VALUE ENGINEERING AND VALUE MANAGEMENT SERVICES MATOC

SOLICITATION NO: W912QR22R0042

Submitted to:

Submitted by:

MHZ JV

In Association With

RIB U.S.COST
running together

LEGIS CONSULTANCY, INC.

NEELU INC.
CONSULTING ENGINEERS

Submittal Date:
April 15, 2022

MSMM ENGINEERING, LLC · HUITT-ZOLLARS A MENTOR PROTÉGÉ JOINT VENTURE

April 15, 2022

Attn: Mr. Joseph Russell
KO Contracting Division
U. S. Army Corps of Engineers, Louisville District
600 Dr. Martin Luther King Jr. Place
Louisville, KY 40202-2230

Subject: Response to Small Business Solicitation: Value Engineering and Value Management Services MATOC, Solicitation No. W912QR22R0042

Dear Ms. McCall and Selection Panel:

Enclosed is the statement of qualifications from the MHZ Joint Venture comprised of MSMM Engineering, LLC and Huitt-Zollar, INC. an SBA approved Mentor Protégé Joint Venture, in response to Solicitation No. W912QR22R0042. We are fully capable of providing the depth of expertise and experience required by this solicitation and commit to the quality delivery of services requested by the Louisville District. Holding multiple IDIQ contracts across multiple USACE districts, our Joint Venture has the proven ability to provide Civil Works and MILCON design, while also delivering on the successful completion of Value Engineering studies across all USACE disciplines and business lines. Our joint venture has the best combination of mission knowledge, full-service capabilities, previous experience, proven track record, and the proven ability to conduct multiple concurrent projects/studies across the Nation and the World. Additionally, have solid working relationships through exclusive agreements with the following sub-consultants with direct applicable project experience: Neelu, Inc., Legis Consultancy, Inc., and RIB – US Cost, Inc. We have specifically chosen this team composition since all the team members have collaborated with each other on a myriad of projects over the past decade, effectively rendering us a cohesive unit that will benefit the USACE through seamless project delivery.

The MHZ Team, by virtue of recent and past performance on projects for various federal agencies such as the U.S. Army Corps of Engineers, NAVFAC, Air Force, National Parks Service, Federal Highway Administration, U.S. Coast Guard, and the Federal Transit Authority, has experience in the Value Engineering / Value Management services required of this solicitation. Additionally, our Team has extensive knowledge of the new USACE HQ VE requirements and has conducted recent studies under those requirements.

The MHZ Team brings and advantage to the Louisville District with our depth of resources to support this contract. Both individual organizations of the JV are structured to provide services to USACE, and we can offer up to ten (10) registered CVS and over six hundred (600)) technical personnel to provide multiple teams to complete concurrent assignment requests. Through the combination of comprising these teams, our Joint Venture has the advantage of a wealth of specialized professional engineering, architectural, value engineering and other technical personnel that are staffed by the Prime small business entity. These resources will be utilized as required for specialized needs and coordination with the USACE Louisville District.

Please feel free to contact us at 504-570-6098 if you require any additional information.

Sincerely,

Manish Mardia, P.E.
JV Board Chairman

Enclosures

PART I, SECTIONS A - D

A. CONTRACT INFORMATION

1. TITLE AND LOCATION (City and State)

VALUE ENGINEERING AND VALUE MANAGEMENT SERVICES MATOC – USACE LOUISVILLE DISTRICT

2. PUBLIC NOTICE DATE	3. SOLICITATION OR PROJECT NUMBER
March 15, 2022	**W912QR22R0042**

B. ARCHITECT-ENGINEER POINT OF CONTACT

4. NAME AND TITLE	**Manish Mardia, P.E., JV Board Chairman**
5. NAME OF FIRM	**MHZ JV, A Mentor-Protégé Joint Venture; DUNS #117073814**

6. TELEPHONE NUMBER	7. FAX NUMBER	8. E-MAIL ADDRESS
(504) 570-6098	**(800) 335-8034**	**mmardia@msmmeng.com**

C. PROPOSED TEAM

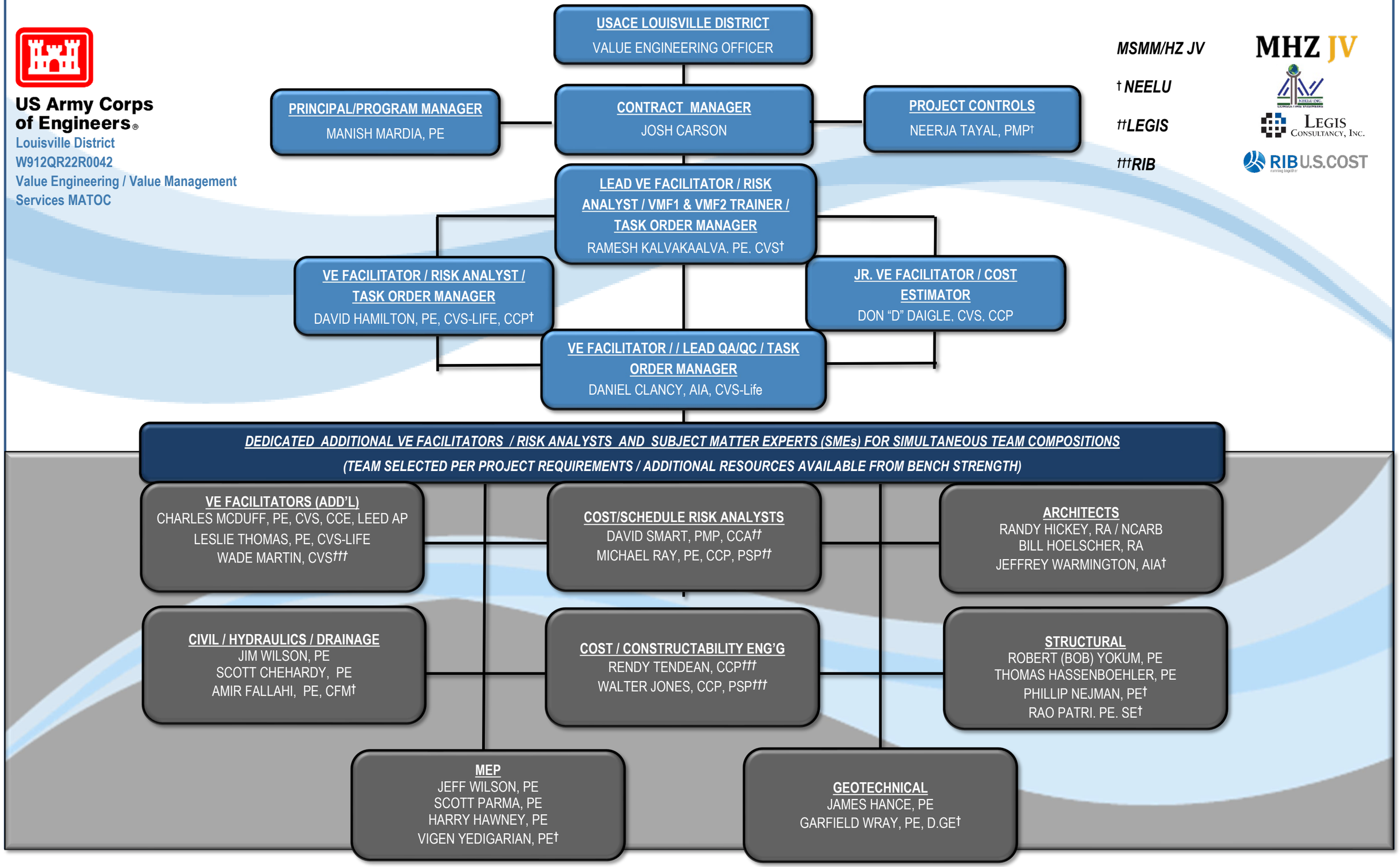
(COMPLETE THIS SECTION FOR THE PRIME CONTRACTOR AND ALL KEY SUBCONTRACTORS)

	(Check) Prime	J-V	Sub	9. FIRM NAME	10. ADDRESS	11. ROLE IN THIS CONTRACT
a.	√			MHZ JV [ ] CHECK IF BRANCH OFFICE	4640 South Carrollton Avenue, Suite 220 New Orleans, LA 70119 DUNS# 117073814	**Small Business** Full-Service Engineering, Design, Modeling, Civil, Structural, Electrical, Mechanical & Environmental Engineering, Architecture, Landscape Architecture, Cost Engineering, BIM Modeling, CIM Modeling, Milcon Design, Microstation Value Engineering/Value Management (VE Facilitators: Les Thomas, PE, CVS-Life (Senior), Daniel Clancy (Senior) CVS-Life; Charles McDuff, PE, CVS-Life, CCE (Senior), Don "D" Daigle, CVS, CCP (Junior))
b.		√		MSMM Engineering, LLC [ ] CHECK IF BRANCH OFFICE	4640 South Carrollton Avenue, Suite 220 New Orleans, LA 70119 DUNS# 969989370	
c.		√		MSMM Engineering, LLC [X] CHECK IF BRANCH OFFICE	13850 Gulf Freeway Suite 202A Houston, TX 77034 DUNS# 071392535	
d.		√		HUITT-ZOLLARS [ ] CHECK IF BRANCH OFFICE	5430 LBJ Freeway Suite 1500 Dallas, TX 75202 DUNS# 080747660	
e.		√		HUITT-ZOLLARS [X] CHECK IF BRANCH OFFICE	500 W. 7th Street Suite 300 Fort Worth, TX 76102 DUNS# 156399560	
f.		√		HUITT-ZOLLARS [X] CHECK IF BRANCH OFFICE	10350 Richmond Avenue Suite 300 Houston TX, 77042 DUNS# 879473999	
g.		√		HUITT-ZOLLARS [X] CHECK IF BRANCH OFFICE	111 N. Magnolia Avenue Suite 1600 Orlando, FL 32801 DUNS# 195075171	
h.		√		HUITT-ZOLLARS [X] CHECK IF BRAN CH OFFICE	2051 Jamieson Avenue Suite 502 Alexandria, VA 22314 DUNS# 117790537	

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			
i.			√	Neelu, Inc. [ ] CHECK IF BRANCH OFFICE	601 Basset Ct., SE Smyrna, GA, 30080 DUNS# 96-277-1957	**Woman-Owned Small Business** Cost & Schedule Risk Assessment, Geotechnical & Structural Engineering, Value Engineering/Value Management: (VE/CSRA Facilitators: David Hamilton, PE, CVS-Life, CCP (Senior); Ramesh Kalvakaalva, PE, CVS, (Senior))
j.			√	RIB U.S.COST [ ] CHECK IF BRANCH OFFICE	11475 Great Oaks Way Suite 250 Alpharetta, GA 30022 DUNS# 10-926-7138	Value Engineering / Value Management; Cost Engineering; Scheduling (VE Facilitator: Wade Martin, PE, CVS, CCP (Senior))
k.			√	LEGIS CONSULTANCY, INC. [X] CHECK IF BRANCH OFFICE	9 Dunwoody Park, Suite 131 Atlanta, GA 30338 Duns# 103766486	**Service-Disabled Veteran Owned Small Business** Sub-consultant; Cost & Schedule Risk Assessment; Cost Engineering

US Army Corps of Engineers®
Louisville District
W912QR22R0042
Value Engineering / Value Management Services MATOC

MSMM/HZ JV
† NEELU
††LEGIS
†††RIB



PART I, SECTION E

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
Manish Mardia, PE	**Program Manager**	**29**	**11**

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

MHZ JV **MHZ JV – New Orleans, LA**

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
BS, Civil Engineering, University of Jodhpur, 1990 **MS, Civil Engineering, Louisiana State University, 1994**	**PE (CIVIL): MS, LA (Since 1999)**

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

Mr. Mardia is a professional engineer with 27 years of experience designing and managing horizontal infrastructure projects for USACE. As the principal of MSMM, Mr. Mardia has successfully executed over 60 task orders related to flood risk reduction and drainage. His design experience spans earthen levee and floodwall evaluation, inspection and design, pump station evaluation and design, and preparation of engineering reports related to stabilization, improvement of levees, canals and floodwalls. Mr. Mardia will be the Program Manager for all associated tasks. He will review and edit all documents before submission to USACE.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, TX**	**2022**	**2024**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Scope: MSMM has been tasked by the USACE Ft. Worth District to develop two design-build RFP's. One is for the Dallas Floodway 277K Levee Raise with 4:1 side slopes, and 277K conveyance levee raise. Additionally, the Delta Pump Station renovations consist of a new electrical building and site improvements. The Design-Build RFP's are in final design development. **Specific Role:** Mr. Mardia is providing the quality control for the project. He provided extensive review of the Summary of Work spec and made several changes to the write-up to reflect documentation outlined in the project drawings. **Construction Cost:** $40 Mil.		
	(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 – USACE New Orleans District**	**2021**	**2023**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Scope: MSMM has been tasked with providing the civil and structural design for the Cow Bayou Complex, a component of the Sabine Pass to Galveston Bay, Orange coastal storm risk management project. This 8,000 CFS pump station is under preliminary design. **Specific Role:** Mr. Mardia is the Quality Control manager for the project. Providing review of the civil and structural design elements. **Construction Cost:** $250 Mil.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**Design of Jefferson Parish Walls, Jefferson Parish, Louisiana - USACE New Orleans District**	**2009**	**2011**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Scope: Following Hurricane Katrina, MSMM was instrumental in providing design phase and construction phase services for the implementation of over 3 miles of floodwalls along the western perimeter of the Hurricane Storm Damage Risk Reduction System (HSDRRS) in Jefferson Parish. Specifically, our engineering team was responsible for the design of the Western Return Wall. **Specific Role:** Mr. Mardia was responsible for quality control on the project. He was instrumental in refining design solutions associated with construction of the floodwall beneath Interstate 10. **Construction Cost:** $120 Mil.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
d.	**Algiers East and West Levee Improvement Design, New Orleans, LA – USACE New Orleans District**	**2011**	**2012**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ 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
Manish Mardia, PE	**Program Manager**	**29**	**11**

Scope: Through USACE MVN, MSMM was tasked with developing alternatives for 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. **Specific Role:** Mr. Mardia was tasked with quality control and clean-up of the developed documentation. **Construction Cost:** $56 Mil.

e.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Harahan Drainage Pump to the River, Harahan, LA – USACE New Orleans District	**2014**	**2017**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM provided full engineering design for the USACE MVN for this important drainage pump station 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, the levee crossing design, reinforced concrete and discharge basin in the Mississippi River. **Specific Role:** Mr. Mardia server as the Program Manager for the tasks completed on this contract. He served as a point of contact for USACE, as well as the non-Federal sponsor. **Construction Cost:** $135 Mil.

f.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
Dallas Floodway Extension, Phase II Recreation Access Design, Dallas, TX – USACE Ft. Worth District	**2020**	**TBD**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM finished design of recreational features of the Dallas Floodway Extension project. The project consists of over 2 miles of concrete trails, a large bridge crossing the Trinity River, two smaller bridges for creek crossings, and an elevated boardwalk. **Specific Role:** Mr. Mardia was the Program Manager for the overall contract. He served as the task order manager, and provided QA/QC of all documents provided to USACE. **Construction Cost:** $3.6 Mil.

g.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
PA 14/PA15 Dewatering, Houston Ship Channel, Harris County, Texas	**2019**	**2020**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Combining and Dewatering of Placement Areas No. 14 & No. 15 which have been in use for the HSC and the Bayport Ship Channel for many years. Used yearly in an alternating pattern (Programmatic), the two PAs started out as open bay disposal sites and advanced to upland confined placement, with plans to combine the two into one large PA. **Specific Role:** Mr. Mardia was the program manager and was responsible for assembling the VE team based on the requestd needs of the Galveston District. **Construction Cost (Annual):** $9.75 Mil.

h.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Corpus Christi Ship Channel Jetty Repairs – Value Engineering Study	**2018**	**2020**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM recently conducted this VE study for the USACE Galveston District. The design was preliminary in nature at the time of the study, and performed by the District. The construction cost estimate for this project was approximately $39.5 million. The scope of the project consisted of the following: Repairs to the North and South jetties that border the entrance to the Corpus Christi Ship Channel. The study resulted in $12M in potential first cost savings. **Specific Role:** Mr. Mardia was the program manager and was responsible for assembling the VE team based on the requested needs of the Galveston District. **Construction Cost:** $32M.

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
Daniel Clancy, CVS, AIA	**Senior Certified Value Specialist (CVS) Facilitator**	**42**	**10**

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

MHZ JV – Houston, TX MHZ JV

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
M Arch. and BA Design of the Environment, University of Pennsylvania	**Architect, Washington, 1983;**

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

Certified Value Specialist (CVS-Life), SAVE International, 1999 #990724
LEED Accredited Professional, U.S. Green Building Council (USGBC), 2004
Choosing By Advantages Facilitator, Institute for Decision Innovations, 2005
Dispute Resolution Board Training, Dispute Resolution Board Foundation, 2012
At OAC 1993-2012, Dan managed multiple IDIQ contracts with Alaska, Honolulu and Fort Worth Districts that led to 2004 Value Engineering Achievement Award from the Department of Defense and the 2006 Design and Environmental Excellence Awards from the USACE Chief of Engineers. Since starting Clancy Value Services in 2012, Dan has completed 91 formal VE studies or value-based program/project planning/design charrettes for US Army Corps of Engineers (USACE) Fort Worth, Tulsa, Honolulu, Japan, Far East, Seattle and Alaska Districts. He's also worked with National Park Service, Province of Alberta, local municipalities and non-profit organizations. In the last 36 months Dan has conducted 29 value studies that either followed the SAVE standard and were greater than 24 hours in length or used a nontraditional approach based on function analysis to identify solutions to complex problems. Since being introduced to the USACE Value Study Guide in June 2021, Dan has executed four reports in accordance with the USACE Value Standard.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Duckabush River Estuary Ecosystem Restoration Jefferson County, WA	**2021**	**NA**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Facilitated a virtual value engineering study for USACE-Seattle on 35% design package for a 1,614-foot long 34-foot-wide bridge prior to removal of the existing adjacent highway downstream in order to reconnect floodplain and intertidal wetlands, improving tidal exchange, sediment transport, and estuary development. Tidal and riverine hydrology would be restored to 38 acres of the Duckabush River delta, allowing for natural habitat forming processes including sediment and detritus exchange, freshwater input, and tidal flushing within the delta. Restoration in the Duckabush River will provide rearing habitat for Hood Canal summer chum salmon by reconnecting 20 river miles of nearly pristine upstream habitat with a now fully functional salt marsh and mudflat estuary. The program amount (PA) is $90.320M.
Key Recommendations:
Reduce/consolidate the number of small distributary channels ($778,000)
Re-purpose High Way 101 embankment material to raise grade of southern parking area and provide shellfish bed access ($585,000)
Professional services completed June 2021

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Emergency Power Microgrid Offutt AFB, NE	**2021**	**NA**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Facilitated a virtual value engineering study for USACE-Omaha District on the 35% design package for a $51.0M (program amount) repair by replacement of 14 Mega-Watt power generation and associated distribution assets to provide sufficient backup for critical facilities during a commercial grid outage. The system and associated commercial and emergency power distribution infrastructure will be resized and reconfigured to better serve and isolate new and existing facilities and critical loads.
Accepted Value Proposals:
Consolidate fuel polishing at each site ($324,000)
Eliminate future equipment foundations ($794,000)
Elevate power distribution center (PDC) to eliminate vault ($84,000)
(Professional services completed June 2021

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
Daniel Clancy, CVS, AIA	**Senior Certified Value Specialist (CVS) Facilitator**	**42**	**10**

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
USDA Fruit Fly Rearing and Release Facility Edinburgh, TX	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	2019	**NA**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Facilitated a four-day value engineering study for USACE-Fort Worth District on a 117,000 sq. ft. building to produce 400 million sterile fruit flies weekly to biologically control the infestation of Mexican Fruit Flies in the citrus orchards of the Rio Grande Valley. Worked with independent previously not involved architect, industrial process and multidiscipline engineer team members from designer of record firms to review 35% draft design documents and identify alternatives to decrease the $83.661M current working estimate within the $58M budget. The team's analysis of Rear Flies as basic Why? with Access Site, Condition Space, Drain Area, Extend Utilities, Finish Space, and Support Load as required How? functions to address Control fruit fly infestation biologically by colonizing to harvest eggs, develop larvae in diet mix and initiate to produce sterile males while keeping females within the process project goal, led to development of 36 VE workbooks out of 43 creative ideas. The customer accepted 5 alternatives worth $977G cost avoidance including Keep existing 16-inch raw water line and Reduce aircraft canopies from 4 to 2 and reduce gates, path and driveway. $85G additional cost was accepted to improve function. As the project moves forward, another 6 alternatives are being further studied for $2.624M cost avoidance including Rotate building 90 degrees to simplify drainage and increase distance away from runway and Limit epoxy coating floor to larvae initiation (10) rooms and use sealed concrete where appropriate.

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
Dining Facility Joint Base San Antonio Camp Bullis, TX	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	2019	**NA**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Facilitated a three-day value engineering study for USACE-Fort Worth District on a $18.5M, 3,410 SM (36,705 SF) dining facility for 1,300 to 1,500 personnel. Worked with independent architect and food service design professional along with previously not involved multidiscipline engineer team members from designer of record firms to review concept design 35% draft submittal documents and identify alternatives to decrease the $23.5M current working estimate within the $18.5M budget. The team's analysis of Serve Meals as basic Why? with Access Building, Condition Space, Demolish Buildings, Distribute Power, House Dining, House Kitchen, Light Area, Pave Area, and Support Load as required How? functions to address Consolidate facilities for feeding Bullis, Reduce operating costs and Enhance quality of service project goals, led to development of 24 VE workbooks out of 38 creative ideas. The customer accepted 7 alternatives worth $1.959M cost avoidance including Reduce air volume in Dining during low occupancy, Re-use over excavation material to channelize drainage and fill building sites, Right-size dining, Right-size Kitchen, and Reconfigure Flight Kitchen; $231G life cycle savings over 40 years and $24G additional cost to improve function. As the project moves forward 11 alternatives worth $512G cost avoidance under Scenario 1 – Optimize Current Configuration and $876G cost avoidance under Scenario 2 – Simplify Building Geometry are being studied further.

e.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
Bureau of Engraving Printing Western Currency Facility Fort Worth, TX	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	2017	**NA**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

After attending a three-day design charrette to gain background information on project requirements, facilitated a four-day value engineering study for USACE-Fort Worth District on a $158M, 379,000 sq. ft. addition to increase production capacity and accommodate phased improvements of linear processes. Worked with independent previously not involved architect and engineer team members from designer of record firms to utilize design build 35% documents for VE on customer-requested change to design-bid-build acquisition. The team's analysis of Increase Capacity as basic Why? with Control Environment, Distribute Utilities, Enclose Building, Improve Security, Power Equipment and Support Load as required How? functions to address Expand to support new generation of currency and Maintain redundancy project goals, led to development of 31 VE workbooks out of 47 creative ideas. The customer accepted 14 alternatives worth $954G cost avoidance including Eliminate raised floor and recessed slab at Data Center, Substitute PVC for ductile iron on fire loop, Use open cut at non-security sensitive locations, and Modify perimeter grade beam at Production; and $789G additional cost to improve function. As the project moves forward, another 7 alternatives are being considered for $1.742M cost avoidance and $891G additional cost.

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
Leslie Thomas, PE, CVS-Life	**Senior VE Facilitator / Drainage Engineer**	**44**	**4**

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

MHZ JV **MHZ JV– Orlando, FL**

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
BS, Civil Engineering; Virginia Polytechnic Institute and State University	**Certified Value Specialist, 1985 (CVS - Life) – SAVE-International GA, FL: Professional Engineer – Civil**

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

Over 40 years in the design of Water Resources Facilties (including Flood Control), Water Supply, Storage, Pumping Systems, Treatment Processes and Distribution Design. He also is an expert in Advanced Wastewater Treatment, pumping stations and effluent disposal systems including Reuse Systems. He has designed four (4) State Correctional Institutions for the State of Florida. Mr. Thomas also served the SAVE International Certification Board as its Executive Director '02-'09, and member of the board of directors '09-'11. Mr. Thomas earned his CVS in 1985 and has since served the society as founder and President of the North Florida Chapter, Chairman 1993 International Convention in Ft. Lauderdale. **Former US Navy P-3C Orion Pilot, served during the Vietnam war.**

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, TX**	**2020**	**2021/2022**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Co-Facilitator and Drainage Engineer:: To meet a 277k cfs water surface elevation and design new levee crest access roads; **Levee Side Slope Flattening:** The levee side slopes shall be flattened to 4H:1V along the entire length of the river side of the levees; **Delta Pump Station:** New pumps (2), new electrical building, new transformer, concrete curb and gutter road to Hampton Road, truck access, new retaining walls, new security fencing and gates.**Construction Cost:** $40 Mil. Benefits included substantial VE cost savings, improved constructabilty, schedule management, risk mitigation.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
b.	**Walter Reed Army Institute of Research, Forest Glen, MD**	**2015**	**2019**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	VE Facilitator: Value Engineering Study of the Walter Reed Army Institute of Research, Forest Glen, Maryland. This is a new research facility complete with animal facilities, laboratories etc. for the advancement of science and medicine. The VE study identified $13 million worth of savings on this $157 million project..		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**Medical Clinic Replacement; Holloman Air force Base, White Sands, NM**	**2013**	**2017**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	VE Facilitator: Value Engineering Study of the Medical Clinic Replacement at the Holloman Air Force Base, White Sands, NM. The $55 Million facility was a 98,000 SF new construction. Benefits included VE cost savings, improved constructabilty, schedule management.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
d.	**Value Engineering Services for the Georgia Department of Transportation (GDOT), Atlanta, GA**	**2009-16**	**Ongoing**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	VE Facilitator: Performed 66 Value Engineering (VE) studies for the GDOT. The studies included rural, secondary, primary and interstate roadways, bridges, drainage, pavement designs, interchanges, flyovers, unlimited and limited access. To date, the GDOT has reported the VE savings to be in excess of $168 Million for just these projects. Benefits included VE cost savings, improved constructabilty.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
e.	**NASA Causeway Bridge, Cape Canaveral, FL**	**2019**	**2022**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ 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
Leslie Thomas, PE, CVS-Life	**Senior VE Facilitator / Drainage Engineer**	**44**	**4**

VE Co-Facilitaor: This VE study was directed at the project being administered by District 5 of the Florida Department of Transportation, consisting of NASA Causeway Bridge. The NASA Causeway Bridge was built in 1964 to cross the Indian River Lagoon and connect Titusville to Merritt Island. It serves as the main thoroughfare for freight and payload traffic into Kennedy Space Center/Cape Canaveral Air Force Station. This is the only route a payload may utilize to travel from processing facilities in Titusville to the launch pads. The carrying capacity and horizontal and vertical clearances are degrading and inadequate for payloads that can exceed 40-60 feet in height. The VE Study adhered to the the six-step **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $125 Mil. **Accepted VE Savings**: $13.5 Mil. Benefits included VE cost savings, improved constructabilty.

f.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
Detainee Dormitory at the El Paso Service Processing Center Detainee Dormitory, El Paso, TX	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
	2022	**2023**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	

VE Co-Facilitator: Value Engineering Study for the Development of a new Detainee Dormitory Facilty for families crossing the Southern Border. The facility is run by ICE and customers for the project include Customs and Border Patrol. The client for the study is USACE Fort Worth District. The pre-study process has been completed and the study will be conducted the week of April 18th.

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
Ramesh Kalvakaalva, PE, CVS	**Senior Certified Value Engineer / Risk Analyst**	**32**	**12**

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

Neelu Inc. – Smyrna, GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
MS, Civil Engineering; Louisiana State University **BS, Civil Engineering; NIT, Trichy, India**	**PE (CIVIL): MS, LA, FL, AL, GA, LA, TN, NC, SC, AZ, IN, MI (Since 1997)** **SAVE® Ceritfied CVS (Worldwide) (Since 2010)**

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

SAVE® Certified VMF1 & VMF2 Workshop Trainer; Papers and Presentations at various AASHTO Peer Exchange Workshops, SAVE-International® Summits, and Canadian Society of Value Analysis 20th National Conference, Montreal, QC; ▪ Value Engineering Lectures to Undergraduate and Graduate Students of Georgia Tech, and Westwood College, Atlanta; ▪ President – SAVE® Piedmont Chapter; Technical ▪ Committee Member for SAVE International®'s VMBoK®, Chapters 6 & 9. Professional Memberships ▪ SAVE International® ▪ ASCE ▪ SAME Facilitated over 250 VE Workshops to date. Clients include State DOTs (Georgia; Florida; Texas; Wyoming; CALTRANS; LA Metro; VaDOT); DoD; NAVFAC; USACE; Counties and Cities (Fairfax County; NYC Office of the Mayor; NY Port Authority); Institutional; Law Enforcement;

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, TX**	**2021**	**2024**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Facilitaor (Virtual Workshop): **277K Levee Raise:** Raise the top of the levees to meet a 277k cfs water surface elevation and design new levee crest access roads; **Levee Side Slope Flattening:** The existing East and West levees have side slopes varying from approximately 2:8H:1V to 4H:1V. The side slopes shall be flattened to 4H:1V along the entire length of the river side of the levees; **Delta Pump Station:** New pumps (2), new electrical building, new transformer, concrete curb and gutter road, truck access, new retaining walls, new security features. The VE Study adhered to the **USACE Value Standard** and **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $40 Mil. **Accepted VE Savings**: $1.25 Mil. Note: A **Risk Register** was developed for mitigation during construction. Benefits included substantial VE cost savings, improved constructabilty, schedule management, risk mitigation.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
b.	**Construct Dangerous Cargo Pad; Relocate CATM, Canon Airforce Base, Clovis, New Mexico**	**2018**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Facilitaor: Per AFMAN 32-1084, a dangerous cargo area is required to support the movement of munitions by cargo-type aircraft (C-5, C-17, Boeing 747) and to support daily C-130 operations. Siting for this facility is limited by explosive quantity-distance criteria. The existing North Calibration Pad, CATM and small arms range, the Rod & Gun Club, Skeet and Trap Range, and supporting facilities must be demolished and relocated to another site. The VE Study adhered to the **USACE Value Standard** and **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $42 Mil. **Accepted VE Savings**: $13 Mil. Benefits included substantial VE cost savings, improved constructabilty, schedule management.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**PA 14/PA15 Dewatering, Houston Ship Channel, Harris County, Texas**	**2018**	**10 yr Programmatic**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Facilitaor: Dewatering of Placement Areas No. 14 & No. 15 on the Houston Ship Channel. Used yearly in an alternating pattern (Programmatic), these two PAs started out as open bay disposal sites and advanced to upland confined placement with the deepening project. Underway are plans to combine the two into one large PA. The VE Study adhered to the **USACE Value Standard** and **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost (Annual):** $9.75 Mil. **Accepted VE Savings**: $1.75 Mil. Benefits included substantial VE cost savings, improved construction and quality management and, schedule management.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
d.	**Woodlawn Fire Station No. 24, Fairfax County, Virginia**	**2018**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ 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
Ramesh Kalvakaalva, PE, CVS	**Senior Certified Value Engineer / Risk Analyst**	**32**	**12**

VE Facilitaor: The Woodlawn Fire Station was originally constructed in the early 1970s. The prototype designed developed for Woodlawn Fire Station was adapted for several subsequent stations including Edsall road and Reston. The VE Study adhered to the **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $7.25 Mil. **Accepted VE Savings**: $0.75 Mil. Benefits included substantial VE cost savings, improved constructabilty, schedule management.

e.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Aerospace Ground Equipment (Age) Complex, Davis-Monthan AFB, Tucson, AZ	**2019**	**2020**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Facilitaor: AGE complex consists of administrative and maintenance areas, covered open-storage facility, with reinforced concrete foundations and floor slabs, structural-steel frames, standing-seam metal roof systems; fire detection/protection, and demolition of 13 facilities and 2 associated canopies. Facilities will be designed as permanent construction in accordance with the DoD Unified Facilities Criteria (UFC) 1-200-01, UFC 1-200-02, High Performance and Sustainable Building Requirements. This project will comply with DoD antiterrorism/force protection requirements per UFC 4-010-01. The VE Study adhered to the **USACE Value Standard** and the six-step **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $15.5 Mil. **Accepted VE Savings**: $1.25 Mil. Benefits included substantial VE cost savings, improved constructabilty, schedule management.

f.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
Ship Channel - PA 10 – Shoreline Protection/Stabilization – Containment Dike Raise, Corpus Christi, Texas	**2018**	**Programmatic**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Facilitaor: CCSC PA10 is located on the south side of Corpus Christi Ship Channel. The average containment dike elevation of PA10 is about 32 feet from survey taken in 2013 (as presented in the survey plot from station 68+00 to station 71+00 in Section II. The proposed plan is to optimize erosion protection beginning at station 65+00 and ending at station 99+00 which makes the total design length of the erosion prevention construction 3,400 linear feet. Additionally, the Dike is proposed to be raised to an uniform elevation +40 feet, along with a PA expansion. The VE Study adhered to the **USACE Value Standard** and the six-step **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $8 Mil. **Accepted VE Savings**: $1 Mil. Benefits included substantial VE cost savings, improved consttruction and quality management and, schedule management.

g.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
STORMWATER WASTEWATER FACILITY – II, Fairfax County, VA	**2019**	**2021**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Facilitaor: The County of Fairfax, Virginia, Department of Public Works facility includes accommodating Maintenance and Stormwater Management Division (MSMD), Stormwater Planning Division (SWPD) and the Urban Forest Management Division (UFMD). The total site area is approximately 23.7 Acres. Parcel 13 is 14.39 acres, zoned I-5, and currently improved with the existing Wastewater Collection Division Facility. Parcel 11 is 9.31 Acres, zoned I-6, and currently improved with an inactive concrete batch plant. The site is located in the Area III, Pohick Planning District, P6 Middle Run Community Planning Sector of the Comprehensive Plan. The VE Study adhered to the **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $70 Mil. **Accepted VE Savings**: $5 Mil. Benefits included VMF1 Training for Client Personnel, cost savings, improved schedule and construction management.

h

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
Widening of Florida's Turnpike (SR 91) from Jupiter (Indiantown Road/SR706) to Ft. Pierce (Okeechobee Road/SR70), FTE, FL	**2020**	**2030 (Projected)**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Facilitaor / Risk Assessment Co-Facilitator (Virtual Workshops): Currently, Florida's Turnpike (S.R. 91) is a four (4) lane limited access toll facility. The Turnpike intersects at S.R. 70/Okeechobee Road (MP 152) in Fort Pierce, St. Lucie County. The Turnpike has two interchanges in Port St. Lucie, one at Becker Road (MP 138) and the other at S.R. 716/Port St. Lucie Boulevard (MP 142).The project purpose is to enhance the integrity of the highway while accommodating future traffic demands, improving overall safety, and meeting current design standards. New interchange access locations will be evaluated as part of the study (FPID 406143-1), as well as improvements to the existing interchanges.. The **Cost Risk Assemment** (CRA) adhering to the FHWA Guidelines preceded the VE Study which adhered to the six-step **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $1.4 Bil. **Proposed VE Savings**: $50 Mil. **Results of CRA** forecast the Construction Cost (70% Confidence) at $2.4 Bil. Benefits include focused risk mitigation measures, optimized VE process through more targeted brainstorming of mitigation measures.

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
David Hamilton, PE, CVS-Life, CCP, ENV-SP, LEED AP	**Senior Certified Value Engineer / Risk Analyst / Cost Engineer**	**44**	**4**

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

Neelu Inc. – Smyrna, GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
BS Civil Engineering; Seattle University	**Profession Engineer (PE) – Civil (WA State - #23471) (1986)** **SAVE® Ceritfied CVS- Life (Worldwide) (Since 1991)**

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

Training: SAVE 40-hour MOD I VE; Quantitative Risk Analysis Using Palisades @Risk; Safran Risk; Sage / Timberline; Primavera P6
Certifications / Professional: SAVE International - Certified Value Specialist (CVS-Life)(1991); AACE - Certified Cost Professional (CCP) (2003); LEED® (AP) – Life (2002; Envision™ Sustainability Professional (ENV-SP) – Life (2016)
David is one of very few CVS's with both a PE and a CCP (cost engineer) certification and has extensive experience in military and civil design projects, project life cycle costing, ROI, cost/schedule risk modeling, mitigation measures and risk trending during the design process. He has conducted more than 500 DoD VE studies in 47 States and numerous locations overseas Asia, the Pacific, Europe and the Middle East. In the past 36 months alone, David has facilitated 46 VE Workshops; 7 Design Charrettes/FACD's; and 8 CSRA's. **Facilitated more than 800 value, constructability, and CSRA studies over the past 30 years, with more than 500 VE, CSRA and FACD studies conducted for DoD clients worldwide.** Extensive experience in military construction practices, sustainability, and quantitative risk (Monte Carlo Simulations) using Crystal Ball, @Risk and/or Safran Risk software, having prepared more than 100 risk models to meet CSRA study requirements. He has also prepared Economic Analysis and LCCA on facility alternative analylsis, energy consumption, and cost/benefit analysis.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, Texas**	**2021**	**2024**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Co-Facilitaor (Virtual Workshop): **277K Levee Raise:** Raise the top of the levees to meet a 277k cfs water surface elevation and design new levee crest access roads; **Levee Side Slope Flattening:** The existing East and West levees have side slopes varying from approximately 2:8H:1V to 4H:1V. The side slopes shall be flattened to 4H:1V along the entire length of the river side of the levees; **Delta Pump Station:** New pumps (2), new electrical building, new transformer, concrete curb and gutter road to Hampton Road, truck access, new retaining walls, new security fencing and gates. The VE Study adhered to the **USACE Value Standard** and **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $40 Mil. **Accepted VE Savings**: $1.25 Mil. Note: A **Risk Register** was developed for mitigation during construction. • Benefits included substantial VE cost savings, improved constructabilty, schedule management, risk mitigation.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
b.	**Olmsted Major Lock Rehab Project, Ohio River, USACE Louisville District**	**2015**	**2017**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	VE Facilitator: The VE study investigated opportunities for value improvements on the Olmsted Lock & Dam project to rehab the existing gate and culvert cylinders. These cylinders have been in use for over 12 years and have experienced notable corrosion on the cylinder rods to the point where major repair or replacement of the rods/cylinders will be required to maintain navigation capacity on the Ohio River. Extensive life cycle costing analysis provided justification for higher quality and more durable cylinders to reduce cost impacts to traveling barges, improve the ROI for the project, and reduce future down-time at the locks. Operations staff were incredibly supportive of the opportunity to install "high value" cylinders which will reduce maintenance and improve operability. This was an in-house LRL design project. • Key Benefits included greatly improved equipment reliability, reduced delays at the locks, and improved Cost/Benefit.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**FACD/VE/CSRA Workshops – USACE Middle East District – P922 Fleet Maint. Facility & Tactical Ops. Center, Bahrain**	**2018-2020**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ 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
David Hamilton, PE, CVS-Life, CCP, ENV-SP, LEED AP	**Senior Certified Value Engineer / Risk Analyst / Cost Engineer**	**44**	**4**

Cost and Schedule Risk Assessment Lead:: Facilitated a VBDC with more than 50 participants and developed the CSRA with follow-on monthly risk trending models during the design process to track cost and schedule risk mitigation effectiveness. The prime consultant is Jacobs.

Led an on-site Value Based Design Charrette and CSRA on the Fleet Maintenance Facility (FMF), a 7,500SF pre-engineered facility which will include logistic support, maintenance bays and secure areas. The Tactical Operations Center (TOC) will be a 10,000SF pre-engineered facility and will serve as the consolidated air intelligence support center. Cost: $24.7M.

- Key Benefits included improved risk tracking, more focused risk mitigation, and improved budget control.

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
JT Meyer Lock & Dam – Major Lock Rehab Evaluation, USACE Louisville District	**2015**	**N/A**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	

VE & CSRA Lead: Rreview available maintenance issues, condition assessments, and historical records for JT Myers and to conceptualize a prioritized 50 year budget with phased cash flow to extend the life of the facility another 50 years (to 2065). The mission statement for the VE team was: Develop a phased scope of work to validate the needed improvements outlined in the JY Myers Reliability Study prepared in 2010, keeping in mind that the downstream scour issue appears to have stabilized over the past 10 years per recent dive reports, but future monitoring is needed. The scope of work should provide a phased capital program to extend the life of the lock and dam for an additional 50 years. Function "Optimize Reliability" and "Prioritize Investments". The team developed a maintenance "criticality" matrix to develop the future maintenance program.

- Benefits include focused maintenance budgeting, preventative maintenance planning, decision making based upon economic "criticality factors".

e.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Widening of Florida's Turnpike (SR 91) from Jupiter (Indiantown Road/SR706) to Ft. Pierce (Okeechobee Road/SR70), FTE, FL	**2020**	**2030 (Projected)**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Risk Assessment Facilitator (Virtual Workshops / VE Co-Facilitaor: Currently, Florida's Turnpike (S.R. 91) is a four (4) lane limited access toll facility. The Turnpike intersects at S.R. 70/Okeechobee Road (MP 152) in Fort Pierce, St. Lucie County. The Turnpike has two interchanges in Port St. Lucie, one at Becker Road (MP 138) and the other at S.R. 716/Port St. Lucie Boulevard (MP 142), followed by the Fort Pierce/Port St. Lucie Service Plaza at MP 144. The interchange of Turnpike and S.R. 714/S.W. Martin Highway (MP 133) is the only exit to Martin County. The purpose of the project is to enhance the integrity of the highway while accommodating future traffic demands, improving overall safety, and meeting current design standards. New interchange access locations will be evaluated as part of the study (FPID 406143-1), as well as improvements to the existing interchanges.. The **Cost Risk Assemment** (CRA) adhering to the FHWA Guidelines preceded the VE Study which adhered to the six-step **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $1.4 Bil. **Proposed VE Savings**: $50 Mil. **Results of CRA** forecast the Construction Cost (70% Confidence) at $2.4 Bil. The Implementation Meeting is scheduled for September 2020.

- Benefits include focused risk mitigation measures, optimized VE process through more targeted brainstorming of mitigation measures.

f.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
NASA Causeway Bridge, Cape Canaveral, FL	**2019**	**2022**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Co-Facilitaor: This Value Engineering study was directed at the project being administered by District 5 of the Florida Department of Transportation, consisting of NASA Causeway Bridge. The NASA Causeway Bridge was built in 1964 to cross the Indian River Lagoon and connect Titusville to Merritt Island. It serves as the main thoroughfare for freight and payload traffic into Kennedy Space Center/Cape Canaveral Air Force Station. This is the only route a payload may utilize to travel from processing facilities in Titusville to the launch pads. The carrying capacity and horizontal and vertical clearances are degrading and inadequate for payloads that can exceed 40-60 feet in height. The VE Study adhered to the the six-step Value Engineering Job Plan as promulgated by SAVE International®. Construction Cost: $125 Mil. Accepted VE Savings: $13.5 Mil.

- Benefits included substantial VE cost savings, improved freight flexibility for heavy NASA transport requirements.

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
Charles R. McDuff, PE, CVS-Life, CCE, LEED-AP	**Certified Value Engineer / Risk Analyst / Cost Engineer**	**48**	**10**

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

MHZ JV – Houston, TX

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
BS Civil Engineering – Missouri School of Mines	**FL, GA, NC, VA; Professional Engineer - Civil**

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

Specialized in VE; Construction Cost Claims, Estimating, and Trends; Cost and Life Cycle Cost Analyses. Use of **Crystal Ball - Monte Carlo Simulations, PACES, MCACES, MS Project and MII**; VE team leader on over 300 projects; and has participated as civil engineering or cost/constructability team member on additional projects. Participated in the design, construction cost estimating and scheduling, on projects involving billions of dollars in construction. He served three years active duty with USACE where he held rank of Captain. The assignments while on active duty included serving as a company commander in Vietnam.

Professional Affiliations/Awards: ASCE; SAVE International I®; and AACE International. Earned Bronze Star Medal; Army Commendation Medal.

Certifications: Certified Cost Engineer (CCE), Certified Value Specialist (CVS), and a LEED-Accredited Professional. Served seven years on the SAVE International I® Certification Board; **Training Capabilities:** Created the Value Management Body of Knowledge (VMBOK) for SAVE International I®. Held Module I and Module II training workshops throughout the country for various clients and enabled candidates obtain AVS (now VMA) and CVS certifications. Mr. McDuff achieved his CVS certification in 1982.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, Texas**	**2020**	**2023**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (Civil): **277K Levee Raise:** To meet a 277k cfs water surface elevation and design new levee crest access roads; **Levee Side Slope Flattening:** The levee side slopes shall be flattened to 4H:1V along the entire length of the river side of the levees; **Delta Pump Station:** New pumps (2), new electrical building, new transformer, concrete curb and gutter road to Hampton Road, truck access, new retaining walls, new security fencing and gates.**Construction Cost:** $40 Mil. Note: Contributed to the **Risk Register.** Benefits included substantial VE cost savings, improved constructabilty, schedule management, risk mitigation.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
b.	**Medical Clinic Replacement; Shaw Airforce Base; NAVFAC (For The Air Force), Sumter, SC**	**2012**	**2017**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Facilitator: The facility was 115,881 SF along with ancillary support buildings. The study was conducted January 16 - 20, 2012, with the presentation held at the Shaw AFB on February 22, 2012. The VE Study adhered to the **USACE Value Standard** and **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $55 Mil. **Accepted VE Savings**: $9 Mil. Note: A **Risk Register** was developed for mitigation during construction. Benefits included substantial VE cost savings, improved constructabilty, schedule management, risk mitigation.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**Nuclear Power Training Unit Facility (NPTU), Joint Base Charleston, SC (NAVFAC MILCON Project)**	**2013**	**Ongoing**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Facilitator: MILCON Projects P-099 / P-100 , (NPTU), Joint Base Charleston, SC. NPTU's current facilities and systems are inadequate to meet the future needs in support of the training mission and necessitate an extensive transition of the existing facility with an increase in student load, inclusion of simulator-based training, and the addition of a training ship. The VE Study adhered to the **USACE Value Standard** and **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $122 Mil. **Accepted VE Savings**: $4 Mil. Benefits included substantial VE cost savings, improved construction phasing, schedule management.		
d.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	

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
Charles R. McDuff, PE, CVS-Life, CCE, LEED-AP	**Certified Value Engineer / Risk Analyst / Cost Engineer**	**48**	**10**

	Cost Management/Estimating – Hurricane Protection Office – USACE, New Orleans, LA	PROFESSIONAL SERVICES **2006**	CONSTRUCTION(*If applicable*) **2015**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Lead Cost Estimator Using MII: Lead a Team in the HPO since April following Katrina. Worked on the preparation of over 300 draft IGEs for use by USACE contract negotiators. Personally addressed rebuild of vintage 1909 Pump Station Motors, Fiber Optic control and phone systems. Completed PACES parametric estimates on the 17th Street, Orleans and London Avenue Permanent Pump Stations. Benefits included Cost Containment, Schedule and Budget Management.		
e.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	Master Planning, Conceptual Design, and Program Integration Services for BRAC05, Fort Belvoir, VA	PROFESSIONAL SERVICES **2011**	CONSTRUCTION *(If applicable)* **Ongoing**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Risk Management Team Member: Provided input into the formulation and conduct of the risk and opportunities associated with the BRAC work to be accomplished. Used **Cost Estimating (MII)** combined with personal skills to assess cost risks through the use of **Monte Carlo simulations**. Benefits included Risk Identification and Mitigation, Budget Control.		
e.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	Widening of Florida's Turnpike (SR 91) from Jupiter (Indiantown Road/SR706) to Ft. Pierce (Okeechobee Road/SR70), FTE, FL	PROFESSIONAL SERVICES **2020**	CONSTRUCTION(*If applicable*) **2023**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Risk Assessment &/ VE Team Member: Currently, Florida's Turnpike (S.R. 91) is a four (4) lane limited access toll facility. The Turnpike intersects at S.R. 70/Okeechobee Road (MP 152) in Fort Pierce, St. Lucie County. The Turnpike has two interchanges in Port St. Lucie, one at Becker Road (MP 138) and the other at S.R. 716/Port St. Lucie Boulevard (MP 142), followed by the Fort Pierce/Port St. Lucie Service Plaza at MP 144. The interchange of Turnpike and S.R. 714/S.W. Martin Highway (MP 133) is the only exit to Martin County. The purpose of the project is to enhance the integrity of the highway while accommodating future traffic demands, improving overall safety, and meeting current design standards. New interchange access locations will be evaluated as part of the study (FPID 406143-1), as well as improvements to the existing interchanges.. The **Cost Risk Assemment** (CRA) adhering to the FHWA Guidelines preceded the VE Study which adhered to the six-step **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $1.4 Bil. **Proposed VE Savings**: $50 Mil. **Results of CRA** forecast the Construction Cost (70% Confidence) at $2.4 Bil. The Implementation Meeting is scheduled for September 2020. Benefits include focused risk mitigation measures, optimized VE process through more targeted brainstorming of mitigation measures.		
f.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	NASA Causeway Bridge, Cape Canaveral, FL	PROFESSIONAL SERVICES **2019**	CONSTRUCTION *(If applicable)* **2022**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member: This Value Engineering study was directed at the project being administered by District 5 of the Florida Department of Transportation, consisting of NASA Causeway Bridge. The NASA Causeway Bridge was built in 1964 to cross the Indian River Lagoon and connect Titusville to Merritt Island. It serves as the main thoroughfare for freight and payload traffic into Kennedy Space Center/Cape Canaveral Air Force Station. This is the only route a payload may utilize to travel from processing facilities in Titusville to the launch pads. The carrying capacity and horizontal and vertical clearances are degrading and inadequate for payloads that can exceed 40-60 feet in height. The VE Study adhered to the the six-step Value Engineering Job Plan as promulgated by SAVE International®. Construction Cost: $125 Mil. Accepted VE Savings: $13.5 Mil. Benefits included substantial VE cost savings, improved freight flexibility for heavy NASA transport requirements.		

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
Don "D" Daigle, CPE, CVS	**Junior VE Facilitator / Cost Estimator**	**35**	**4**

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

MHZ JV – New Orleans, LA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
NVCC, Annandale, A.A.S – Mechanical Engineering, A.A.S. – Electro-Mechanical Engineering Technology, 1984	**Certified Value Specialist (CVS) – SAVE-International (Since 2015) Professional Cost Estimator (CPE) – ASPE (Since 2014)**

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

Mr. Daigle brings to MSMM 34 years of Construction Management that enhances his Value Engineering experience. As an estimator, project/construction manager and owner/operator of a firm for nationwide construction projects, he led the successful completion of various public and private construction projects, ranging from college & university campuses to public safety facilities.

MII Cost Estimating – Training provided by US Cost

Training/Publications/Lectures/Awards

Lectures to Undergraduate Students of Georgia Mason University, Washington D.C. and ASPE Washington D.C. Chapter, on the "Basics of Value Engineering".

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, Texas**	**2021**	**2023**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	MII Cost Estimator: 277K Levee Raise: To meet a 277k cfs water surface elevation and design new levee crest access roads; **Levee Side Slope Flattening:** The levee side slopes shall be flattened to 4H:1V along the entire length of the river side of the levees; **Delta Pump Station:** New pumps (2), new electrical building, new transformer, concrete curb and gutter road to Hampton Road, truck access, new retaining walls, new security fencing and gates.**Construction Cost:** $40 Mil.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
b.	**Nuclear Power Training Unit Facility (NPTU), Joint Base Charleston, SC (NAVFAC - Milcon)**	**2013**	**Ongoing**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	VE Team Member (Cost Estimator): MILCON Projects P-099 / P-100 , (NPTU), Joint Base Charleston, SC. NPTU's current facilities and systems are inadequate to meet the future needs in support of the training mission and necessitate an extensive transition of the existing facility with an increase in student load, inclusion of simulator-based training, and the addition of a training ship. **Construction Cost:** $122 Mil. **Accepted VE Savings**: $4 Mil.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**PA 14/PA15 Dewatering, Houston Ship Channel, Harris County, Texas**	**2018**	**10 yr Programmatic**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Co-Facilitator / Cost Estimator:: Combining and Dewatering of Placement Areas No. 14 & No. 15 which have been in use for the HSC and the Bayport Ship Channel for many years. Used yearly in an alternating pattern (Programmatic), the two PAs started out as open bay disposal sites and advanced to upland confined placement with the deepening project. Plans to combine the two into one large PA. **Construction Cost (Annual):** $9.75 Mil.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
d.	**Woodlawn Fire Station No. 24, Fairfax County, Virginia**	**2018**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ 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
Don "D" Daigle, CPE, CVS	**Junior VE Facilitator / Cost Estimator**	**35**	**4**

VE Co-Facilitator / Cost Estimator: The Woodlawn Fire Station was originally constructed in the early 1970s as the County's first capital funded fire station facility. The prototype designed developed for Woodlawn Fire Station was adapted for several subsequent stations including Edsall road and Reston. The VE Study adhered to the **Value Engineering Job** Plan as promulgated by SAVE International®.. **Construction Cost:** $7.25 Mil.

e.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
Ship Channel - PA 10 – Shoreline Protection/Stabilization – Containment Dike Raise, Corpus Christi, Texas	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	2018	**Programmatic**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Co-Facilitator / Cost Estimator: CCSC PA10 is located on the south side of Corpus Christi Ship Channel, to the northwest of Corpus Christi Bay, and south of Ingleside in San Patricio County, Texas**.** The proposed plan is to optimize erosion protection beginning at station 65+00 and ending at station 99+00 which makes the total design length of the erosion prevention construction 3,400 linear feet. Additionally, the Dike is proposed to be raised to an uniform elevation +40 feet, along with a PA expansion. The VE Study adhered to the **USACE Value Standard** and the six-step **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $8 Mil. **Accepted VE Savings**: $1 Mil.

f

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
Institute for Advanced Learning and Research, Danville, VA	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
	2019	**2021**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Facilitator: The institute (IALR) is a specialized school that trains manufacturing start up companies to advance in the marketplace. The project is new construction and will house four (4) large bays to enable new businesses to begin limited operations, test manufacturing techniques and allow for collaboration. The facility will also house process improvement labs, demonstration labs as well as an ISO Certified Inspection lab. The VE Study adhered to the **Value Engineering Job** Plan as promulgated by SAVE International®.. **Construction Cost:** $19.5 Mil. **Accepted VE Savings**: $3.0 Mil.

g.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
VA School for the Deaf & Blind, Staunton, VA	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	2019	**2021**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Facilitator: Project goals included the full scale restoration and repair of a four (4) story solid bick Historic School for the deaf & blind. The project included the exterior envelope restorations, disassemble and repair of the portico deck, replacement of the monumental steps, associated repairs to substructure and installation of waterproofing membrane and creation of new handicap accessible entrance. The building is on the National Historic Registar and began service in 1840. The VE Study adhered to the **Value Engineering Job** Plan as promulgated by SAVE International®..
Construction Cost: $8.9 Mil. **Accepted VE Savings**: $.8 Mil.

h.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
Henry County, VA – Adult Detention Center, Martinville, VA	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
	2019	**2021**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Facilitator: The project will include the construction of a 161,000 gross square feet, two (2) level adult detention center. Centralized inmate housing and recreation with program space surrounding the area. The exterior to have an Industrial appearance with brick and metal panel. The existing site is an abandoned Dupont chemical plant and much of the site will need abatement. The VE Study adhered to the **Value Engineering Job** Plan as promulgated by SAVE International®.. **Construction Cost:** $59.5 Mil. **Accepted VE Savings**: $2.8 Mil.

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
Wade Martin, CVS, CCP, LEED AP	**Junior VE Facilitator**	**30+**	**30+**

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

RIB U.S. Cost, Atlanta GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
BS, Design in Architecture, 1978, University of Florida	**Certified Value Specialist (CVS | Certified Cost Professional (CCP) AACEi | LEED AP – First Licensed in 1998**

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

Wade Martin is a Certified Value Specialist with 25+ years' experience specifically in facilitating Value Engineering Studies. He is the Principal In Charge and Value Engineering Team Leader for our firm's longest running Value Engineering contract which is with the New York City Office of Management & Budget in which he has led 500+ VE studies over the past 20 years.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Repair U.S. Army Reserve Center, North Little Rock, AR**	**2019**	**2022**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	
	VE Facilitator: 3-day VE Workshop. The project is comprised of renovations to repair a 82369SF Training Building and a 11425SF Area Maintenance Support Activity Building. The identified 48 ideas during the creative phase of the study. After these ideas were evaluated, 22 of those became formal proposals. Potential savings of $1.4M was identified. $21M. COE Louisville District.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
b.	**Repair U.S. Army Reserve Center, Charlotte, NC**	**2019**	**2021**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	
	VE Facilitator: 3-day VE Workshop including Life Cycle Cost Analysis (LCCA). The project is comprised of renovations to four existing buildings coupled with site and supporting facility improvements. The value engineering study identified 44 value improvement ideas during the creative phase of the study. LEED Silver Certification. After these ideas were evaluated, 15 of those became formal proposals. Potential savings of $1.4M was identified. $20.6M. COE Louisville District.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**Renovate Marine Corps Reserve Center, Phase I, Brooklyn, NY**	**2016**	**2018**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	
	VE Facilitator: 40 Hour VE workshop. Design-Build. Phase II is the work to complete renovations to the single-story areas of the building, and the renovation of the Vehicle Maintenance facility and Storage Facility. A total of 26 creative ideas were created with a savings of $1.3M. Included ATFP. COE Charleston District.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
d.	**Renovate Marine Corps Reserve Center, Phase II, Brooklyn, NY**	**2016**	**2018**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	
	VE Facilitator: 40 Hour VE workshop. Design-Build. Phase II is the work to complete renovations to the single-story areas of the building, and the renovation of the Vehicle Maintenance facility and Storage Facility. A total of 26 creative ideas were created with a savings of $1.3M. Included ATFP. COE Charleston District.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
e.	**Building E-1930 Renovation, Fort Bragg, NC**	**2015**	**2017**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	
	VE Facilitator: 40 Hour VE workshop. The building will house the USASOC History Office operations. The existing building is approximately 13,500SF and will not be expanded except for the addition of a canopy for covered storage on the south side of the building. A total of 40 creative ideas were created; 17 ideas were accepted with a savings of $211k. COE Wilmington District.		

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
Joshua Carson	**Project Manager**	**14**	**7**

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

MHZ JV **MHZ JV – New Orleans, LA**

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
MS, Environmental Science and Policy, John Hopkins University, 2011 **BS, Biology, Baldwin-Wallace College, 2007**	

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

Mr. Carson is a former USACE project manager who was responsible for managing projects across all business lines, inclusive of navigation, environmental restoration, military design, IIS and flood risk management. Mr. Carson is tasked with developing schedules, managing budgets and working with client reps to ensure schedule compliance, identify risk, adhere to the design quality management plan and developing scheduling solutions for projects with multiple stakeholders/authorities having jurisdiction. Mr. Carson has also served as a technical expert on several Value Engineering studies.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**277K Levee Raise and Delta Pump Station Renovation Design-Build, Dallas TX – USACE Ft. Worth District**	**2022**	**2023**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Scope: MSMM has been tasked by the USACE Ft. Worth District to develop two design-build RFP's. One is for the Dallas Floodway 277K Levee Raise with 4:1 side slopes, and 277K conveyance levee raise. Additionally, the Delta Pump Station renovations consist of a new electrical building and site improvements. The Design-Build RFP's are in final design development. **Specific Role:** Mr. Carson is the project manager for the project. He is responsible for overseeing the development of the design-build packages, and the DDR. He is also responsible for managing the HTRW evaluation, the geotechnical boring plan, and the value engineering study. **Construction Cost:** $40 Mil.		
b.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	Cow Bayou Drainage Pump Station Complex Design, Orange County, TX – USACE New Orleans District	**2021**	**2024**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Scope: MSMM has been tasked with providing the civil and structural design for the Cow Bayou Complex, a component of the Sabine Pass to Galveston Bay, Orange coastal storm risk management project. This 8,000 CFS pump station is under preliminary design. **Specific Role:** Mr. Carson is the lead project manager for the project, he is the liaison between the A-E design team and the USACE design team. He is also responsible for ensuring compliance with the DQCP and for all managing all design deliverables. **Construction Cost:** $250 Mil.		
c.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	Texas City & Vicinity Hurricane Flood Protection Project, I-Wall to T-Wall Conversion, Texas City, TX – USACE Galveston District	**2020**	**2021**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Scope: MSMM Engineering was recently contracted by the USACE Galveston District to provide engineering and design services for the replacement of approximately 700 linear feet of existing I-Wall with a new T-wall structure. **Specific Role:** Mr. Carson is the project manager and point of contact for MSMM. He works with the management staff from USACE to administer all contractual obligations required of MSMM. **Construction Cost:** $22 Mil.		
d.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
	MRGO Ecosystem Restoration Plan Feasibility Study, New Orleans, LA – USACE New Orleans District	**2014**	**N/A**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ 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
Joshua Carson	**Project Manager**	**14**	**7**

Scope: MSMM was responsible for managing the completion of a feasibility study to determine the impacts of the former MRGO channel. This $15M study was conducted at USACE MVN, and was finalized in 2014. **Specific Role:** As an in-house contractor, Mr. Carson managed the study on behalf of USACE. He was responsible for the successful completion of a feasibility study that resulted in a signed Chiefs Report. **Construction Cost:** $15M.

e.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Ship Channel - PA 10 – Shoreline Protection/Stabilization – Containment Dike Raise, Corpus Christi, Texas	**2018**	**Programmatic**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Project Manager: CCSC PA10 is located on the south side of Corpus Christi Ship Channel.The average containment dike elevation of PA10 is about 32 feet from survey taken in 2013. The proposed plan is to optimize erosion protection beginning at station 65+00 and ending at station 99+00 which makes the total design length of the erosion prevention construction 3,400 linear feet. Additionally, the Dike is proposed to be raised to an elevation +40 feet, along with a PA expansion. The VE Study adhered to the **USACE Value Standard** and the six-step **Value Engineering Job** Plan as promulgated by SAVE International®. **Construction Cost:** $8 Mil. **Accepted VE Savings**: $1 Mil.

f.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
Dallas Floodway Extension Phase II, Recreation & Access Design, Dallas, TX	**2021**	**2023**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: Mr. Carson managed the development of full plans and specs and construction bid documents for the development of a USACE recreation project intended to connect two neighborhoods through the development of over 2 miles of concrete trail, multiple bridges, drainage infrastructure and an elevated boardwalk. The project design was completed in 2021 and is awaiting non-Federal funding for the project to go to bid. **Construction Cost:** $3.5M

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
Neerja Tayal, MBA, PMP	**Project Controls**	**30**	**10**

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

Neelu Inc. – Smyrna, GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
MBA (Finance), Louisiana State University **BS (Finance), Louisiana State University**	**Project Management Profesional (PMP)**

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

Professional Memberships: Project Management Institute (PMI)
Professional Certifications: Project Management Professional (PMP); Georgia State Financial Management Certificate.
Budget management for various state agencies, evaluated fiscal simulations, and projections on amendments in PeopleSoft & Budget Net (PBCS); Managed budgets in excess of $191 million in state funds & $204 million in federal funds.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, Texas	**2020**	**2023**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Team Coordination/Controls: **277K Levee Raise:** To meet a 277k cfs water surface elevation and design new levee crest access roads; **Levee Side Slope Flattening:** The levee side slopes shall be flattened to 4H:1V along the entire length of the river side of the levees; **Delta Pump Station:** New pumps (2), new electrical building, new transformer, concrete curb and gutter road to Hampton Road, truck access, new retaining walls, new security fencing and gates.**Construction Cost:** $40 Mil. Note: Contributed to the **Risk Register.**

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Aerospace Ground Equipment (Age) Complex, Davis-Monthan AFB, Tucson, AZ	**2019**	**2020**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Team Coordination/Controls: AGE complex consists of administrative and maintenance areas, covered open-storage facility, with reinforced concrete foundations and floor slabs, structural-steel frames, standing-seam metal roof systems; fire detection/protection, and demolition of 13 facilities and 2 associated canopies. Facilities will be designed as permanent construction in accordance with the DoD Unified Facilities Criteria (UFC) 1-200-01, UFC 1-200-02, High Performance and Sustainable Building Requirements. This project will comply with DoD antiterrorism/force protection requirements per UFC 4-010-0. **Construction Cost:** $15.5 Mil.

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
City of Richmond - Old City Hall – Renovation, Virginia	**2019**	**2020**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

VE Team Coordination/Controls:: Built in 1886, the Historical City Hall of Virginia, located in Richmond, is scheduled for Exterior and Interior renovations. The renovations include Preservation, Restoration, Rehabilitation and Renovation as follows (highlights only): Architectural /Structural /Systems: Roof replacement (slate and copper flashing); Repointing Stone,; Restore Windows; Restore Historic lighting; Add ADA Access; Restore Interior Painted Finishes; Mechanical & Electrical upgrades. The VE Study adhered to the **Value Engineering Job** Plan as promulgated by SAVE International®.. **Construction Cost:** $46 Mil. A **Peer Review** of the Design Elements was also performed.

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
Virginia Military Institute (VMI), Lexington, VA	**2012**	**2015**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	

Schedule/Document Controls/Report Preparation: Administration/Report Preparation for the Value Engineering Study on VMI's Restoration and Upgrades (including vertical transportation for accessibility) to two Historic Buildings (Cormack & Cocke Halls) on the campus at Lexington, Virginia. Historic Preservation and Restoration, Cost/Benefit Analysis, Life Cycle Cost Analysis, Sustainability were key features of the VE Study.

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
Jim Wilson, PE, LEED AP	**Civil Engineer**	**32**	**11**

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

MHZ JV **MHZ JV – New Orleans, LA**

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
BS, Civil Engineering, Michigan Technological University, 1988	**PE (CIVIL): TX, LA, FL, MI (Since 1993) Certification: Leadership in Energy and Environment Design (LEED AP, Since 2008)**

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

Mr. Wilson is a senior civil/drainage/levee engineer with over 30+ years of civil engineering experience. He is the designer of record for 10 recent USACE vertical infrastructure projects and has an extensive engineering portfolio covering the design of levees, walls, canals and drainage structures. Mr. Wilson is fully versed in the USACE design process and is currently designing multiple USACE projects in Texas and Louisiana.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Texas City & Vicinity Hurricane Flood Protection Project, I-Wall to T-Wall Conversion, Texas City, TX – USACE Galveston District	**2022**	**2024**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM Engineering has been tasked by USACE Galveston District to provide engineering and design services for the replacement of approximately 700 linear feet of existing I-Wall with a new T-wall structure. Additional features include temporary flood protection, a vehicular access gate, and the relocation of several utilities while working in an active refinery. **Specific Role:** Mr. Wilson is the lead civil engineer for the project. He is responsible for working with the structural engineer to identify the proper site for the floodwall, identify and relocate impacted utilites, identify the construction access and laydown areas, determine and develop the required ROW. **Construction Cost:** $22 Mil.

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
New Orleans International Airport Drainage Pump Station, New Orleans, LA – New Orleans Aviation Board	**2017**	**2018**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM recently completed full engineering design services for a new 600 cfs drainage pump station and for all landside drainage, as part of constructing the new airport terminal at the New Orleans International airport. The FAA funded project consisted of $45 million of drainage mitigation design inclusive of landside and airside drainage. **Specific Role:** Mr. Wilson was the lead Civil Engineer and designer of record for the project. He was responsible for developing the Civil Design Plans and bid ready documents. **Construction Cost:** $45 Mil.

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
277K Levee Raise and Delta Pump Station Renovation Design-Build, Dallas TX – USACE Ft. Worth District	**2021**	**2023**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM has been tasked by the USACE Ft. Worth District to develop two design-build RFP's. One is for the Dallas Floodway 277K Levee Raise with 4:1 side slopes, and 277K conveyance levee raise. Additionally, the Delta Pump Station renovations consist of a new electrical building and site improvements. The Design-Build RFP's are in final design development. **Specific Role:** Mr. Wilson is the lead engineer responsible for developing the design-build RFP's, determing the required levee raise and flattening areas, developing solutions for outfall protection and bridge/levee interfaces, and relocation of the access roadways. **Construction Cost:** $320 Mil.

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
Dallas Floodway Extension, Phase II Recreation Access Design, Dallas, TX – USACE Ft. Worth District	**2019**	**2020**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM finished design of recreational features of the Dallas Floodway Extension project. The project consists of over 2 miles of concrete trails, a large bridge crossing the Trinity River, two smaller bridges for creek crossings, and an elevated boardwalk. **Specific Role:** As the lead engineer, Mr. Wilson was responsible for design of the overall project inclusive of the trail system and boardwalk, coordinating the design with the preferences of the City of Dallas and connecting to existing and future projects. **Construction Cost:** $3.6 Mil.

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
Scott Chehardy, PE	**Civil Engineer**	**24**	**9**

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

MHZ JV **MHZ JV – New Orleans, LA**

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
BS, Civil Engineering, University of Southwestern LA, 1994	**PE (CIVIL): LA, IN (Since 1999)**

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

Mr. Chehardy started his career providing design of levee roads and bike paths on USACE projects in the greater New Orleans area. Over the past 6 years, Mr. Chehardy has provided the civil design for levees, walls, floodwalls and pump stations for multiple USACE Civil Works projects. He is proficient in providing design in Microstation and has a long history of providing Specifications in SpecsIntact. He has also provided Civil conepts for VE studies.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Cow Bayou Drainage Pump Station Complex Design, Orange County, Texas – USACE New Orleans District & Galveston District	**2021**	**2024**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM has been tasked with providing the civil and structural design for the Cow Bayou Complex, a component of the Sabine Pass to Galveston Bay, Orange project. This 8,000 CFS drainage pump station is currently under design via USACE MVN and SWG. **Specific Role:** Mr. Chehardy is the engineering lead for the project.. He is responsible for site design, roadway and bridge design, and coordination of the overall project with the multi-disciplinary team. **Construction Cost:** $250 Mil.

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Harahan Drainage Pump to the River, Harahan, LA – USACE New Orleans District	**2014**	**2017**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM provided full engineering design for the USACE MVN for this important drainage pump station 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, the levee crossing design, and discharge basin in the Mississippi River. **Specific Role:** Mr. Chehardy prepared the final design documentation and provided construction services for the discharge basin, levee crossing and 22,000-feet of 84" pipe discharge pipe. **Construction Cost:** $135 Mil.

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Design of Jefferson Parish Walls, Jefferson Parish, Louisiana - USACE New Orleans District	**2009**	**2011**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM was instrumental in providing design phase and construction phase services for the implementation of over 3 miles of floodwalls along the western perimeter of the Hurricane Storm Damage Risk Reduction System (HSDRRS) in Jefferson Parish. Specifically, we designed the Western Return Wall. **Specific Role:** Mr. Chehardy was tasked with working with the FAA and SLPA-E to provide fencing and access road design that met their regulations. He also designed the access roadways and turn-arounds for the levee road. **Construction Cost:** $120 Mil.

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
HSDRRS Algiers East and West Levee Improvement, Algiers, Louisiana – USACE New Orleans District	**2011**	**2012**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM was tasked with alternatives development for 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. **Specific Role:** Mr. Chehardy was the lead civil engineer on the project. He developed the alternatives for the DDR and provided levee design, and utility relocations. **Construction Cost:** $56 Mil.

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
Amir S. Fallahi, P.E., CFM	**Civil/Hydraulics Engineer**	**29**	**6**

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

Neelu Inc. – Smyrna, GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
M.S./Civil Engineering/1986/University of Louisville **B.S./Civil Engineering/1982/University of Kentucky**	**GA, MS: Professional Engineer - Civil**

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

ASFPM Certified Floodplain Manager #08-03548; Georgia Soil and Water Conservation Commission level II certification #7781; State of KY- LSIT

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Aerospace Ground Equipment (Age) Complex, Davis-Monthan AFB, Tucson, AZ**	**2019**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (Civil): AGE complex consists of administrative and maintenance areas, covered open-storage facility, with reinforced concrete foundations and floor slabs, structural-steel frames, standing-seam metal roof systems; fire detection/protection, and demolition of 13 facilities and 2 associated canopies. Facilities will be designed as permanent construction in accordance with the DoD Unified Facilities Criteria (UFC) 1-200-01, UFC 1-200-02, High Performance and Sustainable Building Requirements. This project will comply with DoD antiterrorism/force protection requirements per UFC 4-010-0. **Construction Cost**: $15.5 Mil.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
b.	**VAMC , Combined Heat & Power Plant, GA**	**2013/14**	**Onoing**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Civil Engineering Project Lead: Civil engineering and landscape design services for a new Combined Heat & Power Plant (CHP) on various VA Medical Centers in Georgia. The CHP includes a three story plant space and plant courtyard. The project was designed to achieve Green Globe Certification. Responsible for designing the site including grading and drainage, storm water management, truck access, and utility service and relocation.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**Independent Quality Control Manager for FY13 GA Flood Insurance Rate Maps, Atlanta, GA**	**2019**	**N/A**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	QA/QC Manager for the GA RiskMAP FY13 Project:: To provide high quality Risk MAP products and services for the Georgia Flood M.A.P. program, an independent Quality Control plan developed and implemented. Quality Control is defined as the operational techniques and activities that are to fulfill requirements for quality. Each watershed project included the following topics in the FIRM workflow: Topographic Data Development; Detailed Hydrologic & Hydraulic Analysis; Non-Regulatory Flood Risk Products; Flood Insurance Report and DFIRM (Database) Production (including Floodplain Mapping).		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
d.	**Floodplain Map Modernization Program in the State of Georgia, Atlanta, GA**	**2008-2012**	**N/A**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	Program Manager: Contractor team that was tasked to complete 39 countywide flood insurance studies in Georgia. The duties included overseeing the hydraulic and hydraulic river modeling and mapping for the flood map modernization program. During this accelerated effort, 440 DFIRMS were produced that included more than 3,600 stream miles of studies. Each project complied with FEMA's Guidance and Specifications for Flood hazard mapping. The impressive achievement was accomplished using complex multi-level planning, QA/QC program implementation, and innovative engineering and mapping technologies.		

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
Robert Yokum, PE	**Structural Engineer**	**38**	**9**

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

MHZ JV **MHZ JV – New Orleans, LA**

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
BS, Civil Engineering, University of New Orleans, 1975 **MS, Civil Engineering, Tulane University, 1980**	**PE (CIVIL AND STRUCTURAL): MS, LA (Since 1984)**

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

Mr. Yokum, a former USACE New Orleans District Structural Engineer, has over 35 years of experience providing structural design for USACE projects. Mr. Yokum specializes in designing flood risk reduction measures and has designed levees, walls, locks, gates and drainage structures for his entire career. Mr. Yokum developed the unbalanced load criteria used by USACE for levee design.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
Design of Jefferson Parish Walls, Jefferson Parish, Louisiana - USACE New Orleans District	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	2009	**2011**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: Following Hurricane Katrina, MSMM was instrumental in providing design phase and construction phase services for the implementation of over 3 miles of floodwalls along the western perimeter of the Hurricane Storm Damage Risk Reduction System (HSDRRS) in Jefferson Parish. Specifically, our engineering team was responsible for the design of the Western Return Wall. **Specific Role:** Mr. Yokum was the lead structural engineer, designing 19,300 ft. of new floodwall monoliths, which were fit between the existing (smaller) floodwall & an adjacent canal. Mr. Yokum also provided construction administration for the batter pile installation, as the foundation had to be driven between existing foundation pilings. Mr. Yokum worked with the MSMM hydraulic engineering team for wave modeling that was required to fit the levee underneath the Interstate. His design included T-walls, monoliths, foundation, and small gate structures. **Construction Cost:** $120 Mil.

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
Texas City & Vicinity Hurricane Flood Protection Project, I-Wall to T-Wall Conversion, Texas City, TX – USACE Galveston District	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	2022	**2024**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM Engineering is providing A-E design services to USACE Galveston District for the replacement of approximately 700 linear feet of existing I-Wall with a new T-wall structure. Additionally, a vehicular swing gate and gate monolith are being replaced, and temporary flood protection design utilizing sheetpile and HESCO baskets is also included. **Specific Role:** Mr. Yokum is the lead structural engineer for the project and is responsible for designing the floodwall monoliths, providing the structural calculations, providing the temporary flood protection design and establishing the H-Pile layout. Mr. Yokum is also designing the large swing gate for the project. **Construction Cost:** $22 Mil.

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
Cow Bayou Drainage Pump Station Complex Design, Orange County, TX – USACE New Orleans District	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	2021	**2024**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM has been tasked with providing the civil and structural design as well as the architectural design and cost estimating for the Cow Bayou Complex, a component of the Sabine Pass to Galveston Bay, Orange coastal storm risk management project. This 8,000 CFS pump station consists of multiple pumps, a safe house, fuel storage facility, a new roadway and bridge to access the site and design of new floodwall monoliths (T-wall). **Specific Role:** Mr. Yokum is providing the structural design, inclusive of the foundational design for the pump station and T-wall. He is responsible for working with USACE to establish the governing loads given the construction over water and the changing hydraulic modeling results which have impacted the number and size of pumps since the preliminary design. **Construction Cost:** $250 Mil.

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
Tom Hassenboehler, PE	**Structural Engineer**	**49**	**5**

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

MHZ JV **MHZ JV – New Orleans, LA**

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
BS, Civil Engineering, Louisiana State University - 1970 **Masters Courses, Tulane University- Steel Design & Reinforced Concrete – 1975**	**PE (CIVIL): LA (Since 1976)**

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

Mr. Hassenboehler is the former Chief of General Engineering at the USACE New Orleans District. Working at USACE for 37 years, he was involved in numerous flood protection, pumping stations, and navigation projects throughout south Louisiana. For several years he was one of the lead engineers developing design documentation for the $170M Red River Lock and Dam No. 1 near Marksville, LA. Following his retirement from USACE in 2007, Mr. Hassenboehler joined the HPO Technical team as a contract engineer until 2013. Mr. Hassenboehler joined MSMM in 2017 and has been instrumental in providing structural engineering expertise to several large-scale civil works project currently under design with multiple USACE districts.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Cow Bayou Drainage Pump Station Complex Design, Orange County, TX – USACE New Orleans District	**2021**	**2024**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM has been tasked with providing the civil and structural design for the Cow Bayou Complex, a component of the Sabine Pass to Galveston Bay, Orange coastal storm risk management project. This 8,000 CFS pump station is under preliminary design. **Specific Role:** Mr. Hassenboehler is assisting in the structural design of the station. He is responsible for design components related to the pump station slabs and beams, walls, crane supports, and the rail beam for the crane. **Construction Cost:** $250 Mil.

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Sewerage and Water Board of New Orleans Protective Fender Design Alternatives at the Oak Street Mississippi River Intake, New Orleans LA	**2020**	**2020**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: Through the Sewerage and Water Board of New Orleans, MSMM is developing an alternatives analysis and detailed design for replacement of the damaged Oak Street water intake fender system on the Mississippi River. Three alternatives have been developed and preliminary design and cost estimating has been finalized. **Specific Role:** Mr. Hassenboehler as the structural engineer for the project is responsible for providing the preliminary design alternatives and providing the cost estimating. To date the alternatives consist of filled steel pipe piles with steep members (at varying depths) and steel pipe piles with a battered pipe pile for lateral support. Once Sewerage and Water Board chooses an alternative, final design will commence. **Construction Cost:** $1.7 Mil.

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
New Orleans International Airport Drainage Pump Station, New Orleans, LA – New Orleans Aviation Board	**2017**	**2018**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: MSMM recently completed full engineering design services for a new 600 cfs drainage pump station and for all landside drainage, as part of constructing the new airport terminal at the New Orleans International airport. The FAA funded project consisted of $45 million of drainage mitigation design. **Specific Role:** Mr. Hassenboehler assisted in the structural design for the project. He provided the design for the concrete intake channel and provided scour protection design on the discharge side of the canal. **Construction Cost:** $45 Mil.

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
Phillip J. Nejman, PE	**Structural Engineer**	**12**	**6**

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

Neelu Inc. – Smyrna, GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
BS in Civil Engineering (2009), University of Florida, Gainesville, FL	**FL, GA, AL, NC, SC: Professional Engineer - Civil**

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

Member: Wireless Infrastructure Association; National Association of Tower Erectors

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, Texas**	**2020**	**2023**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (Structural): **277K Levee Raise:** To meet a 277k cfs water surface elevation and design new levee crest access roads; **Levee Side Slope Flattening:** The levee side slopes shall be flattened to 4H:1V along the entire length of the river side of the levees; **Delta Pump Station:** New pumps (2), new electrical building, new transformer, concrete curb and gutter road to Hampton Road, truck access, new retaining walls, new security fencing and gates.**Construction Cost:** $40 Mil. Note: Contributed to the **Risk Register.**		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
b.	**Aerospace Ground Equipment (Age) Complex, Davis-Monthan AFB, Tucson, AZ**	**2019**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (Structural): AGE complex design consisted of covered open-storage facility, with reinforced concrete foundations and floor slabs, structural-steel frames, standing-seam metal roof systems; fire detection/protection, and demolition of 13 facilities and 2 associated canopies. Facilities were designed as permanent construction in accordance with the DoD Unified Facilities Criteria (UFC) 1-200-01, UFC 1-200-02, High Performance and Sustainable Building Requirements. **Construction Cost:** $15.5 Mil.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**City of Richmond - Old City Hall – Renovation, Virginia**	**2019**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (Structural):: Built in 1886, the Historical City Hall of Virginia, located in Richmond, is scheduled for Exterior and Interior renovations. The renovations include Preservation, Restoration, Rehabilitation and Renovation as follows (highlights only): Architectural /Structural /Systems: Roof replacement (slate and copper flashing); Repointing Stone,; Restore Windows; Restore Historic lighting; Add ADA Access; Restore Interior Painted Finishes; Mechanical & Electrical upgrades. The VE Study adhered to the **Value Engineering Job** Plan as promulgated by SAVE International®.. **Construction Cost:** $46 Mil. A **Peer Review** of the Design Elements was also performed.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
d.	**Tower Design and Modifications, Verizon Wireless, Nationwide (USA)**	**2015**	**Ongoing**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	Structural Engineer-of-Record: Conducted due diligence tower site audits as well as gathered field information required for structural modifications and analyses. Reviewed and approved tower reinforcement closeout documents as well as generated post modification inspection reports		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
e.	**Mission Critical Data Centers, AT&T, Nationwide (USA)**	**2012**	**2018**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	Structural Engineer-of-Record: Performed the Structural Design of Mission Critical Data Center Facilities (2). Buildings were comprised of Cocnrete Foundations, Reinforced Masonry Block Walls; Steel Bar Joists (special design); and Standing Seam Metal Roof. The buildings were designed to withstand Seismic loads with a high level of redundancy built in.		

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
Narasimha Rao Patri, PE, SE	**Senior Structural Engineer / Special Inspections**	**30**	**11**

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

Neelu Inc. – Smyrna, GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
MS, Civil Engineering; Memphis State University, TN (1993) **BS, Civil Engineering; Andhra University, India (1991)**	**AK, FL, GA, IL (SE), KY, LA, ME, MS MI, NC, OH, PA, SC, TN and WV (Professional Engineer – Civil, Structural)**

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

Professional Memberships ▪ ACEC ▪ AISC ▪ NCEES ▪ SAME ▪ TNSEA

Awards: Associated Builder and Contractor Award- for structural design of the **first LEED®-NC Platinum Project in Tennessee**, Upper Cumberland Regional Health Facility, Cookeville, TN, Aug 2011 and Fiberweb, Inc., Old Hickory, TN, Aug 2011

Certificate of Commendation from the **Historical Commission of Metropolitan Nashville**-Davidson county for outstanding efforts toward the preservation of Davidson County's architectural heritage- Homewood Suites by Hilton, Nashville Downtown- May, 2008.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Memphis International Airport, Taxiway Improvements, GLYCOL Management, Memphis, TN	**2018**	**2020**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Structural EOR: Design and Construction Documents for parts of Memphis Airport Taxiway Improvements (GLYCOL Management, Airside). Project included: Service Road Bridge (SR-2) over Louis Carruthers Drive, MSE Retaining Walls to support embankments and abutments and two new Taxiways to connect the southern ends of Taxiway J and Taxiway N for the operational aspects of the southern deicing pad, and a Pump Station.

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Nashville Internatonal Airport (BNA), New Terminal Construction, Parking Deck, Security Enhancements, Airside Improvements, Nashville, TN	**2016**	**Ongoing**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Structural EOR: Design and development of Construction Documents for Nashville International Airport's Improvements. Features Include: New Parking Facility; A pedestrian bridge connecting the Terminal Garage to the terminal building; Expanded central security screening checkpoint (24 screening lanes); A state-of-the-art International Arrivals Facility (6 gates); New marketplace just past the security checkpoint with a variety of dining, retail and service amenities; A new look, complete with a higher roof and windows for compelling airfield views.

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Data Center Renovations and Enhancements, USACE MILCON, Camp Zama, Japan	**2016**	**2018**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Structural EOR:: The Design-Build project involved modifications to the existing Data Center for modernization, including auxiliary units. Seismic Anchorage was a key challenge to the project along with limited site capacity considerations. Scope included: Interior Demolition and Modificatins for the Installation of Fiber Optic Cabling, Ductwork, Anti-Static Flooring, Re-framing; Exterior Installations of Chillers with Steel Framed Mezzanine, Generator, Secured Diesel Tank, New Security Fencing with Controlled Vehicle Access. Design was per UFC, MIL-STD, ATFP, US Army NETCOM Criteria.

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
South Florida Operations Office, Clewiston, FL (USACE, JAX)	**2011-12**	**Ongoing**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Structural Engineer: Condition Assessment, Historic Preservation and Upgrades to withstand CAT 5 Hurricanes, Cost Estimating and Construction Scheduling of the SFOO building which serves as base of operation for the USACE for their involvement in South Florida. SFOO becomes the Central Command Headquarters for any severe weather events in South Florida. Continuous operations during construction, AT/FP Criteria were key to design.

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
JEFF WILSON, PE, LEED AP	**MECHANICAL ENGINEER**	**17**	**15**

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

MHZ JV **MHZ JV – FORT WORTH, TX**

16. EDUCATION *(DEGREE AND SPECIALIZATION)*	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
BS, Mechanical Engineering, University of Texas at Arlington	Professional Engineer: TX, CA, MI, NM, WA
BA, Architecture, University of Texas at Arlington	LEED Accredited Professional

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

Jeff has served as the senior mechanical engineer for some of the the largest USACE programs for Air Force, Army and IIS projects during his career. His design experience has included new construction and facility renovations. He is an expert in engineering analyses and studies related to energy conservation/reduction, LEED and ASHRAE 90.1, and performs detailed HVAC design requirements and load simulators for commercial and industrial complexes.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*: **Vehicle Maintenance Shop VE Study – Camp Bullis, TX**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2017 — CONSTRUCTION *(if applicable)*: N/A

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Scope: Constructed a new vehicle maintenance shop and other ancillary structures to support the maintenance shop. The facility was a small standard TEMF per the Army Center of Standardization (CoS) UFC 4-201-02 Tactical Equipment Maintenance Facilities (TEMF) Standard Design dated 24 March 2015. The maintenance shop was semi-conditioned and provided vehicle maintenance for tactical equipment used for training purposes; and includes work bays, storage, and office and support spaces. Other ancillary structures such as: Organizational Storage (2,400 SF) POL Storage (840 SF), Hazardous Waste Storage (840 SF) and a Vehicle Wash Facility (3,000 SF) paving, lighting, washing equipment, treatment equipment and controls was provided to support the vehicle maintenance shop. Professional services completed as a sub-consultant to GCEN JV the prime contractor. **Cost:** $13.6M **Specific Role:** Mechanical Engineer for VE Study

b.

(1) TITLE AND LOCATION *(City and State)*: **Dining Facility Joint Base San Antonio, Camp Bullis, TX**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2019 — CONSTRUCTION *(if applicable)*: N/A

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☒ Check if project performed with current firm

VE Team Member / Mechanical: A value engineering study for USACE-Fort Worth District on an $18.5M, 3,410 SM (36,705 SF) dining facility for 1,300 to 1,500 personnel. Professional services completed as a sub-consultant to GCEN JV the prime contractor. The team developed 24 alternatives with $1.959M in cost avoidance savings. **Cost:** $1.959M

c.

(1) TITLE AND LOCATION *(City and State)*: **Hangar 8 Renovation – Corpus Christi Army Depot, TX**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2018 — CONSTRUCTION *(if applicable)*: ONGOING

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☒ Check if project performed with current firm

VE Team Member / Mechanical Our team prepared a design-build RFP for the renovation and repair to one of the major maintenance bays of the 1.2M square foot facility. This complex project includes a major overhaul of the systems and facility layout of approximately 80K square feet. The project includes upgrades to comply applicable codes, UFCs and standards for all electrical, structural, fire suppression, HVAC, concrete floor repairs. Our team also performed a charrette to gather the user's specific requirements, validate the 1391 and prepare an ENG Form 3086. The team then prepared a design-build RFP, performed a structural evaluation, and participated in the value engineering study with an independent design team. **Cost:** $20M

d.

(1) TITLE AND LOCATION *(City and State)*: **Maneuver Systems Sustainment Center, Phase 3, Main Building – Red River Army Depot, Texarkana, TX**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2013 — CONSTRUCTION *(if applicable)*: 2016

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Lead Mechanical Engineer: The Maneuver Systems Sustainment Center (MSSC) is a new 400,000 SF facility that achieves consolidation of multiple functions into a single facility for maintenance, rebuild, and remanufacture of the Army's fleet of tactical vehicles. The functions served by the facility include disassembly, rebuild, and metal finishing, body repair, painting and preparation of present and future tactical vehicles, including their major components and control systems. The MSSC is one of only three such army depots in the nation. **Cost:** $39M

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
Harry Hawney, PE	**Electrical Engineer**	**43**	**10**

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

MHZ JV **MHZ JV – New Orleans, LA**

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
B.Eng. (Electronics Engineering), National University of Ireland, 1970 MBA, Trinity College, 1971	**PE (ELECTRICAL): LA (Since 1981)**

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

Mr. Hawney's 40 years of power and electrical engineering experience includes site lighting, drainage pump stations, roadways, airports, power plants, water treatment and wastewater treatment facilities, and electrical and generator layouts for new facilities.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Section 219 Environmental Infrastructure, Hillaryville Wastewater Treatment Plant, Ascension Parish, LA – USACE New Orleans District	**2020**	**2021**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: Through the federal 219 program and USACE MVN, MSMM is providing design, cost estimating and preparation of final construction bid documents in USACE standards, for the design of a 1,800 million gallon per day (average daily flow) wastewater treatment plant (WWTP) to increase treatment capacity and facilitate regionalization of Hillaryville and surrounding service area. **Specific Role:** Mr. Hawney is the lead electrical engineer for the project. He is 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. **Construction Cost:** $3.9 Mil.

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
New Orleans International Airport Drainage Pump Station, New Orleans, LA – New Orleans Aviation Board	**2014**	**2015**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: Our team recently completed full engineering design services for a new 600 cfs drainage pump station and for all landside drainage, as part of constructing the new airport terminal at the New Orleans International airport. **Specific Role:** Mr. Hawney was the lead electrical engineer, he was responsible for providing design for the detailed electrical controls, electrical power design, set-up for the safe house and provided site lighting design. **Construction Cost:** $45M.

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Section 219 Environmental Infrastructure, Sewer Liftstation and Forcemain at the East Baton Rouge Landfill, Baton Rouge, LA – USACE New Orleans District	**2019**	**2020**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: Our team recently completed expedited design for 3,200 linear feet of 48" ductile iron forcemain and a new effluent pump station at the Baton Rouge landfill. Due to an emergency situation, plans and specs, cost estimates and the DDR were developed and approved within 6 months. **Specific Role:** Mr. Hawney was the lead electrical engineer for the project. He was responsible for design of the new electrical controls, the inclusion of a new generator, and design of site lighting. **Construction Cost:** $3.2 Mil.

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
Harahan Drainage Pump to the River, Jefferson Parish, LA – USACE New Orleans District	**2014**	**2017**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	

Scope: Our team provided final design for this USACE 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, the levee crossing design, and reinforced concrete discharge basin in the Mississippi River. **Specific Role:** Mr. Hawney provided design for the detailed electrical controls, provided electrical power design and set-up for the safe house and provided site lighting design. **Construction Cost:** $135 Mil.

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
SCOTT PARMA, PE, LEED AP	**ELECTRICAL ENGINEER**	**37**	**14**

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

MHZ JV **MHZ JV - FORT WORTH, TX**

16. EDUCATION *(DEGREE AND SPECIALIZATION)*	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
BS, Electrical Engineering	Professional Engineer: TX LEED Accredited Professional

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

Scott Parma's engineering experience includes power distribution, electrical systems analysis, system planning, electrical system design, and construction administration. He has completed a wide array of facilities projects in the utility, transportation, municipal, infrastructure, and commercial sectors of construction. His main expertise is in medium-and low-voltage power systems design and analysis. He also has experience in lighting, telecommunications, and fire alarm system design.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(if applicable)*
Vehicle Maintenance Shop VE Study – Camp Bullis, TX	2017	N/A

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☒ Check if project performed with current firm

VE Team Member / Electrical: Constructed a new vehicle maintenance shop and other ancillary structures to support the maintenance shop. The facility was a small standard TEMF per the Army Center of Standardization (CoS) UFC 4-201-02 Tactical Equipment Maintenance Facilities (TEMF) Standard Design dated 24 March 2015. The maintenance shop was semi-conditioned and provided vehicle maintenance for tactical equipment used for training purposes; and includes work bays, storage, and office and support spaces. Other ancillary structures such as: Organizational Storage (2,400 SF) POL Storage (840 SF), Hazardous Waste Storage (840 SF) and a Vehicle Wash Facility (3,000 SF) paving, lighting, washing equipment, treatment equipment and controls was provided to support the vehicle maintenance shop. Professional services completed as a sub-consultant to GCEN JV the prime contractor.
Cost: $13.6M

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(if applicable)*
Biggs Army Airfield Shoulder Repair, Eielson AFB, AK	2017	N/A

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☒ Check if project performed with current firm

VE Team Member / Electrical: The project involved three phases to maximize operational capabilities during construction on Runway 03/21 as follows: Phase 1 – Replaced the 300 ft. wide x 1,500 ft. long runway approach end 21 to the northeast with Portland Cement Concrete (PCC); Phase 2 – Replaced 300 ft. wide x 1,000 ft. long runway approach 03 to the southwest with PCC; Phase 3 – Narrowed the 150 ft. wide x 11,000 ft. long runway interior pavement area by replacing existing Asphalt Cement Concrete (ACC) with PCC, repaired/replaced the outer 25 ft. on each side of the 150 ft. wide x 11,000 ft. long runway, 25 ft. wide x 10,500 ft. long runway shoulders on each side, patch the existing 100' wide PCC runway keel, replaced or relocated lighting and signage, and re-mark the repair areas Non-concurrent Phases 1 & 2 executed repairs at each runway end requiring a temporary displaced threshold for each phase. Phase 3 executed repairs of the runway interior and requires the Runway 03/21 to be completely shut down. Professional services completed as a sub-consultant to GCEN JV the prime contractor. **Cost:** $55M

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(if applicable)*
Dining Facility Joint Base San Antonio Camp Bullis, TX	2019	N/A

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☒ Check if project performed with current firm

VE Team Member / Electrical: A value engineering study for USACE-Fort Worth District on an $18.5M, 3,410 SM (36,705 SF) dining facility for 1,300 to 1,500 personnel. Professional services completed as a sub-consultant to GCEN JV the prime contractor. The team developed 24 alternatives with $1.959M in cost avoidance savings. **Cost:** $1.959M

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(if applicable)*
Hangar 8 Renovation – Corpus Christi Army Depot, TX	2018	ONGOING

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☒ Check if project performed with current firm

VE Team Member / Electrical: Our team prepared a design-build RFP for the renovation and repair to one of the major maintenance bays of the 1.2M square foot facility. This complex project includes a major overhaul of the systems and facility layout of approximately 80K square feet. The project includes upgrades to comply applicable codes, UFCs and standards for all electrical, structural, fire suppression, HVAC, concrete floor repairs. Our team also performed a charrette to gather the user's specific requirements, validate the 1391 and prepare an ENG Form 3086. The team then prepared a design-build RFP, performed a structural evaluation, and participated in the value engineering study with an independent design team. **Cost:** $20M

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
Vigen Yedigarian, PE	**Mechanical Engineer**	**41**	**3**

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

Neelu Inc. – Smyrna, GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
M.Sc (1979), Mechanical Engineering, George Washington University, Washington DC **B.Sc (1978), Mechanical Engineering, George Washington University, Washington DC**	**MD, DC, VA, IN, IL, FL, NC, SC, PA, OH, CA, CT: Professional Engineer**

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

Extensive experience in the planning, programming, and design of mechanical, electrical and plumbing systems for new facilities and renovation of existing buildings. Experience on Federal, Private and Industrial facilities including housing, sports facilities, animal labs and medical offices.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, Texas**	**2020**	**2023**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (MEP): **277K Levee Raise:** To meet a 277k cfs water surface elevation and design new levee crest access roads; **Levee Side Slope Flattening:** The levee side slopes shall be flattened to 4H:1V along the entire length of the river side of the levees; **Delta Pump Station:** New pumps (2), new electrical building, new transformer, concrete curb and gutter road to Hampton Road, truck access, new retaining walls, new security fencing and gates.**Construction Cost:** $40 Mil. Note: Contributed to the **Risk Register.**		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
b.	**Aerospace Ground Equipment (Age) Complex, Davis-Monthan AFB, Tucson, AZ**	**2019**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (MEP): AGE complex consists of administrative and maintenance areas, covered open-storage facility, with reinforced concrete foundations and floor slabs, structural-steel frames, standing-seam metal roof systems; fire detection/protection, and demolition of 13 facilities and 2 associated canopies. Facilities will be designed as permanent construction in accordance with the DoD Unified Facilities Criteria (UFC) 1-200-01, UFC 1-200-02, High Performance and Sustainable Building Requirements. This project will comply with DoD antiterrorism/force protection requirements per UFC 4-010-0. **Construction Cost:** $15.5 Mil.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**City of Richmond - Old City Hall – Renovation, Virginia**	**2019**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (MEP):: Built in 1886, the Historical City Hall of Virginia, located in Richmond, is scheduled for Exterior and Interior renovations. The renovations include Preservation, Restoration, Rehabilitation and Renovation as follows (highlights only): Architectural /Structural /Systems: Roof replacement (slate and copper flashing); Repointing Stone,; Restore Windows; Restore Historic lighting; Add ADA Access; Restore Interior Painted Finishes; Mechanical & Electrical upgrades. The VE Study adhered to the **Value Engineering Job** Plan as promulgated by SAVE International®.. **Construction Cost:** $46 Mil. A **Peer Review** of the Design Elements was also performed.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
d.	**9 on Canal Phase 1, Indianapolis, IN**	**2016-2017**	**2019**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	MEP Engineer-of-Record: 299 unit multifamily building, consisting of three towers, 5 stories, 6 stories and 10 stories on a common podium, with commercial spaces on sub-2 and first floors, underground parking, tree houses, swimming pool, fitness rooms, dog run area and amenity areas. 10 story tower was provided with systems required to comply with codes applicable to high riser construction. Facility was designed with a 275 KW, diesel, stand-by generator and fire pump. HVAC system consisted of VRV systems for energy efficiency.		

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
BILL HOELSCHER, RA, LEED AP	**ARCHITECT**	**34**	**17**

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

MHZ JV **MHZ JV. – FORT WORTH, TX**

16. EDUCATION *(DEGREE AND SPECIALIZATION)*	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
BA, Art, University of Dallas, 1984 **Master of Architecture, University of Texas at Arlington, 1988**	**Registered Architect: TX** **LEED Accredited Professional**

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

Bill has experience providing complete project management, architectural design, and space planning services. His experience includes many major Military task orders focusing on vertical construction projects from charrette through construction. His work includes Vehicle Maintenance Facilities, industrial facilities, and admin facilities.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*: **Hangar 8 Renovation – Corpus Christi Army Depot, TX**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: **2018** — CONSTRUCTION *(if applicable)*: **ONGOING**

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Architect: Our team prepared a design-build RFP for the renovation and repair to one of the major maintenance bays of the 1.2M square foot facility. This complex project includes a major overhaul of the systems and facility layout of approximately 80K square feet. The project includes upgrades to comply applicable codes, UFCs and standards for all electrical, structural, fire suppression, HVAC, concrete floor repairs. Our team also performed a charrette to gather the user's specific requirements, validate the 1391 and prepare an ENG Form 3086. The team then prepared a design-build RFP, performed a structural evaluation, and participated in the value engineering study with an independent design team. Bill's responsibilities included project management and team leadership of the value engineering technical team. The project required evaluation of an existing preliminary design; recommendations of alternatives to building systems; technical narrative descriptions of suggested alternative systems; and coordination of the civil, structural, mechanical/plumbing, and electrical engineering disciplines while providing input as to the architectural design and systems evaluation. **Cost:** $20M

b.

(1) TITLE AND LOCATION *(City and State)*: **Maneuver Systems Sustainment Center, Phase 3, Main Building – Red River Army Depot, Texarkana, TX**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2013 — CONSTRUCTION *(if applicable)*: 2016

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Architect: The Maneuver Systems Sustainment Center (MSSC) is a new 400,000 SF facility that achieves consolidation of multiple functions into a single facility for maintenance, rebuild, and remanufacture of the Army's fleet of tactical vehicles. The functions served by the facility include disassembly, rebuild, and metal finishing, body repair, painting and preparation of present and future tactical vehicles, including their major components and control systems. The MSSC is one of only three such army depots in the nation. **Cost:** $39M

c.

(1) TITLE AND LOCATION *(City and State)*: **Airman and Family Readiness Center (ARFC), Cannon Air Force Base, Clovis, NM**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2015 — CONSTRUCTION *(if applicable)*: 2016

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Architect: The new facility was designed to meet the Cannon AFB Architectural Compatibility guidelines. Interior spaces include Public Lobby with a resource library and eight computer workstations. There are nine private offices for counselors, staff workstations, support areas and Interview Rooms. Other spaces include Loan Locker, demonstration kitchen, shower facility and private entrance for families interacting with grief counselors. The project achieved 50 points in design toward achieving the goal of LEED Silver. **Cost:** $5.1M

d.

(1) TITLE AND LOCATION *(City and State)*: **DOL BII Storage Facility, TMP Dispatchers Facility and TMP Maintenance Inspection Facility – Fort Polk, LA**

(2) YEAR COMPLETED — PROFESSIONAL SERVICES: 2016 — CONSTRUCTION *(if applicable)*: 2017

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE — ☒ Check if project performed with current firm

Architect: Our team provided full design for the $2.35M project of three new metal facilities, a DOL BII Storage Facility, TMP Dispatchers' Facility, and TMP Maintenance/Inspection Facility, (Storage: 3,600 SF/ Dispatch: 3,000 SF/ Maintenance: 2,800 SF). The design included three new metal facilities, a DOL BII Storage Facility, TMP Dispatch Facility, and TMP Maintenance/Inspection Facility, to include foundation design and construction and ancillary site improvements to ensure positive watershed away from the facilities. **Cost:** $2.35M

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
Jeffrey Warmington, AIA	**Senior Architect**	**36**	**5**

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

Neelu Inc. – Smyrna, GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
B.Arch Architecture / University of Miami, Florida	**FL, GA, NY, NJ, PA, USVI: Registered Architect**

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

National Council of Architects Registration Board (NCARB)-Certified; Leadership in Energy and Environmental Design (LEED) Accredited; American Institute of Architects (AIA)

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, Texas**	**2020**	**2023**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (Architectural): **277K Levee Raise:** To meet a 277k cfs water surface elevation and design new levee crest access roads; **Levee Side Slope Flattening:** The levee side slopes shall be flattened to 4H:1V along the entire length of the river side of the levees; **Delta Pump Station:** New pumps (2), new electrical building, new transformer, concrete curb and gutter road to Hampton Road, truck access, new retaining walls, new security fencing and gates.**Construction Cost:** $40 Mil. Note: Contributed to the **Risk Register.**		
b.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	Aerospace Ground Equipment (Age) Complex, Davis-Monthan AFB, Tucson, AZ	**2019**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (Architectural): AGE complex consists of administrative and maintenance areas, covered open-storage facility, with reinforced concrete foundations and floor slabs, structural-steel frames, standing-seam metal roof systems; fire detection/protection, and demolition of 13 facilities and 2 associated canopies. Facilities will be designed as permanent construction in accordance with the DoD Unified Facilities Criteria (UFC) 1-200-01, UFC 1-200-02, High Performance and Sustainable Building Requirements. This project will comply with DoD antiterrorism/force protection requirements per UFC 4-010-0. **Construction Cost:** $15.5 Mil.		
c.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
	City of Richmond - Old City Hall – Renovation, Virginia	**2019**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (Architectural):: Built in 1886, the Historical City Hall of Virginia, located in Richmond, is scheduled for Exterior and Interior renovations. The renovations include Preservation, Restoration, Rehabilitation and Renovation as follows (highlights only): Architectural /Structural /Systems: Roof replacement (slate and copper flashing); Repointing Stone,; Restore Windows; Restore Historic lighting; Add ADA Access; Restore Interior Painted Finishes; Mechanical & Electrical upgrades. The VE Study adhered to the **Value Engineering Job** Plan as promulgated by SAVE International®.. **Construction Cost:** $46 Mil. A **Peer Review** of the Design Elements was also performed.		
d.	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
	Selfridge Air National Guard, Munitions Maintenance Buildings, Harrison, MI	**2011-2012**	**2012**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☐ Check if project performed with current firm	
	Project Manager: Project manager responsible for construction administration services for three new munitions maintenance and administration buildings. To meet the goal of a certifiable LEED Silver facility, the buildings include passive sustainable features such as high-performance glazing and sustainable interior finishes. The use of active features such as high efficiency HVAC systems and low-flow fixtures along with other strategies contribute to the financial, social, and environmental benefits of sustainability in the building and site.		

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
David R. Smart, PMP	**Cost Engineer**	**33**	**21**

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

Legis Consultancy, Inc. - Atlanta, GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
B.A. Psychology **Juris Doctor**	**Certified Criminal Analyst CCA #415 (IALEA)** **PMP #19137 (PMI)**

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

Mr. Smart has almost 20 years' experience in Cost-Schedule Risk Analysis and has worked with multiple USACE Districts including NAB, LRH, SPA, MVS, and SPL. Sectors include Healthcare, Civil Works, MILCON, HTRW, and IIS projects with a variety of clients, including VA, USACE, DOE, USAF, USN, and GSA. Software proficiency with Primavera, MCACES MII, and Crystal Ball.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
U.S. Navy North Island Next Generation Aircraft Maintenance Facility Naval Base Coronado, CA	**2020**	**Ongoing**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	

Project Manager, Senior Cost Engineer. Provided a risk register and CSRA model and report using the Crystal Ball add-in in MS Excel to support the P897 Next Generation Aircraft Maintenance Facility Preliminary Design Authority (PDA) project. The effort included a workshop interview process, with one round of Government review and subsequent updates to deliverable. Proj. Cost: Procurement Sensitive.

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Operations Facility, East Campus (ECB4), Fort George G. Meade Fort Meade, MD [USACE Baltimore]	**2019**	**Ongoing**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	

Senior Risk Analyst, Cost Engineer. This project will construct an operations facility of 864,000 GSF, including supporting facilities with associated site work and environmental measures. The primary facility will be comprised of a multi-story structure with full basement, including open office areas, operations areas, collaboration spaces, food market, fitness center and remote learning/unclassified VTC areas. Conducted an Integrated Cost-Schedule Risk Analysis using Crystal Ball based on budget data of all program elements through projected construction completion. This effort includes Government Reviews and Comment Resolution, and includes any changes that may arise during the Feasibility Study and planning Charrettes. Proj. Cost: $500 Mil - $1000 Mil.

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Veterans Affairs Long Beach Mental Health Hospital Inpatient/Outpatient, Long Beach, CA [VA CFM, USACE]	**2018**	**Ongoing**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	

Cost Engineer. This design-bid-build, LEED-certified project consists of two buildings: Building 162 Outpatient (80,000 GSF) and Building 163 Inpatient (82,000 GSF). A covered walkway connects the two. Additional enclosed walkways connect to other buildings. Legis provided Project Management and Cost Engineering activities: including Design Review, Project Planning activities, Project Delivery Rating Index (PDRI) meetings, preparation of MII cost estimates, development of CPM schedules, and undertaking a probabilistic Cost-Schedule Risk Analysis to establish contingencies. Proj. Cost: $115 Mil.

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
Everglades Agricultural Area (EAA) Storage Reservoir, South Florida Water Management District, West Palm Beach, FL	**2018**	**N/A**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	

Senior Risk Analyst, Cost Engineer. South Florida Water Management District (SFWMD) study of large scale new construction civil works project to determine reduction of damaging effects of freshwater discharges into Florida Bay. Potential improvements include reservoir, levees, bridges, canals, and pump stations. Legis assessed SFWMD readiness for an Agency Technical Review by reviewing cost estimates, quantity takeoffs, quality control, Cost-Schedule Risk Analysis, Schedule, and Project Management documentation and produced recommendations relative to the CSRA to assure the client's preparation for the ATR process. Proj. Cost: $1.5 Bil.

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
Michael C. Ray, AAC, PMP	**Risk Analyst / Cost Engineer**	**50+**	**19**

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

Legis Consultancy, Inc. - Atlanta, GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
B.S. Civil Engineering	**GA: Professional Engineer - Civil** **CCP #01080 (AACEI) / PSP #0002 (AACEI) / PMP #2774 (PMI)**

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

Fellow – AACE International, Fellow – ASCE, SAME, PMI, GA Engineering Foundation

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
U.S. Navy North Island Next Generation Aircraft Maintenance Facility Naval Base Coronado, CA	**2020**	**Ongoing**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	

Principal Cost Engineer. Provided a risk register and CSRA model and report using the Crystal Ball add-in in MS Excel to support the P897 Next Generation Aircraft Maintenance Facility Preliminary Design Authority (PDA) project. The effort included a workshop interview process, with one round of Government review and subsequent updates to deliverable. Proj. Cost: Procurement Sensitive.

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Cost Engineering Support for Special Operations Facility, Joint Operations Compound, Mazar-e-Sharif, Afghanistan [USACE Middle East]	**Ongoing**	**Ongoing**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	

Project Manager, Principal Cost Engineer. SOFJOC is a multi-building (20 buildings) compound comprised of buildings for military dog kennels, billeting, training facility, Army Family and Morale, Welfare and Recreation, medical aid, Tactical Operation Center, Joint Operations Center, logistics operation s and storage, communications, facility and vehicle maintenance, dining, water treatment and energy generation plant. Legis conducted a cost analysis using the TRACES suite and schedule analysis using Primavera. Legis will be providing expert witness testimony as to cost and schedule performance in late 2019. Proj. Cost: $43 Mil.

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
Veterans Affairs Long Beach Mental Health Hospital Inpatient/Outpatient, Long Beach, CA [VA CFM, USACE]	**2018**	**Ongoing**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	

Principal Cost Engineer. This design-bid-build, LEED-certified project consists of two buildings: Building 162 Outpatient (80,000 GSF) and Building 163 Inpatient (82,000 GSF). A covered walkway connects the two. Additional enclosed walkways connect to other buildings. Legis provided Project Management and Cost Engineering activities: including Design Review, Project Planning activities, Project Delivery Rating Index (PDRI) meetings, preparation of MII cost estimates, development of CPM schedules, and undertaking a probabilistic Cost-Schedule Risk Analysis to establish contingencies. Proj. Cost: $115 Mil.

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
Cost Engineering Support for YRP KORCOM Operations Center, USAG Humphreys, South Korea [USACE Far East]	**2014**	**N/A**
(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	

Principal Cost Engineer/Principal Scheduler. Legis provided Cost Estimating and Construction Scheduling, Value Engineering, CSRA, Procurement Consulting, and Technical Design Review. Additionally, Legis evaluated stand-alone (continuous) operating requirements for the facility as well as alternative project delivery (contracting) methods for mitigating risks to the overall project budget and schedule. The project consists of constructing the underground hardened KORCOM Operations Center and the associated site development, parking structure, pavements, and landscaping. The construction includes an underground facility with gross area of 30,500 M2, a 24,600 M2 Burster Slab, and a 600-vehicle Parking Structure. Proj. Cost $215 Mil.

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
Rendy Tendean, CCP	**Senior Cost Estimator / Scheduler**	**14**	**14**

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

RIB U.S. Cost - Atlanta GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
BS, Construction, 1981, Louisiana State University	**Certified Cost Professional (CCP) | AACEi ID 03114 | Planning & Scheduling Professional (PSP) | AACEi ID**

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

Rendy has over 14 years of experience in the cost engineering and construction industry. He is a cost estimator with a specialized understanding and application of concepts, principles and practices related to cost and contracts gained through comprehensive experience. Rendy is responsible for the preparation of quantity take offs; labor, material and equipment pricing; and summarizing cost estimates for all disciplines.

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Repair U.S. Army Reserve Center, North Little Rock, AR**	**2019**	**2022**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	
	Value Engineering Team - Senior Cost Estimator: 3-day VE Workshop. The project is comprised of renovations to repair a 82,369SF Training Building and a 11425SF Area Maintenance Support Activity Building. The identified 48 ideas during the creative phase of the study. After these ideas were evaluated, 22 of those became formal proposals. Potential savings of $1.4M was identified. $21M. USACE Louisville.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
b.	**SSG Frederick J. III JR United States Army Reserve Center Addition/Alteration, Bullville, NY**	**2017**	**2018**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	
	Value Engineering Team - Senior Cost Estimator: Provided cost estimating services for multiple phase submissions for the alterations to an existing Training Building and construction of an addition; existing Organizational Maintenance Shop (OMS) converted into an Unheated Storage and new OMS. Design-Build. Included costs for Base Bid and 13 separate Options. MII Reports. 20166SF. $10.8M. COE Louisville.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**U.S. Army Reserve Center, Joint Base Lewis-McChord, WA**	**2018**	**2018**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	
	Value Engineering Team - Senior Cost Estimator: Rendy provided cost engineering services for multiple phase submissions for the 400-member training facility with administrative, educational, assembly, library, learning center, vault, weapons simulator and physical fitness areas for 12 Army Reserve units. Maintenance shop constructed to the modified Tactical Equipment Maintenance Facility (TEMF) standard. Also included concrete aprons, two vehicle wash racks/platforms, unit storage and parking areas. Design-Build. Included costs for Base Bid and 12 separate Options. AACEi Class 3 Methodology. MII Reports. 65882SF. $46.3M. USACE Louisville District.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
d.	**New U.S. Courthouse and Repair / Alteration of John A. Campbell Courthouse, Mobile, AL**	**2017**	**2018**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	
	Value Engineering Team - Senior Cost Estimator: Value Engineering cost estimating services for the 138404SF building and a 18300SF parking / loading area. 69 creative ideas generated; 27 accepted. $2M potential savings. $84M.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
e.	**Building E-1930 Renovation, Fort Bragg, NC**	**2015**	**2017**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	Check if project performed with current firm	
	Value Engineering Team - Senior Cost Estimator: 40 Hour VE workshop. The building will house the USASOC History Office operations. The existing building is approximately 13,500SF and will not be expanded except for the addition of a canopy for covered storage on the south side of the building. A total of 40 creative ideas were created; 17 ideas were accepted with a savings of $211k. USACE Wilmington.		

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
Garfield Wray, PE, D-GE	**Geotechnical Engineer**	**36**	**10**

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

Neelu Inc. – Smyrna, GA

16. EDUCATION *(Degree and Specialization)*	17. CURRENT PROFESSIONAL REGISTRATION *(State and Discipline)*
M.Sc. Geotech. Eng. – Howard University, Washington, DC **B.Sc. Civil Eng. (Hons) – University of the West Indies, Trinidad**	**FL, CA: Registered Professional Engineer - Civil**

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

- **Deep Foundation Institute**
- **Diplomate Geotechnical Engineer, Academy of Geoscience (ASCE)**
- **Member SAME**

19. RELEVANT PROJECTS

	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
a.	**Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, Texas**	**2020**	**2023**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (Geotechnical): **277K Levee Raise:** To meet a 277k cfs water surface elevation and design new levee crest access roads; **Levee Side Slope Flattening:** The levee side slopes shall be flattened to 4H:1V along the entire length of the river side of the levees; **Delta Pump Station:** New pumps (2), new electrical building, new transformer, concrete curb and gutter road to Hampton Road, truck access, new retaining walls, new security fencing and gates.**Construction Cost:** $40 Mil. Note: Contributed to the **Risk Register.**		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
b.	**Aerospace Ground Equipment (Age) Complex, Davis-Monthan AFB, Tucson, AZ**	**2019**	**2020**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (Geotechnical): AGE complex consists of administrative and maintenance areas, covered open-storage facility, with reinforced concrete foundations and floor slabs, structural-steel frames, standing-seam metal roof systems; fire detection/protection, and demolition of 13 facilities and 2 associated canopies. Facilities will be designed as permanent construction in accordance with the DoD Unified Facilities Criteria (UFC) 1-200-01, UFC 1-200-02, High Performance and Sustainable Building Requirements. This project will comply with DoD antiterrorism/force protection requirements per UFC 4-010-0. **Construction Cost:** $15.5 Mil.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION *(If applicable)*
c.	**PA 14/PA15 Dewatering, Houston Ship Channel, Harris County, Texas**	**2018**	**10 yr Programmatic**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	VE Team Member (Geotechnical):: Combining and Dewatering of Placement Areas No. 14 & No. 15 which have been in use for the HSC and the Bayport Ship Channel for many years. Used yearly in an alternating pattern (Programmatic), the two PAs started out as open bay disposal sites and advanced to upland confined placement with the deepening project. Plans to combine the two into one large PA. **Construction Cost (Annual):** $9.75 Mil.		
	(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
		PROFESSIONAL SERVICES	CONSTRUCTION*(If applicable)*
d.	**Herbert Hoover Dike, Lake Okeechobee, FL (USACE, JAX - SAJ)**	**2010-2012**	**Ongoing**
	(3) BRIEF DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE	☒ Check if project performed with current firm	
	Senior Geotechnical Engineer: Risk Informed Decision Based Computational Analyses and Design Services for upgrades to Levees, Dikes, Culverts, Pump Stations and Floodwalls along Reach 1, Subreach 1D of the Lake Okeechobee flood protection system to bring them to current Design Criteria to withstand Category 5 hurricanes. Performed Foundation engineering analyses for headwalls and wingwalls for the Herbert Hoover dike around Lake Okeechobee. Analyses included computation of foundation loads, performing CPGA, LPILE, and GROUP.		

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
RANDY HICKEY, RA, RID	ARCHITECT/INTERIOR DESIGNER	38	24

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

MHZ JV

MHZ JV – HOUSTON, TX

16. EDUCATION *(DEGREE AND SPECIALIZATION)*	17. CURRENT PROFESSIONAL REGISTRATION *(STATE AND DISCIPLINE)*
BA, Architecture	Registered Architect: TX, MI, OK Registered Interior Design: TX NCARB

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

Randy is responsible for design concepts, schematic design, design development and managing the flow of work during the complete project from conception to completion. He integrates the exterior and interior spaces with flowing spatial relationships that included natural light, coordinated colors, textures and acoustical qualities.

19. RELEVANT PROJECTS

a.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(if applicable)*
CCAD Hangar 8 DB RFP – Corpus Christi Army Depot, TX	2017	2019

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☒ Check if project performed with current firm

Project Manager: Hangar 8 serves as part of the rotary wing rebuild activities at CCAD. Our team prepared a design-build RFP for the renovation and repair to one of the major maintenance bays of the 1.2M square foot facility. This complex project includes a major overhaul of the systems and facility layout of approximately 70K square feet. The project includes upgrades to comply applicable codes, UFCs and standards for all electrical, structural, fire suppression, HVAC, concrete floor repairs. Services included a charrette to gather the user's specific requirements, validate the 1391 and prepare an ENG Form 3086. The team then prepared a design-build RFP, performed a structural evaluation and participated in the value engineering study with an independent design team. The design team continued support through the bidding phase with responses to RFIs and pre-proposal conference presentations. The design-build RFP was prepared in accordance with the AEIM and was submitted at each design phased with MII cost estimates. The project originally had a CCL of $12.1 M; however, after the charrette an ENG 3086 was complete, the project was reprogramed for $20M.

b.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(if applicable)*
Repair Warehouse for LRS/CE Consolidation (B4845), Barksdale AFB, LA	2015	2016

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☒ Check if project performed with current firm

Architect & Interior Designer: Provided full-service A-E Design on this Design-Build contract. Building 4845 is a 228,600 sq-ft warehouse building. The $7 million building renovation was designed using aesthetically pleasing, functional, durable finishes appropriate to the building's function. Acoustic properties of materials, as well as durability and ease of maintenance, were important factors considered during material selection. **Cost:** $7M

c.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(if applicable)*
Fort Bliss Historic Building 11108 Renovation, USACE, Fort Worth District, Fort Bliss, TX	2011	2012

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☒ Check if project performed with current firm

Architect & Interior Designer: Building 11108 is one of only four of its type built in 1953 after WWI. Due to its historic significance renovations followed the Fort Bliss Historic Building Maintenance and Repair Plan. Scope of work included the selective replacement of damaged, asbestos-containing Transite exterior wall panels, relocation of interior partitions, upgrades to interior finishes, accessibility upgrades, additions / renovations to restrooms, installation of an elevator and fire exit stairs, and installation of a new split-system HVAC units, ductwork, and controls. In addition, site work options included repaving and regarding of existing parking lots and aircraft aprons adjacent to the building. **Cost:** $3.8M

d.

(1) TITLE AND LOCATION *(City and State)*	(2) YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION *(if applicable)*
Renovations of Dormitories 10070 & 10075, Lackland AFB, San Antonio, TX	2010	2011

(3) DESCRIPTION *(Brief scope, size, cost, etc.)* AND SPECIFIC ROLE ☒ Check if project performed with current firm

Architect & Interior Designer: Full design partner on D/B contract for renovation, repair and alternation of aging AF dorms. Interior improvements were focused on waste reduction and recovered materials by limiting demolition and re-purposing of materials and spaces. Upgrades to the HVAC, electrical and utilities focused on energy efficiency. **Cost:** $11.4M

PART I, SECTION F

PART I, SECTION F

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 **F-1**

21. TITLE AND LOCATION (*City and State*)	22. YEAR COMPLETED	
	PROFESSIONAL SERVICES	CONSTRUCTION (*If applicable*)
VE Study - PA 14/PA15 Dewatering, Houston Ship Channel, Harris County, Texas	**2018**	**10 Yr. Programmatic**

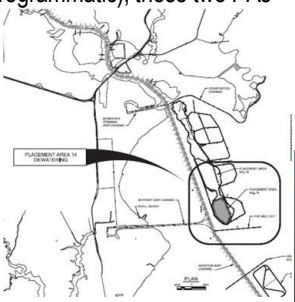
a. PROJECT OWNER	b. POINT OF CONTACT	c. TELEPHONE NUMBER
USACE, Galveston District	Mr. Jake Walsdorf, PLA VEO/A-E Contract Coordinator	409-766-3817

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

Project Description:

Our team was tasked by the Galveston District to complete a Value Engineering Study for a 10-year programmatic dredging placement area project along the Houston Ship Channel. This 4-day workshop hosted at the Galveston District Workshop adhered to the USACE Value Standard and the six step Value Engineering job plan as promulgated by SAVE International®.

Placement Area No. 14 and Placement Area (PA) No. 15 have been in use for the Houston Ship Channel (HSC) and the Bayport Ship Channel for many years. Used yearly in an alternating pattern (Programmatic), these two PAs started out as open bay disposal sites and advanced to upland confined placement zones as the ship channel deepening occurred. At the start of the VE study, plans were underway to combine the two individual placement areas into one large PA. Additionally, each PA contains an environmental restoration (march) area (on the east side) constructed through mitigation requirements for the current project.



The Galveston District area office project goal was to keep the existing alignments, create flow paths to the existing drop-outlet structures, excavate the interior trench into sloped surfaces from higher interior elevations to lowest elevation near the existing discharging pipes.

Construction Cost:

Total Construction Budget for Periodic Dewatering of PA14 and PA15 is approximately $9.75 Million.

VE Workshop: May 1-4, 2018.

Facilitated by Ramesh Kalvakaalva, PE, CVS of Neelu Inc, Team Members were provided by MSMM, Neelu Inc and USACE Galveston District.

SMEs included: Civil; Hydraulics; Geotechnical; Constructability; Operations; Cost Estimator

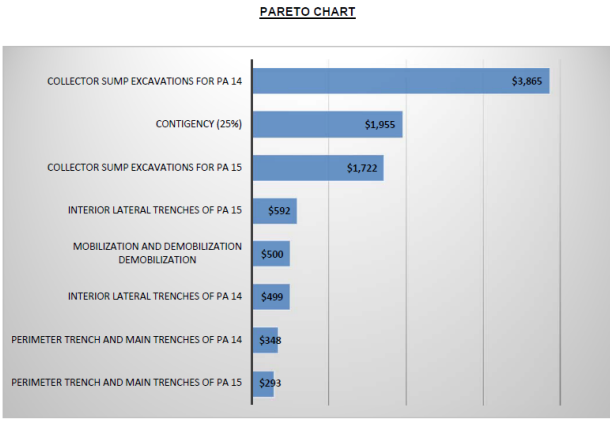
The VE Workshop adhered to the USACE Value Standard and the six step Value Engineering job plan as promulgated by SAVE International®. This six-step job plan included: I. Information Phase; II. Function Analysis Phase; III. Speculation/Creative Phase; IV. Evaluation Phase; V. Development Phase; VI. Presentation Phase. A FAST Diagram was developed to validate the Scope of the Operations and enable the VE Team to focus on the Functions identified as High Risk.

The VE Facilitator and PM also participated in the Implementation Meeting.

Objectives of the VE Study:

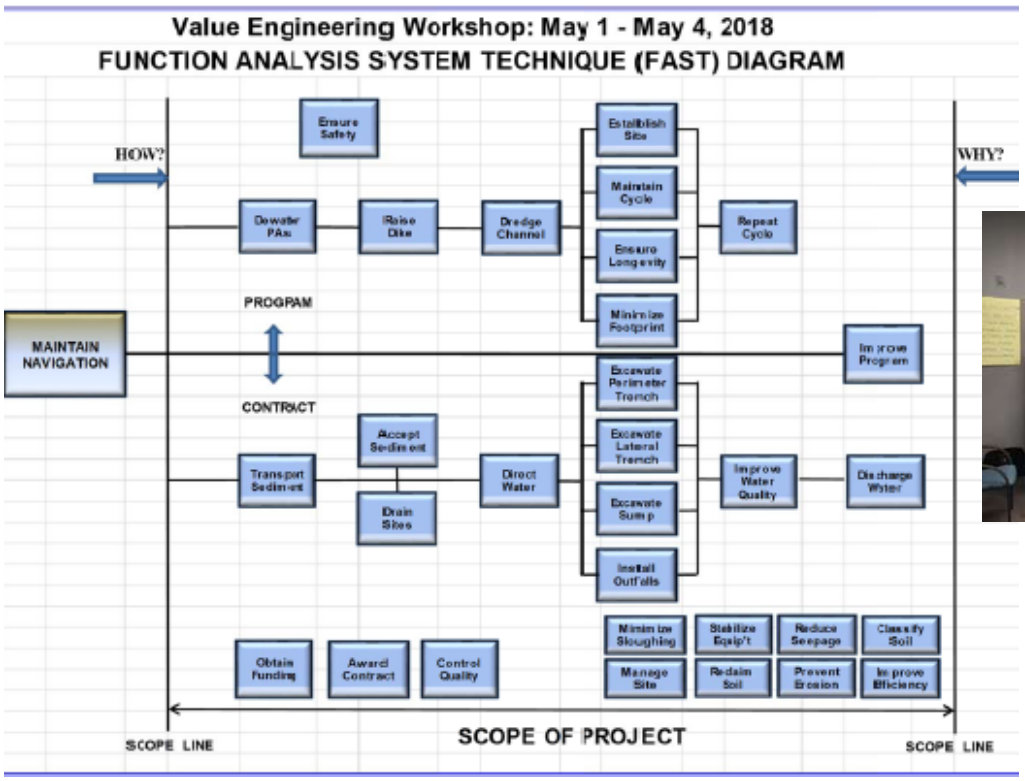
- Get the best return for construction dollars spent (ROI)
- Assist in bringing the project within budget – consider options for Bid Alternates
- Assist in identifying the best approach for project delivery
- Reduce the risks associated with project delivery
- Minimize Life Cycle Costs for O & M
- Enhance the project outcome
- Where costs are reduced, do so without compromising vital functions

Cost Model:



Function Analysis:

During this phase, the team reviewed the project from the simplest format in asking the questions of "What is the project supposed to do?", and "How is it supposed to accomplish this purpose?". In the Value Engineering vernacular, the answers to these questions are cast in the form of active verbs and measurable nouns. These verb/noun pairs form the basis of the function analysis that distinguishes a Value Engineering effort from a potentially damaging cost cutting exercise. With guidance from the VE Facilitator, the team developed a Function Analysis System Technique (FAST) diagram that depicts the flow of functions within this project.



Creative Ideas:

Objectives:

- Reduce the current (potential) budget overrun and reduce life cycle costs
- Improve functionality and quality of the Facility/Operation
- Reduce the time of construction
- Incorporate innovative technologies

This brainstorming session initially identified a large volume of ideas (56) that were then evaluated in the next phase.

Evaluation:

Criteria:

- Construction Cost Savings
- Life Cycle Costs (LCC)

- Ability to Implement the Idea
- General Acceptability of the Alternatives
- Constructability
- Operator Friendliness
- Process Improvement

The workshop resulted in full development of seventeen (17) Design Alternatives (some mutually inclusive) that offered an estimated two million dollars ($2 Million) in potential first cost savings to be considered for implementation. These alternatives were selected as being reasonable considerations for incorporation in the design. There were also nineteen (19) Design Suggestions that offered measures to simplify construction, provide various means for reducing costs (in these cases these savings are hard to quantify), may help to improve the operational requirements for the facility, and reduce the construction duration.

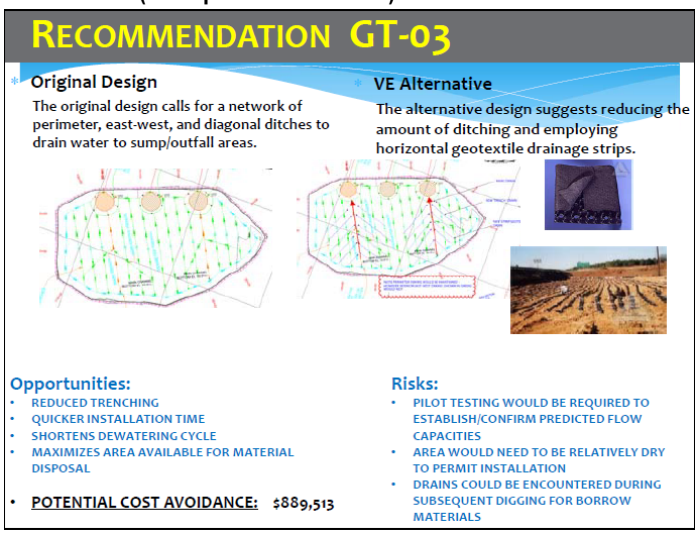
Snapshot of Summary of Results:

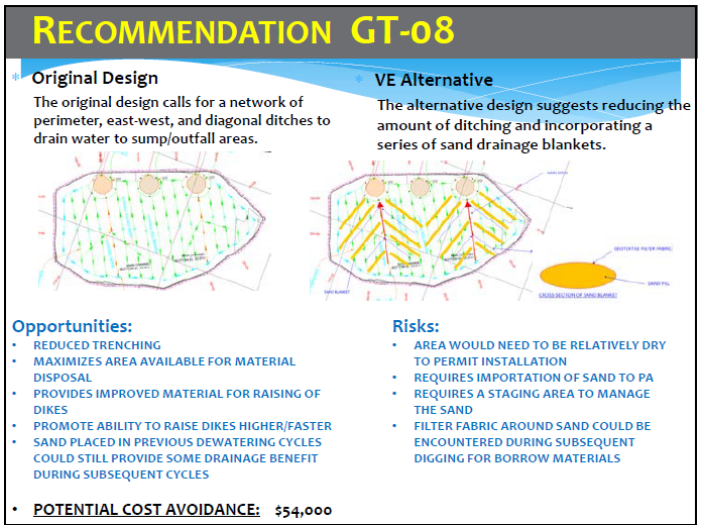
USACE GALVESTON DISTRICT

PA 14/PA15 Dewatering, Houston Ship Channel,
Harris County, Texas
Value Engineering Workshop: May 1 - May 4, 2018 - SUMMARY OF RESULTS

		VE Team Ranking	Cost Original Design	Cost Alternative	Initial Cost Reduction
VALUE ALTERNATIVES					
GEOTECHNICAL (GT)					
GT2	Introduce Stabilizing Agent To Secure Slopes	5	$1,364,000	$1,049,400	$314,600
GT3	Reduce Ditching And Utilize Horizontal Geo-Textile Sheets	5	$2,265,000	$1,916,000	$349,000
GT4	Incrementally Increase Slope To Outlets	5	See GT-03		
GT8	Selectively Replace Ditches With Drainage Blankets	4	$2,165,000	$2,111,000	$54,000
OPERATIONS & MAINTAINANCE (OM)					
OM2	Provide Compaction And Stabilization	5	See OM-06		
OM6	Widen Ditches For Equipment Access	5	$3,910,000	$3,609,500	$300,500

Presentation (Examples from Outbrief):





VE Results:
The workshop resulted in full development of 17 Design Alternatives (some mutually inclusive) that offered an estimated $2 Million in potential first cost savings to be considered for implementation. There were also 19 Design Suggestions that offer measures to simplify construction, provide various means for reducing costs (in these cases these savings are hard to quantify), may help to improve the operational requirements for the facility, reduce the construction duration, and improve dewatering methods.

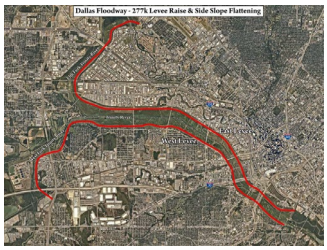
Implemented Results:
7 Design Alternatives were accepted for a net savings of $1.75 Million. All Design Suggestions were flagged for consideration during the Final Design phase of the project.

Prime Firm: MSMM Engineering – Contract W9126G-16-D-0017, Task Order # W9126G18F0159 – Subconsultant – Neelu, Inc.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT		
FIRM NAME	(2) FIRM LOCATION (*City and State*)	(3) ROLE
MSMM Engineering, LLC	**New Orleans, LA, Houston, TX**	**Project Management / VE Team Members (Co-Facilitator/Cost Estimator: Don "D" Daigle, CVS, CCP; Civil: Jim Wilson, PE, PM: Josh Carson)**
Neelu, Inc.	**Smyrna, GA**	**VE Facilitation / VE Team Members (Facilitator: Ramesh Kalvakaalva, PE, CVS; Geotech: Garfield Wray, PE, D.GE)**

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 **F-2**
21. TITLE AND LOCATION (*City and State*)		22. YEAR COMPLETED	
Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, Texas		PROFESSIONAL SERVICES **2020**	CONSTRUCTION (*If applicable*) **2023**
a. PROJECT OWNER	b. POINT OF CONTACT		c. TELEPHONE NUMBER
USACE, Fort Worth District	Mr. Clarence Banks District Value Officer		817-886-1556

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



Through a USACE Fort Worth District task order, our team was responsible for the development of two stand-alone Design-Build RFP packages for Civil Works flood risk reduction projects. Our Prime Joint Venture was tasked with overall management and design of the DB packages, while sub-consultant Neelu Inc. conducted the Value Engineering Study. This 5-day value engineering study was completed in unison and encompassed the evaluation of two DB packages that resulted in the development of two independent Value Engineering reports. Due to COVID regulations, this Value Engineering study was held remotely via GoToMeeting. The VE Workshop adhered to the USACE Value Standard and the six step Value Engineering job plan as promulgated by SAVE International®. The VE study resulted in 80 alternatives (across the two projects) that resulted in 28 implemented alternatives and gross cost avoidance of approximately $2M.

Project Description: Although considered separate D/B Projects, a combined VE Workshop was held for the 277k Levee Raise and Delta Pump Station.
277K Levee Raise: Design and construction of existing East and West levees to raise the top of the levees to reduce flooding potential, meet a 277,000 cfs water surface elevation, and design new levee crest access roads. The levee raises will occur at any location where the effective levee crest height is less than the 277,000 cfs water surface El..
Levee Side Slope Flattening: The existing East and West levees have side slopes varying from approximately 2:8H:1V to 4H:1V. The side slopes shall be flattened to 4H:1V along the entire length of the river side of the levees anywhere the existing slope is steeper than 4H:1V to reduce erosion potential.
Delta Pump Station: New pumps (2), new electrical building, new transformer, concrete curb and gutter road to Hampton Road access, new stairs for low flow building, extend the concrete apron for bobcat and dump truck access, new retaining walls, new security fencing and gates.

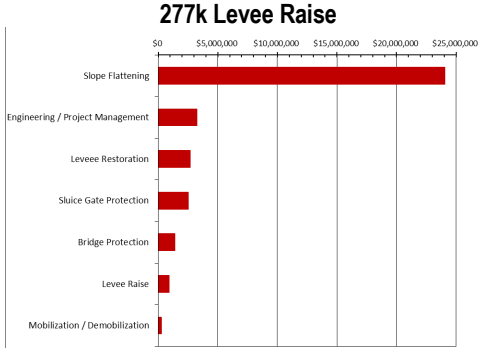
Construction Cost:
Total Construction Budget for the 277k Levee Raise is approximately $35 Million and that for the Delta Pump Station is approximately $5 Million.

VE Workshop: April 6-10, 2020, via **Virtual Platform**.
Facilitated by Ramesh Kalvakaalva, PE, CVS and Co-Facilitated by David Hamilton, PE, CVS, along with all Team Members of Neelu Inc. The Design Team was led by MSMM and its Team that addressed the Implementation of the VE Results.
SMEs included: Civil; Hydraulics; Geotechnical; Environmental; Architectural; Structural; Constructability; Operations; Cost Estimator.
The VE Workshop adhered to the USACE Value Standard and the six step Value Engineering job plan as promulgated by SAVE International®. This six-step job plan included: I. Information Phase; II. Function Analysis Phase; III. Speculation/Creative Phase; IV. Evaluation Phase; V. Development Phase; VI. Presentation Phase. A Random Function Analysis, with Risk Assignments, was performed with the FAST Diagram developed by the Facilitator to validate the Scope of the Projects/Operations and identify the Key Functions of the projects.
The VE Facilitator (Ramesh Kalvakaalva) also participated in the Implementation Meeting for both projects.

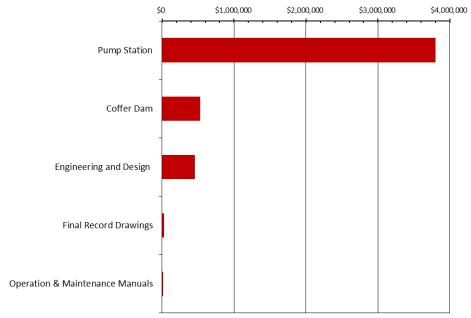
Objectives of the VE Study(s):
- Get the best return for construction dollars spent
- Assist in bringing the project within budget
- Assist in identifying the best approach for project delivery
- Reduce the risks associated with project delivery
- Minimize Life Cycle Costs for O & M
- Enhance the project outcome
- Where costs are reduced, do so without compromising vital functions

Cost Model:

277k Levee Raise



Dela Pump Station



Function Analysis:

During this phase, the team reviewed the project from the simplest format in asking the questions of "What is the project supposed to do?" and "How is it supposed to accomplish this purpose?" In the Value Engineering vernacular, the answers to these questions are cast in the form of active verbs and measurable nouns. These verb/noun pairs form the basis of the function analysis that distinguishes a Value Engineering effort from a potentially damaging cost cutting exercise. With guidance from the VE Facilitator, the team developed a Random Function Analysis; Identified the Order of the Functions; and Assigned Risks Associated to The Function. The rating of the project risk highlights areas for constructability improvements. Snapshots are shown below:

277k Levee Raise

TABULAR FUNCTION ANALYSIS 277K LEVEE PROJECT			
Project Element	Function Verb - Noun	Function Type	Project Risk
277K LEVEE			
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

Delta Pump Station

TABULAR FUNCTION ANALYSIS DELTA PUMP STATION			
Project Element	Function Verb - Noun	Function Type	Project Risk
DELTA PUMP STATION			Low
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
Transformers	Energize Equipment	Required Secondary	Low

Creative Ideas:

Objectives:

- Reduce the current (potential) budget overrun and reduce life cycle costs
- Improve functionality and quality of the Facility/Operation
- Reduce the time of construction and potential for change orders
- Incorporate innovative technologies

This brainstorming session initially identified a large volume of ideas (36 for the 277k Levee Raise & 44 for the Delta Pump Station) that were then evaluated in the next phase. Sample Risk Register shown alongside.

Evaluation:

Criteria:

- Construction Cost Savings
- Life Cycle Costs
- Ability to Implement the Idea
- General Acceptability of the Alternatives
- Constructability
- Operator Friendliness
- Process Improvement

				Project Cost			Project Schedule		
CREF	Risk/Opportunity Event	Risk Event Description	PDT Discussions on Impact and Likelihood	Likelihood ®	Impact ®	Risk Level ®	Likelihood (R)	Impact (R)	Risk Level (R)
Contract Acquisition Risks (CA)									
CA1	Pump Station - Procurement Process	PS may be too small of a contract for D/B	Needs scope clarification to avoid change orders	Likely	Extreme	Medium	Likely	Negligible	Low
General Technical Risks (TR)									
TR1	Very old facility	Potential change orders typically		Very Likely	Negligible	Medium	Very Likely	Negligible	Medium
Architectural and Interior (AI)									
AI1	Roof Membrane	Roof condition may be worse after inspection	May need a complete new roof	Likely	Extreme	Medium	Likely	Negligible	Medium
Civil/Site Design (CV)									
CV1	Scope of Work/ Quantities	Soil quantities may be variable	Crossections may be too far apart - 200ft; D/B team may need to survey the full length of the levy with 50ft O.C.	Very Likely	Significant	High	Possible	Extreme	Medium
CV2	Selection and Maintenance of the Haul Roads	Construction scope needs to be inclusive of O&M requirements	Pre-Post inspection of any existing roads/conditions	Possible	Extreme	Medium	Possible	Negligible	Low
CV3	Export/Waste Materials	Clear/Grub cost may increase costs		Likely	Negligible	Medium	Likely	Negligible	Medium
CV4	Moisture content of the existing borrow material	Additional testing and investigation may be justifiable	Slows the construction process caused by re-blading the soil/tilling, etc.	Likely	Extreme	Medium	Likely	Extreme	Medium
CV5	Potential seepage through the levy sections?	Key geotechnical question.....	Has this been completed??	Unlikely	Negligible	Low	Possible	Negligible	Low
CV6	Slope of Levy	Less than 4:1 may cause safety issues	May be historical issue driving the 4:1 slope	Unlikely	Negligible	Low	Possible	Negligible	Low
CV7	Relocation of Utilities	Potential issues with utility location and depth	Subsurface investigation for utilities may not have been completed yet in the design process	Likely	Extreme	Medium	Possible	Negligible	Low
Structural (SD)									
SD1	Roof Structure	Roof is older and may needed additional support if penetrations are made	Framing may be weakened; old 2-way system - 4in slab, spans 8.5ft to center beam; to formed bond beam on exterior wall	Likely	Significant	High	Possible	Negligible	Low
SD2	Settlement Issues	Soils may move - expansive clays?	Both during construction and final design	Very Likely	Extreme	High	Possible	Negligible	Low
SD3	PS Bracing	Walls may need bracing during construction	Contractor may need to include additional costs	Likely	Extreme	Medium	Possible	Negligible	Low
SD4	Slope between the PS buildings	Grade is unknown currently	Need additional clarification	Possible	Negligible	Low	Possible	Negligible	Low

The workshop resulted in full development of Design Alternatives (some mutually inclusive) that were selected as being reasonable considerations for incorporation in 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), may help to improve the operational requirements for the facility, and reduce the construction duration.

Snapshot of Summary of Results:

277k Levee Raise

USACE FORT WORTH DISTRICT
277k Levee Raise
Value Engineering Workshop: April 6-10, 2020 - VE RESOLUTIONS

US Army Corps of Engineers

		VE Team Ranking	Cost Original Design	Cost Alternative	Initial Cost Reduction	PDT Remarks	PDT Resolution
QUANTITATIVE IDEAS (VE ALTERNATIVES)							
LR-01	Evaluate Alternate Slopes	5	SEE BELOW ALTERNATIVES				
LR-02	Install 3.5:1 Slope	5	$16,901,258	$10,600,875	$6,300,383	The City of Dallas maintains a database to document the occurrence of slides over the life of the project. The data shows that slides are prevalent in the areas where the slopes are less than 4:1. In addition, 4:1 slopes are easier to maintain and mow. There are also several USACE dams in the vicinity (with similar soil conditions) where 4:1 slopes have reduced the occurrence of slides. This is a betterment that is paid for by the City of Dallas.	Reject
LR-03	Modify Slope Only In Selective Areas	4	$21,592,463	$19,433,217	$2,159,246	The scope for slope modification is not being proposed for the entire length of both levees. The modification to 4:1 will only occur where the topographic survey identifies the slope to be less than 4:1. This is a betterment that is paid for by the CoD.	Reject
LR-05	Terrace The Levee Slope	4	$16,901,755	$17,700,755	($799,000)	This will be increase the maintenance cost for the CoD. It would also prevent proper inspections of the sideslopes and toe. It is imperitive that the levee can be inspected properly.	Reject

Delta Pump Station

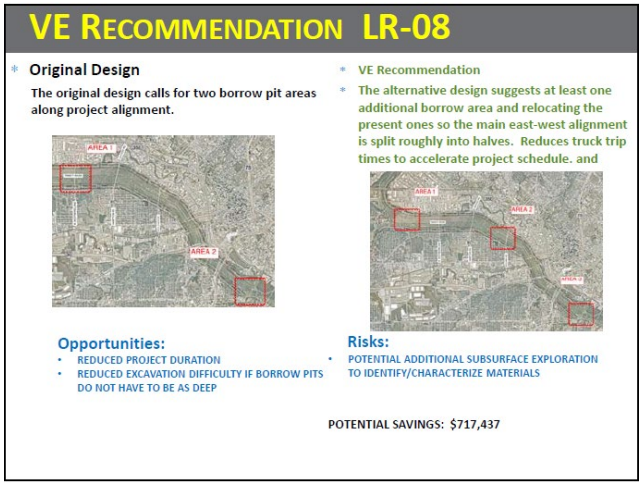
USACE FORT WORTH DISTRICT
Delta Pump Station
Value Engineering Workshop: April 6-10, 2020 - VE RESOLUTIONS

US Army Corps of Engineers

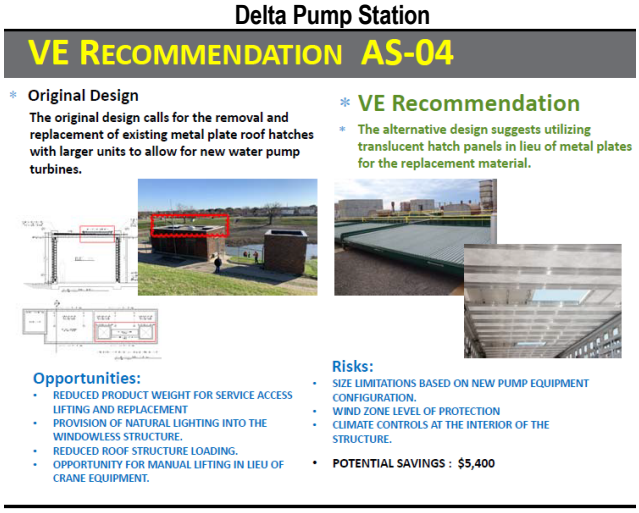
		VE Team Ranking	Cost Original Design	Cost Alternative	Initial Cost Reduction	PDT Remarks	PDT Resolution
QUANTITATIVE IDEAS (VE ALTERNATIVES)							
ARCHITECTURAL & STRUCTURAL (AS)							
AS-01	Build New Structures	5	$908,241	$1,095,626	($187,385)	CWDS is not a criterion to build a new structure. Would require concurrence from USACE leadership. May be a viable option if more detailed cost numbers are provided.	Reject
AS-03	Evaluate Modifications To Roof Openings	5	$0	$20,250	($20,250)	All it does more signal to replace the existing roof support of the roof for the new Vertical Bays and accommodate the larger openings required for the new pumps that was? Will be evaluated by the DB A-E during design.	Further Study
AS-04	Use Translucent Panels For Roof Hatches	5	$10,800	$5,400	$5,400	Based purely on the risks stated on the Alternative Ref. AS-04 worksheets. Might be an issue for the City of Dallas. Solid closure is required to ensure stability of the roof hatch.	Reject
AS-05	Separate Louvres And Exhaust Fans Locations	4	$15,651	$24,512	($8,861)	Locate intake louvers and exhaust fans to achieve noise at Zero. Will be evaluated by the DB A-E during design.	Further Study
AS-08	Replace Brick Walls With CMU Load Bearing Walls	5	$0	$23,943	($23,943)	Retain existing structures to maintain historic character. It is out of the scope of the project.	Reject
AS-09	Replace Existing Buildings With Prefabricated System	5	See AS-01			Retain existing structures to maintain historic character. It is out of the scope of the project.	Reject
AS-11	Utilize Lighter Roof/Framing System	5	$30,467	$49,140	($18,673)	Will this reduce the headroom in the pump house, or require raising the building height? Will be evaluated by the DB A-E during design.	Further Study
AS-14	Install Alternate Trash Rack/Debris Conveyance System	5	$0	$54,000	($54,000)	Will be evaluated by the DB A-E during design.	Further Study
AS-15	Install Gutters And Down Spouts For Roof Drainage	5	$0	$2,076	($2,076)	Will this survey the additional maintenance to keep the gutters and downspouts clean? Will be evaluated by the DB A-E during design.	Further Study
CIVIL & CONSTRUCTABILITY (CC)							
CC-05	Install Single Double-Swing Gate To The Outside Of Entrance	5	$3,629	$2,279	$1,350	Not recommended. Feasible constraints issue. Will have to be confirmed by the DB A-E.	Further Study
[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	[illegible]	Reject

Presentation (Examples from Outbrief):

277k Levee Raise



Delta Pump Station



VE STUDY STATISTICS:

1. Total Alternatives: 36 (a. Number of Alternatives Developed: 23; b. Number of Accepted Alternatives: None; c. Total Number of Implemented Alternatives: 8)
2. Quantitative Alternatives: (a. Number of Quantitative Alternative: 13; b. Number of Accepted Alternatives: None)
3. Qualitative Alternatives: (a. Number of Qualitative Alternative: 10; b. Number of Accepted Alternatives: 8)
4. Cost Avoidance (Gross): (a. Potential /Projected Cost Avoidance (Gross): $10 Million; b. Accepted Cost Avoidance: None)
5. Life Cycle Cost: (a. Maximum Life Cycle Cost: N/A; b. Accepted Life Cycle Cost: N/A)

1. Total Alternatives: 44 (a. Number of Alternatives Developed: 36; b. Number of Accepted Alternatives: 20;)c. Total Number of Implemented Alternatives: 20)

2. Quantitative Alternatives: (a. Number of Quantitative Alternative: 21; b. Number of Accepted Alternatives: 11)
3. Qualitative Alternatives: (a. Number of Qualitative Alternative: 15; b. Number of Accepted Alternatives: 9)
4. Cost Avoidance (Gross): (a. Potential /Projected Cost Avoidance (Gross): $1 Million (Includes Value Addition); b. Accepted Cost Avoidance: $180 Thousand (Value Addition))
5. Life Cycle Cost: (a. Maximum Life Cycle Cost: N/A; b. Accepted Life Cycle Cost: N/A)

MSMM Prime Contract: W9126G-16-D-0017 (Task Order No. W916G20F033); A-E Contract Award Amount: $127,000.00)

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT		
FIRM NAME	(2) FIRM LOCATION (*City and State*)	(3) ROLE
MSMM Engineering, LLC	**New Orleans, LA, Houston, TX**	**Project Management/Design (PM: Josh Carson, Civil Engineer – Jim Wilson, Cost Estimator – Don Daigle)**
Huitt-Zollars, INC.	**Fort Worth, TX**	**Mechanical Designer – Jeff Wilson, Electrical Designer – Scott Parma, Architect-Bill Hoelscher**
Neelu, Inc.	**Smyrna, GA**	**VE Facilitation / VE Team Members (Facilitator: Ramesh Kalvakaalva, PE, CVS; SMEs: Garfield Wray, PE, D.GE; David Hamilton, PE, CVS-Life; Charles McDuff, PE, CVS-Life; Leslie Thomas, PE, CVS-**

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 **F-3**
21. TITLE AND LOCATION (*City and State*)	22. YEAR COMPLETED		
	PROFESSIONAL SERVICES	CONSTRUCTION (*If applicable*)	
VE Study - Corpus Christi Ship Channel - PA 10 - Shoreline Protection/Stabilization - Containment Dike Raise, Texas	**2018**	**2022**	
a. PROJECT OWNER	b. POINT OF CONTACT	c. TELEPHONE NUMBER	
USACE, Galveston District	Mr. Jake Walsdorf, PLA VEO/A-E Contract Coordinator	409-766-3817	

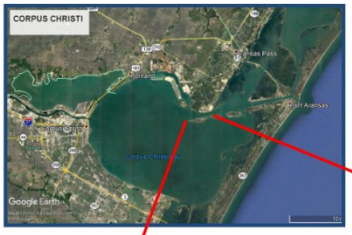
24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, cost*)

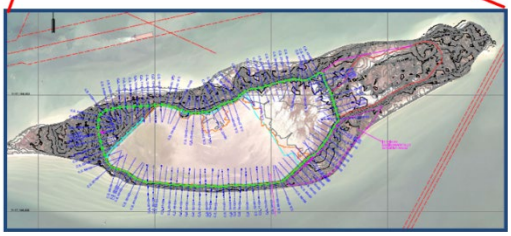
Prime Firm: MSMM Engineering – Contract W9126G-16-D-0017, Task Order # W9126G18F0159 – Subconsultant – Neelu, Inc.

Our team was tasked by the USACE Galveston District with completing a Value Engineering Study for the potential Containment Dike Raise along the Corpus Christi Ship Channel in Corpus Christi, Texas. We conducted a 4-day value engineering study evaluating the design to repair the stone jetties at the entrance to the Corpus Christi Ship Channel. The plans called for deepening the entrance channel by 7 ft. to an authorized depth of -52 ft. MLT. This results in the entrance channel bottom depth being lowered by 2 ft. to -54 MLT and extending it by 10,000 feet further into the Gulf of Mexico. Thus, the jetties need significant improvements/repairs. Utilizing the SAVE method, the VE team evaluated the $50M construction estimate and project documentation, eventually developing 7 alternatives that were accepted for a net savings of approximately $1.75, which resulted in the re-evaluation of the entire scope of the project by the Galveston District design team.

Project Description:
CCSC PA10 is located on the south side of Corpus Christi Ship Channel, to the northwest of Corpus Christi Bay, and south of Ingleside in San Patricio County Texas.

The average containment dike elevation of PA10 is about 32 feet from survey taken in 2013 (as presented in the survey plot from station 68+00 to station 71+00 in Section II. The proposed plan is to optimize erosion protection beginning at station 65+00 and ending at station 99+00 which makes the total design length of the erosion prevention construction 3,400 linear feet. Additionally, the Dike is proposed to be raised to a uniform elevation +40 feet, along with a PA expansion towards the northeast and relocation of the spill box northward.





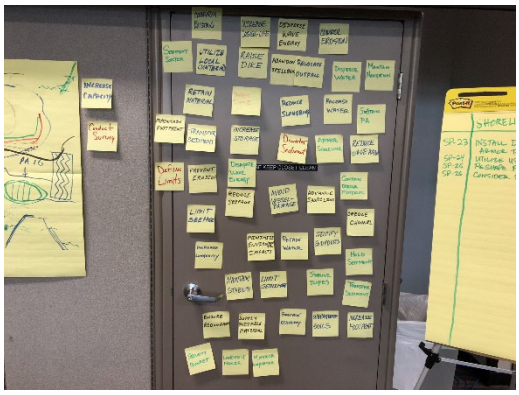
Construction Cost:
Total Construction Budget at the Design Development (35%) phase totals approximately $8 million (not including contingency).

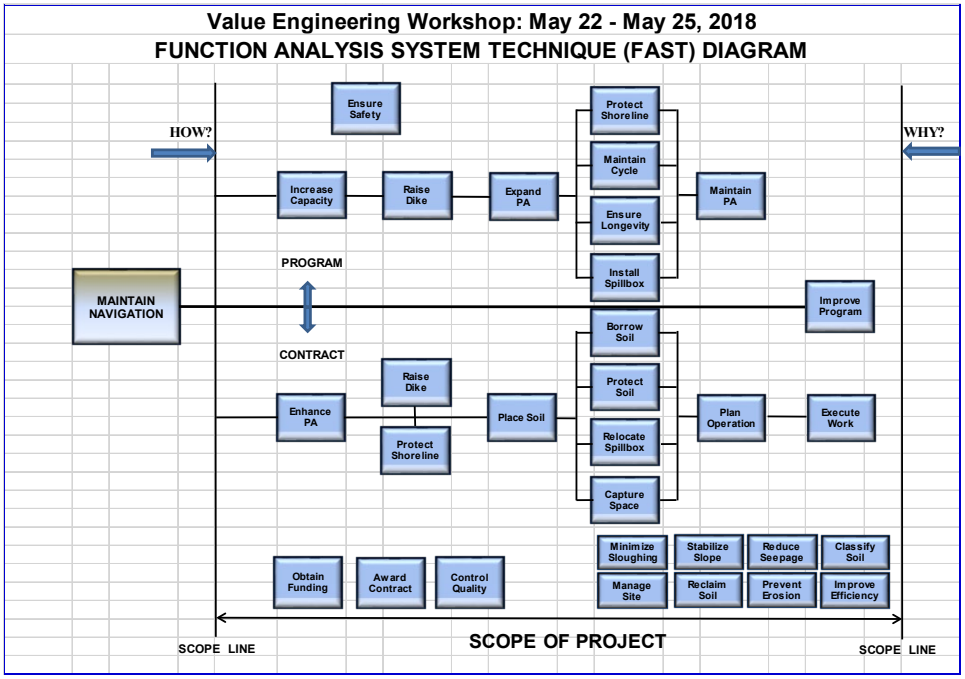
VE Workshop: May 22-25, 2018.
Facilitated by Ramesh Kalvakaalva, PE, CVS of Neelu Inc, Team Members were provided by MSMM, Neelu Inc and USACE Galveston District.
SMEs included: Civil; Hydraulics; Geotechnical; Constructability; Operations; Cost Estimator
The VE Workshop adhered to the USACE Value Standard and the six step Value Engineering job plan as promulgated by SAVE International®. This six-step job plan included: I. Information Phase; II. Function Analysis Phase; III. Speculation/Creative Phase; IV. Evaluation Phase; V. Development Phase; VI. Presentation Phase. A FAST Diagram was developed to validate the Scope of the Operations and enable the VE Team to focus on the Functions identified as High Risk.
The VE Facilitator and PM also participated in the Implementation Meeting.

Objectives of the VE Study:
- Get the best return for construction dollars spent
- Assist in bringing the project within budget
- Assist in identifying the best approach for project delivery
- Reduce the risks associated with project delivery
- Minimize Life Cycle Costs for O & M
- Enhance the project outcome

- Where costs are reduced, do so without compromising vital functions

Function Analysis:
During this phase, the team reviewed the project from the simplest format in asking the questions of "What is the project supposed to do?", and "How is it supposed to accomplish this purpose?". In the Value Engineering vernacular, the answers to these questions are cast in the form of active verbs and measurable nouns. These verb/noun pairs form the basis of the function analysis that distinguishes a Value Engineering effort from a potentially damaging cost cutting exercise. With guidance from the VE Facilitator, the team developed a Function Analysis System Technique (FAST) diagram that depicts the flow of functions within this project.





Creative Ideas:
Objectives:
- Reduce the current (potential) budget overrun and reduce life cycle costs
- Improve functionality and quality of the Facility/Operation
- Reduce the time of construction
- Incorporate innovative technologies

This brainstorming session initially identified a large volume of ideas (44 that were then evaluated in the next phase.

Evaluation:
Criteria:
- Construction Cost Savings
- Life Cycle Costs (LCC)
- Ability to Implement the Idea
- General Acceptability of the Alternatives
- Constructability
- Operator Friendliness

- Process Improvement

Snapshot of Summary of Results:

MSMM ENGINEERING, LLC

US Army Corps of Engineers

USACE GALVESTON DISTRICT

Corpus Christi Ship Channel - PA 10 – Shoreline Protection/Stabilization – Containment Dike Raise

Value Engineering Workshop: May 22 - May 25, 2018; Implementation Meeting: July 26, 2018

		VE Team Ranking	Cost Original Design	Cost Alternative	Initial Cost Reduction	Accepted / Rejected / Pending Further Analysis	Remarks
ALTERNATIVES							
DIKE RAISE (DR)							
DR6	Install Outfall To Discharge On Bay Side (Southwest Corner)	5	$16,669	$34,809	($18,140)	Accepted	Where appropriate and funding is available
DR7	Reduce Berm Requirements On Interior Of Containment Dike	5	$1,101,853	$550,926	$550,927	Not Accepted	
DR10	Selectively Extend Limits Of PA To The East	4	$428,750	$426,016	$2,734	Accepted	Where appropriate
DR11	Stabilize Dike Construction Material	5	$1,932,129	$1,782,539	$149,590	Accepted	Where appropriate
DR12	Install Sheet Pile Cutoff Wall	5	$211,056	$105,000	$106,056	Not Accepted	
DR13	Install Slurry Cutoff Wall	4	$211,056	$437,500	($226,444)	Not Accepted	
DR14	Raise Dike In Stable Lifts	5	$4,303,031	$4,928,031	($625,000)	Not Accepted	
DR16	Prioritize Construction Of Dike To Uniform Elevation	4	$4,303,031	$848,750	$3,454,281	Not Accepted	
DR20	Do Not Raise Dike Over Next Two Dredging Cycles	5	$4,303,031	$0	$4,303,031	Not Accepted	
DR21	Replace In-Lieu Of Relocating Spillbox	5	$1,675,365	$1,625,000	$50,365	Accepted	Where appropriate
DR22	Optimize Upstream Dike Slope	5	$700,000	$583,336	$116,664	Accepted	
DR24	Terrace Dike Outward Along The Southside	5		**See DR-22**		Accepted	
DR26	Place Protective Layer On Dike To Prevent Erosion From Rainwater	5	$3,585,881	$2,674,766	$911,115	Not Accepted	
SHORELINE PROTECTION (SP)							
SP4	Consider Placing Breakwater	5	$737,625	$327,563	$410,062	Not Accepted	
SP6	Provide Layered Armoring	5		**See SP-8**		Accepted	If funding is available
SP8	Install Secondary Offset Armor Source	5	$737,625	$625,000	$112,625	Accepted	If funding is available
SP9	Install Alternate Armoring Material	5	$2,271,125	$1,744,500	$526,625	Accepted	If funding is available
SP16	Add Fringe Marsh In Conjunction With Reef Balls	5		**See SP-8**		Accepted	If funding is available
SP19	Rebuild Dike From Sta. 60 To Sta. 99 Only	5	$4,303,031	$1,721,081	$2,581,950	Not Accepted	

Presentation (Examples from Outbrief)

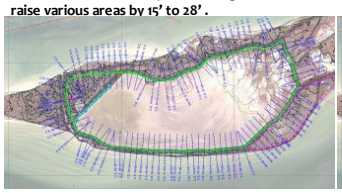
RECOMMENDATION DR-14

Original Design

The original design calls for raising the entire dike system to elevation 40' (approximately 10,300 LF). This includes 1,700' of new dike in the northwest. This requires adding material to raise various areas by 15' to 28'.

VE Alternative

The alternative design suggests limiting the current dike raise to stable lifts as a single raise of such magnitude may be impermissible to achieve.



Raise Dike to Elevation 40' — Dike to Remain at 32'

Raise Dike in stable lifts Dike to Remain at 32'

Opportunities:

- INCREASED STABILITY
- REDUCED SETTLEMENT ISSUES
- ALTHOUGH ADDITION OF STORAGE CAPACITY OF THE PA IN THE SHORT TERM IS NOT ACHIEVED, IT MAY NOT BE POSSIBLE ANYWAY

Risks:

- MULTIPLE FUTURE PROJECTS TO RAISE THE DIKE TO 40' WILL BE REQUIRED
- DIKE RAISE WILL NEED TO DESIGNED TAKING INTO CONSIDERATION SETTLEMENT ISSUES

- Value Addition : ($625,000)

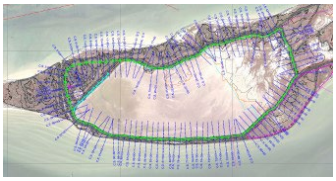
RECOMMENDATION DR-16

Original Design

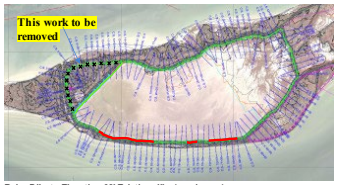
The original design calls for raising the dike to elevation 40' (approximately 10,300 LF). This includes 1,700' of new dike in the northwest'.

VE Alternative

The alternative design suggests just bringing the low elevation dike areas up to previous design elevation of 32'.



Raise Dike to Elevation 40' — Dike to Remain



Raise Dike to Elevation 32' Existing dike (no change)

Opportunities:

- SIGNIFICANTLY REDUCES TIME AND COST OF OVERALL PROJECT
- ELIMINATES THE ANTICIPATED STORAGE CAPACITY OF THE PA BUT THE PA'S CAPACITY IS ONLY AS MUCH AS THE LOWEST DIKES CAN HOLD

Risks:

- A FUTURE PROJECT TO RAISE THE DIKE WILL BE REQUIRED

- POTENTIAL COST AVOIDANCE: $3,454,281

VE Results:

The workshop resulted in full development of nineteen (19) Design Alternatives (some mutually inclusive) that offer an estimated one million dollars ($1 Million) in potential first cost savings to be considered for implementation. These alternatives were selected as being reasonable considerations for incorporation in the design. There were also twenty-five (25) Design Suggestions that offer measures to simplify construction, provide various means for reducing costs (in these cases the savings are hard to quantify), may help to improve the operational requirements for the facility, and reduce the construction duration.

Implemented Results:

7 Design Alternatives were accepted for a net savings of $1.75 Million. All Design Suggestions were flagged for consideration during the Final Design phase of the project.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT		
FIRM NAME	(2) FIRM LOCATION (*City and State*)	(3) ROLE
MSMM Engineering, LLC	**New Orleans, LA, Houston, TX**	**Project Management / VE Team Members (Co-Facilitator/Cost Estimator: Don "D" Daigle, CVS, CCP; Civil: Jim Wilson, PE, PM: Josh Carson)**
Neelu, Inc.	**Smyrna, GA**	**VE Facilitation / VE Team Members (Facilitator: Ramesh Kalvakaalva, PE, CVS; Geotech: Garfield Wray, PE, D.GE, Constructability: Charles McDuff, PE, CVS-Life)**

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 **F-4**
21. TITLE AND LOCATION (*City and State*)	22. YEAR COMPLETED		
	PROFESSIONAL SERVICES	CONSTRUCTION (*If applicable*)	
VE Study - Hurricane Flood Protection Project-I-Wall Repair, Texas City, Texas	**2022**	**2024**	
a. PROJECT OWNER	b. POINT OF CONTACT	c. TELEPHONE NUMBER	
USACE, Galveston District	Mr. Jake Walsdorf, PLA VEO/A-E Contract Coordinator	409-766-3817	

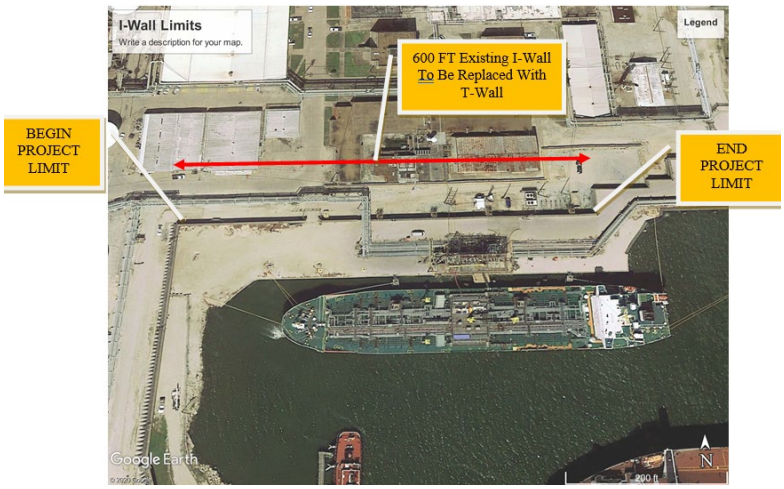
24. BRIEF DESCRIPTION OF PROJECT AND RELEVANCE TO THIS CONTRACT (*Include scope, size, cost*)

Project Design Firm: MSMM Engineering; VE Study Firm: Neelu, Inc.

Our team was tasked by the USACE Galveston District with the replacement of a failing Hurricane Protection I-wall in Texas City Texas. The project design was fully completed by MSMM while, Huitt-Zollars provided the ITR review of the entire system. Sub-consultant Neelu Inc. provided the in-person Value Engineering study that was conducted in unison with Galveston District personnel.

Project Description:

The project is part of the Texas City and Vicinity, Texas, Hurricane Flood Protection Project (HFPP) in Galveston County. Indications that the I-Wall has moved between STA 501+08.68 and STA 504+98.65 were noted during an inspection in February 2016. These indications include joint separation, spalled concrete at the joints, leaning I-Wall, 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 Dock 1 bulkhead and the I-Wall. A subsequent site visit on 24 March 2016 indicated continued settlement of the fill material between the I-Wall and Dock 1 as well as further movement of the I-Wall. According to new USACE standards, this section of I-Wall requires replacement and will be replaced by a T-wall.



The cantilevered I-Wall section was originally designed as part of the Texas City and Vicinity Hurricane Protection Project in 1967. It was designed in accordance with ACI 318-63 and EM 1110-1-2101 with the intention of reducing flood damage risks from the Galveston Bay to the industrial and residential area behind it. This I-Wall has a vertical height of 13 feet, an embedment ratio of 1.7, no scour protection, and is subject to hurricane surge, impact, and wave loading. The design of the I-Wall assumed a stable bulkhead backfill material at Dock 1, whose bulkhead is 80 feet from the face of the I-Wall. Borings in the area indicate foundation materials are medium to loose silty sands that extend to 10 feet below the bottom of the I-Wall.

There will be approximately 600 ft of floodwall constructed for this project, as measured on the flood side face of the walls. This length includes the monolith for the Vehicle Access Gate which will remain. Monolith lengths range from 36 ft. to 66 ft. There are a total of ten new monoliths.

Construction Cost:

Total Construction Budget at the Design Development (35%) phase totals approximately $15 million (not including contingency).

VE Workshop: February 18-21, 2021.

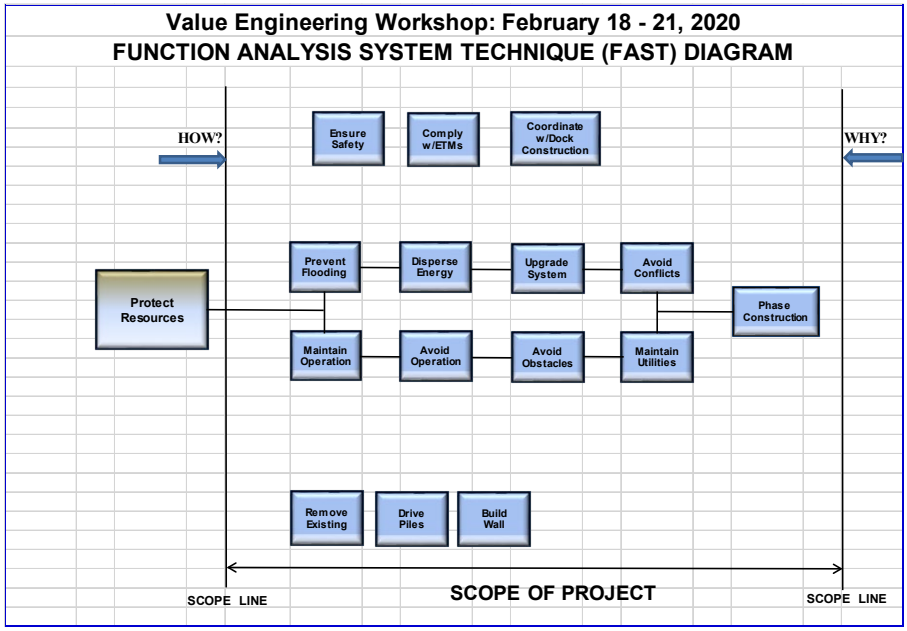
Facilitated by Ramesh Kalvakaalva, PE, CVS of Neelu Inc, Team Members were provided Neelu Inc and USACE Galveston District. SMEs included: Civil; Hydraulics; Geotechnical; Constructability; Operations; Cost Estimator, The VE Workshop adhered to the USACE Value Standard and the six step Value Engineering job plan as promulgated by SAVE International®. This six-step job plan included: I. Information Phase; II. Function Analysis Phase; III. Speculation/Creative Phase; IV. Evaluation Phase; V. Development Phase; VI. Presentation Phase. A FAST Diagram was developed to validate the Scope of the Operations and enable the VE Team to focus on the Functions identified as High Risk.
The VE Facilitator and PM also participated in the Implementation Meeting.

Objectives of the VE Study:

- Get the best return for construction dollars spent
- Assist in bringing the project within budget
- Assist in identifying the best approach for project delivery
- Reduce the risks associated with project delivery
- Minimize Life Cycle Costs for O & M
- Enhance the project outcome
- Where costs are reduced, do so without compromising vital functions

Function Analysis:

During this phase, the team reviewed the project from the simplest format in asking the questions of "What is the project supposed to do?", and "How is it supposed to accomplish this purpose?". In the Value Engineering vernacular, the answers to these questions are cast in the form of active verbs and measurable nouns. These verb/noun pairs form the basis of the function analysis that distinguishes a Value Engineering effort from a potentially damaging cost cutting exercise. With guidance from the VE Facilitator, the team developed a Function Analysis System Technique (FAST) diagram that depicts the flow of functions within this project.



Creative Ideas:

Objectives:

- Reduce the current (potential) budget overrun and reduce life cycle costs
- Improve functionality and quality of the Facility/Operation
- Reduce the time of construction
- Incorporate innovative technologies

This brainstorming session initially identified a large volume of ideas (44 that were then evaluated in the next phase.

Evaluation:

Criteria:

- Construction Cost Savings
- Life Cycle Costs (LCC)
- Ability to Implement the Idea
- General Acceptability of the Alternatives

- Constructability
- Operator Friendliness
- Process Improvement

Snapshot of Summary of Results:

US Army Corps of Engineers

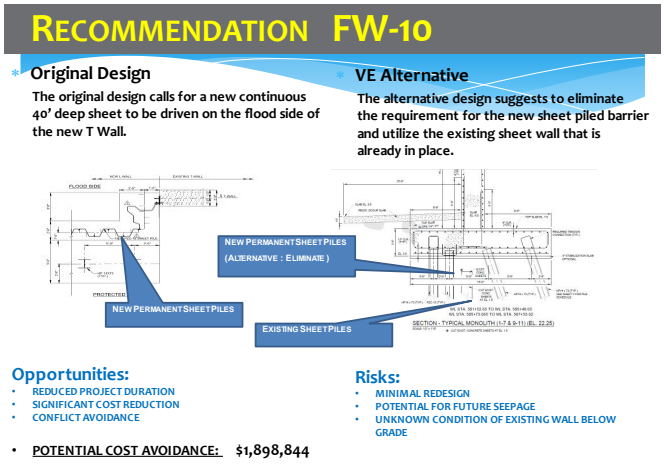
USACE GALVESTON DISTRICT

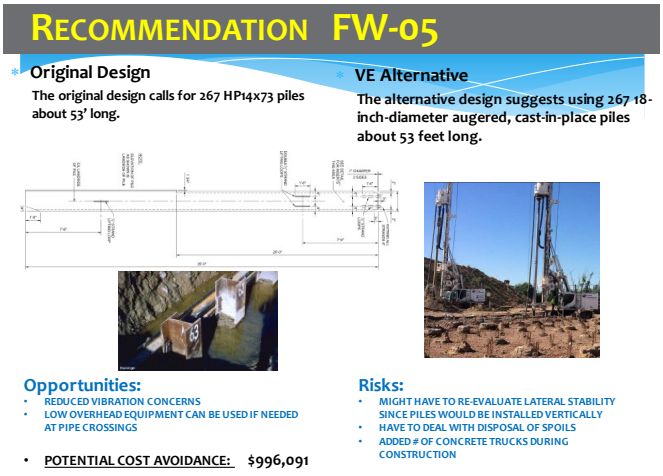
Texas City and Vicinity Hurricane Flood Protection Project-I-Wall Repair

Value Engineering Workshop: February 18-21, 2020 - SUMMARY OF RESULTS

		VE Team Ranking	Cost Original Design	Cost Alternative	Initial Cost Reduction
ALTERNATIVES AND DESIGN SUGGESTIONS					
FLOOD WALL (FW)					
FW-02	Modify Concrete Design	DS	**DESIGN SUGGESTION**		
FW-05	Use Augered Cast-In-Place Piles	4	$3,069,403	$2,073,312	$996,091
FW-07	Use Pressed-In Tubular Piles	DS	**DESIGN SUGGESTION**		
FW-10	Use Existing Sheet Pile And Eliminate New Sheet Piling	5	$1,898,844	$0	$1,898,844
FW-11	Selectively Reduce Depth Of Cut Off Wall	5	$1,784,880	$1,178,021	$606,859
FW-13	Ensure Access Through HESCO Baskets During Interim Phases	DS	**DESIGN SUGGESTION**		
FW-16	Reduce Wall Thickness Near Top Of Wall	5	**See FW-23**		
FW-18	Install Precast Scour Pads	4	$227,448	$311,040	($83,592)
FW-20	Reduce Width Of Monolith Base	4	$1,243,570	$1,208,927	$34,643
FW-21	Re-evaluate Thickness Of Monolith Base	4	$1,243,570	$1,065,917	$177,653
FW-23	Build Tapered Wall	5	$1,061,553	$884,975	$176,578
FW-24	Reduce Wall Thickness Over Entire Wall	5	$1,061,553	$884,975	$176,578
FW-25	Reduce Thickness Of Scour Protection Slab To 6"	5	$105,738	$63,443	$42,295
FW-30	Review Need For Temporary Protection Of Monoliths	5	$1,870,229	$0	$1,870,229
FW-31	Use HESCO Baskets At Areas Of Need Only	4	$1,022,361	$499,025	$523,336
FW-34	Revise Mobilization/Demobilization As A Result Of Durations vs Productivity Of Cited Equipment	5	$614,221	$460,728	$153,493

Presentation (Examples from Outbrief):





VE Results:

The workshop resulted in full development of fourteen (14) Design Alternatives (some mutually inclusive) that offer an estimated five million dollars ($5 Million) in potential first cost savings to be considered for implementation. These alternatives were selected as being reasonable considerations for incorporation in the design. There were also seven (7) Design Suggestions that offer measures to simplify construction, provide various means for reducing costs (in these cases the savings are hard to quantify), may help to improve the operational requirements for the facility, and reduce the construction duration.

Implemented Results:

6 Design Alternatives were accepted for a net savings of $2.5 Million. All Design Suggestions were flagged for consideration during the Final Design phase of the project.

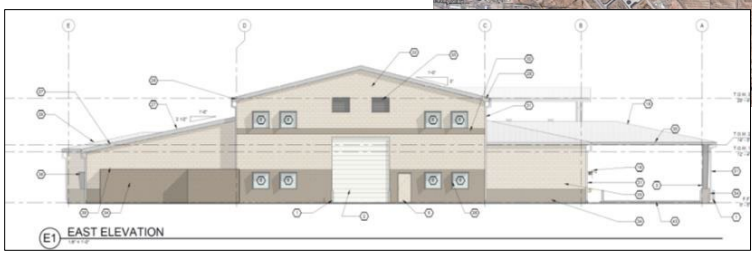
25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT		
FIRM NAME	(2) FIRM LOCATION (*City and State*)	(3) ROLE
MSMM Engineering, LLC	**New Orleans, LA, Houston, TX**	**Project Management / Design Team (Civil: Jim Wilson, PE; Structural: Robert Yokum, PE; Hydraulics: Scott Chehardy, PE; PM: Josh Carson, Cost-Don Daigle)**
Huitt-Zollars, Inc.	**Fort Worth, TX**	**ITR – Electrical – Scott Parma**
Neelu, Inc.	**Smyrna, GA**	**VE Facilitation / VE Team Members (Facilitator: Ramesh Kalvakaalva, PE, CVS; Co-Facilitator: David Hamilton, PE, CVS-Life; Geotech: Garfield Wray, PE, D.GE, Constructability: Charles McDuff, PE, CVS-Life)**

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 **F-5**
21. TITLE AND LOCATION (*City and State*)	22. YEAR COMPLETED		
Aerospace Ground Equipment (AGE) Complex, Davis-Monthan AFB, Tucson, AZ	PROFESSIONAL SERVICES **2019**	CONSTRUCTION (*If applicable*) **2020**	
a. PROJECT OWNER	b. POINT OF CONTACT	c. TELEPHONE NUMBER	
USACE, Albuquerque District	Mr. David Abbott, C.C.C., VMA District Value Officer (DVO)	505-342-3108	

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

Project Description:

AGE complex consists of administrative areas, maintenance area, and covered open-storage facility, with reinforced concrete foundations and floor slabs, structural-steel frames, standing-seam metal roof systems, splitfaced block, concrete hardstand for open storage, all utilities, site improvements, landscaping with landscape establishment, irrigation, asphalt pavement and parking, fire detection/protection, and demolition of 13 facilities and 2 associated canopies. Facilities will be designed as permanent construction in accordance with the DoD Unified Facilities Criteria (UFC) 1-200-01, General Building Requirements and UFC 1-200-02, High Performance and Sustainable Building Requirements. This project will comply with DoD antiterrorism/force protection requirements per UFC 4-010-01.



Construction Cost:

Total Construction Budget for this Design/Build project is approximately $15.5 Million.

VE Workshop: March 18-21, 2019

Facilitated by Ramesh Kalvakaalva, PE, CVS, of Neelu Inc., Team Members were provided by Neelu Inc and Legis Consultancy.

SMEs included: Civil; Architectural; Structural; Mechanical, Electrical, and Cost Estimator.

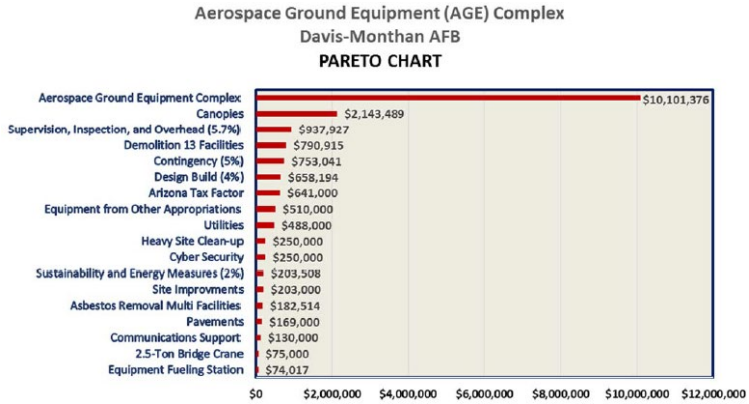
The VE Workshop adhered to the USACE Value Standard and the six step Value Engineering job plan as promulgated by SAVE International®. This six-step job plan included: I. Information Phase; II. Function Analysis Phase; III. Speculation/Creative Phase; IV. Evaluation Phase; V. Development Phase; VI. Presentation Phase. A Random Function Analysis with assigned Risks was developed and converted to a FAST Diagram to validate the Scope of the Project/Operation/Constructability.

The VE Facilitator (Ramesh Kalvakaalva) also participated in the Implementation Meeting.

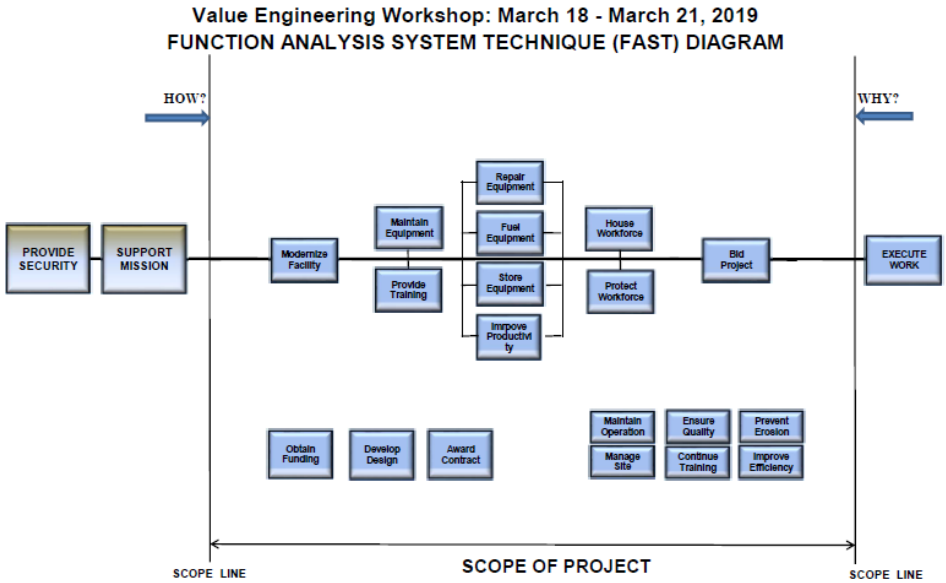
Objectives of the VE Study / Design Charrette:

- Identify High Risk Functions of the project and mitigate them
- Re-assess the budget
- Assist in identifying the best approach for project delivery
- Reduce the risks associated with project delivery
- Minimize Life Cycle Costs for O & M
- Enhance the project outcome
- Where costs are reduced, do so without compromising vital functions

Cost Model:



Function Analysis:
During this phase, the team reviewed the project from the simplest format in asking the questions of "What is the project supposed to do?", and "How is it supposed to accomplish this purpose?". In the Value Engineering vernacular, the answers to these questions are cast in the form of active verbs and measurable nouns. These verb/noun pairs form the basis of the function analysis that distinguishes a Value Engineering effort from a potentially damaging cost cutting exercise. With guidance from the VE Facilitator, the team developed a Function Analysis System Technique (FAST) diagram that depicts the flow of functions within this project.



Creative Ideas:
Objectives:

- Reduce the current (potential) budget overrun and reduce life cycle costs
- Improve functionality and quality of the Facility/Operation and Renovation Techniques adopted.
- Reduce the time of construction
- Incorporate innovative technologies

This brainstorming session initially identified a large volume of ideas (56) that were then evaluated in the next phase.

Evaluation:
Criteria:

- Construction Cost Savings
- Life Cycle Costs
- Ability to Implement the Idea
- General Acceptability of the Alternatives
- Constructability
- Operator Friendliness
- Process Improvement

The workshop resulted in full development of seventeen (17) Design Alternatives (some mutually inclusive) that offered an estimated two million dollars ($2 Million) in potential first cost savings to be considered for implementation. These alternatives were selected as being reasonable considerations for incorporation in the design. There were also nineteen (19) Design Suggestions that offered measures to simplify construction, provide various means for reducing costs (in these cases these savings are hard to quantify), may help to improve the operational requirements for the facility, and reduce the construction duration.

Snapshot of Summary of Results:

LEGIS CONSULTANCY, INC. — US Army Corps of Engineers

USACE ALBUQUERQUE DISTRICT

Aerospace Ground Equipment (AGE) Complex; Davis-Monthan AFB

Value Engineering Workshop: March 18 - March 21, 2019 - SUMMARY OF RESULTS

		VE Team Ranking	Cost Original Design	Cost Alternative	Initial Cost Reduction
VALUE ALTERNATIVES					
ARCHITECTURAL AND CIVIL (AC)					
AC-06	Install Glazing In Lieu Of Kalwall	4	$14,467	$11,173	$3,294
AC-07	Selectively Use Metal Wall Panels At Exterior	5	$63,506	$22,423	$41,083
AC-08	Build Entire Façade With Split Face Block	5	$529,952	$479,621	$50,331
AC-09	Build Entire Structure With PEMB	5	$7,450,119	$6,535,193	$914,926
AC-10	Build High Bay Area With PEMB	5	$3,859,812	$3,385,800	$474,012
AC-11	Eliminate Pre-finished Solar Control Device	5	$22,230	$0	$22,230
AC-12	Harness Daylight With Skylights In Lieu Of Clerestory	4	$14,405	$14,274	$131
AC-13	Reduce High Bay Height	5	$340,113	$313,257	$26,856
AC-14	Reduce Admin Building Height	5	$84,486	$70,778	$13,708
AC-15	Install Single Slope Roofs Over Tool Crib Area	4	$73,872	$64,133	$9,739
AC-16	Reduce Size Of Conference Training Room	4	$240,084	$153,900	$86,184
AC-17	Eliminate Canopy Outside Break Room	5	$44,660	$0	$44,660
AC-18	Use Exterior Insulation On Return Air Ductwork In Lieu Of Line Ductwork	5	$20,833	$24,944	($4,111)
AC-19	Install Drinking Fountains For Maintenance Staff	5	$4,655	$9,309	($4,654)
AC-20	Install Hand/Scrub Sinks For Maintenance Staff	5	$8,550	$17,100	($8,550)
AC-21	Re-evaluate Pond Modifications	5	$194,670	$86,045	$108,625
AC-22	Re-evaluate Canopy Structure	5	$1,451,141	$1,269,590	$181,551
AC-23	Optimize Site Cleanup Requirements	5	$427,500	$342,000	$85,500
AC-25	Verify/Reduce Size Of Domestic Water Service	5	$6,498	$4,104	$2,394
AC-27	Use Rigid Insulation For Roof And Exterior Walls	5	$102,027	$76,066	$25,961
AC-28	Selectively Use Sealed Concrete In Lieu Of Ceramic Tiles In Bathrooms	4	$8,550	$5,985	$2,565
MECHANICAL AND ELECTRICAL (ME)					
ME-01	Install Packaged Air Cooled DX Cooling With Gas Heating HVAC Unit	4	$584,100	$171,000	$413,100
ME-02	Salvage Existing Main Electric Service Transformer	5	$40,874	$3,420	$37,454
ME-04	Utilize Aluminum Conductors For Transformer Secondary	5	$5,207	$3,720	$1,487
ME-05	Right-Size Switchgear	5	$15,561	$7,830	$7,731
ME-06	Install Energy Recovery From Bathroom Exhaust	5	$1,548	$6,129	($4,581)
ME-07	Use Ground Source Heat Pumps	4	$384,536	$553,732	($169,196)

Snapshots from VE Report:

LEGIS CONSULTANCY, INC. — US Army Corps of Engineers

Value Analysis Alternative

PROJECT:	Aerospace Ground Equipment (AGE) Complex Davis-Monthan AFB	ALTERNATIVE NO.: AC-10
DESCRIPTION:	Build High Bay Area With PEMB	SHEET NO.: 1 of 5

ORIGINAL DESIGN:

The original design calls for reinforced concrete blocks with metal roof framing at the high maintenance bay.

ALTERNATIVE:

The alternative design suggests using a Pre-Engineered Metal Building System at the maintenance bay potentially reducing construction costs.

OPPORTUNITIES:

- REDUCED CONSTRUCTION COSTS
- FASTER CONSTRUCTION
- EASE OF GANTRY CRANE INSTALLATION

RISKS:

- NO SIGNIFICANT DOWNSIDE
- ADDING ALTERNATE FIRE RATING PROTECTION BETWEEN THE MAINTENANCE AND ADMINISTRATION SPACES

CATEGORIES:

Safety	X Operations	Environment	X Construction	Other

VE RESOLUTION: PENDING FURTHER ANALYSIS

This VE recommendation is possible. A PEMB could be considered as an Option. Whoever gets the D-B Contract is going to propose this at the kick-off anyhow.

COST SUMMARY	INITIAL COST	PRESENT WORTH RECURRING COSTS	PRESENT WORTH LIFE-CYCLE COST
COST SUMMARY	$ 3,859,812	$	$ 3,859,812
ALTERNATIVE	$ 3,385,800	$	$ 3,385,800
SAVINGS	$ 474,012	$	$ 474,012

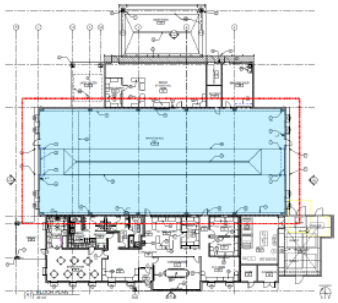
LEGIS CONSULTANCY, INC. — US Army Corps of Engineers

Illustration

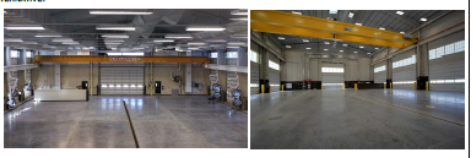
PROJECT:	Aerospace Ground Equipment (AGE) Complex Davis-Monthan AFB	ALTERNATIVE NO.: AC-10
DESCRIPTION:	Build High Bay Area With PEMB	SHEET NO.: 3 of 5

ORIGINAL DESIGN:

THE ORIGINAL DESIGN AND THE ALTERNATIVE DESIGN WILL HAVE THE SAME FLOOR PLAN



ALTERNATIVE:



LEGIS CONSULTANCY, INC. — US Army Corps of Engineers

COST WORKSHEET

PROJECT:	Aerospace Ground Equipment (AGE) Complex Davis-Monthan AFB	ALTERNATIVE NO.: ME-01
DESCRIPTION:	Install Packaged Air Cooled DX Cooling With HVAC Gas Heating Unit	SHEET NO. 3 of 3

CONSTRUCTION ITEM		ORIGINAL ESTIMATE			PROPOSED ESTIMATE		
ITEM	UNITS	NO. OF UNITS	COST/ UNIT	TOTAL	NO. OF UNITS	COST/ UNIT	TOTAL
Chiller	EA	1	$65,050	$ 65,050			$ -
Boiler	EA	2	$8,912	$ 17,824			$ -
Pumps	EA	6	$27,691	$ 166,146			$ -
Heat recovery package	EA	1	$7,032	$ 7,032			$ -
Air Handling unit	EA	1	$33,153	$ 33,153			$ -
Piping	LS	1	$25,849	$ 25,849			$ -
				$ -			$ -
Packaged VAV outdoor unit	EA				1	$ 100,000.00	$ 100,000
				$ -			$ -
balancing chiller	EA	1	$830	$ 830			$ -
balancing boiler	EA	1	$428	$ 428			$ -
piping purge	EA	1	$2,797	$ 2,797			$ -
pipe testing	EA	1	$ 2,720.00	$ 2,720			$ -
control components	EA	5	$ 3,950	$ 19,750			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
				$ -			$ -
Sub-total				$ 341,579			$ 100,000
Mark-up at 71.00%				$ 242,521			$ 71,000
TOTAL				$ 684,100			$ 171,000
Cost Avoidance / (Value Addition):							$413,100

VE Results:
The workshop resulted in full development of 34 Design Alternatives (some mutually inclusive) that offered an estimated $3 Million in potential first cost savings to be considered for implementation. There were also 16 Design Suggestions that offer measures to simplify construction, provide various means for reducing costs (in these cases these savings are hard to quantify), may help to improve the operational requirements for the facility and reduce the construction duration.

Implemented Results:
20 Design Alternatives were accepted for a net savings of $1.25 Million. Design Suggestions were evaluated for consideration during the Final Design phase.

25. FIRMS FROM SECTION C INVOLVED WITH THIS PROJECT		
FIRM NAME	(2) FIRM LOCATION (*City and State*)	(3) ROLE
Neelu, Inc	**Smyrna, GA**	**VE Facilitation / VE Team Members (Facilitator: Ramesh Kalvakaalva, PE, CVS; SMEs: Charles McDuff, PE, CVS-Life; Amir Fallahi, PE; Phillip Nejman, PE; Jeffrey Warmington; AIA; Vigen Yedigarian, PE)**
Legis Consultancy, Inc.	**Atlanta, GA**	**Project Management / Cost Estimator (David Smart; PMP Michael Ray, PE, CCP, PSP)**

PART I, SECTION G

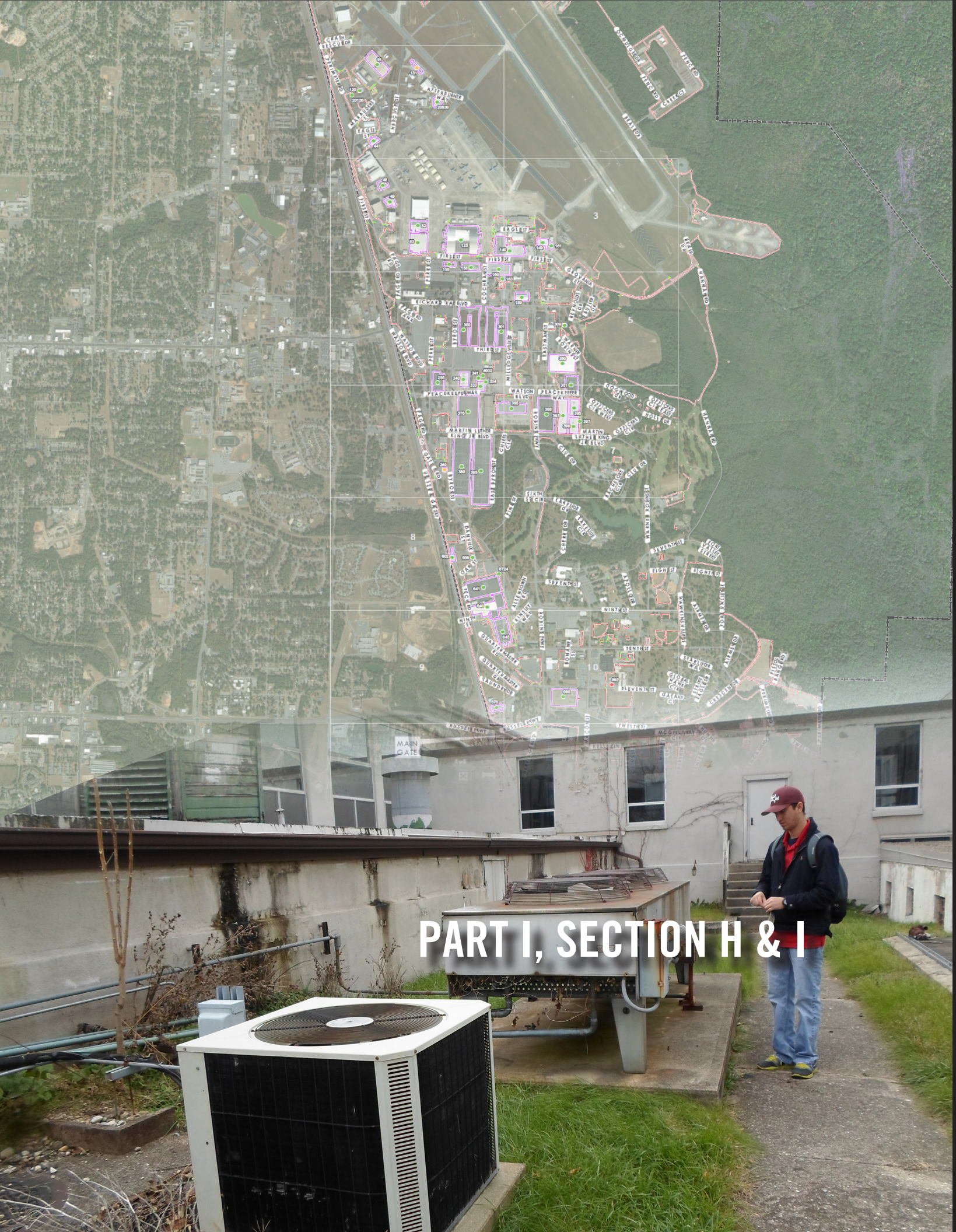
PART I, SECTION G

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
Manish Mardia, PE - MHZ	Program Manager	X	X	X	X	
Dan Clancy, CVS, AIA - MHZ	Senior VE Facilitator		X			
Leslie Thomas, CVS - MHZ	Senior VE Facilitator / Risk Analyst	X	X	X	X	
Ramesh Kalvakaalva, PE, CVS - Neelu	Senior VE Facilitator / Risk Analyst	X	X	X	X	X
David Hamilton, CVS - Neelu	Senior VE Facilitator / Cost Estimator	X	X	X	X	X
Charles McDuff, CVS - MHZ	Senior (CVS) Facilitator					
Don "D" Daigle, CVS, CPE - MHZ	Junior VE Facilitator / Cost Estimator	X	X	X		
Wade Martin, CVS, CCP, LEED AP - RIBUSC	Junior VE Facilitator					
Josh Carson - MHZ	Project Manager	X	X	X	X	
Neerja Tayal, PMP - Neelu	Project Manager	X	X	X	X	X
Jim Wilson, PE, LEED AP - MHZ	Civil Engineer	X	X	X	X	
Scott Chehardy, PE - MHZ	Civil Engineer	X	X	X	X	
Amir Fallahi, PE, CFM - Neelu	Civil Engineer				X	X
Robert Yokum, PE - MHZ	Structural Engineer		X		X	
Tom Hassenboehler, PE - MHZ	Structural Engineer					
Phillip Nejman, PE - Neelu	Structural Engineer		X			X
Rao Patri, PE, SE - Neelu	Structural Engineer					
Jeff Wilson, PE, LEED AP - MHZ	Mechanical Engineer		X			
Vigen Yedigarian, PE - Neelu	Mechanical Engineer		X			X
Harry Hawney, PE - MHZ	Electrical Engineer		X		X	
Scott Parma, PE, LEED AP - MHZ	Electrical Engineer		X			
Bill Hoelscher, RA, LEED AP - MHZ	Architect		X			
Jeffrey Warmington, AIA - Neelu	Architect		X			X
David Smart, PMP - Legis	Cost Engineer					X
Michael Ray, CCP, PSP - Legis	Cost Engineer/Risk Analyst					X
Rendy Tendean, CCP - RIBUSC	Cost Engineer/Scheduler					
Garfield Wray, PE - Neelu	Geotechnical Engineer	X	X	X	X	X
Randy Hickey, RA, RID - MHZ	Interior Designer		X			

29. EXAMPLE PROJECTS KEY

NO	TITLE OF EXAMPLE PROJECT (FROM SECTION F)
1.	PA 14/PA15 Dewatering, Houston Ship Channel, Harris County, Texas (USACE Galveston District)
2.	Design Build (DB) Request for Proposal (RFP) Development for Dallas Floodway - 277k Levee Raise and Delta Pump Station, Dallas, Texas (USACE Fort Worth District)
3.	Corpus Christi Ship Channel - PA 1, Corpus Christi, Texas (USACE Galveston District)
4.	Hurricane Flood Protection Project-I-Wall Repair, Texas City, Texas (USACE Galveston District)
5.	Aerospace Ground Equipment (Age) Complex, Davis-Monthan AFB, Tucson, AZ (USACE Albuquerque District)



PART I, SECTION H & I

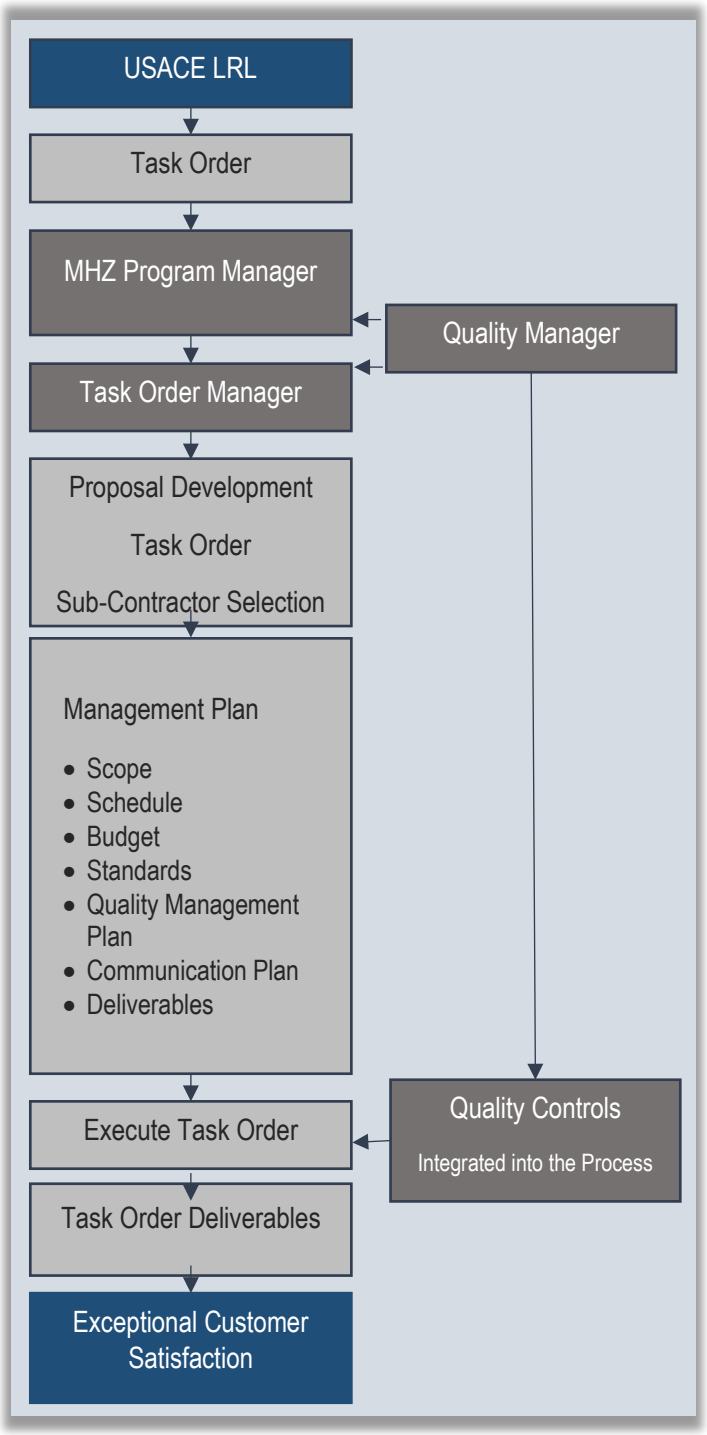
PART I, SECTION H & I

H. Additional Information

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

INTRODUCTION:

The Prime A-E for this assignment will be MSMM Huitt-Zollars, A Joint Venture (MHZ). We are certified by the Small Business Administration as an approved Mentor Protégé small business enterprise. The two partner firms comprising our Joint Venture are MSMM Engineering, LLC headquartered in New Orleans, LA (with a Texas office) and Huitt-Zollars, Inc. headquartered in Dallas, TX (with several offices throughout the AOR), both of whom are full-service USACE focused firms specializing in all services requested by USACE Districts, inclusive of Value Engineering Studies, life-cycle cost analysis, MCACES cost estimates, full scale design-bid-build construction packages and design-build RFP packages. Our combined resources offer the Louisville District a full-service team with a deep portfolio in executing Federal IDIQ contracts. Both firms have extensive USACE planning, design, construction phase and project management experience, and as a team we are currently engaged with several USACE Districts across the country. Another advantage we offer is the nationwide coverage through our JV's multiple offices.



Our team believes that we are a perfect match for this assignment because:

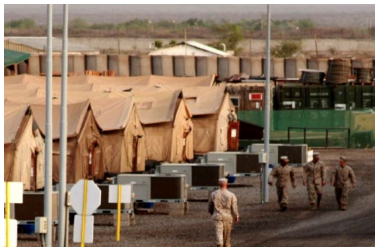
- As a Prime JV, we employ four (4) Registered CVS and have extensive bench strength for all disciplines, affording us the ability to conduct multiple concurrent Value Engineering studies at multiple locations.
- Recent completion of Value Engineering Studies for multiple USACE Districts.
- Additionally, combining our team resources, we have as many as ten (10) registered CVS available for project placement.
- Understanding of USACE processes, understanding the required involvement of project sponsors and end users.
- Experience across all USACE business lines inclusive of military, civil works, IIS, and construction phase services.
- Both Prime firms carry extraordinarily strong CPARS ratings for completed projects.

Among the advantages, that we offer you on this assignment is the responsiveness of a small business with a proven history, with the Joint Venture carrying nationwide resources. Our combined resources offer USACE LRL a full-service team that specializes in Value Engineering and Value Management (including Risk Analysis) on Civil Works and Military projects on a global basis with a deep understanding of the USACE LRL District's Mission. Our team has completed USACE design services for projects as diverse as the largest drainage pump station in the world, the Western Closure Complex, to detailed flood risk reduction projects such as floodwalls and levees. In addition to 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 of - and thousands of individual task orders under dozens of master agreements such as yours - 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 included requirements of this scope. The flow chart above shows our internal process which we follow on every task order to ensure your projects' success.

The MHZ JV is proud to offer the Louisville District three key sub-consultants for the execution of the requested services. Our Joint Venture has worked with each of these firms on several task orders and takes immense pride in adding them to this team, knowing that the quality of work, responsiveness, and experienced personnel they have proposed will be representative of the work product our Joint Venture continually provides USACE districts across the country. In addition to these benefits, this group of subconsultants diversifies our capabilities in specialty areas of technical expertise and enhances our commitment to the participation of small business entities.

Our comprehensive team includes Neelu, Inc., a WOSB and a major contributing sub-consultant, and is also supported by Legis Consultancy, Inc. (SDVOSB), and RIB – US Cost, Inc.



Neelu, Inc., (NI), is a Woman Owned Small Business (WOSB) founded in 2010 and comprised of a group of likeminded professionals with a passion for providing sound Engineering and Business Solutions. **NI**'s team of highly dedicated and technically skilled professionals offers a wide range of services derived from experience in Value Engineering; Cost Schedule and Risk Assessment (Risk Management); Infrastructure Engineering, Project, and Construction Management; Economic Analysis (LCCA); and Business Solutions. **NI** has the capability of augmenting teams per the requirements of projects from resources of these complementary, like-minded professionals, based on camaraderie developed amongst them from working as one team on a variety of projects around the nation.

NI has provided Value Management solutions for a diverse clientele including various Federal Agencies, City and State Agencies, Departments of Transportation, and other Private Industrial and Commercial Agencies. With over 250 VE Studies over the past 5 years alone, the spectrum of their projects has included Transportation Design (Roadways, Bridges and Support facilities), Infrastructure Design and Maintenance (Buildings, Water/Wastewater Facilities, Navigation/Flood Control Structures, Defense Structures, etc.), and Business Solutions (Systems, Processes, Infrastructure, and Facilities).
CORE SERVICES: The services **NI** offers fall under the broad categories listed below:
PROJECT & CONSTRUCTION MANAGEMENT: Project Scheduling; Cost Estimating; Risk Analysis and Management; Design & Constructability Reviews; Construction Specification Creation or Reviews; Independent Peer Reviews
INFRASTRUCTURE: Civil and Site Design; Single & Multi Storied Structures; Underground Structures (Tunnels, Sub-systems, Sewage Structures, etc.); Environmental Structures (Water / Wastewater Treatment Plants & Facilities); Institutional Structures (Schools & Colleges); Medical Facilities; Airports (Landside & Airside); Flood Protection Structures; Communication Facilities - Towers, Data Centers, Mission Critical Facilities; Community Facilities – Parks and Recreation Centers, ADA Accessibility.

TRANSPORTATION: Highway Design; Bridge Design; Transit Design
VALUE ENGINEERING: Value Management; Function & Cost Analysis; Life Cycle Cost Analysis; Design, Construction, Processes & Systems
CLIENTS: USACE; NAVFAC; US DoD; SFWMD; State Departments of Transportations; Municipalities; Private Industries

Legis Consultancy, Inc., (**Legis**) is a Service-Disabled Veteran-Owned Small Business (SDVOSB) located in Atlanta, Georgia. The firm was founded in 2001 by partners from other management consulting firms; core capabilities include cost engineering (estimating, scheduling, economic risk analysis, value engineering), litigation consulting, program and project management, and management consulting. **Legis** has provided services for domestic projects in 28 U.S. states and international projects in 15 countries.

Projects for various U.S. Government agencies include the U.S. Army Corps of Engineer Districts of Tulsa, New Orleans, Albuquerque, Los Angeles, Baltimore, Huntington, St Louis, New York, Jacksonville, Buffalo, Japan, East Asia, Iraq, and Afghanistan. **Legis** has supported the U.S. Department of Defense in California, Arizona and New Mexico, the U.S. Department of State in Uganda, Namibia, Denmark, Honduras and Afghanistan, the U.S. Department of Veterans Affairs in California, Colorado, Florida, Oregon, and Louisiana.

Legis participated in projects for the U.S. Department of Energy in New Mexico, California, Tennessee, South Carolina, and Washington State. The firm also holds a $7.5 million, 5-year cost engineering IDIQ contract with USACE-Walla Walla.

Legis has considerable experience in MILCON, IIS, HTRW, hospital and clinic construction, airfields, runways, hangars, laboratories, warhead test facilities, hot cell D&D, and electrical power plants. Additionally, **Legis** staff is experienced in civil works projects for flood control, dredging, locks & dams, ports & harbors, canals, levees, flood walls, pump stations, reservoirs, general marine construction, water treatment facilities, sewage treatment facilities, environmental restoration, bridges, and roadways.

Legis' expertise in software includes MCACES-MII for cost estimating, Primavera for scheduling, and Crystal Ball and Polaris for Integrated Cost and Schedule Risk Analysis.

RIB U.S. Cost is a leader in conducting and in the performance of Value Engineering Studies having led more than 1500 in the past years. **RIB U.S. Cost** takes a holistic approach to value engineering studies and understand that the successful study will embody aspects of operational understanding, risk assessment, constructability analysis, programming and design, and cost and schedule analysis.

RIB U.S. Cost is a recognized leader in the field of Value Engineering. They provide comprehensive services to assist project owners, designers and/or developers in obtaining the maximum possible value for each dollar invested. They staff and direct full forty hour V.E. and/or V.A. workshops for public and private sector clients, having worked for such agencies as *the U.S. Army Corps of Engineers, U.S. Air Force, U.S. Department of Energy, U.S. Department of General Services, U.S. Navy, Fairfax County, Metropolitan Atlanta Rapid Transit Authority, the Port Authority of New York and New Jersey, the Florida, Georgia, and South Carolina Departments of Transportation, New York City Office of Management and Budget, and the National Park Service*, among others.

RIB U.S. Cost's V.E. practice is a core specialty for the firm and has been offered for all their 37 years - since 1983. Along with their V.E./V.A. services, RIB U.S. Cost also provides the services below.

Project Estimates	Project Schedules
Budget Development/Validation	Construction Market Studies
Schedule Review and Analysis	Time Impact Analysis
Change Orders Evaluation	GMP, MGC Negotiation Support
Dispute Resolution	Change Management
Bid Analysis	Work-In-Place Projections
Cash Flow Projections	Life Cycle Cost Analyses
Project Control Reports	Damages and Back Charges Calculations
Process Improvement Support	Risk Analyses

With 37 years of experience, their expert teams have completed 1500+ Value Engineering Studies / Workshops for all types of design and construction projects including:

K-12 Facilities	Police, Fire Facilities
Administrative & HQ Buildings	Public Service Facilities / Buildings
Large Warehouses	Water / Wastewater Collection & Treatment
Waterfront Facilities	Hospitals
Maintenance / Training Facilities	Light & Heavy Rail Mass Transit Systems

Each project is approached as an entity and the team study tailored to address its specific requirements.

TEAM INTER-RELATIONSHIPS

The MHZ Team has a long-established working relationship. This Team is not a union of convenience but one with an objective of working together, by virtue of inter-relationships, to seamlessly provide the best results to the USACE LRL.

MSMM, Huitt-Zollars and Neelu Inc are established teaming partners on a current 5-year IDIQ for the USACE Fort Worth District. The MHZ JV has been awarded recent design contracts by the USACE Tulsa District, United States Air Force, and the National Park Service, where Neelu and Legis are also teaming partners. Personnel of MSMM and NI go back over 25 years in working together on a myriad of projects Nationwide. Since each of the firms were established over decade ago, the same personnel have worked together on numerous projects.

THE MHZ TEAM DIFFERENCE

- ✔CVSs with 150+ years of combined experience; and 1000+ VE studies, including those for the USACE
- ✔**Innovative** adaptation of the USACE VE Standard and SAVE International Job Plan to maximize **ROI**
- ✔Team SMEs access to regional experts
- ✔Zero learning curve leading to **actionable VE deliverables**
- ✔Proven **QA/QC** program enabling USACE LRL leadership to move forward with speedier **implementation**
- ✔Proactive application of **context sensitive solutions** respectful to stakeholder agreements

NI and Legis are teaming partners on VE Studies for USACE Albuquerque and have a continued relationship in pursuit of opportunities.

All Cost Estimators have, at some point, been trained in the use of MCACES – MII through RIB US Cost.

UNDERSTANDING OF SCOPE OF SERVICES AND APPROACH TO EXECUTING TASK ORDERS

We understand that tasks assigned under this contract will involve applying VE & CSRA on Civil Works/Military/Environmental Projects, Standards, Specifications, Processes and may include Training of personnel. Our execution of VE & CSRA adhere to the USACE and SAVE International® Standards, Cost Estimate Reviews (CER) using Major Project Program Cost Estimating Guidance. Other resources we take guidance from are the Project Management Institute's (PMI) Project Management Body of Knowledge (PMBOK®), incorporating the best processes into the workshops we Facilitate. We are aware that Projects subject to VE & CSRA may be of the design-bid-build (at the Concept, PD&E, DDR stages) or design-build types. Also, we have Facilitated VE & CSRA Workshops as: i) Stand-alone CSRA Workshops; ii) Stand Alone VE Studies; iii) Combined VE & CSRA Study; iv) Stand Alone CSRA Training; v) Stand Alone VE Training & vi) Combined VE and CSRA Training. Our Facilitators have led VE & CSRA studies with teams that were comprised of: 1) Personnel appointed by the district; 2) A combination of Personnel appointed by the district and provided by the Consultant; 3) All Personnel provided by the Consultant.

PERFORMING SCOPE OF SERVICES

- ✔Criteria for Team Member selection
- ✔Emphasis on Function Analysis
- ✔Innovative Analytical Methods
- ✔Wealth of resources for flexibility
- ✔Capable of forming multiple teams at short notice
- ✔Holistic Approach Using Risk Analysis and LCCA

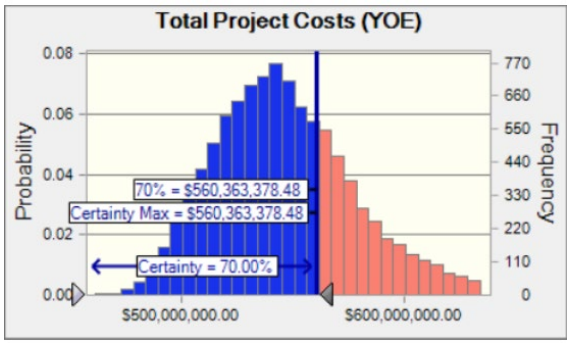
All VE Studies are completed under the guidelines of USACE COVE POLICY LETTER # 2015-03.

- ✔Effective VE process through adaptation.
- ✔Measured ideas.
- ✔Collaborative team approach.
- ✔VMF1 & VMF2 SAVE International® certified trainers.
- ✔Schedule management.
- ✔Cost and Risk management.
- ✔Respectful of USACE's budget constraints.
- ✔Dedicated resources.
- ✔Effective communications.

CSRA Training: CSRA Workshops could be coupled with an optional inclusion of formal training. For CSRA, we always take time to begin Workshops with an introduction to the process along with visual aids. This knowledge transfer exercise can also be expanded, to complete our customized Training Program. The topics covered adhere to Industry Guidelines and include i.) Risk Management

Planning; ii) Risk Identification; iii) Qualitative Risk Analysis; iv) Quantitative Risk Analysis; v) Risk Response Planning; vi) Risk Monitoring and Control; vii) Earned Value Management (EVM); viii) Cost Estimating; and ix) Cost & Schedule Control.

VE Training: For VE Workshops, we have always made the effort to educate the Team Members on the Six-Step Job Plan to generate their interest in the process, thereby ensuring productivity. Our VE Facilitators are SAVE International® Certified VMF1 and VMF2 trainers, have conducted numerous standalone Training Workshops and can provide this opportunity to USACE team members as part of a VE Study or standalone sessions. Team members may take the VMA examination upon completing a simultaneous 40-hour VMF1 Workshop. They could then pursue a CVS qualification upon completion of a separate VMF2 Workshop and fulfilling SAVE International® requirements to take that exam. Our VE Facilitators have also provided Team Leader training to many clients' personnel in the USA and abroad.



a. Previous CSRA Experience with Complex Projects

Our CSRA staff has delivered over 200 Studies and supported multiple teams providing cost estimate reviews, risk and probability assessments, and modeling for major, complex transportation projects nationwide for the USACE, FHWA, State DOTs, Regional Mobility Agencies, and other entities. Highlights of recent Major Projects Unit Studies, Cost Estimate Reviews, Risk/Probability Analysis for Major Projects (>$0.5 billion) Nationwide: i) Pennsylvania Turnpike/I-95 Interchange, PA; ii) Route 11 and I-95/I-395/Route 11 Interchange, CT; iii) I-95 New Haven Harbor Crossing, CT; iv) Maryland Inter-County Connector, MD; v) Process Review, Vermont Agency of Transportation, VT; vi) St. Croix River Crossing Bridge Project, MN and WI; vii) Legacy Parkway, UT; viii) I-40 Cross Town Project, OK; ix) I-93 Improvements, NH; x) New Mississippi River Bridge, IL and MO; xi) San Francisco-Oakland Bay Bridge Project, CA; xii) Florida's Turnpike Toll Plazas and Expansion Program. The Team's other related experience include those for TxDOT, CDOT, VDOT, GDOT, NCDOT, CALTRANS, LA Metro, Port Authority of New York, etc.

b. Previous VE Experience on Major Projects (details of diversity showcased in the following pages)

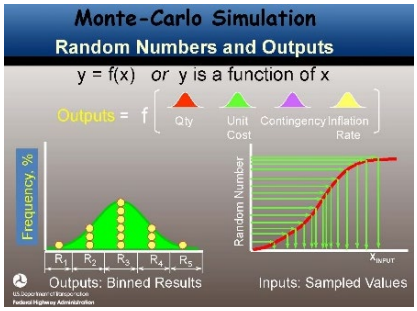
The MHZ team's VE staff has delivered over 750 successful results to various USACE Districts, DOT's, FDOT Districts, and others around the country. The Team delivered 25+ VE Studies for the USACE and 35+ VE Studies for FDOT alone between 2015 and 2020. Projects that were the subject of VE included Navigation Flood Protection Systems, Base and Airfield Upgrades, Rails to Trails, Urban Arterials, Rural Corridors, Interstates, Tollways, Resurfacing and Rest Areas. Example highlights of VE Studies this same Team delivered to the various FDOT Districts in the past 5 years: FDOT, District 1: 1) 15th St E/301 Blvd E From Tallevast Rd To US 41; 2) SR 60 from CR 630 to East of Kissimmee River Bridge; FDOT, District 2: 1) I-95 (SR-9) from SR 202 (JTB) to Atlantic Blvd.; 2) I-95 (SR-9) R&R (Including Rest Areas); FDOT, Districts 5: 1) I-4, Segment 5, Ultimate Section; 2) CR 470 From CR 527 to SR 91 (Florida Turnpike); 3) SR 600 From 1900' West of Poinciana Blvd to CR 535; 4) SR 44 over St. Johns River, 5) NASA Causeway Bridge Replacement; 6) SR-9/I-95 from NB Rest Area to SB Rest Area, Brevard County; FDOT, Districts 6: 1) Palmetto Expressway Improvements – CRA+VE; FDOT, Districts 7: 1) *US 19 from 66th Ave. N. to 118th Ave. 2) US 92 from I-4 to CL Rd.;* FDOT, Turnpike: 1) CRA+VE for Central Polk Parkway from US 17 (SR 35) to SR 60. The table alongside lists a sample of results obtained from some of the VE Studies performed for FDOT in the past few years. Civil Works and DoD Projects included USACE Bases around the world, Navigation and Flood Control Structures, Sensitive Training Facilities and Labs, Medical Centers, and Educational Institutions, to name a few.

FPN #	Const. Cost	Creative Ideas	VE Alternatives	Implemente d Ideas	Realized Savings
201210-3	$441 Million	36	13	15	**$39 Milliom**
418403 3	$58 Million	57	19	14	**$16 Million**
435893 1	$20 Million	41	18	15	**$3 Million**
434912 1	$75 Million	40	19	24	**$25 Million**
407402-3 & 407403-4	$541 Million	78	25	14	**$51.25 Million**
430132-1	$129 Million	81	25	8	**$25.5 Million**
432259-2	$290 Million	77	29	11	**$5.5 Million**

c. Knowledge of CSRA Process Including Approach to Conducting Workshop

Process: The **MHZ team** will work interactively with the USACE LRL VEO (or their designee), and the Project Manager to produce a workshop that has the right members, engages all participants for input, and develops a consensus of the workshop participants to arrive at a meaningful report. Once we are notified of the need for a CSRA, we will deliver the following process:

1. Identify team: Our intent is to have SMEs with the greatest knowledge of the project to tap into their understanding of the potential project risks; 2. Schedule Workshop & Presentations: We will coordinate with the project manager to schedule a pre-workshop preparatory session and the workshop and post-workshop presentation, including notifying participants well in advance to ensure the greatest attendance; 3. Initial Contact & Preparatory Session: The Risk Lead will confirm project scope, assumptions, and delivery strategy, and will establish the sequence of major project schedule activities in terms of a "flow chart". The CSRA Facilitator or Cost and Schedule Lead will facilitate an initial discussion on base cost and schedule. Any additional requirement for the Risk Assessment Workshop will be clearly defined during this meeting; 4. Risk Assessment Workshop: A typical workshop will be approximately three (3) days in duration and may vary depending on project scope and analysis needs. The project flow chart will be reviewed, and the Facilitator or Cost and Schedule Lead will conduct review of the "base" cost and schedule. The Risk Lead will identify and assess "risk factors", to include threats and opportunities with each including the probability of occurrence and impacts to cost & schedule to utilize in the Monte Carlo modeling. The Risk Lead will also elicit subjective assessments from project team and Subject Matter Experts (SMEs). All risk information will be documented in the "risk register"; 5. Risk Analysis and Modeling: Within three weeks after the conclusion of the risk assessment workshop, our team will submit a draft report that combines the "base" and non-mitigated "risk" factors with the flow chart to quantify uncertainty in the project. Critical threats and opportunities will be prioritized within the Crystal Ball program, based on the assessment of potential project impacts. Modeling will adjust the probabilities to calibrate the cost/schedule impacts; 6. Risk Assessment Workshop Results Presentation: This can be performed in person or via a webinar if needed to avoid travel and disruption; 7. Risk Assessment and Risk Management Workshop Analysis and Report: Approximately two weeks after the approved draft report, finalize the Risk Assessment analysis (assuming no significant changes to the Risk Assessment) and prepare a written report on the Workshop results; 8. Risk Response Strategies & Additional Modeling: Conduct an analysis for the proposed risk response strategies plan, including quantifying uncertainty in mitigated cost and schedule and prioritizing the residual threats and opportunities. Finalize Risk Assessment inputs, and if results from the risk assessment indicate the need, a) facilitate the identification of potential risk management actions to address critical risks and key opportunities as identified during the Risk Assessment, b) facilitate quantification of the costs and benefits of proposed actions (in terms of changes to base factors and risk factors), and c) document adequately. The approximate schedule for this process from NTP could be:



Process Step	Approximate Typical CSRA Schedule (Months)						
	1	2	3	4	5	6	7
1. Identify team							
2. Schedule Workshop & Presentations							
3. Initial Contact & Prep. Session							
4. Risk Assessment Workshop							
5. Risk Analysis & Modeling							
6. Workshop Results Presentation							
7. Workshop Report							
8. Risk Response Strategies & Addtl. Modeling							

d. Knowledge of VE Process Including Approach to VE Job Plan

Our designated Contract Manager, Josh Carson, is familiar with many USACE specific VE processes. He, along with the designated VE Facilitator (CVS) to serve as Task Order Manager, will be in constant communication with the VEO to ascertain Fiscal Year VE (or CRAVE) Study requirements to minimize team response time. Upon being awarded a Task Order, Josh/Designated VE Facilitator can respond to VE (or CRAVE) workshop requirements within five days. He will coordinate with the VEO to confirm the disciplines, experience, and qualifications of participants, ensuring that the necessary resources are available to address the technical issues. Per the quality management plan, he will solicit input from the Program Manager and fully staff the team to fulfill the requirements of the task order. He or the assigned Facilitator, will confirm that appropriate project documents are available for team use during the Information Phase and for the remainder of the team's deliberations.

As preferred by the VEO, the Team can conduct the Workshop at USACE facilities, project sites, off-site locations, design team's offices, or at our local offices. Josh and the identified VE Facilitator will coordinate logistics of the VE study, working closely with the VEO. Pre-workshop and post-workshop activities will be done primarily from the MSMM offices while we are also prepared to participate in Implementation Meetings.

Key Considerations for Assembling a VE Team:

- ☛ **Job Knowledge**: The team must have the technical skills and relevant experience suited to the subject.
- ☛ **Availability**: Offices in proximity to the specific FDOT project, rendering easy mobilization of the selected team personnel - be it all consultant, a combination of consultant and USACE, or all USACE.
- ☛ **Team Refreshment**: It is constructive to rotate team members occasionally to keep the creative processes open and not repetitive of previous efforts.
- ☛ **Lack of Bias**: Prospective team members must not have significant ties to the ongoing design process.
- ☛ **Practical**: Team members must have the ability to deploy the latest technology and innovations in their field yet know when something has not proven itself.
- ☛ **Life-Cycle Savvy**: Our team is aware of basic life cycle cost concepts, including cost of ownership.

Executing the Six-Step VE Job Plan: i) Information Phase; ii) Function Analysis Phase; iii) Creative Ideas Phase; iv) Evaluation Phase; v) Development Phase; vi) Presentation Phase

Years of practice have enabled us to develop and fine tune our standardized process templates to be utilized at various stages of executing the six-step Job Plan. This not only streamlines the execution of the VE Workshop and makes best use of the VE Team for the duration allotted but also enables us to capture the execution of the VE Process in a sequential manner and document them in a easy to read VE Report delivered with a quick turnaround upon completion of the VE Study.

Information Phase: Cost Models are developed during the **Pre-Study** efforts by the VE Facilitators along with Key Project features that are to be shared with the VE Team at the onset of the VE Workshop. Further information gathered from the Designers is captured on Flipcharts for continuous display and reference within the Workshop environment. When a **site visit** is conducted, all photographs and field notes are also saved, sorted, and shared with the VE Team. When a site visit is not feasible, tools such as **Google Earth Pro** are utilized for a "fly by" view of the project alignment with or without KMZ files that may be provided by the Designers.

Function Analysis Phase: This is by far the most critical process in the six-step Job Plan It serves as a powerful communications tool that enables VE participants to discuss a project or process in terms that help to depersonalize the conversation, elevating the communication to a more professional and less emotional tone. Development of a **Function Analysis System Technique (FAST)** diagram, or **Function Cost/Worth Matrix**, or arranging the project Functions in a logical order, helps the VE team reach consensus on their understanding of the project goals and objectives. This process is made interactive, utilizing post-it notes or a white board, to build further camaraderie within the VE Team to ensure better results. The visual aids are retained within the Workshop environment for continuous reference and enables a more focused creativity process, such that the team brainstorms alternative ways to *perform functions*, as opposed to alternative ways to design a project element. Other **analytical methods** (paired comparisons, matrix evaluations, etc.) can also be employed. Qualitative or quantitative risk analysis is an additional tool to help identify the potential pitfalls of a given idea, and how to mitigate those challenges should the idea be evaluated further. The FAST is converted to our electronic templates (using Visio or Excel) for inclusion in the VE Report.

Creative Ideas Phase: The large volume of Creative Ideas that emanate from "Out of the Box" brainstorming during this session is captured on flip charts for visual display and on our electronic templates that are shared with the VE Team.

Evaluation Phase: The Team's Evaluation of the Creative Ideas, using a Ranking Scheme by consensus, or weighted average based on select criteria for evaluation (Safety; Operations; Construction; Environmental, etc.), is captured on the flip charts listing the Creative Ideas as well as on the electronic templates for ease of reference.
A **mid-point review** with the owners and stakeholders is usually performed at this time as an additional vetting process to ensure that the VE Alternatives are within the constraints the context of the project.

Development Phase: Our standardized, easy to use Word and Excel templates enable the Team members to efficiently develop the Alternatives that were championed. Opportunities & Risks are clearly described along with technical narratives. Illustrations are made clear and crisp to better convey the Alternative to the readers. Quantities, Costs and Life Cycle Cost Analyses are documented for comparison with the original Design.

Presentation Phase (Outbrief): On the last day of the VE Workshop, the Team presents their findings in an informal Outbrief to the owners and stakeholders. We have developed concise templates to serve as visual aids using PowerPoint to present the Alternatives to the audience. The Quantitative (Alternatives) and Qualitative (Design Suggestions) ideas are separated in a Summary of Results sheet that is distributed to the audience for reference at the Outbrief.

Subsequently, a formal Draft Report would be submitted to the district within an agreed upon time for Implementation considerations. The Implementation decisions may be internal to the district or, the VE Team and/or VE Facilitators could participate in the process. Team Building and QA/QC are intrinsic to execution of each Task.

VE Final Report: Comments from Owners or Stakeholders are incorporated in the Report. Upon completion of the Implementation/Resolution Meeting between the Owner and Designer (VE Facilitator is available to participate), results of acceptance/non-acceptance/or other notes are added to the Report, Summary of Results sheet updated, Resolution Memo included, and a Signed & Sealed VE Final Report is submitted. Timeframe for submission of the Final Report is usually 7 days after the Implementation meeting. The result is an easy to read, **structured Final VE Report** which also enables USACE's VE Coordinator to easily transpose information on to **the Federal reporting spreadsheets**

e. Previous Experience Conducting Combined CSRA & VE

The **MHZ Team** also successfully conducted multiple CSRA's combined with Value Engineering (VE) studies as "CRAVEs" for various clients. In the past year alone, the Team has completed three such studies: FDOT District 6: Palmetto Expressway Improvements – CRA Led by David Hamilton and assisted by Ramesh Kalvakaalva of **NI**. The VE Study was led by Ramesh Kalvakaalva of **NI**.; FDOT, Turnpike: CRA for the Design segment of Central Polk Parkway from Polk Parkway (SR 570) to US 17 (SR 35), and CRA + VE for PD&E segment of Central Polk Parkway from US 17 (SR 35) to SR 60 - CRA & Turnpike Widening (36 miles), CRAs were led by David Hamilton and assisted by Ramesh Kalvakaalva, both of **NI**. The VE Studies were led by Ramesh Kalvakaalva of **NI**. The studies were completed to the satisfaction of the District 6 and the Turnpike, within the agreed upon schedule.

Project Staffing

Our Team delivers the best results by sheer merit and passion to exercise our competencies. With this principle, our vision has realized success, as testified by numerous satisfied clients nationwide. Our combination of aptitude and attitude will bring added value to USACE on this contract.

Qualifications and Experience of CSRA Facilitators Detailing Past and Recent CSRA Workshops

Our dedicated CSRA experts together bring more than 150 years of combined experience in Facilitating CSRA Workshops on par or exceeding USACE requirements on qualifications as listed on their resumes. One of our key CSRA Facilitators, David Hamilton, has organized and led more than 800 VE and CSRA studies on projects ranging in size from $2 million to $7 billion in 47 States as well as worldwide for over 30 years. He has structured multidisciplinary teams of specialists to study a variety of such projects including USACE Bases, Overseas MILCON projects, highways, transit systems, tunnels, and buildings. He has also trained more than 2,000 design professionals worldwide in VE and cost management and has presented several week-long seminars at Georgia Tech University. Recent experience includes preparing 8 Monte Carlo simulations and monthly cost trending on major civil projects.

Qualifications and Experience of VE Team Leaders Detailing Past and Recent VE Studies
Another key Senior VE Facilitator, Ramesh Kalvakaalva, brings 25 years of experience in VE, Life Cycle Cost Analyses, Risk Management, and Infrastructure Design. He has served as VE team leader on 200+ projects for a wide spectrum of clients (USACE, other Federal agencies, DOTs, and local governments). This contract requires a VE Facilitator with intimate knowledge of the USACE's VE program past and present. Ramesh's experience in on similar contracts and knowledge of USACE's processes will ensure the success of the Team's work under this contract. His knowledge of the Plan Development Process, by virtue of having designed infrastructure for USACE, provides an added advantage of his participation. The **MHZ team's** dedicated VE Facilitators include nationally recognized VE practitioners whose approach to leading VE workshops has proven repeatedly to be an effective tool in achieving the VE goals of Federal and State agencies. They are not only VE Facilitation experts but also Registered Professional Engineers and/or Certified Cost Estimators well versed in the design and delivery of projects in DoD Installations and Civil Works. As supporters of the VE job plan, the Team's VE Facilitators are always prepared to adapt how the process is applied.

David Hamilton, Ramesh Kalvakaalva, Charles McDuff, and Les Thomas, the dedicated VE team leads, are SAVE International® certified instructors of our customized VMF1 Training Workshop. They have trained numerous candidates through certified Workshops to achieve goals of obtaining a VMA or CVS certifications. Examples of recent Workshops include clients at Fairfax County, LaDOTD, SAVE Conferences of 2014 and 2015, AASHTO Peer Review Workshops, FHWA Workshops and individual training sessions.

The Team's dedicated VE Facilitators, with 150+ years of combined experience have also contributed to the furtherance of VE to local and national organizations by way of education (e.g., lectures at Georgia Tech and other institutions; leading the national and local SAVE Chapters; presenting technical papers; and highlighting the success of the VE Program at various forums). Our Facilitators have served at the national and state levels in lobbying lawmakers on the value of such VE exercises. Our Subject Matter Experts (SMEs) have also contributed to numerous DOT's efforts in improving and updating their Technical Manuals and Design Memoranda that provide guidelines for State infrastructures.

The **MHZ team's** Facilitators have authored Technical Papers, presented at international Seminars/Forums, and participated in developing ASTM/AASHTO Manuals and ISO 9000 Standards in Value Engineering. Our Facilitators have participated as prominent SAVE International office bearers (Director / Membership Chair / Continued Education / Technical Committee), created the North Florida SAVE International® Chapter, and led the Southern Piedmont and Rocky Mountain Chapters.

Ability to Provide Experienced Team Members for Either CSRA Workshop or VE Study
Resources: The key to a VE & CSRA contract of this nature is having a large roster of qualified and experienced personnel in the disciplines needed, so that multiple qualified teams can be staffed in the required time frames, particularly for concurrent studies.

The Team for this contract has several proven and experienced VE & CSRA Facilitators (four of them Life Certified; two of them with Life Certified plus Certified Cost Professionals), as well as numerous VMAs. They are supported by a dedicated team of technical experts in various disciplines with extensive VE & CSRA study experience. The JV team has more than six hundred similar professionals nationwide who can be engaged if required. When the team comprises of USACE personnel, their expertise on the subject matter adds immense value to the outcome.

We also can provide resources for multiple VE & CSRA Studies on simultaneous schedules. There are two notable challenges the **MHZ team** personnel were able to overcome for FDOT/Fairfax/USACE and other clients in the past: 1) VE workshops scheduled over successive weeks – Our depth of Facilitators and SMEs can ensure that these situations are easily addressed through effective schedule management and personnel assignments; 2) Consecutive workshops over nine days on various individual GDOT overlay projects combined under one VE Task Order – Addressing this challenge by alternating the VE Facilitators and refreshing the SMEs to keep each project workshop in motion.

Unmatched Local Resources: With the Nationwide reach of the Team, we have made a conscious commitment to dedicate the strongest local technical staff possible to support USACE's VE & CSRA studies. The proposed personnel have worked with and share USACE's philosophy. The Team members are dedicated to beginning work on any assigned Task Order at short notice. Moreover, our past USACE VE & CSRA experience will allow us to hit the ground running, seamlessly integrating into USACE LRL's VE & CSRA Program. Given the depth and strength of our resources, from Facilitators to SMEs, we would be able to easily form multiple teams to respond to simultaneous or back-to-back VE & CSRA Studies or Training.

Other Considerations
We encourage the VE Team to incorporate tried and tested innovations in Design/Construction methods from our experiences. We keep abreast of the state-of-art and ever evolving infrastructure industry standards. For instance, on Bridge projects, we have successfully recommended Accelerated Bridge Construction techniques where MOT was a challenge. We have also recommended utilizing Design-Build type construction on large projects that have high Risk factors requiring advanced mitigation or other potential constraints.

We understand that some projects that are at the Preliminary stage of Design are not developed enough to establish a construction schedule. Our scheduling expertise enables us to develop a tentative construction schedule, benefitting the VE Team to identify critical paths that need to be evaluated for Alternate Design or Construction Techniques. Projects in dense Urban areas with premium property acquisition requirements are evaluated by our Right-of-Way experts for Alternate acquisition techniques. MOT Is another challenge that our VE Team Constructability experts evaluate and help overcome.

Innovative Concepts Used in The Application of CSRA, VE or Both Including the Use of Technology
We bring a highly effective VE & CSRA process and the most technically qualified staff to comprise the team. This process focuses on identifying alternatives that are extremely useful in the context of the specific project setting. Identifying many risks/ideas for consideration, and then boiling these risks/ideas down to select the essence. This provides the best opportunity to mitigate risks, reduce project costs, reduce life-cycle maintenance costs, minimize ROW acquisitions, coordinate utility conflicts, expedite project delivery and minimize environmental impacts, all without compromising safety. This plan has proven to be highly effective when practiced by personnel who are knowledgeable of the constraints of the USACE's project delivery processes.

Our team utilizes a non-proprietary CSRA Monte Carlo product (Oracle Crystal Ball) that provides transparency and collaboration with USACE and other consultants to provide a process that is straight-forward and is innovative in that it simplifies the process for all stakeholders. The program allows for designation of the risk distributions (BetaPert, Triangular, etc.) and the ability to perform two-step modeling. This complements our similar VE approach, with the total CRAVE meeting industry standard tools. We also spend time with the team defining risk mitigation, which is valuable to the project team as they continue with the risk management post-CSRA.

Each project has its own unique goals, objectives, constraints, and challenges, with various stakeholders driving those interests. These distinctive characteristics often demand adapting VE & CSRA tools to the task. For example, in past studies where competing interests were strong influences, we created an evaluation matrix for the team to measure ideas relative to both the functions supported and the effects on performance criteria. Also, our VE Facilitators execute the six-step VE Job Plan in a manner that encourages Team Member participation and building camaraderie which is healthy for the outcome of the Workshops.

The **MHZ team** presents results in a fashion that encourages all stakeholders to consider alternatives as tools crafted specifically to help achieve desired project ends. This typically includes cost containment, minimization of life cycle costs, and conversion of funds spent on less necessary items to project components that will enrich project functionality and enhance the end users' daily experience, ensuring a lifetime of quality service.

Team Approach: Our assigned VE & CSRA team leaders will facilitate Workshops with the most appropriate methods tailored to the nature of projects. The emphasis will be on guiding the team members through a respectful review of the design as delivered by the project delivery team, in a manner that conforms to the VE & CSRA job plans. From the outset of a VE and/or CSRA effort, our Facilitators will partner with USACE, its stakeholders, and its project delivery team to facilitate the most favorable achievement of project goals as possible.

The **MHZ team's** PM, and nationally recognized/award winning VE Facilitators will monitor the execution and delivery of every Task Order through completion. Resource commitments and workloads are constantly updated. The PM will continue to monitor the progress and schedule of the VE report after the completion of each VE Workshop. QC and QA efforts will be concurrent at all appropriate phases.

EFFECTIVE COMMUNICATION

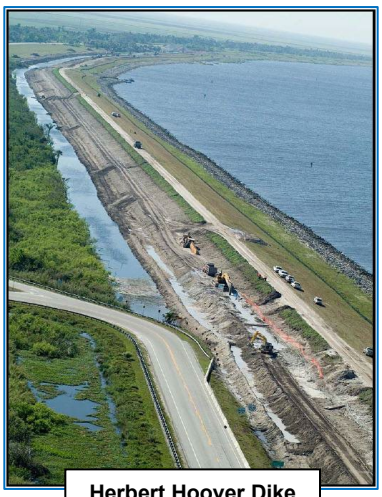
Regular communication with the District VEO during project initiation and delivery is of paramount importance to the MHZ team. Successful VE & CSRA project delivery over the past few years to various USACE Districts will be an additional benefit to this contract's execution.

Camaraderie: MHZ leadership and project assigned personnel work regularly with Neelu, Inc., Legis, and US Cost personnel. Our long-time working relationships will be an immense benefit to USACE LRL since teamwork is of paramount importance to the success of VE & CSRA projects. We have also established long-term working relationships with various District personnel.

The **MHZ team's** approach to VE & CSRA studies is that the goal is to *improve value*, which does not always translate to reduced cost. Value results from professionally facilitated application of the VE & CSRA Job Plan, optimizing the relationship between cost, function, and quality; thus, meeting the client's and stakeholders' goals and objectives. Our strength lies in TEAMWORK in achieving our clients' goals. We realize this objective by combining Aptitude and Attitude and take pride in being able to contribute to our clients' successes.

The advantage the **MHZ team** offers is the dedication of regional yet nationally recognized VE Facilitation talent, who are also well versed in USACE's Plan Development Process. We will also draw upon experience gained from similar award-winning services provided to various other Federal agencies and a myriad of clients. The **MHZ team** has developed innovative adaptations of the VE & CSRA Process, including remotely facilitating and monitoring a VE & CSRA process, implementation of State-of-the-Art technology such as video conferencing, compressing VE Schedules when required, accelerated VE Workshops, Tutorials via Webinars, and unique Team Building Exercises. With this background and commitment, we are certain that USACE LRL will realize a healthy **Return on Investment** through the Team's capabilities to deliver desirable results on any assigned VE & CSRA projects.

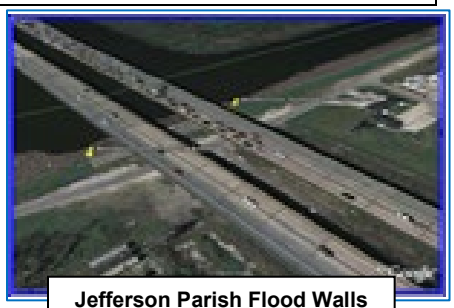
MHZs Advantages
▪ **Small Business Experience** – The MHZ joint venture has complete knowledge of the USACE Civil Works and Military programs and has worked on projects requiring expertise at each level of the review process. Our personnel have experience planning, managing, designing, bidding, performing construction management, engineering during construction, and interacting with non-Federal sponsors (and end users) and the vertical team for multiple USACE projects. ▪ **USACE Engineering** – Both individual firms of the Joint Venture are structured to support USACE. MSMM has performed design services on over eighty task orders that had strong schedule commitments made to the public for civil works flood damage reduction projects. MSMM has designed pump stations, levees, channel stabilization and other drainage structures. Huitt-Zollars led the development of project solutions for the large multi-billion-dollar Fort Bliss program. ▪ **Committed Staff with Exceptional Depth of Experience in USACE Projects Worldwide** – The MHZ team includes licensed design professional with extensive experience on military and civil USACE projects; plus, our VE team leaders hold multiple registrations and certifications and PE's, CVS's, (CCP) AACE - Certified Cost Engineers, LEED specialists and constructability specialists. The Prime respondent to this solicitation has over six hundred professional resources available to execute any assignment the Louisville District should assign us. These resources are located nationwide, and we are positioned with the ability to execute multiple concurrent Value Engineering studies across the country.



Herbert Hoover Dike

Lock: Bayou Manchac

Mississippi River Old River Complex



Jefferson Parish Flood Walls

UNIQUE CAPABILITIES

What differentiates our Facilitators from the rest?

Our Facilitators are one of very few CVS's with both a PE and a CCP (cost engineer) certification and have experience in military and civil design projects, project life cycle costing, ROI, cost/schedule risk modeling, mitigation measures and risk trending during the design process. They have conducted more than 500 DoD VE studies in 47 States and numerous locations overseas Asia, the Pacific, Europe, and the Middle East. Some of them also hold certifications in LEED and Envision which broadens our perspective on sustainable design solutions.

Our abilities to get results

Our Facilitators are consensus-builders and pay strict attention to user needs, priorities, and goals. These are then converted into functions for further analysis, prioritization, and brainstorming. They use intuitive problem-solving nature to evaluate technical issues, target problem areas, and encourage teams to explore creative solutions. Numerous clients have remarked on their ability to balance and document differing perspectives while encouraging compromises which meet project requirements within the limits of project funding and schedule. They focus on key functions which meet the customer's needs while optimizing total life cycle cost and balancing capital cost and future maintenance requirements.

Examples of quality function analysis, from their studies, and how the function analysis allowed the team to find more creative solutions.

An interesting DoD project in San Diego required a Hazardous Waste Storage Building to be built near the shipyard area. Function analysis with the VE team identified "Store Waste" and "Consolidate Waste" as key functions per the DD1391. However, upon further analysis and investigation, it was found that consolidating and storing waste was in fact, quite hazardous and not a function which should be achieved. Instead, the team focused upon the function to "Remove Waste" from the shipyard, yielding the solution to hire a contractor to train personnel in waste handling and remove the waste material several time each week, i.e., like the milkman. The DD1391 was cancelled, saving NAVFAC more than $7M in facilities.

Examples of Key VE alternatives/proposals that were instrumental to the success of the submitted VE study.

a. **A recent highway tollway project ($2.1 Billion) in Florida was the focus of a CRAVE study** (risk analysis followed by VE). David led the risk analysis workshop and conducted the risk modeling. Cost and schedule risk exposure was identified for right of way procurement. Major expenditures and high risks were quantified in the risk modeling and then brainstormed in the follow-on VE study, resulting in a design using retention basins parallel to the highway rather than isolated parcels. The net accepted savings to the owner was nearly $40 Million.

b. **A recent VE workshop on F-22 facilities at Joint Base Langley-Eustis (JBLE)** resulted in savings of over $700,000 by modifying the roof framing of the hangar facility from custom made pitched trusses to sloped standard long span joist girders. Several technical issues needed to be solved including security requirements at the roof/wall penetrations, roof drainage modifications and impacts upon the building aesthetics. Discussions during the consensus meeting required coordination with the Base Architect, facility operations and the design team, but agreement was gained through open discussions and VE alternative optimizations. This alternative was a successful case of optimized team communication focused on common project goals.

c. **Successful VE studies sometimes require unique approaches**. A recent VE study on a wastewater treatment plant for the City of Portland, OR integrated City staff with several outside technical specialists on the VE team to evaluate a critical replacement of the plant headworks. This method blended technical engineering expertise of the outside consultants with internal construction management and contracting personnel. This unique team was able to identify methods to streamline the internal CM procedures with new engineering solutions to "Reduce Disruption" and "Maintain Treatment" through the renovation process. Joint work resulted in the project schedule being reduced by 15-months and total accepted savings to the project of more than $1M out of a total project cost of $13M.

QUALITY CONTROL PLAN

Our team is proud of our reputation with USACE and the high-quality work products we have developed for your customers. Quality control is embedded within every stage of a project and starts during project planning. MSMM has provided USACE with high quality deliverables on their multiple IDCs and have consistently developed design Quality Management Plans (QMPs) for these efforts. Our QMP meet the requirements as defined for quality control in ER 1110-1-12, Quality Management. Our QMP address how we will produce our deliverables and the steps that will be taken to control quality. We are accustomed to working with the districts "in-house" technical personnel on resolving project criteria and participating in the government review process in Dr. Checks. We understand the process for comment tracking and resolution as well as annotation and review of government comments at each stage of design.

For example, on our recent Fort Worth District IDC, MSMM included Huitt-Zollars as a teaming partner in which they have provided quality management and Independent Technical Review of the design packages consistent with their DQMP. Huitt-Zollars has focused their review on compliance with Federal regulations and Unified Facility Criteria specifically related to USACE project execution. The Huitt-Zollars comments have been relayed to our engineering team, and we have met to go over the plans and discuss the comments. This work has been completed in compliance with the original DQMP plans established for the Timber Creek and Granger Lake projects.

Under this pursuit, and through our established QC/QA program, every deliverable must undergo a QC/QA review to assure that the product was prepared in accordance with accepted standards of our professional practice, the established scope of work, client needs, and our own internal procedures. We strive to "prevent and not correct," and thus provide optimal value to our clients. Additionally, we consider QC/QA as an ongoing process throughout the execution of the VE & CSRA Job Plans. Even at the onset of the Task Order, we prepare the Risk Register or Reporting Forms relevant to the project. As the Team Develops the Creative Ideas, the Facilitator and Co-facilitator review the contents and make necessary corrections or enhancement. The next opportunity is during preparation of the slides for the presentation to the stakeholders on the last day of the Study. The narratives are also distributed to the Team for mark-ups prior to presentation. Another opportunity for a QC/QA is during compilation of the Draft VE and/or CSRA Report which is then distributed to the Team for further review. The last opportunity for QC/QA is prior to compilation and submission of the Final VE & CSRA Report. The Reports will also be reviewed by a CVS that was not associated with the project. This helps to improve our diligence, and to use audience appropriate verbiage. Comments are discussed with the assigned Facilitators prior to incorporation into the report. Non-participating Facilitators will assume the QC/QA lead role as appropriate. This practice has ensured near flawless success on our deliverables to all our clients.

At the end of each workshop, our Facilitators conduct an after-action review to analyze the effectiveness of the study and its process and collect comments. The results of this review, in combination with client feedback, enables our facilitation staff to collect input on how to make the process more efficient for all participants. Client's participation in this process is critical for meaningful results.

QUALITY MANAGEMENT PLAN OVERVIEW

Leaning on our past and current USACE IDC experience, our approach for this program includes developing an overarching program Quality Management Plan developed by our Quality Managers. The program QMP will included our Quality Control Procedures and objectives as well as guidance on the development of the project specific design Quality Management Plan (QMP). Our Quality Control Procedures will include:

- ✓ Identifying documents to be reviewed
- ✓ Defining the Quality Review Team
- ✓ Determining Project Schedule
- ✓ Development of discipline and inter-discipline teams
- ✓ Identification of Electronic Document Controls and File Sharing Procedures
- ✓ Creation of Critical-Path Method Project Schedule showing sequencing of events to produce the design and include adequate review and resolution period prior to submissions

Our project managers will be responsible for the development of the QMP and for its implementation across the program. They will report directly to the Program Manager, Manish Mardia and are responsible for:

- ✓ Providing Independent Application and enforcement of quality control
- ✓ Preparing design Quality Control Plans
- ✓ Mobilizing the Task Order quality control process
- ✓ Enforcing the application of quality control procedures with the Program Manager

The program QMP will address both program and project level QA/QC issues. Our entire team is committed to continual quality improvement through a "plan, do, check, act" sequence to benefit from lessons learned and client and internal feedback on performance. The entire Team will be trained in and will comply with our program QMP and the project specific QMPs.

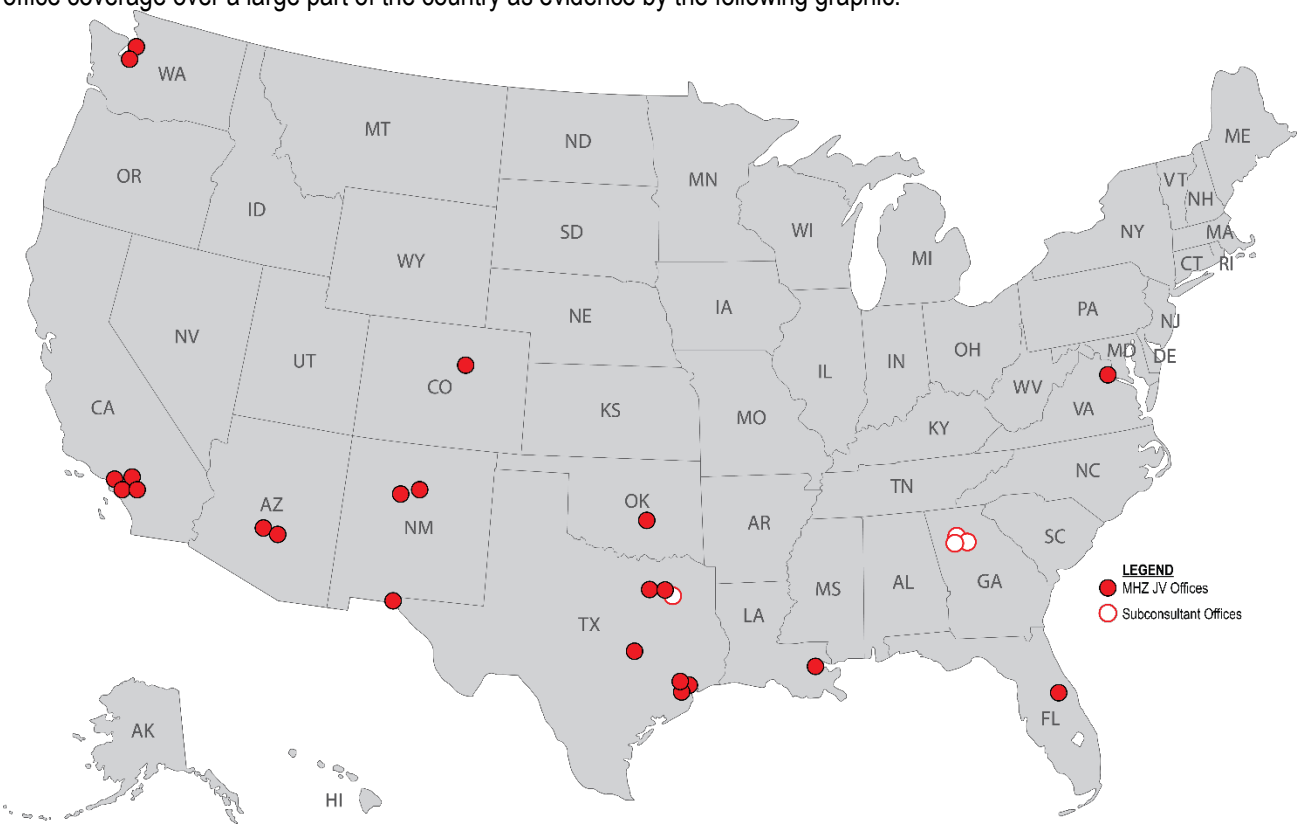
PROGRAM MANAGER

In a similar role for the last ten years as Program Manager, 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 (PDTs) 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 subject matter expertise
- ✓ 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

CAPACITY

Our Joint Venture has proven to be efficient and comfortable handling concurrent task orders over a large geographic area. We have office coverage over a large part of the country as evidence by the following graphic.



MHZ is a proven small business entity with the ability to execute multiple task orders at one time. Each partner firm has recently executed more than three (3) task orders at a time for various USACE districts. Individually, MSMM currently executes $4-5M per year in task orders for USACE, and over 80% of those task orders are completed with in-house personnel. Huitt-Zollars, a large business executes a larger workload. For this solicitation, and based on the structure of our team, we feel extremely confident in the ability to produce multiple concurrent assignments. Given the common core services of Value Engineering / Value Management / Cost & Schedule Risk Analysis / Cost Estimating / DoD Civil Works Design, supplementing our strengths to deliver any workload requirements will not pose any challenge to us. For the past 3 years we have been able to execute this model to the satisfaction of multiple USACE districts, and we do not see a need to change it for this pursuit. Performing at least 50% of the work in-house as a Prime Consultant will not be an issue on this contract. As we typically perform well over 75% of services on all USACE task orders.

REFERENCES

We currently have six (6) active task orders between the Galveston, 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. Sandra Allen, the design manager 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. For services at Galveston District, we invite you to reach out to Ms. Kalli Clark-Egan, COR at (409) 766-3846. For current design services being completed at the New Orleans District, we invite you to reach out to Mr. Charlie Brandstetter, the Engineering lead at (504) 862-2501. We also invite you to reach out to the VEO from any of the following Districts: Ft. Worth, Galveston, Albuquerque, and New Orleans.

1. Multi-Tasking Ability

The key to a VE/CSRA contract of this nature is having a large roster of qualified and experienced personnel in the disciplines needed, so that multiple qualified teams can be staffed in the required time frames, particularly for concurrent studies.

The Team for this contract has several proven and experienced VE & CSRA (CVS) professionals (three of them Life Certified). They are supported by a dedicated team of technical experts in various disciplines with extensive VE & CSRA facilitation experience. In addition to the technical experts within MSMM, the sub-consultants have more than five hundred similar professionals throughout the nation who can be engaged if required. When the team comprises of USACE personnel, their expertise on the subject matter adds immense value to the outcome.

We also can provide resources for multiple VE & CSRA Studies on simultaneous schedules. There are two notable challenges the CSI Team personnel were able to overcome for the USACE and other clients in the past: 1) VE workshops scheduled over successive weeks – Our depth of Facilitators and experts can ensure that these situations are easily addressed through effective schedule management and personnel assignments; 2) Consecutive workshops over nine days on various individual GDOT overlay projects combined under one VE Task Order – Addressing this challenge by alternating the VE Facilitators and refreshing the SMEs to keep each project workshop in motion.

Schedule Management: Our PM, Josh Carson, has an intimate knowledge of USACE's VE Program. From Task Order initiation through VE Reports deliverables, Josh will ensure adherence to schedule. He will also ensure that appropriate VE Team Member commitments are made through continuous communications with the team members and consultation with the USACE VEO.

Ability and Willingness to Meet Time Requirements: In the past, we have performed VE Studies for USACE over a 3 Day, 4 Day and 5 Day schedules. We are flexible to accommodate any duration of the VE Workshop based on project magnitude and requirements. During the current COVID environment we have completed multiple VE studies remotely via Microsoft Project. This has afforded USACE the ability to move forward with their original design schedule.

Resource Allocation: We have made a conscious commitment to **dedicate the strongest regional technical staff** possible to support USACE's VE studies. Our Team members have 100% availability to begin work. Moreover, our past USACE VE experience will allow us to hit the ground running, seamlessly integrating into the USACE LRL's VE Program. Given the depth and strength of our resources, from Facilitators to Subject Matter Experts, we would be able to easily form **multiple teams** to respond to **simultaneous or back-to-back** VE Studies or Training.

2. Diversity of VE Work

The MHZ team brings VE / CSRA experience across a wide-ranging clientele and project types as in Section E and F of this response. The **Team's** VE staff has delivered over 750 successful results in the past decade alone to various USACE and DoD Districts, DOTs, Cities, Municipalities, and others around the country. The Team collectively delivered over 32 VE Studies for USACE alone between 2017 and 2020. Projects that were the subject of VE and/or CSRA included Flood Protection Systems; Ship Channels; Airfield Improvements; Base Modernizations; Laboratory/Training Facilities (Sensitive Projects and Civil Works); Hospitals; Educational Institutions; Fire Stations; Water/Wastewater/Stormwater Facilities; Rails to Trails, Urban Arterials, Rural Corridors, Interstates, Tollways, Resurfacing and Rest Areas.

Our CSRA staff has also delivered over 250 Studies in the recent past and supported multiple teams providing cost estimate reviews, risk and probability assessments, and modeling for major civil works projects and complex transportation projects nationwide for the USACE, DoD, FHWA, State DOTs, Regional Mobility Agencies, and other entities.

In 2021, our team executed the following studies:

1. Tenkiller Main Spillway Bridge Design, Sequoyah County, OK
   Facilitated a virtual value engineering study for USACE-Tulsa District on the $23.0M, 600 ft. long replacement spillway bridge and catwalks constructed in 1956 at Tenkiller Lake Dam.

2. Albeni Falls Dam Fish Passage Facility, Bonner County, ID
   Facilitated a virtual value engineering study for USACE-Seattle on 35% design package for a fishway with ladder cutting through the rock island adjacent to Albeni Falls Dam spillway to a holding pool and sorting facility with truck hauling capability for bull trout to access historic upstream habitats with a $59M current working estimate budget.

3. Renovate Tech Training Dorm – B213, Altus AFB, OK
   Facilitated a virtual value engineering study for USACE-Tulsa District on the $12.8M, repair of a 40,000 sq. ft., three story, 102-person dormitory.

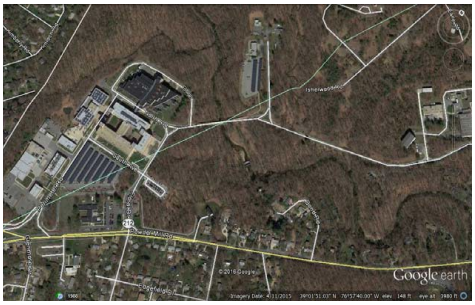
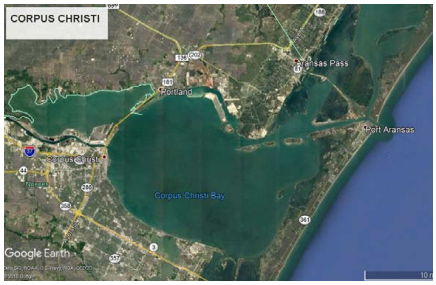
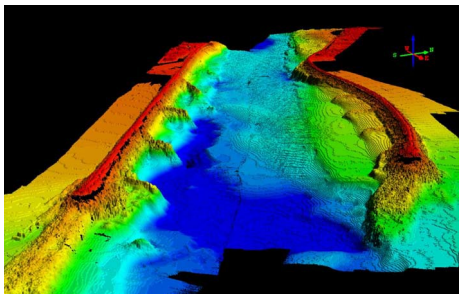
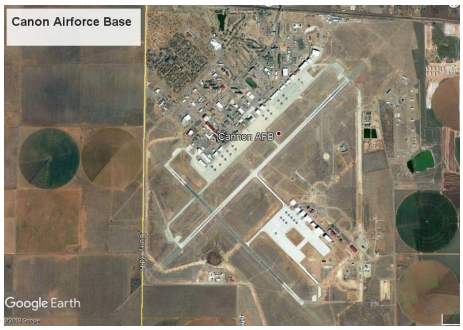
4. Automated Multipurpose Training Range, Fort Bragg, NC
   Facilitated a virtual value engineering study for USACE-Savanah District on the $32.54M, 35% design of a standard design Multipurpose Training Range (MPTR) including downrange site preparation, range operations control area (ROCA), range control tower (non-instrumented), small after-action review building, large operations/storage building, latrine, bleacher enclosure, covered mess, ammunition loading dock, bivouac area, unit staging area, and building information systems

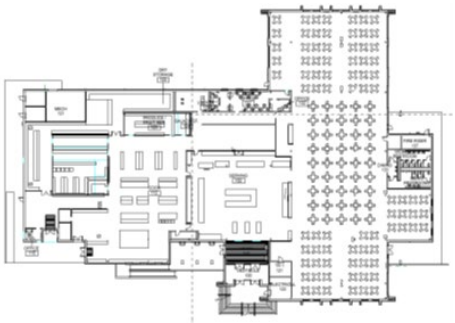
5. Emergency Power Microgrid
   Offutt AFB, NE
   Facilitated a virtual value engineering study for USACE-Omaha District on the $51.0 (program amount) repair by replacement of 14 Mega-Watt power generation and associated distribution assets to provide sufficient backup for critical facilities during a commercial grid outage.

6. USDA Houston Child Nutrition Center Renovation, Houston, TX
   Facilitated a virtual value engineering study for USACE-Fort Worth District on the $22.45M (program amount) Design-Build (D-B) Request for Proposal (RFP) package for the renovation of the Child Nutritional Research Clinic (CNRC).

7. Duckabush River Estuary Ecosystem Restoration, Jefferson County, WA
   Facilitated a virtual value engineering study for USACE-Seattle on 35% design package for a 1,614-foot long 34-foot-wide bridge prior to removal of the existing adjacent highway downstream to reconnect floodplain and intertidal wetlands, improving tidal exchange, sediment transport, and estuary development. Tidal and riverine hydrology would be restored to 38 acres of the Duckabush River delta, allowing for natural habitat forming processes including sediment and detritus exchange, freshwater input, and tidal flushing within the delta. Restoration in the Duckabush River will provide rearing habitat for Hood Canal summer chum salmon by reconnecting 20 river miles of pristine upstream habitat with a now fully functional salt marsh and mudflat estuary.

A snapshot of the Diversity of the MHZ team's completed VE studies are captured below:

Army Research Laboratory Renovations; Adelphi; *USACE Baltimore District*: Adelphi Lab Center (ALC) is a U.S. Army maintained garrison that includes several groupings of interconnected Laboratory facilities on a 207- acre campus in Adelphi, Maryland. The main function on the campus is Research and Development (R&D), housed in various laboratory complexes for the military and civilian academia workforce to advance technologies on sensors and electronic devices. Some R&D missions occur 24/7 (i.e., testing). 207 was constructed in the 90s and houses both laboratory and general office space. The existing dry room facility is not meeting the space needs of the tenant, so the adjacent lab space is being converted into an additional dry room. Laboratory 507 was constructed in the 90s for a previous tenant and has since been renovated to meets the needs of the current research group. The roof and wall insulation are to be brought up to current code to maintain comfortable conditions within the space. • The workshop resulted in full development of 14 Design Alternatives that offered over $750,000 in potential first cost savings. (Sensitive project.)	
MILCON Projects P-099 / P-100; Nuclear Power Training Unit Facility (NPTU); Joint Base Charleston, SC: NPTU Charleston's current facilities and systems are inadequate to meet the future needs in support of the NPTU Charleston training mission. These mission objectives necessitate an extensive transition of the existing facility with an increase in student load, inclusion of simulator-based training, and the addition of a training ship. (Other information Sensitive.) • The workshop resulted in full development of 28 alternatives that offered over $4 Mil in potential first cost savings.	
Ship Channel - PA 10 – Shoreline Protection/Stabilization – Containment Dike Raise, Corpus Christi, Texas; USACE Galveston: CCSC PA10 is located on the south side of Corpus Christi Ship Channel, to the northwest of Corpus Christi Bay, and south of Ingleside in San Patricio County, Texas. The average containment dike elevation of PA10 is about 32 feet from survey taken in 2013 (as presented in the survey plot from station 68+00 to station 71+00 in Section II. The proposed plan is to optimize erosion protection beginning at station 65+00 and ending at station 99+00 which makes the total design length of the erosion prevention construction 3,400 linear feet. Additionally, the Dike is proposed to be raised to a uniform elevation +40 feet. • 10 Design Alternatives were accepted for a net savings of $950,000.	
Corpus Christi Ship Channel – Jetty Repairs, Corpus Christi, Texas; USACE Galveston: The Corpus Christi Ship Channel (CCSC) is a deep-draft navigation channel servicing multipurpose port facilities at Corpus Christi, Texas. The existing entrance channel is 24,800 ft. long and protected by stone jetties on either side of the entrance channel. The current plan is to deepen the entrance channel 7 ft. to an authorized depth of -52 ft. MLT. The entrance channel project will lower the bottom depth 2 ft. to -54 ft. MLT, and it will extend the channel approximately 10,000 ft. further into the Gulf of Mexico maintaining this same depth. Total Construction Budget for the project is approximately $39.5 Million (up to $50 Million with contingency). • 7 Design Alternatives were accepted for a net savings of $30 Million, resulting in the re-evaluation of the entire scope of the project.	
Construct Dangerous Cargo Pad; Relocate CATM, Canon Airforce Base, Clovis, New Mexico; USACE Albuquerque: Per AFMAN 32-1084, a dangerous cargo area is required to support the movement of munitions by cargo-type aircraft (C-5, C-17, Boeing 747) and to support daily C-130 operations. Siting for this facility is limited by explosive quantity-distance criteria. To build a dangerous cargo pad, sized for the current mission, the existing North Calibration Pad, CATM and small arms range, the Rod & Gun Club, Skeet and Trap Range, and supporting facilities must be demolished and relocated to another site. The existing CATM and small arms range do not meet Engineering Technical Letter (ETL) 11-18. Construction Budget for this Design/Build project is approximately $42 Million. • 12 Design Alternatives were accepted for a net savings of approximately $3 Million.	

Kingstowne Consolidated Facility (KTCF); Fairfax County, VA: Fairfax County proposes to build a new co-located single facility for Alexandria, Virginia, in an area known as *Kingstowne* to include the following independent program areas: a Regional Library; a Police Department; an office suite for the Board of Supervisors; an Active Adult Center; a Childcare Center; the Franconia Museum; one secure parking structure for the Police Department; one public parking structure to serve the remainder of the complex and a fueling station to serve county vehicles. Construction Estimate is approximately $54M. • The workshop resulted in full development of thirty-nine (39) Design Alternatives (some mutually inclusive) that offered an estimated $2.5 Mil in potential cost savings.	
Fairfax County Police Heliport; Fairfax County, VA: The original program assumed a new 23,000 square foot building and demolition of the existing 9,500 square foot building. A new concrete helipad and approach, parking and associated site improvements are also part of the scope of work. The County will make arrangements for operations to be moved offsite for the duration of construction, and therefore construction phasing considerations are not required. Construction Estimate is approximately $54M • The workshop resulted in full development of forty-six (46) Design Alternatives (some mutually inclusive) that offered an estimated $1Mil in potential first cost savings.	 *Perspective from North*
USDA Fruit Fly Rearing and Release Facility, Edinburgh, TX Construction of a 117,008 sq. ft. building and 10,000 sq. ft. warehouse addition to serve as a Mexican Fruit Fly Rearing, Eclosion, and Release Facility (RERF) at Moore Air Base in Edinburg, Texas in support of its Preventive Release Program to control the population of Mexican Fruit Flies in the Rio Grande Valley. This new facility will replace the aging existing facility, and upon completion, will improve the current process of rearing flies (or other species), will better withstand the rigors of the rearing and eclosion activities as compared to the current, and increase the weekly production of sterile fruit flies from the current 150 million to 400 million. The new facility will provide four distinct areas to produce Mexflies and other species in the future. Rearing, Irradiation, Eclosion (also called Eclosion & Release) and Administrative/Office. Initial processing converts raw product intake into pupae 'sausages" (clustered male pupae in bags readied for sterilization) for subsequent distribution to other eclosion facilities or to this facility's release processing area.	
Camp Bullis Dining Hall Facility, Joint Base San Antonio, TX Construct of a dining facility for 1300 to 1500 personnel at Joint Base San Antonio (JBSA) - Camp Bullis and relocate an existing warehouse that is in the footprint of the dining facility. Construction includes reinforced concrete foundations, structural steel frame with split faced concrete masonry unit veneer and a standing seam metal roof. The project includes utilities, site improvements, pavements, communications infrastructure, and all other work necessary to make complete and useable facilities. The project will demolish 17 buildings. There are four facilities currently used to support feeding operations. These wooden facilities were constructed in the 1930s and have far exceeded their intended design lifespan. Two facilities have been issued a Fire Safety Deficiency Code 1 for fire safety issues. In addition to being in a state of disrepair, the facilities are severely undersized and provide approximately one half the space necessary to support feeding operations based on training throughput.	

U.S. Navy North Island Next Generation Aircraft Maintenance Facility Naval Base Coronado, CA: With all the ships in port, the population of the station is 35,000 active-duty military, selected reserve military, and civilian personnel. NAS North Island facilities include over 230 stationed aircraft, and it is homeport to two aircraft carriers: USS Abraham Lincoln and USS Theodore Roosevelt. Additionally, the base is home to the Navy's only Deep Submergence Rescue Vehicles, Mystic (DSRV-1) and Avalon (DSRV-2). It includes large factory-type buildings which comprise the Naval Aviation Depot, employing 3,300 civilians, and its own commissary, Navy Exchange, recreation facilities, and housing units.
CSRA models were developed using the Crystal Ball add-in to MS Excel. A workshop interview process was implemented to manage risk register development, with updates to deliverables, as necessary. The resulting data will be used to support the P897 Next Generation Aircraft Maintenance Facility project with NAVFAC Southwest. The CSRA report was prepared in accordance with U.S. Army Corps of Engineers (USACE) "Cost and Schedule Risk Analysis (CSRA) Guidance. The USACE Cost Engineering Mandatory Center of Expertise for Civil Works (MCX) guidance for CSRAs recommends budgeting based on the 80-percent level of statistical confidence.

- For this project, meeting that threshold will require a cost contingency of approximately $7 million.

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 design and coastal restoration experience, along the Gulf Coast.

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, such as the adjacent letter from Mr. Durund Elzey, the current Assistant DPM at the New Orleans District.

DEPARTMENT OF THE ARMY
CORPS OF ENGINEERS, NEW ORLEANS DISTRICT
7400 LEAKE AVENUE
NEW ORLEANS, LOUISIANA 70118

REPLY TO
ATTENTION OF

DEC 0 1 2016

Programs and Project Management Division
Projects and Restoration Branch

MSMM Engineering, LLC
4640 South Carrollton Avenue, Suite 220
New Orleans, Louisiana 70119

To Whom It May Concern:

This letter is written to commend the exceptional past performance history of MSMM Engineering, LLC (MSMM). MSMM has been a vital asset to the U.S. Army Corps of Engineers, New Orleans District (MVN), Projects and Restoration Branch. The professionalism, responsiveness, and quality performance has positioned MVN to complete a wide range of many challenging and mission critical projects throughout various stages of the Civil Works process. Given their consistent and effective delivery of assigned task, MSMM is one of the top performing small business Architect-Engineering firms within MVN.

MSMM leadership and staff are customer oriented and driven to succeed irrespective of the task. MSMM consistently completes all assignments within the allotted schedule and budget. They have supported the development and delivery of projects across various MVN programs that includes but is not limited to the Flood Risk Management, Environmental Infrastructure, Planning Assistance to States, Floodplain Management Services, and Continuing Authorities Programs. In addition, their design expertise with levees, floodwalls, water and sewer pump stations has supported the development of sound engineering solutions.

I certainly recommend utilizing this firm to support future needs within Civil Works. Please feel free to contact me at, (504) 862-1674 if additional information is required concerning work performed by MSMM for MVN.

Thanks,

Durund F. Elzey
Senior Project Manager
Projects and Restoration Branch

Other Notable client accolades cited below:

"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.**
"MSMM was an exceptional firm to work with to execute the VE Study. The team leader/facilitator, Ramesh Kalvakaalva, led the team through the study process with energy and excitement to make sure every phase of the study was done to the highest quality possible." **– Jake Walsdorf – A-E Acquisition Manager, USACE Galveston District.**
"This was by far the best VE study I have participated in. It was well-run, the VE team was knowledgeable and produced great ideas, and the ideas were relative and potentially implementable (not too off-the-wall). Team member personalities were well-matched, and specialties were well-rounded. I also appreciated that the team understood that some ideas were just not feasible and let those did not force us to include them. I also liked that D was prepared and able to calculate costs for our alternatives instead of each team member attempting to locate cost information and calculate costs themselves. That made the study much more efficient. Thanks again, it was a great study, I was impressed." **– Tricia Campbell, Operations Manager – Navigation Branch, SWG (USACE Galveston District).**
"Legis provided a quality and complete product, was on time, and the project was managed well. I would use the contractor for VE studies in the future, in fact we have used them several times in the past… Overall I am pleased with the final product and the process to get there." – **David Abbott, District Value Officer (DVO), USACE Albuquerque District.**
"Ramesh – Great Job of running the implementation meeting. You have captured everything I had." –**John Deal Jr, Project Manager, *USACE Albuquerque District.***
"Ramesh consistency beats all deadlines in submitting his TWOs and submitting all accompanying information. For all task work orders, he called and followed-up to assure we received the proper information. All documents were returned complete, signed, and ahead of schedule." – **Ashraf Elmaghrahy, FDOT D5 VE Coordinator**
"Ramesh knows what he is doing. I do not need to be at the VE Workshop." – **Kurt Lieblong, FDOT Statewide VE/CRA Coordinator.**
"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 POC – Cow Bayou Drainage Pump Station Project**

The following CPARS table is a summary of formal ratings we have received to date.

CPAR / ACASS RATINGS ON PROJECTS (PAST 10 YEARS)

Task Order No.	Project Title	Project Description	USACE Project Manager	A-E Task Manager(s)	Fee	Rating
0043 Mod 001	**Phase II Development of Fault Tree Analysis Tool**	**Additional programming associated with modeling uncertainty in loading, fragility & consequence.**	Danny Thurmond	Manish Mardia	$49,806	Exceptional
0044	**Development of Barge Impact Analysis Tool**	**Support of Risk Analysis Models & Reliability Model Development**	Danny Thurmond	Manish Mardia	$60,000	Exceptional
0046	**BCRA Levee Risk Assessments**	**Levee Risk Assessments & Levee Evaluation Software Tools**	Danny Thurmond	Manish Mardia	$234,636	Exceptional
0046 Mod 001	**BCRA Levee Risk Assessments**	**Address enhancements and new additions that aim to expand new functionalities.**	Danny Thurmond	Manish Mardia	$49,866	Exceptional
0006 Mod 002	**Jefferson Lakefront Floodwalls & Structures, Phase II, Jefferson & St. Charles Parishes**	**Additional Surveys for I-10 W/ Traffic Study.**	Denis Hoerner	Manish Mardia	$121,098	Very Good
0006 Mod 004	**Jefferson Lakefront Floodwalls & Structures, Phase II, Jefferson & St. Charles Parishes**	**IEPR Review for Williams Gate**	Denis Hoerner	Manish Mardia	$26,277	Very Good
0006 Mod 006	**Jefferson Lakefront Floodwalls & Structures, Phase II, Jefferson & St. Charles Parishes**	**I-10 Study**		Manish Mardia	$234,965	Exceptional
0006 Mod 007	**Jefferson Lakefront Floodwalls & Structures, Phase II, Jefferson & St. Charles Parishes**	**Re-Alignment South of I-10**	Denis Hoerner	Ramesh Kalvaakalva	$237,904	Exceptional
0006 Mod 009	**Jefferson Lakefront Floodwalls & Structures, Phase II, Jefferson & St. Charles Parishes**	**Redesign of Williams gate**	Denis Hoerner	Ramesh Kalvaakalva	$89,934	Exceptional
0006	**Jefferson Lakefront Floodwalls & Structures, Phase II, Jefferson & St. Charles Parishes**	**P&S, E&D During Advertisement for West Return Floodwall, Re-curve Wall & Williams Blvd. Gate**	Denis Hoerner	Si Cunningham/Manish Mardia/Bob Yokum/Tom Hickey	$3,137,725	Exceptional
0006 Mod 001	**Jefferson Lakefront Floodwalls & Structures, Phase II, Jefferson & St. Charles Parishes**	**Additional Geotechnical Investigation at Williams Blvd. Gate**			$11,067	Exceptional
0015	**Levee Safety Periodic Inspections of Levees Above Old River**	**Inspection & report preparation**	Rich Varuso	Ramesh Kalvakaalva	$248,050	Exceptional
0022	**GIWW Survey Services for Locks**	**Surveying & Preparing Instrumentation Documents**	Joe Chryssoverges	Ramesh Kalvakaalva	$181,838	Very Good
0022 Mod 001	**GIWW Survey Services for Locks**	**Additional Cross Sections**	Joe Chryssoverges	Ramesh Kalvakaalva	$3,833	Very Good
0024	**Periodic Inspection of Davis Pond Pump Station 7 Calcasieu Lock & Surveying & Evaluating 2010 Data On 7 Structures**	**Surveying, Inspection & report preparation**	Joe Chryssoverges	Ramesh Kalvakaalva	$289,423	Exceptional
W9126G19F0004	**Value Engineering Study for the Corpus Christi Ship Channel Jetty Repairs**	**Value Engineering Study for the Corpus Christi Ship Channel Jetty Repairs**	Jake Walsdorf	Josh Carson	$63,107	Exceptional
W9126G18F0004	**A&E Services for Design of the Granger Lake Management Office Replacement**	**Design of the Granger Lake Management Office**	Gail Hicks	Josh Carson	$358,037	Very Good
W9126G16D0017	**Value Engineering Studies - Disposal Area Managmement Plan (DAMP) Programmatic VE Study, Placement Area 14 Houston Ship Channel, Shoreline Stabilization and Containment Dike Raise Programmatic VE Study**	**Value Engineering Study for Placement Area 14 Houston Ship Channel**	Jake Walsdorf	Josh Carson	$129,989	Exceptional

Most Recent CPARS:

Contract/TO:	Project Title:	Description:	CPARS Rating:
W9126G16D0017 W912P819F0215	Cow Bayou Drainage Pump Station Complex Design	35% Design Package for a Large Drainage PS and Flood Risk Infrastructure	Exceptional
W9126G16D0017 W9126G18F0286	Dallas Floodway Extension (DFE) Phase II Recreation and Access Design, Trinity River, Dallas, TX	Ready for bid construction documents for a recreational project involving ecosystem components	Very Good
W9126G16D0017 W9126G18F0322	Design of Granger Lake Management Office Replacement	Ready for bid construction documents for the replacement of a government office building	Very Good

CPARS of project included in Section F:

Contract/TO:	Project Title:	Description:	CPARS Rating:
W9126G16D0017 W9126G18F0159 **Section F – Project 1**	Programmatic Value Engineering Studies for HSC Dewatering PA 14/15 and CCSC Shoreline Protection at PA10	Value Engineering Study and Report	Exceptional
W9126G16D0017 W9126G20F0033 **Section F – Project 2**	DB RFP's Development for Dallas Floodway 277K Levee Raise and Delta Pump Station Renovation	Development of two stand-along DB packages for flood risk reduction projects, and Value Engineering Study and Reports	Satisfactory
W9126G16D0017 W9126G18F0159 **Section F – Project 3**	Value Engineering Study for the Corpus Christi Jetty Repairs	Value Engineering Study and Report	Exceptional
W9126G16D0017 W912HY19F0031 **Section F – Project 4**	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

I. AUTHORIZED REPRESENTATIVE

The foregoing is a statement of facts

31. SIGNATURE	32. DATE SIGNED
	April 12, 2022

33. NAME AND TITLE

Manish Mardia, P.E., Joint Venture Chairman

PART II

PART II

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER *(If any)*
W912QR22R0042

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 Huitt-Zollars a Joint Venture	3. YEAR ESTABLISHED **2019** 4. UNIQUE ENTITY IDENTIFIER **WQGNH65AUN21**
2b. STREET 4640 S Carrollton Ave Ste 220	5. OWNERSHIP a. TYPE **Joint Venture**
2c. CITY New Orleans 2d. STATE LA 2e. ZIP CODE 70119	b. SMALL BUSINESS STATUS **Small Business**
6a. POINT OF CONTACT NAME AND TITLE **Manish Mardia, Joint Venture Chairman**	7. NAME OF FIRM *(If block 2a is a branch office)*
6b. TELEPHONE NUMBER 504-559-1897 6c. E-MAIL ADDRESS mmardia@msmmeng.com	
8a. FORMER FIRM NAME(S) *(If any)*	8b. YR. ESTABLISHED / 8c. DUNS NUMBER

9. EMPLOYEES BY DISCIPLINE

a. Function Code	b. Discipline	c. No. of Employees (1) FIRM	c. No. of Employees (2) BRANCH
	NOTE: The Joint Venture does not have employees, it is a legal entity. Locations listed for JV personnel in section E resumes are the individuals respective firm's office location.		
	Total		

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

a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*

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

(Insert revenue index number shown at right)

a. Federal Work	1
b. Non-Federal Work	1
c. Total Work	1

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
4/13/2022

c. NAME AND TITLE
Manish Mardia, Joint Venture Chairman

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (*If any*)
W912QR22R0042

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 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 (1) FIRM	c. No. of Employees (2) BRANCH	a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
12	Civil Engineer	3	2	C07	Coastal Engineering	2
21	Electrical Engineer	1	1	C13	Computer Facilities; Computer Service	2
23	Environmental Engineer	2	1	C15	Construction Management	3
57	Structural Engineer	2	1	D01	Dams (Concrete; Arch)	1
42	Foundation/Geotechnical Engineer	1		D02	Dams; Dikes; Levees	2
24	Environmental Scientist	1	1	E03	Electrical Studies and Design	1
32	Hydraulic Engineer	1	1	L06	Lighting (Exteriors; Streets; Memorials Athletic Fields)	1
18	Cost Engineer / Estimator	1		P06	Planning (Site, Installation and Project)	4
08	CADD Technician	4	3	R11	Rivers; Canals: Waterways; Flood Control	4
06	Architect	1	1	S09	Structural Design; Special Structures	2
48	Project Manager	2	2	S13	Storm Water Handling & Facilities	3
61	Value Engineer	1	1	W02	Water Resources; Hydrology Ground Water	2
15	Inspector	3	3	W03	Water Supply; Treatment and Distribution	3
02	Administrative	2	1			
	Total	25	18			

11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS *(Insert revenue index number shown at right)*	
a. Federal Work	6
b. Non-Federal Work	5
c. Total Work	6

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 11 APR 2022
c. NAME AND TITLE Manish Mardia, P.E., President/Owner	

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (*If any*)
W912QR22R0042

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)*

8. FORMER NAME(S) *(If any)*	8b. YEAR ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER

9. EMPLOYEES BY DISCIPLINE

a. Function Code	b. Discipline	c. No. of Employees (1) FIRM	c. No. of Employees (2) BRANCH
12	Civil Engineer	3	1
21	Electrical Engineer	1	
23	Environmental Engineer	2	1
57	Structural Engineer	2	1
42	Foundation/Geotechnical Engineer	1	1
24	Environmental Scientist	1	
32	Hydraulic Engineer	1	
18	Cost Engineer / Estimator	1	1
08	CADD Technician	4	1
06	Architect	1	
48	Project Manager	2	
61	Value Engineer	1	
15	Inspector	3	
02	Administrative	2	1
	Total	25	7

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

a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
C07	Coastal Engineering	2
C13	Computer Facilities; Computer Service	2
C15	Construction Management	3
D01	Dams (Concrete; Arch)	1
D02	Dams; Dikes; Levees	2
E03	Electrical Studies and Design	1
L06	Lighting (Exteriors; Streets; Memorials Athletic Fields)	1
P06	Planning (Site, Installation and Project)	4
R11	Rivers; Canals: Waterways; Flood Control	4
S09	Structural Design; Special Structures	2
S13	Storm Water Handling & Facilities	3
W02	Water Resources; Hydrology Ground Water	2
W03	Water Supply; Treatment and Distribution	3

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

a. Federal Work	6
b. Non-Federal Work	5
c. Total Work	6

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 11 APR 2022
c. NAME AND TITLE Manish Mardia, P.E., President/Owner	

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER *(If any)*
W912QR22R0042

PART II - GENERAL QUALIFICATIONS

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

2a. FIRM (*or Branch Office*) NAME
Huitt-Zollars, Inc.

3. YEAR ESTABLISHED
1975

4. UNIQUE ENTITY IDENTIFIER
HVLYQETLZHY9

2b. STREET
5430 LBJ Freeway, Suite 1500

2c. CITY
Dallas

2d. STATE
TX

2e. ZIP CODE
75240

5. OWNERSHIP

a. TYPE
Corporation

b. SMALL BUSINESS STATUS
Large Business

6a. POINT OF CONTACT NAME AND TITLE
Robert J. McDermott, PE, President

6b. TELEPHONE NUMBER
214-871-3311

6c. EMAIL ADDRESS
mcdermott@huitt-zollars.com

7. NAME OF FIRM *(If Block 2a is a Branch Office)*
N/A

8a. FORMER FIRM NAME(S) *(If any)*

8b. YEAR ESTABLISHED

8c. UNIQUE ENTITY IDENTIFIER

9. EMPLOYEES BY DISCIPLINE

a. Function Code	b. Discipline	c. Number of Employees (1) FIRM	c. Number of Employees (2) BRANCH
02	Administrative	68	37
06	Architect	90	4
08	CADD Technician	46	11
12	Civil Engineer	159	33
15	Construction Inspector	4	
16	Construction Manager	10	1
21	Electrical Engineer	16	
23	Environmental Engineer	2	1
25	Fire Protection Engineer	2	
37	Interior Designer	6	1
38	Land Surveyor	57	16
39	Landscape Architect	6	6
42	Mechanical Engineer	24	1
47	Planner: Urban/Regional	4	
57	Structural Engineer	17	7
60	Transportation Engineer	15	9
62	Water Resource Engineer	12	7
	Other Employees		
	Total	538	134

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

a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
A06	Airports; Terminals and Hangars; Freight Handling	1
B02	Bridges	7
C15	Construction Management	6
C16	Construction Surveying	6
D04	Design-Build – Preparation of RFPs	4
G01	Garages; Vehicles Maintenance Facilities; Parking Decks	6
H04	Heating; Ventilating; Air Conditioning	6
H07	Highways; Streets; Airfield Paving; Parking Lots	8
H11	Housing (Residential, Multi-Family; Apartments)	3
I06	Irrigation; Drainage	6
L02	Land Surveying	7
L03	Landscape Architecture	6
P06	Planning (Site, Installation and Project)	7
R04	Recreation Facilities (Parks, Marinas, Etc.)	4
S04	Sewage Collection, Treatment and Disposal	7
S10	Surveying; Platting; Mapping; Flood Plain Studies	6
S11	Sustainable Design	6
S13	Storm Water Handling and Facilities	5
T04	Topographic Surveying and Mapping	5

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

(Insert revenue index number shown at right)

a. Federal Work	6
b. Non-Federal Work	8
c. Total Work	8

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
4/13/2022

c. NAME AND TITLE
Monica Kent, PE, LEED AP, Senior Vice President

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER *(If any)*
W912QR22R0042

PART II - GENERAL QUALIFICATIONS

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

2a. FIRM (*or Branch Office*) NAME
Huitt-Zollars, Inc.

3. YEAR ESTABLISHED
1975

4. UNIQUE ENTITY IDENTIFIER
QCMMZ5KBGCL5

2b. STREET
500 W. 7th Street, Suite 300

2c. CITY
Fort Worth

2d. STATE
TX

2e. ZIP CODE
76102-4728

5. OWNERSHIP

a. TYPE
Corporation

b. SMALL BUSINESS STATUS
Large Business

6a. POINT OF CONTACT NAME AND TITLE
Larry O. Rogers, PE, Vice President

6b. TELEPHONE NUMBER
817-335-3000

6c. EMAIL ADDRESS
lrogers@huitt-zollars.com

7. NAME OF FIRM *(If Block 2a is a Branch Office)*
Huitt-Zollars, Inc.

8a. FORMER FIRM NAME(S) *(If any)*

8b. YEAR ESTABLISHED

8c. UNIQUE ENTITY IDENTIFIER

9. EMPLOYEES BY DISCIPLINE

a. Function Code	b. Discipline	c. Number of Employees (1) FIRM	c. Number of Employees (2) BRANCH
02	Administrative	68	4
06	Architect	90	11
08	CADD Technician	46	6
12	Civil Engineer	159	7
15	Construction Inspector	4	
16	Construction Manager	10	1
21	Electrical Engineer	16	10
23	Environmental Engineer	2	
25	Fire Protection Engineer	2	1
37	Interior Designer	6	
38	Land Surveyor	57	
39	Landscape Architect	6	
42	Mechanical Engineer	24	14
47	Planner: Urban/Regional	4	
57	Structural Engineer	17	4
60	Transportation Engineer	15	
62	Water Resource Engineer	12	
	Other Employees		
	Total	538	58

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

a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
A09	Anti-Terrorism/Force Protection	4
B01	Barracks; Dormitories	4
C15	Construction Management	2
D04	Design-Build Preparation RFP's	3
D07	Dining Halls; Clubs; Restaurants	2
E02	Educational Facilities; Classrooms	2
E05	Elevators; Escalators; People-Movers	1
E07	Energy Conservation; New Energy Sources	5
F03	Fire Protection	4
G01	Garages; Vehicle Maintenance Facilities; Parking	5
H07	Highways; Streets; Airfield Paving; Parking	4
H11	Housing (Residential, Multi-Family; Apartments; Condominiums)	3
I01	Industrial Buildings; Manufacturing Plants	5
I05	Interior Design; Space Planning	2
I06	Irrigation; drainage	
J01	Judicial and Courtroom Facilities	4
M05	Military Design Standards	3
O01	Office Buildings; Industrial Parks	5
P08	Prisons & Correctional Facilities	2
R06	Rehabilitation (Buildings; Structures; Fac's)	5
S11	Sustainable Design	6
W01	Warehouses & Depots	5

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

(Insert revenue index number shown at right)

a. Federal Work	6
b. Non-Federal Work	5
c. Total Work	7

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
4/13/2022

c. NAME AND TITLE
Monica Kent, PE, LEED AP, Senior Vice President

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER *(If any)*
W912QR22R0042

PART II - GENERAL QUALIFICATIONS

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

2a. FIRM (*or Branch Office*) NAME
Huitt-Zollars, Inc.

3. YEAR ESTABLISHED
1975

4. UNIQUE ENTITY IDENTIFIER
TE2UF5DKK3B7

2b. STREET
10350 Richmond Ave., Suite 300

2c. CITY
Houston

2d. STATE
TX

2e. ZIP CODE
77042-4248

5. OWNERSHIP

a. TYPE
Corporation

b. SMALL BUSINESS STATUS
Large Business

6a. POINT OF CONTACT NAME AND TITLE
Gregory R. Wine, PE, LEED AP, Vice President

6b. TELEPHONE NUMBER
281-496-0066

6c. EMAIL ADDRESS
gwine@huitt-zollars.com

7. NAME OF FIRM *(If Block 2a is a Branch Office)*
Huitt-Zollars, Inc.

8a. FORMER FIRM NAME(S) *(If any)*

8b. YEAR ESTABLISHED

8c. UNIQUE ENTITY IDENTIFIER

9. EMPLOYEES BY DISCIPLINE

a. Function Code	b. Discipline	c. Number of Employees (1) FIRM	c. Number of Employees (2) BRANCH
02	Administrative	68	5
06	Architect	90	2
08	CADD Technician	46	4
12	Civil Engineer	159	25
15	Construction Inspector	4	1
16	Construction Manager	10	5
21	Electrical Engineer	16	1
23	Environmental Engineer	2	
25	Fire Protection Engineer	2	
37	Interior Designer	6	1
38	Land Surveyor	57	4
39	Landscape Architect	6	
42	Mechanical Engineer	24	2
47	Planner: Urban/Regional	4	
57	Structural Engineer	17	
60	Transportation Engineer	15	
62	Water Resource Engineer	12	1
	Other Employees		
	Total	538	51

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

a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
B01	Barracks; Dormitories	2
C15	Construction Management	5
D04	Design-Build – Prep RFPs	4
E02	Educational Facilities; Classrooms	4
G01	Garages; Vehicles Maintenance Facilities; Parking Decks	4
H01	Harbors; Jetties, Piers, Ship Terminal Facilities	3
H07	Highways; Streets; Airfield Paving; Parking Lots	6
I05	Interior Design; Space Planning	2
O01	Office Buildings, Industrial Parks	3
R03	Railroad; Rapid Transit	7
R04	Recreation Facilities (Parks, Marinas, Etc.)	5
R06	Rehabilitation (Buildings; Structures; Facilities)	6
R11	Rivers; Canals; Waterways; Flood Control	6
S04	Sewage Collection; Treatment and Disposal	5
S10	Surveying; Platting; Mapping; Flood Plain Studies	5
S11	Sustainable Design	4
S13	Storm Water Handling and Facilities	4
T03	Traffic and Transportation Engineering	3
T04	Topographic Surveying and Mapping	5

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

(Insert revenue index number shown at right)

a. Federal Work	1
b. Non-Federal Work	7
c. Total Work	7

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
4/13/2022

c. NAME AND TITLE
Monica Kent, PE, LEED AP, Senior Vice President

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER *(If any)*
W912QR22R0042

PART II - GENERAL QUALIFICATIONS

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

2a. FIRM (*or Branch Office*) NAME
Huitt-Zollars, Inc.

3. YEAR ESTABLISHED
1975

4. UNIQUE ENTITY IDENTIFIER
J75HXUHYNNP1

2b. STREET
111 N. Magnolia Ave., Suite 1600

2c. CITY
Orlando

2d. STATE
FL

2e. ZIP CODE
32801-2367

5. OWNERSHIP

a. TYPE
Corporation

b. SMALL BUSINESS STATUS
Large Business

6a. POINT OF CONTACT NAME AND TITLE
James Pope, Vice President

6b. TELEPHONE NUMBER
407-839-0414

6c. EMAIL ADDRESS
jpope@huitt-zollars.com

7. NAME OF FIRM *(If Block 2a is a Branch Office)*
Huitt-Zollars, Inc.

8a. FORMER FIRM NAME(S) *(If any)*

8b. YEAR ESTABLISHED

8c. UNIQUE ENTITY IDENTIFIER

9. EMPLOYEES BY DISCIPLINE

a. Function Code	b. Discipline	c. Number of Employees (1) FIRM	c. Number of Employees (2) BRANCH
02	Administrative	68	3
06	Architect	90	15
08	CADD Technician	46	
12	Civil Engineer	159	
15	Construction Inspector	4	
16	Construction Manager	10	
21	Electrical Engineer	16	
23	Environmental Engineer	2	
25	Fire Protection Engineer	2	
37	Interior Designer	6	
38	Land Surveyor	57	
39	Landscape Architect	6	
42	Mechanical Engineer	24	
47	Planner: Urban/Regional	4	
57	Structural Engineer	17	
60	Transportation Engineer	15	
62	Water Resource Engineer	12	
	Other Employees		
	Total	538	18

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

a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
E02	Educational Facilities; Classrooms	2
G01	Garages; Vehicle Maintenance Facilities; Parking Decks	2
H09	Hospital & Medical Facilities	1
I05	Interior Design; Space Planning	3
O01	Office Buildings; Industrial Parks	1
R06	Rehabilitation (Buildings; Structures; Facilities)	5
S11	Sustainable Design	3
R04	Recreation Facilities (Parks, Marinas, etc.)	6

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

(Insert revenue index number shown at right)

a. Federal Work	1
b. Non-Federal Work	7
c. Total Work	7

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
4/13/2022

c. NAME AND TITLE
Monica Kent, PE, LEED AP, Senior Vice President

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER *(If any)*
W912QR22R0042

PART II - GENERAL QUALIFICATIONS

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

2a. FIRM (*or Branch Office*) NAME
Huitt-Zollars, Inc.

3. YEAR ESTABLISHED
1975

4. UNIQUE ENTITY IDENTIFIER
F5F8YWY9BHF3

2b. STREET
2051 Jamieson Avenue, Suite 502

2c. CITY
Alexandria

2d. STATE
VA

2e. ZIP CODE
22314

5. OWNERSHIP

a. TYPE
Corporation

b. SMALL BUSINESS STATUS
Large Business

6a. POINT OF CONTACT NAME AND TITLE
Jim Wink, PE, Vice President

6b. TELEPHONE NUMBER
571-559-4050

6c. EMAIL ADDRESS
jwink@huitt-zollars.com

7. NAME OF FIRM *(If Block 2a is a Branch Office)*
Huitt-Zollars, Inc.

8a. FORMER FIRM NAME(S) *(If any)*

8b. YEAR ESTABLISHED

8c. UNIQUE ENTITY IDENTIFIER

9. EMPLOYEES BY DISCIPLINE

a. Function Code	b. Discipline	c. Number of Employees (1) FIRM	c. Number of Employees (2) BRANCH
02	Administrative	68	
06	Architect	90	
08	CADD Technician	46	
12	Civil Engineer	159	1
15	Construction Inspector	4	
16	Construction Manager	10	
21	Electrical Engineer	16	5
23	Environmental Engineer	2	
25	Fire Protection Engineer	2	1
37	Interior Designer	6	
38	Land Surveyor	57	
39	Landscape Architect	6	
42	Mechanical Engineer	24	6
47	Planner: Urban/Regional	4	
57	Structural Engineer	17	
60	Transportation Engineer	15	
62	Water Resource Engineer	12	
	Other Employees		
	Total	538	13

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

a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
B02	Bridges	3
G01	Garages; Vehicle Maintenance Facilities; Parking Decks	4
G02	Gas Systems (Propane, Natural, Etc.)	2
H04	Heating; Ventilating; Air	3
H11	Housing (Residential, Multi-Family; Apartments; Condominiums)	2
I01	Industrial Buildings; Manufacturing Plants	4
L02	Land Surveying	3
L03	Landscape Architecture	5
P06	Planning (Site, Installation, & Project)	1
P07	Plumbing & Piping Design	2
R06	Rehabilitation (Buildings; Structures; Facilities)	2
S05	Soils & Geologic Studies; Foundations	2
S09	Structural Design; Special Structures	1
S11	Sustainable Design	3
S13	Storm Water Handling & Facilities	2
U03	Utilities (gas & steam)	2
W01	Warehouses & Depots	3

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

(Insert revenue index number shown at right)

a. Federal Work	1
b. Non-Federal Work	6
c. Total Work	6

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
4/13/2022

c. NAME AND TITLE
Monica Kent, PE, LEED AP, Senior Vice President

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER *(if any)*: W912QR22R0042

PART II - GENERAL QUALIFICATIONS

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

2a. FIRM (OR BRANCH OFFICE) NAME	**Neelu, Inc.**
3. YEAR ESTABLISHED	2010
4. UNIQUE ENTITY IDENTIFIER	UMEFG8V9TKS5
2b. STREET	601 Basset Ct., SE
2c. CITY	Smyrna
2d. STATE	GA
2e. ZIP CODE	30080
5. OWNERSHIP	
a. TYPE	S-Corporation
b. SMALL BUSINESS STATUS	Woman Owned Small Business
6a. POINT OF CONTACT NAME AND TITLE	Ramesh Kalvakaalva, PE, CVS - Executive Vice President
6b. TELEPHONE NUMBER	(770)312-2014
6c. E-MAIL ADDRESS	Ramesh.Neeluinc@Gmail.com
7. NAME OF FIRM *(If block 2a. is a branch office)*	
8a. FORMER FIRM NAME(S) (If any)	
8b. YR ESTABLISHED	
8c. UNIQUE ENTITY IDENTIFER	

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	c. No. of Employees (2) BRANCH	a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
02	Administrative	1		A05	Airports	1
06	Architect	1		B01	Barracks; Dormitories	1
08	CADD/GIS Specialist	1		B02	Bridges	1
12	Civil Engineer	2		C15	Construction Management	1
18	Cost Engineer/Estimator	1		C18	Cost Estimating; Cost Engineering	1
61	Value Engineer	3		P06	Planning (Site, Installation & Project)	1
21/42	MEP Engineer	1		R10	Risk Analysis	1
27	Foundations/Geotechnical Engineer			S09	Structural Design; Special Structures	1
48	Project Manager*	1		T03	Traffic and Transportation Engineering	1
50	Risk Assessor*	1		V01	Value Analysis, Life Cycle Costing	2
53	Scheduler	1				
57	Structural Engineer	3				
61	Value Engineer*	3				
62	Water Resources Engineer	2				
*Member of other primary disciplines						
	Total:	10				

11. ANNUAL AVERAGE PROFESSIONAL SERVICES REVENUES OF FIRM FOR LAST 3 YEARS *(Insert revenue index number shown at right)*	
a. Federal Work	3
b. Non-Federal Work	3
c. Total Work	4

PROFESSIONAL SERVICES REVENUE INDEX NUMBER

1. Less than $100,000
2. $100,00 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: Neerja Tayal

b. DATE: 15 APR 2022

c. NAME AND TITLE: Neerja Tayal, PMP - President

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER (If any) **W912QR22R0042**

PART II – GENERAL QUALIFICATIONS

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

2a. FIRM *(or branch office)* NAME	3. YEAR ESTABLISHED	4. UNIQUE ENTITY IDENTIFIER
RIB U.S.COST	**1983**	**QSNJG9DLXXN1**

2b. STREET		
11475 Great Oaks Way, Suite 250		
2c. CITY	2d. STATE	2e. ZIP CODE
Alpharetta	**GA**	**30022**

6a. POINT OF CONTACT NAME AND TITLE	
Wade Martin, Senior Vice President	
6b. TELEPHONE NUMBER	6c. E-MAIL ADDRESS
770.481.1600	**Wade.Martin@rib-uscost.com**

5. OWNERSHIP

a. TYPE

CORPORATION

b. SMALL BUSINESS STATUS

n/a

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

8a. FORMER FIRM NAME(S) (if any)	8b. YR. ESTABLISHED	8c. UNIQUE ENTITY IDENTIFIER
U.S. Cost, Incorporated	**1983**	**QSNJG9DLXXN1**

9. EMPLOYEES BY DISCIPLINE

a. Function Code	b. Discipline	c. No. of employees (1) FIRM	c. No. of employees (2) BRANCH
02	Administrative	7	5
18	Cost Engineer / Estimator	36	12
12	Civil Engineer	1	
48	Project Manager	6	2
53	Scheduler	3	1
61	Value Engineer	1	1
	Other Employees		
	Total	54	21

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

a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
C18	Cost Estimating: Cost Engineering and analysis; Parametric Costing; Forecasting	7
V01	Value Analysis; Life-Cycle Costing	4

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

a. Federal Work **6**
b. Non-Federal Work **6**
c. Total Work **7**

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
	04/01/2022

c. NAME AND TITLE

Wade Martin, Senior Vice President

ARCHITECT-ENGINEER QUALIFICATIONS

1. SOLICITATION NUMBER *(if any)*: W912QR22R0042

PART II - GENERAL QUALIFICATIONS

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

2a. FIRM (OR BRANCH OFFICE) NAME	Legis Consultancy, Inc.
3. YEAR ESTABLISHED	2001
4. UNIQUE ENTITY IDENTIFIER	FU2ZLX1AHN71
2b. STREET	9 Dunwoody Park, Suite 131
2c. CITY	Atlanta
2d. STATE	GA
2e. ZIP CODE	30338
6a. POINT OF CONTACT NAME AND TITLE	Patrick S. Ray, Vice President
6b. TELEPHONE NUMBER	(404)509-2441
6c. E-MAIL ADDRESS	p.ray@legisconsultancy.com
5. OWNERSHIP a. TYPE	Corporation
b. SMALL BUSINESS STATUS	Service-Disabled Veteran-Owned
7. NAME OF FIRM *(If block 2a. is a branch office)*	
8a. FORMER FIRM NAME(S) (If any)	
8b. YR ESTABLISHED	
8c. UNIQUE ENTITY IDENTIFER	

9. EMPLOYEES BY DISCIPLINE

a. Function Code	b. Discipline	c. No. of Employees (1) FIRM	c. No. of Employees (2) BRANCH
02	Administrative	2	
16	Construction Manager	1	
18	Cost Engineer/Estimator	3	
48	Project Manager	2	
53	Scheduler	1	
61	Value Engineer	1	
	Total:	10	

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

a. Profile Code	b. Experience	c. Revenue Index Number *(see below)*
A05	Airports	2
B01	Barracks; Dormitories	2
C15	Construction Management	1
C18	Cost Estimating; Cost Engineering and Analysis; Parametric Costing; Forecasting	2
E03	Electrical Studies	1
E06	Embassies and Chanceries	1
E08	Engineering Economics	1
F03	Fire Projection	1
G01	Garages; Vehicle Maintenance Facilities; Parking Decks	2
H09	Hospitals and Medical Facilities	2
O01	Office Buildings	2
P02	Petroleum and Fuel	1
P06	Planning and Scheduling	2
R10	Risk Analysis	2
R11	Canals; Waterways; Flood Control	2
R12	Roofing	1
U03	Utilities	2
V01	Value Analysis; Life-Cycle Costing	2

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

a. Federal Work	4
b. Non-Federal Work	1
c. Total Work	5

PROFESSIONAL SERVICES REVENUE INDEX NUMBER

1. Less than $100,000
2. $100,00 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: PRay

b. DATE: 08 APR 2022

c. NAME AND TITLE: Patrick S. Ray, Vice President