



## PROPOSAL STATEMENT OF WORK

# TASK # TBD: WATERFRONT FACILITIES INSPECTION AND DESIGN OF REPAIRS TO MOLE PIER 2 BULKHEAD AT NAVAL AIR STATION KEY WEST

Key West, FL

This proposal has been prepared in accordance with the current General Environmental Engineering Services Agreement between the City of Key West and Tetra Tech, Inc, Resolution No. 20-039, dated March 24, 2020. The work described herein will be performed on a Lump Sum basis in accordance with the fee schedule established in this agreement. Fees shall be not-to-exceed unless approved in writing by the City of Key West. This proposal is valid for a period of 90 days from the date on this page.

Prepared by: TETRA TECH, Inc.  
November 20, 2021





**PROPOSAL / STATEMENT OF WORK**

Tetra Tech along with our subconsultants, EMC Divers, Inc. & Nutting Engineers, will work with the City of Key West (City) by providing Professional Services to perform a Dive Inspection, provide Structural Engineering and Geotechnical Engineering to assist with the Design of Repairs to a steel sheet pile bulkhead along the Key West Outer Mole Pier 2 at the Naval Air Station Key West in Key West, Florida. We understand from the RFQ and our discussion with City Staff that a large void space (measuring approximately 30 feet long, 15 feet wide, and 17 feet deep) has revealed itself upland of the existing bulkhead. It is suspected that this void space is the consequence of a failed welded plate connection and resulting loss of upland soil; that a total of seven (7) such welded plates are present along the project limits; and that those welds may be in similar condition and susceptible to similar failure with similar material loss through the bulkhead.



*Insert 1: Location of Project Limits (Red Line) along NAS Key West Mole Pier*

Tetra Tech proposes to furnish services under the following categories:

**Task 1 – Administration**

1. Tetra Tech will review existing documentation related to the construction of the bulkhead as provided by the City and the US Navy. This information may include but not limited to drawings, geotechnical information, surveys, as-builts, pile logs, welding logs, utility locations, sheetpile specifications, embedment depths, inspection reports, or other pertinent information on the original construction of the existing bulkhead as may be required to fully understand the problem and potential solutions.
2. Tetra Tech will coordinate with the City and Navy for up to ten (10) routine progress meetings to be held virtually.

**(1) Administration:                      \$ 19,825**



**Task 2 – Dive Inspection**

1. Provide a four (4) man dive team and required equipment to safely perform dive operations.
2. Perform inspections, as directed by the engineer, of approximately 600 linear feet of sheet pile seawall.
3. Inspection tasks shall include, but not be limited to 100% level I visual inspection of the seawall, Level II and III inspections of select areas, Ultrasonic thickness readings, representative photographs of as-found conditions, evaluation of extent of corrosion, evaluation of extent of marine growth, evaluation of existing steel patches, evaluation and cataloging of any holes in sheet pile, coupons (base sheet pile metal samples) and measurements as directed.
4. Provide a plan and cost to remove and replace existing steel patches after evaluation of the same.
5. All work will be conducted in strict accordance with EM 385-1-1 safe practices for commercial diving.
6. Proposal includes testing of three (3) steel sheet pile coupons for carbon equivalent.
7. The locations of coupons taken, if not from an open hole in the wall, will be patched by the dive team.

**(2) Dive Inspection:                      \$ 44,325**

---

**Task 3 – Structural Engineering**

1. Attend 6-8 scheduled coordination and/or review meetings virtually to support this scope of work.
2. Have a structural engineer on site during the dive assessment and investigation for site condition verification and to provide immediate response and direction should questions arise from the dive activities. Assume 2 days on site plus travel.
3. Prepare a structural field investigation memo with summary of findings from the dive assessment and design analysis that outlines the design criteria and approach that will be used for repairs.
4. Prepare Structural Plans and Specs for repair of the steel sheet pile bulkhead by patching the existing holes that are allowing erosion of the backfill.
5. Provide quantities to the dive contractor for cost estimating. Then review the prepared cost estimate and provide comments.
6. Prepare a calculation package for submittal to reviewing authorities, as required.
7. Deliverables include Dive Investigation Memo, Design Analysis, 95% and 100% submittals.

**(3) Structural Engineering:                      \$ 39,080**

---

**Task 4 – Geotechnical Engineering**

1. Perform six (6) Standard Penetration Test (SPT) borings in general accordance with ASTM D-1586 specifications to a depth of 50 feet at locations identified.
2. Provide a geotechnical engineering report including a description of findings and soil parameters for bulkhead repairs. In order to provide information concerning the engineering properties of the soils encountered, it is anticipated that tests may be performed to determine natural water content, organic content, and sieve analysis on representative soil samples collected from the site.
3. Base cost for the six (6) SPT borings shall be \$15,000. A contingency of \$2,500 is included for pre-work Ground Penetrating Radar, in the event it is required by the US Navy prior to drilling.
4. The six (6) SPT borings will be located by the divers such that they are coincidental with the existing patches on the seawall for the purpose of confirming the presence or absence of voids in addition to the geotechnical testing for soil properties noted above. No drilling will occur where a patch is confirmed via diving to be missing and a void is therefore known to exist and can be probed from the water side.



**(4) Geotechnical Engineering:**                     \$ 17,500

**Task 5 – Services During Construction Engineering**

1. Tetra Tech is prepared to provide Services During Construction at the request of the City.
2. The proposed course of action for repairing the seawall is contingent upon performance of the scope above and the ensuing recommendations. Since the recommended course of action is unknown as of this writing, a scope and fee for our efforts is impossible to assign at this time.
3. A budgetary estimate, as noted, is therefore assigned to this task with the implicit understanding that a scope will later be negotiated based upon the contract rates and required levels of effort. Depending upon the scope requested by the City, the fee may be adjusted accordingly through Change Order or similar mechanism.
4. This task does not include the fee for the actual construction repairs.

**(5) Services During Construction:**                     \$ 20,040

**PROJECT ASSUMPTIONS**

1. The City and US Navy shall make available to Tetra Tech all drawings, geotechnical information, surveys, as-builts, pile logs, welding logs, utility locations, sheetpile specifications, embedment depths, inspection reports, or other pertinent information on the original construction of the existing bulkhead as may be required to fully understand the problem and potential solutions.
2. Any site visits requested by the City beyond those detailed above will be billed on an hourly basis.
3. Permitting and fees (including for the local building permit) shall be the responsibility of others or may be provided for under a separate authorization.
4. The City will be responsible for producing front-end documents for inclusion into the bid package.
5. Efforts related to re-design or value engineering shall be made available through a separate authorization.
6. Price is based on two (2) travel days, mobilization, demobilization and three (3) days of field investigation working ten (10) hours per day exclusive of any time required to gain access to the work site.
7. Assumes that security / access / badging can be done such that a trip down to Key West prior to the start of inspection is not required.
8. Includes testing of three (3) steel pile coupons for carbon equivalent. Coupons are anticipated to be 1" x 1" if they can be saw cut, or 5" x 5" if they need to be cut with a torch. The cost of carbon equivalent testing is included with this proposal.
9. Pay rates utilized to develop pricing are not based on any department of labor imposed prevailing wage determination. Should a specific wage determination be required, pricing may be adjusted accordingly.
10. A secure storage area will be provided for the team's provided equipment.
11. A dive station will be set up at the seawall's edge such that diving takes place from land adjacent to the seawall.
12. Services During Construction, (potentially inclusive of Bid Support) scope & fee to be negotiated and adjusted at a later time.

**PROJECT EXCLUSIONS**

This Scope of Work excludes the following items which may be provided under separate authorization:



**City of Key West – Key West Outer Mole Pier 2**  
**Naval Air Station Key West**  
Waterfront Facilities Inspection and Design of Repairs

1. This scope does not include costs associated with removal, repair or replacement of the seven (7) steel patches mentioned in the RFP. The patch situation will be evaluated including steel chemistry and a plan with cost estimate will be provided after the completion of the evaluation.
2. Performance of the prescribed repairs.
3. Detailed cost estimating per Navy standards.
4. Global analysis and assessment of the existing bulkhead system for any external load cases, including mooring and berthing.
5. Repairs or inspections of the tieback system, if in place.
6. Berthing & mooring analysis.
7. Permitting through FDEP, SFWMD, USACE, NOAA/FKNMS, the US Navy or the local Building Department.
8. Benthic Assessments
9. Coral Studies, Mapping, Relocation Services or Mitigation Fees as may be required by NOAA/FKNMS.
10. Permit fees
11. Utility Engineering
12. Survey

Task	Description	Amount
1	Administration	\$ 19,825
2	Dive Inspections	\$ 44,325
3	Structural Engineering	\$ 39,080
4	Geotechnical Engineering	\$ 17,500
5	Services During Construction	\$ 20,040
<b>TOTAL</b>		<b>\$ 140,770</b>