



**Hatch Mott
MacDonald**

Hatch Mott MacDonald

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September 3, 2015

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ORIGINAL

New Jersey Department of Treasury
Division of Property Management & Construction
Contracts & Procurement Unit
33 West State Street
9th Floor, Plan Room
Attention: Bill Mahan
P.O. Box 034
Trenton, New Jersey 08625-0034

**RE: Project # P1128-00
South Absecon Inlet Jetty Repair
Oriental Avenue and Boardwalk, Atlantic City, Atlantic County, NJ**

Dear Mr. Mahan:

Hatch Mott MacDonald (HMM) is pleased to respond to the Solicitation for Consultant Services issued by the State of New Jersey, Department of Treasury – Division of Property Management and Construction (NJDPMC) to repair the South Absecon Inlet Jetty in Atlantic City. HMM is distinctly qualified to provide the NJDPMC the services required to complete this project to their full satisfaction. HMM is Prequalified with the NJDMPC in Marine Engineering with a \$10 Million Construction Cost Estimate and also prequalified in Estimating/Cost Analysis as required by the RFP.

HMM has teamed with **Churchill Consulting Engineers**, who are Prequalified with the NJDMPC in Hydrographic Surveying as additionally required by the RFP and in land surveying as dictated by HMM's design needs. The HMM Team is the appropriate mix of experience and professionals that we anticipate will exceed the expectations of the DPMC.

The HMM design team has previously design and overseen the construction of the previously successful repair and reconstruction of a full core box jetty on the South side of the Townsends Inlet; inclusive of a jetty extension and head at this same location. This unique experience from both design through construction allows the HMM Team to be able to recognize the needs of the project and intricacies of construction.

HMM has provided quality engineering and environmental services since 1937. HMM is well regarded in the engineering industry and is ranked No. 36 in the ENR Top 500 Design Firms for 2015. HMM possesses the practical knowledge and experience required to meet the technical challenges of this project. Our approach is strictly client-focused, with corporate commitment to engineering excellence.



**Hatch Mott
MacDonald**

HMM is a locally based consulting firm Headquarters in Iselin, New Jersey. We provide comprehensive engineering services in all areas of ports and marinas, coastal engineering, infrastructure, environmental, transportation, tunnels, water, wastewater, pipeline and utility markets. We offer public and private clients a complete range of services from planning, feasibility studies, environmental assessments, conceptual through preliminary and detailed design, to procurement, construction inspection, construction management, and full project and program management services, as well as operations and maintenance support.

We trust that you will find ample evidence of the Hatch Mott MacDonald's Team expertise, experience and suitability for this project within our attached response submittal package.

Please do not hesitate to contact this office if you have any questions regarding the above or attached.

Very truly yours,

Hatch Mott MacDonald, LLC

Eric C. Betz, PE, BCEE, CME
Vice President & Manager
Municipal & County Services
T: 732.780.6565 F: 732.577.0551
eric.betz@hatchmott.com

Very truly yours,

Hatch Mott MacDonald, LLC

Robert C. Mainberger, PE, CME
Senior Vice President
Municipal & County Services
T: 732.780.6565 F: 732.577.0551
robert.mainberger@hatchmott.com

Firm/Project Team Experience

1. Prime Consultant



Hatch Mott MacDonald (HMM) is pleased to respond to the Request for Proposal (RFP) and has assembled an exceptional team that is distinctly qualified to provide the NJDPMC the services required to complete the tasks assigned to this contract to the full satisfaction of the NJDPMC. HMM is Prequalified with the DPMC in the following categories:

■ Asbestos Design	NA	■ Hydraulics/Pneumatics	Unlimited
■ Asbestos Safety Monitoring	NA	■ Hydrology	NA
■ Barrier Free/ADA Design	10 Million	■ Landfill Closure	NA
■ Boiler/Steam Lines/High Pressure Sys	10 Million	■ Landscape Design	10 Million
■ Building Commissioning	1 Million	■ Marine Engineering	10 Million
■ Civil Engineering	Unlimited	■ Perimeter Security Fencing	25 Million
■ Claims Analysis	NA	■ Planning	25 Million
■ Construction Field Inspection	Unlimited	■ Plumbing Engineering	20 Million
■ Construction Management	Unlimited	■ Project Management	Unlimited
■ Dam/Levee Design	\$500,000	■ Roofing Consultant	10 Million
■ Electrical Engineering	15 Million	■ Roofing Inspection	3 Million
■ Energy Management Control System	25 Million	■ Sanitary Engineering	Unlimited
■ Environmental Consultant	NA	■ Security Systems	5 Million
■ Environmental Engineering	Unlimited	■ Site Planning	Unlimited
■ Estimating/Cost Analysis	NA	■ Soils Engineering	10 Million
■ Feasibility Planning	10 Million	■ Storage Tank Installation	NA
■ Fire & Safety Renovations	Unlimited	■ Storage Tank Removal	NA
■ Fire Detection Systems	Unlimited	■ Structural Engineering	Unlimited
■ Fire Protection Engineering	Unlimited	■ Traffic	NA
■ Fire Protection Systems	Unlimited	■ Transportation	Unlimited
■ Geology	NA	■ Value Engineering	NA
■ HVAC Engineering	25 Million	■ Waste/Water Treatment	Unlimited

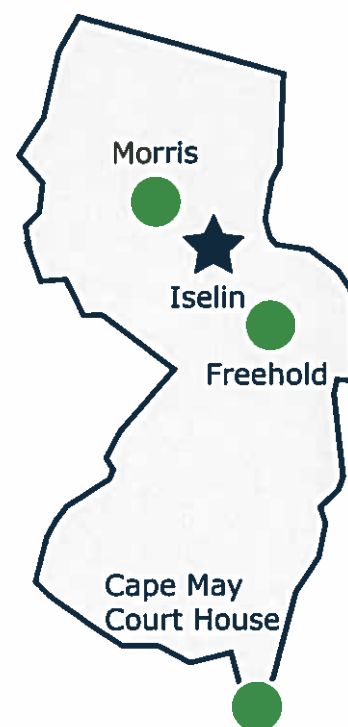
The purpose of this project is to reconstruct the South Absecon Inlet Jetty that has been significantly damaged as a result of Super Storm Sandy. HMM has assembled a project team with direct experience in the repair and reconstruction of modified rubble mound structures and more specifically core box construction as preferred by the NJDEP in the mid-1900's. HMM and our subcontractor, Churchill Engineering has successfully completed projects for the DPMC, NJDEP BCE and the City of Atlantic City that will assist in the ability to seamlessly provide the engineering design services required to bring this significant piece of coastal infrastructure back to full functional form as needed to stabilize the North end of the Atlantic City Beach and also the Absecon Inlet Channel.

HMM has a full understanding of the Littoral processes in this area having completed a full coastal audit for Atlantic City in addition to a beachfill for the city which pre-empted the present USACoE project and work along the inlet related to the groin repair and bulkhead construction to create a pocket beach and upland Oscar E. McClintock Park.

HMM has provided quality engineering and environmental services since 1937. HMM is well regarded in the engineering industry and is ranked No. 35 in the ENR Top 500 Design Firms for 2014 and ranked No. 8 in the Top 25 Marine and Port Consultants. HMM possesses the practical knowledge and experience needed to meet the technical challenges of this project. Our approach is strictly client-focused, with corporate commitment to engineering excellence.

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ENR	35	F
TOP 500	36	HATCH MOTT MACDONALD
	37	
	38	I

HMM is a locally based consulting firm headquartered in Iselin, New Jersey. We provide comprehensive engineering services in all practice areas. We offer public and private clients the complete range of services from planning, feasibility studies, environmental assessments, conceptual through preliminary and detailed design, to procurement, construction inspection, construction management, and full project and program management services, as well as operations and maintenance support.



HMM provides a full range of project services in the following practice areas:

- ✓ Aviation
- ✓ Environment
- ✓ Fire & Life Safety
- ✓ Highways & Bridges
- ✓ Passenger & Freight Rail
- ✓ Pipelines
- ✓ Ports
- ✓ Project Delivery
- ✓ Rail & Transit
- ✓ Transportation Planning
- ✓ Tunnels
- ✓ Wastewater
- ✓ Water

HMM specializes in servicing the following areas:

- Coastal Engineering
- Ports & Harbors
- Water Supply
- Wastewater Management
- Environmental Services
- Parks & Recreation
- Stormwater Management
- Flood Hazard Planning & Mitigation
- Highways, Bridges & Tunnels
- Rail & Transit
- Architectural Services (as limited by NJ Statute for Licensed Engineering Firms)
- Traffic Engineering Roadways & Streetscapes
- GIS & Info Management
- Brownsfields Remediation
- Mechanical & Electrical Engineering
- Structural Engineering
- Geotechnical Engineering
- Land Surveying
- Tax Map Maintenance
- Building Information Modeling (BIM) & Alternate Project Delivery Methods

HMM has broad experience with the design and repair of a variety of marine structures, including jetties and groins of the rubble mound and modified rubble mound category, ferry terminals, municipal marinas, timber piers, dolphin structures, bulkheads, coffer cells and revetments. Our locally-based engineering team provides expert services for above-water and underwater inspection supervision, coastal modeling and wave force analysis, mooring and berthing analysis, marine structural design, construction cost estimating, and construction administration and inspection. Our project team also has a history of successful collaboration with the DPMC, the NJDEP BCE and Atlantic City, and possesses the specialist skills required to reconstruct this important coastal stabilizing structure in Atlantic City.

Additionally, HMM has an in-depth knowledge of applicable State and Federal regulations regarding near-water and in-water construction projects and environmental considerations associated with the demolition and construction activities needed for this project. Our design staff is thoroughly familiar with the project's Federal and State permit requirements, which need to be integrated during the design process. HMM has obtained environmental permits for waterfront development projects throughout New Jersey and can incorporate local knowledge to minimize environmental impacts and maximize the probability of a streamlined permit-acquisition process.

2. Subconsultant



Churchill Consulting Engineers (CCE) is a NJDPMC approved consulting engineering firm providing public and private sector clients with planning, design, hydrographic and upland surveying, permitting and construction management services for a broad range of civil and environmental projects. The

firm was founded more than 35 years ago and, since its inception, has been committed to not merely meeting its client's needs, but exceeding them with both innovative and cost effective solutions.

As a certified Small Business Enterprise, Churchill frequently assists its public sector clients and their consultants in meeting SBE goals. With its corporate office in Camden County and office in Atlantic County, and ready access to major transportation routes, the firm is easily able to serve its client base throughout New Jersey, the New York metropolitan area, and the Delaware Valley.

HMM has purposefully brought CCE into the design team to provide survey support for both upland and hydrographic survey work as pre-qualified with the DPMC for these categories.

3. The HMM Team – Summary of Experience

The HMM Team proposed for this project: HMM and CCE have worked together previously and have teamed together in the past. Our most recent collaboration was for the Underwater Inspection of four Monmouth County Movable Bridges and Underwater Inspection of Union County Bridge for the New Jersey Department of Transportation.

The HMM Team have successfully executed and been involved in numerous significant coastal waterfront projects in the NJ area for many years, including projects with direct relevant experience to this project as presented on the following pages:



8th Street Jetty Reconstruction & Extension

Location

Avalon Borough, Cape May
County, NJ

Client

Borough of Avalon

Project Type

Coastal Engineering

Services

Structural & Hydrodynamic
Evaluation
Permitting
Design
Bidding Services
Construction Administration

Duration of Program

Start date: Spring, 1993
End date: Fall, 2000

Construction Cost

\$5 Million

Project Description

The initial concept of the jetty extension dates back prior to 1980, when an overall controlled channel concept was examined and identified as an Army Corps of Engineers project for Townsend's Inlet. In the mid-1980s, the 8th Street jetty was reconstructed utilizing the present core box design configuration, inclusive of an initial 170 foot extension, through a project implemented in conjunction with the NJDEP.

At the time of that project, the major dog-leg to the south which involved an additional 400 to 500 foot extension, was not implemented due to funding considerations.

In the wake of the December 1992 storm, which was declared a Federal Disaster, the jetty was found to suffer considerable damage in the mid span area and was reconstructed between 1993 through early 1994 to the limits approved by FEMA through a design completed by Hatch Mott MacDonald which included enhancement of the core box construction and function through the employment of highly specialized marine geotextile fabrics. Since that time, this portion of the jetty has performed as designed without any observable damage. In conjunction with the damage results of the 1992 storm and in continued recognition that a jetty extension would be beneficial to the Borough, the breakwaters submerged reef was implemented into the system through the New Jersey Pilot Reef Program, as funded by grants through the NJDEP and the FEMA Hazard Mitigation Grant Program.

The reef system was installed on the approximate alignment for the proposed jetty extension and the performance closely monitored by HMM, Steven's Institute of Technology, and Davidson Labs; and also in conjunction with the Stockton University CRC lead by Dr. Farrell.

The results of this program demonstrated the potential to stabilize the erosive northern section of the Borough; however, due to reef settlement, the positive effects were short lived. Based upon the monitoring results, recommendations were offered by HMM, C.P.E. and Stevens Institute to pursue the overall jetty extension project. These recommendations were forwarded to the Philadelphia branch of the Army Corps of Engineers and reviewed in various meetings with the Corps' Planning and Engineering Department. As a result of those meetings, the recommendations were included in the USACE Reconnaissance and Feasibility Reports.





Although the Corps recognized the benefit of this project, it did not fit the exact cost benefit ratio (CBR) calculation required by the federal government for damage protection. The Corps formally recommended a beachfill project in conjunction with hardening of the Townsend Inlet shoreline, which met the required CBR for Federally funded projects.

It is important to note that the Borough's and the U.S. Army Corps of Engineer's views regarding cost effectiveness can diverge on any specific project, as the Borough would consider recreational needs and resultant economic impact, whereas, the U.S. Army Corps of Engineers (USACE) primarily focuses on damage mitigation.

Along the north end of the Borough, the beach can be totally removed back to rock revetment between 10th and 15th Street within a single severe winter storm season and, potentially, during a single significant storm event. The 8th Street Jetty extension not only acts as a terminal structure to retain sand through isolation of the adjacent beach from the influence of inlet currents, but also serves as an emerged breakwater to intercept waves and wave energy, which erodes Avalon's North end beach and allows localized longshore currents to develop and transport sand to the south during northeast storms.

In development and design of this project of this nature, HMM teamed with C.P.E. for their specific expertise in shoreline modeling, along with the services of various subconsultants for soil investigation and related foundation design, to address settlement and stability issues.

Accordingly, HMM developed a joint project scope with Coastal Planning and Engineering, Inc., (CPE), of Boca Raton, Florida, who was familiar with the project, having completed an initial overview and report of the system for the Borough, and who also had a successful track record in projects of this nature. This shared approach allowed use of HMM's local services and relationship with the NJDEP and Army Corps, in conjunction with CPE's Coastal Engineering capabilities.

Ultimately, HMM design the final 400 LF jetty extension which was bid under contract by the NJDEP Bureau of Coastal engineering and Construction (BCE). HMM worked side-by-side with the BCE to bring the extension portion of the project to successful completion.

The repaired jetty and jetty extension has been in service for over 15 years and survived Hurricane Sandy without any damage.

HMM Role

Hatch Mott MacDonald provided research and transmission of all available historical documents relating to the existing jetty, shoreline and inlet, inclusive of review of NJDEP and USACE archives and completed survey control work and data correlation to provide appropriate monumentation and construction references for the project in addition to interpretation regarding prevailing tidal reference. HMM provided engineering services associated with preparation of all permit applications required for the project as well as prepared plans and specifications for permit requirements and bid phase services, which included review of bid documents and recommendation of award. Additionally, HMM provided on-site observation and inspection of construction activities for the reconstruction portion of the project as well as agency reporting to the NJDEP and ACoE as required.

Location

Middlesex County, NJ

Client

City of Perth Amboy

Reference

Mike Keller
Director of Economic
Development
732.826.0290

Services

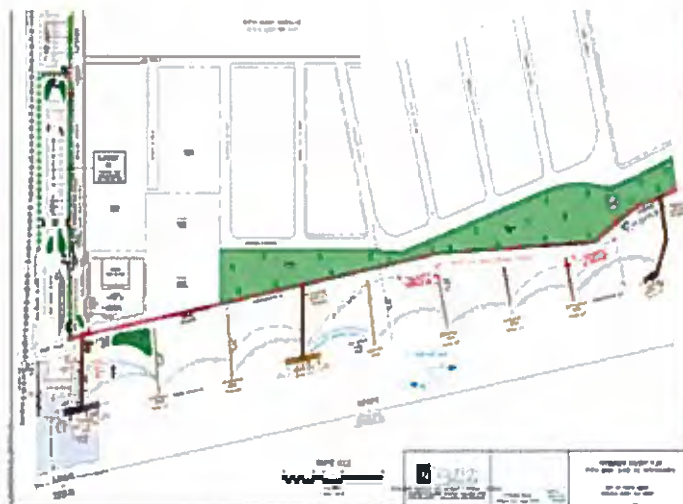
Concept Plan Development
Renderings
Permitting
Shoreline Improvement
Design
Structural and Marina
Design
CSO Relocation Design
Final Design Plans and
Specifications
Obtain Funding (funding
applications)
Environmental Assessments
Construction Inspection and
Administration

The City of Perth Amboy completed the redevelopment of approximately 3,200 linear feet of its waterfront property along the Raritan River at the confluence of the Raritan Bay and the Arthur Kill. The project made available beachfront recreational activities including fishing and boating that had been lost over time when the City became industrialized.

A conceptual plan, full design, all permitting, bidding activities and construction management was completed by Hatch Mott MacDonald for that portion of the waterfront located between High Street and Second Street (Sadowski Park). In addition to taking into account the need to provide waterfront access and recreational benefits to the citizens, other important needs were incorporated into the project. The project provided for additional protection from storm and flood damage; created potential job opportunities (particularly Minority Business Enterprise); enhanced economic growth; and resolved potential health, safety, and welfare issues associated with the site and the existing CSO's which extended from the City infrastructure into the highly volatile Raritan Bay wave environment.

Major elements of the initial phase of the project included: a beach nourishment; the addition of two (2) significant fishing and recreational piers to the City's inventory; reconstruction and replacement of seven (7) deteriorated timber and stone groins and the addition of one (1) additional groin into the groin system to provide coastal protection and erosion mitigation; and the reconfiguration of six (6) coastal outfalls ranging in size up to 48 inches in diameter with the design and construction of the associated pile bent support systems to extend these outfalls approximately 200 feet into the Bay to clear the impacts of the project beach fill and relocate the influence of the existing outfalls away from the recreational areas. The design of the outfall pile bent support systems for the outfalls was extremely complex due to the combination of wave forces that could be developed in the bay due to the significant wind fetch from the site from across the Raritan Bay from the Atlantic Ocean and the potential ice flow impacts from the Raritan River feeding into the project area from the west.

Additional services included investigation of potentially hazardous sites in the vicinity of the development to determine current and future impacts on the project site subsequent phases; addressing security measures; permits compliance, historical background search; and assistance with obtaining state funding.



**Location**

Avalon Borough, Cape May
County, NJ

Client

Borough of Avalon

Project Type

Coastal Engineering

Services

Surveying
Historical Document
Research
Construction Plans &
Specifications
Construction Engineering
Services

Duration

Start date: August 2006
End date: October 2006

Construction Cost

\$200,000

Project Description

A 1997 feasibility study conducted by the U.S. Army Corps of Engineers (USACE) recommending the construction of a 3,000 linear foot seawall along the Townsends Inlet frontage in the Borough of Avalon, New Jersey. The project included the placement of a foundation mattress, core stone, and capstone ranging in weight from 5 to 8 tons. Work commenced in 2004 and was completed in 2006. The seawall was constructed from the north end of Avalon's oceanfront at the 8th Street Jetty to the northwesterly limits of the residential area fronting the inlet.



Based on local knowledge of the history of northeast storms, the Borough was concerned that a Borough street end and residential property at the north end of the project were not adequately protected by the seawall. The Borough advocated for the inclusion of an extension of the federal project consisting of a 100 linear-foot spur extending at right angles from the terminus of the federal seawall. Although the USACE declined the Borough's request to include this in the federal project, they allowed it to be included as a "betterment" to the project if the non-federal sponsor (the NJ Department of Environmental Protection and the Borough of Avalon) provided the design and funds for the extension.

In 2006, Hatch Mott MacDonald completed the design of the seawall extension and provided construction drawings and specifications for the extension. The USACE accepted the design and authorized the federal contractor, Jay Cashman, Inc., to construct the extension. The seawall extension utilized 65 square yards of foundation mattress, 120 square yards of geotextile, 1000 cubic yards of excavation of existing materials, and 1300 tons of underlayer and capstone. The seawall extension consisted of an 18-foot wide crest at elevation 10.5 (NAVD88) and a seaward face sloped at 1.5H:1.0V. The project also included the repair of an existing timber seawall immediately landward of the extension and repairs to timber access stairs to the beach at the northwesterly terminus of the extension.

HMM Role

Hatch Mott MacDonald provided professional engineering services consisting of surveying, historical document research, preparation of construction plans and specifications, and construction engineering services.

Location

Middle Township, Cape May
County, NJ

Client

Township of Middle w/
NJDEP BCE

Project Type

Coastal Engineering

Services

Analysis
Permitting
Design
Bidding Services
Construction Administration

Construction Cost

\$2 Million

Project Description

Hatch Mott MacDonald (HMM) was retained by the Township of Middle to perform engineering services for the rehabilitation of the Bidwell's Creek Inlet stone Jetty, located along the Delaware Bay Shoreline. The Township and the NJDEP were experiencing a sand shoaling problem in the channel area adjacent to and northwest of the Bidwell's Creek Jetty. Site visits did not readily disclose the nature of the shoaling and the typical sand storage area immediately southeast of the jetty demonstrated that the typical sand collection was not at full capacity.

The analysis of the situation included a review of the past dredging activities in the area, the location of the disposition of sand from those activities and a report on the condition of the jetty. A cursory sediment transport analysis was performed to identify the most likely situations involving currents, construction or changes in the area, coastal activities, and other influencing factors to determine the past, present, and future causes and impacts of the shoaling at Bidwell's Creek.

After completion of the bathymetric survey and analysis, HMM provided a report to the Township detailing the current sediment transport situation and demonstrating that the jetty has suffered significant settlement which eliminated its sand retention value. The cause of this settlement was found to be related to the breach of the thin sand veneer which bridged the jetty stone over the underlying Delaware Bay mud of significant depth. The report included HMM's estimates of the progression of the shoaling in the future and the cumulative volume of sand that may be required to be dredged in order to reestablish an acceptable level of service for the channel and jetty reconstruction to maintain the channel and updrift sand. In addition, we will include recommendations to the Township regarding the possibility of correcting the issue and the feasibility of mitigating further accumulation.

HMM Role

Hatch Mott MacDonald's services included design of the new jetty with geotextile support mat system to bridge existing sand veneer and underlying of wave analysis, rock sizing, design, permitting, bid assistance and construction management. The design was coordinated with the NJDEP BCE dredging program to assure stability of the structure in relationship to the NJDEP's preferred channel location and depth; inclusive of creating an upland containment area for dredge material deposition to create a coastal protective beach to the southeast of the jetty.

Location

Port Aransas, TX

Client

Texas General Land Office

Project Type

Navigation

ServicesCoastal Engineering Analysis,
Design, and Construction
Oversight**Duration (Phased)**

2002 - 2007

Construction Cost

\$2.4 million

Project Description

The Piper Channel, located in Port Aransas, Texas, provides access from the Gulf of Mexico and Corpus Christi Ship Channel to a 350+ lot subdivision, marina and shallow intertidal habitat for recreation. The channel experiences sedimentation and pressure field effects from passing vessels that cause the channel to shoal and diminishes navigation safety. In 1996, two 800-foot geotextile tube jetties were installed at the connection of the channel with Corpus Christi Ship Channel in an attempt to reduce channel shoaling and shoreline erosion. In 2001, a 200-foot section in each jetty breached, allowing sediment to migrate into the channel. The channel was then closed.

HMM Role

HMM designed a permanent solution to protect the channel entrance from erosion, sedimentation, and extreme hydrodynamic conditions that affect the safety of navigation. HMM performed a feasibility study, conducted engineering analysis and design, and provided engineering services during construction. The new jetty structure was composed of coated steel sheet piling, a waler system, vertical steel piles and batter (angled) piles, and navigational aids.

The project consisted of removing all portions of the existing jetties and replacing them with a new flared jetty alignment that would reduce channel sedimentation, reduce wave energy penetration, and improve navigation safety.

Project Highlights

- ◆ Designed a new shore protection system consisting of a rock revetment and an erosion control system for upland surface water runoff.

Sustainability

The new jetties eliminated the need for continuous maintenance dredging.



Churchill Consulting Engineers
Project Experience for NJ DPMC Project #P1128-00 /
South Absecon Inlet Jetty Repair



Ocean Drive Seawall and Road Repair; 2012; \$20K. Churchill was retained by Cape May County to perform a hydrographic survey of the waters along a seawall on Ocean Drive, Avalon, New Jersey. During Hurricane Sandy, ocean waters breached the masonry seawall and caused significant damage to approximately 1000 LF of roadway. Cape May County retained an engineering firm to perform a wave action study to determine the required height of the seawall to ensure future storms would not breach the seawall

and cause significant roadway damage. Churchill prepared a hydrographic survey along the wall and under the Ocean Drive Bridge for a length of approximately 1,200 LF and approximately 400 ft. into the ocean/inlet. Churchill prepared a topographic map of the channel with one foot contour intervals. *Reference: Dale Foster, Cape May County Engineer, 609-465-1035*



South Ferry Terminal Hydrographic Survey; 2013; \$10K. Churchill was retained by Parsons Brinkerhoff to perform a hydrographic survey of the South Ferry Terminal located in South Amboy, New Jersey. Churchill performed this hydrographic survey as part of the upcoming reconstruction to the Pulaski Skyway. As a result of the Pulaski Skyway Reconstruction, the NJDOT

initiated works to construct a new ferry dock to service residents of South Amboy with ferry service to Manhattan. Churchill performed a hydrographic survey along the South Amboy portion for a length of approximately 600 ft. by 400 ft. Based upon our hydrographic survey. Churchill prepared a topographic map of the channel with one foot contour intervals.

Reference: William Hagerty, PB, 609-512-3640



Route 72 over Barnegat Bay Hydrographic Survey; 2015; \$20K. Churchill was retained by Parsons Brinkerhoff to perform a hydrographic survey of the Route 72 over Barnegat Bay as part of the new bridge design adjacent to the existing bridge. Churchill performed a hydrographic survey of the structure and 100 ft. upstream and downstream of the structure. Based upon our hydrographic survey, Churchill prepared a topographic map of the channel bottom with 1 ft. contour intervals. Area of

survey was approximately 250 ft. by 850 ft. *Reference: Joseph Mumber, Parsons Brinckerhoff, 609-512-3571*



Betsy Ross Bridge over Delaware River; 2012; \$8K. Churchill performed a hydrographic survey as part of an underwater inspection performed on the Betsy Ross Bridge which connects Camden and Philadelphia. The hydrographic survey extended from shoreline of New Jersey to the shoreline of Pennsylvania and approximately 100 feet upstream and downstream of the structure. Work was performed as part of a NBIS Inspection.

Based upon our hydrographic survey, Churchill prepared a topographic map of the channel with one foot contours. *Reference: Richard Little, Modjeski and Masters, 717-790-9565*





Route 37 over Barnegat Bay Hydrographic Survey; 2013; \$25K. Churchill was retained by Parsons Brinkerhoff to perform a hydrographic survey of the Route 37 over Barnegat Bay Bridge (Mathis Bridge). As a result of Hurricane Sandy, significant scour was found around six substructure units located at the east end of the structure. Churchill performed a hydrographic survey of the structure, upstream, downstream and around substructure units, prior to the installation of scour counter measures.

Approximately one year later, Churchill performed a second hydrographic survey of area to assure scour counter measures were working as designed. Survey Area was 200 ft. by 800 ft. *Reference: Rama Krishnageri, PB, 609-512-3583*

Section (b)
Organization Chart

e. Project Key Personnel List

Firm Name	Key Personnel & Title	PERCENTAGE OF TIME ASSIGNED TO PROJECT				Hourly Wage Level 1-7
		Investigation & Preliminary Design Submission	90% Design Development/BCE Permitting Phase	Final Design Phase		
 Hatch Mott MacDonald	Robert C. Mainberger, PE, BCE <i>Project Manager</i>	10	10	10	7	
	Douglas A. Gaffney, PE, D.CE <i>Project Designer</i>	25	25	20	5	
	Thomas R. Thornton, PE, CME <i>Project Designer</i>	10	10	10	5	
	Frank Bruton, CFM <i>Project Designer</i>	15	10	10	3	
	John Francescon, PE <i>Cost Estimating</i>	5	5	2	5	
 CHURCHILL	Andrew Coursen <i>Survey Manager</i>	40	2	2	6	

*Insert the Wage Level from 1 to 7 for each Key Person. Do not insert any Hourly Rate.



P1128-00

South Absecon Inlet Jetty Repair
*Oriental Avenue & Boardwalk, Atlantic City,
Atlantic County, NJ*



PROJECT MANAGER

Robert C. Mainberger, PE, CME
Principal

COST ESTIMATING

John Francescon, PE
Principal Engineer

PROJECT DESIGNERS

Douglas A. Gaffney, PE, D.CE
Coastal Deputy Practice Leader

Thomas R. Thornton, PE, CME
Principal Project Manager

Frank Bruton, CFM
Engineer III



 **CHURCHILL**
SURVEYING SERVICES

Andrew Coursen, LS

Section (c)
Resumes of Key Team Members

Resumes of Key Staff Members

We have presented resumes for the DPMC's review in the following order by company:

 The logo for Hatch Mott MacDonald features a stylized blue wave or 'H' shape to the left of the company name, which is written in a blue, sans-serif font. Hatch Mott MacDonald	▪ Robert C. Mainberger, PE – Coastal Engineering/Project Manager
	▪ Douglas A. Gaffney, PE, D.CE – Project Designer
	▪ Thomas R. Thornton, PE, CME – Project Designer
	▪ Francis X. Bruton, CFM – Project Designer
	▪ John Francescon, PE – Cost Estimating
 The logo for Churchill features a stylized black triangle or sail shape to the left of the company name, which is written in a black, serif font. CHURCHILL	▪ Andrew Coursen, LS – Hydrographic/Topographic Surveying

Education

BS, Civil Engineering,
Newark College of
Engineering, 1973

BS, Environmental
Engineering, Newark
College of Engineering,
1973

Registrations

Professional Engineer
#24GE04195900, NJ,
1999

Certified Municipal
Engineer #CME02-40, NJ,
2002

Years in Practice – 44

Memberships

American Shore and Beach
Association

Jersey Shore Partnership

New Jersey Association of
Floodplain Management

Northeast Shore and Beach
Preservation Association

South Jersey Association of
Water Superintendents

Experience Summary

Mr. Mainberger has considerable experience in the planning, design, construction supervision, and associated field work, for sanitary sewer, water, municipal, recreation, and coastal resource management projects. Mr. Mainberger has acquired experience and expertise in the civil engineering field, specializing in the design, permitting, and construction management of municipal water and sewer infrastructure projects, coastal defense and stabilization systems, and storm damage recovery programs. He has designed and managed beach renourishment and dredge programs (totaling over 2 million cubic yards of material) for a number of New Jersey municipalities.

Mr. Mainberger has managed FEMA claims and disaster recovery programs for more than 10 federally-declared disasters, including the notable storm of December 1992 in New Jersey, Hurricanes Pearl and Opal (as the P.A. Officer for North Carolina) in the early 1990s, Hurricane Irene, Tropical Storm Lee, the March 2010 Nor'easter, and, most recently, SuperStorm Sandy in 2011. Currently, Mr. Mainberger's responsibilities focus on providing services as the Coastal Recovery Manager for Mantoloking Borough (Ocean County, NJ) and the City of Perth Amboy (Middlesex County, NJ) in response to the impacts of SuperStorm Sandy. He also serves in an advisory role for coastal recovery for several municipalities in Monmouth, Ocean, and Cape May Counties (NJ), as well as the Middlesex County Utilities Authority and the New Jersey Water Supply Authority.

Mr. Mainberger's design and construction experience includes a wide variety of infrastructure improvement projects involving the construction of new and/or rehabilitation of existing water pumping stations and transmission mains, potable water well facilities, water treatment plants, sanitary sewerage systems, including pumping stations and force mains, and wastewater treatment facilities. Additionally, Mr. Mainberger has been responsible for numerous stormwater pumping and conveyance facility projects, as well as municipal roadway construction and resurfacing programs.

Mr. Mainberger has considerable experience in the restoration, protection, and management of coastal resources, specifically along the New Jersey coastline. He has served as Project Manager for several extensive coastal audits and coastal erosion studies, as well as the design and implementation of beach renourishment and sand replacement programs. He has been responsible for the evaluation of existing shoreline protection systems and the design and installation of system improvements. Components include groins, bulkheads, jetties, and piers. He has developed plans and specifications for shoreline protection and dune systems in accordance with FEMA standards for disaster mitigation. He has coordinated the preparation and submittal of Hazard Mitigation Grant Program (HMGP) applications and FEMA Damage Project Worksheets (PWs), resulting in the award of federal and state funding grants for several projects.

Selected Project Experience

8th Street Inlet Jetty Reconstruction & Extension, Borough of Avalon, Cape May County, NJ
Project Designer and Project Manager for the reconstruction of the Avalon 8th Street Jetty and subsequent 400' jetty extension, through a project implemented in conjunction with the NJDEP. In the wake of the December 1992 storm, which was declared a Federal Disaster, the core box style jetty was found to suffer considerable damage in the mid span area and was reconstructed in 1993/1994 to the limits approved by FEMA and subsequently extended in 2000/2001 through designs completed by Hatch Mott MacDonald. Since that time, the jetty has performed as designed without any observable damage to date and through the impacts of "Sandy". The core box design preferred by the NJDEP at the time of initial construction was modified to include a marine fabric wrapping for greater stability and more robust design.



Education

MS, Marine
Studies/Applied Ocean
Science, University of
Delaware, 1989

BS, Marine Engineering, US
Merchant Marine
Academy, 1984

Registrations

Professional Engineer
#24GE04062600, NJ,
1997

Diplomate, Coastal
Engineering

Years in Practice – 30

Memberships

American Shore and Beach
Preservation Association

American Society of Civil
Engineers

American Society of Testing
Materials

Association of Coastal
Engineers

Coasts, Oceans, Ports, &
Rivers Institute

Northeast Shore and Beach
Preservation Association

Permanent International
Association of Navigation
Congresses

Experience Summary

Mr. Gaffney serves as Deputy Practice Leader for HMM's Coastal Engineering services, focusing on coastal protection, restoration, and resilience in the northeast region of the United States. He has extensive experience in the innovative design of riverine, coastal, and waterfront structures and environmental restoration and dredging. His consulting background includes coastal and geotechnical investigations, planning, design, and construction in the U.S. and internationally. He has managed the preparation of Environmental Impact Statements (EISs), Reconnaissance studies, Feasibility studies, and Preconstruction Engineering and Design (PED) services.

Mr. Gaffney has significant experience with the US Army Corps of Engineers (USACOE) as well as the Federal Emergency Management Agency (FEMA). He has participated in FEMA post-disaster hazard mitigation and post-storm recovery teams after coastal disasters. As a Coastal Planner and Project Manager for the U.S. Army Corps of Engineers (USACOE), Mr. Gaffney represented the North Atlantic Division as a member of the Coastal and Hydraulics Laboratory, Field Review Group. This group met to evaluate and rank research being conducted at the Waterways Experiment Station in Vicksburg, MS. More recently, he participated in the writing of the post-Sandy North Atlantic Coast Comprehensive Study (NACCS).

Mr. Gaffney regularly teaches on the use of geosynthetics in the marine environment and other topics. He was the U.S. Representative to the Permanent International Association of Navigation Congresses (PIANC) Working Group 56, which prepared Report No. 113, "The Application of Geosynthetics in Waterfront Areas" in 2011.

Mr. Gaffney's experience includes the development of engineering tools for stone-filled marine mattresses used in civil engineering applications such as coastal structures, bridge scour countermeasures, propeller scour and vessel wake, and shoreline and riverbank protection. While with a geotextile manufacturer, Mr. Gaffney was a lead author in developing industry standards (GRI-GT10 and GRI-GT11) at the Geosynthetic Research Institute for the materials and installation of geotextile tubes for coastal and riverine applications. As a consultant, he participated in the development of ASTM Test Method D-7701-11 "Standard Test Method for Determining the Flow Rate of Water and Suspended Solids from a Geotextile Bag."

Selected Project Experience

North End Beach Restoration, Atlantic City, NJ

Engineer-of-Record and Project Manager for a study of beach restoration alternatives with numerical modeling (Litpak) of the coastal and sediment transport processes, resulting in the design of two rubble mound groin refurbishments and extensions, a stone submerged sill, a low profile timber groin, and beachfill with dune. Since the design included both gravity and pile-supported structures, a geotechnical study was completed which included subbottom acoustic profiles and cores. Successfully obtained all required permits. The design was adopted by the NJDEP and constructed with State and local funds. (2009 – 2012)

Absecon Island Limited Reevaluation Report, US Army Corps of Engineers (USACOE), Philadelphia District, Atlantic County, NJ

Mr. Gaffney was asked to provide Independent Technical Review of the Absecon Island Limited Reevaluation Report. The Reevaluation Report reviewed changes in economics and site conditions as they relate to the justification of the Absecon Island Shore Protection project. (2003)



Education

MS, Civil
Engineering/Coastal and
Water Resources, Drexel
University, 2012

BS, Civil Engineering,
Rutgers University, 1992

Registrations

Professional Engineer
#24GE04177000, NJ,
1999

Certified Municipal
Engineer 03-41, NJ, 2003

Years in Practice – 22

Memberships

American Shore and Beach
Preservation Association

American Society of Civil
Engineers

American Water Works
Association

New Jersey Association of
Floodplain Management

South Jersey Water
Professionals Association

Experience Summary

Mr. Thornton has gained extensive experience in the design of roadways, water supply and distribution systems, sanitary sewer systems, and coastal engineering and marine structures. He has also provided engineering services for municipal recreation facilities, site design of municipal and county libraries and public buildings, municipal dam repairs and inspections, hydraulic and hydrologic studies, and drainage system and site plan reviews.

Mr. Thornton has significant experience in municipal engineering services, serving as Municipal Engineer and/or Planning/Zoning Board Engineer for several southern New Jersey municipalities since 2001. In his capacity as Borough Engineer, Mr. Thornton is involved in many of the day-to-day municipal engineering activities as well as design and consulting services. Projects have included business district roadway and streetscape improvement projects, marine structures including bulkheads and boardwalks, and coastal engineering projects, including beach renourishment projects and dredging of navigational waterways. He has also provided design services for municipal and county road reconstruction projects, sanitary sewage pump station and conveyance system improvements, stormwater system upgrades, and water distribution and supply systems, including the design of two 700 gpm triple-cased potable water wells. Mr. Thornton's experience in the wastewater field includes the design, inspection, construction and troubleshooting of gravity and force mains, pump stations, wastewater treatment plants and internal sanitary sewer repair projects. He has also performed infiltration and inflow (I/I) studies.

Mr. Thornton has also acquired a broad range of experience in dealing with permitting and regulatory issues through his employment with the New Jersey Department of Environmental Protection and subsequent dealings in the municipal and private sector with various branches of the NJDEP.

Selected Project Experience

Timber Boardwalk Reconstruction, Avalon Borough, Cape May County, NJ

Responsible for the design and project management of the demolition and reconstruction of 1,200 lf of oceanfront timber boardwalk. Responsibilities included evaluation of the existing boardwalk structure, survey of the existing dune system and topography, design of components of the timber structure, and oversight of construction engineering services. (2004 - 2005)

Graven's Island Confined Disposal Facility (CDF), Avalon Borough, Cape May County, NJ

Project Manager for the design and permitting for the excavation and removal of 150,000 cy of dredged material from an existing confined disposal facility (CDF) located within the tidal marshes approximately 2,000 feet from the nearest road. Services included site survey and sub-surface soil investigation, design of temporary "floating" roadway across the tidal marsh, procurement of state and federal permits, preparation of a wetlands restoration plan, preparation of construction drawings, and bidding services. The \$4.5 million project was conducted in order to make space available within the CDF for the Borough's planned 2014 back bay dredging project. (2013)

Reconstruction of Various Bulkheads, Avalon Borough, Cape May County, NJ

Responsible for the design and project management for the reconstruction of bayfront bulkheads at 8th Street, 21st Street, and 5th Avenue. Responsibilities included oversight of the survey of existing conditions, evaluation of geotechnical reports based on soil samples, design of timber and steel bulkheads to replace the existing deteriorating timber structures, and permitting. (2005 - 2006)

Education

BS, Civil/Environmental
Engineering, Rutgers
University, 2001

AS, Engineering, Ocean
County College, 1998

Registrations

Certified Floodplain
Manager #US-13-06810,
2013

Years in Practice – 15

Memberships

American Society of Civil
Engineers

Association of State Flood
Plain Managers

New Jersey Association of
Floodplain Management

Experience Summary

Mr. Bruton has significant experience in the area of municipal engineering and the construction of municipal infrastructure. His project management responsibilities include the completion of municipal project lifecycles from planning and concept through to design and construction. He has managed projects in the areas of roadway and streetscape improvements, storm and sanitary sewers and water main rehabilitation and installation, water and wastewater pumping and treatment, coastal engineering and waterfront improvements, recreational improvements, and other special projects.

Mr. Bruton's municipal engineering responsibilities include assisting in the preparation of reports infrastructure planning. He has also prepared construction bond estimates, and been responsible for meeting with and addressing resident concerns pertaining to local construction activities.

Selected Project Experience**Steel Sheet Pile Dune Restoration Project, Mantoloking Borough/Brick Township, Ocean County, NJ**

Project Manager for the design and preparation of specifications for a steel sheet piling sea wall and geotextile fabric anti-scour overwash apron and associated appurtenances along approximately 4 miles of the dune system. Scope of the \$40 million project included sand grain and wave analysis to determine the design of sheet pile. The project received 80% funding through the FWA program. (2013 – 2015)

Flood Hazard Risk Reduction and Resiliency Grant Application, City of Brigantine, Atlantic County, NJ

Assisted the City of Brigantine with the preparation of their Flood Hazard Risk Reduction and Resiliency Grant Application, administered through the New Jersey Department of Environmental Protection, by preparing a Benefit-Cost Analyses (BCAs) utilizing FEMA's Benefit-Cost Analysis Toolkit 5.0 software for the City's proposed projects. HMM incorporated information provided by the City, inclusive of repetitive/severe repetitive loss data and work orders of incurred costs relative to the mitigated activity, with a hydrological and hydraulic analysis prepared by HMM and successfully achieving a BCA greater than 1.0. The City received over \$1.3 million dollars of funding assistance through this Grant Program. (2015)

Flood Mitigation Plan, Mantoloking Borough, Ocean County, NJ

Program Manager for development and continued implementation of the Borough's comprehensive Flood Mitigation Plan, developed in accordance with FEMA Guidelines to incorporate a systematic approach to mitigate flooding. The plan has been integrated into the Borough's Community Rating System (CRS) Program. (2009 to present)

Community Rating System (CRS), Mantoloking Borough, Ocean County, NJ

Coordinator of the Borough's CRS program, which is offered through FEMA's National Flood Insurance Program and offers discounted flood insurance rates to municipal residents based on a point system from various activities/actions implemented by the municipality. Responsible for monitoring the overall program, including yearly recertification as well as 5-year cycle verification. (2009 to present)

Groin System Reconstruction, Bayhead Borough, Ocean County, NJ

Assisted in the design and permitting for the reconstruction of the Borough's beach groin system. (2009)

Education

MS, Civil Engineering, The
Cooper Union for the
Advancement of Science
and Art, 1991

BS, Civil/Structural
Engineering, The Cooper
Union for the
Advancement of Science
and Art, 1990

BA, Creative Writing,
University of
Massachusetts Amherst,
1984

Registrations

Professional Engineer
#072043-1, NY, 1995

Professional Engineer
#24GE04890100, NJ,
2010

Years in Practice – 25**Memberships**

American Society of Civil
Engineers

Society of American
Military Engineers

Experience Summary

Mr. Francescon has more than 30 years of diversified domestic and international engineering, construction, and construction management experience, including 20 years of dedicated marine terminal experience. His project experience focuses on the marine environment and includes container terminals, dry bulk handling and storage facilities, naval pier facilities, marinas, petroleum terminals, buildings, and a variety of transportation related projects. Areas of expertise include marine engineering design and analysis, construction management, cost estimating, scheduling, and environmental permit acquisition.

Selected Project Experience**Condition Assessment and Capacity Study, Montreal Gateway Terminals, Montreal, Canada (2/14-7/14)**

Technical Advisor and Cost Estimator for appraisal of existing assets and planned future development at Racine Terminal. Provided concept development scenarios for berth expansion and associated cost estimates for infrastructure elements and quayside equipment. Study involved assessing fixed assets and critical terminal equipment; developing capital expansion options; and analyzing throughput capacities and operating costs.

Pier Complex Replacement, Naval Weapons Station Earle, U.S. Navy, Colts Neck, NJ (2010)

Lead Construction Estimator and Scheduler for new \$130 million ammunitions pier replacement, including pier demolition, berth dredging, railroad trackage, and mechanical and electrical home porting facilities. Prepared detailed construction cost estimate, construction and monthly cash flow schedules, and constructability methodology. Awarded bid price was within 2% of estimated cost.

Kalifa New Container Terminal, Abu Dhabi Ports Authority, Abu Dhabi, UAE (2006-2007)

As Lead Cost Estimator, prepared Master Planning construction cost estimates and CPM construction schedules for \$13.4 billion multi-use port terminal, including concrete block quay wall, terminal paving, container handling equipment, buildings, infrastructure upgrades, dredging, reclamation, and shore protection.

ExxonMobil Sakhalin LNG Export Terminal, ExxonMobil, Sakhalin Island, Russia (2005-2006)

Served as Lead Cost Estimator and Scheduler and prepared detailed construction cost estimates and construction schedules for four alternative site development concepts for new \$1 billion liquid natural gas (LNG) Export Terminal in an undeveloped sub-arctic region in the Russian Far East. Facilities included LNG tanker offshore berth, six-kilometer sub-sea cryogenic pipeline to SPM, heavy haul road, pioneering camps for 1,000 personnel, and other site requirements.

Dry Dock 8 Extension - Norfolk Naval Shipyard, U.S. Navy, Portsmouth, VA (2005-2006)

Served as Lead Cost Estimator and Scheduler and prepared construction cost estimate, CPM schedule, and cash flow diagram for \$45 million extension of an existing dry dock to service future generation aircraft carriers. Project included site dewatering, 75-foot deep braced excavation, demolition, and reconstruction of 25,000 cubic yards of concrete slabs and walls, replacement of crane rails, railroads, and extensive underground utilities.

Andrew E. Coursen, PE, PLS
Survey Task Leader**Education**

BSCE, University of Vermont, 1988
GPS & GIS Courses

Professional Certifications

Professional Engineer in New Jersey
Professional Land Surveyor in New Jersey

Professional Associations

American Society of Civil Engineers
National Society of Professional Land Surveyors

Over 26 years of experience in highway and bridge design survey and ROW engineering services and construction verification survey, including a diverse array of civil engineering and land surveying projects. Professional Land Surveyor for 22 years and Professional Engineer for 18 years. He serves as manager of the survey and CADD functions with responsibility for procedures, reviewing the accuracy of survey data, managing the work and the production of the required deliverables. He has extensive experience with NJDOT and NJTA projects, procedures, manuals (NJDOT Articles 44 and 51), and standards; preparing design files/drawings utilizing Microstation/Inroads and AutoCAD 3D; large digital terrain models (DTMs); and with traffic control procedures for field survey following procedures manuals and the MUTCD standards.

Hydrographic Surveys:

Ocean Drive Seawall and Road Repair; 2012; \$20K. Survey Department Manager for this hydrographic survey of the waters along a seawall on Ocean Drive, Avalon, New Jersey. During Hurricane Sandy, ocean waters breached the masonry seawall and caused significant damage to approximately 1000 LF of roadway. Cape May County retained an engineering firm to perform a wave action study to determine the required height of the seawall to ensure future storms would not breach the seawall and cause significant roadway damage. Churchill prepared a hydrographic survey along the wall and under the Ocean Drive Bridge for a length of approximately 1,200 LF and approximately 400 ft. into the ocean/inlet. Responsibilities included preparation of a topographic map of the channel with one foot contour intervals. *Reference: Dale Foster, Cape May County Engineer, 609-465-1035*

Route 37 over Barnegat Bay Hydrographic Survey; 2013; \$25K. Survey Department Manager for this hydrographic survey of the Route 37 over Barnegat Bay Bridge (Mathis Bridge). As a result of Hurricane Sandy, significant scour was found around six substructure

units located at the east end of the structure. Churchill performed a hydrographic survey of the structure, upstream, downstream and around substructure units, prior to the installation of scour counter measures. Approximately one year later, Churchill performed a second hydrographic survey of area to assure scour counter measures were working as designed. Responsibilities included preparation of a topographic map of the channel with 1' contour intervals. *Reference: Rama Krishnageri, PB, 609-512-3583*

Betsy Ross Bridge over Delaware River; 2012; \$8K. Survey Department Manager for this hydrographic survey completed as part of an underwater inspection performed on the Betsy Ross Bridge which connects Camden and Philadelphia. The hydrographic survey extended from shoreline of New Jersey to the shoreline of Pennsylvania and approximately 100 feet upstream and downstream of the structure. Work was performed as part of a NBIS Inspection. Responsibilities included providing topographic mapping, baseline surveying and field survey to establish datums. *Reference: Richard Little, Modjeski and Masters, 717-790-9565*

South Ferry Terminal Hydrographic Survey; 2013; \$10K. Survey Department Manager for the hydrographic survey of the South Ferry Terminal located in South Amboy, New Jersey. Churchill performed this hydrographic survey as part of the upcoming reconstruction to the Pulaski Skyway. As a result of the Pulaski Skyway Reconstruction, the NJDOT initiated works to construct a new ferry dock to service residents of South Amboy with ferry service to Manhattan. Churchill performed a hydrographic survey along the South Amboy portion for a length of approximately 600 ft. by 400 ft. Responsibilities included preparation of a topographic map of the channel with one foot contour intervals. *Reference: William Hagerty, PB, 609-512-3640*

Land Surveys:






NJDOT Route 71 over Shark River Fender Design Services; 2014; \$1.5M. Churchill Consulting Engineers served as a subconsultant to Bucharth Horn on this NJDOT project. The project involved the complete removal and replacement of the treated timber fender and dolphin systems below the main channel span of the bridge. Churchill prepared a survey base map of the bridge, set project controls, established survey baselines and prepared a Survey Control Report. Horizontal positions were calculated, checked and adjusted onto localized ground datum based upon the New Jersey State Plain Coordinate System, NAD83. The vertical control was adjusted to the elevations of the North American Vertical Datum 1988. A hydrographic survey of the main span channel was also performed. Based upon that survey, a topographic map of the

Section (d)



Key Team Members Project Experience Data Sheets
(form)



d. Key Team Members Project Experience Data Sheet

Name		Robert C. Mainberger, PE, BCE					
Title		Project Manager / Principal					
Firm		 Hatch Mott MacDonald					
Project Title Location and Total Construction Cost or Fee	A/E of Record for this Referenced Project	Specific Type of Work Experience (Study, Schematic, Construction Administration)	Team Members Specific Role or Title on the Referenced Project	Duration of Team Member's Involvement of the Referenced Project (in months)	% of Time Duration based upon a 40 Hour Week	Dates of the Team Member's Involvement in the Referenced Project	Client Name Contact Person and Phone Number
8 th Street Jetty Reconstruction & Extension <i>Borough of Avalon</i> Construction Cost: \$5 Million	 Hatch Mott MacDonald	Structural & Hydrodynamic Evaluation, Permitting, Design, Bidding Services, Construction Administration	Project Manager & Project Designer	24	50	1992 - 2002	Borough of Avalon Scott Wahl Borough Administrator T: 609.967.7057
Bidwells Creek Jetty Maintenance Dredging of Navigational Channel <i>Township of Middle</i> Construction Cost: \$2 Million	 Hatch Mott MacDonald	Past Dredging Activities Analysis, Survey, Design & Construction Management	Project Manager & Project Designer	12	50	2001 - 2002	Township of Middle Hon. Timothy Donahue, Mayor T: 609.465.8732
Shoreline Improvements Project <i>City of Perth Amboy</i> Construction Cost: \$3 Million	 Hatch Mott MacDonald	Design , Permitting, and Construction Management	Project Manager	24	50	1999 – 2002	City of Perth Amboy Greg Fehrenbach Jillian Barrick T: 732.826.0290
Waterfront Improvements <i>City of Perth Amboy</i> <i>Marina & Pier Reconstruction; Bulkhead & Revetment Construction. Park Promenade Flood Wall Construction</i> Construction Cost: \$9.8 Million	 Hatch Mott MacDonald	Damage Assessment, Survey, Permitting, Design, Bidding & Construction	Project Manager	36	20	10/2012 - Present	City of Perth Amboy Greg Fehrenbach Jillian Barrick T: 732.826.0290

**Project # P1128-00 / South Absecon Inlet Jetty Repair**
Oriental Avenue and Boardwalk, Atlantic City, Atlantic County, NJ

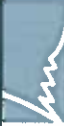
Project Title Location and Total Construction Cost or Fee	A/E of Record for this Referenced Project	Specific Type of Work Experience (Study, Schematic, Construction Administration)	Team Members Specific Role or Title on the Referenced Project	Duration of Team Member's Involvement of the Referenced Project (in months)	% of Time Duration based upon a 40 Hour Week	Dates of the Team Member's Involvement in the Referenced Project	Client Name Contact Person and Phone Number
Steel Sheet Pile Dune Restoration Mantoloking Borough & Brick Township <i>Federal Project ETL-NJ13 (004)</i> <i>NJDEP Project # 4256-14, 4257-14</i> Construction Cost: \$24 Million	 Hatch Mott MacDonald	Assessment, Permitting, Design, Bidding and Construction Coordination	Project Manager	14	10	10/2013 – Present	NJDEP – Bureau of Coastal Engineering William Dixon T: 732.255.0770
Waterfront Recovery Project City of Perth Amboy Construction Cost: \$3.5 Million	 Hatch Mott MacDonald	Damage Assessment, Permitting, Design, Bidding and Construction	Project Manager	20	20	01/2012 – 10/2013	City of Perth Amboy Greg Fehrenbach Jillian Barrick T: 732.826.0290

*A Key Team Member is a Person with a Critical Role in the Project and/or Devolving 20% or More of their Time to any Phase of the Project.









d. Key Team Members Project Experience Data Sheet

Name Douglas A. Gaffney, PE, D.CE									
Title Project Designer / Coastal Deputy Practice Leader									
Firm  Hatch Mott MacDonald									
Project Title Location and Total Construction Cost or Fee	A/E of Record for this Referenced Project	Specific Type of Work Experience (Study, Schematic, Construction Administration)	Team Members Specific Role or Title on the Referenced Project	Duration of Team Member's Involvement of the Referenced Project (in months)	% of Time Duration based upon a 40 Hour Week	Dates of the Team Member's Involvement in the Referenced Project	Client Name Contact Person and Phone Number		
North End Atlantic City Restoration Project Atlantic City, NJ Construction Cost: \$11.4 Million	OCC	Coastal Engineering, Numerical Modeling, Alternatives Analysis, Federal & State Permitting, Cost Estimating, Construction Engineering	Project Manager	36	20%	2009-2012	NJDEP Erick Doyle T: 732.255.0770		
Niantic Bay Beachfill and Groin East Lyme, CT Construction Cost: \$6.7 Million	OCC	Coastal Engineering, Numerical Modeling, Alternatives Analysis, Federal & State Permitting	Project Manager	24	20%	2009-1010	Gannett Fleming Ted Roehrig T: 610.650.8101		
Absecon Island Shore Protection Project Atlantic City, NJ Construction Cost: \$24.0 Million	U.S. Army Corps of Engineers	Coastal Engineering, Coastal Planning, Cost Estimating, Numerical Modeling, Federal & State Permitting	Project Manager	78	40%	1990-1997	USACE, Philadelphia District Jeff Gebert T: 215.656.6573		

*A Key Team Member is a Person with a Critical Role in the Project and/or Devolving 20% or More of their Time to any Phase of the Project.






d. Key Team Members Project Experience Data Sheet

Name		Thomas Thornton, PE, CME					
Title		Project Designer / Principal Project Manager					
Firm		 Hatch Mott MacDonald					
Project Title Location and Total Construction Cost or Fee	A/E of Record for this Referenced Project	Specific Type of Work Experience (Study, Schematic, Construction Administration)	Team Members Specific Role or Title on the Referenced Project	Duration of Team Member's Involvement of the Referenced Project (in months)	% of Time Duration based upon a 40 Hour Week	Dates of the Team Member's Involvement in the Referenced Project	Client Name Contact Person and Phone Number
Long Reach & Whale Harbor Dredging Avalon, NJ Construction Cost: \$8.1 Million	 Hatch Mott MacDonald	Hydrographic Survey, Sediment Sampling and Testing, Civil Engineering, Federal & State Permitting, Construction Engineering	Project Manager	48	10%	1/2010 - 12/2014	Borough of Avalon Scott Wahl Borough Administrator T: 609.967.7057
2010 Beach Renourishment Project Avalon, NJ Construction Cost: \$4 Million	 Hatch Mott MacDonald	Hydrographic Survey, Civil Engineering, Federal & State Permitting, Construction Engineering	Project Manager	9	15%	11/2009 – 7/2010	Borough of Avalon Scott Wahl Borough Administrator T: 609.967.7057
8 th Street Bulkhead Replacement Avalon, NJ Construction Cost: \$430,000	 Hatch Mott MacDonald	Civil Engineering, Federal and State Permitting, Construction Engineering	Project Manager	53	6%	1/2004 to 4/2009	Borough of Avalon Scott Wahl Borough Administrator T: 609.967.7057

*A Key Team Member is a Person with a Critical Role in the Project and/or Devolving 20% or More of their Time to any Phase of the Project.






d. Key Team Members Project Experience Data Sheet

Name		Frank Bruton, CFM					
Title		Project Designer / Engineer III					
Firm		 Hatch Mott MacDonald					
Project Title Location and Total Construction Cost or Fee	A/E of Record for this Referenced Project	Specific Type of Work Experience (Study, Schematic, Construction Administration)	Team Members Specific Role or Title on the Referenced Project	Duration of Team Member's Involvement of the Referenced Project (in months)	% of Time Duration based upon a 40 Hour Week	Dates of the Team Member's Involvement in the Referenced Project	Client Name Contact Person and Phone Number
Steel Sheet Pile Dune Restoration Mantoloking Borough & Brick Township Federal Project ETL-NJ13 (004) NJDEP Project # 4256-14, 4257-14 Construction Cost: \$24 Million	NJDEP – Bureau of Coastal Engineering	Assessment, Survey, Permitting, Design, Bidding (Specifications), and Grant Administration	Assistant Project Manager	24	40%	10/2013 – Present	NJDEP – Bureau of Coastal Engineering William Dixon T: 732.255.0770
Flood Hazard Risk Reduction and Resiliency Grant Application, City of Brigantine, Atlantic County, NJ Grant Award: \$1.3 million	 Hatch Mott MacDonald	Hydrological and hydraulic analysis, Benefit-Cost Analyses (BCAs)	Assistant Project Manager	4	80%	12/2014 – 4/2015	City of Brigantine Edward P. Stinson, P.E., C.M.E. Brigantine City Engineer 609 266-7600
FEMA – Federal Reimbursement for Federally Declared Disasters: Borough of Mantoloking 1867 DR NJ – November 2009 Storm Event (approx.. \$50,000) 4021 DR NJ – Hurricane Irene (approx.. \$50,000) 4086 DR NJ – Super Strom Sandy (amount still to be determined)	 Hatch Mott MacDonald	Damage Survey Reports, Preliminary Damage Assessment Summary, Project Worksheets, Closeout (receipt of allotment)	Project Manager	6 - 8 (each)	40% (each)	1867 DR NJ – (11/2009 - 6/2010); 4021 DR NJ – (8/2011 – 4/2012); 4086 DR NJ – (10/2012 - current)	Borough of Mantoloking George C. Nebel, Mayor T: 732.457.6983

*A Key Team Member is a Person with a Critical Role in the Project and/or Devolving 20% or More of their Time to any Phase of the Project.



d. Key Team Members Project Experience Data Sheet


Name		John Francescon, PE						
Title		Principal Engineer – Cost Estimating						
Firm		 Hatch Mott MacDonald						
Project Title Location and Total Construction Cost or Fee	A/E of Record for this Referenced Project	Specific Type of Work Experience (Study, Schematic, Construction Administration)	Team Members Specific Role or Title on the Referenced Project	Duration of Team Member's Involvement of the Referenced Project (in months)	% of Time Duration based upon a 40 Hour Week	Dates of the Team Member's Involvement in the Referenced Project	Client Name Contact Person and Phone Number	
New Breasting Dolphin Design, Buckeye Marine Terminal <i>Bayonne, NJ</i> Construction Bid: \$0.5 Million	 Hatch Mott MacDonald	Feasibility study and detail design of innovative breasting dolphin for project specific application Provided report, drawings and specs, and cost estimates	Cost Estimator and Lead Designer	5	30%	September 2014 to January 2015	Buckeye Partners, LP Clay Carlisle Project Manager T: 732.425.9039	
Tioga Butane Terminal <i>Philadelphia, PA</i> Construction Cost: \$100 Million	 Hatch Mott MacDonald	Condition Assessment EPCM – Terminal Development, Pre-FEED Study, Marine/Geotech Eng., Site Development Civil/Structural, Process / Program Management Study and Detail Design of LNG Terminal in greenfield site – manmade island, marine structures, dredging, man camps	Lead Engineer for Marine Design, Permitting, and Cost Estimating	6	95%	March 2013 to September 2013	Navigator Gas David Butters President and CEO T: 212.355.5893	
LNG and LPG Export Terminal, AES Ocean LNG Ltd. <i>Ocean Cay, Bahamas</i> Construction Cost: \$120 Million	Han-Padron Associates, LLP (HPA)		Lead Estimator and Scheduler	36	20%	February 2002 to June 2004	AES Ocean LNG Ltd. Chris Diez Project Manager T: 716.745.7166	

*A Key Team Member is a Person with a Critical Role in the Project and/or Devolving 20% or More of their Time to any Phase of the Project.





4. Key Team Members Project Experience Data Sheet

Name		Andrew Coursen, LS					
Title		Survey Manager					
Firm		 CHURCHILL					
Project Title Location and Total Construction Cost or Fee	A/E of Record for this Referenced Project	Specific Type of Work Experience (Study, Schematic, Construction Administration)	Team Members Specific Role or Title on the Referenced Project	Duration of Team Member's Involvement of the Referenced Project (in months)	% of Time Duration based upon a 40 Hour Week	Dates of the Team Member's Involvement in the Referenced Project	Client Name Contact Person and Phone Number
South Ferry Terminal <i>South Amboy, NJ</i> 10K Fee	Parsons Brinckerhoff	Survey Base Mapping for design including hydrographic and control survey tied into land based survey performed by others for a ferry dock.	Survey Manager	1	20%	12/2013	Parsons Brinckerhoff William Hagerty T: 609-512-3640
Ocean Drive Reconstruction <i>Avalon Borough, NJ</i> 20K Fee	Parsons Brinckerhoff	Survey Base Mapping for design including hydrographic, topographic and control surveying for the reconstruction of a sea wall and 1000 LF of roadway damaged during Hurricane Sandy.	Survey Manager	2	20%	12/2012 - 1/2013	Cape May County Dale Foster, PE T: 609-465-1035
SB GSP over Great Egg Harbor Bridge Replacement <i>Somers Point & Upper Twp., NJ</i> Construction Cost: \$200 Million	Hardesty and Hanover	Survey base mapping for design including verification of control, topographic and hydrographic surveying, parcels and acquisition plans for two bridge replacements.	Survey Manager	13	20%	4/2012 - 6/2013	NJ Turnpike Authority Elizabeth Trimpin, PE T: 732-750-5393

**Project # P1128-00 / South Absecon Inlet Jetty Repair**
Oriental Avenue & Boardwalk, Atlantic City, Atlantic County, New Jersey

Project Title Location and Total Construction Cost or Fee	A/E of Record for this Referenced Project	Specific Type of Work Experience (Study, Schematic, Construction Administration)	Team Members Specific Role or Title on the Referenced Project	Duration of Team Member's Involvement of the Referenced Project (in months)	% of Time Duration based upon a 40 Hour Week	Dates of the Team Member's Involvement in the Referenced Project	Client Name Contact Person and Phone Number
Route 37 over Barnegat Bay Hydrographic Survey <i>Toms River, NJ</i> Construction Cost: \$25K	Parsons Brinckerhoff	Hydrographic survey of the structure, upstream, downstream and around substructure units, prior to the installation of scour counter measures. One year later, performed a second hydrographic survey of area to assure scour counter measures were working as designed.	Survey Manager	3	20%	2013	Parsons Brinckerhoff Rama Krishnagiri, PE T: 609-512-3583
Betsy Ross Bridge over Delaware River <i>Pennsauken, NJ</i> Construction Cost: \$8K	Modjeski and Masters	Hydrographic survey that extended from shoreline of New Jersey to the shoreline of Pennsylvania and approximately 100 feet upstream and downstream of the structure. Work was performed as part of a NBIS Inspection.	Survey Manager	1	15%	2012	Modjeski & Masters Richard Little, PE T: 717-790-9565
NJDOT Route 71 over Shark River Fender Design Services <i>Belmar, NJ</i> Construction Cost: \$1.5M	Buchart Horn	Prepared a survey base map of the bridge, set project controls, established survey baselines and prepared a Survey Control Report. A hydrographic survey of the main span channel was also performed. Based upon that survey, a topographic map of the channel bottom was prepared with 1' contour intervals.	Survey Manager	4	10%	7/2014 - 11/2014	NJDOT Raymond Kauffman T: 609-259-8925

**Project # P1128-00 / South Absecon Inlet Jetty Repair**
Oriental Avenue & Boardwalk, Atlantic City, Atlantic County, New Jersey

Project Title Location and Total Construction Cost or Fee	A/E of Record for this Referenced Project	Specific Type of Work Experience (Study, Schematic, Construction Administration)	Team Members Specific Role or Title on the Referenced Project	Duration of Team Member's Involvement of the Referenced Project (in months)	% of Time Duration based upon a 40 Hour Week	Dates of the Team Member's Involvement in the Referenced Project	Client Name Contact Person and Phone Number
Six Bridge Scour Surveys Camden County, NJ Construction Cost: \$2.14M	HNTB	The survey was performed to provide a basis to conduct design analysis services on needed scour repairs. Responsibilities included Survey Base Mapping which included hydrographic river bed surveying, skematic bridge asbuilts, flood plain topography, setting of project control benchmarks, baseline survey, and preparation of a Survey Control Survey Report.	Survey Manager	4	20%	8/2014-1/2015	Camden County Kevin Becica, PE T: 856-566-2971
Eighth Street Bridge Folsom, NJ Construction Cost: \$672K	Stantec	Performed survey to provide a basis for design services on the needed bridge replacement of the existing closed structure. Provided Survey Base Mapping and Property Survey and Right-of-Way, setting of project control benchmarks, baseline survey, and preparation of a Survey Control Survey Report.	Survey Manager	1	20%	8/2013	Atlantic County Doug DiMeo, PPE T: 6609-645-5898

*A Key Team Member is a Person with a Critical Role in the Project and/or Devolving 20% or More of their Time to any Phase of the Project.

Section (e)

Project Key Personnel List (form)

Section (f)
Project Approach

Project Understanding (and Repair Approach)

The New Jersey Department of Environmental Protection (NJDEP), Bureau of Coastal Engineering (BCE) is seeking a qualified firm to provide engineering and design services necessary to reconstruct the South Absecon Inlet Jetty in Atlantic City extending from Oriental Avenue.

As a result of Super Storm Sandy, heavy wave impact, tidal surges and undermining attributed to significant damages along the extent of the jetty. Field inspection shows displacement of armor stone and destruction of the existing core box resulting in settlement of cap stone and bridging of cap stone over the void left by the loss of core stone below. There is also a section of armor stone rotation throughout the structure. Approximately 1,000 linear feet or more of jetty was damaged due to Sandy. The nose of the jetty experienced significant damage and is in need of reconstruction.



The damage observed in the field indicates to us that prior to "Sandy" some damage to the primary armor and secondary armor stone would have attributed to the significant more abrupt damage to the core box and jetty caused by Super Storm Sandy.

We anticipate that the preference of the NJDEP to implement a recreationally accessible upper surface into the structure by modifying a typical rubble mound structure to fill the upper primary armor stone voids with concrete to create a safe walkable surface for recreational users and fisherman. HMM would also add PVC fishing rod inserts along the top crest of the Jetty on each side into the concrete at reasonable spacing for recreational use, which has been very popular on previous projects.

Core box construction of the era utilized to achieve numerous advantages as follows:

- Ease of construction
- Enhanced sand permeability resistance
- Cost Savings
- Ability to easily vary upper surface elevation to accommodate placement of cap stone to achieve a flat walking surface.



Unfortunately, unless the original construction was controlled through the detailed placement of secondary armor stone to encapsulate the core, any loss of armor stone creates a loss mechanism and route for the core stone.

In addition, by fixing or pinning the cap stone in position with concrete between the voids, the cap stone does not have the opportunity to settle and maintain contact with the core stone as incremental movement and losses of same are experienced.

When this occurs, a void area is created below the cap stone and wave energy and surge is conveyed internally through the structure and in essence can jettison the remaining core stone out of the structure in a short period of time during extreme storm conditions.

Since the cap stone cannot drop until the concrete in the voids fails, the void increase compounds the issue and internal forces may even be significant enough to move larger secondary or even primary armor stone that is in a precarious position to the outboard side of the structure.

HMM observed the failure of the Avalon 8th Street Jetty due to the loss of approximately 2000 tons of core stone over a 3-day period as a result of the December 1991 storm due to minor preceding damage observed from the "Halloween" storm.

Whereas, the recreational use of the South Absecon Inlet Jetty is so desirable and significant, HMM understands the desire to retain the cap stone configuration and concrete void filler feature as much as possible. HMM also anticipates that the FEMA damage claims funds are basically set up to restore the jetty essentially in kind.

Noting the potential future failure of this type of construction and the desire to maintain the economies and sand tightness of core box construction. HMM has implemented the use of marine geotextile fabrics to encapsulate the core box and prevent or minimize the future loss of core stone when the eventual voids open up in the structure. In addition to enhanced stability, the geotextile fabric also significantly decreases sand permeability and buffers the transmission of wave forces through the structure internals. HMM has also implemented the use of marine fabrics to create a sand curtain in the upper areas of the jetty for addition sand retention.

HMM also understands the difficulty of transporting significantly large armor stone to meet anticipated wave conditions for the reconstruction of this jetty and meet the storm magnitude resistance to be discussed with the BCE. Especially since the nose of the jetty has shown that some of the stone utilized may be undersized to create the "robust" design that is needed in this location. Accordingly, HMM would approach the repair to specify higher density stone where available and detail stone placement in a "preferred orientation" or "select placement" manner in order to provide long axis alignment perpendicular to the wave forces to minimize stone size and weight in the reconstruction process where practical.

We have attached some basic plates illustrating the above methods. Also, noting that these appear to be a few areas of significant rotation around the nose of the jetty potentially caused by undermining and scour which should be disclosed by the bathymetric survey work and examination during a blow-out tide. HMM would evaluate and design scour protection as deemed necessary for the protection and stability of the structure. HMM does not find that side-scan sonar will significantly assist in this evaluation. HMM also does not find that the cost to identify and retrieve rocks that are not in close proximity to the toe of the jetty



and would only retrieve rocks that are obviously loose along the toe of the structure and easily retrievable during construction which is more cost effective.

In addition to the obvious deliverable in the following scope of work section, HMM recognizes that significant engineering inspection and evaluation in addition to basic land-based and bathymetric survey is needed to evaluate void areas, extent of core box construction and damage to develop an accurate estimate of quantities and also limits of future core box construction, secondary armor and primary armor stone sizing and placement. All design work will be conducted in accordance with the most up-to-date USACoE coastal design manual criteria.

HMM design engineers will also review alternative design and construction methods to enhance the design as possible.

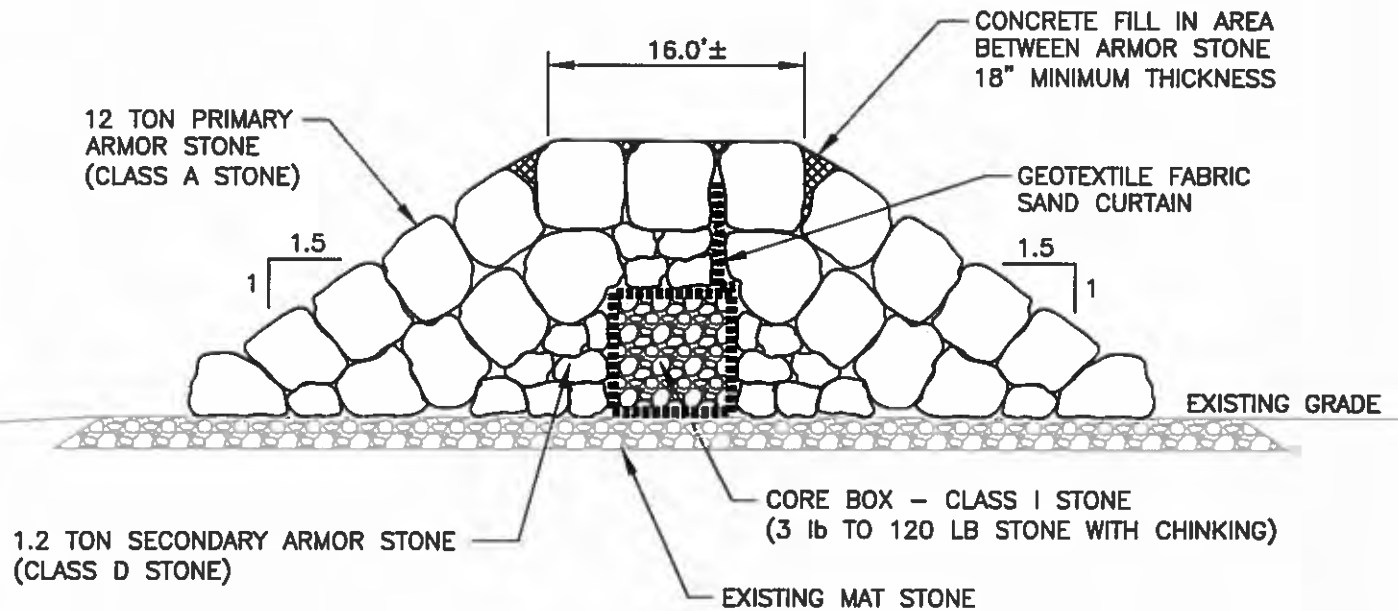
HMM will determine in conjunction with the NJDEP BCE the desired design criteria and warranted robustness of the design.

HMM also understands that the success of the repair work will be highly dependent upon the diligence of the construction control during the project work and the reliance on the project documents, contract quantities and contract items are key to the projects work. The contract specifications will also be key to controlling the contractor noting that "means and methods" will always be in control of the contractor but owner risk must be limited by the teeth of the specifications.

HMM would suggest limiting the maximum length of jetty opening at one time to a length where the jetty repair can be temporarily closed in anticipation of sewer storm conditions. HMM specifications would also limit the maximum amount of excess stone the contractor may advance into the project area in order to mitigate contractor claim for payment for unneeded or unused materials.

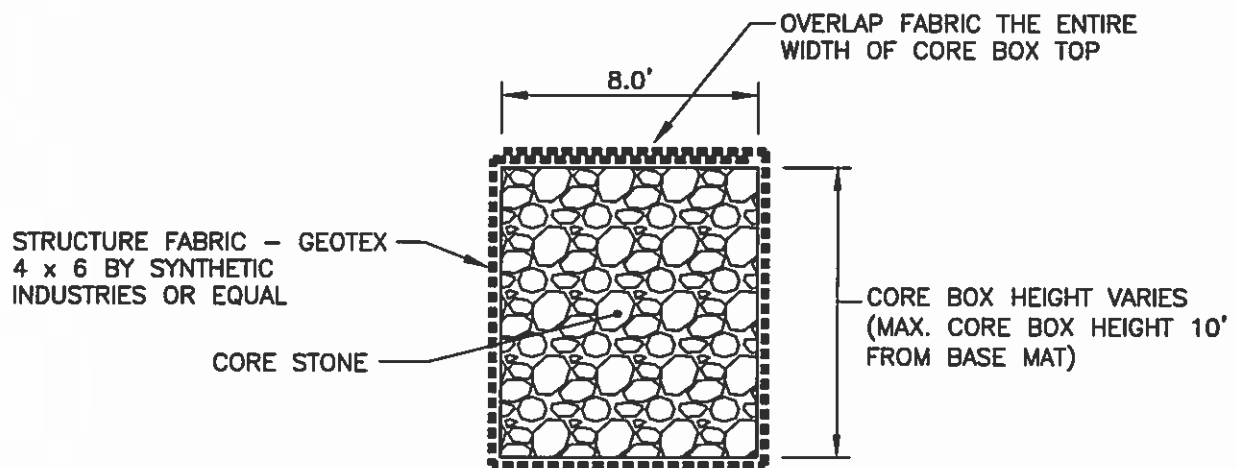
South Absecon Inlet Jetty Repair Anticipated Bid Items

1. Mobilization
2. Preparation of Access and Final Restoration and Cleanup – General Work (\$ Lump Sum)
3. Corestone for Core Box Construction and "Chinking" (\$ per Ton)
4. Remove and Dispose Concrete Cap Stone Void Filler (\$ per Ton)
5. Geotextile Structural Fabric Wrapping for Core Box and Sand Curtain Construction (\$ per SY)
6. Geotextile Filter Fabric for Vertical Sand Curtain and Core Box Sand Curtain Construction (\$ per SY)
7. Rehandled Armor Stone (\$ per Ton)
8. New Armor Stone (\$ per Ton)
9. Concrete Void Filler (\$ per CY)
10. DeMobilization (\$ Lump Sum)
11. Other items needed as recognized in design process



TYPICAL JETTY CROSS SECTION

NOT TO SCALE



CORE BOX DETAIL

NOT TO SCALE



**Hatch Mott
MacDonald**

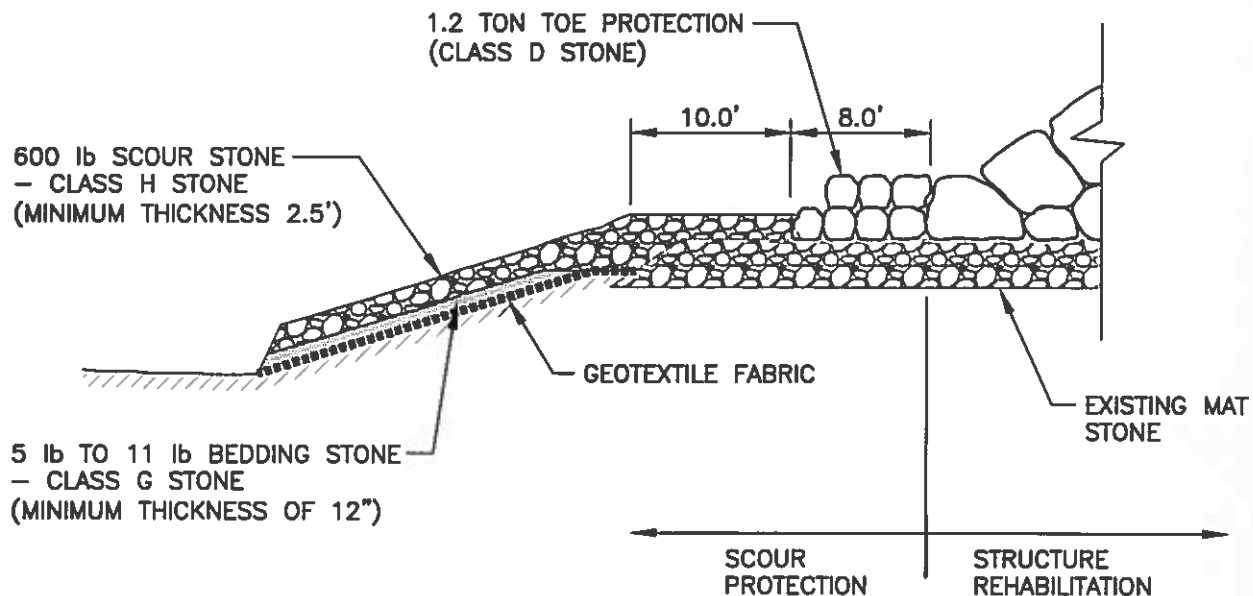
Certificate No. 24GA28016600

3 Paragon Way
Freehold, New Jersey 07728

CITY OF ABSECON
ATLANTIC COUNTY, NEW JERSEY
TYPICAL JETTY CROSS SECTION
AND CORE BOX DETAIL

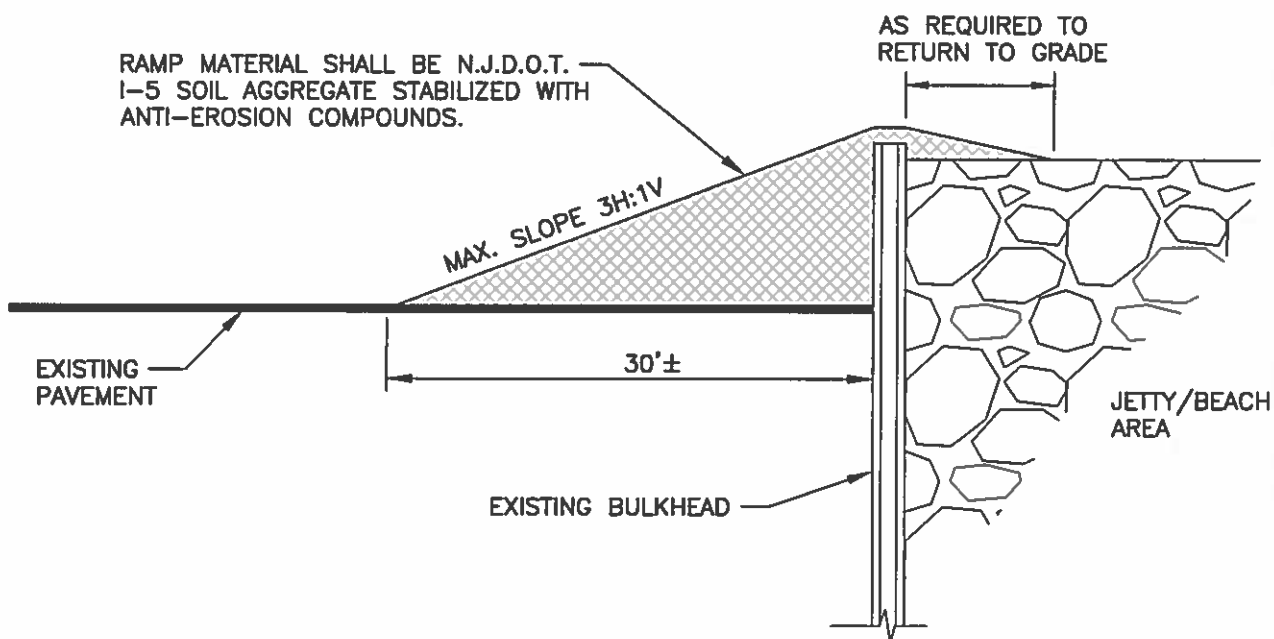
FIGURE 1

Designed R.C.M.	Drawn D.E.	Checked R.C.M.	Approved	Date
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SCOUR PROTECTION DETAIL

NOT TO SCALE



CONSTRUCTION ACCESS RAMP DETAIL

NOT TO SCALE



**Hatch Mott
MacDonald**

Certificate No. 24GA28016600

3 Paragon Way
Freehold, New Jersey 07728

CITY OF ABSECON
ATLANTIC COUNTY, NEW JERSEY

CONSTRUCTION ACCESS RAMP DETAIL
AND SCOUR PROTECTION DETAIL

FIGURE 2

Designed
R.C.M.

Drawn
D.E.

Checked
R.C.M.

Approved

Date

Scope of Work

The HMM Team has provided our scope of work and approach to the project in the previous project understanding section and as follows: The HMM Team will perform coastal and structural design services for the reconstruction of sections along the 1,200 linear foot jetty which will include clearing of existing concrete grout and investigation of the cap stone and core box, removal of existing cap stone, resetting of the removed cap stone, construction of the new core box, removal and disposal of broken concrete, and placement of new stone, which includes armor stone to ensure stability in future storm events of the magnitude selected by the NJDEP BCE as an acceptable risk factor.

The HMM Team will ensure that all details during the design phase of the project are in compliance with all applicable codes, regulating authorities, and the guidelines established in the DPMC Procedures for Architects and Engineers Manual and in accordance with USACoE design manual criteria. Construction documents will ensure that all of the design items described in the scope are addressed and including in the project drawings and specifications. The HMM Team will provide all design elements for the project and under no circumstance will delegate responsibility of any portion to the Contractor.

The HMM Team will submit all required Contract Deliverables to the Project Manager at each completed phase of the project. The HMM Team will provide reports, meeting minutes, plan review comments, project schedules and cost estimates in CSI format, 2014 edition. All correspondence, calculations and other items will be presented in a bound letter-size book format.

The HMM Team will prepare construction plans and specifications in the Construction Specifications Institute (CSI) format, "MasterFormat©2014". Our Team will work closely with the Bureau of Coastal Engineering to incorporate our general conditions and to develop the final specification, noting HMM's previous experience in working with the BCE on similar projects.

The HMM Team will provide cost estimates with each design submittal phase including a detailed construction cost estimate itemized and summarized by division and sections of the CSI MasterFormat©2014. We will provide a detailed breakdown of the work items involved including labor, equipment, materials and total costs as well as any alternate bid items and all unit price items itemized and summarized by the divisions and sections of the specifications.

HMM will provide all corrections, additions or omissions to the submitted drawings and specifications at the Permit Phase to the Bureau of Coastal Engineering in one (1) document. We understand that no addendums will be accepted.

The HMM Team will conduct review meetings with the Project Team as needed during each design phase of the project to determine if the project meets the requirements, to question any contract deliverables, and make changes where appropriate. The HMM Team will provide the process and methodology used in the development of the design criteria and the various alternatives considered to meet the project objectives. The HMM Team will present studies, sketches, cost estimates, schedules and other relevant information to support the design solutions proposed. Additionally, special considerations will be addressed, such as: Contractor site access limitations, utility shutdowns and switchover coordination, phased construction and schedule requirements, security restrictions, available swing space, material and equipment delivery dates, etc. HMM will ensure that our sub-consultant, Churchill Consulting Engineers are in attendance at design review meetings as deemed necessary by the DPMC or BCE.

The HMM Team understand that this project will be advertised as a single project with a single prime contractor responsible for all work detailed in the plans and specifications. Construction drawings will have the required prefix designations and specification sections will be color coded for each trade as detailed in the DPMC Procedure for Architects and Engineers Manual. The HMM Team will provide a Construction Cost Estimate as required for each trade on the appropriate DPMC form and will submit the estimates at each design phase and updated prior to bid advertisement.

Pre-Design Meeting

There will be a Pre-Design Meeting held between the HMM Team and the DPMC upon the issuance of the Notice to Proceed. The HMM Team will provide the DPMC with a Gantt Chart Design Schedule as well as coordinate the following:

- **Project Directory** – Develop a project directory detailing the names and phone numbers of key designated representatives who may be contacted during the design phases of the project.
- **Site Access** – Develop procedures to access the project site and provide names/phone numbers of approved escorts. Adhere to special security and policy procedures that will be followed during all work as well as be included in Division 1 of the specification.
- **Project Coordination** – Review current and future projects at the site that may impact the design, construction and scheduling requirements and incorporate appropriate information and coordination requirements in Division 1 of the specification. A known project to be included where construction is expected to commence in the near future, will be the USACoE Seawall Construction and Boardwalk Restoration project in the North end of Atlantic City, which will begin at Oriental Avenue and extend to Mediterranean Avenue.
- **Existing Documentation** – The HMM Team understands that the State does not attest to the accuracy of errors by the use of any information and material contained in the documentation and that it will be the HMM Team's responsibility to verify the contents and assume full responsibility for any determination or conclusion drawn from the material used. If the information provided is insufficient, the HMM Team will take the appropriate actions necessary to obtain the additional information required. Additionally, the HMM Team will return all original documentation to the DEP and DPMC at the completion of the project. *HMM has acquired these design drawings and is familiar with their impact on this project.*
- **Scope of Work** – The HMM Team will review the design and construction administration responsibilities and the submission requirements identified in the Scope of Work with Project Team Members including items such as: contract deliverables, special sequencing or phased construction requirements, special hours for construction based on Client Agency programs, delivery dates of critical and long lead items, weather restrictions, and coordination with other project construction activities at the site will be addressed. The HMM Team will include this information and all general administrative information, including a narrative summary of the work for this project in Division 1 of the specification. The HMM Team will ensure that there are no conflicts between the information contained in Division 1 of the specification and the DPMC General Conditions.
- **Project Schedule** – The HMM Team will review and update the project design and construction schedule with the project team members.



Phase 1 - Investigation & Preliminary Design

Upon completion of the Phase 1 Investigation and Preliminary Design, the HMM Team will present an oral presentation to the DPMC, BCE and other local authorities as required for review and comment of the preliminary design documents.

Task 1. Field Surveying

The HMM Team will perform a topographic survey that will include the entire jetty surface and extend 100 feet landward of the jetty face. Survey sections will be taken at 25 foot intervals along the jetty centerline and will identify all existing features. Churchill Consulting Engineers will perform a hydrographic survey which will be limited to soundings taken along the northern and southern face of the existing jetty and circumferentially around the nose of the jetty extending 100 feet in all directions. Both topographic and hydrographic surveys will maintain a minimum 10 foot overlap.

The HMM Team will prepare Base maps from the survey information collected and referencing the horizontal datum NJ State Plan Coordinate System NAD 1983 and vertical datum NAVD 1988. Maps will include a tide gauge with the relationship between NGVD 1929 and NAVD 1988, and Mean Low Water, Mean High Water and High Tide Line. Survey control will be set by the field surveyor.

Task 1 Deliverables: The HMM team will provide the DPMC with one (1) copy of digital files on CD or other approved storage device with a label that includes: project number and name; municipality and county; firm name and date of survey of the following information:

- Raw XYZ Survey Data
- Edited XYZ Survey Data
- AutoCAD file in ".dwg" format

Task 2. Preliminary Design

Jetty Design

HMM will review the existing jetty design and needed criteria for and needed criteria for reconstructed . HMM will hindcast significant wave criteria and calculate appropriate stone sizes, density and orientation to properly reconstruct the jetty and rebuild the jetty nose.

Core Stone Box Design

HMM will review all dimensions of the existing core box through detailed site investigation and determine the approximate dimensions for reconstruction and surrounding secondary armor stone inclusive of the potential application of marine fabric wrap.

Nose Construction Design

HMM will detail the nose construction taking special consideration to wave size, stone size and density, and placement orientation. HMM will analyze the need for scour protection for the jetty nose.



Task 2 Deliverables: The HMM team will provide the DPMC with two (2) copies of preliminary 24 x 36" drawings which will include:

- Title Sheet (one sheet)
- Legend Sheet (one sheet)
- Survey Control Sheet (one sheet)
- General Plan & Elevation Sheet (one sheet)
- Construction Details
 - Typical Jetty Cross-Section(s)
 - Typical Core Stone Box Design
 - Nose Construction Design
 - Additional Details as needed
 - Access ramps, work and material storage areas

Task 3. Construction Cost Estimate

The HMM Team will provide a Construction Cost Estimate on letter size paper at the completion of Phase 1 which will be signed and sealed by a NJ Licensed Professional Engineer.

Phase 2 – 90% Design Development

Upon completion of the Phase 2 90% Design Development, the HMM Team will present an oral presentation to the DPMC, BCE and other local authorities as required for review and comment of the preliminary design documents.

Task 1. 90% Design Development

Task 1 Deliverables: The HMM team will provide the DPMC with two (2) copies of the 90% Design 24 x 36" drawings which will include:

- Title Sheet (one sheet)
- Legend Sheet (one sheet)
- Survey Control Sheet (one sheet)
- General Plan & Elevation Sheet (one sheet)
- Construction Details
 - Typical Jetty Cross-Section(s)
 - Typical Core Stone Box Design
 - Nose Construction Design
 - Additional Details
 - Quantity Tables

Task 2. BCE Permitting Phase

HMM will coordinate with the Bureau of Coastal Engineering's Specialist during the design phase to ensure the plans reflect permitting requirements. Permits will be acquired by the DEP's Bureau of Coastal Engineering by submitting the 90% design phase plans to the Division of Land Use Regulation and the USACoE



to acquire the necessary permits for the project inclusive of all placement quantities in the zones of interest by each entity.

Task 2 Deliverables: The HMM team will provide the DPMC with ten (10) signed and sealed copies of the 90% Design on 8.5" x 11" plan sheets for permit submission to the Division of Land Use Regulation and USACoE.

Task 3. Construction Cost Estimate

The HMM Team will provide a Construction Cost Estimate on letter size paper at the completion of Phase 2 which will be signed and sealed by a NJ Licensed Professional Engineer.

Phase 3 – Final Design

Upon completion of the Phase 3 Final Design, the HMM Team will present an oral presentation to the DPMC, BCE and other local authorities as required for review and comment of the preliminary design documents.

Phase 3 Deliverables: The HMM team will provide the DPMC with two (2) signed and sealed copies of the Final Design on 24 x 36" plan sheets as well as two (2) signed and sealed copies on 8.5" x 11" plan sheets, which will include:

- Title Sheet (one sheet)
- Legend Sheet (one sheet)
- Survey Control Sheet (one sheet)
- General Plan & Elevation Sheet (one sheet)
- Construction Details
 - Typical Jetty Cross-Section(s)
 - Typical Core Stone Box Design
 - Nose Construction Design
 - Additional Details
 - Quantity Tables

Additionally, the HMM Team will submit one (1) set of signed and sealed Mylar plans of the final design, and one (1) CD (or approved storage device) containing digital files in either .pdf or AutoCAD format of the final design.

Task 3. Construction Cost Estimate

The HMM Team will provide a Construction Cost Estimate on letter size paper at the completion of Phase 3 which will be signed and sealed by a NJ Licensed Professional Engineer.

Pre-Design Preliminary Cost Estimate

HMM has complete a preliminary design cost estimate of the project from the limited data available at this time. We find that the NJDEP's estimate of repairs may be understated and the value of the project would be approximately \$4.75 million plus or minus \$0.5 million.

Section (g)
Project Schedule

Project Schedule

A realistic project schedule is the first step to assure project success. The project schedule is a tool that can ensure that your project finishes successfully and on time. Each individual task identified in the project schedule is given a duration consisting of a start and end time. Resources can then be assigned to the tasks, and milestones can be set at significant points within the project schedule. Further, the schedule will provide information pertaining to the logical order of the sequencing of the tasks to identify dependencies and constraints between tasks to ensure that project delays are avoided. The project schedule will also be utilized as a gauge for how the project is progressing. Tasks are deemed to not being completed on time can be identified and resources can be allocated to put the task back on track. The project work schedule is realistic as proposed by the DPMC in the RFP and can be adhered to with the only risk factor would be a series of bad weather events delaying initial survey tasks which could delay completion of the follow-up design tasks. If this happens, HMM would advance other tasks as much as possible to attempt to still meet the proposed schedule.

The NJDPMC's estimated design phases for the project and their estimated durations are as follows:

Project Phase	Estimated Duration (calendar days)
1. Investigation & Preliminary Design	60
▪ <i>Project Team Review & Comment</i>	<i>14</i>
2. 90% Design Development Phase	20
▪ <i>Project Team Review & Comment</i>	<i>14</i>
3. Final Design Phase	10

The attached project schedule for the South Absecon Inlet Jetty Repair outlines the basic step-by-step tasks and associated time frames that will bring this project to a timely and successful conclusion and are based on the estimated durations provided by the DPMC. The tasks have been presented in the logical order of their implementation and completion. The HMM Team's approach in preparing the project schedule is to:

- Consider the safe construction of the work.
- The construction activities and durations were developed from estimated quantities and applying reasonable production rates to determine the initial durations.

The HMM Team is confident that the DPMC and our proposal schedule is realistic and that our milestone commitments are achievable.

Design Sequencing

As shown in the proposal schedule attached, we have taken a realistic yet aggressive approach to the project, the associated tasks, and their timeframes for completion. The HMM Team has further evaluated the schedule and believes there is a small opportunity to condense the project duration further given the following:



- The HMM team has an in-depth knowledge of the structure, and is ready to make an immediate start on preliminary design development, following Notice to Proceed. Our Technical Lead, Robert Mainberger has worked on similar projects, HMM has in-house data available pertinent to this project and our subconsultant Churchill Consulting Engineers, recently completed an underwater condition inspection and repair project of similar nature in Cape May following Superstorm Sandy.
- We are very familiar with the local environmental and geotechnical conditions in the area, having been designing marine structures in the local area for many years. This in-depth knowledge will allow us to very efficiently develop workable schematic design concepts early in the project, and will potentially reduce the overall preliminary design phase duration.
- Through the development of our proposal schedule, we have identified that the client review process is a critical path activity for the project, and we will work closely with the DPMC, BCE and other stakeholders, to ensure that there are no "surprises" when we submit deliverables for review. The Pre-Design Meeting with key stakeholders is key to a streamlined review and approval process.
- The firms comprising the HMM Team have well over 400 employees in offices local to the project. This will allow for the adequate staffing of all tasks. Further, if a task appears to fall behind schedule, sufficient resources exist that would allow additional staff to be assigned to the task.

Section (h)
Certificate of Employee Information Report

Section (i)
Source Disclosure Certification

Final / Accepted Fee Proposal



Professional Services Fee Proposal Division of Property Management & Construction

THIS FEE PROPOSAL TO BE RETURNED
IN A SEPARATELY SEALED ENVELOPE TO:

Division of Property Management & Construction
33 WEST STATE STREET, 9TH FLOOR., PLAN ROOM
P.O. Box 034
Trenton, NJ 08625-0034
Attention: Bill Mahan

DATE: September 3, 2015
REVISED DATE: September 25, 2015
PROJECT NO.: P1128-00

THIS PROPOSAL DUE DATE, NO LATER THAN 2:00 PM, THURSDAY, September 3, 2015

FIRM NAME:



Hatch Mott
MacDonald

THE UNDERSIGNED PROPOSES TO PROVIDE ALL PROFESSIONAL SERVICES AS CALLED FOR IN THE SCOPE OF WORK AND THE AGREEMENT BETWEEN
THE STATE OF NEW JERSEY AND THE CONSULTANT

INVESTIGATION & PRELIMINARY DESIGN SUBMISSION	\$ 71,313.34
90% DESIGN DEVELOPMENT/BCE PERMITTING PHASE	\$ 25,449.98
FINAL DESIGN SUBMISSION	\$ 14,961.86
TOTAL LUMP SUM FEE FOR PROFESSIONAL SERVICES	\$ 111,725.18
PERMIT FEE ALLOWANCE	\$ NA
MISCELLANEOUS SERVICES ALLOWANCE	\$ 5,000.00
ALLOWANCE FOR WORK SPECIFIED BY CONSULTANT	\$ NA
TOTAL CONTRACT AMOUNT	\$ 116,725.18

PROPOSAL TO HOLD GOOD FOR 60 DAYS AFTER THE DUE DATE

Signature and Title of Principle or Individual of the firm authorized to sign contractual documents:

Signature of the consultant below attests that the Consultant has read, understands and agrees to all terms,
conditions and specifications set forth in the Request for Proposal (RFP) and Consultant Proposal Package.

Signature:

Printed Name:

Eric C. Betz

Title:

Vice President

Date:

September 25, 2015

Witness Signature:

Print Name:

Robert C. Mainberger

ATTACH PROOF OF REQUIRED INSURANCE COVERAGE

See attached requirements per "General Conditions to Consultant Agreement" Section 27, pp. 18-19

PROFESSIONAL LIABILITY INSURANCE

(\$100,000 MIN LIMIT/\$25,000 MAX DEDUCTIBLE)

2015 SEP 25 P 2:35

RECEIVED
DPMC

2015 SEP 25 P

RECEIVED
DPAC

CONSULTANT TASK / LABOR / FEE SHEET A/E:

Project #: P1128-00

Date: September 3, 2015

Project Name: South Absecon Inlet Jetty Repair

Revised Date: September 25, 2015

Project Location: Atlantic City, Atlantic County, NJ

PROJECT PHASE OR TASK	CONSULTANTS LEVEL OF EFFORT IN HOURS/FEE **								REPRODUCTION COST PER PHASE INCLUDING SUBCONSULTANT DOCUMENTS***	TOTALS PER TASK
	LEVEL	7	6	5	4	3	2	1		HOURS
	*HOURLY RATE	\$264.09	\$155.00	\$228.44	\$128.21	\$112.50	\$87.16	\$71.15		\$ AMOUNT
INVESTIGATION & PRELIMINARY DESIGN SUBMISSION	HOURS	33	32	92	96	64	178	16		511
	AMOUNT	\$ 8,365.00	\$ 4,960.00	\$ 21,134.25	\$ 12,253.31	\$ 7,199.94	\$ 15,262.52	\$ 1,138.32	\$1,000.00	\$71,313.34
90% DESIGN DEVELOPMENT / BCE PERMITTING PHASE	HOURS	12	-	24	56	26	36	32		186
	AMOUNT	\$ 3,360.00	\$0.00	\$ 5,343.28	\$ 7,218.29	\$ 2,924.97	\$ 3,326.80	\$ 2,276.64	\$1,000.00	\$25,449.98
FINAL DESIGN SUBMISSION	HOURS	10	-	16	24	14	12	24		100
	AMOUNT	\$ 2,800.00	\$0.00	\$ 3,676.91	\$ 3,093.55	\$ 1,574.99	\$ 1,108.93	\$ 1,707.48	\$1,000.00	\$14,961.86
TOTAL	HOURS	55	32	132	176	104	226	72		
	AMOUNT	\$ 14,525.00	\$4,960.00	\$30,154.44	\$22,565.15	\$11,699.90	\$ 19,698.25	\$5,122.44	3,000	
PROFESSIONAL SERVICES GRAND TOTAL									HOURS	797
									AMOUNT	\$111,725.18
									Miscellaneous Services Allowance	\$5,000.00
										\$116,725.18

*Includes Hourly Average Rate

**Totals include Subconsultant Hours and Costs

***Includes Travel Costs

Final / Accepted Fee Proposal


SUB-CONSULTANT TASK / LABOR / FEE SHEET A/E:

RECEIVED
DPMC
2015 SEP 28 1A 10:24

Project #: P1128-00

Project Name: South Absecon Inlet Jetty Repair

Project Location: Atlantic City, Atlantic County, NJ

PROJECT PHASE OR TASK	SUB CONSULTANTS LEVEL OF EFFORT IN HOURS / FEE		TOTALS PER TASK
	FIRM NAME	 CHURCHILL	
INVESTIGATION & PRELIMINARY DESIGN SUBMISSION	HOURS	133	133
	AMOUNT	\$12,000.00	\$12,000.00
90% DESIGN DEVELOPMENT / BCE PERMITTING PHASE	HOURS	-	-
	AMOUNT	\$0.00	\$0.00
FINAL DESIGN SUBMISSION	HOURS	-	-
	AMOUNT	\$0.00	\$0.00
TOTAL	HOURS	133	
	AMOUNT	\$12,000.00	\$12,000.00
TOTAL			\$12,000.00*

PROVIDE FIRM NAME(S) AT TOP OF COLUMN(S). MAKE COPY OF THIS SHEET IF MORE SPACE IS NEEDED.

PLEASE ATTACH PROOF OF SUBCONSULTANT PREQUALIFICATION (48A) WITH DPMC.

*Includes HMM overhead cost

Revised September 25, 2015 (Corrected discrepancy in hours from 128 to 133)



**Hatch Mott
MacDonald**

**Final / Accepted
Fee Proposal**

Hatch Mott MacDonald
3 Paragon Way
Freehold, NJ 07728
T 732.780.6565 www.hatchmott.com

September 25, 2015

2015 SEP 25 P 2: 35

New Jersey Department of Treasury
Division of Property Management & Construction
Contracts & Procurement Unit
33 West State Street
9th Floor, Plan Room
Attention: William Mahan
P.O. Box 034
Trenton, New Jersey 08625-0034

RE: Project # P1128-00
South Absecon Inlet Jetty Repair
Oriental Avenue and Boardwalk, Atlantic City, Atlantic County, NJ

Dear Mr. Mahan:

Attached please find our revised cost proposal and labor hour estimate for the South Absecon Inlet Jetty Repair project. Per your request we have reviewed our proposal and have effected cost savings based on the following:

- Reduced any possible staff redundancy where found
- Transferred tasks or partial task assignments where possible to lower cost staff without affecting quality
- Reduced the number of redundant staff from attending project meetings
- Reduced the labor cost rate for Category 7

We anticipate you find this revision acceptable. We look forward to your approval, starting the project and providing the quality work and product to you and the NJDEP necessary for a successful project.

Very truly yours,

Hatch Mott MacDonald, LLC

Robert C. Mainberger, PE, CME
Senior Vice President
Municipal & County Services
T: 732.780.6565 F: 732.577.0551
robert.mainberger@hatchmott.com

cc: David Pittman (DPMC)
Eric Betz, PE
Doug Gaffney, PE



Hatch Mott MacDonald

Hatch Mott MacDonald

3 Paragon Way

Fridgely, NJ 07728

T 732.780.6565 www.hatchmott.com

2015 OCT - 11 P 3:41

October 1, 2015

Mr. Dave Pittman
Division of Property Management and Construction
20 West State Street, 3rd Floor
Trenton, NJ 08608-1206

RE: Project No.: P1128-00
Subject: South Absecon Inlet Jetty Repair at Atlantic City N.J.
No Exception Letter

Dear Mr. Pittman:

Based upon our multiple conference calls and negotiations, Hatch Mott MacDonald, LLC (HMM) is providing the following clarifications and responses to our schedule and fee proposal as requested:

1. Hatch Mott MacDonald, LLC takes no exception to the project Scope of Work included in the RFP and Addendum "A" dated August 26, 2015 issued by the NJ DPMC.
2. The HMM project team includes the necessary disciplines and services to complete the items required in the Scope of Work.
3. We acknowledge that in accordance with the project schedule, this Design will be completed within 118 calendar days of the issuance of the Notice to Proceed by NJ DPMC (weather pending completion of survey work). We understand that if the construction schedule is extended during the design phase, we would not be granted, nor seek additional fees for our construction phase services.
4. The revised project fee documents dated September 25, 2015 reflect all agreed to modifications to address adjustments to rates and hours where possible without impacting scope and project deliverables.

Please advise if you have any questions regarding the above.

Very truly yours,

Hatch Mott MacDonald, LLC

Robert C. Mainberger, PE, CME
Senior Vice President
T: 732.780.6565 F: 732.577.0551
robert.mainberger@hatchmott.com

cc: William Mahan
Eric Betz

	Project Manager/ Principal	Project Manager/ Principal	Designer	Designer	Designer	Designer	Designer	Cost Estimating	Designer/CA DD	PLS	Field Survey Tech	Office Survey/Cadd Tech	Admin	Total Hours	TOTAL \$\$
	Mainberger	Churchill	Gaffney	Thornton	Bruton	Carr	Walling	Francescon	Eckardt	Churchill	Churchill	Churchill	Kilpatrick		
Personnel Levels	7	7	5	5	3	4	2	5	4	6	2	2	1		
Phase 1 - Investigation & Preliminary Design (60 days)															
Pre-Design Meeting	4		4							4				12	
1a. Field Survey & Base Survey Plan Development		7				4				28	38	56		133	
1b. Preliminary Design														0	
*Engineering Field Investigation	4		4		8	8								24	
*Hindcast, Wave Analysis, Rock Sizing	2		10				12							24	
*Geotechnical Fabric Analysis	1		4											5	
*Design Work/Plans/Water & Flood Lines	2		16	8	16		24		60					126	
*Contract Items Formulation/Spec Preparation	2			8	24		24							58	
*Quality Control/Quality Assurance	4		6											10	
1c. Construction Cost Estimate														0	
*Quantity Takeoffs	2				8		16	24	16					66	
*Pricing	2		2	2										6	
1d. Preliminary Deliverables Submission					8		8		8				16	40	
1e. Oral Presentation	3		4											7	
Travel/Reproduction Costs															\$ 1,000.00
Phase 1 SubTotal Hours	26	7	50	18	64	12	84	24	84	32	38	56	16	511	
Phase 1 SubTotal Cost															\$ 71,313.34
Phase 2 - 90% Design Development															
2a. Incorporate Design Comments from Phase 1	2		4	4	4		8		16				16	54	
2b. Construction Cost Estimate (revised)	2			2	6		4	4						18	
2c. 90% Design Development Deliverables	2		2		8		8		16				8	44	
2d. BCE Permitting Deliverables	2		2	2	8		16		24				8	62	
2e. Oral Presentation	4		4											8	
Travel/Reproduction Costs															\$ 1,000.00
Phase 2 SubTotal Hours	12	0	12	8	26	0	36	4	56	0	0	0	32	186	
Phase 2 SubTotal Cost															\$ 25,449.98
Phase 3 - Final Design															
3a. Incorporate Design Comments from Phase 2	2		4		4		4		8				16		
3b. Construction Cost Estimate	2		2		2			4							
3c. Final Design Deliverables	2			2	8		8		16				8		
3d. Oral Presentation	4		4												
Travel/Reproduction Costs															\$ 1,000.00
Phase 3 SubTotal Hours	10	0	10	2	14	0	12	4	24	0	0	0	24	100	
Phase 3 SubTotal Cost															\$ 14,961.86
TOTAL HOURS	48	7	72	28	104	12	132	32	164	32	38	56	72		797
TOTAL LABOR															\$ 111,725.18
Miscellaneous Services Allowance (As requested including Bid Assistance, Construction Admin, Design Questions and RFI's, Etc)															
															\$ 5,000.00
GRAND TOTAL (For HMM)															\$ 116,725.18