GARY GREENE
ENGINEERS
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November 25, 2024

Heather Finnell
Town of Holden Beach
110 Rothschild Street
Holden Beach, NC 28462

Subject: Statement of Qualifications for Development of Preliminary Designs and Cost Estimates for 441 Ocean Boulevard West

Dear Ms. Finnell:

The assessment and proposed design /repair options for the existing timber piles and decking at the Town of Holden Beach's Fishing Pier will require knowledge of pile / soil interaction behavior, wave forces and uplift on structures, shoreline erosion considerations and coastal wave estimation along with ability to develop economical options to maintain or replace segments of the pier. Gary Greene Engineers is ready to help you with performing proper evaluations and developing options for the pier.

More than 300,000 feet of /pier / wharf and over 700,00 feet of bulkhead important lessons-learned over the past 45 years will be at your disposal for this important project. During that time, services have been provided on analysis, new construction design and rehabilitation projects. Also, investigation reports on failed structures and expert testimony. Mr. Gary Greene will be the project manager and marine engineer on this project. His experience has been recognized leading to numerous appointments including:

- Appointed to assist North Carolina insurance department to write Chapter 36 of North Carolina Building Code on docks, piers, bulkheads and revetments and will be making revisions in 2025.
- Appointed to committee to prepare American Society of Civil Engineers (ASCE) 'Design Standard for Piers and Wharves". Will be a sub-chapter to the ASCE 7 document which is utilized in building codes.
- Appointed to committee updating ASCE 61 for seismic design of piers and wharves

The firm of Applied Technology and Management (ATM) is included on our team to provide water level data, wave data and shoreline profile (typical and long term erosoin) on this project. I have worked together with ATM on previous projects and can attest to the quality of the services provided by this firm. In addition, other engineers from ATM will be available to assist on civil and structural tasks as needed. For the project, services will be needed for surveying and geotechnical engineering. For geotechnical work, I will be recommending firms that can provide some advanced exploration techniques to get good data for the soil parameters. Once scope of utility items are identified, consultants for this work will be identified.

We are extremely interested in providing services to the Town of Holden Beach. As always, the opportunity to discuss marine structure related issues is welcomed; therefore, please call if you have any questions or need additional information.

Sincerely,

Gary Greene PE D.PE
Gary Greene Engineers

LISTING OF PERSONNEL

The firm of Gary Greene Engineers with subconsultant ATM provide expertise in the design of marine structures and coastal engineers. Gary Greene Engineers was started in 1992 with a focus on marine structures and is a sole proprietorship firm. In addition to municipal and private ocean fishing piers, the firm has provided services to State Port Authorities, State agencies, municipal agencies along with various private operations -industrial ports for container, bulk and liquid bulk products / marinas and shipyards. In addition to design of marine structures, the firm has provided forensic investigations of failed structures along with expert testimony.

ATM maintains six full-service office in the Carolinas, of which Wilmington, NC, and Mt. Pleasant, SC, have historically led efforts with the Town of Holden Beach. Additional waterfront support services will be provided as needed from other offices. ATM has more than 80 waterfront and coastal practitioners with a deep bench of more than 2,600+ additional specialist staff. ATM of NC's staff are trained coastal engineers and scientists. ATM has maintained a presence in the Carolinas for 40 years and has provided services on approximately 50 projects in North Carolina, with a focus on coastal and waterfront communities. Our team has a proven history of involvement in North Carolina coastal projects and resiliency improvements.

The project will be under the direction of Gary Greene, PE who will be responsible for overall team coordination, design and quality control. On previous projects, Mr. Greene has been responsible for projects involving bulkheads and piers, dredging, dredge disposal, slope protection (above & underwater) and other aspects associated with marine related projects in addition to permitting both new and rehabilitation projects. Therefore, he provides experience in the various disciplines which is valuable in managing these tasks.

The principal team members are as follows:

Gary K Greene PE D.PE, Project Manager / Marine Structural Engineer - Gary Greene Engineers
Mr. Greene has been responsible for project management, planning, design, and construction management of port and marine / coastal related projects. His 45 year experience includes responsibility for planning of port and harbor facilities, structural analysis and design of waterfront and coastal structures; channel design; dredge and dredge disposal; analysis and design of shore facilities; and permitting. In addition to being the project manager for the project, Mr. Greene will develop the structural documents (plans and specifications) along with permitting and managing the construction administration and inspection tasks.

Mr Greene has worked and currently has projects at various locations along the southeast from Maryland to Florida along with gulf coast work in Texas and projects overseas. With office in Raleigh, the firm is accustomed to managing projects inside and outside of North Carolina.

Francis J. Way, PE, Coastal Engineer

Mr. Way specializes in coastal, environmental and water resources engineering. He applies his background in coastal and water resources to flood hazard risk assessments, wave and current modeling, development of wave and other environmental loading on structures, beach nourishment, dredging and navigation studies, alternatives analyses, as well as shoreline stabilization projects. Mr. Way provides hydrodynamic, water quality, flushing, watershed, sedimentation, acoustic, artificial neural network, shoreline, and wave modeling and completes field data collection, data mining, statistical, and time series analyses. He is proficient in various surface water hydrodynamic, hydrologic, hydraulic, and water quality models and provides expert witness testimony on coastal engineering and FEMA-related issues.

He has extensive experience with the coastal systems in and around Holden Beach and has worked with the town on numerous coastal projects since 2008.

Justin D. Davis, PE, Civil / Structural Engineer

Mr. Davis specializes in waterfront development and redevelopment projects ranging from small private docks on the rivers of South Carolina to multi-million-dollar mixed-use luxury marinas in the Caribbean and Middle East. He has comprehensive knowledge of all phases of waterfront development and redevelopment for both public and private clients. His areas of specialization include project feasibility, grant market analysis, financial modeling, grant funding procurement, planning, permitting, marine structural assessment and design, and construction administration.

Timothy P. Mason, PE, Coastal Engineer

Mr. Mason is a senior coastal and waterfront engineer with over 30 years of experience with both public and private clients along the US east coast and internationally. Mr. Mason's coastal engineering work includes development of comprehensive beach and shoreline management plans, erosion assessment, coastal flood hazard/risk evaluations, evaluation of oceanographic conditions affecting fixed and floating piers and docks, and specification and design of waterfront infrastructure including piers, docks, and coastal protection structures. He also provides affidavits, expert analysis/reporting, and expert witness services.

Resumes are provided at end of this document.

CURRENT AND PROJECTED WORKLOAD

Based on contracted work underway and expected projects, the team will be able to provide services in a timely manner adhering to schedules developed.

GENERAL UNDERSTANDING OF THE PROJECT

Experience in Investigations

Mr Greene began inspecting marine structures as an engineer for the NC State Ports Authority in 1979 and trained for underwater inspections. Thus, the +45 years of inspecting various marine structures creates an understanding of what is important. It was noted in one of the reports submitted to the Town that the inspection of the timber piles consisted of a visual inspection. Please note the two pictures below. The one on the left shows an external view which would indicate no issues; however, the actual condition is noted on the right.

With growth cleaned / scraped on the pile, the small holes noted on the left would note a potential for teredo and lead to taking some cores into the pile to detect deterioration (holes could be plugged after inspection).

Experience in Soil Structure Interaction

In order to obtain soil capacity that is not too conservative, we will be recommending some soil testing that can provide better parameters compared to typical SPT / CPT testing. With regard to this project, one items noted in the Town documents is that installation of timber piles utilized water jetting should not be allowed. While there is some reduction in capacity, this does not mean that the structure has no capacity. We have results of tests showing the initial loss and the presence of an increase of capacity over time. Thus, using jetting, which allows for smaller equipment on the pier deck, can be accommodated with modeling.

Modeling of the pier structure support will develop, with our software, the lateral and vertical movements of the structure. This allows us to investigate the difference in swaying of the structure, under wave loads, for both battered pile bents and plumb pile bents along with evaluation of stress at top of plumb piles where cross bracing in various directions attempt to restrain the sway.

Experience in Wave Parameters

ATM has experience in developing wave criteria which will consider both nourished and eroded near shore profiles. In addition to wave load development based on Corps of Engineers design recommendations, the use of testing of waves on piers at HR Wallingford will be utilized.

Experience with Coastal Timber Piers

Mr. Greene's first timber fishing pier design was in 1981 for reconstruction of the Ocean Crest fishing pier. This design introduced different connections for the components that created redundancy for the pier along with establishing deck elevations based on surge levels.

Experience with Project Costs

Due to experience with providing services to contractors, the approach is to estimate project costs and time in a similar manner to a contractor. In lieu of unit costs, we will obtain delivered material prices and estimate labor and equipment time for project tasks. The items include time and materials for templates required for installation of piling and the number of sets (dismantling and erecting templates) required for a project. We are in contact with contractors on a daily basis and will consult with them on a project costs.

Experience with Asset Management

Gary Greene Engineers and ATM have both provided clients with developing an asset management plan that provides input for owners to plan for maintenance of the infrastructure.

Experience with Permitting

Gary Greene Engineers and ATM have both provided clients with obtaining permits for timber piers for maintenance / repair along replacements..

MOST IMPORTANTLY, WE ARE VERY INTERESTED IN PROVIDING SERVICES TO THE TOWN AND WOULD BE PLEASED TO HAVE THE OPPORTUNITY TO WORK WITH THE TOWN IN DEVELOPING ECONOMICAL SOLUTIONS THAT CAN PROVIDE THE PIER STRUCTURE WITH A DESIGN THAT WILL PROVIDE A SUSTAINABLE FACILITY.

RESUMES

RESUME: GARY K. GREENE PE D.PE

EDUCATION:

B.S. Civil Engineering
NC State University

Graduate Studies
NC State University

REGISTRATION:

Professional Engineer - Virginia, North Carolina, South Carolina, Florida, Pennsylvania, Maryland, Georgia and Texas

EXPERIENCE:

Mr. Greene has been responsible for project management, port operations review, planning, design, and construction management of port and marine related projects. His 40 years of experience includes responsibility for planning of port, & harbor facilities, review; structural analysis and design of waterfront structures; analysis and design of shore facilities; and permitting. Waterfront structural experience includes over 300,000 feet of Industrial Piers and over 600,000 feet of Bulkheads.

Mr Greene's career includes:

-appointment as peer reviewer of USCOE Sheetpile Design Manual by ASCE

- preparation of NC Building Code Chapter 36, Piers, Bulkheads & Waterway Structures

- appointment to ASCE committee to prepare national (US) design standards manual for Piers and Wharves

A partial list of projects include:

Port Planning & Design

ADM Marine Terminal, Southport - Inspection and design of repairs for steel H Piles and concrete deck for access trestle, platform and breasting / mooring structures.

Facility Expansion, Port of Anchorage, Alaska- Evaluation of sheetpile and pile supported wharf alternates for seismic and other loading conditions at site. Distance from proposed top of deck to mudline - 85 feet allowing for 34 ft tide *thus bulkhead was designed for 85 feet height.* Additional work involved developing dike system to allow fill of material 400 feet from exiting shoreline.

Repair / Replacement of Ocean Fishing Pier, Long Beach, NC - Development of design wave and design of pier.

Replacement of Ocean Fishing Pier, Myrtle Beach State Park, SC - Development of design wave criteria and structural design of pier.

Evaluation and Development of Repairs for Avon Fishing Pier, Avon NC - Development of wave criteria, inspection of structure and development of repairs for National Parks.

Yeamans Hall Shoreline Protection, Charleston SC - Project involved providing steep slope protection for eroding bluff and failed bulkhead segments utilizing combination of mat and MSE wall.

Pier and Pipe Storage Design, Agru Pipe Facility, Charleston SC - Design of pier to allow launching and retrieval of large diameter HDPE pipe to/from Cooper river along with waterside pipe storage and shoreline structures.

The City Boatyard, Forklift and Travel Lift Piers, Wando SC - As structural consultant to ATM engineers, design of modification and expansion of travel lift pier and new fork lift pier.

The City Marina, Charleston SC - As structural consultant to ATM engineers, design of piers and waterfront structures for marina expansion.

1000 ton Travel Lift Pier, Stevens Towing, Yonges Island SC - Design of piers for 1000 ton and 150 ton travel lifts.

Savannah Riverwalk Failure Study, River Landing, Savannah - Investigation and recommendations for repair of pile supported structure with bulkhead that was experiencing differential lateral movement.

RESUME: GARY K. GREENE PE D.PE

APPOINTMENTS:
1983 Appointed to ASCE Port and Harbor Technical Committee

1983 Appointed to ASCE Port & Harbor Task Committee on Vessel Traffic Control

1986 Appointed Chairman to ASCE Port & Harbor Task Committee on Computer Modeling for Port and Harbor Planning and Design

1987 Appointed to ASCE Port and Harbor Committee for Updating Manual 50, Small Craft Harbors

1987 Appointed to ASCE Port & Harbor Task Committee on Committee on Underwater Scour of Marine Structures

1990 Appointed Chairman to ASCE Port and Harbor Task Committee on Storm Drainage for Container Terminals

1990 Appointed to ASCE Port and Harbor Task Committee on Timber Materials in Marine Environment

1990 Appointed Principal US Representative to Working Group on Movement of Moored Ships, PIANC

1992 Appointed to Paving subcommittee for American Association of Port Authorities

1993 Appointed as Peer Reviewer for ASCE on US Army Corps of Engineer's Manual on "Engineering and Design of Sheet Pile Walls"

1997 Appointed to Joint ASCE / PIANC committee to develop standard for fender testing specifications.

2001 Appointed to ASCE Port and Harbor Task Committee on mooring analysis.

2002 Appointed to PIANC Committee on Composite Materials in Marine Facilities

2002 Appointed to PIANC Committee on Slope Protection for Bowthrusters

2012 Peer Reviewer of ASCE practice manual on mooring of ships

2013 Appointed to ASCE committee practice manual on port pavements

2016 Appointed to PIANC WG186 Committee on Mooring of Large Ships at Piers / Quays

Buckeye Terminal, Baltimore - Inspection and preparation of report identifying and preliminary design of repair requirements for steel piles and concrete deck. Also included evaluation of mooring and fendering for environmental conditions and passing vessels along with review of terminal for OCIMF parameters.

SC Port Authority Leatherman Marine Terminal Bulkhead Failure Investigation, Charleston. Forensic services on claim associated with failure of terminal bulkhead structure during construction.

Masons Landing Marina Bulkhead - Investigation and forensic services for evaluation of failed bulkhead along with task to re-design bulkhead with limited distance for anchoring wall structure and high water tables.

Dockside Restaurant & Marina - Permitting and design of waterfront structures with new deck, bulkhead and floating docks.

Odfjell Terminal, Charleston - Planning and design of new facilities and modifications for developing a new marine chemical liquid bulk terminal. New platform with hose tower along with dolphins, approach / pipe bridge access and fire suppression.

Boreo Terminals Berth 12, Grand Bahama - Planning and Design for reconstruction of tanker berth involving bulkhead, landside improvements, hose tower and bunker fueling structures.

Sheetpile Seawalls, Sandbridge Beach, Va - Project involved development of design wave criteria along with design of sheetpile wall structures to accommodate wave loading and overwash. Seawalls replaced existing structures that had failed.

Buckeye Terminal, Raritan Bay, NJ - Inspection and preparation of report identifying and preliminary design of repair requirements for steel piles and concrete deck of liquid bulk tanker pier. Also included evaluation of mooring and fendering for environmental conditions.

Port of Suape, Brazil - Study including forecasting of container volume; planning and conceptual design of container facilities and developing cost estimates for infrastructure improvements and equipment.

East Coast Terminals, Savannah - Permitting and design of various projects including re-construction of 1200 feet of existing wharf for upgraded loadings; repairs / modifications to existing dolphins and modifications to pier platform for ship loader for this dry bulk terminal.

Gdansk, Poland - Developed planning documents that included layout and preliminary designs for a 500k TEU container facility and short sea ro-ro terminal at north port area (greenfield site) in Gdansk port.

Failed Bulkhead Investigation, Panama City Port, Fl. Independent investigation, on behalf of port authority, of bulkhead failure that occurred during construction efforts associated with modifications to increase dredge depth using jet grouting.

Port Expansion Review, Colombo (Sri Lanka) - Port planning involving capacity analysis and operations analysis for determination of equipment, storage area and number of berths based on forecasts for next 20 years beyond existing facilities along with facility construction and cost estimates for expansion of the port.

Savannah Plant Riverside Riverwalk Failure Study, Savannah - Investigation and recommendations for repair of pile supported structure with bulkhead that was experiencing lateral movement.

Design of shore protection for Florida Power & Light Coastal Nuclear Facilities - Design of shoreline protection to accommodate federal requirements (Post Fukuashima Evaluation) for nuclear facilities to accommodate potential tsunami wave event.

RESUME: GARY K. GREENE PE D.PE

2018 Appointed to ASCE WG211 committee to prepare design standards manual for Piers and Wharves

2018 Appointed to PIANC committee to update international standard for fender testing specifications and berthing design standards

2020 Appointed to PIANC committee to develop bollard specification and testing requirements

AFFILIATIONS

American Society of Civil Engineers

Permanent International Association of Navigation Congress

American Association of Port Authorities

Moran Towing Dock, Savannah, Geogia - Investigation and recommendations of failed bulkhead associated with tie backs.

Port of Bourgas, Bulgaria - Planning and design services for development of container and intermodal terminal facilities. Included operations evaluation, capacity modeling, planning development and improvements to accommodate forecasts, equipment selection, layout, preliminary facility design and cost estimating.

Port of Ploce, Croatia - Planning and design services for development of container and intermodal terminal facilities. Services included operations evaluation, capacity modeling, planning development, analysis of existing berth structures to accommodate loadings, equipment selection, layout, preliminary facility design and cost estimating.

Guayaquil (Ecuador) Terminal Planning - Performed study of existing operations, including computer simulation models of port operation, evaluated terminal layout options and equipment requirements. Prepared report with recommendations for terminal improvements / expansion and modifications to operations for both container and general cargo facilities.

Rio Haina (Dominican Republic) Terminal and Equipment Selection Study - Develop forecasts of container cargo for various lines calling the port along with modeling the terminal for various scenarios of storage layouts and types of equipment.

Liberty Terminals, Savannah - Planning, permitting and design for re-use of existing terminal for use as general / bulk cargo terminal. Various projects include re-construction of existing 1200 feet wharf; new 1000 feet wharf and ro-ro ramp; rehabilitation of existing warehouses and re-construction of open storage areas.

Buckeye, Tampa - Permitting and design of T-head pier and related waterfront structures for replacement of existing liquid bulk facility. Other work for Hess includes minor repairs of existing dolphins.

National Gypsum Dock Facilities, Savannah GA. Permitting and design associated with reconstruction of waterfront facilities to accommodate increased dredge depth along with shoreline stabilization and miscellaneous repairs to existing structures.

Liberty Terminals, Baltimore- Planning, permitting and design for re-use of existing shipyard for use as general / bulk cargo terminal.

Georgetown Steel Wharf, Georgetown SC- Investigation of damage and design of repairs due to accidental ship berthing. Investigation included modeling ship impact / structure interaction.

Cruise Mooring Facilities, Cancun Mexico. Design of offshore moorings to berth cruise ships in 80 feet of water.

Hess Oil, Wilmington - Design of T-head pier and related waterfront structures for replacement of existing liquid bulk facility. Other work for Hess includes minor repairs of existing dolphins, evaluations for deepening and ship mooring, dredge deepening; and breasting dolphin replacement.

Coal /Bulk Import Facility, Wilmington, NC- Permitting and design of detached pier for transfer of product to barge along with design of barge unloading facilities for conveying material to existing stockpile.

Hess Oil, Charleston - Permitting and design of replacement dolphins and related waterfront structure repairs.

Sophie, Bulgaria; Sarajevo, Bosnia; and Schopie, Macedonia Intermodal Container Facilities - Providing planning and design services for development of rail intermodal terminals to accommodate container transfer. Services include planning, equipment selection, layout, preliminary facility design and cost estimating.

Justin D. Davis, PE

Senior Professional Engineer

ATM
A Geosyntec Company

PROFESSIONAL EXPERIENCE

Total Years: 21
Years with ATM: 18

AREAS OF SPECIALIZATION

- Project Management
- Engineering Feasibility Analysis
- Marina/Drystack Due Diligence
- Market Analysis
- Financial Analysis
- Marina Planning
- Drystack Planning
- Insurance Claim Resolution
- Grant Funding
- Structural Design

EDUCATION

- Graduate Certificate, Structural Engineering, The Citadel, 2022
- MBA, The Citadel, 2009
- BS, Civil Engineering, Cum Laude, Clemson University, 2002

PROFESSIONAL REGISTRATIONS

- Prof. Engineer, NC, No. 042879, 2015
- Prof. Engineer, SC, No. 28181, 2010
- Prof. Engineer, GA, No. PE040200, 2015

PROFESSIONAL AFFILIATION

- South Carolina Clean Marina Committee Member
- Association of Marina Industries (AMI) Panelist for Certified Marina Manager (CMM) Training

SUMMARY OF QUALIFICATIONS

Mr. Davis specializes in waterfront development and redevelopment projects ranging from small private docks on the rivers of South Carolina to multi-million-dollar mixed-use luxury marinas in the Caribbean and Middle East. He has comprehensive knowledge of all phases of waterfront development and redevelopment for both public and private clients. His areas of specialization include project feasibility, grant market analysis, financial modeling, grant funding procurement, planning, permitting, marine structural assessment and design, and construction administration.

RELEVANT PROJECT EXPERIENCE

Isle of Pails Public Pier, Marina, and Park Redevelopment, Isle of Palms, SC: Assisted throughout all stages of a comprehensive redevelopment of a municipally owned waterfront site including master planning, permitting, design, and several phases of bidding and construction. Lead structural designer and Engineer of Record for the replacement and reconfiguration of a public fishing and recreation pier. Coordinated closely with the Town and Contractor throughout bidding and construction ensure the works were completed in accordance with design plans and specifications.

Charleston Waterfront Park Expansion and Public Pier, Charleston, SC: Led regulatory permitting and marine structural design efforts for an expansion of the extremely popular Joseph P. Riley Waterfront Park in downtown Charleston, SC. Procured $600k in federal funding for a public pier and marina to service the park and an associated luxury hotel. Performed pro forma analysis and coordinated marina layouts with other members of the design team including upland site/civil and landscape architects. Developed regulatory permit applications and gained regulatory approvals for all waterside project elements including the proposed marina, an alongshore boardwalk, and the expansion of the waterfront park via a combination of land reclamation and fixed structures. Lead structural designer and Engineer of Record for the proposed public pier and associated marina facility. Currently engaged in value-engineering exercises with the Client's selected contractor.

Cooper River County Park and Marina, North Charleston, SC: Leading a diverse team of landscape architects and engineers throughout master planning, permitting, and design efforts associated with the holistic redevelopment and rebranding of a historically underutilized waterfront site owned by the Charleston County Park and Recreation Commission into an extensive public park offering both passive and active recreational opportunities. Facilitated preliminary planning charrettes, detailed master planning, cost estimating, phasing

determination. Conducted structural assessment of existing fixed piers and floating docks and integrated these marine elements into the park master plan. Participated in extensive public outreach efforts, council/stakeholder meetings, and presentations. Procured regulatory permitting through state, and federal entities for marine elements including modifications to the existing Grande Pier, shoreline protection, a pedestrian access pier, and a public crabbing dock. Currently leading final design and regulatory authorizations processes for Phase 1 of the masterplan which includes a new park office/restroom building, covered shelter, ~700 linear feet of rip-rap revetment, site grading, stormwater retention, picnic area, lawn areas, meadows, landscaping, site furnishings, paths, boardwalks, site sanitary sewage system design, site potable water design, etc.

St. Johns Yacht Harbor Marina, Charleston, SC: Lead structural designer and Engineer of Record for several fixed timber piers associated with the redevelopment and expansion of the St. Johns Yacht Harbor Marina facility in Johns Island, SC. The design included determination of appropriate design parameters, analysis of applied wave and other environmental loads on the structures, integration with existing structures, and incorporation of fixed boatlifts into the design of the structure. Reviewed contractor submittals and responded to technical Requests for Information (RFIs) throughout project bidding and construction. Conducted progress inspections throughout construction to ensure construction works were in keeping with design documents.

Charleston City Marina Redevelopment, Charleston, SC: Provided myriad support to the comprehensive redevelopment and expansion of the municipally owned Charleston City Marina since 2009. The facility is one of the largest marina facilities in the region and a premier boating destination along the eastern seaboard of the U.S. Managed a multi-year regulatory permitting effort for the redevelopment which required extensive coordination with regulatory agencies, participation in stakeholder meetings and presentations, and various other public outreach efforts. Coordinating closely with regulatory agencies with regard to ongoing permit modifications and ensure regulatory compliance. Procured over $2M in grant funding approvals for the project and administering the grants via close coordination with state and federal agencies. Facilitating final design of various project elements, wave modeling/analysis for future phases of development, and peer review of the selected Dock Manufacturer's engineering design and providing a wide range of ancillary technical support during ongoing and future phases of project construction.

SeaBreeze/Town Creek Marina Redevelopment, Charleston, SC: Assisted with marina feasibility assessments for the redevelopment and expansion of a marina on Town Creek in Charleston, SC. Developed joint federal and state permit applications for marina redevelopment and expansion. Lead structural designer and Engineer of Record for several project elements including a gangway access pier and two large over-water piers/decks intended to host special events and gatherings at the marina. Coordinated closely with the Contractor and Client throughout construction to review contractor submittals and conduct site visits to ensure the works are being executed in accordance with the design plans, specifications, and contract documents.

Kiawah River Plantation Waterfront Improvements, Johns Island, SC: Led planning, permitting, and design efforts associated with waterfront access facilities at the Kiawah River residential development in Johns Island, SC. These facilities include two (2) community piers with floating docks, a concrete boat launch ramp, courtesy dock, and pedestrian pier/boardwalk. Conducted pre-application meetings with federal and state regulatory authorities, coordinated site and bathymetric surveys, and oversaw development of federal and state permit applications and approvals. Lead structural designer for the fixed piers, boardwalk, and boat ramp. Administered the bidding process and construction contract on the Client's behalf for the first facility and currently entering the construction phase for the second facility.

PROFESSIONAL EXPERIENCE

Total Years: 26
Years with ATM: 24

AREAS OF SPECIALIZATION

- Coastal and Ocean Engineering
- Coastal Processes and Sediment Transport Modeling
- Wave Modeling
- Shoreline Erosion Modeling
- Hydrodynamic Modeling
- Water Quality Modeling
- FEMA Flood Zone Analysis and Remapping
- Permitting and Comprehensive Environmental Studies
- EIS and NEPA support
- Endangered Species Formal Consultations
- Fisheries, Wetland and Biological Studies
- Physical and Biological Oceanography
- Data Collection and Statistical Analysis
- Data Mining

EDUCATION

- MS, Ocean Engineering, Texas A&M University, 2000
- BS, Biology, Boston College, 1993

PROFESSIONAL REGISTRATIONS

- Prof. Engineer, NC, No. 044849, 2017
- Prof. Engineer, SC, No. 27831, 2009
- Certified Floodplain Manager, No. US-21-11993, 2021

PROFESSIONAL AFFILIATIONS

- Member, FEMA Scientific Resolution Panel
- SC Beach Advocates
- North Carolina Beach, Inlet and Waterway Association

SUMMARY OF QUALIFICATIONS

Mr. Way specializes in coastal, environmental and water resources engineering. He applies his background in coastal and water resources to flood hazard risk assessments, wave and current modeling, development of wave and other environmental loading on structures, beach nourishment, dredging and navigation studies, alternatives analyses, as well as shoreline stabilization projects. Mr. Way provides hydrodynamic, water quality, flushing, watershed, sedimentation, acoustic, artificial neural network, shoreline, and wave modeling and completes field data collection, data mining, statistical, and time series analyses. He is proficient in various surface water hydrodynamic, hydrologic, hydraulic, and water quality models and provides expert witness testimony on coastal engineering and FEMA-related issues.

He has extensive experience with the coastal systems in and around Holden Beach and has worked with the town on numerous coastal projects since 2008.

RELEVANT PROJECT EXPERIENCE

Holden Beach Nourishments, Holden Beach, NC: Project manager responsible for the design, permitting and overseeing borrow area and beach nourishment construction activities in 2008, 2009, 2014, 2017, 2019, 2021 and 2022. Nourishments vary in size and shoreline reach placement. 2008 and 2009 nourishments were truck hauls of 200,000 cubic yards; 2014 and 2019 projects used an inlet shoal as a borrow source while the 2017 and 2022 nourishments utilized offshore borrow areas and were 1.31 and 1.54 million cubic yards. The 2009 project was a FEMA mitigation project due to Hurricane Hanna. The 2017 project also included some FEMA mitigation from Hurricane Matthew (2016) while the 2022 project included FEMA mitigation from Florence (2018), Michael (2018), Dorian (2019) and Isaias (2020). Interacted with state and federal regulatory agency personnel on a weekly basis and ensured the project complied with all permit and monitoring conditions. Developed bid documents and oversaw bidding process. Performed construction administration and reviewed all payment/volume data. Coordinated all post-project monitoring requirements. Borrow areas included upland, nearby sections of the Atlantic Intracoastal Waterway (AIWW), and offshore.

Terminal Groin Analysis and Modeling, Holden Beach, NC: Developed alternative analysis and subsequent studies to determine the feasibility of a terminal groin and nourishment project along the erosive east end. Applied the CMS numerical sediment transport model which considers inlet and nearshore currents, tides and waves.

Terminal Groin Environmental Impact Statement (EIS) Development, Holden Beach, NC: Worked with the USACE and their third party independent contractor to develop a draft and final EIS for a terminal groin and nourishment project along the erosive east end. Developed an inlet

management plan and performed a 30-year economic cost analysis for several alternative beach management strategies.

Hurricane Damage Analysis, FEMA Coordination, and Beach/Dune Mitigation/Restoration, Holden Beach, NC: Assisted the Town in recovery from Hurricanes Florence and Michael. Performed beach and dune surveying and loss calculations; developed necessary documents for FEMA mitigation and reimbursement; and identified several alternatives for restoring beach and dune system (upland, nearshore, offshore sand sources, etc.).

Holden Beach FEMA Mitigation, Holden Beach, NC: Responsible for coordination with FEMA on Hurricane Hanna (2008) impacts related to dune and engineered beach restoration activities. Successfully performed post-mitigation work with FEMA funding participation.

Borrow Area Search and Analysis, Holden Beach, NC: Conducted a search for beach nourishment sand offshore. Bathymetry, side-scan sonar, seismic imaging, live hardbottom and vibracore data were all analyzed in order to establish feasible, permittable borrow areas.

Post-Hurricane Florence Assessment and Mitigation, North Topsail Beach, NC: Performed post-hurricane support and evaluations for the Town following one of the most destructive hurricanes to hit since Hurricane Fran in 1996. Worked with the Town and FEMA to construct emergency dunes (Category B) and engineered beach (Category G) mitigation. Developed an estimate of probable costs for FEMA to have the mitigation/recovery projects obligated for FEMA reimbursement. Permitted, bid, and constructed an upland truck haul project for the Category B section of shoreline in spring 2021. This truck haul project placed ~150,000 cy of sand over 6 miles of shoreline. Worked with the Town to ensure FEMA funding as well as acquire state funding for additional work. The Category G project for 630,000 cy over 3.5 miles was successfully completed in the 2023/2024 winter/spring environmental window.

Harbor Station Marina Wave Design and Flushing Analysis, Harbor Station, VA: Developed extreme water level and wave forces for a proposed marina development on the Potomac River. Assessed existing water quality and potential project impacts. Performed flushing analysis and established marina entrances/openings based on this analysis.

Open Coast Docking Pier and Marina Evaluation, Guacalito, Nicaragua: Analyzed the operational and extreme offshore wave conditions, then used the CMS wave model to propagate the conditions to the site. Evaluated many conditions under varying water level, wave height, wave period, wave direction to optimize pier and marina location and dimensions. Also evaluated breakwater alternatives to enhance marina tranquility.

Municipal Memorial Waterfront Park Phase 2, Pier Wave, Water Level, Current, And Flushing Analysis, Mount Pleasant, SC: Developed design forces for the pier related to waves, water levels, currents. Also developed a wave screen design to maximize operations for the marina component of the pier. Assisted in permitting and evaluating flushing as well as scour.

Commercial Dock Design, Permitting, and Construction Oversight, Village Creek Landing, St. Simons Island, GA: Project manager responsible for the redesign of a commercial dock and performed all permitting. Developed bid documents, evaluated bids, coordinated with contractor throughout the construction process.

Timothy P. Mason, PE
Senior Principal

ATM
A Geosyntec Company

PROFESSIONAL EXPERIENCE

Total Years: 32.5
Years with ATM: 31.5

AREAS OF SPECIALIZATION

- Coastal and Waterfront Engineering
- Environmental Siting Studies
- Wave and Water Level Determination for Piers and Docks
- Shoreline Protection and Restoration
- Coastal Flood Hazards
- Regulatory Permitting
- Design and Construction Documents
- Construction Contract Administration
- Environmental Impact Evaluation
- Monitoring and Mitigation Plans

EDUCATION

- ME, Coastal and Oceanographic Engineering, University of Florida, 1993
- BS, Ocean Engineering, Florida Atlantic University, 1991

PROFESSIONAL REGISTRATIONS

- Prof. Engineer, NC, No. 29747
- Prof. Engineer, FL, No. 74424
- Prof. Engineer, SC, No. 18341
- Prof. Engineer, DE, No. 12271
- Prof. Engineer, NJ, No. 24GE05079100
- Prof. Engineer, U.S. Virgin Islands, No. 0-13896-1B

PROFESSIONAL AFFILIATIONS

- American Society of Civil Engineers Marinas 2020 Task Committee Member
- States Organization for Boating Access
- Association of Marina Industries

SUMMARY OF QUALIFICATIONS

Mr. Mason is a senior coastal and waterfront engineer with over 30 years of experience with both public and private clients along the US east coast and internationally. Mr. Mason's coastal engineering work includes development of comprehensive beach and shoreline management plans, erosion assessment, coastal flood hazard/risk evaluations, evaluation of oceanographic conditions affecting fixed and floating piers and docks, and specification and design of waterfront infrastructure including piers, docks, and coastal protection structures. He also provides affidavits, expert analysis/reporting, and expert witness services.

PROJECT EXPERIENCE

Beach Restoration, Town of Holden Beach, NC: Provided senior coastal engineering consulting to ATM's Town of Holden Beach project team including development and implementation of long-term beach monitoring plans, evaluation of upland and offshore borrow sources for beach nourishment, and design, plans and technical specifications for beach nourishment projects.

Dames Point Fishing Pier Rehabilitation, Jacksonville, FL: Senior principal engineer and project manager responsible for limited construction phase support to City of Jacksonville for the repair of the Dames Point Fishing Pier which was damaged in Hurricane Irma. Repairs included concrete decking, guard and handrails (to meet ADA fishing pier requirements), overhead lighting, and bench seating. Provided contractor shop drawings, methods, and materials submittal reviews, site observations, and technical coordination with City construction staff. Coordinated with structural and utilities subs. Provided final completion and project regulatory and construction closeout documentation.

Chokoloskee Bridge Wave Analysis, Collier County, FL: Performed a Level 1 coastal engineering analysis in support of a coastal bridge redevelopment project in Collier County. Coordinated a site visit, compiled available bathymetric and met-ocean design information for the site, and developed water level and wave parameters for preliminary bridge design using USACE ACES software and FEMA CHAMP model. Determined wave loads on the bridge structural elements using AASHTO's 2008 *Guide Specifications.*

Post-Irma Watefront Inspections and Design, Jacksonville, FL: Principal engineer and project manager responsible for field surveys, engineer and dive inspections, geotechnical data collection, and concept planning and reporting for recommended repairs to four City of Jacksonville waterfront project locations which

experienced damage from Hurricane Irma in September 2017. Worked with the City Division of Parks, Recreation, and Community Services to develop repair and mitigation improvements alternatives for the purposes of FEMA funding reimbursement applications, including evaluation of repair and full replacement cost scenarios. Prepared and submitted state and federal permit applications for the City's selected improvements. Prepared project final design, construction documents (plans and technical specifications) in parallel with regulatory permitting. Completed limited construction phase services for constructed projects.

Cruise Pier Expert Witness Services, Confidential Client and Location: Provided coastal engineering expert witness services to allegations made regarding design deficiencies of a cruise pier facility. Focus as an expert was on design wave and water level conditions, and resulting design wave loads on the pier structure. Conducted associated research, prepared an expert opinion report, and provided testimony in an international arbitration.

Harvest Caye Cruise Pier, Belize: Principal engineer who provided technical oversight and QC for two phases of this project: (1) field assessment and numerical modeling of coastal processes affecting a proposed resort development on a low-lying island near Palencia. Work included developing exposure assessment, basic coastal processes, and cut/fill volumes related to site improvements; (2) development of plans and technical specifications for new work dredging to allow for cruise ship access to the proposed cruise terminal on the south side of Harvest Caye.

Papa Joe's Bayside Wave Attenuation Assessment, Panama City Beach, FL: Senior principal engineer and QA/QC for an assessment of wave attenuation alternatives. This included a desktop study of environmental conditions, resulting waves, and attenuation options to protect an existing fixed pier utilized for boat rentals. Recommendations included a comparison of floating attenuators and fixed wave screens, conceptual layouts, and order of magnitude costs. The report also addressed diffraction and overtopping concerns. The report will assist future permitting and design phases.

Environmental Siting Condition Assessments: Lead engineer for evaluations of wind and wave climate, currents, tides, and other environmental siting factors for over one hundred project sites in the U.S. and international locations in support of evaluation of existing waterfront facilities and/or proposed waterfront infrastructure (docks, piers, marinas, shoreline stabilization) development and design.

Ponte Vedra Inn and Club, Ponte Vedra, FL: Performed coastal engineering analysis of the project site including erosion assessment, water level determination, and calculation of wave forces affecting structural elements; preparation, submittal, and processing of a FDEP coastal construction control line permit for the rebuilding of an existing hotel structure with two new buildings.

Beach Nourishment, Daufuskie Island, SC: Directed surveys, coordinated vibracore sampling in the offshore borrow areas, prepared regulatory permit applications, and completed project design for this 3.5-mile, 1.4 million cubic yard beach nourishment project. Provided onsite field construction phase services. Developed preliminary design and cost estimates for three proposed groin structures at south end of the island (Bloody Point). Completed six-month through two-year post-project monitoring and reporting.

Vista Del Mar Condominium, Myrtle Beach, SC: Conducted coastal engineering analysis for a condominium resort development. Analysis included compilation of available oceanographic data, modeling of storm surge and beach erosion associated with a 100-year return period event, and evaluation of hydraulic loads on building foundation structures. Also developed recommendations for finished floor elevations and breakaway walls/structures in accordance with the FEMA Coastal Construction Manual.

REQUESTED FORMS

EXHIBIT A

Execution Page

By executing this Request for Qualifications ("RFQ"), the undersigned Vendor certifies that this response is submitted competitively and without collusion, that none of its officers or directors has been convicted of any violations under Chapter 78A of the North Carolina General Statutes (the North Carolina Securities Act), the Securities Act of 1933 or the Securities Exchange Act of 1934, and that it is not an ineligible vendor as set forth in N.C.G.S. § 143-59.1.

As required under N.C.G.S. § 143-48.5, the undersigned Vendor certifies that it, and each of its sub-contractors, if any, for any contract awarded as a result of this RFQ, complies with the requirements of Article 2 of Chapter 64 of the North Carolina General Statutes, including the requirement for each employer with more than 25 employees in North Carolina to verify the work authorization of is employees through the federal E-Verify system.

Proposals will be evaluated to rank the responding vendors in order of their qualifications and competence following which the Town will attempt to negotiate a fair and reasonable contract price with the best qualified vendor.

The failure to execute/sign this response prior to its submittal shall render the response invalid such that it will be rejected. Late responses shall not be considered.

Vendor: Gary Greene Engineers
Street Address: 5832 Faringdon Place, Suite 2
City, State, and Zip: Raleigh, NC 27609
Mailing Address: PO Box 99213
City, State and Zip: Raleigh, NC 27624
Federal ID No. or Social Security No.: 238985017
Name/Title of Person Signing on Behalf of Vendor: Gary Greene
Signer's Telephone No.: 9198558488 Signer's Mobile No.: 9194171698
Signer's Email Address: Date: 11/25/2024
Vendor's Authorized Signature:

GaryGreene@GGEngineers.com

EXHIBIT B

Name of Vendor: Gary Greene Engineers.

The undersigned hereby certifies that [check all applicable boxes]:

☑ Vendor is in sound financial condition.

☑ Vendor has no outstanding tax or judgment liens.

☑ Vendor is current in all amounts due for payments of federal and state taxes and required employment-related contributions and withholdings.

☑ Vendor is not the subject of any current litigation or findings of non-compliance under federal or state law.

☑ Vendor has not been the subject of any past or current litigation or findings in any past litigation which may impact in any way its ability to perform its obligations under an agreement resulting from this procurement process.

☑ The undersigned is authorized to make the foregoing statements on Vendor's behalf.

If one or more of the foregoing boxes is NOT checked, please set forth the reason in the space directly below.

Signature _____

Date 11/25/2024

Gary K Greene, Owner

Printed name and title

EXIHIBIT C

Pursuant to N.C.G.S. § 143-64.31, the Town invites and encourages participation in this procurement process by businesses owned by minorities, women, disabled, disabled business enterprises, and non-profit work centers for the blind and severely disabled. This includes utilizing subcontractors to perform any required functions set forth in this RFQ. Any questions concerning NC HUB certification may be directed to the North Carolina Office of Historically Underutilized Businesses at (984) 236-0103 or huboffice.doa@doa.nc.gov.

1. Is Vendor a Historically Underutilized Business? ☐ Yes ● No
2. Is Vendor certified with North Carolina as a Historically Underutilized Business? ☐ Yes ● No

If so, state HUB classification: _____.

Signature

11/25/2024

Date

Gary K Greene, Owner

Printed Name and Title