

**SCOPE OF SERVICES
FOR
GENERAL ENGINEERING SERVICES – 2020 IDIQ**

I. INTRODUCTION

The Coastal Protection and Restoration Authority (CPRA) is responsible for planning, designing, evaluating, permitting, implementing, maintaining, operating, and monitoring Coastal Restoration and Flood Protection projects in the Louisiana Coastal Zone. The Indefinite Delivery/Indefinite Quantity (IDIQ) contracts will provide General Engineering Services on projects initiated by CPRA. Services may be provided in areas of work such as, but not limited to, civil, coastal, hydraulics, hydrology, geotechnical, environmental, surveying, mapping, and CAD support. Work may include, but is not limited to, engineering support for data collection, feasibility studies, numerical computer modeling, preparation of design reports, performing design analyses, value engineering, independent technical review, preparation of conceptual and contract drawings, contract specifications, cost estimating, construction contract administration and construction inspection services.

II. SCOPE OF WORK

Consultants will perform engineering and related services for CPRA projects on an **as needed, Task Order basis**. Consultants will be required to execute a Task Order which will specify the scope of services, task schedule, and compensation. Each Task Order will become a part of the IDIQ Contract.

Consultants will be required to provide some or all of the following services for each Task Order.

A. Services Required

The specific engineering services for this contract shall follow CPRA's current Geotechnical Standards for Marsh Creation and Coastal Restoration Projects, and Louisiana Flood Protection Design Guidelines (LFPDG), and consist of the following:

1. Hydraulics and Hydrology Engineering. Provide personnel and equipment to model, analyze and design a wide array of coastal restoration and flood protection structures including weirs, culverts, water control structures, inlet/outlet and conveyance channels, and pump stations. Designs could consist of wave, storm and/or sediment transport modeling.
2. Structural Engineering. Provide personnel and equipment to analyze and design a wide array of coastal and flood protection structures including levees, shoreline

protection and breakwaters, gated inlet and outfall structures, weirs, flap gated culverts and structural foundations. Designs could consist of structural steel, concrete, timber, fiberglass and/or soil.

3. Geotechnical Engineering. Provide personnel and equipment to perform geotechnical investigations, analyses, and design. These services may include, but are not limited to:
 - a) Field Investigations: Consultant shall provide personnel and equipment to conduct field investigations including, but not limited to:
 - Land based exploration, marine/deep water exploration and marsh/shallow water exploration
 - Undisturbed shallow and deep soil borings using fixed piston sampler for 3-inch and 5-inch diameter soil samples
 - Cone Penetrometer Testing (CPT)
 - Sampling (grab samples and vibracores)
 - b) Laboratory Testing: Testing services deliverables shall follow Geotechnical Document Standards. Consultant shall provide personnel and equipment to conduct laboratory testing including, but not limited to:
 - Soil classification testing (e.g., moisture content, organic content, unit weight, Atterberg limits, grain size distribution, and pH testing, etc.)
 - Soil strength testing (e.g., unconfined compression – UC; triaxial – UU)
 - Settlement testing (e.g., 1-D consolidation test, settling column test, low stress consolidation test, etc.)
 - c) Analyses: Consultant shall provide personnel and equipment to conduct geotechnical analyses including, but not limited to:
 - Data gap analyses
 - Slope stability analyses
 - Consolidation settlement analysis of both underlying soils and self-weight consolidation of dredge material, estimated settlement curves, construction sequencing, etc.
 - Subsurface soil profiles (e.g., strength profiles, geologic profiles, etc.)
 - Detailed engineering reports with analyses and recommendations
 - d) Construction Monitoring: Consultant shall provide personnel and equipment for construction monitoring services including, but not limited to:
 - Instrumentation
 - Field QA/QC of construction activities
 - Marsh fill sampling

4. General Engineering. Provide personnel and equipment to perform engineering design on a wide array of coastal restoration and flood protection projects including, but not limited to:
 - General engineering and hydraulic studies
 - Analysis and manipulation of data sets and GIS software
 - Technical document development, review and presentation
 - Preparation of construction documents including plans, specifications and bid packages
 - Engineer's opinion of probable construction cost

5. Project Management. Provide personnel and equipment to manage a wide array of coastal restoration and flood protection projects. These services could consist of managing and developing budgets and schedules, scoping and administering tasks for sub-consultants. Emphasis should be placed on communication and coordination to ensure timely and cost efficient project execution.

6. Surveying Services. Provide personnel and equipment to provide all surveying services necessary to perform topographic, bathymetric and boundary surveying, develop right-of-way or servitude maps, and provide other existing site data. These services may include, but are not limited to:
 - Topographic surveys to determine the horizontal and vertical position of existing natural features (ground elevations, bodies of water, vegetation, etc.)
 - Bathymetric and hydrographic surveys to determine the shoreline and depths of bays, tidal inlets, and other bodies of water within the project area.
 - Magnetometer surveys to locate pipelines, obstructions or anomalies as necessary to clearly define borrow areas, flotation access channels or fill areas.
 - Geophysical surveys utilizing side scan, sub-bottom acoustic sonar, and seismic sub-bottom profiling to facilitate geophysical and archeological investigations.
 - Establish Secondary benchmarks, both temporary (surface monument) and permanent (deep rod driven to refusal), as described by the latest CPRA GPS guidelines and as required to carry out field survey work
 - Surveying and engineering services to produce plan drawings, topographic and contour maps, cross sectional diagrams, and data sets.
 - Surveys suitable for the determination of property lines and corners and the preparation of Legal Descriptions, Property, and Right-of-Way Maps. These surveys will be used to define project boundaries and for the acquisition of property needed for project construction.
 - Control Accuracy Standards - Contractors must recognize and follow the recommendations and guidelines established in the latest CPRA GPS Guide for performing GPS Surveys & Establishing GPS derived orthometric heights.

- Construction related surveying services
7. Environmental and Permitting Services. Provide personnel to perform all environmental and permitting services necessary to obtain project permits. Required permits may include, but are not limited to:
- Cultural Resources clearances
 - NEPA documentation
 - Coastal Use permits (CUP) from the LA Department of Natural Resources
 - Wetland permits (404 and Nationwide) and Section 10 permits from the US Army Corps of Engineers
 - 408 permissions
 - Water Quality Certification from the LA Department of Environmental Quality
 - Scenic Stream permits from the LA Department of Wildlife and Fisheries
 - DOTD permits
 - Levee board permits
8. Construction Administration and Inspection. Provide personnel and equipment to perform construction administration and inspection services on a wide array of coastal and flood protection projects. Duties may include, but are not limited to:
- Contractor supervision and representation of owner
 - Resident inspection in remote locations
 - Review of contractor daily work logs
 - Technical document development and review
 - Daily inspection reports
 - Verification of pay requests

Additional services utilized under this scope could include those listed below; however, consultants are not required to include qualifications for these services in their SIQ as these qualifications will not be included in the scoring criteria.

9. Coastal and Hydraulics Engineering. Provide personnel and equipment needed to perform complex coastal engineering services such as but not limited to:
- Engineering assistance with the design of unique coastal restoration projects including but not limited to barrier island restoration, inlet stability, ridge restoration, marsh creation, hydrologic and hydraulic restoration, shoreline protection, and beneficial use of dredged material.
 - Utilization of hydraulic, morphological and hydrodynamic models to predict coastal, riverine and estuarine processes including, but not limited to, flow, circulation, wave climate, sediment transport and tidal influence.
 - Review and development of construction cost estimates and technical reports.
 - Preparation of construction documents including plans, specifications and bid

- packages.
- Technical presentations.
- Interfacing with all engineering and scientific disciplines.
- Other coastal engineering tasks as assigned.

10. Dredge Engineering. Provide personnel and equipment to analyze and design large scale dredge projects in a marine environment such as but not limited to:

- Knowledge of pertinent data collection and analysis associated with borrow and fill sites.
- Dredge borrow area and fill site design including determination of fill elevations, site layout for booster and pipeline routing and interpretation of borrow and fill site geotechnical data.
- Written dredge specifications and contract language specific to projects that involve riverine, inland or offshore site locations.
- Dredge construction inspection and contract management, including dredge log review and verification.
- Claim and dispute resolution.

11. Geophysical and Geological Investigations. Provide personnel and equipment to conduct reconnaissance level and detailed geophysical investigations for riverine and offshore sediment searches. Investigations may include collection and analysis of:

- Bathymetric survey
- Preliminary sampling plan (grab samples and vibracores)
- Seismic survey / Sub-bottom profiling
- Jet probing
- Side scan sonar survey
- Magnetometer survey
- Evaluation of geophysical data
- Borrow area delineation and volume calculations
- Technical report writing

Sand search investigations should follow CPRA's General Guidelines for Exploration of Offshore Sand Sources.

B. Personnel and Equipment Requirements

1) General. Provide the field personnel, engineers, office staff, and equipment necessary to accomplish the services as tasked by CPRA and outlined in Section A. Project sites are typically located in remote coastal areas (e.g., marsh, barrier island) requiring special access equipment of different size and capability. Typical requirements will include requesting site access from land owners prior to work being performed.

- 2) Field Work. All soil sampling methods accomplished under this Scope of Services shall be performed under the supervision of a Louisiana Licensed Professional Engineer well versed in such work.
- 3) Survey Requirements. Surveying work accomplished under this Scope of Services will be performed in accordance with the laws and rules of the Louisiana Professional Engineering and Land Surveying Board (LAPELS).
- 4) Engineer Requirements. Engineering work accomplished under this Scope of Services will be performed in accordance with the laws and rules of the Louisiana Professional Engineering and Land Surveying Board (LAPELS).
- 5) Equipment. Provide the necessary computer hardware, software, instruments, vehicles, boats, drill rigs, CPT rigs and other equipment best suited to accomplish the services required by CPRA.

C. Typical Deliverables

- 1) Plans typically are 11" x 17" size drawings bearing the seal of the responsible Professional Engineer or Professional Land Surveyor and may include:
 - <Elevation contour maps
 - <Cross-sections
 - <Plan views (Overlay on aerial or satellite photography and the Lambert Conformal Conic Projection, Louisiana State Plane Coordinate System South Zone, NAD83 may be required.)

Plans shall be submitted as directed by CPRA. Digital copies of plans shall also be submitted in AutoCAD 2015 or newer (*.dwg) format, *.dwt and *.pdf formats. All Plans shall be produced on CPRA standard title block.
- 2) Specifications (compatible with the CPRA standard format, hardcopy and digitally in MS Word and Adobe formats) and bid documentation.
- 3) Technical presentations
- 4) Technical reports
- 5) Progress reports
- 6) Data Collection Reports

A specific list of deliverables, with reporting format requirements, will accompany each Task Order when issued. All deliverables shall be accompanied by a Letter of Transmittal.