Rebuild By Design—
Hudson River Project
Design and Construction Administration Services

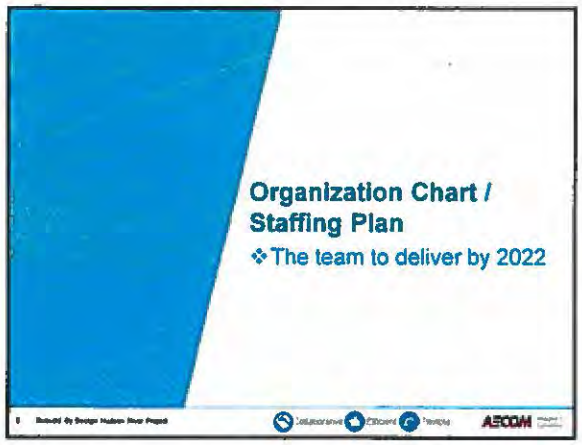
Interview | July 14, 2017

AECOM Imagine it. Delivered.

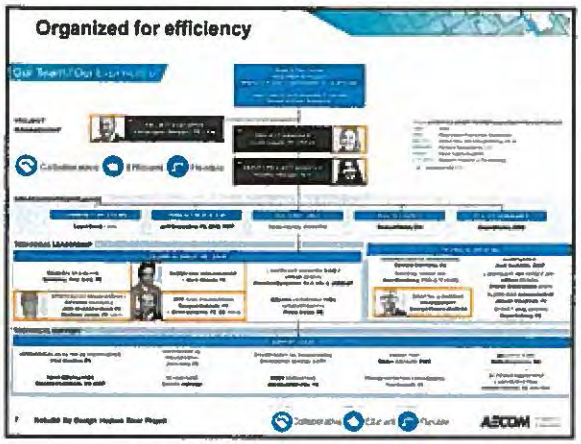

Locally Invested and Experienced Partner
COLLABORATION
EFFICIENCY
FLEXIBILITY


The team to get it done
Prime Consultant
AECOM
Specialty Subconsultants
STEVENS
MAGNUSSON KLEMENCIC ASSOCIATES
OMA AMO
MATRIXNEWORLD
Remora Consulting
Royal HaskoningDHV


Dedicated leadership exclusive to this project
Karen Appell
Project Manager
Heather Morgan
Deputy Project Manager


Organization Chart /
Staffing Plan
❖The team to deliver by 2022


AECOM Team
Project Management
Technical Leadership
Here Today

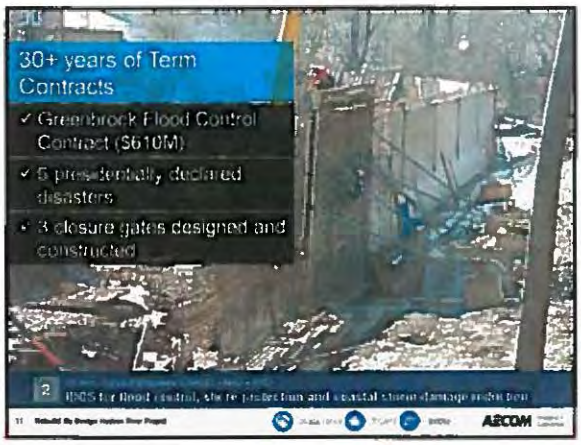

Organized for efficiency

Transdisciplinary team in action

Benefit - Reduces the risk for design and construction changes throughout the life of the project

Similar and Relevant Experience

- Large scale flood mitigation and environmental infrastructure term contracts - proven and delivered


30+ years of Term Contracts
✓ Greenbrook Flood Control Contract ($610M)
✓ 5 presidentially declared disasters
✓ 3 closure gates designed and constructed
2
AECOM


Mega-scale infrastructure for the State ($2.3B)
✓ Unprecedented permitting timeline
✓ Complex utility, acquisition, construction management
✓ $200MM under budget
3
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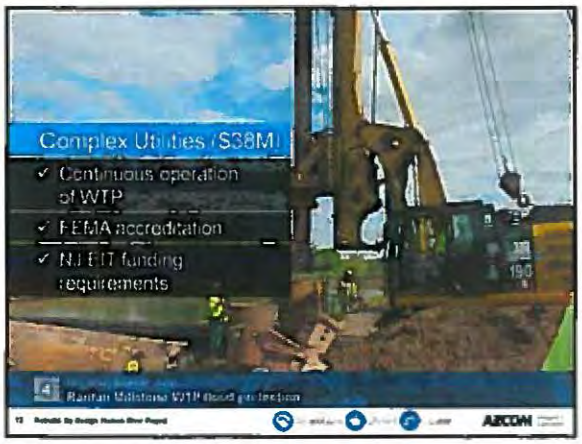
Complex Utilities ($38M)
✓ Continuous operation of WTP
✓ FEMA accreditation
✓ NJ EIT funding requirements
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Design & construction in dense urban environment ($60 M)
✓ Design & construction coordination w/ multiple owners & stakeholders
✓ Innovative strategies for public realm
✓ Importance of Landscape Architecture
5
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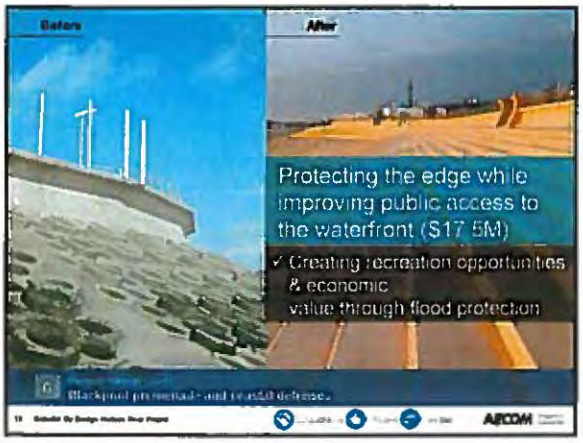
Before
After
Protecting the edge while improving public access to the waterfront ($17.5M)
✓ Creating recreation opportunities & economic value through flood protection
6
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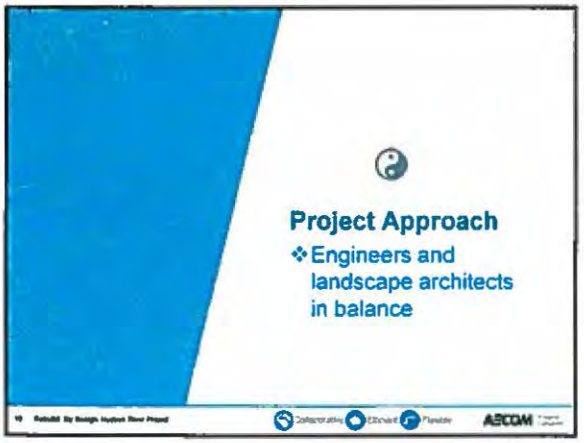
Project Approach
❖ Engineers and landscape architects in balance
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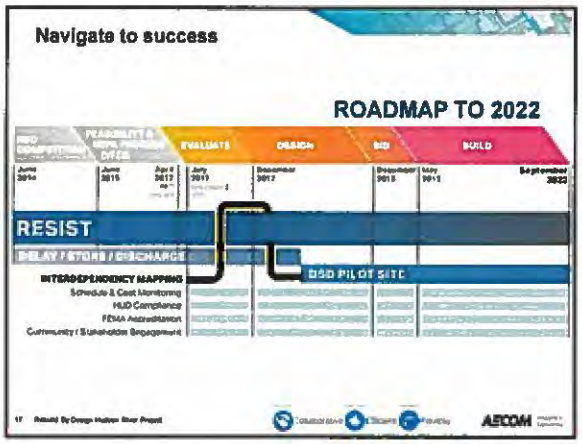
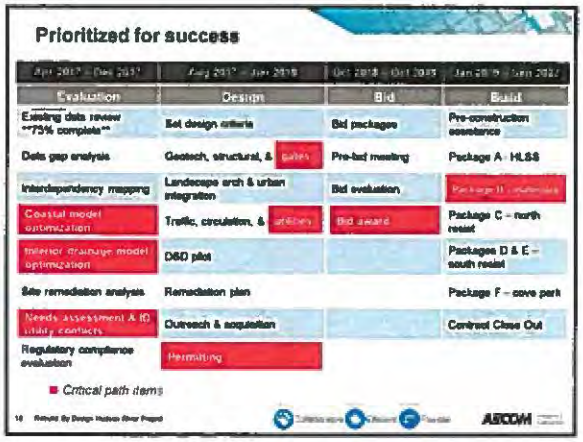
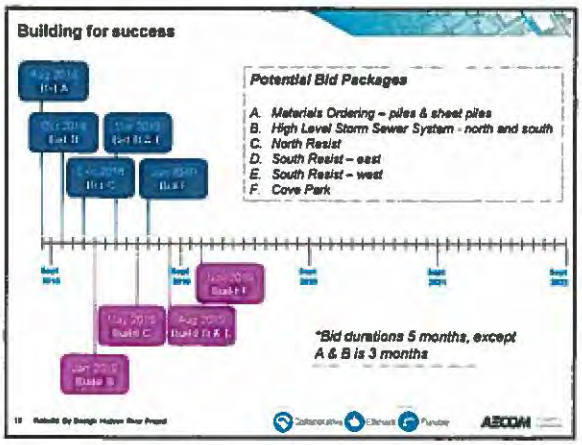

Navigate to success
ROADMAP TO 2022
EVALUATE
DESIGN
BID
BUILD
RESIST
DSD PILOT SITE
INTERDEPENDENCY MAPPING
Schedule & Cost Monitoring
HLD Compliance
FEMA Accreditation
Community / Stakeholder Engagement
AECOM


Prioritized for success
Evaluation
Design
Bid
Build
Existing data review ~75% complete**
Set design criteria
Bid packages
Pre-construction assistance
Data gap analysis
Geotech, structural, & gates
Pre-bid meeting
Package A - HLSS
Interdependency mapping
Landscape arch & urban integration
Bid evaluation
Coastal model optimization
Traffic, circulation, & utilities
Bid award
Package C – north resist
Interior drainage model optimization
DSD pilot
Packages D & E – south resist
Site remediation analysis
Remediation plan
Package F – cove park
Needs assessment & ID utility conflicts
Outreach & acquisition
Contract Close Out
Regulatory compliance evaluation
Permitting
Critical path items
AECOM


Building for success
Potential Bid Packages
A. Materials Ordering – piles & sheet piles
B. High Level Storm Sewer System - north and south
C. North Resist
D. South Resist – east
E. South Resist – west
F. Cove Park
*Bid durations 5 months, except A & B is 3 months
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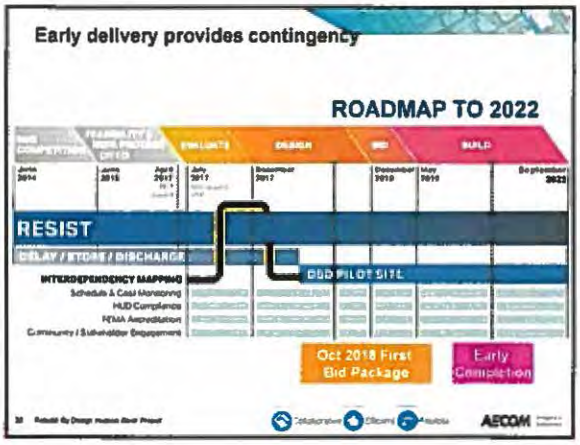
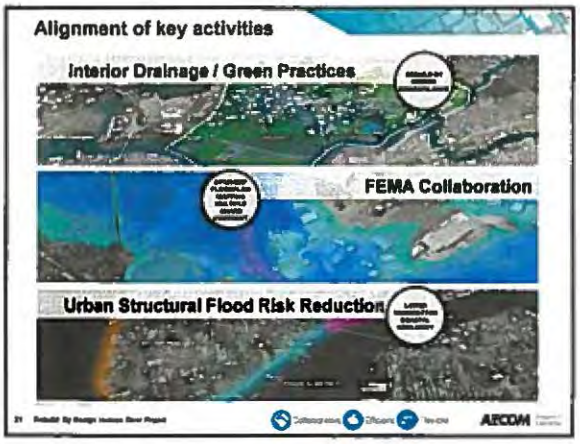

Early delivery provides contingency
ROADMAP TO 2022
RESIST
DELAY / STORE / DISCHARGE
OSD PILOT SITE
INTERDEPENDENCY MAPPING
Schedule & Cost Monitoring
HUD Compliance
NFMA Accreditation
Community / Stakeholder Engagement
Oct 2018 First Bid Package
Early Completion
AECOM


Alignment of key activities
Interior Drainage / Green Practices
FEMA Collaboration
Urban Structural Flood Risk Reduction
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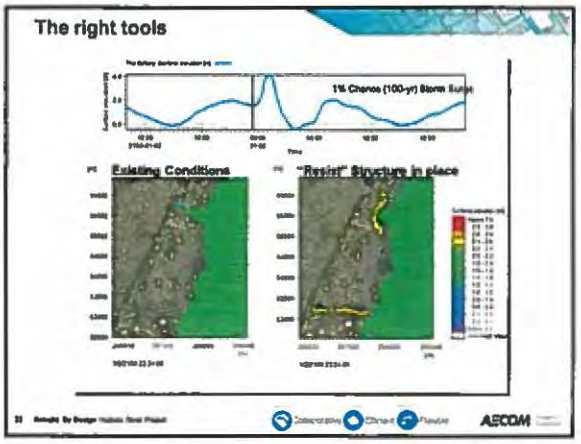

The right tools
1% Chance (100-yr) Storm Surge
Existing Conditions
"Resist" Structure in place
AECOM

Our FEMA advantage

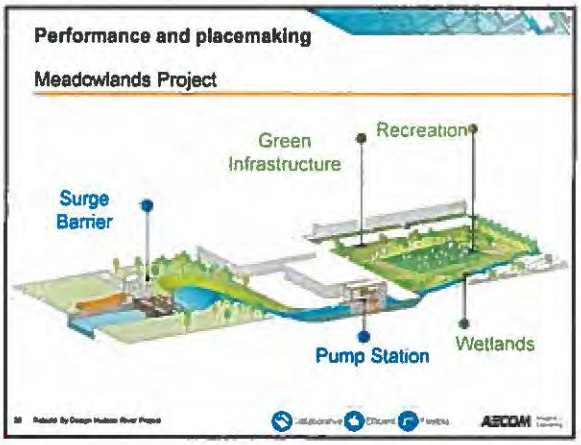
LPV 111 Levee Reach system, New Orleans

NJ American Water plant in Bridgewater

Why AECOM

Performance and placemaking

North end - program elements of Hudson Project


Performance and placemaking
Meadowlands Project
Green Infrastructure
Recreation
Surge Barrier
Pump Station
Wetlands
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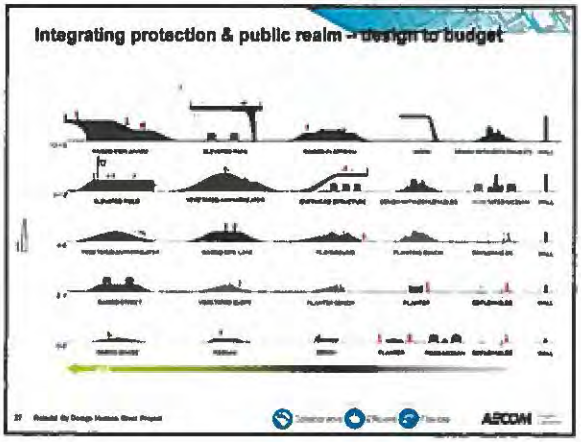
Integrating protection & public realm – design to budget
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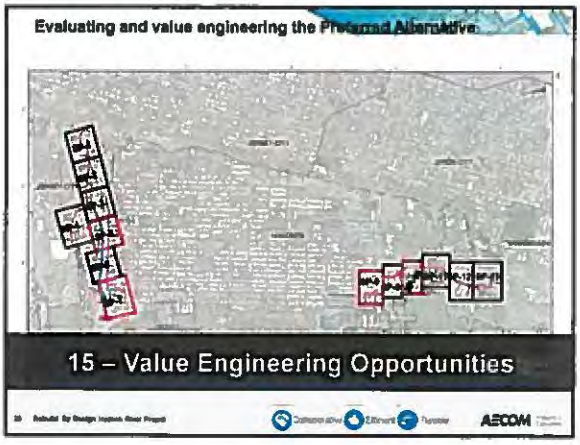
Evaluating and value engineering the Proposed Alternative
15 – Value Engineering Opportunities
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The Resist structure

Depending on HEIGHT of Wall, we can find efficiencies

ABOVE GROUND

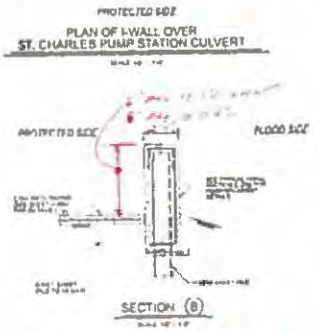
BELOW GROUND

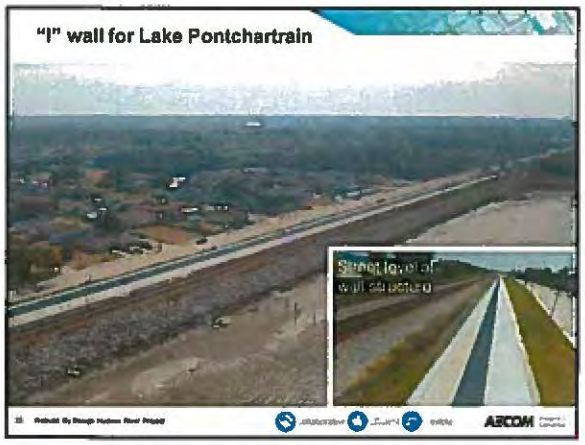
Efficiencies

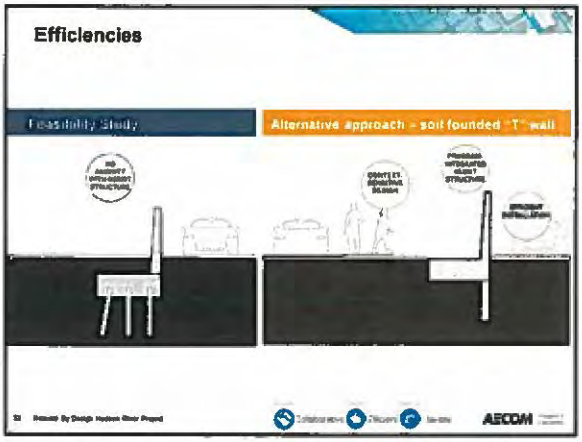
Feasibility Study

Alternative approach

Efficiencies below ground- "I" wall

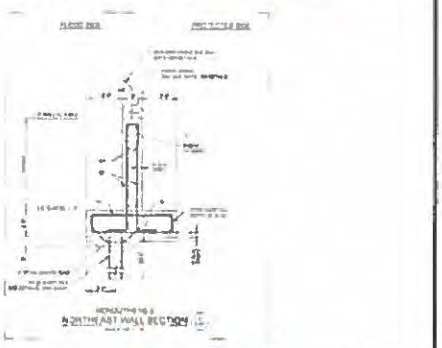



"I" wall for Lake Pontchartrain
AECOM

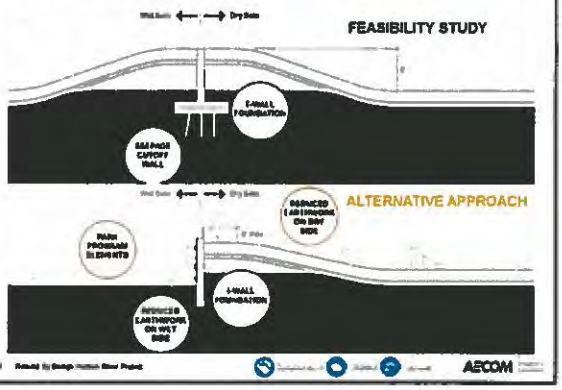

Efficiencies
Feasibility Study
Alternative Approach - soil founded "T" wall
AECOM


Construction efficiencies
AECOM

Efficiencies below ground- soil founded "I" wall



Earthwork efficiencies



Overcoming contaminated soils

Gate alternatives

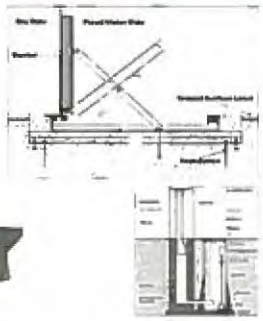
AECOM flood gate designs

Step Log Structure - 50 ft wide x 4 ft high structure across NJ Transit rail lines, Bound Brook, NJ

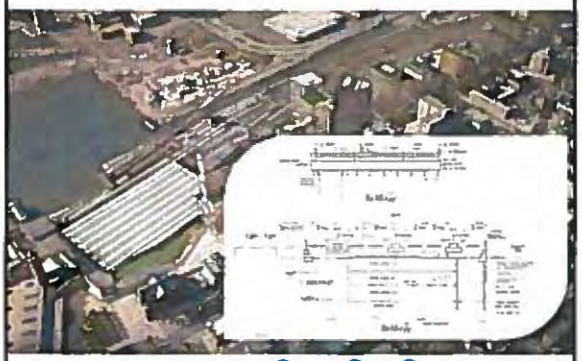
Roller Gate - 47 foot wide by 16 foot high roller gate across South Main Street, Bound Brook, NJ

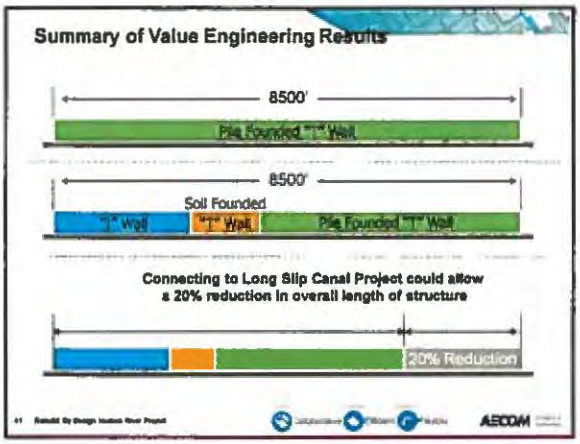
Swing Gate - 80 foot wide by 7 foot high swing gate across NJ Transit rail lines, Bound Brook, NJ

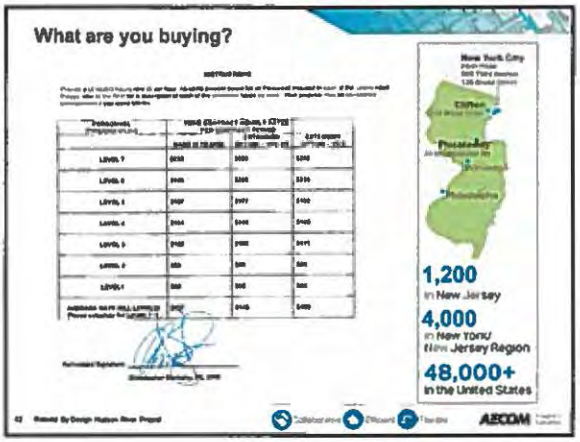
Deployable alternatives



Long Slip Canal




Summary of Value Engineering Results
8500'
Pile Founded "T" Wall
8500'
Soil Founded
"T" Wall
"T" Wall
Pile Founded "T" Wall
Connecting to Long Slip Canal Project could allow
a 20% reduction in overall length of structure
20% Reduction
AECOM


What are you buying?
1,200
in New Jersey
4,000
in New York/
New Jersey Region
48,000+
in the United States
AECOM


Committed to deliver
COLLABORATION:
EFFICIENCY
FLEXIBILITY
Locally Invested and Experienced Partner
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Thank you!
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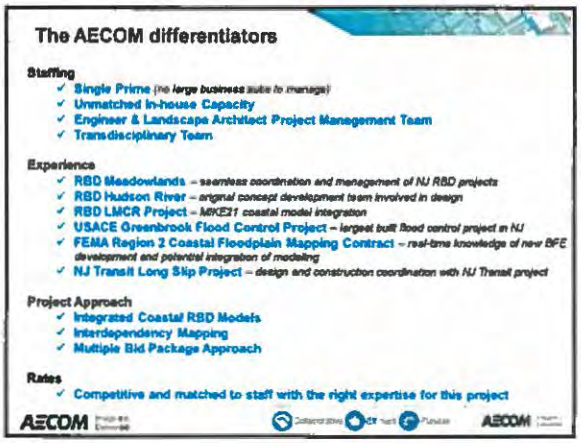
AECOM
Imagine it.
Delivered.


The AECOM differentiators
Staffing
Single Prime (no large business suite to manage)
Unmatched in-house Capacity
Engineer & Landscape Architect Project Management Team
Transdisciplinary Team
Experience
RBD Meadowlands – seamless coordination and management of NJ RBD projects
RBD Hudson River – original concept development team involved in design
RBD LMCR Project – MIKE21 coastal model integration
USACE Greenbrook Flood Control Project – largest built flood control project in NJ
FEMA Region 2 Coastal Floodplain Mapping Contract – real-time knowledge of new BFE development and potential integration of modeling
NJ Transit Long Slip Project – design and construction coordination with NJ Transit project
Project Approach
Integrated Coastal RBD Models
Interdependency Mapping
Multiple Bid Package Approach
Rates
Competitive and matched to staff with the right expertise for this project
AECOM
AECOM

We have a portfolio of large and similar projects

AECOM has well over 40 years of experience in developing implementable flood risk management projects from concept development through pre-design (Feasibility Study, NEPA EIS preparation, permitting), design, construction, project turnover and close-out. Below is a sampling of representative projects which are described in more detail at the end of this section.

1 US Army Corps of Engineers (USACE) - NY District
SANDY HOOK TO BARNEGAT BEACH EROSION CONTROL

- Comprehensive design and construction support for of $125M coastal resiliency project in NJ
- Key personnel proposed involved: Christopher Benosky, Karen Appell, Steven Li, Ed Schmeltz

2 US Army Corps of Engineers (USACE) - USACE IDCS
FOR FLOOD CONTROL, SHORE PROTECTION AND COASTAL STORM DAMAGE REDUCTION

- Planning, design and construction of large-scale, $610M flood damage reduction project in NJ
- Key personnel proposed involved: Christopher Benosky, Karen Appell, Heather Morgan, John Dromsky-Reed

3 New Jersey Turnpike Authority
INTERCHANGE 6 TO 9 WIDENING PROGRAM

- Program management and construction management and mitigation design and permitting for $2.3B Widening Program which includes flood risk management
- Key personnel proposed involved: Christopher Benosky, Karen Appell, Shruhti Ashokan

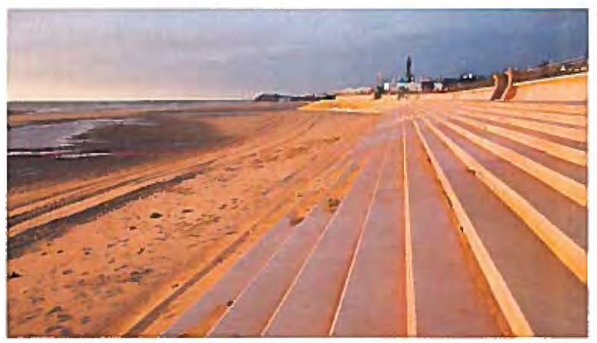
4 New Jersey American Water
RARITAN MILLSTONE WTP FLOOD PROTECTION

- Design of one-mile long flood protection system surrounding water treatment plant in floodplain of Raritan River, comprised of earthen levees and concrete floodwalls
- Key personnel proposed involved: Christopher Benosky, Mark Gonski

5 Port Authority of NY & NJ
WORLD TRADE CENTER PUBLIC REALM

- Comprehensive landscape architecture/ urban design, and green infrastructure design as part $200+M WTC public realm design
- Key personnel proposed involved: Christopher Benosky, Karen Appell, Brandon Cappellari

6 Blackpool Borough Council
BLACKPOOL PROMENADE AND COASTAL DEFENSES



- Integration of coastal dynamics with public realm design resulting in coastal protection structure that has become a direct extension of the waterfront
- Successful collaboration between landscape architects and marine engineers, with successful flood protection and enhanced public access on the waterfront

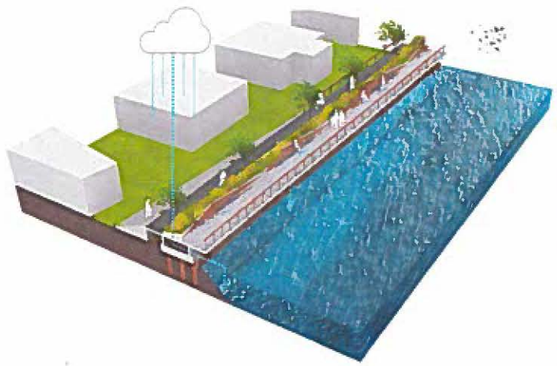
We know how to get projects done, and we deliver; we don't just develop high-concept renderings and plans. We design and build projects that reduce our community's vulnerabilities, and we do it with an approach philosophy founded on:

Collaboration

Efficiency

Flexibility

Working closely with DPMC/DEP on RBD Meadowlands, AECOM has developed replicable and scalable approaches to inland and tidal surge flood management which can be implemented separately, or together, to address a wide spectrum of risks while providing civic amenities and renewed investment; ultimately connecting design, funding, and implementation strategies.



AECOM provided DESIGN AND CONSTRUCTION ADMINISTRATION SERVICES

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973 883 8501 fax

June 13, 2017

Catherine Douglass
Department of Treasury, Division of Property Management & Construction
Contracts & Procurement Unit
33 West State Street, P.O. Box 034
Trenton, New Jersey 08625-0034

RE: Rebuild by Design Hudson (Hoboken) Project Design and Construction Administration Services, Term Contract TC-003 DPMC Project P1155-00

Dear Ms. Douglass:

The Rebuild by Design: Hudson River project represents the continued commitment of the State of New Jersey to equip its communities and infrastructure to face the severe effects of climate change and extreme weather events like Hurricane Sandy.

Recognizing the significant accomplishments of the State and project stakeholders on the Rebuild by Design Hudson River project over the last few years, AECOM Technical Services, Inc. and AECOM Architects & Engineers (NJ), Inc. (AECOM) is grateful for the opportunity to work with the New Jersey Department of the Treasury, Division of Property Management and Construction and the New Jersey Department of Environmental Protection, Bureau of Flood Resilience (DPMC/DEP), on this important project.

We appreciate the hard work that has gone into managing the process from concept through the Feasibility Study and Draft EIS; building stakeholder consensus along the way. The heavy lift of creating a viable Preferred Alternative and getting to the Final EIS and Record of Decision is almost done. AECOM is ready, willing, and able to now work in partnership with DPMC/DEP to move the project into the next phase - through final design and construction, to the ultimate goal of creating an independent utility by September 2022.

We are committed to achieving your goals on the project with a collaborative, efficient and flexible approach as a partner who is able to effectively achieve compliant, constructed results on a strict schedule.

Project Understanding and our Commitment to Resiliency Goals – A safer, more resilient, more secure New Jersey is the goal of this project. DPMC/DEP, FEMA, HUD, USACE, EPA, FTA and the mayors and citizens of the area will all benefit for generations to come from this project's successful outcome. AECOM has been involved in many aspects of this resiliency effort working alongside the community and stakeholders. For example:

The United Nations Office for Disaster Risk Reduction has designated the City of Hoboken, New Jersey, USA, as a Role Model City of the Making Cities Resilient campaign for its flood risk management practices; only the second such role model city in the United States. AECOM collaborated with the UNISDR to create the first resiliency scorecard using the ten essentials outlined in the Making Cities Resilient campaign.

The post Hurricane Sandy Rebuild by Design (RBD) resiliency competition awarded Hoboken the funds to implement a comprehensive "Resist, Delay, Store, Discharge" water management strategy that will protect Hoboken, Weehawken and northern Jersey City from flooding. **AECOM has been leading the work to implement the next phase of two other RBD projects:** Lower Manhattan Coastal Resiliency (LMCR) for the NYC Office of Resiliency and Recovery and NYC Economic Development Corporation and the Meadowlands project for DPMC/DEP and is intimately familiar with the requirements and challenges of this type of project.

Hurricane Sandy significantly impacted New Jersey's public transit systems. Commuter rail service was disrupted for months in what has been described by the President's Hurricane Sandy Rebuilding Task Force as "the worst disaster for public transit systems in the nation's history." Commuters from Hoboken, Weehawken and Jersey City were scrambling to get to and from their jobs for weeks. **NJ Transit chose AECOM to provide design, engineering, construction assistance and other technical services for the NJ TransitGrid Project** to bring resilient distributed generation area rail and bus stations.

These examples serve not only to illustrate that our commitment to resiliency in the NY/NJ region, but also as evidence our experience and expertise and the considerable benefits we bring to DPMC/DEP as the selected consultant for RBD Hudson River.

This experience and expertise allows us to offer a highly qualified team that will focus on providing:

Efficiency – We have directly relevant experience on urban coastal resiliency projects. This allows us to understand and efficiently address project complexities with a practical and constructible solution for residents. Our staff have worked in these watersheds and nested communities and we are already familiar with the technical data for the project area. Moreover, through our work with you on the RBD Meadowlands and other term contracts, we are experienced with DPMC/DEP and RBD/HUD processes and have established protocols and processes to maximize efficiencies. The urban coastal experience we have is augmented and enhanced by international expertise and local teams combining the best practices industry-wide with practical local solutions.

Collaborative – Our integrated transdisciplinary teams work collaboratively creating synergies that merge design solutions to specifically address urban complexities. Additionally, we have demonstrated our ability to work collaboratively to get results for your programs. Whether it's the RBD Meadowlands or our FEMA CTP and Blue Acres work, we know DPMC/DEP staff, as well as the other stakeholders and are able to work toward common goals.

Flexible – We have the depth of resources and the ability to quickly staff up to meet project demands or to provide expertise in a specialized area. Our approach is based upon design to budget; focusing on efficient and effective delivery by balancing staffing levels with project needs to achieve the right design decisions within budget and schedule parameters. We are experienced at managing term contracts and will be able to quickly mobilize our team, without the steep compliance learning curve as required for the project deliverables.

Locally Invested and Experienced Partner – AECOM has over 500 staff in NJ and 2,000 in the NY/NJ area. We are locally invested and this is a hometown assignment for many of the staff on this project. We are proud of our long and successful working relationship with DPMC/DEP, founded on decades of service to the agencies and the State, as well as FEMA and HUD.

AECOM's greatest strength and value we can provide to this project are our exceptional people and their ability to provide a robust integration of communities and coastal infrastructure. Our deep bench of local subject matter and national coastal protection experts, teamed with strategic subconsultants, will staff this project with the right people needed to deliver the project on time and on budget. While we will draw on our experience working on similar RBD projects, this is a fully dedicated team:

Our **project manager, Karen Appell,** a licensed professional engineer in the State of New Jersey, has over 19 years of experience in the planning, design and construction of multi-disciplinary water resources infrastructure projects in coastal communities. Karen will be responsible for the overall management of the project and she will coordinate directly with the DEP project manager. She is proven in managing complex projects with diverse professions. As a Hoboken resident she is personally invested in the success of this project.

As **project executive, Chris Benosky** is responsible for the oversight of the term contract and coordination with the DPMC Project Director and DEP Program Manager. Chris has 25+ years of experience in managing water resources contracts in the State of New Jersey. As AECOM's Rebuild by Design program manager in NJ, Chris has experience working with DPMC/DEP together with HUD. Chris will provide continuity with our other RBD contracts, as well as bringing best practices and practical lessons learned from other similar projects to this project.

As **deputy project manager, Heather Morgan** will augment AECOM's management of this project with her ability to manage transdisciplinary teams to achieve a common goal. Heather has over 16 years of experience as a landscape architect, with the last 6 years at the U.S. Army Corps of Engineers Headquarters (HQ USACE) and the New York District. Heather will also manage our specialty subconsultants, using her collaborative nature and management experience to ensure full engagement and design integrity amongst our transdisciplinary team.

As a result of Superstorm Sandy, Hoboken alone sustained over $100 million in private property damage and $10 million in public property damage. But it doesn't take a storm of the century to impact residents and our economy. Localized flooding continues to plague communities, even during moderate rainfall events. This Rebuild by Design – Hudson River Design and Construction Administration Services term contract is a key response to changing conditions and is being followed by communities throughout North America.

AECOM is excited for the opportunity to continue as DPMC/DEP's partner to implement the projects and innovations that will protect our citizens and livelihood for years to come. I can be contacted by email at Christopher.Benosky@aecom.com or by phone at 908.670.1036 and will be happy to provide any additional information you may require.

Very truly yours,

AECOM Technical Services, Inc.

Christopher Benosky, PE, CFM
Vice President

Contents

1 Organization Chart/ Staffing Plan

AECOM Technical Services, Inc., along with AECOM Architects & Engineers (NJ), Inc. (AECOM), is grateful for the opportunity to work with the New Jersey Department of the Treasury, Division of Property Management and Construction (DPMC) and the New Jersey Department of Environmental Protection, Bureau of Flood Resilience (DEP) (DPMC/DEP), on this important project: ***Rebuild by Design–Hudson River Project.***

DPMC/DEP Need a Partner They Can Trust

AECOM has a long and successful working relationship with DPMC/DEP, founded on decades of service to the agency, as well as FEMA, USACE, and HUD. Our team is better prepared to partner with you on the Rebuild by DesignHudson River Project because we are:

Collaborative – We have a reputation for working collaboratively to achieve our clients' goals. Our multiple business lines regularly work together to get results collaboratively on large scale and similar programs and for DPMC/DEP — we have the established relationships and the training to begin on Day 1 without startup delays. **Our integrated team works together to get projects implemented, on time and within budget.**

Efficient – We know the project and can provide continuity. Our local team lives and works in these watersheds and nested communities. Our project manager, Karen Appell, is a Hoboken resident and is familiar with the needs of her community. Our project executive, Chris Benosky, will facilitate a seamless startup sharing lessons learned from the RBD Meadowlands Project with no impact to schedule. **This will help save DPMC/DEP review time.**

Flexible – We have the capacity and expertise to perform any work orders under this contract. AECOM has the resources to undertake simultaneous assignments with a high level of quality and efficiency across all required disciplines. Because of the depth of our resources, we have assigned a completely separate team from the RBD Meadowlands Project to ensure both projects can be effectively delivered in parallel. **This team leadership is not just qualified, but based upon institutional knowledge gained on other RBD projects, was chosen to be flexible and responsive to changing project requirements.**

AECOM has assembled a dedicated, integrated team to meet all needs of the RBD Hudson River Project. This team offers DPMC/DEP the ***Collaboration, Efficiency and Flexibility*** that will be required to successfully achieve the schedule to implement the Resist design and Delay/ Store/Discharge pilot project.

Value to DPMC/DEP
A fast tracked process

We have the capacity and diverse expertise, and we've worked with DPMC/ DEP for decades.

ECOM knows how to deliver resiliency projects in the U.S.
ur key staff have an understanding of the locale that helps us
iatch the right solutions to each project's unique conditions
nd stakeholders.

p: Incorporating water sensitive urban design features in all elements of the cityscape, has been an integral part of AECOM's Living Machine© for San Francisco.

ght: AECOM mobilized quickly to implement priority flood protection measures to critical PATH infrastructure in New Jersey in the aftermath of Superstorm Sandy.

ttom: AECOM has been part of a design-build team that constructed the $1 billion Inner Harbor Navigation Canal Lake Borgne Surge Barrier for New Orleans.

Organization Chart

Built to deliver responsive design solutions: AECOM expertise required to manage the entire range of poss under this contract. We have enlisted the services of a who bring special insights valuable to our team. We be outstanding experience and an exceptional level of ca services to support this contract.

ted are AECOM employees unless ated:

- A
- gnusson Klemencic Associates
- trix New World Engineering, Inc.
- mora Consultants, LLC
- val HaskoningDHV
- vens Institute of Technology
- SBE firm

PROJECT MANAGEMENT

Collaborative Eff

ENGAGEMENT/ COMPLIANCE

COMMUNITY RELA	QUALITY ASSURANCE
Laura Baird *(OM*	**Dean Challes, CCM**

TECHNICAL LEADERSHIP

ISORS

COASTA / DSCAPE ARCHITECTURE/
MODELIN URBAN DESIGN
Steven Li, PhD, **ohei Shigematsu** *(OMA)*

OOD RISK MANAGEMENT
Joseph Chapman, PE

STORMWATER MAI
INTERIOR DR/ STRUCTURAL DESIGN
John Dromsky- **Bruce Lelong, PE**
Matthew Jones,

TECHNICAL SUPPORT

MECHANICAL/EL ARCHITECTURE
ENGINEERI **Niels Benavides, RA**
Paul Moulto

NEPA COMPL ACCESS/EASEMENTS/
Donald Ehrenbecl LAND SURVEYING
rew Raichle, PE *(MATRIX)*

Reliable Teaming with Trusted Partners

The combined experience of our team is reflected in our organizational leadership, policy and procedure development at the programmatic level, and our production focused management process, which includes time-saving techniques, procedures and significant construction oversight experience honed over 100+ years in the industry. Our team spans across the development of technical studies, NEPA compliance, design and construction administration support for coastal engineering, flood control, interior drainage, green infrastructure, stormwater management, community engagement landscape architecture and urban planning projects.

Our team is depicted below, with AECOM as the prime consultant, supported by the following firms, specifically selected for their expertise and background, as well as experience with AECOM:

Prime Consultant

AECOM

AECOM is comprised of two prequalified entities:
AECOM Technical Services, Inc. and **AECOM Architects & Engineers (NJ), Inc.**

- Project Management
- Evaluation
- Design
- Bidding Administration
- Construction Administration
- QA
- Health & Safety
- Stakeholder Engagement
- FEMA Accreditation/HUD Compliance

Specialty Subconsultants

OMA	Magnusson Klemencic Associates (MKA)
• Community Relations • Landscape Architecture • Urban Design	• Site/Civil Engineering • Green Infrastructure
Matrix New World Engineering, Inc. (SBE)	**Remora Consultants LLC**
• Survey • Geotechnical Engineering • Landscape Architecture • Permitting • Access/Easement Rights	• HUD Compliance
Stevens Institute of Technology	**Royal Haskoning**
• Coastal Modeling	• Coastal & Riverine Management

AECOM is prequalified with DPMC in:
- Civil Engineering (05)
- Hydrology (47)

The combined team prequalifications with DPMC include:
- P011 Environmental Engineering
- P001 Architecture
- P013 Landscape Architecture
- P025 Estimating/ Cost Analysis

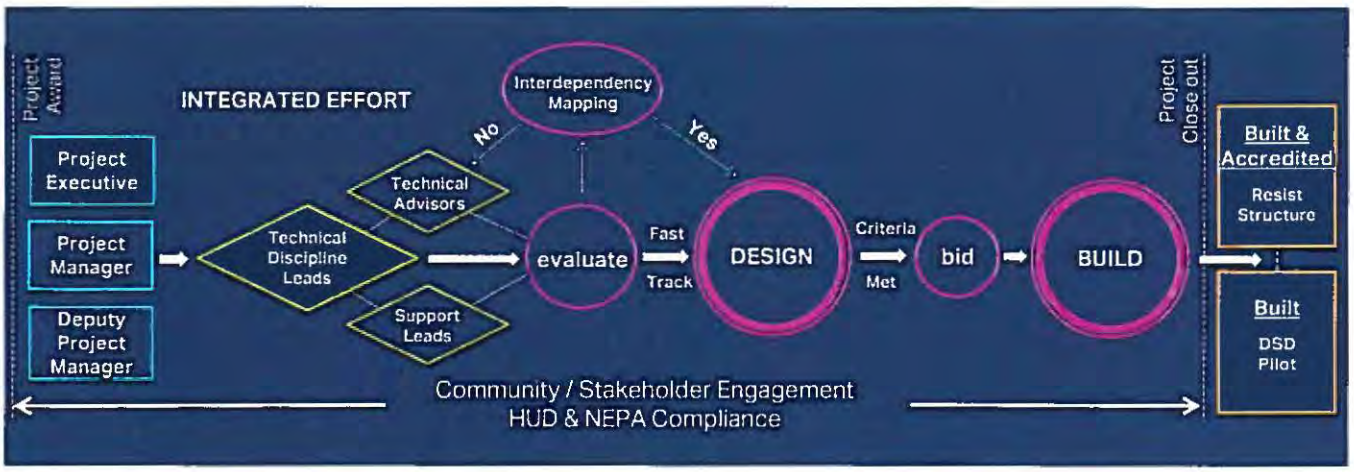
Our Transdisciplinary Approach

Many firms will provide clients with "multi-disciplinary" teams, but just having multiple disciplines at the project table does not ensure that the team, nor the solution, will be integrated and fully responsive. "Multi" describes the composition of a team, but it **does not describe how** a team behaves or executes its process. A transdisciplinary approach is distinct because its primary goal is to understand the present problem through an overarching and unified knowledge of the site and the design, and not let the focus be on or controlled by specific disciplines.

A transdisciplinary approach is about deliberately crossing the boundaries of many disciplines to create a systemic approach to the design. This directly applies to large scale design efforts focused on solving flood risk management challenges. Flood water crosses over many physical boundaries, and by doing so, it demands an alignment between many disciplines. The boundless nature of flood water also demands that our teams execute integrated behavior, knowledge transfer, and the cross-pollination of disciplines. Transdisciplinary teams will, by nature of their structure, determine what the most relevant design issues are and they will be showcased in the interdependency mapping. Superior design will be informed by the diversity of perspectives on the team and collected by open discussion, technical proofing, and frequent dialogue. The goal of transdisciplinary behavior is to achieve integrated results verses a fragmented summary of different subject matter areas. In a transdisciplinary setting, concepts or methods developed by one discipline can be used by several others. This is how our team will behave. This approach allows for **flexibility** and creates **efficiencies** in calibrating the right level of detail that our teams will use when working with each other and DPMC/DEP, while we evaluate, design, bid and build this project.

The field of flood risk management is becoming more integrated, bridging risk management, place making, and public safety. This requires flexibility and agility to redefine services and demand an elevated form of integrated behavior. This transdisciplinary approach will help DPMC/DEP manage its risks while implementing the Preferred Alternative.

This graphic depicts how our team will behave in a transdisciplinary approach to evaluate, design, bid, build, and certify the Resist structure and DSD Pilot project. The process, as shown amongst our managing, technical and stakeholder teams, will govern when we transition into each phase, and efficiently guide the critical decision paths to completion.



For the eighth year in a row, we've been ranked as the top design firm in the U.S. by *Engineering News-Record* (ENR).

Value to DPMC/DEP

Demonstrated success on similar projects

We meet the DPMC's prequalification requirements.

AECOM is a global provider of engineering, architecture, design, and construction services to a broad range of markets, including water, transportation, facilities, environmental, energy and government. With approximately 85,000 employees around the world, AECOM is a leader in all of the key markets that it serves. AECOM provides a blend of global reach, local knowledge, innovation and technical excellence in delivering solutions that create, enhance and sustain the world's built, natural, and social environments. A Fortune 500 company, AECOM serves clients in more than 150 countries.

AECOM was founded on a commitment to deliver socially and environmentally responsible places and infrastructure. While our official founding was in 1990, some of our predecessor firms have distinguished histories dating back to the early 1900s. Over the past 25 years, more than 40 companies have joined AECOM, with URS Corporation and Hunt Construction are the most recent to join the AECOM family of companies in 2014.

AECOM has extensive experience in a range of complex urban infrastructure and resiliency projects. Our sophisticated analysis and design techniques, combined with innovative engineering, are tailored for projects that require a robust integration of communities and coastal infrastructure. Our planners, engineers and architects address diverse aspects of the urban environment—from structures and buildings, to natural environments, and the infrastructure that provides for life in cities. Our work includes Award Winning examples: the World Trade Center Public Realm, East Midtown Waterfront Esplanade, Brooklyn Bridge Park, and Blackpool Promenade and Coastal Defenses. **This team will draw from our global experience to deliver local results.**

We are a large New Jersey employer with extensive federal, state and local agency experience. AECOM's New Jersey staff has over 500 engineers, architects, designers, environmental planners, and scientists have an excellent record of performance for New Jersey agencies, including DPMC, NJDEP, NJDOT, NJTA, Port Authority of NY and NJ, and NJ TRANSIT, among others, bringing a deep understanding of the best practices essential to the success of any New Jersey project. In addition, AECOM experts are working closely with agencies of the federal government, including FEMA, HUD, and the U.S. Army Corps of Engineers (USACE), to develop best practices and strategies for implementing long-term solutions to climate change impacts and resiliency best practices.

Examples of our past work shown on the opposite page demonstrates AECOM's directly relevant experience to RBD Hudson River Project.

The AECOM Team - Proven Staff

Our process for developing this team centered around those partners that could bring immediate knowledge of the Hudson River Project through prior working experience. In addition to these partners, we included teaming partners that have experience working directly with AECOM on similar programs. We know that this project has to have a team that is collaborative, efficient and flexible. Below is a summary of our selected teaming partners with their anticipated value to the project.

OMA

- **Winning RBD Hudson River strategy**
- **Involved in EIS and Feasibility Study**
- **Established community relationships**

OMA is a leading international partnership practicing architecture, urbanism, and cultural analysis, with offices in Rotterdam, New York, Beijing, Hong Kong, and Doha. OMA New York, established in 2001, is also leading a number of innovative public space projects, including leading the West Louisville Food Port, the RFK Stadium Armory-Masterplan, and the 11th Street Bridge Park in Washington, DC.

OMA led the winning RBD strategy for Hudson River and is a member of the team completing the EIS and Feasibility Study for the project. OMA's comprehensive urban water strategy deploys programmed hard infrastructure and soft landscape for coastal defense (**resist**); policy recommendations, guidelines, and urban infrastructure to slow rainwater runoff (**delay**); a circuit of interconnected green infrastructure to store and direct excess rainwater (**store**); and water pumps and alternative routes to support drainage (**discharge**). The team has an existing relationship with the stakeholder groups of the project. During the earlier phases, the OMA team actively engaged with a wide a range of stakeholders through presentations, workshops and meetings to educate the community and the design team on the costs and benefits of protecting Hoboken and living with water. They presented at multiple events and mediated differences between groups through the shared objective of resilience. **OMA will continue to engage stakeholders and neighborhoods as we move into the next phase of the project to ensure seemless interactions with impacted communities.**

Royal HaskoningDHV

- **Winning RBD Hudson River strategy**
- **World renowed expertise in flood risk reduction**

Royal HaskoningDHV has a long and recognized track record in the implementation of flood alleviation schemes in coastal and river environments. The firm's coastal engineering projects and studies include structural and non-structural solutions (Nature Driven Design), coastal protection, offshore land reclamation, beach nourishment by dredging, closure of estuaries or lagoons, breakwaters, ports, access channels and coastal waterfront development. They were on the team with OMA that won the Rebuild By Design Competition that is the basis for this RBD Hudson River contract. Royal HaskoningDHV led the design and engineering in the development and implementation of major flood protection and flood risk reduction projects (under the Dutch multi-billion investment programs National Dike Reinforcement Program

HWBP and Room for the River during the past 10 years), including Room for the River Waal in Nijmegen, IJsseldelta, Noordwaard: integrating flood safety in an urban environment, enhancing spatial quality with a technical complex solution.

Additionally, Royal HaskoningDHV was the leader in design of flood risk reduction schemes including national coastal risk reduction schemes (the Netherlands, United Kingdom), specific flood control measures (St. Peterburg barrier, IHNC barrier New Orleans), setting flood safety standards (Singapore, Indonesia, Canada, Philippines) and enhancing flood protection of cities (NCICD Jakarta, city expansion Manila, flood protection Ho Chi Minh City). **Royal HaskoningDHV brings established collaborative relationships and in-depth familiarity and knowledge of the project, combined with their world renowned expertise.**

Magnusson Klemencic Associates (MKA)

- **$99B in projects in 54 countries**
- **Focused on site/civil design**
- **180 staff**

MKA provides structural and civil engineering services worldwide, with $99 billion worth of projects in 47 states and 54 countries and individual projects in excess of $2 billion. MKA provides a full range of civil engineering services on a wide variety of developments, ranging from small urban infill sites to campuses over 440 acres. MKA focuses exclusively on site and infrastructure design for architectural and landscape projects, and helps plan for and design a project's site elements in a manner that is intuitive, not forced.

MKA's central civil engineering practice is the integration of public space design with utilitarian, urban infrastructure, as will be its focus for the Rebuild by Design (RBD) – Hudson River Project. This is exemplified by **MKA's work on the Elliott Bay Central Seawall, a project which earned MKA a top ACEC award this year** for design leadership in melding the needs of urban seawall protection with in-water salmon recovery, while enhancing the pedestrian experience of the most heavily touristed stretch of waterfront in Seattle. **MKA's proudest project achievement with AECOM is our work together on the San Ysidro Land Port of Entry project (see photo on the right)** for which MKA designed a zero discharge site through the use of natural, landscaped-based, drainage systems, and achieved net-zero water through the implementation of onsite wastewater treatment and water reuse. **MKA brings a unique urban design element that is collaborative and flexible, but practical for the public enhancement.**

Matrix New World (MKA)

- **Successful working relationship with AECOM on RBD projects**
- **NJ WBE/SBE**
- **130 staff**

Matrix New World Engineering, Inc., is a New Jersey-based woman-owned small business enterprise (SBE) providing environmental, geotechnical and a wide range of professional engineering and surveying services since 1992. Matrix's relevant experience in Hoboken, Weehawken, and Jersey City includes design and permitting of multiple redevelopment projects, site remediation, dredging, wetlands restoration, ferry terminals, port facilities, waterfront parks, and NJ Transit/PANYNJ facilities. Likewise, Matrix has substantial experience in local/regional climate change resiliency projects, including such marquee projects as the RBD Meadowlands and Lower Manhattan Coastal Resiliency

projects (with AECOM), Hunts Point Resiliency, and multiple NJ TRANSIT facilities. **Matrix brings local knowledge and expereience on similar projects.**

Matrix's role in the RBD Hudson River team focuses on surveying, access/ easement rights acquisition, permitting, and geotechnical engineering. The firm provides these services regionally and has specific experience within each of the three municipalities that comprise the project area. **Matrix is prequalified in over 24 DPMC professional categories and brings relevant local experience to the team.**

Matrix, Stevens and Remora have an established working relationship with AECOM on the RBD Meadowlands project, and OMA/Royal Haskoning collaborated on the winning design of the Resist, Delay, Store, Discharge alternative.

Stevens Institute of Technology

Stevens Institute of Technology, a premier technological university, is home to the Davidson Laboratory, headed by **Dr. Alan Blumberg,** a world renowned oceanographer and innovator of predictive modeling. The laboratory focuses on assessing, predicting and mitigating the damage of natural and man-made disasters to coasts as a result of storm events and climate change modeling. Stevens has been involved with their forecasting work during Hurricane Sandy, and has been well recognized by their peers, the National Weather Service and the press. Dr. Blumberg's forecasting expertise for natural disasters gives the team valuable insight to leverage for the project from a recognized national expert.

- **Previous work on RBD Hudson River**
- **Involved forecasting storm surges in NY/NJ region for 10 years**

Remora Consulting, LLC

Remora Consulting, LLC, represented by its president, Kevin Hamby, has experience in working with CDBG-DR since October of 2005 and has created a boutique firm dedicated to providing focused expertise to assist grant recipients in delivering services to their communities, while still meeting HUD's requirements. With experience gained from the RBD Meadowlands Project, **Kevin will work to make certain that the program is in compliance with HUD CDBG regulations and other cross cutting federal compliance.**

- **Focused expertise to assist grant recipients**
- **Involved in RBD Meadowlands Project**

Proven Staff

The AECOM team was assembled specifically to provide the most qualified professionals and most relevant experience to meet the varied needs of this contract, and to assure a fully compliant and constructible project that meets all HUD and NEPA requirements as well as the State's resiliency goals for the region. As demonstrated by our organization chart, the attached resumes and the "Key Team Member Project Experience Data Sheets" in this section, our project team provides DPMC/DEP with more than sufficient qualified staffing to meet the anticipated demands of the TC-003 contract.

Value to DPMC/DEP

Our ongoing working relationship will expedite the decision making process

Project Management

Key to the success of any project are the project executive and project manager as they will serve as the points of contact with the DPMC project director and DEP project manager, and be responsible to the State for the oversight of all the services performed. For that reason we have selected Chris Benosky and Karen Appell to serve in these roles, respectively.

Project Executive Christopher Benosky, PE, CFM
Chris Benosky is a vice president of AECOM, the NY/NJ Metro Area Water Resource Leader, and one of the firm's global technical practice leaders for the firm's Coastal and Ecosystem Restoration Services. He has over 25 years of experience in flood risk management, coastal engineering, ecosystem restoration design, dam and levee engineering, hydrologic, hydraulic, and hydrodynamic modeling and analyses, stormwater management system design and construction management. In his current role at AECOM, Chris focuses on developing the firm's water resource practice to provide our clients with comprehensive design approaches and innovative solutions.

Chris has directed AECOM's role on several USACE work order contracts with values of over $10 million and served as AECOM's project manager on DPMC/DEP's floodplain mapping contract. Under that Term Contract, Chris directed an analysis for the Pompton Lake Dam Floodgate Facility, a very challenging project. The analysis included the development of an unsteady HEC-RAS hydraulic model to simulate the downstream effects resulting from the operation of the dam's floodgate facility. This analysis/model allowed for post-contract modifications/analyses by the USACE and NJDEP to evaluate the impacts of potential modifications/changes to the floodgate operational regime, such as: changes to the Pompton Lake Dam floodgate operating rule curve and/or lowering Pompton Lake in anticipation of flood events. Chris presented the results of this study to the local stakeholders at a public meeting alongside Commissioner Martin on April 12, 2012. **As a result of the study that AECOM performed, Chris and Dr. Arthur Miller co-authored a paper with John Moyle, Russel Ray, and Joseph Ruggeri of NJDEP for the September 2012 issue of International Water Power & Dam Construction.**

He is also the project executive on the RBD Meadowlands Project, which is a DPMC/DEP term contract dealing with similar scope elements and stakeholders, including FEMA/HUD/RBD.

Operations review at Pompton Lake

Value to DPMC/DEP

Chris' knowledge of the RBD process and success with agencies in similar projects will ensure efficient delivery of the RBD Hudson River Project

Collaborative **Efficient** **Flexible**

On the RBD Meadowlands project Chris has established a successful collaborative working relationship with DPMC/DEP staff involved in the RBD program. His efficient leadership and flexibility has enabled the project to advance well within the anticipated schedule and budget.

Chris has designated a highly regarded and trusted colleague as project manager, Karen Appell. Karen will have overall responsibility for the project and coordination with DEP's project manager on the project assignments issued under this contract.

Project Manager Karen Appell, PE, CPESC

Karen Appell is a senior manager with AECOM's Water practice. As a licensed professional engineer in New Jersey and New York, her work has spanned all project phases, including the formulation and implementation of design feasibility studies; conceptual, preliminary, and final design; State and federal permitting; public outreach; and bidding and construction management. This expertise provides the technical foundation for her to both oversee and a comprehensive project like RBD Hudson. With more 19 years of experience on multifaceted water resources infrastructure projects in coastal communities, Karen has the capability to lead the AECOM team in delivering technical success, on time and on budget.

Over the past 12 years, Karen has focused on project management of various civil and environmental engineering projects, large and small. More recently, she has focused on the management of more technically complex coastal projects, directing sizable multi-disciplinary teams. Karen will guide this project through the evaluation, design, bid, & construction phases, foster collaboration amongst our expert staff, and support consistency through our technical review process. Her experience will provide DPMC/DEP with a responsive, communicative, and adaptable team.

As a resident of Hoboken, Karen brings the added benefit of familiarity with the project area and insight into the community needs. Combined with her practice at integrating resilient design into urban projects, she brings significant value to this project.

For over 15 years, Karen has worked collaboratively with Chris Benosky on projects and published research in fields relevant to RBD, as demonstrated in her resume provided in this section. Their mutual respect, familiarity in communicating, and knowledge of each other's management styles, provide the foundation for their ability to work extremely well together. Prior to AECOM, Karen worked at the Louis Berger Group, and still maintains relationships with many of the staff at the RBD Hudson Construction Management Firm. Both of these relationships represent advantages to DPMC/DEP, in fostering reliable communication and operational success across the project phases.

Karen will have the overall responsibility for services performed on each assignment under this contract. She will serve as the direct liaison with the State throughout all project phases and will coordinate with and report to the NJDEP project manager on the issued work orders. She will be responsible for the day-to-day management of the project, including technical, financial, scheduling, and risk mitigation aspects. She will work hand-in hand with and be fully supported by deputy project manager Heather Morgan.

Karen and Chris have been working together since 2001 and have an established relationship with the DMPC/DEP CMF representatives for this project.

Deputy Project Manager Heather Morgan, RLA
Heather has over 16 years of experience as a landscape architect, with the last 6 years at the U.S. Army Corps of Engineers Headquarters (HQ USACE) and New York District. A registered landscape architect, with a master's degree in landscape archelogy, she served as an integrator and planning advisor for feasibility studies. At the HQ national level, she reviewed and advised projects from planning to engineering and design phases for the implementation of Planning Modernization, a process intended to accelerate, simplify, and reduce the cost and time for USACE's planning and Feasibility Study process.

Heather focused on planning for coastal and flood risk management and ecosystem restoration for the USACE New York District at Fire Island, East Rockaway, Plumb Beach, and Lake Montauk. Heather worked in the fields of landscape architecture, project management, land planning and landscape archaeology for over 10 years before joining USACE in 2009 (NY District). She applies a transdisciplinary strategy in analyzing water resource projects for redefining the relationship between our human infrastructure and the natural systems they are nested in. Her position at USACE integrated a postindustrial value system into the medium of water resource management and infrastructure for the nation.

Combined experience in landscape architecture, engineering and construction at HQ USACE uniquely qualifies Heather to lead our integrated team.

As the Deputy Project Manager, Heather will work hand-in-hand with Karen to lead the team and maintain the project's schedule and budget. One of her key responsibilities will be to manage our specialty sub consultants and ensure the design integrity between our teams of engineers and the landscape architects; being multi-disciplined herself, her collaborative nature and past management experience with diverse professions and engineers, will be as asset in successfully managing the multiple-disciplines involved. Her role at HQ USACE in Engineering & Construction was to create and develop what large-scale sustainability could look like for all of USACE Civil Works missions. She led and managed a transdisciplinary team and approach to develop this content for all of Civil Works. This initiative was developed to evolve the way the agency plans for its water future, how it manages water, and using sustainable values as a guide for informing resilience and climate adaptation.

Engagement/Compliance

Community Relations Laura Baird
Laura Baird is one of four Associates at OMA, who has worked on a number of masterplans internationally with a specialist focus on sustainable building design, and energy efficient practice. Laura moved to the New York office in 2015, where she has led many of the studios' masterplan initiatives. She was the project executive for the RBD Feasibility study and resiliency masterplan in Hoboken, working in close collaboration with project leader and director of the New York office Sho Shigematsu. She is currently the associate in charge of the 190-acre waterfront RFK Stadium-Armory masterplan in Washington DC, and a multimodal waterfront masterplan in Toronto.

FEMA Accreditation Jeff Brizendine, PE, CFM, PMP
Jeff is a water resources group leader with 20+ years of experience in water resources and almost 30 years of experience as an engineer. Jeff is intimately familiar with FEMA processes and requirements, having served as project manager for AECOM for levee support on a joint venture project to support FEMA's Risk Assessment, Mapping, and Planning (Risk MAP) project. He has provided FEMA Accreditation services on many projects, including the City of Waterloo 13-mile levee and floodwall system in Iowa, the Blue Lake Wastewater Treatment Plant one-mile ring levee in Minnesota, and the Santa Clara River Levee Improvements in California, among others.

Health and Safety Manager Richard Renzi, CIH
Rich Renzi is a vice president and AECOM's Northeast Region Safety Technical Director. He has more than 36 years of experience in safety and environmental procedures related to chemical, radiological, and biological hazards. Rich oversees AECOM activities at water and wastewater treatment plants, construction and hazardous waste sites. He is a key member of AECOM's safety leadership that has promoted our Safety for Life Program throughout the organization and enabled the firm to achieve safety ratings that are better than industry targets. He has been assisting the New York City DEP in developing and implementing an EHS management system that has fostered a "culture of safety" at the agency. He also served as safety officer for the NYC Rapid Repairs Program, responsible for developing, implementing and overseeing the safety program for NYC's response to Hurricane Sandy.

HUD Compliance Kevin Hamby
Kevin Hamby of Remora Consulting, LLC, is our designated HUD compliance lead, with more than 12 years of direct experience with CDBG-DR funding in both the public and private sector. Kevin has helped clients with program design, program management, and legal compliance, to achieve effective results on programs related to HUD funding, Fair Housing, Davis Bacon compliance and Section 3 policy requirements. In addition to comprehensive work with federal programs administered by HUD, Kevin has worked with cross cutting federal requirements, including allowable costs and expenditures (formerly OMB circulars) and other advisories on allowable activities.

Kevin has been working with AECOM on the RBD Meadowlands Project, providing administration and development of policies and procedures for HUD compliance and federal cross cutting requirements along with montioring.

Value to DPMC/DEP
Continuity and valuable lessons learned

For three years in the NJ RREM program, Kevin worked with recipients of Hurricane Sandy funds, and with policy teams to establish Section 3 programs and other HUD policies. With the New York State New York Rising Program, Kevin

Park City. Brandon's knowledge of resliencey coupled with his urban design background brings efficiencies in landscape design for this project.

Bidding/Construction Administration Philipp Sieber, PE
Philipp is a senior project manager with 25+ years of experience in environmental and civil engineering. Since 2014 Philipp has been serving DPMC as the program manager for a contract providing design and construction management services for the demolition of residential properties as part of the State's Blue Acres program (Term contract TC-008).

In DPMC's latest performance review of Philipp's team on that program, AECOM received ratings of 100% in all categories and the comment "Always exceeds the contract requirements and frequently provides a high level of performance."

Philipp also served NJDEP as part of a team performing environmental assessments of homes located throughout New Jersey that were affected by Hurricane Sandy (DEP/CDGB-DR Program).

> "Philipp in the past 3+ years has never let me/us down. He has been most responsive to all of our needs."
>
> Walter Fernandez, Asst. Deputy Director, DPMC (on DEP Blue Acres Program)

Technical Advisors

When we embark on a complex project like this, we augment our local knowledge and expertise with world class technical advisors who will be available to the project leadership on an as needed basis. These experts in their fields, coming from both within and outside of AECOM, are nationally, and even internationally, known in subjects that may impact the sucess of this project like large scale waterfront development programs, coastal engineering and modeling, flood risk management, urban design, civil/structural engineering and compliance. The Technical Advisors will be consulted at key points or milestones in the project to ensure we have considered and are using best practices, best tools and es technologies. Under the oversight of our quality assurance officer Dean Challes, each of the staff members assigned as technical advisor brings in excess of 25 years of experience in his respective area of expertise and is a registered professionals where appropriate.

We have access to subject matter experts who are available as needed to provide technical or quality review of the work orders under this contract.

Value to DPMC/DEP

The breadth of AECOM's expertise ensures that global ideas and experience are incorporated locally

Marine/Coastal Engineering Ed Schmeltz, PE — Principal coastal engineer with 40+ years of experience in the management, planning, design, and construction of coastal facilities, including shore protection, dune construction, beach restoration, beach erosion and control and coastal structures for storm protection, including shore protection in Montauk Point, Long Beach, Hudson River Park and Brooklyn Bridge, among many other projects in the region.

Coastal Modeling Alan Blumberg, PhD — George Meade Bond Professor of Ocean Engineering, and Director of The Davidson Laboratory at Stevens Institute of Technology, with main focus in urban oceanography. Presently leading several major studies to predict and assess storm flooding events in New York and New Jersey; working with the NY City Mayor's office on the effects of sea level rise on coastal flooding, and with the NJ Governor's Office on statewide storm surge reduction alternatives.

Coastal & Riverine Management George Peters — George Peters has 20+ years of experience in the design of dikes, dams, structures and flood risk management projects. Both as project manager and expert he has been involved in construction schemes and flood protection works along the rivers Waal and Meuse in the Netherlands and the U.S.

Flood Risk Management Joseph Chapman, PE — With over 28 years of experience, Joe Chapman serves as AECOM's North America technical practice leader for Flood and Natural Hazard Risk Management. He served as principal in charge and project manager for AECOM's floodplain mapping efforts for DPMC/DEP, including the completion of hydrologic and hydraulic modeling for disaster recovery projects.

Landscape Architecture/Urban Design Shohei Shigematsu — Shohei Shigematsu is a principal with OMA, with 20 years of experience. He has overseen many masterplanning projects, including waterfront regeneration in Toronto; Food Port in Louisiana, Kentucky; and a city center masterplan for Bogota in Colombia. Led the winning entry for the HUD Rebuild by Design Hoboken competition phase and the subsequent Resist, Delay, Store, Discharge: A comprehensive Urban Water Strategy study.

Structural Design Bruce Lelong, PE — Principal civil/structural engineer with 21 years of experience, including 17 years designing flood protection systems, pumping stations, drainage structures, navigation locks, dams, water control and flood gates, and port facilities. Managed several the USACE Hurricane Protection Office levee construction projects in New Orleans.

Compliance Josh Sawislak — Global director of resilience at AECOM leading the firm's global climate adaptation and disaster resilience strategy. Most recently served in the Obama Administration at the White House and the President's Hurricane Sandy Rebuilding Task Force, and as the senior advisor for infrastructure resilience to the HUD Secretary. Currently supports AECOM's work on resilience projects in New Jersey/New York and other regions.

Staffing Plan

OUR STAFFING PLAN: An Integrated Team

One of the advantages of being such a robust firm is the great depth of resources which assures the ability to accept new projects while honoring our existing commitments.

AECOM's deep bench of professionals allows us to assign key staff separate from the current RBD Meadowlands project team—but equally qualified in terms of experience and expertise—under the direction of the same project executive, Chris Benosky.

Value to DPMC/DEP

The capacity to cover all disciplines required by the work orders

We've created a flexible, efficient management structure

Successful work order execution will be the responsibility of the project manager and deputy project manager aided by the disipline leads. Our AECOM project executive, Chris Benosky, has the authority to commit corporate staffing resources and negotiate contracts. He will be the primary point of contact for contractual matters and will be responsible for the overall financial administration of the contract, and will conduct periodic "How are we doing" audits with DPMC/DEP. Karen Appell, our project manager, will be the primary point of contact on all technical matters and will be responsible for the overall financial administration and delivery of services under the contract. Heather Morgan, our deputy project manager, has a strong background in integrating landscape architecture, urban design, and water resource management into sustainable landscapes. This experience, combined with Karen's engineering skills, will provide a balanced approach between engineering and design and between the water and the community.

We have the depth of expertise to meet all your needs

Technical resource personnel from AECOM will support the management team in the production and management of each work order, including the technical oversight of our team's subconsultants. We have technical leaders that will head up the main disciplines that we anticipate will be required to perform the project requirements. The specific roles and responsibilities of the entire dedicated team and a summary of their individual qualifications are detailed in Section 3 of this proposal; in the attached resumes in this section; and in the "Key Team Member Project Experience Data Sheets" in Section 2– Similar and Relevant Experience.

The capacity to undertake any assignment

Sufficient qualified staffing is a function of the ability to foresee the end product and understand how to best apply staff resources to reach that goal. The AECOM team has the experience to make that happen. The table below compares the number of team staff available from the responding offices to the number of staff required to perform a project of this nature. This demonstrates that the team has sufficient capacity to meet demands in all discipline areas.

Discipline	Team Member	Anticipated # of Staff Required	Capacity of Responding Team		Responsibility
			Local	*National*	
Land Surveyors	Matrix	6-9	20	176	Hydrographic, land, & aerial GPS; traditional survey data
H&H Engineers	AECOM	5-7	50	1112	H&H analysis; interior drainage analysis; GI & drainage design
Coastal/Structural Engineers	AECOM, RHDHV	4-6	76	1652	Wave run-up analysis; hydrodynamic modelling; bidding & const. admin
Geologists/Geotechnical Engineers	AECOM, Matrix	4-6	56	1923	Boring inspection; seepage, settlement, & stability analysis; foundation designs; bidding & const. admin
Architects/Landscape Architects/ Urban Designers	AECOM, OMA, Matrix	8-12	158	639	Community relations support; architecture/ landscape architecture design; bidding & const. admin
Site/Civil/Transportation Engineers	AECOM, MKA	5-8	408	6763	Site layout & stormwater design; traffic & transportation analysis & design; bidding & const. admin
Environmental Specialists	AECOM, Matrix	6-8	88	3977	Impact evaluation; permitting & regulatory compliance; wetland delineation; NEPA compliance; public outreach
Access/Easement Specialists	AECOM, Matrix	1-2	4	52	Needs assessment; ownership outreach; land acquisition
Cost Estimators	AECOM	1-2	33	901	Construction cost estimates, support bidding & const. admin
Schedulers	AECOM	1-2	22	156	Project scheduling; support bidding & const. admin
Community Relation Specialists	AECOM, OMA	3-4	29	402	CAG meetings; public information sessions/ meetings; stakeholder engagement
HUD Compliance Specialists	AECOM, Remora	2-3	1	28	Establish and monitor HUD compliant file system; ensure project policy in conjunction with NJ policy
Field Inspectors	AECOM	5-7	106	1603	Boring oversight; utility investigations; construction field support

AECOM's projected workload anticipates the absorption of work presented by this assignment without difficulty, even with the expedited schedule driven by the HUD compliance process, or a significant increase in the project's scope. The key personnel we have introduced are available upon notice to proceed to perform the services associated with this project. Our key staff members have repeatedly achieved their project's scheduling goals and have been consistently responsive to our clients' needs.

In addition to the local resources of our team, we have the availability of other staff as necessary, from the team's various offices outside our immediate region. We pride ourselves on the quality of our professional staff and the ability to meet every challenge that our profession demands. AECOM also maintains a state-of-the-art technology infrastructure, allowing its project managers to work with remote project team members on a real-time basis.

We are local—five offices within 1/2 hour of project site

AECOM has several office locations in the vicinity of the project area where the proposed staff will be located. Our New Jersey office in Clifton, NJ, will serve as the main location for the work, housing our proposed project executive and project manager. This office is currently comprised of civil, geotechnical, water resources, structural, mechanical, transportation, and electrical engineers, as well as environmental scientists and architects. Our proposed staff will be located at this office, with support from our Piscataway, NJ and New York City offices, as well as from our flood risk management group in New Orleans.

We propose to establish a working space in Hoboken for meetings and field personnel. We will consider leasing commercial space or making use of space that could be made available to our team by Dr. Blumberg in the Griffith Building at Stevens.

Conflicts of interest

AECOM will manage a Conflict of Interest (COI) plan to ensure any conflicts, should they arise, are quickly resolved. While at this stage in the process it is not possible to foresee possible COI, the potential always exists for a COI or the perception of a COI to occur. If a potential conflict involving any team member is identified, we will immediately notify the State and propose a course of action to mitigate the COI.

530+
in New Jersey

2,000+
in New York/
New Jersey Region

48,000+
in the United States

Value to DPMC/DEP

Local resources available to commence work immediately, seamlessly and with no learning curve

Project Key Personnel List

The combined experience of our team is reflected in our organizational leadership, policy and procedure development at the programmatic level, and our production focused management process.

On the following page we have included the completed Project Key Personnel List form, showing the percentage of time assigned to the project for all key staff (as defined in the RFP, personnel with an hourly wage level of 5 and above).

Project Key Personnel List

Firm Name	Key Personnel & Title	Percentage of Time Assigned to Project							Hourly Wage Level 1-7
		Feasibility Study	EIS	Design Phase	Bidding & Award Phase	Construction		Close Out Phase	
						Office	Field		
AECOM	**Christopher Benosky** Project Executive	—	—	40%	40%	20%	5%	10%	7
AECOM	**Karen Appell** Project Manager	—	—	100%	100%	60%	40%	100%	6
AECOM	**Heather Morgan** Deputy Project Manager	—	—	100%	100%	60%	40%	100%	6
OMA	**Laura Baird** Community Relations	—	—	50%	10%	15%	20%	5%	6
AECOM	**Jeff Brizendine** FEMA Accreditation	—	—	10%	5%	10%	0%	75%	6
REMORA	**Kevin Hamby** HUD Compliance	—	—	10%	5%	10%	5%	30%	6
AECOM	**Richard Renzi** Health & Safety	—	—	5%	5%	5%	5%	5%	7
AECOM	**Dean Challes** Quality Assurance	—	—	5%	5%	5%	0%	5%	6
AECOM	**Steven Li** Coastal Modeling	—	—	30%	0%	0%	0%	0%	6
AECOM	**Mark Gonski** Flood Control	—	—	30%	5%	5%	5%	5%	6
AECOM	**Brandon Cappellari** Landscape Architecture/ Urban Design	—	—	40%	5%	5%	5%	5%	5
AECOM	**John Dromsky-Reed** Stormwater Management/ Interior Drainage	—	—	40%	5%	5%	5%	5%	5
MKA	**Matthew Jones** Stormwater Management/ Interior Drainage	—	—	30%	5%	5%	5%	5%	5
AECOM	**Douglas Kubovic** Site/Civil Engineering	—	—	30%	5%	5%	5%	5%	5
MKA	**Drew Gangnes** Site/Civil Engineering	—	—	20%	5%	5%	5%	5%	7
AECOM	**Philipp Sieber** Construction Administration	—	—	10%	50%	30%	20%	5%	6
AECOM	**Paul Moulton** Mechanical/Electrical Engineering	—	—	15%	5%	5%	5%	5%	6
AECOM	**John Volk, PE** Geotechnical Engineering	—	—	20%	5%	5%	5%	5%	6
AECOM	**Christopher Venezia** Environmental Engineering	—	—	15%	5%	5%	5%	5%	6
AECOM	**Sherri Albrecht** Permitting	—	—	20%	0%	0%	5%	5%	5
AECOM	**Niels Benavides** Architecture	—	—	10%	5%	5%	5%	5%	6
AECOM	**Don Ehrenbeck** NEPA Compliance	—	—	5%	5%	5%	0%	5%	5
AECOM	**Shruthi Ashokan** Scheduling	—	—	20%	20%	15%	0%	5%	5
AECOM	**Jay Bayersdorfer** Cost Estimating	—	—	20%	20%	15%	0%	5%	6
Matrix	**Andrew Raichle** Access/Easements/Land Surveying	—	—	20%	0%	5%	5%	5%	7
AECOM	**Tom Elsroth** Transportation Engineering	--	--	10%	5%	5%	5%	5%	5

Resumes of Key Personnel

Christopher Benosky, PE, CFM

Project Executive

Throughout his career, Chris Benosky has been responsible for the planning, design, and construction of more than 10,000 acres of wetlands and more than 20 miles of upland protection flood control dikes and levees throughout North America and abroad. He is currently overseeing AECOM's efforts on the Rebuild By Design-New Meadowlands project as project executive, interacting with DPMC/DEP staff on similar issues and requirements as those anticipated for the Hudson River contract. Chris brings this experience and established working relationship to provide continuity for AECOM's Hudson River team and facilitate a seamless and start up and efficient execution of the project.

A Vice President of AECOM, the Director of Operations for the NJ Water Business Line Chris is one of the global Technical Practice Leaders for the firm's Coastal and Ecosystem Restoration Services. In his role as project executive , he brings the team more than 25 years of experience in flood protection and risk management, coastal engineering, ecosystem restoration design, dam and levee engineering, hydrologic, hydraulic, and hydrodynamic modelling and analyses, stormwater management system design, geotechnical engineering, construction cost estimation, and construction management. He is a licensed professional engineer in New Jersey and a nationally certified floodplain manager.

DPMC/DEP, Rebuild By Design (RBD) New Meadowlands Project, Bergen County, NJ

Project executive for preliminary design and feasibility studies, NEPA documentation and permitting, construction documents, and construction administration for New Meadowlands' Pilot Area 1. Integrating coastal ecology, multi-modal mobility enhancements, and economic redevelopment opportunities, the New Meadowlands Project is envisioned to improve regional resilience across a spectrum of flood related-risks while providing new civic amenities and opportunities for economic development. AECOM is currently developing strategies to implement enhancements to existing built and natural systems, new green infrastructure and public-realm improvements; and plan new public open spaces and improved recreational access to the Meadowlands.

U.S. Army Corps of Engineers - New York District (USACE-NYD), Sandy Hook to Barnegat Beach Erosion Control Project: Elberon to Loch Arbour, NJ

Principal engineer and construction managment lead on the project for the final outfall design at Loch Arbour to Elberon, NJ under the Sandy Hook to Barnegat Beach Erosion Control Project, which involves the construction of a beach fill berm to provide storm risk management to multiple municipalities affected by Hurricane Sandy along northern New Jersey coast. The project also includes modifications to six existing groins, as well as improvements to eighteen outfalls, including ten outfall extensions, six pre-formed scour holes, and one retention system. The design analysis includes the development of design criteria, design calculations, structural and coastal analyses, including daily and extreme wave loading and wave forces for cyclic load computation, and hydrologic and hydraulic calculations to support the outfall extension designs. The combined construction costs are $125 million.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ Project executive for RBD New Meadowlands
- ✓ Provides continuity for DPMC/DEP's RBD program
- ✓ Established relationships with DPMC/DEP staff

"As AECOM's Resiliency Leader for the NY/NJ area, it has been a privilege to work with DPMC/DEP on efforts to protect and enhance the New Meadowlands. I look forward to sharing the knowledge I have gained from technical solutions, stakeholder engagement and agency interaction with the Hudson River RBD team."

Christopher Benosky, PE, CFM, *cont.*

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Education
MCE, Ohio State University, 1992
BS, Civil Engineering, Ohio State University, 1991

Registration
Professional Engineer NJ, #24GE03991600
Also NY, PA, DE, FL, LA, OSHA 40hr.HAZWOPER Health & Safety
OSHA 8hr. HAZWOPER Health & Safety Annual Refresher
ASFPM Certified Floodplain Manager (US-06-02282)
Rosgen Level I - Applied Fluvial Geomorphology Certification, 2003
Rosgen Level II - River Morphology and Application Certification, 2003
Rosgen Level III - River Assessment and Monitoring Certification, 2003
Rosgen Level IV – Natural Channel Design and River Restoration Certification, 2003
Rutgers Stream Restoration Certification, 2002

Professional Affiliations
American Society of Civil Engineersr
Association of State Floodplain Managers
New Jersey Floodplain Management Association
Chi Epsilon
Phi Kappa Phi

USACE-NYD, Green Brook Channel Improvements Flood Damage Reduction Project, Somerset County, NJ

Principal engineer for project to develop and implement post-construction monitoring and adaptive management design and feasibility services for the project's wetland mitigation site, the Finderne Wetland Mitigation Site, a 180-acre parcel of undeveloped land in Somerset County.

New Jersey Turnpike Authority (NJTA), New Jersey Turnpike Widening Construction Management Services, Interchanges 6 – 9

Resident engineer for the construction of Contract 001 and Contract 003 of the NJ Turnpike 6 to 9 widening project. This portion of the contract consisted of five freshwater mitigation sites that required construction oversight and field inspection to ensure that the work is in compliance to the approved plans and specifications, as well as NJDEP regulatory permit requirements. The four sites total over 300 acres of wetland restoration and reforestation, construction of vernal pools, upland and wetland planting, invasive species removal, and the creation of new ecological habitat. The overall construction consts for the 6to9 Widening project were approximately $2.4 Billion and the combined costs for Contracts 001 and 003 were approximately $15 Million.

NJDEP/DPMC Federal Emergency Management Agency (FEMA) Flood Risk MAP Project for Hackensack-Passaic Watershed, Morris, Passaic and Bergen Counties

Project manager for the FEMA Flood Risk MAP project for portions of the Hackensack-Passaic watershed. The objective of this Flood Risk MAP project was to develop and support a Digital Flood Insurance Rate Map (DFIRM) and Flood Insurance Study (FIS) report for portions of the Hackensack-Passaic watershed.

USACE-NYD, Hudson River Estuary (HRE) and HRE-Lower Passaic River Ecosystem Restoration Feasibility Studies, Various Locations, NY & NJ

Principal in Charge for AECOM for feasibility study for ecosystem restoration within the Hudson Raritan Estuary, including eight separate planning regions. AECOM is leading the effort, along with e4sciences, to prepare a feasibility report/environmental assessment (FR/EA) to recommend construction of the various recommended site plans for a subset of the overall HRE restoration opportunities.

Karen Appell, PE, CPESC

Project Manager

Karen Appell, senior manager, specializes in the management of multidisciplinary projects, both large- and small-scale. She has over 19 years of experience in the planning, design, and construction of ecological restoration, coastal systems, and sustainable stormwater projects. Ms. Appell's educational background and experience with various disciplines – engineering, ecology, landscape architecture – have afforded a transdisciplinary approach to her work. She focuses on integrating sustainable design into urban and suburban projects, both in coastal and inland areas. She recently spent two-years in a corporate position, working on the development, implementation, and staff training for 'ePM,' AECOM's worldwide, proprietary project management/delivery system.

U.S. Army Corps of Engineers New York District (USACE-NYD), Sandy Hook to Barnegat Beach Erosion Control Project: Elberon to Loch Arbour, NJ

Project manager for the final outfall design at Loch Arbour to Elberon, NJ under the Sandy Hook to Barnegat Beach Erosion Control contract. The project involves the construction of a beach fill berm to provide storm risk management to multiple municipalities along northern New Jersey Coast from Loch Arbour to Elberon affected by Hurricane Sandy. The project also includes modifications to six existing groins, as well as improvements to eighteen outfalls, including ten outfall extensions, six pre-formed scour holes, and one retention system. The design analysis includes the development of design criteria, design calculations, structural and coastal analyses, including daily and extreme wave loading and wave forces for cyclic load computation, and hydrologic and hydraulic calculations to support the outfall extension designs.

USACE IDCs for Flood Control, Shore Protection and Coastal Storm Damage Reduction - New York District, Green Brook Channel Improvements Flood Damage Reduction Project, Somerset County, New Jersey

Project manager for the development and implementation of the post-construction monitoring/adaptive management for Greenbrook's Finderne Wetland Mitigation Site, a 180-acre parcel with 1,100 linear feet of stream in Somerset County, New Jersey. AECOM documented site success based on NJDEP permit requirements and USACE mitigation policy. AECOM is also updating the invasive species management plan, designing hydrologic improvements, and coordinating with the USACE, NJDEP, and other stakeholders.

As a subconsultant to the prime firm, served as the AECOM project manager for an independent technical review of the conceptual designs for flood risk reduction for commercial, industrial, and residential structures within the Greenbrook Sub-Basin of the Raritan River Basin. Work included review of estimated construction costs for non-structural measures such as dry floodproofing, raising, and construction of ringwalls. Design documents included plan views, elevation/cross-section views, and individual structure flood proofing reports for a total of nineteen (19) structures within the municipality of Green Brook within the 150-year floodplain.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ Project manager for ecological restoration/flood protection projects throughout NJ/NY region
- ✓ Extensive experience with federal and state agencies, e.g., USACE, EPA, FEMA, NJDEP

"I bring both proven management and technical skills to this project, but most of all, as a Hoboken resident since prior to Hurricane Sandy, I fully understand the need to implement the RBD Hudson River project for the sake of our community."

Karen Appell, PE, CPESC, *cont.*

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Education
Graduate Certificate, Water Resources Engineering, Stevens Institute of Technology, 2007

B.S. Agricultural and Biological Engineering, Cornell University, Concentration in Environmental Systems Engineering, 1998

Registration
Professional Engineer (NJ, #44890; NY, #88721)

Certified Professional in Erosion and Sediment Control (CPESC), #6408

Accreditation
Stormwater Management for Engineers, Rutgers Office of Continuing Professional Education, 2013

Combining Green and Gray Approaches in Combined Sewer Watersheds, Center for Watershed Protection, 2013

Micro-Computer Aided Cost Estimating System (MCACES) Second Generation (MII) User Training, 2006

River Morphology and Applications (Rosgen Level II), Wildland Hydrology, 2006

New Jersey Turnpike Authority, Turnpike Interchange 6 to 9 Widening Program

Project manager for full-time resident engineering and inspection services for Contract 001 of the project, responsible for all project administrative work, as well as coordinating field services scheduling with the resident engineer. This portion of the contract consisted of four freshwater mitigation sites that required construction oversight and field inspection to ensure that the work is in compliance to the approved plans and specifications, as well as NJDEP regulatory permit requirements. The four sites total 93 acres of wetland restoration and reforestation, construction of vernal pools, upland and wetland planting, invasive species removal, and the creation of new ecological habitat.

World Trade Center, NYC Port Authority, New York, NY

As part of three separate Joint Venture entities, AECOM is providing project management, design leadership and technical and construction support for the redevelopment of the 16 acre World Trade Center District. The redevelopment project includes five world class skyscrapers, a performing arts center, a regional multi-modal transportation hub and a state-of-the-art vehicle security center. The project also includes an extensive public realm program including the reconstruction of streets, plazas, retail areas, rooftop gardens and parks which serve to integrate all aspects of the visual and physical environment occupied by pedestrians and motorists in the district. Ms. Appell served as a project engineer and technical reviewer for the design of the stormwater capture and reuse system for the plaza and planter drainage for the Calatrava Transportation HUB building, including piping and pipe routing across the roof to controlled disposal points.

New Jersey Department of Environmental Protection, Flood Risk MAP Project, Floodplain Mapping Multiple Award Contract- Statewide, New Jersey

AECOM is providing professional technical services to the New Jersey Department of Environmental Protection in support of transitioning their CTP program to Risk MAP. This three-year base term contract spans multiple work orders to address the floodplain mapping and Hydrologic & Hydraulic (H&H) analyses needs for the state of New Jersey.

Project manager for the FEMA Flood Risk MAP project for the analysis of the operation of the Pompton Lake Dam floodgates and its influence on the occurrence of downstream flooding. AECOM calibrated an existing HEC HMS model to four storm events using Storm Precipitation Analysis System (SPAS) data and used as the input into a 6 mile reach of stream that was studied upstream and downstream of the dam with an unsteady HEC-RAS model. Due to the high public interest in the Pompton Lake Dam floodgate study, AECOM supported NJDEP during several phases of public outreach efforts.

Heather Morgan, RLA

Deputy Project Manager

Heather Morgan is the Water Resources Sustainability Manager at AECOM for the NY Metro Area Water Business line. She has worked in fields of landscape architecture, project management, land planning and landscape archaeology for over 16 years before joining AECOM this spring. Heather worked for the US Army Corps of Engineers at both the NY District and the national Headquarters level. She has been exposed to some of our nation's most complicated water resources issues from flooding and coastal surge, to dams, levees and reservoirs. At the local level, she worked on NY District's coastal and flood risk management projects such Fire Island, East Rockaway, Plumb Beach, and Lake Montauk. At the Headquarters national level, she reviewed and advised projects from planning to engineering and design phases for the implementation of Planning Modernization, a process intended to accelerate, simplify, and reduce the cost and time for USACE's SMART planning and feasibility study process ($3M in 3 years).

Heather applies a transdisciplinary strategy in analyzing water resource projects for redefining the relationship between our human infrastructure and the natural systems. She integrates a post-industrial value system into the medium of water resource planning for the nation. Project experience ranges from coastal and riverine risk management, ecosystem restoration, and land planning for public and private lands, ethnographic landscapes and heritage management. Combination of private and public sector work provides an array of systems experience from dense, to rural, to land conservation and water. Understands our sustainable intelligence and culture towards water is imperative for our survival.

U.S. Army Corps of Engineers – Headquarters (HQUSACE), National Planning Modernization Team, Washington, DC

Helped lead the implementation of Civil Works (CW) Planning Modernization across the national portfolio and missions. Reviewed and advised projects from planning to engineering and design phases for the implementation of Planning Modernization, a process intended to accelerate, simplify, and reduce the cost and time for USACE's planning process and feasibility studies. Planning Modernization ($3M x 3yrs x 3 levels of vertical team) acceleration of feasibility studies was written in the Water Resources Reform and Development (WRRDA) Act of 2014. The team facilitated project charrettes and developed processes, risk registers, tools, to all Districts and Divisions on risk informed decision making and milestones for CW Projects. Team also developed policies and guidance to integrate SMART planning's into the current planning process.

U.S. Army Corps of Engineers - New York District (USACE-NYD), Reformulation and Coastal Storm Damage Reduction Project, East Rockaway, NY

Provided planning services and in assessing back bay flood risk management and coastal storm risk management opportunities and alternatives for the feasibility study area for the urban Rockaway Peninsula and the communities surrounding Jamaica Bay. Worked performed includes land planning to engineering and design phases, of terminal

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ National water resources experience at managing transdisciplinary teams planning, engineering and design.
- ✓ Worked for USACE NY District's on local coastal & flood risk management projects
- ✓ Worked for HQ USACE: National level advised Civil Works projects from planning, engineering, and design to accelerate, simplify, and reduce study time and cost.

"As part of the national Planning Modernization team at HQ USACE and as the Civil Works Sustainability lead, Heather has been exposed to some of our nation's most complicated water resources issues from flooding and coastal surge, to ecosystem restoration, to dams, levees and reservoirs."

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Education
Masters of Archaeology and Arts, Landscape Archaeology, University of Bristol, 2007
BS, Landscape Architecture, University of Georgia, 2001
Urban Studies Major, College of Charleston, 1995 – 1997

Registration
Registered Landscape Architect: New York

Affiliations
World Economic Forum (WEF) Sustainability Working Groups, 2016-present
Guest Lecturer for Harvard University (GSD), Oct 2015
IWR Public Involvement Specialist & Conflict Resolution: North Atlantic Division Representative
Urban Stream Restoration Work Group (ERDC): 2012
Environmental Benefit Analysis Work Group (ERDC): 2012

Achievements
Humanitarian Achievement Medal for Civilian Service: Dept. of Army, Emergency Operations, Hurricane Sandy, Dec 2012
Certificates of Achievement: Dept. of the Army, Emergency Operations, Hurricane Sandy, Dec 2012; Hurricane Irene, Dec 2011
Achievement Medal for Civilian Service: Dept. of Army, Emergency Operations, Joplin, MO, Dec 2011

groins, groin fields, inlets, navigation channels, sea walls, and flood walls. All planning was performed in the urban fabric of mixed use high-rise buildings, streetscapes, water front amenities, boardwalks, public parks, beaches, storm water management, transit and utilities corridors. Similar to Hoboken, the two study areas (coastal and back bay) act as an interconnected system in storm events, and the study expanded its assessments boundary in order to evaluate it together as a system. Hurricane Sandy exposed the coastal, urban and back bay vulnerabilities.

U.S. Army Corps of Engineers - New York District (USACE-NYD), Long Beach Coastal Storm Damage Reduction Project, Long Beach, NY

Provided planning services for 9 miles of ocean shoreline on the southern shore of Long Island between East Rockaway Inlet to Jones Inlet ($230M construction cost). Long Beach's ocean edge is urban and residences are tucked into two square miles of land surrounded by water. Long Beach's seaside edge is composed of a boardwalk, retail, condominiums, single family homes, and mixed use and bay side community is lined with homes, canals and private docks. Work included coastal risk management and land planning alternatives, design and layout of the primary dune and groin system, beach erosion, beach nourishment, inlet and navigation channel. Land planned access to waterfront through boardwalk alignments and locations, real estate requirements and easements, public access and amenities. Extensive community engagement with a diverse range of stakeholders, including but not limited to, NYSDEC, City of Long Beach, local home owners, Long Beach Historical Society, and other federal and state agencies.

U.S. Army Corps of Engineers - New York District (USACE-NYD), Plumb Beach Coastal Shoreline Storm Damage Reduction Project, Brooklyn, NY

Provided planning services for a feasibility study within the Gateway National Recreation Area (NPS) along the Belt Parkway of Jamaica Bay. Plumb Beach is a major destination for recreation, nature watchers, bikers, hikers, wind surfers, and sunbathers within the Gateway National Recreation Area. The Belt Parkway is critical transportation and utility infrastructure that was threatened by intense beach erosion previous to and after Hurricane Sandy. The site had intense erosion from numerous storm events and the Belt Parkway needed to reach a long-term sustainable solution, while retaining the environmental and recreational aspects of the site. Working closely with NYC Parks and Recreation on land planning and alternatives development, beach nourishment through beneficial use of dredge material, design of stone groins, breakwaters, and planting plans.

Laura Baird

Community Relations

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ Expert in stakeholder engagement and presentations
- ✓ Associate in charge of OMA's RBD HR winning proposal and subsequent involvement in feasibility study and EIS

Laura Baird is one of four associates at OMA*AMO New York who work directly with the two managing partners, leading projects within the studios' staff of 70. She joined OMA in 2007, and has since worked on a number of masterplans internationally with a specialist focus on sustainable building design, and energy efficient practice. Laura moved to the New York office in 2015 where she has led many of the studios' masterplan initiatives. She was the Project Executive for the Rebuild by Design Feasibility study and Resiliency, masterplan in Hoboken, New Jersey, working in close collaboration with Project Leader and Director of the New York office Sho Shigematsu. She is currently the Associate-in-Charge of the 190-acre waterfront RFK Stadium-Armory masterplan in Washington DC, and a multi-modal waterfront masterplan in Toronto.

Since 2009, Laura has led the OMA think-tank, AMO's growing involvement in the fields of energy policy and renewable energy planning. Notable project leadership includes the Zeekracht Masterplan, an offshore windfarm for the North Sea; the Roadmap 2050 a proposal for a decarbonized power grid for Europe by 2050; and the production of "The Energy Report": a project with the WWF proposing renewable energy and sustainable strategies on a global scale.

Laura is a highly proficient pubic speaker, having led many public and stakeholder consultations, and fundraising presentations. She has specialist expertise in deciphering complex technical and theoretical design solutions to layman audiences, which has proven critical to the success of a number of strategic masterplans the studio has led.

NJDEP, Rebuild By Design Hudson River

Associate in charge, 2015-2017. In 2014, OMA's proposal for "Resist, Delay, Store, Discharge" was awarded $230 million in Federal funding as a result of the Rebuild by Design competition. The OMA team has been engaged as a subconsultant in the Feasibility Study and EIS Phases from 2015-2017.

OMA's initial approach was framed by a desire to understand and quantify flood risk. Within the Sandy-affected region, New Jersey's communities of Jersey City, Hoboken and Weehawken are susceptible to both flash flood and storm surge. As integrated urban environments, discreet one-house-at-a-time solutions do not make sense. Thus, OMA proposed a comprehensive urban water strategy that deploys programmed hard infrastructure and soft landscape for coastal defense (resist); policy recommendations, guidelines, and urban infrastructure to slow rainwater runoff (delay); a circuit of interconnected green infrastructure to store and direct excess rainwater (store); and water pumps and alternative routes to support drainage (discharge). As the OMA associate in charge of the Feasibility Study and EIS stages, responsible for the day-to-day management of the project and the project team, overseeing the content development and graphic output. Led presentations to the prime consultant, project team, client, and public, describing OMA's urban design proposals in detail and on record.

Laura Baird, *cont.*

Firm
OMA

Education
Master of Architecture, Rice University, 2008
BA, Public Policy Studies, Duke University, 2004

Affiliations
Lectures widely
Visiting professor at PennDesign teaching a third year Masters studio at the University of Pennsylvania
Van Alan Institute, Storefront for Art and Architecture

Events DC, RFK Stadium-Armory Campus Masterplan

Associate in charge, 2015-present (ongoing). The conceptual plan for the 190-acre RFK Stadium-Armory Campus site, located in the Southeast corridor of the District of Columbia, delivers a holistic concept for the site that leverages the District's waterfront, provides neighborhood serving amenities, and connects the current site with increased and sustainable green space, flexible recreational fields and natural access to pedestrian-friendly paths. Of crucial importance in the site's location in a floodplain: the proposed strategies offer flood risk reduction benefits, and the conceptual planning effort also envisions phasing the implementation of short-term and long-term program elements for the site. As the associate in charge of the project, oversees the production of project team and day-to-day management, as well as coordination with client team and the other consultants. Has led the preparation of material for the stakeholder engagement meetings, and attends and presents OMA's concepts to the client and the public meetings.

First Gulf Development, East Harbour Masterplan in Toronto, CA,

Associate in charge, 2015-present (ongoing). Located on a 60-acre site directly east of Toronto's downtown core, East Harbour is the largest transit-oriented development currently planned in North America, surpassing New York's 28-acre Hudson Yards, and the 40-acre Transbay Center District in San Francisco. Once complete, this 12-million square foot, unique mix of office, retail, and institutional developments will become a new city center for Toronto, providing employment for over 50,000 people. The masterplan also leverages Toronto's distinct ravine system, which runs adjacent to the site from the Don Valley to the north, through the Lower Don Lands and Lake Ontario Park to the south. East Harbour's public realm introduces a new node for this series of natural greenways, with proposed pedestrian and bike trails that plug into the existing trails along the waterfront. This green network also provides flood protection to the site. As the associate in charge, manages the day-to-day production, and all required coordination with the Client, collaborators, and sub-consultants. Regularly presents to the client and project team, as well as the City of Toronto, in public meetings, and strategizes and holds working sessions with relevant stakeholders.

Events DC, Walter E Washington Convention Center Streetscape

Associate in charge, 2016-present (ongoing). OMA is the prime consultant on a proposal to activate the exterior perimeter of the 2.3 million square foot Walter E. Washington Convention Center, and better connect the building to the surrounding Shaw neighborhood. The streetscape plans will transform the façade of the Convention Center through lighting, signage, canopies and furniture, as well as activate and enrich the sidewalks and enhance the exterior streetscape along 9th, N and 7th Street. Not only will the proposed plans provide added value to Convention Center clients and their attendees, but the project will create a greater sense of place for the revitalized Shaw community. As the OMA associate in charge of the project, oversees the day-to-day production, and coordinates the production and deliverables of OMA.

Jeff Brizendine, PE

FEMA Accreditation

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 30+ years of experience
- ✓ Subject matter expert in levee certification
- ✓ Extensive experience with FEMA regulations and coordination

Jeff Brizendine has more than 20 years of experience in water resources and almost 30 years of experience as an engineer. His expertise extends to program and project management, business and client development, marketing, engineering, and personnel and operations management. He has a varied project involvement background, including levees, dams, floodplain management and mapping, flood studies, stormwater management, stormwater utilities/funding, watershed studies, stormwater mitigation, capital improvement plans, green/bio engineering, regulatory permitting, sanitary sewer closed-circuit television and inspections, inflow/infiltration inspection/elimination, combined sewer overflow/manhole rehabilitation, and application of technology.

Jeff has extensive experience with FEMA requirements and coordination, including many levee certification projects.

Federal Emergency Management Agency (FEMA), Risk MAP Standard Operations Task Order - Levee Support, Kansas City, MO

Project manager for AECOM and control account manager (CAM) for levee support on this joint venture project to support FEMA's Risk Assessment, Mapping, and Planning (Risk MAP) project. Responsible for all levee related issues encountered by the Production Technical Services (PTS) team in FEMA regions IV, VIII, and IX. The joint venture team being the lead PTS for all levee related issues under Risk MAP meant being at the forefront of the dynamic and evolving levee body of knowledge. This leadership role included coordination amongst the three Regional Service Centers (RSCs), coordination with the other PTS teams on nationwide issues, and coordination with FEMA on national policy issues. Responsibilities included drafting of procedure memos, tracking provisionally accredited levee agreements and data, and addressing other problems and issues as they related to levees and the floodplain mapping process.

City of Waterloo, Levee Certification Inspection, Waterloo, IO

Lead hydrology/hydraulics and civil engineer for this FEMA levee certification project. Responsible for evaluation of all hydraulic structures that were part of the levee system as well as overall site/condition inspections. The 13-mile levee and floodwall system protects the city from major flooding from Black Hawk Creek and the Cedar River runs through residential, commercial, and industrial areas of the city. Items evaluated during the inspections include culverts, flap and sluice gates, gatewell structures, riprap blankets, vegetative cover, encroachments, as well as evaluation of and revisions to as-built drawings. AECOM served as the city's representative to FEMA and coordinated all meetings and correspondence related to the certification submittal.

Metropolitan Council Environmental Services, Blue Lake Wastewater Treatment Plant, MN

Project manager, lead hydrology/hydraulics, and civil engineer for the FEMA levee certification of this one-mile ring levee that protects the WWTP. Responsible for

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Education
MS, Civil Engineering, University of Missouri - Columbia, 1999
BS, Mechanical Engineering, University of Missouri - Columbia, 1987

Registration
Professional Engineer, MO, KS, NB, IO
Project Management Professional
Certified Floodplain Manager

Affiliations
Association of State Floodplain Managers
Society of American Military Engineers
American Society of Civil Engineers
American Public Works Association

managing the overall project, the evaluation of the hydraulic structures that were part of the levee system, overall site/condition inspections, and the assessment report. Items evaluated during the inspections included culverts, flap and sluice gates, gatewell structures, riprap blankets, vegetative cover, encroachments, as well as evaluation of and revisions to as-built drawings. The inspection was coordinated with an active construction project that involved a plant expansion and addition of levee embankment to the existing levee system. AECOM was the MCES's representative to FEMA and coordinated all meetings and correspondence related to the certification submittal.

US Army Corps of Engineers (USACE)- Detroit District, Levee Periodic Inspection, Frankemuth, MI

Lead hydrology/hydraulics and civil engineer for this periodic levee inspection for the US Army Corps of Engineers - Detroit District. These inspections were part of the USACE's overall effort to catalogue and inspect all levees to which the USACE has some sort of significant connection (designed, built, and/or operated). Responsibilities included evaluation of the hydraulic structures that were part of the levee system as well as overall condition inspection of the levees. The inspections were completed using the USACE's Levee Inspection System (LIS), a notepad computer program with a GIS link that catalogues all relevant information found during the inspections, including condition, comments, and photographs that could all be georeferenced via a GPS unit taking locations in the field.

Ventura County, Santa Clara River Levee Improvements (SCR-3), Ventura, CA

Subject matter expert - FEMA levee issues, and certification, and segment manager. This project was part of an ongoing project along the south bank of the Santa Clara River in Ventura County, California. The purpose of this project was to complete 50% design of all reaches including river engineering, geotechnical and levee evaluations, agency coordination, and engineering support for the CEQA and permit process; complete final design for Reaches 1 and 2; complete final design of Reaches 3 and 4; and assist with construction support. CLOMR/LOMR processing, and levee certification where needed. Project challenges included a nearby capped landfill that had been repurposed as a public golf course, methane capture facilities, determination of levee boundaries, a possible levee vegetation variance request, and rework of existing stream taming structures.

Sacramento Area Flood Control Agency, Natomas 100-Year Certification, CA

Program manager on this follow-on to the Natomas Levee Improvement Program (NLIP), to assist in obtaining certification for the Natomas levee system. Due to the extent of the repairs required, SAFCA was not able to complete the necessary mitigation to bring all levee reaches up to standards in the allotted timeframe. The team assisted in obtaining an A-99 designation from FEMA so that properties inside the Natomas basin could continue paying reduced flood insurance rates while the necessary repairs were being made.

Kevin Hamby, JD

HUD Compliance

Kevin Hamby has been involved in working with federally funded programs since 2005—and specifically with CDBG-DR funds. Kevin has applied his expertise to state and local governments providing program design, procurement, policies and procedures development, operational plans, implementation guidance, and issue resolution for technical problems that are encoutered during the implementation process.

Kevin brings more than a decade of experience in CDBG-DR management to projects. Kevin has helped clients with program design, program management, and legal compliance, to achieve effective results on programs related to HUD funding, Fair Housing, Davis Bacon compliance and Section 3 policy requirements. In addition to comprehensive work with federal programs administered by the Department of Housing and Urban Development, Kevin has also worked with cross cutting federal requirements including allowable costs and expenditures (formerly OMB circulars) and other advisories on allowable activities.

Kevin is currently working with AECOM to ensure program compliance with HUD on the RBD New Meadowlands project.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 10+ years of experience working with CDBG-DR funds
- ✓ Subject matter expert in HUD compliance
- ✓ Working in similar capacity with AECOM on RBD New Meadowlands

NJ DPMC/DEP, Rebuild By Design New Meadowlands, NJ

Working closely with AECOM to ensure that the program is in compliance with HUD CDBG regulations and other cross cutting federal compliance. Reviewed and incorporated State of New Jersey requirements for Section 3 and Disadvantaged Businesses into policies for performance as these will also be monitored by HUD and HUD OIG. Developed an internal monitoring program to review the Meadowlands team for compliance with HUD policies to detect issues prior to HUD monitoring visits.

Hurricanes Katrina and Rita (Texas)

As the General Counsel for TDHCA, Kevin wrote and directed many of the policies used by Texas consistent with Federal Register Notice providing funds to Texas. Many people are unaware that Texas received several hundred thousand relocations from New Orleans to Houston. Kevin worked with the federal government for necessary waivers to housing programs and he development community to allow people with living spaces to accept temporary residents. In addition, shortly after Katrina hit Louisiana and Texas, a stronger storm hit East Texas. Kevin coordinated the activities and worked to design a program that allowed Texas to rebuild housing in small communities in East Texas rather than the compensation program utilized in Louisiana's Road Home program. The program successfully built several thousand homes for low income Texans. Civil rights advocates testified before Congress that the program was effective and should be used in other disasters.

Kevin Hamby, JD, *cont.*

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Education
Juris Doctor, The Catholic University of America, Washington, DC, 1993
BA, Government, University of Texas, Austin, 1981

Hurricanes Dolly and Ike (Texas)

Kevin worked in both the public and private sectors serving as the Executive Director's disaster liaison for Round 1 of Hurricanes Dolly and Ike funding and as a consultant in Round 2 of the program. Kevin took over a stagnant program where HUD was threatening to take away funds. Under his leadership, the program began to build houses and impediments were removed to complete housing. HUD recognized the progress and moved funding forward issuing Round 2 funds to Texas. Not related to the housing program progress, the State was subject to an administrative and Fair Housing complaint. Kevin worked closely with the Governor's office to reach agreement with civil rights groups through a negotiated Conciliation Agreement. After leaving the state, Kevin worked as a private consultant to implement policies, guides and program requirements that put into effect the Conciliation Agreement, HUD Federal Register requirements and Texas legal requirements.

Hurricane Sandy (New Jersey RREM, New York Rising, and New York City Build It Back)

For three years, Kevin worked with recipients of Hurricane Sandy funds. In the NJ RREM program, he worked with policy teams to establish Section 3 programs and other HUD policies. He also worked with procurement programs to obtain builders and available homes for victims of the storm. The program assisted applicants who had been accepted in the program with completing the process under HUD guidelines and using pre-approved building groups and designs.

With the New York State New York Rising Program, Kevin worked with the team determining how the program would assist homeowners. Kevin was instrumental in the program taking safeguards to limit future exposure for repayment to HUD by the state. Kevin worked with Section 3 policies, contracting between builders and homeowners, federal requirements for record keeping and data collection.

Kevin was an early participant of the NYC BIB program and continued to serve as a policy and operations advisor for intake until 95% of the applicants had been through intake. Kevin focused on ensuring the application intake process met the HUD requirements, while still allowing the program to move forward with easy application procedures. Kevin worked with the NYC BIB team and its contractor to draft policies that included Section 3, Record Keeping, and Uniform Relocation Act (URA), that were used across the program. In addition, Kevin developed various policies that impacted the intake program directly. Kevin also worked as an operational efficiency consultant working with the staff at various registration centers to improve response times and streamlining requirements to expedite applicants wait periods.

Richard A. Renzi, CIH

Health and Safety

Rich Renzi is a vice president and AECOM's North Region's Safety Technical Director, with more than 39 years of experience. He is responsible for providing safety, health and environmental (SH&E) technical support to the region as well as directly supporting clients in the development, execution and management of their safety programs. Rich oversees AECOM construction activities at wastewater treatment plants and hazardous waste site operations. He develops policies for corporate safety manuals, provides OSHA-required safety training, and conducts audits at offices and work sites to verify compliance with applicable AECOM policies, OSHA and EPA regulations.

Passaic Valley Sewage Commission (PVSC), Resiliency Program Management, NJ

Program health and safety manager responsible for overall EHS program. The project core elements include construction of a 30 MW standby power generating facility, building of a facility-wide floodwall and associated pumping stations.

New York City Department of Environmental Protection (NYCDEP), Bureau of Engineering Design & Construction (BEDC) Wastewater Resiliency Program, NY

EHS program manager responsible for development of overall EHS program. The project is focused on hardening DEP's wastewater infrastructure to minimize the probability of damage, service disruptions and environmental impacts from surge events. Program covers 14 Wastewater treatment plants and 42 wastewater pumping stations.

NYCDEP BEDC, Rapid Repairs Program, NY

Safety officer for the program. Developed, implemented and oversaw safety program for NYC's response to Hurricane Sandy. Provided safety training and safety program oversight for assessment teams conducting initial damage assessments, hazard identification and utility re-connection.

California Department of Transportation, Stormwater Management On-Call Services, Various Locations

Health and safety officer for the $10.3 million on-call stormwater technical assistance planning and design contract for the department's overall stormwater management program, which is required by its National Pollutant Discharge Elimination System permit. Incorporated applicable state and OSHA requirements into Caltrans guidance manuals, training materials, and facility designs and implemented the required health and safety program for all pilot program studies.

World Trade Center Recovery Services, New York, NY

Provided safety assessment and review of environmental and sampling data at One World Financial Center of the World Trade Center shortly after 9/11. Provided health and safety support and oversight for the client throughout building repair and renovation activities.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 39+ years of SH&E experience especially as it relates to water/ wastewater treatment plants, construction and environmental regulatory requirements
- ✓ Resiliency experience, including: PVSC and NYCDEP Resiliency Programs
- ✓ NYCDEP Hurricane Sandy Rapid Repairs Program
- ✓ Certified Industrial Hygienist (CIH)

Richard A. Renzi, CIH, *cont.*

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Education
MS, Public Health, Environmental Health, Boston University, 1987
BS, Biology, Westfield State College, 1978

Registration
American Board of Industrial Hygiene (ABIH), Certified Industrial Hygienist (CIH), #136246
OSHA Construction Outreach Program Trainer, #11-0105056

Affiliations
American Industrial Hygiene Association (AIHA)
American Society of Safety Engineers (ASSE)
New England Chapter American Industrial Hygiene Association (NEAIHA)

MTA Capital Construction, Second Avenue Subway Preliminary Design, New York, NY
Providing health and safety oversight for the Second Avenue Subway project.

U.S. Environmental Protection Agency (EPA) - Region I, Investigation, Remediation, and Oversight under the EPA Region I Response Action Contract, Various Locations
Program health and safety officer responsible for staff training, OSHA compliance, and review and implementation of all safety plans. Developed a safety plan template to reduce costs associated with generating hundreds of safety plans required over the course of the programs.

Massachusetts Water Resources Authority (MWWA), John J. Carroll Water Treatment Plant Construction Services, Marlborough, MA
Health and safety officer supporting the construction of the 405-mgd John J. Carroll (Walnut Hill) water treatment facility, which involved the evaluation of construction site stormwater controls as well as the construction management of a filtration plant, ozonation facility, 144-inch raw water piping intakes, 120-inch finished water piping, and the Cosgrove power station.

DC Water, Washington, DC
Developing an EHS Management System in accordance with ISO 14001 and ANSI/AIHA Z10 protocols. Completed Gap Analysis, Policy and Planning Phases; currently working on Implementation Phase.

NYCDEP BEDC EHS Management System
Created an EHS Management System in accordance with ISO 14001 and ANSI/AIHA Z10 protocols. System is designed to reduce injuries, implement pollution prevention programs and establish a culture of "continuous improvement". Prevention through Design (PtD) program was also been developed and incorporated.

EPA - Region I, PCB Superfund Site Remediation, Norwood, MA
Provided oversight and development of the final health and safety design analysis report for the Norwood PCB Superfund site soil treatment facility.

US Army Engineering and Support Center - Huntsville, Picatinny Arsenal Turnkey Remediation Services, Morris County, NJ
Reviewed and approved the site-specific safety and health plan for the design of the groundwater treatment plant at Picatinny Arsenal.

Dean Challes

Quality Assurance

Dean Challes has worked in various capacities in the engineering and construction industry for over 35 years, including significant management roles with all major parties: architect-engineer, construction manager, contractor, and owner. His roles have included program manager, project manager, and construction manager for primarily large scale public infrastructure projects in the US and abroad. These include management on major mass transportation, critical public service facilities projects, and disaster reconstruction, among other.

Dean currently is employing his extensive engineering and construction management experience overseeing program quality management for AECOM's program management role with the New York City Department of Environmental Protection's $350 million Wastewater Resiliency Program, involving the engineering and construction of flood hazard risk reduction measures for all vulnerable treatment plants and pump station throughout the five Burroughs. He is also currently the quality manager on the AECOM design and construction administration team with the Queens-Brooklyn Tunnel, a $400 million NYCDEP project linking the last water section to the new NYC Metro water system network.

New York City Department of Environmental Protection (NYCDEP); ***Wastewater Resiliency Program, NY***

Program quality manager for AECOM's contract as the program manager and construction manager for the $350 million Wastewater Resiliency Program targeting Wastewater Treatment Plants and Pump Stations. The program is DEP's proactive approach to harden its infrastructure in planning for climate change and the impacts of future extreme weather. As the AECOM's program quality manager, prepared the Quality Management Plan for the program that outlined the policy, resources, methodology, and approach to be used in order to confirm that quality is embedded into every aspect of the Program by:

- Identifying the applicable quality requirements of the program and constituent projects and assigning responsibility for implementation.
- Reviewing and monitoring program and constituent project inputs and outputs for compliance, noting deviation from established standards and DEP Standard Operating Procedures and taking corrective action on identified deficiencies to improving processes and procedures via robust lessons learned protocols.
- Confirming that quality systems and measures are in place across the program and constituent project and are functioning appropriately to reduce deficiencies and enhance overall performance.
- Ensuring that all work from design through construction and closeout shall meet the established and clearly identified requirements, specifications, and purpose of the work.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 35+ years of design and construction management
- ✓ Resiliency experience, including current NYCDEP Resiliency Program and several past flood related natural disasters throughout the United States.
- ✓ Expert in quality management for design and construction activities

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Education
BS, Industrial Engineering, University of California, Berkeley, 1961

Registration
Professional Certificate: Engineering Management for Construction, University of California, Los Angeles, 1986
ASCE/AGC: Certified Construction Engineering Management

Affiliations
Engineers Without Borders: Project Lead
Professional Mentor Columbia University

U.S. Department of Homeland Security, Federal Emergency Management Agency (FEMA); *Florida, Louisiana, Missouri, Iowa, Massachusetts*

Project officer for AECOM professional services support to FEMA in the capacity to FEMA as program and project manager for assistance to states of Iowa, Louisiana, Massachusetts, Missouri, Florida. Conducted extensive flood and wind related damage assessment, evaluations, and developed remedial scopes of work accompanied by detailed reconstruction/replacement construction cost estimates in accordance with Federal regulatory criteria. Mitigation recommendations were made where appropriate involving flood hazard risk reduction measures incorporating multiple components and varying scopes of work. Types of facilities and infrastructure included the following:

- State and local municipal administrative and buildings
- Medical facilities including hospitals and clinics
- Public schools and higher education institutions
- Roads and bridges
- Water, wastewater, and storm drainage facilities
- Electrical transmission/distribution and substations
- Parks and recreation facilities
- Public housing projects
- Historic and nationally registered districts and properties

U.S. Department of Defense, Program Management Office (PMO)/Project and Contracting Office (PCO), Iraq Infrastructure Reconstruction Program, Coalition Provisional Authority (CPA)/U.S. Embassy (DoS), Baghdad, Iraq

Member of AECOM's initial "landing party" in its role of program management consultant to the joint government/consultant program management team for the $18.6 billion Iraq reconstruction program effort. Initially involved in the development of criteria for the overall program management reporting and cost control system, including a Work Breakdown Structure. Subsequently assigned a role administering program management of the Accelerated Iraq Reconstruction Program (AIRP) throughout the Sunni Triangle in northern Iraq. While based in Tikrit, interfaced with local Iraqi civic officials and engineering professionals in the identification of projects, scope definition, estimates, contract administration, and the award of construction projects to local Iraqi contractors within the region's districts. Projects included sewage, water treatment, electrical distribution, schools, roads, and health clinics. Following the implementation of these projects, established and administered the AIRP program management reporting system for the $350 million effort involving the 358 AIRP projects. Recipient of a commendation plaque from the Engineering Brigade Commander of the U.S. Army 1st Infantry Division for his individual effort as a member of AECOM's Program Management Team.

Steven Li, PhD, D.CE, PE

Coastal Modeling

The solid theoretical foundation and the wide range of experiences in Dr. Li's engineering career enabled him to attain a high level of technical expertise related to coastal processes analysis, plan and design of coastal defense structures and coastal & river resiliency study and design (coastal flood study, sea level rise, urban vulnerability assessment, and mitigation measures).

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 30 years of coastal engineering experience
- ✓ Expert in in modeling of coastal process (storm surge, wave, shoreline change, e tc), including the development of coupled urban coastal storm model and inland drainage model system
- ✓ Modeled RBD HR project site as part of Lower Manhattan Coastal Resiliency project
- ✓ Modeling for RBD New Meadowlands

New York City Economic Development Corporation (NYCEDC, Lower Manhattan Coastal Resiliency, New York, NY

Technical lead of coastal engineering/integrated coastal storm and inland drainage modeling system. This study is advancing recommendations from comprehensive plans including A Stronger, More Resilient New York; OneNYC, which include engineering, planning, landscape architecture, urban design, environmental planning, cost estimating, economic analysis, and public engagement services. The study area is divided into four sub-areas for which our project team is developing four distinct flood protection scopes of work with supporting technical analyses and implementation strategies of independent utility using a defined capital budget to be determined and under the direction of the City. As a coastal engineering lead in this project, conducted the development of integrated coastal storm and stormwater management model system to assess the vulnerability to coastal and inland flooding by simulating the flood extent and elevations under the combinations of coastal storms, rainstorms, sea level rises for different return periods, wave modeling, wave overtopping, the support on the alternative assessment of coastal defense structures; the development of hydrological management strategies (including feasibility of various strategies for reorganizing and controlling water flow and providing flood protection within the project area), and drainage and sewer considerations (including producing a quantities analysis of the impact of proposed systems on the drainage of sewage and stormwater runoff from the areas behind the and adjacent to the barriers and propos recommended improvements to address drainage in the events of coastal storm surge, sea level rise, and rainstorm.

NJDEP, Rebuild By Design Meadowlands Flood Protection Project, Meadowlands, NJ

Technical lead of coastal engineering/modeling. This project (New Meadowlands) originated with Rebuild by Design (RBD): a design competition sponsored by the U.S. Department of Housing and Urban Development (HUD) that utilized a collaborative process to find effective ways to protect people, homes, businesses and infrastructure, and to increase resilience in Sandy-affected regions as part of recovery from the storm. The Task Order is to to begin the process to evaluate and build upon the RBD concept to determine the best, most cost effective way to implement comprehensive flood protection and will serve as the foundation and initial steps for the Feasibility Study, Environmental Impact Statement (EIS), Design and Construction Administration for the "New Meadowlands - Protect, Connect, Grow" project. As a coastal technical lead in this project, conducted the development of coastal hydrodynamic model and wave model to establish the extents and elevations of flooding for existing/baseline conditions, to assess the performance of project alternatives under design storm, and to support the planning, analysis, and design/implementation of flood defense alternatives (including the drainage and sewage system).

Steven Li, PhD, D.CE, PE, *cont.*

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Education
PhD, Ocean Engineering, Stevens Institute of Technology, 2001
MS, Coastal Engineering, Nanjing Hydraulic Research Institute, 1990
BS, Civil Engineering (Major in River Engineering), Wuhan University, 1985

Registration
Professional Engineer, New Jersey
Also NY, VA, FL
Diplomate in Coastal Engineering (D.CE), ACOPNE (The Academy of Coastal, Ocean, Port and Navigation Engineers

Affiliations
American Society of Civil Engineer (ASCE)
Oceans, Ports & Rivers Institute (COPRI)
International Navigation Association (PIANC)

Delaware Department of Transportation (DelDOT), Indian River Inlet Coastal Hydraulic and Scour Study, DE

Technical lead for coastal engineering/modeling, responsible for development of storm surge (ADCIRC) and wave (SWAN) models for very large region to simulate storm surges and waves for a series of trainning storms (both hurricanes and Northeasters), analysis Storm Event Frequency-of-Occurrence Relationships with Empirical Simulation Technique (EST) approach, determine the flood water depth and flow pattern in the Indian River Inlet and floodplain, and perform bridge scour analyses, and prediction of expected scour around the proposed Indian River Inlet replacement bridge as well as the design wave and current loadings on the proposed bridge elements.

MTA Bridges and Tunnels (TBTA), Coastal Flood Study, New York, NY

Technical lead for coastal engineering, responsible for engineering study to evaluate the flood elevation for Bronx Whitestone and Throgs Neck Bridges. The major work components include the sea level rise study, storm surge study, and final flood elevations for year of 2020, 2050, and 2080.

New York State Department of Environmental Conservation (NYSDEC), Mt Loretto Coastal Erosion Study, Staten Island, NY

Technical lead for coastal engineering. The Mt. Loretto Unique Area is located on Staten Island, NY. Erosion had occurred at some locations with a maximum retreat of approximately 34 feet from Hurricane Sandy. A coastal erosion study & corresponding engineering countermeasures need to be conducted to prevent from further loss of YNSDEC property. As a technical lead in this project, conducted the analysis of soil conditions and erosion types, meocean analysis, analysis of potential causes for the erosion, and the development of alternative countermeasures, which include surface drainage regrading; Tree removal; toe protection (sand dune protection, revetment, seawall, and combination seawall and sand dune protection).

Transmission Developers Inc, Champlain Hudson Power Express (CHPE) Project, NY

Technical lead for coastal engineering, responsible for expert assessment of the flood zone and storm surge impact associated with Hurricane Sand at the site of the proposed Astoria Converter Station, and potential engineering countermeasures to reduce flood risk. These include the flood zone determination; return period evaluation of Hurricane Sandy at project, sea level rise assessment, final grade determination, and recommendation on the flood protection engineering countermeasures.

Mark Gonski, PE

Flood Control

Mark Gonski is a structural engineer with a combined 36 years of design and project management experience; 33 years at the Corps of Engineers. The majority of his design and construction experience centered on navigation and flood protection projects. He was the Chief of Structures Branch at the New Orleans District, US Army Corps of Engineers (USACE), 2006 – 2014 and oversaw much of the Post Katrina Hurricane Protection structural design effort including over 100 flood protection projects. The projects included floodwalls, levees, pump stations and both sector gated and sluice gated closure structures. He has extensive experience with the design of pile founded structures in soft soils. He is knowledgeable in both Corps Criteria and Industry design standards.

Mark also has design and field experience with the repair and rehabilitation of major navigation and flood control structures. He was the technical manager in the design and construction oversight in several flood protection projects that ran through downtown New Orleans, aesthetics were a key aspect of the design and were incorporated into the flood protection walls.

Mark was a member of the Corps Innovative Navigation Project research effort conducted from 1997 to 2003. The research efforts considered innovative construction and design procedures as a means to cut project costs and improve quality.

NJ American Water, NJAW Raritan Millstone Water Treatment Plant Flood Control Project, Raritan, NJ

Senior structural engineer for the preparation of plans and specifications focused mainly on the concrete wall, floodgates and combi-wall designs. Performed the quality control review of the completed project and addressed structural RFIs and revisions in the ongoing construction.

U.S. Corps of Engineers (USACE) – New Orleans District, Chief of Structures Branch, Post-Katrina Flood Protection Design and Construction, New Orleans, LA

Reviewed for approval, the Plans and Specifications of over 100 hurricane protection projects in the New Orleans area. The flood protection designs included floodwalls, floodgates, and pump station modifications. Authored much of the current Hurricane Storm Damage Risk Reduction System (HSDRRS) structural criteria developed by the Corps following the Katrina Hurricane. Provided oversight and structural guidance for the design and construction of two Drainage Culvert projects, SELA Napoleon and Florida Ave, both were box culverts. One was supported on timber piles, the other supported on soil mixed columns.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 36 years of structural engineering experience - 32 with USACE
- ✓ Expert in flood protection design, (hurricane surge and riverine flooding), USACE design criteria, FEMA certification, deep foundations
- ✓ Responsible for developing more stringent Post-Katrina design criteria for flood control
- ✓ NJ flood risk management experience: Raritan Millstone WTP flood protection, PVSC Flood Protection Study

Mark Gonski, PE, *cont.*

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Education
MS Civil Engineering, Tulane University, 1992
BS, Civil Engineering, New Jersey Institute of Technology, 1978

Registration
Professional Engineer, Louisiana
AWS Certified Weld Inspector (CWI) License (1998- 2007)

Affiliations
ASCE-SEI, New Orleans Branch Structures Committee member, 1996 – Present
American Institute of Steel Construction

USACE New Orleans District, Western Closure Complex Floodgate and Sluice Gate Structures, New Orleans, LA

Senior structural engineer for the in-house design of the Western Closure Complex which included a 225' wide floodgate, sluice gated drainage structure and several reaches of floodwall. The design included the steel gates, concrete monoliths, and tie-in floodwalls. Provided engineering design during construction. The 225-ft sector gates are the largest gate of this type in the Country.

USACE New Orleans District, Hurricane & Storm Damage Risk Reduction Reaches LPV 103; 105-108, LPV 109 and 110, New Orleans, LA

As Chief of Structures Branch, provided the design criteria for the structural components of the project. Prformed technical reviews during Plan development. Became heavily involved in LPV 109 dealing with post-construction settlement issues at the Hwy 11 floodwall and floodgates. Oversaw the analysis required to assure the pile foundation was not overstressed for the life of the Project.

USACE New Orleans District, Harvey Floodgate, Harvey, LA

Technical manager and lead structural engineer for the design and construction of the Harvey Sector gate, a 125-ft wide gate. The Design included the gate, concrete monolith, Tie-In walls, and related civil designs. The design was the first float-in structure designed by Corps in-House engineers. The structure was also designed as a conventional cast in place alternative. The cast in place design was awarded as the Best Value. Construction was completed in 2005. The floodgate is part of the West Bank & Vicinity flood protection system.

USACE New Orleans District, Mississippi River Flood Protection, New Orleans, LA

Structural Engineer, responsible for designing and preparing plans and specification for 6 contracts. Provided the needed engineering during construction. Projects consisted of Floodwalls and Floodgates, relocations, and related civil-site work. Construction of the last project, the Independence Street to IHNC Lock Floodwall Project was completed in 1993.

USACE New Orleans District, SELA Louisiana Ave Drainage Box Culvert, LA

Senior structural engineer during construction providing design modifications due to differing site conditions caused mainly by unknown utilities in the congested streets of New Orleans. Reviewed temporary construction works including braced excavations and work platforms.

City of Baton Rouge, Structural Designer, Engineering during Construction, Baton Rouge O'Neal Sewer Pump Stations

Structural engineer responsible for review of structural submittals and provided design modifications for eight raised pump stations and one generator building.

Brandon Cappellari, RLA, ASLA, LEED AP

Landscape Architecture/Urban Design

For over ten years, Brandon has been shaping conceptual ideas into reality for both public and private clients. Brandon is an effective communicator and liaison between design team sub-consultants, contractors, and clients. He ensures the goals of the client are met with excellent design execution.

Brandon has strong technical and intellectual leadership skills that are used daily in his role at AECOM. Currently, Brandon serves as the technical director for the Landscape Architecture + Urban Design Studio in the AECOM NYC office and leads the construction administration for Liberty Park, a rooftop public park overlooking the 911 Memorial that serves as a key component of the World Trade Center's public realm, along with other projects for the NYC studio. He has also served as technical advisor on the Lower Manhattan Coastal Resiliency project.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ Senior member of AECOM's in-house Landscape Architecture + Urban Design Studio
- ✓ Team member on Lower Manhattan Coastal Resiliency
- ✓ Landscape architect for World Trade Center Public Realm, DUMBO Plaza and other area urban design projects

New York City Economic Development Corporation (NYCEDC), Lower Manhattan Coastal Resiliency, New York, NY

Technical advisor for the Lower Manhattan Coastal Resiliency (LMCR) Project that aims to reduce flood risk due to coastal storms and sea level rise from Manhattan's Two Bridges neighborhood to Battery Park City. It intends to build the physical, social, and economic resiliency of the area by integrating flood protection into the community fabric through strengthening the City's coastline while improving access to the waterfront and enhancing public spaces. AECOM is providing landscape architecture, urban design, engineering, and environmental services for the project.

Port Authority of New York and New Jersey (PANYNJ), World Trade Center Public Realm Master Plan – World Trade Center District, New York, NY

Landscape architect on this project, providing construction documentation leadership, design assistance, and client coordination support. The project comprises the streets, plazas and parks within 'Ground Zero.' The 16-acre redevelopment project involves significant coordination and consensus building with diverse stakeholders, high-end design resolution and integration of all aspects relating to circulation, security and retail into a cohesive public realm.

PANYNJ, Liberty Park – World Trade Center District, New York, NY

Lead construction administrator for this 1.5-acre, $60 million Rooftop Park over the World Trade Center District's vehicle screening center. The project serves as a central public open space for the 16 acre World Trade Center redevelopment district that overlooks the 911 Memorial and surrounding neighborhood. The design includes extensive seating and a variety of display gardens areas. The park features four monumental stairs to allow access to the rooftop from street level and a pedestrian bridge that links the rooftop to the adjacent World Financial Center complex within Battery Park City.

Brandon Cappellari, RLA, ASLA, LEED AP, *cont.*

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Education
Bachelor of Landscape Architecture, Public and Urban Affairs Minor, Virginia Polytechnic Institute & State University, 2004

Registration
Registered Landscape Architect: New Jersey Also NY, CT
LEED Accredited Professional
OSHA 10-Hour Construction

Affiliations
American Society of Landscape Architects New York Chapter (ASLA-NY), Board Member, 2015-current
American Society of Landscape Architects, National Chapter, (ASLA), 2015-current
Green Roofs for Healthy Cities, 2010-2013

Publications and Presentations
"Brave New City", with West 8, Metropolis Magazine, Oct 2012

New York City Department of Design and Construction (NYCDDC), DUMBO Plaza, New York, NY

Lead technical designer for the project redesigning an existing plaza space (once a parking lot), and an adjacent street closure which integrates the Manhattan Bridge Archway. The goal being to restore historic cobble to the main streets, and introduce bike lanes that connect to the greenway and neighborhood of Vinegar Hill. The plaza paving follows the language of the historic cobble streets, while introducing a contemporary take. Many different layers of cobble stone have been inserted to the streets over time, the resulting is a sea of weaved colors and sizes that create the character of DUMBO today. The proposed paving scheme incorporates three cobble stones and response to the site program and circulation set forth in the design. A permanent seating element located in the primary plaza area provides a large gathering space for projections, performance, and events. The linear portion of the site is occupied with a seating and planting element that provides a space a more private environment for small groups. The project is moving forward into the Design Development stage.

Pulaski Street Park, Jersey City, NJ

Technical design lead on the Pulaski Street Park project positioned along Route 139, a buried double decker highway in Jersey City. As a part of a large scale infrastructure project that is reconstructing the skyway and improving pedestrian connection across the large thoroughfare, the park will create a new and much needed public space for residents in the area. The low maintenance planting consists primarily of ornamental grasses with special garden alcoves that provide visual interest in a more intimate setting. Custom benches comprised of a series of folded planes are located throughout and have a unique aesthetic from every angle for added interest.

New Jersey Institute of Technology Wellness and Event Center, Newark, NJ

Design lead and technical advisor for this project. AECOM's landscape architecture studio was asked to work on a new wellness and event center on the existing urban campus in central Newark. The landscape will stitch this new campus focal point into the current fabric of the campus, creating diverse types of spaces for students to gather and study. Through the addition of a new plaza, the design will strengthen the central axis of the campus. Additionally, understanding that space is a commodity in urban campuses, the design uses opportunities such as grade changes, shade trees, and different types of seat edges to encourage students to occupy their campus in ways that personalize their experience.

The Trust for Governors Island, Governors Island Phase 1 Park and Public Space, NY

In charge of the project's construction documentation, consultant coordination, and served as the lead construction administrator. Developed from the 2006 international design competition winning entry and the 2010 Park and Public Spaces Masterplan, Phase 1 of Governors Island creates 30 acres of new park and public spaces and adds key visitor amenities to the historic North Island.

John Dromsky-Reed, PE

Stormwater Management/Interior Drainage

John Dromsky-Reed has 29 years of experience in flood mitigation, hydraulic modeling, and flood mapping. He has been involved in several post-Sandy resiliency improvement initiatives and recently managed several multi-million dollar task orders for flood data analysis and floodplain mapping for multiple counties in New York and New Jersey. He served as the project manager for several flood risk management projects with the New York District of USACE and is currently managing AECOM's Floorplaing Mapping contract with DPMC/DEP.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 29 years of experience in flood risk management
- ✓ NJ licensed PE
- ✓ Extensive experience with NJDPMC/DEP, USACE, FEMA

U.S. Army Corps of Engineers-New York District (USACE-NYD), Green Brook Flood Control Project, NJ

Project manager for this $610M project. Responsible for the reformulation of flood control alternatives for the Upper Portion of the Green Brook Sub-basin, conducting the Raritan River Split Flow analysis to analyze the impact of Tropical Storm Floyd, evaluating potential induced flooding from the partially constructed levee system, analyzing railroad bridge and dam removals, conducting an analysis of impacts of the first upstream constructed segment, overseeing the hydraulic model and cost estimate updates for the remaining construction elements, and preparing the proposal for reevaluation of the tidal portion of the basin.

FEMA Region II, Flood Data Analysis, NY

Project manager for survey, H&H analyses, and creation of work maps for the $1.4 million study, which included detailed study of 100 miles and approximate study of 430 miles of streams and lakes in the Seneca River Watershed in Ontario, Yates, and Tompkins Counties, NY. Coordinated subcontracting for stream surveys, hydrologic and hydraulic models and calculations, reports, and the creation of over 130 work maps.

NJDEP, in partnership with FEMA, Region II, Flood Data Analysis and Mapping, County-wide FIRM for Bergen County, NJ

Project manager for this $1.5 million project for NJDEP. Responsible for survey, H&H analyses, final FIS and creation of FIRMs for Bergen County. Coordinated survey, H&H analyses between several contractors, and mapping, and oversaw development of the FIS and DFIRM. Also responsible for coordinating survey, H&H and mapping deliverables to support FIRMs in Passaic and Essex county being done by others.

Nassau County, Five Towns Drainage Study, NY

Project manager for the $1.2 million project for Nassau County, under funding from the Governor's Office of Storm Recovery (GOSR), which includes stormwater drainage analyses of 9 communities with in the Five Towns area of the Town of Hempstead, NY. Responsible for drainage network survey, hydrologic and hydraulic (H&H) analyses, alternatives analysis, cost and benefit estimating and reporting. Responsible for the evaluation of drainage improvements for 12 separate drainage areas, which included outfall protection, drainage pipe improvements, detention, and pump stations. The

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Education
MS, Environmental Engineering, 1999
BS, Marine Science, 1986

Registration
Professional Engineer, New Jersey
Also NY

project required extensive coordination with the County, communities, and GOSR. Improvement projects were slated to utilize CDBG-DR funding.

New York State Governor's Office of Storm Recovery (GOSR) New York Rising Community Reconstruction Program

Subject matter expert (SME) for flood mitigation and coastal protection, assisted six Community Reconstruction Zone (CRZ) planning committees in NY City and Nassau County, who were tasked with developing plans to improve community resiliency to storm damage, in identifying, screening, and refining potential flood and storm mitigation measures to be included in each zones' Community Reconstruction Plan. Developed preliminary cost estimates for proposed projects, conducted presentations with each committee, and attended public information sessions to describe proposed projects.

NYSDEC and FEMA, Region II, County-wide FIRM for Onondaga County, Rockland County, and Chemung County, NY

Project manager for the $2.8 million project which included the Onondaga County, and Rockland County county-wide FIS and FIRM. Responsible for survey, H&H analyses, final FIS and FIRM. Coordinated subcontracting for survey, H&H analyses, and mapping. Project manager for the $502,000 Chemung County county-wide FIS and FIRM. Coordinated and oversaw the preliminary levee analysis and development of H&H models, reports, and maps. This project included numerous issues related to levee certification and associated outreach. Project was revised to include new detailed studies.

USACE-NYD, Indefinite Delivery Contract 189a for Flood Control/Mapping, NY

Project manager for this $3 million contract for the New York District of USACE. Responsibilities included task order coordination, including cost proposals, subcontract coordination, and scheduling. Scope of work for Task Orders includes: Technical review of engineering drawings for navigation improvements and flood protection projects; engineering support during construction of the $20 million dam remediation project in Waterbury, VT; dam inspections; storm damage reduction projects in Long Island, including economic analyses of proposed protection and plans and specifications.

USACE-NYD, New York and New Jersey Harbor studies

Project engineer assisting in the development of the NY/NJ Harbor Navigation Study's Plan Formulation. Responsible for consolidating project team input and drafting the Feasibility Study's Main Report, and several Appendices, as well as the Corps Alternative Formulation Briefing (AFB) package. Responsible for developing the project's Project Management Plan. Project engineer for the Hudson Raritan Estuary Ecosystem Restoration (HRE) responsible for coordinating development of the 8 Study Area Reports (SARs) outlining each area's existing ecological conditions, history of degradation, and restoration needs, which formed the basis of the project's Comprehensive Restoration Plan (CRP). Assisted in formulating the District's CRP. Coordinated the development of the HTRW and Cultural Resources Appendices for the HRE Programmatic EIS.

Matthew Jones, PE, LEED AP BD+C

Stormwater Management/Interior Drainage

Matt is a principal at MKA and one of the firm's most experienced civil project managers. He brings an unusually broad perspective to his designs, having served as a drip irrigation project coordinator in rural Kenya, a university lecturer on business analysis in Australia, and project manager for a 2,500-acre master-planned, nationally recognized "Green Community" in the U.S.. Since joining MKA, his focus has been on the development of highly sustainable site designs featuring innovative LID interventions. Matt is an active member of the Water Reuse Guide Working Group, a LEED accredited professional, a member of MKA's Water Resources Technical Specialist Team, and skilled at 3D modeling for civil design visualization and integration.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 17 years of experience
- ✓ Actively involved in the industry's advancement of water reuse strategies
- ✓ Expert in decentralized wastewater treatment and reuse for building and landscape projects and expert in low-impact design

Presidio Tunnel Tops, San Francisco, CA

Civil managing principal for new 13-acre park built over the Presidio Parkway Main Post Tunnels near the Crissy Field waterfront, with structured overlooks from a dramatic bluff offering panoramic Golden Gate views. Civil input includes complex 3D modeling to site, the landscape vision, and underlying infrastructure atop brand-new tunnels, all without exceeding the prescribed load carrying capacity. These efforts were needed to create a sense of place, since the landscape architect's achieved vision was more sinuous and complex than originally assumed during the design of the tunnels by others.

NuSkin Headquarters Expansion, Provo, UT

Civil project manager for master plan and civil expansion design of a 7.5-acre, three-building office/data center campus. MKA achieved net-zero stormwater discharge for the site through sustainable and naturalistic stormwater management, including increasing site and street-level permeability and naturally treating the stormwater within the City right-of-way with bioretention prior to infiltration, increasing the groundwater recharge. MKA also rerouted major public infrastructure out of a former public right-of-way to accommodate a new below-grade parking garage.

Governors Island Park and Public Space, NY

Civil design engineer for 119-acre park on an island in the heart of New York Harbor, destined to be an iconic public space. Civil elements include providing the engineering underpinnings for the landscape design vision of "transformation through topography" of this currently flat site. This involves importing some 500,000 yds^3 of soil, placing it in new hills up to 82 ft tall and, in some cases, near-vertical slopes. MKA's solutions include three-dimensional modeling of the complex topography to suit the Lead Designer's vision, including the careful insertion of Universally Accessible paths to the top of the two tallest new hills.

Urban Fabrick, Non-potable Water Reuse Practice Guide

Working group participant and contributing author, provided the narrative content for the chapter entitled "Is non-potable water reuse right for your project", and peer reviewed the entirety of this soon-to-be-released guide that will provide the AEC industry with in-

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Magnusson Klemencic Associates (MKA)

Education
Master of Business Administration, Bond University, 2004
BS, Civil Engineering, California Polytechnic State University, San Luis Obispo, 1999

Registration
Professional Engineer, WA, NV, CA, AZ
New Jersey (in process)

Affiliations
American Society of Civil Engineers
Water Reuse Guide Working Group

depth information on the how, what, and why of integrating water reuse into building and landscape projects.

Constitution Gardens, Washington, Washington, DC

Civil project manager for renovation of a 30-acre historic park including the relocation of the Lockkeeper's House, addition of a new pavilion building, and the rejuvenation of existing dilapidated lake, landscaping, and path system. Civil design elements include utility and vehicular servicing of new building, strategic earthwork adjustments to create a visual and acoustical buffer from the adjacent roads and remainder of the National Mall, as well as drainage improvements to support the landscaping and recharge the lake. Lake water systems will be redesigned to provide a recirculating, sustainable lake that will include passive and active water filtration systems.

Washington Monument Grounds at Sylvan Theatre, Washington, DC

Civil project manager for 3,000-seat amphitheater and other visitor service facilities including a multi-purpose building with café, office, conferencing, gift shop, ticketing, renovations to the historic Surveyors Lodge and Monument Lodge buildings, and a new pedestrian bridge connection to the Tidal Basin, all located at the base of the Washington Monument on the National Mall. Civil elements include site engineering, sustainable soils management, and water resources planning and design for a "net-zero" water site.

San Ysidro U.S. Land Port of Entry, CA

Civil design engineer for phased reconfiguration, expansion, and modernization to a southern U.S. port of entry, considered to be the busiest in the world. The project includes the full replacement of all current inspection buildings and site facilities and expanding the number of inspection lanes, booths, and support facilities, all while maintaining 24/7 operations of the facility. MKA's civil team's effort includes leading the design team's overall assessment and analysis of site sustainability issues, as the project is targeting LEED Platinum. The effort includes "right sizing" the site work, leveraging landscape areas for habitat and stormwater, and identifying better water, waste, and materials resource management opportunities. A 400,000-gallon rainwater reclamation system is part of the water management plan for the facility; when combined with planned on-site sewage treatment, the facility will be "net zero" for all non-potable water demands. In addition, the project is zero discharge for stormwater. MKA also participated in master planning of the overall site and developed complex phasing and staging plans for the project's construction.

Peoria Complete Streets Master Plan, Peoria, IL

Civil project manager for 57 city blocks undergoing a street diet and public space upgrade. MKA's focused on inserting low-impact design (LID) interventions into the renovated street-side public spaces. These insertions take the runoff generated by these streets off of the city's combined sewer system, and make a substantial contribution to the city's CSO reduction targets.

Douglas F. Kubovic, PE

Site/Civil Engineering

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 16 years of experience
- ✓ Extensive experience in site design, including drainage and utility alignments
- ✓ Several waterfront site design projects in NY metro area, including flood protection and green infrastructure

Doug Kubovic has more than 16 years of experience providing civil engineering services for various site development, highway, transit and structural projects. He has experience in the development of reports and detailed plans for feasibility design; plans, specifications, and estimates for highway reconstruction and site development; development of drawings and calculations for New York metropolitan area agency permitting; grading and drainage design; roadway alignment; utility relocations; signing and pavement marking; maintenance and protection of traffic; and quantity and cost estimating. Doug is also experienced in the use of the following technical computer programs: AutoCAD, StormCAD, MicroStation, and Microsoft Office (PowerPoint, Excel, Word).

New York City Department of Design and Construction (NYCDDC), Jamaica Bay Green Infrastructure, Queens, NY

Lead project engineer responsible for performing preliminary and final design services to implement green infrastructure for Jamaica Bay, Queens, as per NYCDEP Office of Green Infrastructure (OGI) procedures. Responsibilities included leading a team throughout the 836-acre project site to complete a site analysis using NYCDEP OGI site selection procedures. This procedure includes evaluating each specific sub-tributary area using DEP GIS sewer maps, performing walkthroughs with the New York City Department of Transportation (NYCDOT), New York City Parks and Recreation (NYCDPR), and OGI.

New York City Economic Development Corporation (NYCEDC), Andrew Haswell Green Park, Manhattan, NY

Lead project engineer responsible for conceptual design services for the conversion of industrial pier to a city park located on the waterfront of the east side of Manhattan between 61st and 63rd Streets. Responsibilities included coordination between the marine, structural, and architectural engineers to prepare a conceptual design package for the demolition and rehabilitation of existing pier structure and construction of parkland as proposed by NYC Department of Parks and Recreation (NYCDPR). As lead civil engineer responsibilities included the oversight of the topographic survey, existing utility mapping and investigation, and developing conceptual utility plans and details for the drainage, mechanical, and electrical systems for the park.

Brooklyn Bridge Park Corporation, Brooklyn Bridge Park Project, Brooklyn, NY

Design engineer for a feasibility drainage study which included a drainage study along the local roadways of the Brooklyn Bridge, a visual inspection of existing storm water drainage outfall locations along the East River at Piers 1 through 6 and a video inspection of the sewer system. Compiled all the information and prepared the report, quantified the deficiencies of the pipes and gave recommendations and costs to upgrade deficient portions identified in the Study. Duties included mapping the existing system, developing improvement alternatives, and utility locations. Developed detailed plans from schematic design to construction documents for the construction of a waterfront park, including

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Education
BS, Civil Engineering, Polytechnic University, Farmingdale, NY, 2001

Registration
Professional Engineer, New York

Affiliations
American Society of Civil Engineers

roadway plans and profiles, drainage system design and layout, and details. Duties included calculating the existing and proposed drainage areas, designing and sizing the proposed drainage system, checking the roadway horizontal and vertical alignment and developing road profiles, and developing specifications. To obtain approval for the various storm water and sanitary sewer connections to the City sewer system developed detailed plans for a site connection permit submission to the Department of Environmental Protection. Reviewed shop drawings submittals and provided field engineered solutions to design problems and unforeseen field conditions.

Port Authority of New York and New Jersey (PANYNJ), Flood Protection for Pump House No. 6 Substation, LaGuardia Airport, Queens, NY

Civil engineer provided engineering services for elevating electrical power and controls at Pump House #6 to a higher elevation to meet FEMA flood protection updated guidelines. Tasks include conceptual design options for installing new medium and low voltage power distribution equipment, and relocating all control equipment and wiring required for pump control. Duties included studying existing site conditions and developing two preliminary design alternatives for the location of the equipment, including site restoration and grading plans.

PANYNJ, Pump Houses 2 and 3 Storm Related Repairs, LaGuardia Airport, Queens, NY

Civil engineer provided engineering services for the replacement of the mechanical controls and electrical equipment damaged during Superstorm Sandy. All work shall be in accordance with the updated FEMA guidelines. Tasks included developing notes, plans and details for contract drawings for the site restoration.

NYCEDC and New York City Parks & Recreation (NYCDPR), Bush Terminal Park Remediation, Piers 1- 4, Brooklyn, NY

Lead civil engineer providing construction support services for the construction of a waterfront Park on top of an existing landfill. Duties included overseeing the coordination and layout of the various utilities throughout the park in accordance with the various New York City utility agency standards and regulations; developing plans, profiles, and cross sections for each utility to check for conflicts and provide resolutions; preparing drawings for the contractor to install each utility, including trench layout elevations and dimensions for the utility corridors containing multiple utilities; and reviewing shop drawings for roadway, drainage, and utility submittals as per the contract documents.

NYCEDC and NYCDPR, West Harlem Waterfront/Riverwalk, Park Construction, NY

Design engineer developed detailed plans of the proposed park drainage system for a site connection permit submission to the NYCDEP for conversion of a parking lot into a waterfront Park. Duties included analysis of the existing drainage system and developing the proposed drainage system design. Reviewed shop drawings for roadway, drainage, and water main submittals and provided field engineered solutions to design problems and unforeseen field conditions.

Drew Gangnes, PE, SE

Site/Civil Engineering

Drew is a senior principal at MKA and leads the firm's civil engineering practice. His 31-year design portfolio reflects an emphasis on civil site design for high-profile, architectural and landscape projects with complex engineering challenges. He has led the civil engineering design on sites up to 178 hectares (440 acres), several LEED Platinum projects, multiple sites on the National Mall in Washington, DC, a complete resculpting of historic Governors Island in New York Harbor, and rejuvenation of Seattle's waterfront with Olympic Sculpture Park (recognized as the top engineering achievement in the nation in 2008 by ACEC). Along with his rare ability to translate architectural designs into effective and efficient civil engineering solutions, Drew has a passion for site and water sustainability and is nationally recognized for his pioneering green roof, water balance analysis, and stormwater management innovations.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 31 years of experience in civil engineering
- ✓ Extensive public space design experience on large-scale, complex projects
- ✓ Extensive resiliency experience, including water self-sufficiency for the San Ysidro Land Port of Entry and Hemisfair Civic Park, and design for sea level rise for Governors Island and India Basin Shoreline Park

Olympic Sculpture Park, Seattle, WA

Civil/shoring principal in charge for 3.4-hectare (8.5-acre) outdoor park for the Seattle Art Museum, designed as a continuous plane crossing over existing infrastructure, highlighting sculpture and connecting the urban core to a revitalized waterfront. MKA's civil design addressed the challenges of two brownfield sites and a 0.8-hectare (2-acre) parking lot bisected by railroad lines and an arterial road. A 670-m (2,200-ft) Z-shaped walkway, sloping continuously downhill, begins at the main pavilion building and ends at the waterfront. The gentle 5-percent slope was possible through the addition and careful grading of 191,130 m^3 (250,000 yd^3) of imported fill, 76,450 m^3 (100,000 yd^3) of which was excavated from a second nearby MKA project (thus eliminating the additional expense and environmental impact of traditional transport). The high-silt-content imported dirt also capped existing brownfield contamination. MKA developed a new "decoupled" form of mechanically stabilized earth (MSE) walls to shape the significant quantities of soil that form the park, a cost-effective alternative to traditional cast-in-place concrete retaining walls. An existing decaying seawall was buttressed with a riprap fill that extends 46 m (150 ft) into the water and includes a fish habitat bench. MKA's solutions also include unique use of an existing tunnel under Elliott Avenue to channel storm water runoff directly to Elliott Bay (avoiding the need for detention), a new pocket beach amenity, and relocation of 244 m (800 ft) of existing sewer and water lines.

West 8, Governors Island Park and Public Space, NY

Civil principal in charge for 48.2-hectare (119-acre) park on an island in the heart of New York Harbor, destined to be an iconic public space. Civil elements include providing the engineering underpinnings for the landscape design vision of "transformation through topography" of this currently flat site. This involves importing some 382,263 m^3 (500,000 yds^3) of soil, placing it in new hills up to 21-m- (70-ft-) tall and, in some cases, near-vertical slopes. MKA's solutions include three-dimensional modeling of the complex topography to suit the lead designer's vision, including the careful insertion of universally accessible paths to the top of the two tallest new hills.

Drew Gangnes, PE, SE, *cont.*

Firm
Magnusson Klemencic Associates (MKA)

Education
BS, University of Washington, Civil Engineering, 1987

Registration
Professional Engineer, WA, NY, DC, VA, MA, PA, KY, TX, OK, NM, MO, IL, ID, CO

Affiliations
American Society of Civil Engineers
AIA Seattle 2014 Water Forum Steering Committee

San Ysidro U.S. Land Port of Entry, San Ysidro, CA

Civil principal in charge for phased reconfiguration, expansion, and modernization to a southern U.S. port of entry, considered to be the busiest in the world. The project includes the full replacement of all current inspection buildings and site facilities, and expanding the number of inspection lanes, booths, and support facilities, all while maintaining 24/7 operations of the facility. MKA's civil team's effort includes leading the design team's overall assessment and analysis of site sustainability issues, as the project is targeting LEED Platinum. The effort includes "right sizing" the site work, leveraging landscape areas for habitat and stormwater, and identifying better water, waste, and materials resource management opportunities. A 1.5-million-liter (400,000-gallon) rainwater reclamation system is part of the water management plan for the facility; when combined with planned on-site sewage treatment, the facility will be "net zero" for all non-potable water demands. In addition, the project is zero discharge for stormwater. MKA also participated in master planning of the overall site and developed complex phasing and staging plans for the project's construction.

Peoria Complete Streets Master Plan, Peoria, IL

Civil principal in charge for 57 city blocks undergoing a street diet and public space upgrade. MKA focused on inserting low-impact design (LID) interventions into the renovated street-side public spaces. These insertions take the runoff generated by these streets off of the city's combined sewer system, and make a substantial contribution to the city's CSO reduction targets.

Elliott Bay Central Seawall, Seattle, WA

Civil managing principal for replacement of 1,128 linear meters (3,700 linear feet) of derelict seawall and abutting city street, utilities, and public spaces, with MKA managing the design of all public-realm and habitat restoration elements into the seawall replacement engineering and its interface with the long-term framework plan for Seattle's viaduct-free waterfront. MKA designed 1,128 linear meters (3,700 linear feet) of light penetrating sidewalk to bring natural light into the salmon migration corridor below the new cantilevered sidewalk. Additional civil site improvements include a new habitat beach and temporary and permanent pedestrian amenities behind the seawall.

India Basin Waterfront Park Concept Design, San Francisco, CA

Civil managing principal for concept design for a 2.43-hectare (6-acre) waterfront park with pedestrian and bike trails. MKA's strategic water planning approach is targeting a net-zero water for the park's irrigation and toilet flushing needs. The civil design included consideration for anticipated sea level rise from both a "planning ahead" and future, adaptive management point of view.

Philipp Sieber, PE

Construction Administration

Philipp Sieber is a senior project manager with more than 25 years of experience in the environmental and civil engineering field. He specializes in program, project and construction management of projects in both the public and private sectors, and has experience in project scheduling, cost estimating and cost control; contract management; environmental (multimedia) and social due-diligence; environmental investigations and remediation; environmental permitting; environmental management systems; stormwater management; and homeland security.

Since 2014 Philipp has been serving DPMC as the program manager for a contract providing design and construction management services for the demolition of residential properties as part of the State's Blue Acres program (Term contract TC-008). He also served NJDEP as part of a team performing environmental assessments of homes located throughout the State of New Jersey that were affected by Hurricane Sandy (NJDEP CDGB-DR Program).

Finally, Philipp is a champion of quality serving as the Local Quality Area Manager for the AECOM Clifton, New Jersey, office since 2010; performing quality audits on over 500 projects since; and, reviewing hundreds of deliverables for quality purposes.

State of NJ Department of Treasury-DPMC, Demolition Consultant (TC-008), NJ

Program manager for contract providing design and construction management services for the demolition of residential properties as part of the State's Blue Acres program. For each work order our scope of work includes performing an asbestos investigation; preparing plans and specifications for each contractor's bid package (6 to 12 dwellings included in each package); reviewing bids and participating in pre- and post-bid meetings; and reviewing and approving submittals, invoices and change orders during demolition. Over 80 dwellings have been demolished to date under this program since 2014.

Public Service Electric and Gas (PSE&G), Resource Recovery and Environmental Compliance, NJ

Program manager of resource recovery and environmental compliance project from 2011 through 2016. Managed this multi-million dollar program consisting of providing staff resources (10 to 30 staff) for waste management and environmental compliance support of multi-site electrical infrastructure rehabilitation and reinforcement construction projects throughout the State of New Jersey. Included providing scheduling and field inspection services (including overseeing contractors and reviewing contractor invoices) for over 1,000 construction projects; and performing close to 2,000 environmental compliance inspections. Program also required ensuring staff had necessary continuous health and safety training and preparing highly detailed monthly cost accruals and invoices.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 25+ years of experience
- ✓ Relevant resiliency experience:
  - manage demolition consultant program through DPMC — Blue Acres program
  - coordinated team of environmental assessors supporting NJDEP CDGB-DR program post-Hurricane Sandy.
- ✓ Expert in project management, soil erosion and sediment control and stormwater quality management

Philipp Sieber, PE, *cont.*

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Education
MS, International Business, University of Colorado, 2002
MBA, Business Administration, University of Colorado, 2002
MS, Civil Engineering, Colorado State University, 1991
BS, Civil Engineering, Universidad Metropolitana, 1988

Registration
Professional Engineer, Colorado

Affiliations
Former co-chair of the Colorado Nonpoint Source Task Force (CNPSTF), an advisory and work group assisting the Water Quality Control Commission with Colorado's nonpoint source program. Comprised of 25 members representing federal and state government agencies, as well as various interest groups
Former member of the Colorado Association of Storm water and Floodplain Managers (CASFM) Storm water Quality Committee

NJDEP, CDGB-DR Program
Project Coordinator for AECOM Clifton office team supporting the program that consists of environmental assessments of over 2,000 homes located throughout the State of New Jersey that were affected by Hurricane Sandy.

Confidential Client, Consequence Management, New York State
Part of a team developing consequence management plans for a chemical, biological or radiological terrorist attack at a transportation facility. Primarily responsible for identifying the facility's physical characteristics (ventilation systems, construction materials, etc.); and developing a GIS system for the facility. Also participated in the writing of plans for Incident Management; Waste Management; Health and Safety; Characterization and Clearance Sampling; and Remedial Action.

Hess, Marcellus Shale, PA
Construction manager for the construction of three well pads in northeast Pennsylvania for the Marcellus Shale development. Included review of plans and specifications, daily oversight of contractor during the construction phase, and providing engineering support as needed.

PSE&G, Susquehanna-Roseland, NJ
Prepared a Stormwater Pollution Prevention Plan for the Susquehanna-Roseland transmission line project in compliance with the NJPDES 5G3 Construction Activity General Permit.

Lockheed Martin Astronautics (LMA), Stormwater Management, CO
Project Manager for the execution of an erosion control study and preparation of an erosion control manual for the LMA Waterton Canyon facility, oversight of construction of erosion control features, and execution of a TMDL study. Included provided training on erosion and sediment control Best Management Practices to LMA plant staff.

The Jack Johnson Company, Stormwater Management, ID
Project Manager for the execution of a stormwater management plan, including erosion and sediment control and storm water quality management best management practices for the development of a new ski resort located in Idaho.

United States Air Force, Stormwater Management, WY
Designed surface water control features, including hydrology, culverts, channels, and erosion control for a landfill closure project within the F.E. Warren AFB.

Continental Airlines, Stormwater Management, CO
Project manager for the execution of a stormwater management plan for Continental Airlines facilities at Denver International Airport.

Edward J. Schmeltz, PE, D.CE

Marine/Coastal Engineering

Ed Schmeltz is a principal coastal engineer with more than 40 years of experience in the management, planning and design of coastal facilities. He has extensive experience in the development of marine projects at a wide range of locations having worked in more than 30 countries around the world.

Ed's projects include shore protection, dune construction, beach restoration, beach erosion and control and coastal structures for storm protection. He has extensive experience in the evaluation of the financial and technical viability of facilities in addition to an understanding of site conditions, design, construction and regulatory requirements associated with resilient structures.

He is currently the President of the Board of Governors of ASCE's Academy of Coastal, Ocean, Port and Navigation Engineers and has the distinction of being the only individual who holds all four Diplomate certifications in the Academy.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 40+ years of coastal engineering experience
- ✓ Extensive experience with design of waterfront protection
- ✓ Diplomate of Coastal Engineering
- ✓ President of ASCE Coastal Engineering Academy

Montauk Point Shoreline Stabilization, NY

Project officer for the concept development and detailed design of shore protection to defend the lighthouse at Montauk Point from severe coastal erosion.

NYCDOT, Reconstruction of Whitehall Ferry Terminal, NY

Project officer responsible for the management and coordination of an $83 million Ferry Terminal in Lower Manhattan. A fire destroyed a large portion of the terminal in September of 1991 and the project was to restore the facility to full operation.

Long Beach Reconnaissance Study, East Rockaway Inlet to Jones Inlet, NY

Project officer for a reconnaissance level study to identify and evaluate a possible solution to ongoing erosion problems along a 9 mile beachfront between the inlets to minimize overtopping and reduce inundation losses and wave damage on local residences.

Hudson River Park Trust, NY

Project officer responsible for the design and/or construction management of 6 segments of the park along the Manhattan shoreline of the Hudson River.

Brooklyn Bridge Park, NY

Technical reviews of designs for the structures along the waterfront of the park.

Indian River Inlet, DE

Project manager responsible for the final design, recommendations, plans, cost estimates, and specifications for reconstructing the north jetty. Analyzed effect of jetty construction on erosion and sediment transport phenomena. Evaluated erosion and deposition rates in and around the inlet.

Edward J. Schmeltz, PE, D.CE, *cont.*

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Education
Post Graduate work in Coastal Engineering, University of Florida
MECE, specializing in Coastal Engineering, Texas A&M University, 1972
BS, Mechanical Engineering, New Jersey Institute of Technology, 1971

Registration
Professional Engineer, New Jersey # GE34954
Also NY, CT, TX

Affiliations
American Society of Civil Engineers, Fellow
Society of American Military Engineers, Fellow
Moles
Permanent International Association of Navigation Congresses; Chairman CoCom; VP, Western Hemisphere
National Society of Professional Engineers
New York Society of Professional Engineers
COPRI, Founding Member
Academy of Coastal, Ocean, Port & Navigation Engineers, President

Jones Inlet, NY

Project manager for the feasibility study and conceptual design for a new west jetty at the inlet. Evaluated the installation of a bypassing plant to reduce erosion of downcast beaches and to stabilize navigation channel and minimize maintenance dredging at the inlet.

Barnegat Inlet, NJ

Project manager analyzed monthly and annual longshore transport rates at the site, to evaluate a planned sediment-bypassing plant. Analyzed the effects of a sediment-bypassing plant on sedimentation rates and patterns in the inlet. Evaluated short- and long-term impact on beach erosion/accretion and environmental assessments.

Manasquan Inlet Sedimentation Study, NJ

Project manager prepared alternative studies to stabilize downdrift beaches in the vicinity of the inlet via bypassing 300,000 cubic yards of material annually.

Open End Contract with the NY COE District

Project manager conducted coastal, economic, environmental, flood control, navigation, and hydraulic studies at various locations within the District.

Liberty State Park, Jersey City, NJ

Principal coastal engineer developed final design, plans, specifications, and cost estimates for approximately 5000 feet of revetments and retaining structures in New York Harbor. The 140-acre landfill was developed as a recreational area.

Coastal and Riverine Flooding Study, Long Island, NY

Project manager conducted coastal and riverine flooding study for 41 communities on Long Island Sound. Evaluated 10-, 50-, 100-, and 500-year floods. Used statistical analyses of historic tide gauge records and numerical modeling of estuarine and riverine flows.

Nantasket Beach Nourishment Project, MA

Project manager provided the State of Massachusetts Disaster Recovery Team with a technical evaluation of a design for a stabilization program at Nantasket Beach. Improvements included the use of 150,000 cubic yards of material to build a recreational beach and artificial dunes to protect inland areas from high storm tides.

Protective Structures Rehabilitation, MA

Project manager designed rehabilitation plans for 17 seawalls, revetments, and breakwaters destroyed as a result of severe winter storms, including evaluations of the effectiveness of existing structures and upgrading where appropriate. Structures were intended to improve resiliency of local communities to future storm events.

Alan F. Blumberg, PhD

Coastal Modeling

Alan F. Blumberg is George Meade Bond Professor of Ocean Engineering, and Director of The Davidson Laboratory at Stevens Institute of Technology. The main focus of his work is in urban oceanography. He studies the interaction between coastal waters and the adjoining urban environment and the interaction between the urban environment and the adjoining coastal waters. A large part of his work is in the creation of ocean observing and forecasting systems which are used for environmental studies, surface vessel operations, and for securing the future safety and sustainability of urban coastal regions. His research makes use of numerical models, laboratory experiments and field measurements. Long-term research interests address new perspectives on the evolution of urban-environment interactions to create sustainable and resilient 21st century coastal city regions.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ World-renowned oceanographer and innovator of predictive modeling
- ✓ George Meade Bond Professor of Ocean Engineering, and Director of The Davidson Laboratory at Stevens Institute of Technology in Hoboken
- ✓ Involved with observing and forecasting storm surges in the New York and New Jersey harbors for over ten years

Dr. Blumberg is presently leading several major studies to predict and assess storm flooding events in New York and New Jersey. He is working with the NY City Mayor's office on the effects of sea level rise on coastal flooding, with the NJ Governor's Office on state-wide storm surge reduction alternatives and with NASA and NOAA assessing impacts from storms of the future. He worked in every major estuary in the United States and many coastal environments around the world including the North West Approaches, and the coastal waters offshore of Norway and around the island of Oahu.

Dr. Blumberg currently serves as a member UCAR's UCACN, a body of scientists, practitioners and stakeholders who provide advice to the National Weather Service thorough its National Centers for Environmental Prediction on all aspects of its operation and planning and is a member of the New York City Panel on Climate Change. He has served on the U.S. Environmental Protection Agency's (EPA) Science Advisory Board where an evaluation was conducted of the complex scientific and technical issues that affect the causes, location, magnitude and duration of the hypoxic zone in the Northern Gulf of Mexico. He was appointed in 2003 to the Ocean Modeling Review Panel that was commissioned by the NOAA Science Advisory Board to review the current ocean science and technology operational prediction capacity and capability that exist within NOAA's National Centers for Environmental Prediction. He serves periodically as a member of the California Bay/Delta Authority's Interagency Ecological Program Science Advisory Group.

Dr. Blumberg is the recipient of the 2001 American Society of Civil Engineers (ASCE) Karl Emil Hilgard Hydraulic Prize and the 2007 Denny Medal from the Institute of Marine Engineering, Science and Technology. In 2013 he was elected a Fellow of the American Meteorological Society and in 2006 he was elected a Fellow of the ASCE. He serves as a member of the organizing committee of ASCE's prestigious biannual Estuarine and Coastal Modeling Conference and was an associate editor of their leading journal, the Journal of Hydraulic Engineering. Dr. Blumberg is also active with the Coastal and Estuarine Research Federation (CERF) as past Associate Editor of Estuaries and through frequent presentations at CERF conferences. He delivered the opening presentation at

Alan F. Blumberg, PhD, *cont.*

Firm
Stevens Institute of Technology

Education
MA honoris causa, , Engineering, Stevens Institute of Technology, 2011
Post Doctoral, Geophysical Fluid Dynamics, Princeton University, 1977
PhD, Earth and Planetary Sciences, The Johns Hopkins University, 1976
MA, Earth and Planetary Sciences, The Johns Hopkins University, 1973
BS, Physics, Fairleigh Dickinson University, 1970

Affiliations
Visiting Lecturer, Harvard Graduate School of Design, 2016
Fellow, American Meteorological Society, 2013
Fellow, American Society of Civil Engineers, 2006
2007 Denny Medal, Institute of Marine Engineering, Science and Technology
2001 Karl Emil Hilgard Hydraulic Prize, American Society of Civil Engineers
Member, External Advisory Committee, CCNY Earth System Science & Environmental Engineering Program, 2010 to present

the CERF 2003 Conference. His work on hurricane intensity reduction was featured in a National Geographic Special in 2008. Dr. Blumberg is often called upon by the media to comment on current science related events and he has been featured in The New York Times, The Record, USAToday, on WCBS News Radio and television stations CNBC, WCBS, CN8 and NJN.

Recent relevant experience includes:

- Gowanus Canal and Newtown Creek, CSO Peer Review Team, Review of Modeling Activities in connection with CSO Long Term Control Planning and Superfund Work.
- Lower Passaic River Restoration Project, Passaic, NJ - Remove or cap contaminated sediment from the Passaic River. Provided independent review, comment and recommendations on this project.
- The Interagency Ecological Program, San Francisco, CA - CALFED Science Program. Comprehensive overview of hydrodynamic and coupled physical-biological modeling in the San Francisco estuary.
- Consortium for Climate Risk in the Urban Northeast: Interactions between Storm Surge and Sea Level Rise - design of effective approaches to adaptation to coastal flooding associated with storm surges, based on research in two cities, NYC and Boston.
- Inundation Hazard Assessment for New York City from Hurricane Storm Surge, Rainfall and Climate – A technical study of the effects of sea level rise on coastal flooding in New York City.
- Flood Adaptation Strategies for the NJ Hudson River Waterfront "Hoboken, Jersey City, Weehawken and Bayonne" - Develop and test several options for adapting the region's urban coasts to flooding and sea level rise.
- Technical Assistance for RBD Hoboken - assist NJDEP selected contractor to perform coastal storm surge model validation and provide written comments and suggestions based on project progress. m
- Storm Surge Reduction Alternatives for Barnegat Bay – quantify the effectiveness of specific short-term and long-term flood protection measures.

George Peters

Coastal and Riverine Management

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 20+ years of experience in flood risk management
- ✓ Expert in flood resilience, rivers and coasts
- ✓ PM and subject matter expert in flood protection works worldwide

George Peters has more than 20 years of experience in the design of dikes, dams, structures and flood risk management projects. Both as project manager and expert he has been involved in construction schemes and flood protection works along the rivers Waal and Meuse in the Netherlands and abroad. In his secondments to the Dutch Ministry of Public Works he designed large scale disposal sites for contaminated dregding materials in the Hollands Diep and Twenthe Canal. George acted team leader in Singapore for design studies on barriers and dams on the northern side of Singapore. Between 2009 and 2011 George worked in Israel as team leader on the feasibility study for the construction of a 400 million euro dam in the Dead Sea, taken into account complex ground conditions and all seismic issues. Currently George is involved in the development of a coastal protection strategy for the Tacloban and Palo area in the Philippines. As team leader George heads a 7-party international consortium, developing ICZM strategies, providing technical assistance, transfer of knowledge to the devastated areas after typhoon Hayian. George's high levels of energy, communication skills, project track record and strong result-orientation makes him the right person to ensure that both technical and process components of projects are implemented effectively and efficiently.

Coastal Seletar Reservoir Barrier Scheme, Singapore

Team leader during fulltime secondment with Singaporean consulting firm CPG for the feasibility, detailed design and preparation of tender documents for dams on the Northern side of Singapore. Dams are part of larger reservoir scheme. Major part of the works involves besides the specialist input on hydraulic aspects (design dam, revetments, dredging, closure analysis etc.) the coordination and quality control on the overall design of the dams.

FLORIS (VNK), The Netherlands

Project Director for Flood Risk in the Netherlands (VNK2); analysing current flood risk in the Netherlands. By using an innovative method, flood probability is being linked to the consequences of flooding expressed in terms of economic damage and potential casualties. The insights produced by the project will help authorities take more targeted, cost-effective measures to protect the Netherlands from flooding. The project is an initiative of the Ministry of Infrastructure and the Environment, the Association of Regional Water Authorities and the Association of Provincial Authorities.

Flood Alleviation Scheme Fermoy, Fermoy, Ireland

Flood defence expert and project manager on the consultancy works for the flood relief scheme in the Irish town of Fermoy, for detailed design, preparation of contract documents, assistance to client during tender process and contract management at construction stage. Acted as lead partner to client and managed joint venture with our local partners T.J.O'Connor & Associates and Jacobs. Works involved the co-ordination of site investigations, preparation of preliminary and detailed design, stakeholder

George Peters, *cont.*

Firm
Royal HaskoningDHV

Education
MSc, Civil and Geotechnical Engineering, University of Wales, College of Cardiff, United Kingdom, 1994
BSc, Civil Engineering, Den Bosch Polytechnic, The Netherlands, 1993

Publications
2009 "Dutch diking expertise protects Olympic city 2010", Paper & Presentation at the 2009 Conference Association of State Floodplain Managers (ASFPM)Green works to Reduce flood Losses June 7-12 2009 Orlando Florida.
2007 "OPW Flood Hazard Mapping Website", Key note paper for the Irish Hydrology Seminar 2007 in Tullamore Ireland, focussing on the development of a web-based GIS database for the presentation of historic flood event information in Ireland, part of OPW's programme under the EU Directive.

involvement, drafting of technical contract documents, and assistance in the process of pre-qualification and selection of contractors. Flood defence construction works on the north side of town have been completed end of 2013; works on the south side expected to be completed end of 2014.

Flood Defence for the City of Richmond, Steveston Richmond, Canada.
Flood defence expert for the preparation of a long term strategy for the flood protection for Steveston in the municipality of the City of Richmond. The urban and business areas around Steveston suffer from flooding, which will in fact worsen due to the effects of climate change. Increased frequency and magnitude of storms combined with pressure from development drove this study. Project includes identification of options, hydraulic and civil design and financial assessments based on life cycle assessments. Together with partner Delcan Vancouver involved in stakeholder consultation.

Flood Management Policies and Defence Structures, Vancouver, Canada.
Expert flood management in a project in which the impact of new provincial guidelines on Climate Change Adaptation Guidelines for Sea Dikes, Coastal Floodplain Mapping Guidelines and Seismic Guidelines for Dikes, have been investigated for the Lower Mainland of British Columbia. Delcan and DHV have been commissioned to prepare a study quantifying impacts of these new guidelines for 220km of flood defences.

Flood Directive and Flood Risk Management (RMBP), Beijing, China.
EU expert in flood directive and flood risk management within the EU-China River Basin Management Program (RMBP). This program was set up to exchange knowledge on Integrated River Basin Management between EU and China, with specific focus on the experience gained from development, adoption, implementation of the EU Water Framework Directive (WFD) and China's No.1 document.

Post Project Evaluation (PPE), Beijing, China
EU expert in quality assurance team for the Post Project Evaluation (PPE) Project within the EU-China River Basin Management Programme (RMBP). The Quality Assurance Team was set up to assist the Chinese Ministry of Water and the RBMP Technical Advisory Team assuring the quality of their research study.

Rehabilitation of the Markermeer Dyke, Edam-Amsterdam, The Netherlands
Team leader for design and engineering for 20km of flood defences (construction costs € 200 million). The urban and rural areas around Volendam and Durgerdam that need to be protected are of cultural heritage and significant environmental value. Balanced solutions had to be found, taking into account the difficult ground conditions (soft clays). Work involves besides the coordination and technical input also contributions during the preparation of Risk Assessments, ESIA, Site Investigations and Public Consultation.

Josh Sawislak, AICP

Compliance

Josh Sawislak is the global director of resilience at AECOM where he leads the firm's global climate adaptation and disaster resilience strategy. Working directly with AECOM clients and the firm's experts across all sectors, business lines, and geographies, Josh drives resilient strategies to prepare communities and companies for impacts from extreme weather and other threats. He most recently served in the Obama Administration at the White House and the President's Hurricane Sandy Rebuilding Task Force, leading national efforts on sustainability, climate adaptation, and resilience policy as well as working with cities, states, and foreign governments on project development and strategy. He also served as the senior advisor for infrastructure resilience to the HUD Secretary.

Josh is a subject matter expert for the Rockefeller Foundation's resilience workshops in support of HUD's National Disaster Resilience Competition and for the Rockefeller Global Resilience Academy (GRA) and 100 Resilient Cities program. He is currently supporting AECOM's work on resilience projects in New Jersey, New York, Florida, Virginia, California, Washington, Texas, and Hawaii.

He serves as the lead for the urban resilience theme within the ARISE private sector partnership with the UN Agency for Disaster Risk Reduction (UNISDR). He is a frequent international speaker and writer on the development, funding, and policy for resilient infrastructure in the US and globally. He has broad experience on both the public and private sector sides of infrastructure development, resilience, and sustainability.

President's Hurricane Sandy Rebuilding Task Force, NJ/NY/CT and Washington DC

Senior advisor to the Cabinet officials and senior White House members of the President's Hurricane Sandy Rebuilding Task Force. Worked closely with members of Congress, governors, mayors, and senior federal, state, local, and tribal officials on plans for $50 billion recovery efforts in New Jersey, New York, and other states impacted by Hurricane Sandy. Principal author of Infrastructure chapter of the Task Force's Strategy Report to the President. Also developed new federal infrastructure resilience investment guidelines for Hurricane Sandy and future federal infrastructure spending.

White House Council on Environmental Quality, Associate Director for Climate Adaptation and Resilience, Washington, DC

Led the climate adaptation and resilience policy team at the White House Council on Environmental Quality (CEQ). This role included advising the President and senior White House staff on issues related to preparing the nation for the impacts of climate change and international cooperation on climate adaptation. Also implemented the recommendations of a Presidential task force of Governors, mayors, tribal leaders, and county officials on climate preparedness and resilience. Led negotiations on clearance of a new policy (EO 13690) on flood risk management standards for all federal investments and supported the new executive order on sustainability and carbon reduction (EO 13693). Responsible for international climate policy issues related to the planned

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 30 years of experience
- ✓ Served on the President's Hurricane Sandy Rebuilding Task Force
- ✓ Senior advisor for infrastructure resilience to the HUD Secretary
- ✓ Extensive resiliency experience:
  - Development of RBD program
  - Coordination of the Hurricane Sandy recovery in NJ, NY, and CT
  - Federal policy for resilient rebuilding and flood risk management
  - HUD CDBG-DR rules and requirements
  - FEMA Stafford Act programs

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Education
Certificate, Infrastructure Development Harvard Kennedy School, 2008
BA, Political Science, The George Washington University, 1986

Registration
Certified Planner (AICP), Member No. 016168

Affiliations
National Institute for Coastal and Harbor Infrastructure, Board Member
Evacuteer.org, Board Member
American Planning Association, Member
UNISDR ARISE, Global lead for urban resilience strategy theme

discussions of adaptation at the 21st Conference of Parties (COP-21) in Paris, planning for the World Conservation Congress (WCC) to be held in Hawaii in 2016, the Sendia Framework on Disaster Risk Reduction, and the climate adaptation partnership at the subnational (city) level with China.

U.S. Department of Housing and Urban Development, Senior Advisor to the Secretary for Infrastructure Resilience, Washington, DC

Advised the HUD Secretary and senior department officials on issues related to resilience efforts and disaster recovery as part of national programs for resilience, energy efficiency, and smart cities and specific disasters such as Hurricane Sandy. Senior HUD member of several White House policy councils and task forces on infrastructure development and finance, resilience, climate adaptation, and national security. Worked with Members of Congress and staff on funding and progress issues related to disaster recovery and infrastructure development such as the CDBG-DR program, NFIP, and the Stafford Act.

Rockefeller Foundation, 100 Resilient Cities and Global Resilience Academies

Subject matter expert on general infrastructure resilience, tidal and riverine flood management issues, infrastructure interdependency, federal rules and funding, public-private partnerships and alternative funding strategies, and resilience planning and policy for several Rockefeller Foundation funded programs, including 100 Resilient Cities, Global Resilience Academies, and the National Disaster Resilience Competition academies. Supporting AECOM's role as the strategy partner for 30 of the 100 Resilient Cities in the program, including Greater Miami and the Beaches, Honolulu, Seattle.

New York City Economic Development Corporation, Lower Manhattan Coastal Resiliency (LMCR), New York, NY

Senior advisor on the long-term concept and funding strategy for this Rebuild by Design project in NYC. AECOM is leading the feasibility study and conceptual design of the near term solution for the Lower Manhattan section of NYC's coastal resilience program funded by the HUD CDBG-DR program. Working with a team of planners, economists, and urban designers on a longer term strategy to protect Manhattan into the next century. The team will look not only at concepts, but the land use and development decisions that will be necessary to fund these future solutions.

FEMA, Mitigation Framework Leadership Group, Washington, DC

Member of the federal Mitigation Framework Leadership Group (MitFLG). The MitFLG is a national coordinating structure established to coordinate mitigation efforts across the Federal government. In particular, the MitFLG focuses on integrating federal efforts to deliver the mitigation core capabilities in the National Mitigation Framework (NMF). The MitFLG also assesses the effectiveness of mitigation capabilities as they are developed and deployed across the nation.

Shohei Shigematsu

Landscape Architecture/Urban Design

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ Leader of 2013 the HUD Rebuild by Design competition winning entry
- ✓ Leader of the Resist, Delay, Store, Discharge: A comprehensive Urban Water Strategy study

Sho Shigematsu joined the Office for Metropolitan Architecture in Rotterdam in 1998. He has 20 years of experience and has overseen many masterplanning projects worldwide, including the Baltic Pearl Masterplan, St. Petersburg, Russia; White City London Masterplan, London, UK; UN City, New York, New York; Isola Parodi, Genoa, Italy; Almere Masterplan, Almere, The Netherlands; Rotterdam Central Station, Rotterdam, The Netherlands; JTC Masterplan, Singapore; Breda Masterplan, Breda, The Netherlands and the Zurich Stadium, Urban Development, Zurich, Switzerland.

Since 2006, Sho has had full responsibility for the design of all OMA*AMO New York projects as a partner and director of the New York office. Working with an emphasis on maximum specificity and process-oriented design, Sho provides design leadership and direction. His more recent masterplanning projects in the Americas include a waterfront regeneration project in Toronto; a Food Port in Louisiana, Kentucky; and a city center masterplan for Bogota in Columbia. In 2013, he led the winning entry for the HUD Rebuild by Design Hoboken, New Jersey competition phase.

Sho has extensive experience in public and client presentations, including presenting concepts to the president of Colombia, for the Bogota CAD masterplan. Shohei Shigematsu speaks regularly on the research and ideas that shape his work. His recent lectures include conferences hosted by TED, Wired Japan and universities throughout the world.

Resist, Delay, Store, Discharge: A comprehensive Urban Water Strategy

Partner in charge responsible for directing the project team, and was the design team representatives at all client and stakeholder presentations, both public and private. He presented the project to various stakeholder bodies to facilitate funding, municipal approval and public engagement, this included presentations to the Governor Office, the Mayor, community meetings and New Jersey Department of Environmental Protection (NJDEP). The Resist, Delay, Store, Discharge: A comprehensive Urban Water Strategy study furthers the HUD Rebuild by Design competition proposal, through an investigative design theory and proposal for a comprehensive urban water strategy. The proposal puts forward the deployment of programmed hard infrastructure and soft landscape for coastal defense (resist); policy recommendations, guidelines, and urban infrastructure to slow rainwater runoff (delay); a circuit of interconnected green infrastructure to store and direct excess rainwater (store); and water pumps and alternative routes to support drainage (discharge).

HUD Rebuild By Design

Partner in charge for OMA's competition winning design team, working in consultation with water management and engineering leads Royal Haskoning DHV, landscape and land use planners Balmori and economic consultants HR&A. Sho was the design team representatives at all Client and stakeholder presentations both public and private.

Shohei Shigematsu, *cont.*

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OMA

Education
Postgraduate Laboratory of Architecture, The Berlage Institute, 1997-98
Master of Architecture, Division of Engineering, Graduate School, Kyushu University, 1997
Department of Architecture, Faculty of Engineering, Kyushu University, 1992-96

Affiliations
Lectures widely
Design critic at the Harvard Graduate School of Design: recently conducted a research studio entitled Alimentary Design, investigating the intersection of food, architecture and urbanism
Visiting critic at Cornell University, College of Architecture, Art and Planning
Visiting critic at Kyoto University of Art and Design

He delivered design presentations to facilitate funding, municipal approval and public engagement, to the various stakeholder groups including: the Governor Office, the Mayor, community meetings and New jersey Department of Environmental Protection (NJDEP). The competition winning design entry

Faena District, Miami Beach, FL

Parner in charge for the Faena District, a 90,922gsf three-building development that stretches three blocks between Indian Creek and the Atlantic beachfront along Collins Avenue. An arts center, retail bazaar and car park have three distinct functions linked, by a sequence of public domains including a plaza, courtyard and marina dock.

East Harbor masterplan, Toronto

Partner in charge for the masterplan for East Harbor, a critical new employment district, well connected to downtown Toronto via efficient infrastructure. East Harbor will offer a range of different typologies of office space, supplemented with retail, entertainment, and other amenities for those employed within the district, as well as its visitors. The built environment is well integrated with and complimented by a variety of open, public spaces and landscaped parks. The East Harbor masterplan is organized into a series of zones , which create a logical and seamless flow through the site. The main retail zone is linked to the large transit hub and feeds into the public Central Plaza. Radiating from this central space, the organization of the plan establishes a series of key pedestrian connections between the neighbouring context and the central Transit Hub.

South Beach ACE, Miami Beach, Fl

Partner in charge for the masterplan that reintegrates the Convention Center into Miami Beach through a series of ingenious yet simple moves: The new green band that surrounds the Convention Center restores an important buffer that was lost with the building's last expansion. In its initial incarnations, a wide area of green extended along Washington Avenue to the east and along the Canal to the north. Our plan creates a new green buffer around the south, west and east sides of the MBCC and a green promenade along Washington. This restores an important open space in Miami Beach that is simultaneously a great resource for the Convention Center. The site is transformed from an area dominated by asphalt into an oasis within Miami Beach. Today almost one-third of the site (16 acres) is surface parking, loading and roads, vs. just three acres of roads in our plan. Over 28 acres of publicly accessible open space integrates the entire convention center site into the rest of Miami Beach.

Bogota Centro Administrativo Nacional, Colombia

Partner in charge for the Bogotá Centro Administrativo Nacional (CAN), positioned as a new civic center, located at the midpoint of Calle 26 avenue, the city's main axis that has symbolically charted its growth from the historic downtown to the airport and the international gateway of Colombia.

Joseph Chapman

Flood Risk Management

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 28+ years of experience in flood mitigation project planning and design
- ✓ Expert in flood risk management: NJDEP and FEMA mapping and studies
- ✓ Resiliency experience, including: application of the UN Disaster Resilience Scorecard

Joe Chapman serves as AECOM's North American Technical Practice Leader for Flood and Natural Hazard Risk Management. He has over 28 years of experience in floodplain mapping, flood risk assessment and flood mitigation projects in support of federal, state and local agencies across North America and abroad. He served as principal in charge for AECOM's floodplain mapping efforts for NJDEP, including the completion of hydrologic and hydraulic modeling. Served as project director for 2 years for previous.

Joe provides high level subject matter expertise related to policy and modeling issues on AECOM's FEMA PTS contract.

FEMA Region III, Sea Level Rise/Climate Change Pilot Study, Maryland

Senior technical advisor for AECOM's pilot study on the Anacostia River in DC/MD to develop climate change-informed future conditions 1% annual chance floodplains along the Anacostia River. This pilot looked at both riverine and tidal areas in order to evaluate cost effective approaches to develop these flood hazard data sets.

NJDEP Risk MAP Floodplain Mapping Contract, New Jersey

Senior technical advisor supporting a range of work orders issued under this contract. Work Order 1 entailed, field survey for over 200 structures and 40 cross sections, LiDAR processing of approximately 700 square miles, H&H analysis for approximately 70 miles of stream, dam flood gate operation analysis, floodplain mapping, Flood Risk database, Flood Risk Map and Flood Risk Report efforts. The dam flood gate operation analysis entailed floodplain inundation mapping of three operational scenarios, each covering over 250 inundation iterations at 10 minute intervals. Datasets were used in a time series animation to demonstrate impacts of the operation downstream of the dam. The final product included a 3D animation of the dam and inundation associated with the dam operation.

FEMA Region II FIS IDIQ. Hunterdon, Mercer, and Morris Counties, New Jersey

Senior technical advisor for supporting NTHMC contract with FEMA Region II FIRM for update and database production tasks for Hunterdon, Mercer and Morris Counties, New Jersey—over 400 panels. The project involved redelineation, base map acquisition, database preparation, FIRM production, QA/QC for Hunterdon and Mercer Counties, FIS submittal for Hunterdon County, overseeing MIP uploads, and correspondence with NJDEP. Supported outreach meetings in coordination with NJDEP.

Charlotte-Mecklenburg Storm Water Services. UN Disaster Resilience Scorecard, Charlotte, NC

Project manager and lead in applying the UN Disaster Resilience Scorecard to the City of Charlotte, Mecklenburg County and 7 additional incorporated communities within the County. The Scorecard, developed by AECOM in partnership with IBM for the UNISDR, provides a tool to help identify strengths and weaknesses across city systems and

Joseph Chapman, *cont.*

Firm
AECOM

Education
BS, Civil Engineering, Clemson University, 1988

Registration
Professional Engineer, NC, VA
Certified Floodplain Manager

Affiliations
Association of State Floodplain Managers
National Association of Flood and Stormwater Management Agencies

pathways to increase resilience, attracting investment and reducing insurance risk. AECOM leveraged the ongoing work to update the County's multi-jurisdiction All Hazard Mitigation Plan which had compiled substantial data with which to readily respond to the questions within the Scorecard.

FEMA Production and Technical Services for the Risk MAP, HMTAP and Building Sciences Program. HQ, Regions I, III, IV, V, VI and VIII

Senior technical advisor providing ad-hoc technical support on issues related to flood risk management. Special projects include: providing technical support to the development of an issue paper on the use of two-dimensional models for FEMA flood hazard analysis, and an issue paper identifying the challenges associated with implementing Executive Order 13690 and the Federal Flood Risk Management.

NOAA Green Infrastructure Pilot Project, NOAA Office for Coastal Management

Project director and senior technical advisor for the application of innovative 2D modeling processes to cost effectively assess the potential flood reduction impacts of a range of green infrastructure alternatives. The study looked at current and future conditions based on climate change scenarios. The results are being utilized by NOAA to assess reductions in annualized flood losses to help support investment in green infrastructure.

FEMA Risk MAP Production & Technical Services

Nationwide senior project manager responsible for the oversight of over $10 million a year in riverine hydrologic and hydraulic modelling and mapping task orders. Also served as the LiDAR/Topographic Mapping Subject Matter Expert for the BakerAECOM team. Provided input and guidance during the development of Procedure Memorandum 61 as well as draft Procurement Guidance for Topographic Mapping projects. Provided technical and quality assurance guidance for the issuance of Task Orders for FY10 Risk MAP LiDAR acquisition projects in Region IV, VIII, and IX for the BakerAECOM team, including development of QA/QC procedures that meet FEMA and USGS requirements.

Ministry of Natural Resources and Forestry, Floodplain Mapping Advisory Services, Ontario, Canada

Provided technical input as part of AECOM's review of the existing provincial Technical Guide for River & Stream Systems - Flooding Hazard Limit, which currently establishes the minimum guideline for preparing hydrology models, hydraulic models, and associated floodplain mapping within Ontario. The review also included an assessment of new national guidelines developed by Public Safety Canada to assess how those new guidelines compared to the MNRF guidelines and also comparing to global best practices in other countries. Responsible for assessing the Canadian Guidelines relative to both US and Australian standards.

Bruce Richardson Lelong, PE

Structural Design

Bruce Lelong is a principal civil/structural engineer with 21 years of experience including 17 years designing flood protection systems, pumping stations, drainage structures, navigation locks, dams, water control and flood gates, and port facilities. Bruce managed and was the civil engineer of record for USACE LPV 111 and temporary structures engineer for LPV 146, which were both CMAR projects. He has extensive experience providing engineering support services during construction, including designs for temporary structures needed for construction, including braced excavations, cofferdams, access bridges, temporary platforms, shored pipeline crossings, pile loading test frames and formwork.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 20+ years of experience, 17 designing flood protection systems
- ✓ Extensive experience with USACE coastal protection projects
- ✓ Expert in levee and gate design and construction

US Army Corps of Engineers (USACE), Inner Harbor Navigation Canal Lock Replacement, New Orleans, LA

Supervising structural design engineers was responsible for designing the float-in concrete lock modules.

Coastal Protection and Restoration Authority, Houma Navigation Canal Lock and Floodgate Optimization Study, Terrebonne Parish, LA

Project manager/lead engineer was responsible for an alternatives comparison study to investigate a re-layout of the 50%-level design, completed in 2008, to accommodate phasing the project over 20 years and to modify the flood protection structures to be incorporated into the permanent flood protection system.

Broadmoor Construction Company, Coast Guard Command Center Mitered Floodgate, New Orleans, LA

Lead engineer was responsible for the design of a 42-foot wide mitered floodgate installed in the levee.

USACE, Houma Navigation Canal Lock and Floodgate, Terrebonne Parish, LA

Project manager/lead engineer oversaw a complex design project that included a 250-foot-wide steel flood gate and 110-foot-wide navigation lock gates. Preliminary engineering included a study of different gate types for the flood gate, including sector gate, barge gate, horizontally hinged gate, and lift gates.

USACE, Sebrings Mills Floodwall Segment, Middlesex, NJ

Structures department manager supervised the structural design of a pile-supported inverted T-wall segment with sluice-gated drainage penetrations.

USACE, LPV 103 Levee/Floodwall Improvement, New Orleans, LA

Structures department manager supervised the design of two steel mitered flood gates and flood protection improvements at Lake Terrace Drive and Rail Street on Lakeshore Drive.

Bruce Richardson Lelong, PE, *cont.*

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Education
BS, Civil Engineering, University of New Orleans, 1995
BA, History, Williams College, 1989

Registration
Professional Engineer, LA

Affiliations
American Society of Civil Engineers
American Institute of Steel Construction
American Concrete Institute

USACE, LPV 105 Levee/Floodwall Improvement, New Orleans, LA
Structures department manager supervised the design of flood protection improvements along Lake Pontchartrain over a 2-mile-stretch, which included levee upgrades, T-walls, I-walls, and a new sluice gate structure at the outfall of St. Charles Street pump station.

USACE, LPV 106 Levee/Floodwall Improvements, New Orleans, LA
Structures department manager supervised the designs of levee upgrades, I-walls, T-walls, and improvements to sluice gate structures at Jahncke and Citrus pump stations.

Coastal Protection and Restoration Authority, Falgout Canal Barge Gate Interim Complex, Terrebonne Parish, LA
Lead civil/structural engineer oversaw the peer review of a swinging steel barge flood gate.

Coastal Protection and Restoration Authority, Maurepas Freshwater Diversion Headworks, St. John the Baptist Parish, LA
Supervising structural engineering was responsible for the design of the sluice gate headworks structure in the Mississippi River levee.

Coastal Protection and Restoration Authority, Houma Navigation Canal Lock and Floodgate Optimization Study, Terrebonne Parish, LA
Project manager/lead engineer was responsible for an alternatives comparison study of retrofits to a swinging steel barge gate for a larger design head and to comply with U.S. Army Corps of Engineers' design criteria.

UACE, Algiers Canal 100-year Level Flood Protection Feasibility Study, Jefferson and Plaquemines Parishes, LA
Project engineer authored the report for the engineering investigation into alternatives for the 100-year level of flood protection where a state highway tunnel crossed under the flood protection line.

USACE, Post-Hurricane Katrina Emergency Repairs, Orleans Parish, LA
Lead independent technical reviewer was responsible for the structural designs for the emergency repairs to the flood protection system. Additional tasks included providing engineering support for the construction activities to breech repairs to floodwalls in New Orleans East.

US Army Corps of Engineers, East of Harvey Canal Floodwall, Jefferson Parish, LA
Project Engineer Supervised and performed structural design work for a proposed, mile-and-a-half long, pile supported, reinforced concrete, inverted T-floodwall and 18 steel, swing flood gates and an aluminum stop log gate closure.

Paul W. Moulton, PE

Mechanical/Electrical Engineering

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 40+ years of experience in Mechanical & Electrical Engineering
- ✓ Expert in standars & design of mechanical process and materials
- ✓ Specializes in water resources

Mr. Moulton is an associate vice president and senior technical leader in the North Mechanical Process Design Center and Process Mechanical Technical Practice Leader for North America. Responsible for overseeing standards, design of mechanical process and materials handling systems, and chemical storage and feed systems. He has more than 40 years of experience in civil and sanitary engineering, specializing in the design of treatment plants, pump stations, force mains, and odor control systems. Mr. Moulton has provided the design and layout of mechanical systems for numerous facilities, including site work and project coordination and management.

Passaic Valley Sewerage Commissioners, Nutrient Removal Evaluation and Cost Estimates for 11 Wastewater Treatment Plants, New Jersey Harbor

Mechanical engineer for a nutrients reduction cost estimation study on behalf of the New Jersey Harbor Dischargers Group, a consortium of authorities in northern New Jersey that collectively discharge 750 mgd of treated wastewater from 11 plants to New York-New Jersey Harbor.

Massachusetts Water Resources Authority, John J. Carroll Water Treatment Plant Design Management Support, Marlborough, Massachusetts.

Provided input to mechanical design for the addition of isolation valves and air break to connect the Wachusett Aqueduct extension pipeline to the finished water pipeline at the MWRA's 405-mgd water treatment plant.

US Army Corps of Engineers – Baltimore District, Dalecarlia and McMillan Water Treatment Plant Improvements, Washington, DC.

Lead mechanical process engineer for valve replacement projects at the water treatment plants Washington Aqueduct Division.

New York City Department of Environmental Protection, Croton Water Treatment Plant, Pump Stations, and Residuals Facility Design, New York, New York.

Provided technical review and advice for the design of the 290-mgd water filtration plant.

Blue Plains Wastewater Treatment Plant Filter Facility, Washington, DC

Lead mechanical process engineer for the replacement of two Filter Influent Pumps with 2-50 mgd Filter Influent Pumps.

Blue Plains Wastewater Treatment Plant Process & Service Water Systems Station, Washington, DC

Lead mechanical process engineer for the upgrade of the High and Low Pressure Reclaimed Final Effluent pumping systems and physical hydraulic modeling.

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John C. Volk, PE

Geotechnical Engineering

John Volk has more than 30 years of experience in geotechnical engineering involving the subsurface investigation, foundation design, retaining and earth structures design of numerous projects in New Jersey, Pennsylvania, Delaware, and New York. John has experience with ground improvement methods such as stone columns, wick drains, cement-soil mixing, reinforcedconcrete shear pins, high-strength geotextiles as base reinforcement, and reinforced slope and retaining wall design. He has extensive experience with soft ground applications involving staged-construction and instrumentation monitoring. He has been involved regionally and nationally in major projects such as the Woodrow Wilson Bridge Project in the Washington D.C. area ($2.5 billion project) and the New Orleans Levee Reconstruction projects.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 30+ years of experience in geotechnical engineering
- ✓ Expert in subsurface investigation, foundation design, retaining and earth structures design
- ✓ Geotechnical engineering for several levee design projects for USACE Hurricane Protection Office

U.S. Army Corps of Engineers (USACE) Hurricane Protection Office, Hurricane & Storm Damage Risk Reduction Reaches LPV 105-110, New Orleans, LA

Geotechnical engineer involved in assessing shear strength of subsurface soft clay soils for Levee reaches LPV 105 to 108. Shear strength was evaluated by CPT testing, UU triaxial testing of lab samples and vane shear testing. John was the Lead Geotechnical Engineer for 7.5 miles of levees (LPV 109.02a) of this $170M project in New Orleans East utilizing wick drains, highstrength geotextiles, and deep mixing methods for ground improvement. The existing levees were raised approximately four to seven feet with a protected side raise on virgin ground. The new levee construction required embankment construction in two stages to heights of 18 to 22 feet above existing grades of the tidal marsh. The raises were accomplished with the use of stability berms, wick drains and high-strength geotextiles. Soil-cement mixing (deep mixing) was utilized under the drainage structures and pump stations. The design methodology and challenges included: a SEEP /W finite-element seepage analysis in the design of the drainage blanket and wick drains; a fully instrumented test embankment with three wick drain spacing's (3 ft., 5 ft., and 7 ft.) to optimize the wick drain design; the slope stability analyses with highstrength geotextiles; site characterization of soft clays with triaxial shear UU testing, cone-penetrometer testing, and vane shear testing; and stability analyses of soil mixing panels under drainage structures. LPV 109.02b involved the raising of Interstate I-10 to allow for the levee raise.

USACE Hurricane Protection Office Engineering & Design of Levee Enlargement Reaeh, LPV 111, New Orleans, LA

Technical reviewer for the deep mixing methods (DMM) portion of the levees in LPV 111. DMM was utilized as ground improvement to support the levee raise for June 2011 completion. The DMM installation was the largest in North America. John also led the investigation of a land-side slope failure of the embankment after construction was complete.

John C. Volk, PE, *cont.*

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Education
MS, Civil (Geotechnical) Engineering, University of Delaware, 1984
BS, Civil Engineering, University of Delaware, 1983

Registration
Professional Engineer, New Jersey
Also NY, PA, DE, VA, OH, WI, IN, MD, LA, WV, CT, SC

Affiliations
American Society of Civil Engineers (ASCE)
American Society of Highway Engineers (ASHE)
International Society of Soil Mechanics and Foundation Engineering (ISSMFE)
Geosynthetic Institute (GSI)
Center for Geotechnical Practice & Research (CGPR)

Awards
2000 Geotechnical Engineer of the Year, Philadelphia Section, ASCE

Virginia DOT, Maryland State Highway and FHWA, Woodrow Wilson Bridge Reconstruction, Alexandria, VA

General engineering consultant responsible for directing and overseeing the section designers in ground improvement on approximately 3 miles of soft ground construction on the Route 1 and Telegraph Road Interchanges in Alexandria, Virginia and the I-295 Interchange in Oxon Hill, Maryland. Ground stabilization techniques that have been evaluated and utilized include: wick drains and surcharging, high-strength geotextile as base reinforcement, deep soil mixing methods, and lime cement columns and lightweight fills (foam concrete and EPS geofoam). Two test embankments, with a construction cost of $1.5 million, were constructed to evaluate some of these techniques. Extensive deep soil-cement column mixing (approx. $15 million) was performed in Virginia to expedite construction of embankments over soft subsoils. The Route 1 abutment involved use of 23,000 cy of geofoam. Extensive instrumentation was utilized to monitor the performance of the soft soils.

Atlantic City/Brigantine Connector Project, NJ

Geotechnical engineer responsible for geosynthetic-reinforced embankment design for 2 miles of highway. This $190 million design-build project involved the construction of embankments and MSE retaining walls (25 to 40 ft in height) over interbedded soft clays and sand alluvial deposits in the coastal plain. High-strength geotextiles (as base reinforcement) and wick drains were designed to reduce staging of the embankments and retaining walls. Investigation with CPT and test borings and two test embankments were part of the design program. The test embankments helped gain insight into consolidation rates of the various clay strata and eliminate wick drains south of the tunnel. Instrumentation data was analyzed to determine when surcharges could be removed.

USACE-Philadelphia District, Dredge Disposal Areas in New Jersey and Delaware

Senior geotechnical engineer responsible for reviewing dike stability analyses for dike raisings of existing dredge disposal facilities to accommodate dredge spoils during deepening of the Delaware River. Reviewed quarterly geotechnical instrumentation monitoring of dredge disposal facilities for inclinometers and piezometers, including Wilmington Harbor South Disposal Facility which is adjacent to the Port of Wilmington.

Christopher P. Venezia, LSRP

Environmental Engineering

Chris Venezia has managed numerous site investigation and remediation projects for clients with manufacturing, research and development, retail petroleum, bulk petroleum storage, and waterways/sediments sites. He has been project manager for the preparation of RCRA closure plans and implementation of RCRA closures for hazardous waste storage. Closure activities have included closure of an aboveground spent solvent tank, an underground spent solvent tank, and a drum storage area. He has also managed the development of RCRA Part A and B permits for hazardous waste storage at telecommunications research facilities, and the preparation of a preparedness, prevention, and contingency (PPC) plan for a research facility.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 30 years of experience in site remediation in NJ
- ✓ NJ Licensed Site Remediation Professional
- ✓ Expert in LSRP and NJDEP regulatory requirements

NJ TRANSIT, 2001 Tonnelle Avenue, North Bergen, NJ

Provided for LSRP services for NJ Transit property acquired for ARC Tunnel Construction. The project consisted of environmental construction oversight during remedial excavation and capping; soil and groundwater RI, including Laser Induced Fluorescence soil investigations; LNAPL Reporting: Receptor Evaluations; and RA post-excavation sampling in support of RIR and RAR submissions.

NJ TRANSIT, Trans Hudson Express Tunnel/Access to the Region's Core (ARC)

Provided senior technical and regulatory review of the documentation of oversight for NJ Transit during closure of ARC Commuter Rail Project. The project consisted of remedial excavation and capping of polychlorinated biphenyl (PCB) impacted soil and sediment within drainage swale on Amtrak a Northeast Corridor Substation. Submitted Linear Construction Initial Notice and Final Report.

NJ TRANSIT, 1801 Tonnelle Avenue, North Bergen, NJ

Provided senior technical and regulatory review for LSRP services for NJ Transit property acquired for ARC Tunnel Construction. The project consisted of conducting a PA/SI, environmental construction oversight during remedial excavation and capping to address historic fill, preparation of an RAR and deed notice to address historic fill in support of RAO.

Elizabeth Viaduct Linear Construction Report, Elizabeth, NJ

Providing senior technical and regulatory review of the development of a Linear Construction Report to document the remedial activities associated with the project.

Former Manufacturing Client, Remedial Design and Remedial Action, Branchburg, NJ

Project Manager and technical lead reviewer for LSRP submissions, remedial plans remedy implementation of bio-sparging in weathered bedrock . Within three months of implementation both the concentration of contaminants and the size of the plume had undergone significantly reduction, long-term O&M is necessary to meet cleanup criteria.

Christopher P. Venezia, LSRP , *cont.*

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Education
BS, Civil Engineering, New Jersey Institute of Technology, 1987
AAS, Civil Engineering, Union County College, 1985

Registration
Licensed Site Remediation Professional, New Jersey

Affiliations
Society of American Military Engineers

US General Services Administration, Remedial Design/Remediation, Hillsborough, NJ

Deputy project manager and senior technical reviewer for the remedial design. The first phase of the project consisted of developing remedial action work plans and plans and specifications for the bidding of remedial action activities for six residential properties and the oversight of remediation. The second phase of the project consisted of developing remedial action work plans and plans and specifications, permits for the Bidding of Remedial Action Activities.

Griffin Pipe, Pipe Products Facility, Florence, NJ

Manager for investigation, regulatory compliance, and demolition services for the pipe products facility since 2009. The facility is part of US Environmental Protection Agency's RCRA 2020 Corrective Action Universe and is regulated by EPA Region 2 and NJDEP. The facility has been used for industrial activities since circa 1857. The site was historically used for the manufacture of pipe, pipe fittings, fire hydrants, and other foundry related activities. The facility is located on a bend in the Delaware River in Florence Township. Manufacturing activities ceased in February 2009 triggering New Jersey's Industrial Site Recovery Act (ISRA) compliance in addition to ongoing permit obligations. The facility's stormwater; wastewater; spill prevention, control, and countermeasure; and RCRA permit and corrective action compliance are ongoing. Decommissioning, decontamination, and demolition activities have necessitated various modifications for current compliance and leading to closure. AECOM has been assisting the client manage various aspects of the facility closure and regulatory compliance while complying with New Jersey's ISRA requirements including Licensed Site Remediation Professional (LSRP) oversight and a multi-media site investigation.

Paper Products Company, Site Investigation/Remediation/Regulatory Compliance, NJ

Project manager/senior program manager/regulatory specialist for various sites under a task order contract. The New Jersey sites have addressed Industrial Site Recovery Act and the technical requirements for site remediation. Final remedies have included active remediation, deed notices, and classification exception area (CEA) components.

Confidential Client, Site Investigation/Remediation, Phillipsburg, NJ

Assisting the client with investigation and remediation of a greater than 340-acre property in western New Jersey with active manufacturing dating from the 1900s. More than 200 separate areas of concern (AOCs) related to soil have been identified. The site also includes free product on groundwater, chlorinated solvent contaminated groundwater, a former and an active landfill, ponds with contaminated sediments, and wetlands issues. An on-site mine has also been subject of investigation. The site receives regulatory oversight from various NJDEP programs, including the Bureau of Solid Waste, Brownfields Redevelopment, Water Allocation, Land Use, and others. EPA and Delaware River Basin Commission also provide regulatory oversight. AECOM has received variances from the Technical Requirements for Site Remediation, and is working closely with regulatory agencies to close-out this large site so that redevelopment can occur.

Sherri Albrecht, PWS

Permitting

Sherri Albrecht is a senior ecologist specializing in regulatory compliance, including: permitting under the Clean Water Act, State wetland, floodplain and coastal regulations, NEPA compliance, ecological evaluation and habitat characterization, and wetland delineation/restoration. She has experience with local approvals (municipal, county, regional) related to stormwater, erosion control, wetlands, zoning, etc. These services have been provided to federal, state and local agencies, as well as private commercial, industrial and utility clients, including recent services to NJDEP under the Rebuild by Design Meadowlands Project where she was involved with preparation of the NEPA EIS and identification of permit requirements.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 23 years of experience
- ✓ Extensive resiliency experience, including RBD Meadowlands
- ✓ Expert in New Jersey Land Use Permitting (Coastal, Flood Hazard, Wetlands) and USACE Permitting

NJDEP, Rebuild by Design Meadowlands, Meadowlands/Bergen County, NJ

Responsible lead author and/or technical review for coastal zone, minerals/energy, and water resources components of this comprehensive NEPA EIS for resiliency improvements along the Hackensack River. Also identified permit requirements for geotechnical investigations during conceptual design phase and as well as permits required for construction of the preferred alternative.

USACE-NYD, Passaic Tidal Coastal Storm Damage Reduction –General Reevaluation Study. Newark, Harrison and Kearny, Essex County NJ

Project manager and technical lead for the NEPA compliance aspect of this proposed project located in the midst of urban New Jersey. Oversaw preparation of an Environmental Assessment (EA) which included demonstration of compliance with Coastal Zone Management Rules and identification of permit requirements.

Passaic Valley Sewerage Commission (PVSC), Flood Protection, Newark, NJ

Provided review of permitting requirements for final design of floodwall; prepared application/obtained freshwater wetland permit from NJDEP DLUR for geotechnical borings to support floodwall detailed design. Oversaw wetland delineation and preparation of application to obtain NJDEP DLUR freshwater wetland permit for stormwater ditch maintenance.

NJDEP Land Use & Related Permitting

The following projects are representative of the numerous projects for which Sherri has successfully obtained NJDEP Land Use Permits through the Freshwater Wetland Protection Act, Flood Hazard Area Control Act and Coastal Permit Programs:

- **NJ American Water, Raritan Millstone Water Treatment Plant Flood Protection, Bridgewater Township.** NJDEP Individual Flood Hazard Area Permit, Freshwater Wetland Permit; Wetland Delineation. Threatened & Endangered Species habitat concerns.
- **Green Brook Flood Control Project - Various Segments and multiple permit applications, Somerset and Middlesex Counties.** NJDEP Bureau of Dam Safety

Sherri Albrecht, PWS, *cont.*

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Education
MA, Environmental Science, Montclair State University, 1996
BS, Biology, Minor Chemistry, Montclair State College, 1986

Registration
Professional Wetland Scientist (PWS) #2043

Affiliations
Society of Wetlands Scientists
Society for Ecological Restoration
Association of State Wetland Managers

and Flood Control. NJDEP Permitting: Individual Flood Hazard Area and Freshwater Wetland Permits. Supervised wetland delineation staff.

- **FAA Teterboro Airport, Airport Traffic Control Tower – NJ Meadowlands.** USACE and NJDEP Permitting.
- **PSE&G-Burlington County Landfill Renewables.** Evaluated the regulatory aspects of a project that investigate the potential for installation of wind turbines on an existing closed landfill in Burlington County, NJ. The landfill site includes an existing "eco-complex" with landfill gas power generation and tie-in to the power grid. Following consideration of the overall environmental/regulatory, geotechnical and engineering feasibility/cost/energy potential of the prospective project, it was not advanced past the initial assessment/feasibility phase consider.
- **PSEG Burlington Generating Station Demolition, Burlington.** USACE and NJDEP Permitting and NJ HPO Coordination /Section 106 Compliance.
- **Confidential Client – Wharf Demolition in Delaware River, Salem County, NJ and New Castle County DE.** USACE, NJDEP and DNREC Permitting and SHPO Coordination/ Section 106 Compliance).
- **Newark Bay Bridge Reconstruction/Rt. 440 Improvements, NJTA**. Wetland delineation and permitting.
- **Newark Liberty International Airport (EWR) infrastructure improvements.** Continental Airlines. Wetland delineation and permitting.
- **Morris County Bridge Replacements, Jefferson and Mendham Townships.** Permitting.
- **Toms River Bridge Construction, Ocean County**. Wetland delineation, permitting, mitigation.

Environmental Compliance – NEPA and Permitting

- **South River Storm Damage Reduction Project.** EA, wetland delineation for levee, floodwall, storm surge barrier/sector gate construction along South River, Middlesex County, NJ. USACE-NYD.
- **US Coast Guard Hurricane Sandy Recapitalization Projects.** NJDEP Permitting/ Federal Consistency determination and EAs for repair and upgrade at Stations Sandy Hook, Manasquan Inlet & Atlantic City.
- **Repauno Site Remediation.** Supervisory/lead wetland delineator and permitting/ regulatory compliance specialist for remediation of a former 1,800+ acre industrial site in Gloucester County, NJ. Delineated numerous wetlands, prepared applications for and obtained multiple NJDEP Land Use permits for both interim and final remediation, including: FWW GP4s, FWW GP6, Coastal GP11s, FHA IP and coordinated with USACE to determine non-jurisdiction. Also coordinated with NJDEP DF&W ENSP for endangered species monitoring and oversaw monitoring to avoid impact to species (Osprey) during remedial construction activities. Prepared documentation to establish Conservation Easements for undeveloped portions of the site as part of Natural Resource Damage settlement with NJDEP.

Niels Benavides, AIA

Architecture

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 30+ years of experience
- ✓ Registered architect
- ✓ Lead architect through all phases of work on urban, NY/NJ area projects

Niels Benavides has 32 years experience as an architect for private and public clients. He has served as supervising project manager, preparing work analysis and overseeing all architectural projects and developing project schedules and cost estimates. In his supervisory role, Niels coordinates all consultant work, contract documents, specifications, code compliance as well as acting as client liaison and construction administrator.

Queens Supreme Court, 88-11 Sutphin Boulevard, Queens NY

Lead architect for the preparation of the multidisciplinary and integrated effort for the Elevator Modernization Project. The upgrade includes the rebuilding of six passenger elevators, four judges and staff elevators plus one dumbwaiter. Project responded to the local code compliance, established the phasing and logistics planning for the renovation so not to disrupt the fully occupied building and its operations. Prepare presentation to NYC Landmark and Local Community for review and acceptance, project is in Bid phase.

PS#51M Replacement School

Lead architect for the construction administration phase for the new school with a student population of 620 and 70 teaching and administrative staff.The structure is a multi-floor high rise free-standing structure. The School Construction Authority, an agent of the NYC Department of Education, invited AECOM to take on the project due to the lack of effort on the original design architect, AECOM accepted the challenge and provided efforts immediately starting April of 2012, construction has been ongoing since 2010. Responsibilities is to coordinate all efforts with the structural and MEP consultants, Resolve field issues, supplement design coordination, respond to RFI and shop drawings in an expedite fashion. The new school is a mid-block five stories and cellar steel frame and masonry and metal cladding structure. The exterior shell implements the latest technology in air/vapor barriers system. The school consists of classrooms for a student body of 6120 from kindergarten through eighth grade. The school was targeted to open for the new school year of September 2013 and opening was achieved on time and on schedule.

Rikers Island Cogeneration Power Plant Building, Rikers Island, NY

Member of the architectural team during the development of the design documents and the lead architect during the construction administration support in 2012. The new building consists of a steel frame with metal cladding. The building houses new gas turbine generators located on a foot print of 13,718 sf with a mezzanine for operation, plant controls and employee support areas. Construction is commencing early February 2012.

Wards Island Water Pollution Control Plant, Boiler Building, Wards Island, NY

Lead architect for investigations for restoration, rehabilitation and renovation of 1932 circa masonry structure, the design documents were recently completed. The

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Education
Bachelor of Architecture, Pratt Institute, New York, 1985

Registration
Registered Architect, New York

abandoned DEP building is re-commissioned to house low pressure boiler facility producing steam. The design entailed reconfiguration of interior floor levels to accommodate five new state of the art boiler equipment. The limestone and brick masonry walls interior and exterior are scheduled for repair. Masonry parapets are removed and rebuilt to existing design and masonry and stone work restored to its original details. A new control room overseeing the boiler operations is located on the main floor. New steel windows with operable vents matching existing, vents satisfy the free air for the boiler system. Responsible for the coordination of all trade work traversing the floors and around a new overhead crane system used for moving heavy equipment within the space. New egress requirements were introduced in compliance with the latest codes. New cold fluid applied roofing system provided for a weather tight and more durable roofing system.

New York City School Construction Authority, Public Schools Renovations

Project and program manager for this on-call scoping, design and construction support services on a variety of Rehabilitation, Restoration and Building Systems Upgrade projects throughout New York City. Coordinated all disciplines, including structural and MEP consultants, evaluated the nature of restoration work required, and the development of the documents representing the required remedial work. Provided Construction Support Services for all projects. Efforts included conducting progress meetings, review of field conditions and resolutions, shop drawing review and all construction services associated with the efforts. The majority of schools are registered with the State Historic Preservation Office and range in student population size of 700 up to 2300. Through the SCA Reso "A" program, provided design and technical support for various School Libraires and overseen the Construction for the libraries.

New Jersey Turnpike Authority, Turnpike Building 15E Renovation

Program manager for this rehabilitation design project. Work included selective demolition of interior walls, repair of building facades and roofs and a site plan for the areas adjacent to the structure. Enlarge the facility in order to satisfy new men and women bathroom and lockers.

Atlantic Center, Atlantic and Fort Greene Place, Brooklyn, NY

This new center was part of downtown urban renewal plan and was the largest vertical retail mall constructed in Downtown Brooklyn with 800,000 sq. ft. - 3 stories of retail totaling 450,000 sq. ft., and two levels of underground parking for 700 cars. As project manager, prepared and coordinated documents and served as field architect during construction. Project consisted of three vertical transportation cores with escalators and elevators, and two freight and receiving cores with docks and elevators. Project included panelized curtain wall system in excess of 100,000 sq. ft., construction around the Atlantic Terminal subway hub, and new pedestrian mall and street thoroughfare.

Donald E. Ehrenbeck, PP, AICP

NEPA Compliance

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 30+ years of experience
- ✓ NEPA specialist, specializing in environmental documentation and permitting for projects in NY/NJ region

Don Ehrenbeck has more than 30 years of experience in NEPA and environmental impact assessment. His background includes managing the environmental documentation and permitting efforts for numerous projects throughout the New York/New Jersey region. He has extensive knowledge of the rules and regulations set forth by the National Environmental Policy Act of 1969 (NEPA), Section 106 of the National Historic Preservation Act, and Section 4(f) of the U.S. Department of Transportation Act, as well as the implementing procedures of federal agencies such as the General Services Administration, the Federal Bureau of Prisons, the Federal Aviation Administration and the Federal Railroad Administration. Don's responsibilities have included overseeing the preparation of environmental impact statements and assessments and permit applications and designing and implementing public outreach efforts.

Amtrak Gateway – Systems Level Design: NEPA Program Development, NY-NJ

In support of Amtrak's proposed Gateway Program, a series of incremental infrastructure projects designed to improve current service, create new capacity and strengthen system resiliency, prepared an Environmental Permit Strategy document. The document identified and summarized the numerous federal, state, regional and local laws, policies and programs that would impose requirements with which the Gateway Program would likely need to demonstrate compliance. Of specific relevance are the requirements of the New Jersey Meadowlands Commission (Master Plan compliance) and New Jersey DEP (Stormwater Management Rules, Flood Hazard Area Individual Permit, Waterfront Development Permit, Tidelands Conveyance Instrument, Section 401 Water Quality Certification and Green Acres, among others), as well as those of the federal government (Section 404/10 Individual Permit, Nationwide Permit No. 6, and a Local Notice to Mariners).

Newark Liberty International Airport Terminal A Redevelopment Program

Responsible for all environmental aspects of an ongoing $2 billion redevelopment program at Newark Liberty International Airport. Specific tasks have included the preparation of a NEPA Environmental Assessment (EA) for the proposed new Terminal A; two FAA Short-Form EAs for proposed fuel system and electrical infrastructure improvements; and a Categorical Exclusion Document for the redevelopment of buildings in the airport's North Cargo Area. All work included close coordination with Port Authority environmental, engineering and permitting staff.

North Jersey Transportation Planning Authority (NJTPA), Rail Freight Capacity and Needs Assessment to Year 2040

Assisted in a study that assessed the capacity of the rail network in the NJTPA Region to handle projected increases in freight traffic to 2040. The work effort included establishing a baseline of the physical characteristics of the network and assessing operations over it; preparing rail demand forecasts, identifying constraints within each rail corridor, an analysis of potential new corridors and an extensive agency and public outreach program.

Donald E. Ehrenbeck, PP, AICP, *cont.*

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Education
MCRP, City and Regional Planning, Rutgers University, 1985
BA, Political Science, Upsala College, NJ, 1981

Registration
Professional Planner, New Jersey No. 4009
Certified Planner No. 046936, American Institute of Certified Planners

Affiliations
American Planning Association
American Institute of Certified Planners
For the past two years has presented a workshop entitled "Introduction to NEPA" to graduate students at the Bloustein School of Planning and Public Policy at Rutgers University

General Services Administration, Public Buildings Service, NEPA Documentation and Environmental Planning Services

In support of GSA's Public Buildings Service, managed environmental planning services at numerous locations nationwide. The work effort included the preparation of numerous EISs, EAs and CEs; as well as site acquisition studies and property disposal reports. All work conformed to the guidelines contained in PBS' NEPA Desk Guide. Notable projects included a property disposal report for the Belle Meade Depot in New Jersey and environmental and planning services supporting the construction of new U.S. Courthouses in Boston, Atlanta, Richmond, Cleveland and Youngstown, OH; Concord, NH; and Wheeling and Beckley, WV; a U.S. Courthouse Annex in Norfolk, VA; federal office buildings in Martinsburg, WV; Philadelphia, Easton, and Scranton, PA; and Border Stations in Derby Line and Highgate Springs, VT.

NJ TRANSIT, Access to the Region's Core (THE Tunnel), NEPA Draft Environmental Impact Statement (EIS), Final EIS and Supplemental Final EIS

Supervised and provided QA/QC to the analysis of Socioeconomics (land use, economics, neighborhood characteristics), Environmental Justice, Secondary and Cumulative Impacts, and Parkland Impacts anticipated to result from the proposed project. The analyses included inventorying and mapping land use, parklands, community facilities, demographics, property values, and calculating impacts to these populations. Case studies were developed to exemplify the type of development and land uses that can be encouraged at transit stops to maximize transit ridership and implement the policies of the New Jersey State Development and Redevelopment Plan. The work effort also included assisting in the preparation of all environmental permit applications.

Department of Justice, Federal Bureau of Prisons and U.S. Marshals Service, NEPA Documentation and Environmental Planning Services

As part of the facility expansion programs of both the BOP and the USMS, prepared numerous EISs, EAs and CEs that conformed to each agency's NEPA implementing guidelines. Project locations have included New Jersey, New York, Pennsylvania, North Carolina, South Carolina, Kentucky, Florida, Texas, Arkansas, Alabama, Mississippi, Louisiana, Hawaii, Arizona, West Virginia and California.

NEC FUTURE Tier 1 Draft Environmental Impact Statement

Provided QA/QC oversight to the NEC FUTURE Tier 1 Draft Environmental Impact Statement (Draft EIS). The Draft EIS, which was prepared pursuant to NEPA, presents the analysis completed by the Federal Railroad Administration to assess the potential effects of the NEC FUTURE program on the built and natural environments. The NEC FUTURE program is a comprehensive planning effort to consider the role of passenger rail service on the Northeast Corridor (NEC) in the context of current and future transportation demands. The QA/QC effort ensured that the Draft EIS was prepared in compliance with NEPA regulations.

Shruthi. S Ashokan

Scheduling

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 10 years of experience
- ✓ Expertise in P6, Schedule Analyzer

Shruthi is a scheduler/project controls engineer with 10 years of progressive experience in all phases of the construction and engineering industry. Shruthi has experience in construction management, project controls, planning/scheduling and management information and on a large variety of projects across major business lines. She specializes in schedule reviews, time impact analysis, delay analysis, mitigation strategies. She is experienced in cost controls – tracking costs by various contracts on large construction projects. She assists in analyzing and publishing reports that include cash flow forecasting, integrated project master schedules, and staffing projections.

New Jersey Turnpike Authority (NJTA) New Jersey Turnpike Interchange 6 to 9 Widening Program

Project controls engineer/office engineer for the $2.7 billion program, which was designed to improve safety and reduce congestion by adding 170 lane miles and 100 structures to the New Jersey Turnpike. The program resulted in a 12-lane (6 lanes in each direction) dual-dual roadway from Interchanged 6 to Interchange 9, capable of accommodating projected traffic need through the year 2032. Work occurred along approximately 34 miles of the highway between Interchanges 6 and 9. The roadway was widened from 6 to 12 lanes between Interchanges 6 and 8A, and from 11 to 12 lanes between Interchanges 8A and 9. The Program also included significant modifications at five interchanges (6, 7, 7A, 8 and 8A), local-bridge overcrossing replacements, extensive earthwork and paving operations, and major upgrades to existing drainage, utilities, electrical, lighting, fiber, overhead signage and sound-barrier systems. Responsibilities included preparing the monthly invoice for the program manager joint venture (JV) by packaging together all the invoices submitted by the JV partners and subconsultants. All the invoices were reviewed for accuracy and any changes if needed were made before submitting to the client for processing. Also included billing hours to specific contracts. Follow up with client to make sure the JV receives timely payment thus being able to meet company targets. Other responsibilities included project timesheets and adding new contracts as necessary to track time. Tracking costs as a backup for any supplemental agreement requests. Assisted the project controls team by generating schedule monthly reports and uploading them for client access. And providing various reports tracking monthly hours and costs to the master project scheduler for cost projections and forecast. Scheduled using P6.

Passaic Valley Sewer Commission (PVSC), Resiliency Program, Newark, NJ

Project controls engineer responsible for developing time tracking based on WBS for the project with an extensive WBS of over 200 task activities. Set up a monthly labor summary template to track costs and time by task. Added responsibilities included finance management, tracking labor and against budgeted amounts. Generating man hour detailed reports, breakdown costs by contracts. FEMA format labor reports as per FEMA requirements.

Shruthi. S Ashokan , *cont.*

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Education
MS, Civil Engineering (Construction Management), Rutgers University, 2006
BS, Civil Engineering, Dayananda Sagar College of Engineering, VTU, India, 2004

New York State Department of Transportation (NYSDOT), Statewide Construction Support Services & CPM Scheduling Services

Project controls engineer for this on-call engineering services contract to assist the NYSDOT Project Management Office and construction project field offices on a task order basis in resolution of complex construction schedule and cost issues, including review and analysis of construction CPM progress schedules, review of contractor requests for time extensions, assisting in defense of contract time-related disputes and claims, acceleration analysis, development of suggested preliminary construction schedules (time determination schedules) during design, constructability reviews, CPM and Oracle-Primavera P6 and contract management (CM) training and software administration for statewide enterprise P6 and CM systems. Responsible for the review of schedules on several construction projects statewide. Scheduled using P6 in enterprise environment.

Prospect Street Bridge, Morris County, NJ

Project controls engineer for this project that provides for bridge replacement with widening and roadway improvements in the town of Dover in Morris County. Responsible for reviewing the baseline schedule and schedule updates. Scheduled using P6 on an enterprise platform.

New Jersey Department of Transportation (NJDOT), Route 80 from Route 46 (Ledgewood Avenue) to Cherry Hill Road (C.R. 654)

Project controls engineer for this $12.8 million project that included 13.4 miles of asphalt pavement resurfacing, electrical, curb, safety improvements and drainage work along Interstate 80. Responsible for reviewing monthly updates and Time Impact Evaluations. Scheduled using P6.

NJDOT, Route 46, Rockfall Mitigation, MP 1.4-2.4, Warren County

Project controls engineer for this $14.6 million project that provides for the rockfall mitigation along Route 46 WB from MP 1.4 to 2.4. Work includes clearing, rock scaling, rock dowels, rock drains, shotcreting and construction of rock protection fencing. Other work in the contract includes paving and installation of guiderails. Responsible for reviewing monthly updates and Time Impact Evaluations. Scheduled using P6 on an enterprise platform.

NJDOT, Route 17, Airmont Road to I-287 Pavement, Bergen County

Project controls engineer for this $7.7 million Route 17 paving project. Project work included milling, paving, safety improvements and signalized intersection improvements. Responsible for reviewing monthly updates. Scheduled using P6.

Jay Bayersdorfer, PE

Cost Estimating

Jay Bayersdorfer is an accomplished civil engineer with more than 30 years of experience in all types of heavy/civil construction, mechanical and plumbing, and electrical energy projects. His experience includes the planning, costing, and implementation of heavy civil projects, underground utility construction, complex excavations for underground structures, earth support systems of every type, slurry walls, groundwater control, environmental remediation, flood resiliency, HVAC and energy.

Jay's experience in planning, managing and executing large civil construction work provides for superior insight not only from a cost standpoint, but also from the standpoint of constructability, sequencing of work and developing realistic means and methods to suit project schedule and project conditions and restrictions.

Prior to joining AECOM, Jay's career was with the leading contractors in the types of work mentioned. Since joining AECOM, he has been instrumental in providing realistic A/E construction cost estimates for the various design departments within AECOM, as well as for use in negotiating fair and reasonable settlements for contractors' claims on current projects of every type.

Goldman-Sachs, 200 West Street and Jersey City, 30H – 50H

Developed early study cost estimates for flood protection elements. Alternatives included combinations of concrete walls, deployable barriers, and specialty doors and gates.

City of Yonkers Wastewater Treatment Plant,

NY Developed early study cost estimates for flood protection elements for the plant. Alternatives included combinations of addition of parapet walls on aeration tanks, concrete and steel sheet pile walls, deployable barriers and specialty doors and gates.

Port Authority of New York and New Jersey (PANYNJ), World Trade Center Site

Developed early study cost estimates for flood protection elements for the new World Trade Center Site. Alternatives included combinations of addition of emergency pumping systems, concrete walls and curbs, deployable barriers and specialty doors and gates throughout the site.

MTA New York City Transit (NYCT), Substation Site in Rockaways, NY

Developed full design cycle estimates from concept thru 100% design for flood protection for substation. Measures included consist of combinations of jet grouting, steel sheet piling, concrete walls supported on mini-pile foundations and specialty doors and gates.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 30+ years of cost estimating experience
- ✓ Expert in realistic estimates, based on contracting background
- ✓ Experience on resiliency/flood control programs in NY/NJ metro area

Jay Bayersdorfer, PE, *cont.*

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AECOM

Education
BS, Civil Engineering, University of Vermont, 1982

Registration
Professional Engineer: New Jersey
Also CT, VT

NJDOT, Route 52 Causeway, Somers Point & Ocean City, NJ

Provided comprehensive bottom up estimate for Phase B of replacement bridge and causeway system connecting Somers Point to Ocean City, NJ. Project involved heavy marine construction, numerous tight sheeted cofferdams, precast pile foundations, erection of precast concrete structures over Intracoastal Waterway, roadway and utility construction and final demolition of existing structures. Evaluation and selection of a cofferdam design that allowed for unencumbered construction means and methods for the bridge pile caps was a key factor in determining a realistic cost. Total approximate cost of this work in excess of $250 million.

New York City Economic Development Corporation (NYCEDC), East Midtown Esplanade, New York (Manhattan), NY

Complete quantity derivation and estimating of 1.2 mile proposed esplanade founded on 100-ft pipe piles in the East River. Work involves heavy demolition of marine structures, piles with rock sockets, pier caps and deck construction, and all utilities and amenities for twenty-two (22) separate alternatives.

NYCEDC, Bush Terminal Landfill Conversion to Park, Brooklyn, NY

This complex project to convert a contaminated landfill into a NYC Park located within dilapidated wharves on the Brooklyn Waterfront involved demolition and reconstruction of waterfront structures, subaqueous excavation and soil stabilization, deep landfill gas extraction trench system in sheeted excavations, and capping systems. Careful evaluation of constructability issues for underwater cap construction of contaminated materials was a key factor in developing an accurate estimate based on workable means and methods. Bottoms up estimate that was submitted was within 5% of apparent low bid.

Brooklyn Bridge Park, Brooklyn, NY

Project involves the conversion of six (6) existing pier structures and adjacent brownfields into park land. Work involves extensive pile rehabilitations, deck replacements, bulkhead replacements and rehabilitations and marina facilities including floating walkways on pile guides, complete utility infrastructure, and park amenities.

Bronx Terminal Waterfront Redevelopment, Bronx, NY

As chief estimator for AECOM acting as CM, led team of three (3) junior estimators in performing quantity takeoffs and complete bottoms up contractors' type estimate for major waterfront park development. Work included major demolition and reconstruction of bulkheads, mass site grading, complex pile supported foundations, all utility infrastructure, park buildings and amenities. Total project value approximately $36MM with winning bid within 6% of our estimate.

Thomas Elsroth, PE

Transporation Engineering

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 30+ years in design and project leadership
- ✓ Experience with similar structures
- ✓ Experience working with similar NJ Authorities

Mr. Elsroth has considerable professional design and project leadership experience on varying sized bridge and roadway projects. Many of these projects included public speaking and community outreach presentations. He has worked in the Civil Department supervising and designing highway, utility, transportation and civil/site projects ranging from municipal local roads through interstate highways and bridges using AASHTO and N.Y. State and City Highway Department standards. The project scope of these assignments ranged from feasibility studies, including traffic analysis, to final design and preparation of construction documents, specifications, estimates, and bid package data. Many projects required the preparation of complex maintenance and protection of traffic schemes for multi-stage construction sequences.

AD/Final Design – Westchester Avenue Bridge - New York City Department Of transportation (NYCDOT), Bronx, New York

Project Manager in charge of developing the Design Approval Document and the Final Design / PS&E for the rehabilitation on the Westchester Avenue Bridge. This federally funded project requires detailed coordination with both the NYSDOT and NYCDOT. Based on the findings of the completed Feasibility Study, the project will raise the Westchester Avenue Bridge over 2.5 feet in order to provide a standard 12'-6" minimum vertical clearance under the bridge to the Hutchinson River Parkway below. Project includes complete concrete deck and steel superstructure replacement using a shallow steel superstructure along with abutment back wall modifications, new utilities, and approach roadway modifications. There is a complex construction sequencing design required to remove the existing girders and installation of the new bridge steel while supporting the MTA Number 6 transit system above the Westchester Avenue Bridge at all times. For this, an overhead rail gantry system will be used to limit impacts to the Parkway below. (2014 – present)

Preliminary Design – Bronx Three Bridges (Snuff Mill Road over Bronx River, Mosholu Parkway over Bronx River and 175th Street over Metro North Railroad, New York City Department Of transportation (NYCDOT), Bronx, New York

Project Manager in charge of developing the Preliminary Design Plans for the 175th Street Bridge over Metro North Railroad. The bridge will be raised and shallow steel members used to increase the existing vertical clearance under the bridge to the NMRR railroad track below. This will included approach roadway modifications to accommodate the raised 175th Street centerline profile. (2014 – present)

Thomas Elsroth, PE, *cont.*

Firm
AECOM

Education
BS, Civil Engineering, Syracuse University, 1987

Registration
Professional Engineer NJ, #24GE04525000
Professional Engineer NY, #072533

Professional Affiliations
American Society of Civil Engineers (ASCE)
Institute of Transportation Engineers (ITE)

Preliminary Design – Bronx Three Bridges (Snuff Mill Road over Bronx River, Mosholu Parkway over Bronx River and 175th Street over Metro North Railroad, New York City Department Of transportation (NYCDOT), Bronx, New York

Project Manager in charge of developing Draft and Final Bridge Reconstruction Project Reports (BRPR's) for the Snuff Mill Road single stone arch Bridge over the Bronx River, the Mosholu Parkway three stone arch Bridge over the Bronx River and the single span steel 175th Street Bridge over the four track Metro North Railroad – Harlem Branch. Once the BRPR's are finalized, work shall include advancing the 175th Street Bridge and to develop Preliminary Design Plans. (2011 – 2014)

Final Design – Rehabilitation of the Westchester Avenue Bridge over the Hutchinson River Parkway, New York City Department Of transportation (NYCDOT), Bronx, New York

Project Manager in charge of developing the 90% final design plans for the rehabilitation of the Westchester Avenue Bridge over the Hutchinson River Parkway. Mr. Elsroth was responsible for all design components, including bridge deck reconstruction, widening of the bridge structure and all utility relocations on the rehabilitated bridge. Of special concern with this structure is the fact that the MTA Number 6 elevated subway line is located above this bridge and directly connected to the Westchester Avenue Bridge girder system. A special staging design is required to maintain adequate support as well as accommodate the high traffic volumes on the bridge. Mr. Elsroth oversaw the development of a new water main system crossing the bridge, limited roadside impacts on parkland, and an elaborate MPT sequence for Westchester Avenue Bridge. His other duties included coordination with the various N.Y. City agencies, performing the required ULURP plan development, and strict NYCDPR (Parks) design guideline adherence. (2004 – 2009)

Feasibility Study – Raising the Westchester Avenue Bridge Over the Hutchinson River Parkway, New York City Department Of transportation (NYCDOT), Bronx, New York

Project Manager in charge of developing the detailed feasibility study to investigate design concepts of raising the Westchester Avenue Bridge over 2.5 feet in order to provide a standard 12'-6" minimum vertical clearance under the bridge to the parkway below. Studied various concepts recommended in the 2011 Project Value Engineering session which included raising Westchester Avenue profile, using a shallow steel superstructure and removing MTA overhead viaduct supports off the bridge. AECOM studied various construction sequencing and construction methods using an overhead rail gantry system. Work culminated in a detailed design report that was approved by the NYCDOT and the NYCT. (2012-2014)

Andrew Raichle, PE

Access/Easements/Land Surveying

Andy Raichle is a civil and marine engineer with nationwide experience in a broad range of waterfront development and maritime projects. His project experience includes planning and design of coastal and port structures, sub-aqueous utilities, navigational dredging, and shore protection projects. He is well versed in the technical, political, and regulatory specialties that are unique to the process of waterfront development/redevelopment, and has applied these skills throughout the U.S. and the Caribbean.

Most recently, Andy has been a key participant in the response, recovery and resiliency planning effort for Hurricane Sandy in the metro New York region. In the days following the storm he led emergency response teams throughout the region. In the years since, Andy has led teams responsible for rebuilding and re-imagining the infrastructure, communities and places of the coastal region.

State of New Jersey, Meadowlands Rebuild by Design, Meadowlands Complex, NJ

Matrix's project director responsible for overseeing multi-disciplined support of project team.

Port Authority of New York and New Jersey (PANYNJ), Post-Sandy Resiliency Projects, Multiple Locations in New York and New Jersey

Consulting environmental/coastal engineer for the PANYNJ's multi-billion-dollar resiliency programs. Projects include resiliency infrastructure for the Authority's three airports, PATH train system, two tunnels, and port infrastructure. Work includes evaluation of design flood elevations, permitting requirements, NEPA, and archaeological/historical concerns.

Bayonne Local Redevelopment Authority, Redevelopment of Military Ocean Terminal, Bayonne (MOTBY), Bayonne, NJ

Engineer of Record for redevelopment of this 700+ acre former military base. Redevelopment included extensive site remediation of contaminated soils and groundwater. Coordinated remediation design and construction activities, including applicable regulatory requirements (NJDEP waterfront development permits, deed notices, CEA's, etc.). Produced remediation record documents, including record surveys and engineering certifications. Permitting and negotiated the filling and associated mitigation of 2.9 acres of contaminated freshwater wetlands on the site. Oversaw the closing and maintenance of a former C&D landfill on the site. Responsible for the design, procurement and execution of $5M square feet of building demolition, including asbestos abatment. Planned and executed modification of contamination engineering controls for new buildings, infrastructure, and utilities. Secured and executed $30M+ of New Jersey Environmental Infrastructure Trust (NJEIT) funding for site remediation and water quality improvements.

QUALIFICATIONS FOR RBD HUDSON RIVER

- ✓ 25 years of experience in waterfront development and maritime projects
- ✓ Extensive resiliency experience, including: RBD – Meadowlands, multiple projects with PANYNJ, NYCEDC, municipalities and private clients.
- ✓ Extensive knowledge of FEMA coastal mapping process and methodologies

Andrew Raichle, PE, *cont.*

Firm
Matrix New World Engineering

Education
ME, Ocean Engineering, Davis Fellow, University of Delaware, 1992
BE, Civil Engineering, University of Delaware, 1990

Registration
Professional Engineer, New Jersey, #24GE04188900, 1990 Also NY

Affiliations
American Society of Civil Engineers
NJ Marine Trades Association
National Association of Industrial & Office Properties (NAIOP)

Port Jersey Channel Deepening Project, Bayonne & Jersey City, NJ

Consulting engineer for the City of Bayonne and Global Terminal for matters concerning the deepening the Port Jersey Navigation Channel and constructing compensatory mitigation for intertidal/subtidal shallow habitats. Consultation included forensic mapping of the PVSC Outfall tunnel, representation of the City of Bayonne in riparian rights issues, and construction oversight on behalf of the City.

Post-Sandy Rapid Infrastructure Assessment, Township of Brick, NJ

Led a team of 10+ engineers to evaluate the impact of Superstorm Sandy in the days and weeks following the storm's impact. Work included life/safety evaluation of structures and infrastructure, coordination with FEMA, and recommendations/cost-estimates for repairs. Work culminated in the preparation of a master infrastructure repair phasing plan, and served as the basis for FEMA funding of the Township's infrastructure responses.

New York City Economic Development Corporation (NYCEDC), Rockaway Shoreline Stabilization, Queens, NY

Management of permitting, surveying, inspection, alternatives analysis, and design of a rock revetment to replace an existing, failed bulkhead along a major roadway in Rockaway, New York City. Permitting effort included coordination with NYSDEC and NGO's for potential incorporation of living shoreline and sea level rise design components.

Post-Sandy Environmental Assessments of Resiliency Projects, New York, NY

Engineer for environmental assessments associated with Post-Sandy CDBG-funded resiliency projects.

PANYNJ, Replacement of Holland Tunnel Protective Piers 9 & 204

Responsible for environmental permitting associated with Holland Tunnel pier replacement. Work includes consideration of ecological impacts of shading, navigation issues, public access to the waterfront, and archaeological/historical resource issues.

PANYNJ, LaGuardia Airport - Flood Control & Resiliency Program, Queens County, NY

Project engineer responsible for evaluation of all required permits from other agencies, including, but not limited to USACE, New York State Department of Environmental Conservation, NYS Department of State, New York City Parks Department, NYC Department of Environmental Protection, NYS and NYC Departments of Transportation and preparation of environmental permit applications and supporting documentation for submission to regulatory agencies.

2 Similar and Relevant Experience

With a focus on **Collaboration, Efficiency and Flexibility**, *AECOM has built an excellent reputation and record of performance in the design and construction of large-scale coastal risk manangement, flood risk management, and water resources infrastructure projects in the State of New Jersey and throughout the world.*

AECOM: A Record of Success

Collaborative – We know the client and stakeholders. Our experience on DPMC term contracts has afforded us a robust working relationship with your staff and the stakeholders. From regional (cities of Hoboken, Weehawken and Jersey City; NJ TRANSIT; Port Authority) to State (DPMC/DEP) and federal agencies involved (USACE, FEMA, HUD), we have been engaged in recovery and resiliency programs for the region for many years.

Efficient – There is no learning curve with AECOM. We currently manage a number of successful DPMC/DEP term contracts and we are providing similar services for the Rebuild by Design (RBD) Meadowlands project and the Lower Manhattan Coastal Resiliency (LMCR) project. This experience, as well as our working knowledge of State and federal guidelines, minimizes start-up time and expenses and ensures streamlined compliance. **Our team's familiarity enables us to work directly with your team, immediately providing crucial and early engagement opportunities with community stakeholders in the process.**

Flexible – We have the responsive capability and adaptive experience. Our capability has been developed and shaped by our vast experience on large scale similar projects, both for DPMC/DEP and other regional clients. We have learned from our DPMC/DEP work that the most effective way to manage is to monitor resources actions and ensure they meet the evolving needs of the project in real-time. Flexibility comes from having in house capacity to recognize and respond quickly to the project needs and conditions. Our depth of resources equips us with the agility to address large-scale urban flood rise management. **AECOM's proficiency ensures the completed construction of an independent utility engineered and FEMA accredited by Septemeber 2022 within the budget.**

> "I thought I would drop you this email to thank you for the work [AECOM] is doing for us for the DEP Blue Acres Program ... It is a real pleasure working with your team."
>
> Walter Fernandez, Asst. Deputy Director, DPMC (on DEP Blue Acres Program)

Value to DPMC/DEP
Proven success on state contracts

.ECOM's vast portfolio includes local coastal sk management projects that involve the same lements as the RBD Hudson River Project. Ve know the area and have developed and nplemented innovative, efficient and reliable ieasures to ensure resiliency.

op: AECOM led the team to create a design for the Bush Terminal Piers Park in Brooklyn that met the needs of a diverse community, and included waterfront structure investigation, economic analysis, and Brownfield remediation elements.

ght: AECOM was the lead marine and civil engineering consultant for the development of the new 85-acre Brooklyn Bridge Park.

ottom: For the Greenpoint Monitor Museum project, AECOM assessed environmentally-beneficial alternatives for shoreline stabilization/protection and related flood control and selected a stepped vegetated gabion system with raised land elevations.

Past Experience on Similar Large Scale Projects

In the USA and around the State, AECOM has completed the planning, design and permitting, and construction for countless miles of flood control structures for flood risk reduction projects that are built and in the ground.

Our lead team members have experience in HUD-funded projects in the New York/New Jersey Metropolitan area in an effort to increase community resilience and protect against coastal and fluvial flooding.

Value to DPMC/DEP
Proven experience designing projects to budget

Specific areas of expertise that are important to highlight include:

Coastal Engineering/Flood Risk Management
In addition to our work on the RBD Meadowlands and Lower Manhattan Coastal Resiliency projects, AECOM's recent project experience includes a number of vulnerability and risk assessments in coastal regions, as well as climate change vulnerability and adaptation projects across the U.S. and worldwide. Our team includes national and global experts in flood risk and coastal hazard.


Building a barrier to protect New Orleans from future storms


Analyzing sea level rise risks to improve San Francisco's infrastructure


Protecting seaside resort of Blackpool (UK)


Modeling of coastal erosion for Australia's Dept. of Defence


Rebuild by Design Meadowlands


Green Brook Flood Risk Management


Sandy Hook to Barnegat Beach Erosion Control Project


Interchange 6 to 9 Widening Wetlands Mitigation

Value to DPMC/DEP

Unequalled NJ flood risk management knowledge and practice

We have global reach ... and local know-how.

Because of our long-term direct involvement with the flood insurance and flood control programs in the State of New Jersey, we have an in-depth knowledge of the state and data sources that are difficult to find elsewhere.

AECOM has been working with the Federal Highway Administration (FHWA, the NYMTC, NYSDOT, PANYNJ and the MTC), assessing the climate change stresses (including sea level rise) and potential solutions to those scenarios for the critical transportation infrastructure in and around New York City. This project is specifically aimed at helping the transportation agencies and local jurisdictions better understand asset vulnerability to extreme weather and climate impacts, especially after Hurricane Sandy.

Working on the Lower Manhattan Coastal Resiliency project, AECOM has a a MIKE 21 Coastal Model (left) up and running that includes the area covered by this RBD Hudson River contract. This readily adaptable model will enable us to minimize modeling time and considerably accelerate the evaluation phase.

Adaptive Experience: Our in house team has already modeled the project site, and will use this model to carry the current feasibility level model into more detailed accuracy to inform the layout and design of the resist stucture.

AECOM has been part of a design-build team that constructed the Inner Harbor Navigation Canal Lake Borgne Surge Barrier for New Orleans. The $1 billion 9000-foot long concrete and steel barrier was designed and built to provide protection against the combination of storm surge and wave conditions generated by a 1% chance hurricane event.

AECOM has carried out numerous projects involving both emergency planning and physical infrastructure design and implementation on behalf of FEMA for disaster recovery efforts. These large-scale projects, in particular post-Hurricane Sandy, have included high-level discussions regarding how to address climate change impacts and increase climate change resiliency.

Value to DPMC/DEP

We've already modeled the project site

Environmental infrastructure

AECOM is experienced in the design of green infrastructure and hybrid green-grey solutions for many locations in the region, including for the Greenpoint Monitor Museum and Greenpoint Transmitter Park in Brooklyn, Brooklyn Bridge Park, Bush Terminal Park, East Midtown Waterfront Esplanade and Greenway and Rockaway Beach Peninsula in Queens. We strive to meet the basic needs of the community while providing more than just utilitarian infrastructure. Neighborhoods will receive new protection and enhanced public spaces, rather than degraded natural habitats impeded and riverfront views.

Greenpoint Monitor Museum

Greenpoint Transmitter Park

Brooklyn Bridge Park

Bush Terminal Park

To complement AECOM's capabilities, we have the benefit of MKA's extensive green infrastructure experience. The work involved in this contract is very similar to MKA's recent work on the Peoria Complete Streets Masterplan (illustrated below) for which MKA worked with the landscape architect to plan the low-impact design retrofit of 57 city blocks undergoing a street diet and public space upgrade. The Low Impact Development (LID) insertions planned by MKA take the runoff generated by these streets off of the city's combined sewer system, and make a substantial contribution to the city's CSO reduction targets.

Value to DPMC/DEP

Partnering that brings added value to all stakeholders

Value to DPMC/DEP

AECOM in collaboration with MKA brings unmatched landscape architecture/urban design practice

Other recent MKA projects with similar goals include:

- The St Louis Art Museum Expansion where new gardens around the expanded museum delay and store roof- and site-generated runoff in artful ways, prior to its discharge to the capacity constrained drainages of the greater Forest Park campus.
- MKA's Theater Commons project in Seattle, where streetside LID interventions fully infiltrate runoff formerly discharging to the city's combined sewer system.
- Collaborative efforts with AECOM on the Elliot Bay Central Seawall that resulted in a new pedestrian promenade and salmon migration corridor stacked together, featuring light penetrating sidewalk panels, which bring the needed natural light to the habitat below the public space.
- The Nuskin Headquarters Expansion project in Provo, where MKA's team planned landscape amenities to serve double duty as LID stormwater infrastructure, with up to the 100 year storm now discharging into the ground via infiltration, rather than running off uncontrolled.

St. Louis Art Museum Expansion

Theater Commons, Seattle

Elliot Bay Central Seawall

Nuskin HQ Expansion, Provo

Landscape architecture in urban areas

AECOM's New York City-based Landscape Architecture + Urban Design Studio is an award-winning practice within AECOM. Applying a design-centered approach to multidisciplinary projects across the company, the studio's work is characterized by captivating public realm interventions built upon various scales of urban infrastructure. The studio's portfolio includes a broad range of public projects, such as resiliency and green infrastructure master plans, plazas, streetscapes, parks, waterfronts, urban regeneration framework plans, and ecological restorations.

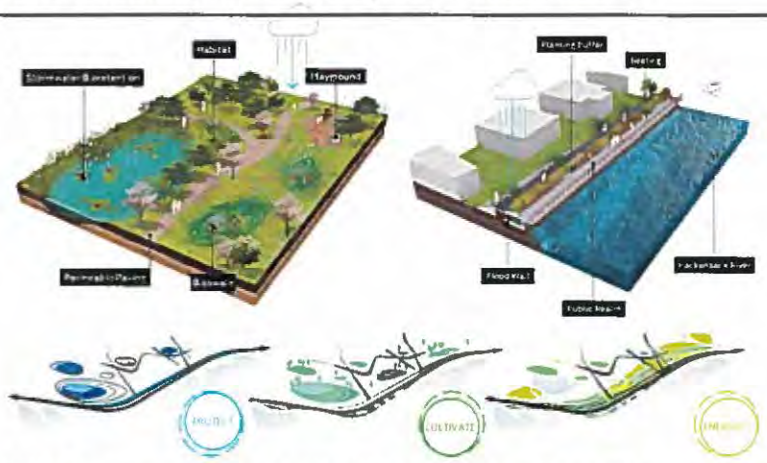
World Trade Center Public Realm

Southwest Brooklyn

OMA and Royal Haskoning DHV's earned experience with the winning design strategy for the RBD Hudson River Competition, and OMA's role during both the EIS and feasibility study phase, reinforce our seamless process of bringing existing knowledge, design, and relationships immediatly to this phase.

The studio collaborates with the diverse expertise of the larger integrated company, leveraging engineering and analytical expertise to envision environments that are innovative, performative, and imaginative. The studio is best known for its two most recent New York City projects, the World Trade Center District Public Realm, including the recently opened Liberty Park, as well as its thought-provoking framework for an equitable and resilient Southwest Brooklyn.

We are also providing urban design for the RBD projects in the Meadowlands and Lower Manhattan that are being well received in the respective communities and by the stakeholders.



RBD Meadowlands is a real-time iterative study in balancing social, environmental, and community benefits while realizing flood risk reduction and increased resilience for communities located within 100-year floodplains.

Value to DPMC/DEP

Proven transdisciplinary practice with area RBD projects

AECOM's approach for both RBD Meadowlands and Lower Manhattan is inherently transdisciplinary in nature; requiring a fully-integrated team of engineers, urban planners, landscape architects, ecologists, environmental scientists, economists egulatory experts, hydrodynamic modeling specialists, and community engagement advisors working in concert.

AECOM is developing a long-term strategy and feasible concept design for a flood protection system in Lower Manhattan.

Site remediation and restoration

In all regions of the world, AECOM solves complex site contamination challenges — addressing a broad array of contaminants and working cooperatively with diverse stakeholder groups. Bringing together the best resources in the industry, AECOM remediation teams critically assess the nature and extent of contamination; assess risks to identify receptors and safe exposure levels; embed leading edge innovations and technology to simplify remedial actions and reduce costs; and prepare remedial designs that appropriately address the problems posed by the contaminants. AECOM has many success stories working with clients/stakeholders where we have recovered the value tied up in impaired property and generated goodwill in the community by creating an asset.

Our remedial design capabilities and experience span the complete range of soil and groundwater remedial technologies. Our services include all phases of project development from site investigation and preliminary reports through environmental impact study, permit application, design, construction management, and operations.

Value to DPMC/DEP

LSRP experts in DEP regulations

Our Environment group in New Jersey consists of more than 240 professionals, including 17 licensed site remediation professionals (LSRP), with unparalleled experience in soil and groundwater remediation and regulatory compliance in the State.

Stakeholder outreach and coordination

AECOM has an excellent reputation for fostering community relations and coordination and addressing concerns. We have provided technical support to New Jersey, FEMA and USACE in presenting complex technical issues to local officials and stakeholders.

On the RBD Meadowlands Project, AECOM has been involved in all aspects of the public outreach and participation process. Early in the project, AECOM developed the Guide for Public Involvement (GPI), which along with NJDEP's Citizen Outreach Plan (COP), established the framework of public involvement and outreach strategies to facilitate collaboration with the general public, including vulnerable and underserved populations, in the project's planning, design, and implementation process, so that the public could provide relevant and timely input throughout all project phases.

"We'd like to thank you all for your efforts toward a very successful CAG meeting. The presentation was comprehensive yet comprehensible. Overall, very well done."

Linda Fisher, NJDEP Project Team Manager
RBD Meadowlands regarding the CAG Meeting conducted by AECOM on 5/24/17

AECOM helps facilitate meetings with the Executive Steering Committee (ESC) and the Citizen Advisory Group (CAG), which is a forum for two-way communication between the state and the project area community. In addition to facilitating meetings, AECOM also prepares newsletters and presentation materials (including graphics, 3-D models, and high-quality drawings and renderings), all of which has allowed the public to be actively engaged in the project.

Value to DPMC/DEP

No learning curve – established guidelines and procedures

Outreach and stakeholder engagement has been a critical element of the RBD Hudson River Project, for which team member OMA has been leading the charge and will continue to do so as a strategic member of the AECOM team.

During the competition and subsequent study phases of HUD Rebuild by Design Hudson River, the OMA team actively engaged with a wide a range of stakeholders through presentations, workshops and meetings. The design teams' goal was to educate the community and the design team on the costs and benefits of protecting Hoboken and living with water. The team presented at multiple events, listening and even teaching resilience through the lens of Politics 101. OMA mediated differences between groups through the shared objective of resilience. The feedback from public showcases and web-based surveys shaped the final proposals. This was the first phase of a rigorous stakeholder process that received impressive and broad based support from federal office through to individual resident that will continue in the implementation phase of the project.

Value to DPMC/DEP

Seamless transition due to established relationships

On a global scale, AECOM is working as the strategy partner with 14 of the first 67 cities to be selected for the 100 Resilient Cities (100RC) program launched by the Rockefeller Foundation in 2013. These include San Francisco, Berkeley, and Oakland in the U.S., together with Melbourne, Christchurch, Bangkok, Rome, Quito and Mexico City. We are working with teams of participants drawn from government, industry, non-government and community groups, and academic institutions. Our workshops are designed to build stakeholder engagement around resiliency, identify focus areas for the chief resilience officers, and acknowledge existing resilience work and achievements of the cities.

Our experience key to this project is summarized in the table that follows, showing a sampling of relevant projects. These projects demonstrate our record of multifaceted, transdisciplinary implementation on large and similar projects.

AECOM Representative Experience with Transdisciplinary Implementation of Large and Similar Projects Client / Project / Location	NJ/NY area project	Flood mitigation	Environmental infrastructure	Surveys/ site investigations	Designs and bid specs	Landscape architecture in urban areas	Proper removal of hazardous materials	Site remediation and restoration	Stakeholder outreach and coordination	Construction oversight services	Experience with state and/or federal government	Work order contract	On schedule
USACE New York District **Sandy Hook to Barnegat Beach Erosion Control*** Elberon to Loch Arbour, NJ	■	■	■	■	■		■		■	■	■	■	■
USACE New York District **IDCs for Flood control, Shore Protection and Coastal Storm Damage Reduction*** North Atlantic States, New York and New Jersey	■	■	■	■	■	■		■	■	■	■	■	■
NJ Turnpike Interchange 6 to 9 Widening Program* Monroe Township, NJ	■	■	■	■	■	■	■	■	■	■	■		■
NJ American Water Raritan Millstone WTP Flood Protection Program* Bridgewater, NJ	■	■	■	■	■				■	■	■		■
World Trade Center Public Realm* New York, NY	■		■	■	■	■			■		■		■
Blackpool Promenade and Coastal Defences* Blackpool, England	■	■	■	■	■	■			■				■
Rebuild by Design Meadowlands NJ	■	■	■	■	■	■	■	■	■	■	■	■	■
Lower Manhattan Coastal Resiliency New York, NY	■	■	■	■	■	■			■		■		■
DPMC/DEP Floodplain Mapping NJ	■	■		■					■		■	■	■
NJ TRANSIT Long Slip Hoboken, NJ	■	■		■	■			■	■		■	■	■
USACE Greater New Orleans Hurricane & Storm Damage Risk Reduction System New Orleans, LA		■		■	■					■	■	■	
East Midtown Esplanade and Greenway New York, NY	■	■	■	■	■	■			■				■

*Detailed descriptions are included at the end of this section.

We've done it before

AECOM plays a leadership role in shaping the resilience planning, tool development and implementation across many clients and geographies for private sector and public sector sponsored work.

We know the client and stakeholders

As mentioned above, AECOM has extensive experience with the Department of the Treasurey, Department of Community Affairs (DCA), DPMC and DEP, on several task order contracts. **AECOM is currently leading the RBD Meadowlands Project under Chris Benosky's direction (with Matrix and Remora as subconsultants).**

Other State contracts Include:

- DPMC/DEP RBD Meadowlands (TC-001)
- DPMC/DEP Blue Acres - Demolition of Residential Properties (TC-008)
- DPMC/DEP Floodplain Risk Mapping (TC-007)
- DPMC/DEP Floodplain Risk Mapping (two previous contracts held by AECOM and legacy URS)
- DPMC Upgrades to the Newark DOT Maintenance Facility
- DCA Management of the Reconstruction Rehabilitation Elevation and Mitigation Program (RREM)

We have worked on other HUD and federal grant projects

We are involved in the RBD Meadowlands and Lower Manhattan resiliency efforts and are active in supporting a number of Community Development Block Grants for Disaster Recovery (CDBG-DR). Our experience includes several work order contracts with area agencies, including the NJ TRANSIT, the MTA in New York and the Port Authority of New York and New Jersey.

Value to DPMC/DEP

A leader in resiliency planning and implementation

> "The newly rebuilt Montague Tube subway tunnel is safer, stronger, and more resilient than ever before. Completed ahead of schedule and under budget, this project exemplifies our commitment to building our communities back stronger and better prepared."
>
> Andrew M. Cuomo, Governor
> State of New York

NJ TRANSIT Hurricane Response Strategy Development

PANYNJ Sandy Recovery and Resiliency

MTA Captial Construction Montague Tunnel Restoration

> "As always, I really appreciate the tremendous amount of support we are getting on these mapping projects."

Mike Powell, State NFIP Coordinator, DNREC, regarding AECOM support as part of our joint venture RiskMAP contract with FEMA Region III

We have been, and continue to be, one of the primary FEMA contractors in the region

AECOM is providing professional technical services to the DEP in support of their Cooperative Technical Partnership (CTP) with FEMA under two separate IDIQ contracts. Under the Hazard Mitigation Technical Assistance Program (HMTAP), AECOM has been chosen by FEMA four consecutive times since 1995 with cumulative contract value of $390 million to provide national hazard mitigation technical support. **Over the course of the contract AECOM has performed over 1,100 task orders.** In addition, AECOM is a key member of joint ventures for two consecutive Production and Technical Services Contracts under FEMA's Risk MAP Program.

To date, the AECOM team has realized approximately $140 million in task orders for a variety of services, with just under $70 million of this work being regional production task orders. Over the past 20 years, under four consecutive open-ended Contracts ($50M, $95M, $75M, $150M), AECOM has provided pre-and post-disaster technical support to assist FEMA's Mitigation Program covering all types of hazards nationwide, including flood hazard identification in the States of New Jersey and New York. **AECOM has been issued more than 500 Task Orders under the contract and has provided support on nearly 100 disaster declarations.**

Value to DPMC/DEP

Intimately familiar with the project area flood mapping

For FEMA's RiskMAP program, AECOM performed on the coastal study and mapping of the entire New Jersey Atlantic coast line. Including, Hoboken, Jersey City, and Weehawken.

We are a USACE New York District and nationwide A/E contractor.

We have been involved with, and responsible for, the feasibility studies, designs, permitting, and construction of some of the largest flood risk management and ecosystem restoration projects in the region over the past few decades. In addition to the USACE, the State of New Jersey, and HUD, the AECOM team has extensive experience working with the Environmental Protection Agency, the Port Authority of New York and New Jersey (including PATH Sandy resiliency work oders), Public Service Electric and Gas Company (PSEG), the Cities of Hoboken, Weekawken and Jersey City, NJ TRANSIT and North Hudson Sewer Authority.

We help cities around the world become more resilient

As a contractor working for the 100 Resilient Cities—pioneered by the Rockefeller Foundation. AECOM is the global resilient cities partner under the R!SE Initiative of The United Nations Office for Disaster Risk Reduction (UNISDR). Partnering with IBM, we have developed the Disaster Resilience Scorecard.

Relevant Past Project Experience

Hoboken is one of 45 cities worldwide—the second in the U.S. after San Francisco—recognized by UNISDR as a "Role Model City of the Making Cities Resilient campaign" for its flood risk management practices, including its plans to retain over a million gallons of stormwater runoff through green infrastructure.

This was based on the Disaster Resilience Scorecard developed by AECOM in partnership with IBM, a tool that helps cities assess and respond to the risks they face in potential natural or human disasters.

Relevant Projects

In accordance with your RFP, we have included detailed descriptions of six relevant large and similar projects to demonstrate our qualifications to provide the required services on the Rebuild by Design Hudson River contract.

1 **USACE — New York District (NYD)**
SANDY HOOK TO BARNEGAT BEACH EROSION CONTROL

2 **USACE — North Atlantic Division & NY District (NAD) NYD**
INDEFINITE DELIVERY CONTRACTS FOR FLOOD CONTROL, SHORE PROTECTION AND COASTAL STORM DAMAGE REDUCTION

3 **New Jersey Turnpike Authority**
INTERCHANGE 6 TO 9 WIDENING PROGRAM

4 **New Jersey American Water**
RARITAN MILLSTONE WTP FLOOD PROTECTION PROGRAM

5 **Port Authority of New York & New Jersey**
WORLD TRADE CENTER PUBLIC REALM

6 **Blackpool Borough Council**
BLACKPOOL PROMENADE AND COASTAL DEFENSES

1 USACE- NYD Sandy Hook to Barnegat Beach Erosion Control

Loch Arbor, Allenhurst, Deal, and Long Branch, NJ

RBDH TOUCHPOINTS

- ✓ NJ/NY area resiliency project
- ✓ Coastal modeling
- ✓ Flood risk management
- ✓ State/federal agency coordination
- ✓ Design/bid documents
- ✓ Construction oversight

Completion
Design: complete
Construction: ongoing

Project Value
$125 million

Key Staff Involved
Christopher Benosky
Karen Appell
Steven Li
Ed Schmeltz

Client Reference
USACE New York District
Roy Messaros
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917.790.8247

AECOM is collaborating on the Army Corps of Engineers New York District's (USACE-NYD) Sandy Hook to Barnegat Beach Erosion Control Project. The project is an approximate 3.5- mile reach of constructed reach of beach from Elberon to Loch Arbour, falling within the larger Sandy Hook to Barnegat Beach Erosion Control Project. Storm risk management is provided by the implementation of a 140-foot wide constructed beach fill berm that is wider and higher than current conditions. The advance nourishment fill accounts for the rates of littoral drift and erosion in the project area to ensure that the constructed project will remain at its authorized dimensions between construction and each renourishment cycle. The project includes modifications to six existing groins, as well as improvements to 17 outfalls, including 10 outfall extensions, six pre-formed scour holes, and one retention system.

AECOM Role and Scope

AECOM was responsible for progressing the design of the outfall extensions, pre-formed scour holes and the retention system through the 30%, 65%, and final design phases. To support this effort, AECOM, a subconsultant to a small-business prime, performed field investigations, including soil borings on land and nearshore, sonar imaging, reflection seismology, land surveying, sediment testing, and photographic inventory. Conceptual alternatives were assessed based on physical and economic sustainability. Design analysis consisted of the development of design criteria for hydrology and hydraulics, geotechnical engineering, and structural/coastal engineering, including the daily and extreme wave loading and littoral budgeting applies laterally (transversely) on the various structural types, as well as wave forces for cyclic load computation. Design documents included construction-level plans and specifications of a Design Documentation Report (DDR) and construction cost estimates.

AECOM is currently providing technical support to the USACE-NYD's resident engineer during site construction administration (CA).

Construction Support Services

To support the USACE-NYD's resident engineer, AECOM is providing technical review services including; specific technical support evaluation & modification of design based on field issues, and weekly/on call construction inspection services. AECOM is responsible for construction activity effort also includes construction activity coordination & reviews between all stakeholders, (USACE, NJDEP, Local Communities, Contractor and Residents) and to minimize impacts to the communities from construction activities during the peak summer beach season. These services include:

- Review and checking of shop drawings and other contractor submissions
- Technical analysis of submittals
- Preform site visits during construction and report on activities at the site
- Technical assistance during construction for RFI's. Provide a reply to RFIs submitted regarding the design and construction for the proposed work.
- Periodic review of as-builts
- Provide technical support during construction
- Support weekly QC inspection at site

2 USACE IDCs: Flood Control, Shore Protection & Coastal Storm Damage Reduction Projects

North Atlantic Division & New York District; North Atlantic States, New York & New Jersey

To meet ARRA funding Deadlines designed, permitted and awarded Construction Contract for nearly $20M in in construction in nine months from of Task order Award including providing topographic mapping and completing the subsurface exploration in the middle of a snowy winter.

For over 30 years, AECOM (including legacy URS) has been a partner with the USACE Civil Works design teams through various prime and joint-venture indefinite delivery and indefinite delivery/indefinite quantity term contracts involving Flood Control, Shore Protection, & Coastal Storm Damage Reduction. These contracts have afforded us the opportunity to consistently provide the USACE Civil Works teams with planning, design, and construction administration services for a diverse array of projects over a long-term timeline. AECOM has successfully demonstrated our ability to meet the demands of these comprehensive term contracts, offering expert resources on a wide variety of assignments, while concurrently executing multiple task orders.

Work under these contracts has included many of the NY District's most significant flood risk management projects including the Passaic River Main Stem and Tidal Reaches Storm Damage Reduction Project; the Sea Bright to Manasquan Inlet Storm Damage Reduction Project, one of the largest beach fills ever constructed in the US; the Fire Island to Montauk Point Storm Damage Reduction Project, encompassing over 83 mile of the south Shore of Long Island and the Green Brook Flood Risk Management Project, the largest flood control project presently under construction in the state of NJ. Work under these contracts has included: flood damage reduction studies in central and northern NJ; plans and specifications for major levees, floodwalls, pump stations and closure gates, including two across NJTransit rail lines along the Raritan River; technical support for FEMA NFIP levee system evaluation to determine dike and barrier system protection from the base flood (1% annual chance); hydrologic and hydraulic modelingto support the consideration of a detention dam, replacement of an undersized rail road crossing, a local levee, and non-structural protection for a flood risk management project in Poplar Brook, Monmouth County, NJ; and evaluation of sea level rise, levee overtopping volume computations, and interior drainage analysis for the South River Coastal Flood Risk Management Project Post Sandy Update in Middlesex County, NJ.

A specific example of a large-scale project for which we have provided long-term services over multiple contracts is the Green Brook Flood Risk Management Project. Located in the Green Brook sub-basin of the Raritan River in Somerset, Middlesex and Union Counties, NJ, this basin has been impacted by frequent and extreme flood events over the last forty years, resulting in Presidential disaster declarations six times. AECOM has completed design analyses, prepared contract drawings, specifications, and cost estimates, and provided construction phase services over the last 15 years. The total estimated construction cost is ~ $ 610 million.

RBDH TOUCHPOINTS

- ✓ State/federal agency coordination
- ✓ Coastal modelling
- ✓ Flood risk management
- ✓ Structural & non-structural flood damage reduction analysis & design
- ✓ Stakeholder outreach and coordination
- ✓ Site remediation
- ✓ Construction documents
- ✓ Construction oversight

> "Congratulations on a well-prepared and efficiently delivered product. Thank you for your dedicated (personal and team) efforts on this first, yet extremely important, milestone."

Amy M Guise, Chief of Planning
USACE Baltimore District,
via email December 19, 2013

Hydrologic/Hydraulic Modeling and Risk Assessments

AECOM formulated and optimized this complex flood control initiative through the incorporation of extensive hydrologic and hydraulic modelling, including hydraulic modeling for over 44 miles of river, application of a basin-wide hydrologic model, and the development of more than 30 interior sub-basins. Recently AECOM updated the modelling by creating a basin wide unsteady HEC-RAS model which incorporates a HEC-RAS 2-D model to evaluate a unique and complex hydraulic analysis to model a 6000 cfs watershed diversion through a heavily urbanized area in Scotch Plains and Plainfield.

Final Design, Permitting, & Construction Documents

Flood control and drainage improvement designs, permits, and construction documents were executed for channel modifications, Interior drainage facilities, levees, floodwalls and eight closure structures for a number of segments.

Floodwalls – During the feasibility stage preliminary designs of approximately 2.1 miles of floodwall protection that considered three types of design: reinforced concrete "Inverted T" walls (floodwalls >10'); reinforced concrete "I" walls with sheet pile foundations (floodwalls > 5' to < 10'), and reinforced concrete "I" walls on spread footings (floodwalls < 5'). These sections were examined for lateral, sliding, overturning stability, uplift pressures, and seismic forces and designed in accordance with USACE criteria. Final design and plans and specifications and engineering services during construction have been provided for over 2000 LF of flood wall using composite walls consisting rock socketed H-piles with concrete capped sheet pile, and micro pile supported T-walls.

Levees – Levee heights and subsurface stratigraphy were examined throughout the proposed project area and project savings were attained by examination of existing features and determining that impermeable cores were unnecessary. Furthermore, the low seepage rates of the native material, in conjunction with short flood durations, allowed a reduction in the size of inspection trenches, increasing anticipated production rates and eliminating needless movement of native materials. Final designs plans and specifications and engineering support during construction have been provided for nearly 3000 LF of levee construction.

Closure structures – To date AECOM performed the final design, plans and specifications and provided engineering during construction services for three of the eight closure gates. The closure gates consist of a 47 ft. long by 17 ft. high roller gate (2 traffic lanes & s sidewalks) across South Main Street; an 80 ft. wide by 7 ft. high two leaf swing gate (4-track equivalent) across the NJTransit Main Line tracks; and a 48 ft. wide by 4 ft. high stop log closure gate (2-track equivalent) across NJTransit cross over track all in Bound Brook NJ.

Left to right: New storm water pump station and levee; AECOM designed swing gate spans NJ TRANSIT Tracks

Completion
Design: complete
Construction: ongoing

Project Value
varies

Key Staff Involved
Christopher Benosky
Karen Appell
Heather Morgan
John Dromsky-Reed

Client Reference
Sheila Rice-McDonnell
(Greenbrook Flood Control Project)
IDC M-308
917.790.8297

Elena Manno
(Greenbrook Flood Control Project)
(IDC C-206)
917.790.8371

Steve Weinburg
(IDC C-201 River Navigation, Flood Control Systems, Shore Protection Systems, and Ecosystem Restoration)
917.790.8296

Steve Couch
(IDC 3002 Engineering and Shore Protection-NY District and NAD/MSC Boundaries; IDC for Shore Protection & Coastal Inlet Studies; both JVs with Moffatt and Nichol)
917.790.8707

Charles P. MacIntosh
(IDC National Planning Center of Expertise for Coastal Storm Damage Reduction; JV with Moffatt and Nichol)
212.656.6541

3 New Jersey Turnpike Authority Interchange 6 to 9 Widening Program

Monroe Township, New Jersey

RBDH TOUCHPOINTS

- ✓ NJ project
- ✓ Flood risk management
- ✓ State/federal agency coordination
- ✓ Stakeholder outreach and coordination
- ✓ Green infrastructure
- ✓ Site remediation
- ✓ Construction oversight

Completed on time and under budget, the Interchange 6 to 9 Widening Program adds 170 lane miles to the turnpike, doubling the section's capacity from Interchange 6 to 8A and adding a third lane in each direction from 8A to 9.

Completion
Design: complete
Construction: ongoing

Project Value
$2.3 billion

Key Staff Involved
Christopher Benosky
Karen Appell
Shruthi Ashokan

Client Reference
New Jersey Turnpike Authority
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The NJ Turnpike Interchange 6 to 9 Widening Program was instituted to address the traffic congestion experienced by the Turnpike and the expected increased traffic volume by 2032 in both the northbound (68 percent) and southbound (92 percent) directions. The Program consisted of road widening and associated interchange improvements from Interchange 6, in Mansfield Township (Burlington County), to just south of Interchange 9 in East Brunswick Township, Middlesex County (Milepost 83). The program included the construction of three truck/vehicle lanes in both northbound and southbound direction over a length of 35 miles in a dual-dual roadway configuration (three inner existing car lanes and three outer truck/vehicle lanes in both directions).

AECOM Role and Scope

AECOM provided environmental consulting, section design, constructability review and comprehensive construction management of this $2.3 billion project. A portion of AECOM's work consists of the design and preparation of construction contract documents for a 411-acre wetland mitigation at the Brookland Site in Monroe Township. Mitigation included creation, restoration, enhancement, and preservation. AECOM analyzed data collected during the conceptual design phase, and collected supplemental data as necessary, including geotechnical, physical, and hazardous materials soil samples, groundwater and stream gage data, and existing onsite wetlands and hydric soils delineations.

H&H modeling was performed to update the existing FEMA models, then existing conditions and effects of the proposed design on the flood hazard area were assessed. Specific drainage areas for each of the proposed wetland areas were delineated. This information, along with an analysis of the collected data, was used to support the mitigation design, converting the existing 157-acre agricultural portion of the site into a mosaic of forested uplands, forested wetlands, vernal pools, and wood turtle nesting habitat.

A major design goal for the project was to reconnect the site's floodplain to the existing drainage ditches. This was done by:

- disconnecting and plugging existing tile drains;
- lowering ground surface elevations; and
- raising the inverts of the existing man-made drainage ditches.

The Brookland Mitigation Site provides numerous environmental uplift and benefits:

- preservation and enhancement of existing wetland habitat;
- creation of new wetland, vernal pool, and wood turtle nesting habitat;
- decrease in curve number and increase in time of concentration;
- increase in flood storage and groundwater recharge within the wetland areas;
- reconnection of the site to the floodplain;
- reduction in nutrient and pesticide loading to the Millstone River; and
- reduction of total runoff and flood flows to the Millstone River.

AECOM developed construction documents, including phasing, grading, planting, and soil erosion and sediment control plans and details, as well as specifications and cost estimates. All excavated materials were placed onsite to achieve materials balance.

AECOM was also responsible for obtaining all requisite permits, including wetland and flood hazard area permits, soil erosion and sediment control certifications, and other necessary approvals from local agencies. We coordinated with various divisions of NJDEP regarding results of soil sampling, cultural resources, T&E species, and impacts to flood hazard areas. We also coordinated with the NJDEP Mitigation Council to obtain approval of the mitigation plans and water budgets.

AECOM developed a permitting program and implemented a permitting process based on early and ongoing agency coordination, dissemination of permitting requirements to the team and development of a transportation solution that minimized environmental impacts while best meeting project purpose and need.

> "I am convinced that our proactive efforts to define the risks and systematically mitigate them and our collective and individual mindset of accountability set the framework for a very successful program."

NJTA Program Manager and Deputy Chief Engineer John Keller, PE, PMP

Once permit applications were submitted, it took only six months to acquire permits for approximately 120 acres of wetland impacts, 400 acres of deforestation and 38 stream crossings. The NJDEP cited AECOM's permitting efforts as a "model" for the way major transportation projects should be permitted.

4 New Jersey American Water Raritan Millstone WTP Flood Protection

Bridgewater, New Jersey

RBDH TOUCHPOINTS

- ✓ NJ project
- ✓ Flood risk management
- ✓ State/federal agency coordination
- ✓ Stakeholder outreach and coordination
- ✓ Interior Drainage
- ✓ Construction administration
- ✓ NJEIT funded

Completion
Ongoing

Project Value
$38 million
(NJEIT Funding)

Key Staff Involved
Chris Benosky
Mark Gonski

Client Reference
New Jersey American Water
Manoj Patel, PE
908.431.3264

New Jersey American Water's (NJAW) Raritan Millstone Plant is a critical water treatment facility, producing 165M gallons of potable water each day for central New Jersey. The plant, however, is located in the floodplain of the Raritan River, and has twice been inundated by floodwaters, in 1971 and again 1999. After the 1999 flood, a security/floodwall was constructed, completing the protection afforded by a previously constructed levee system that only partially encircled the plant. After the recent threats posed by Hurricane Irene (2011), which came within an inch or two of topping the existing line of protection and followed a year later by Hurricane Sandy (2012), NJAW decided to raise the plant's existing one-mile long flood protection system surrounding the plant. The existing system is comprised of earthen levees and concrete floodwalls. The proposed project raises the top of the existing protection nearly four feet, increasing the level of protection from the 100-year flood elevation level to the 500-year level. The $38M project is being funded through a low interest loan administered by the New Jersey Environmental Infrastructure Trust (NJEIT).

AECOM is helping ensure substainability of water supply for more than 1M people in Central New Jersey.

AECOM Role and Scope

AECOM designed the project to FEMA, USACE, NJDEP, NJEIT, and NJAW design requirements, employing its engineering and scientific experts from across the company. Major design challenges included:

- Enlargement of the flood protection footprint would constrict the river flow at flood stage and raise the water surface;
- Numerous large diameter underground water mains and intake pipes cross beneath the flood protection system, complicating installation of deep foundations and underseepage reduction systems;
- Permitting requirements restrict construction easements and place limitations on activities during certain months, and;
- The plant's 24/7 operations require construction activities to be sequenced to maintain plant access and avoid disrupting operations.

AECOM performed the permitting work including the wetland delineations, impact analysis and the HEC-RAS modeling of river flooding for the Flood Hazard Area permit. To address real estate and operational restrictions AECOM developed designs of several different flood control systems to suit the unique conditions in the different quadrants of the plant, including:

- Earthen levee enlargements,
- T-walls and I-walls,
- Raising of an existing concrete lagging wall, and
- A steel pipe pile/sheet pile bulkhead/floodwall .

AECOM provided geotechnical engineering services, including development and oversight of a soil sampling and testing program; stability analyses for the levee enlargements and new floodwalls; and underseepage analyses. To maintain a level of protection during hurricane and winter flood seasons, foundations were designed to facilitate the installation of temporary flood protection systems during the construction period. Both deep and shallow foundations were used. Deep foundation systems included drilled shafts, micro-piles, and steel sheet piling. Underseepage reduction systems consist of bentonite-cement jet grout and steel sheet pile curtain walls, as well as embankment toe drains. The underseepage reduction system is designed to limit underseepage flows to a volume that the plant's existing interior drainage and pumping system can handle.

Structural engineering included design of new T-walls and I-walls, retrofits to the existing lagging floodwall, combination steel pipe pile/sheet pile bulkhead/floodwall, swing gates, and diaphragm cellular walls.

Civil engineering efforts included site work and grading, modifications to existing interior storm water pumping systems, overhead and underground utility relocations, modifications to the plant's spill containment areas and ponding areas, design of secondary retaining walls, and design of a new sanitary sewer lift station, and relocation of company picnic area.

Outreach support included interface with NJDEP for permitting, local community planning boards for site planning and permitting, and public outreach efforts. AECOM is currently on site performing constrution administration and resident engineering for NJAW during the construction.

Groundbreaking ceremony April 12, 2017. *Left to Right:* staff from Gannett Fleming and KC Construction are first 3 from the left; 4th from left is Manoj Patel, PM for NJAW, then Robert Ferrell, DPM for AECOM, Christopher Benosky, Project Director for AECOM, PM from Allied Construction and right is; Mike Wolan, North District Engineering, Mangaer for NJAW

5 Port Authority of NY & NJ World Trade Center Public Realm

New York, New York

RBDH TOUCHPOINTS

- ✓ NJ/NY area project
- ✓ State/federal agency coordination
- ✓ Stakeholder outreach and coordination
- ✓ Green infrastructure
- ✓ Landscape architecture/ urban design
- ✓ Completed on schedule and within budget

Working for the Port Authority of New York and New Jersey, AECOM has designed the public realm for what may already be the most well-known urban site in the world; the World Trade Center (excluding the Memorial). Located in vibrant Lower Manhattan, the site hosts millions of tourists, visitors, commuters and residents each day. The project comprises the streets, plazas and parks within 'Ground Zero,' working to unify a 16-acre redevelopment project that includes five world class skyscrapers, a performing arts center, a regional multi-modal transportation hub and a state-of-the-art vehicle security center.

AECOM Role and Scope

AECOM has led an extensive coordination and consensus building effort through a series of joint ventures.

From the start of the project, a sense of openness and accessibility has been a key priority for the space. The process involved significant coordination with diverse community, agency, and real estate stakeholders, as well as design resolution and integration of urban design elements relating to pedestrian movement, transport, security and retail environments. The project included a number of innovative strategies geared towards a comprehensive public realm, emphasizing open space connectors to all elements within the World trade Center site.

A main focus was to enhance the pedestrian and bicycle experience of the area, unifying the entire district with custom signage, wayfinding, and paving patterns. The streetscape is intended to ground the entire district with an all-encompassing ground plane design that includes generously proportioned sidewalks, secured vehicle stand-off, and a district-wide distinctive paving pattern that follows the east-west grid of the 911 memorial. Regarding security and emergency vehicle access, the approach wass to resist turning the site into a fortress. Learning from the experiences of other cities such as Washington DC, where security measures are often highly visible, designs for this project were conceived to be effective but also unobtrusive, producing a new and intelligent kind of security aesthetic.

Liberty Park

The Landscape Architecture and Urban Design Studio at AECOM led the design effort, including planting, paving, lighting and structural design in coordination with a sustainable stormwater harvesting and detention system, as well as the design of electrical, and irrigation systems, extensive architectural cladding of the Vehicular Security Center building and mechanical intake and exhaust ventilation towers. In addition, and due to the projects complexity and political sensitivity, the design team provided extensive in-house photorealistic documentation of the design to obtain various reviewing agency and stakeholder approvals.

The park's design provides a critical pedestrian walkway connection between the District streetscape and the pedestrian bridge spanning the adjacent West Side Highway while also linking to the World Financial Center in Battery Park City. In addition, the circulation has been carefully orchestrated to allow pedestrians to transition nearly 32 feet in vertical elevation while meeting ADA accessibility requirements.

Through smart design, innovative problem-solving, and a focus on comfort, Liberty Park has cemented itself as both a crossroads and a destination within a rebuilt, resilient Lower Manhattan.

Liberty Park has brought an unprecedented perspective to the surrounding World Trade Center District. Since it's opening in the Spring of 2016, the park has opened to great fanfare from both local resident and visitors alike.

Completion
2017

Project Value
$60 million

Key Staff Involved
Brandon Cappellari
Chris Benosky
Karen Appell

Client Reference
Port Authority of New York & New Jersey
Carla Bonacci, WTC Assistant Director, Infrastructure and Project Development
212.435.5532
cbonacci@panynj.gov

6 Blackpool Bourough Council Blackpool Promenade and Coastal Defences

Blackpool, England

RBDH TOUCHPOINTS

- ✓ Coastal resiliency project
- ✓ Government agency coordination
- ✓ Stakeholder outreach and coordination
- ✓ Coastal modeling
- ✓ Coastal protection design
- ✓ Landscape architecture/ urban design

With increasing threats from super storms and sea level rise, Blackpool faced major challenges in offering protection from the sea while maintaining a sense of openness and connectivity between a seafront community and its water's edge. This pioneering project, which resulted in a serpentine promenade and coastal protection structure along two miles of seafront, demonstrates successful collaboration between landscape architects and marine engineers, with successful flood protection and enhanced

Vision + Master Plan

We prepared and implemented a dramatic master plan for central Blackpool, paving the way for achievable and sustained growth. The master plan was devised to:

- enhance connections between the town and its beach, while mitigating the increased flooding;
- upgrade the urban environment to make Blackpool a more pleasant location to visit, work, live and invest in;
- tackle seasonal economic weaknesses by introducing new year-round attractions and facilities; and
- uplift the overall tourist appeal through physical improvements combined with a new culture of quality in the local hospitality and entertainment sectors.

As catalysts for future development, we completed three key public realm projects, the most prominent of which is the serpentine promenade and coastal protection structure that runs along nearly two miles of seafront. The Southern Gateway scheme and the new George Bancroft Park have also been constructed in this first phase of development, which has set high quality benchmarks and instilled confidence in the ambitious new plans.

New Coastal Protection: A Radical Rethinking

Among Blackpool's challenges was the issue of rising tides and the realization that historical efforts to remedy this problem, including an expansive 30-foot high Victorian seawall, were largely contributing to the town's decline as a favored tourist destination. Due to the need to protect the city still further from escalating flood events, conventional thinking suggested that an even more imposing wave wall was required. Yet this contradicted the resort town's economic needs of increased beach access, demanding a new, integrated approach to be found.

The radical rethink that the project demanded resulted in the coastal protection strategy not being simply seen as an engineering problem to be solved, but rather a piece of large-scale landscape infrastructure. As such, the landscape team took the lead in developing alternatives with input from maritime engineers, who tested the proposals using wave tank analysis. While the old sea wall was a rigid vertical barrier intended to withstand the full force of waves, the new structure has taken its cues from the adjacent sand dunes on which Blackpool was originally built. The design team explored the natural landscape and noted that the dunes mitigated wave energy with the large surface area of their gently sloping seaward elevation. A design for the new structure evolved to dissipate wave energy in a comparable manner by creating a continuous series of steps, each step riser acting as a mini wave wall. This has not only resulted in the seawall being much lower than anticipated, but provides continuous beach access along the city's promenade for the first time in a century. This was designed through a reiterative process of modeling in 3D, which was then used to create CNC physical models that where tested in wave tanks simulating different storm events, the results feeding back to the digital model.

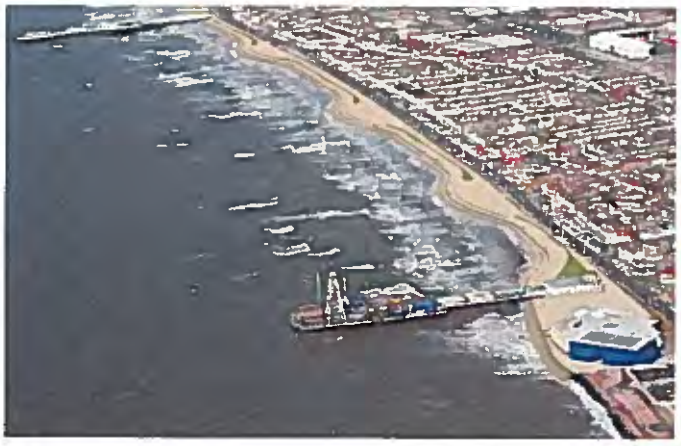
The overall snaking shape of the steps also arose from this process, modeling the coastal sediment transport to determine where the promenade could expand at street level, improving the visual and physical links between beach and town. The result is a striking sculptural form nearly two miles in length, its boldness being in keeping with Blackpool's historic past.

The integration of coastal dynamics with public realm design has been extended beyond the big picture to guide the detailed design scheme. Colored to match the famous Blackpool sand, the curvaceous coastal protection structure has become a direct extension of the waterfront, its gentle incline giving the appearance that the steps are formed of the beach itself.

Our pioneering approach demonstrates the full potential of closely integrating landscape design, engineering and responsiveness to dynamic natural processes. The underlying principles of this scheme have already been adopted further up the coast to the north of Blackpool.

Completion
2007

Client Reference
Blackpool Borough Council
Reg Haslam (formerly with ReBlackpool)
Tackers Lodge, Lancaster Road, Slyne, Lancaster, LA2 6AW



Key Team Member Project Experience Data Sheets

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Christopher Benosky, PE, CFM**

TITLE Program Manager

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Rebuild By Design (RBD) New Meadowlands Project, Bergen County, NJ $100M	AECOM/ State of new Jersey	Field investigations, design analysis, construction documents, and construction administration	Project Executive	17 months	40%	12/15 - current	New Jersey Department of Environmental Protection
Sandy Hook to Barnegat Beach Erosion Control Project: Elberon to Loch Arbour, NJ $125M	AECOM/New York	Field investigations, design analysis, construction documents, and construction administration	Principal Engineer & Construction Management Lead	42 months	5%	11/13 - current	United States Army Corps of Engineers - New York District
USACE IDCs Green Brook Channel Improvements Flood Damage Reduction Project, Somerset County $550K	AECOM/New Jersey	Field investigations, design analysis, construction documents, and construction administration	Project Director & Technical Expert	37 months	5%	04/14- Current	United States Army Corps of Engineers - New York District
Interchange 6 to 9 Widening Program $2.3B	AECOM/New Jersey	Field investigations, design analysis, construction documents, and construction administration	Project Director & Technical Expert	84 months	5%	05/10 - current	New Jersey Turnpike Authority

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Karen Appell, PE, CPESC**
TITLE Project Manager
FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Sandy Hook to Barnegat Beach Erosion Control Project: Elberon to Loch Arbour, NJ $125M	AECOM/New York	Field investigations, design analysis, construction documents, and construction administration	Project Manager	20 months	30%	11/13 - 7/15	United States Army Corps of Engineers - New York District [redacted]
USACE IDCs Green Brook Channel Improvements Flood Damage Reduction Project, Somerset County $550K	AECOM/New York	Field investigations, design analysis, construction documents, and construction administration	Project Manager	15 months	15%	04/14-07/15	United States Army Corps of Engineers - New York District [redacted]
Interchange 6 to 9 Widening Program $2.3B	AECOM/New Jersey	Field investigations, design analysis, construction documents, and construction administration	Project Manager	62 months	20%	05/10 -07/15	New Jersey Turnpike Authority [redacted]
World Trade Center Public Realm, New York, NY $60M	AECOM/New York	Design analysis (for stormwater design) and construction document review	Project Engineer and Technical Reviewer	2 months	10%	2011	Port Authority of New York & New Jersey
Floodplain Mapping Multiple Pequannock, NJ $1.4M	AECOM/New Jersey	Detailed hydrologic & hydraulic studies, floodplain mapping, and field surveys	Project Manager	13 months	15%	01/12 - 02/13	NJDEP [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Heather M. Morgan, RLA**

TITLE Deputy Project Manager

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
USACE National Planning Modernization Team, Washington DC (No cost- Federal Strategy)	USACE	Study and Schematic	National Team member: National Policy compliance review and guidance development.	12 months	100%	2013-2014	N/A
USACE IDCs: Reformulation and Coastal Storm Damage Reduction Project, East Rockaway, NY $3M	USACE	Study and Schematic	Enviromental Planning, Land Planning/ Design and Cultural Resources	36 months	50-80%	2009-2013	N/A
USACE IDCs: Long Beach Coastal Storm Damage Reduction Project, Long Beach, NY $230M	USACE	Study, Schematic and Construction	Enviromental Planning, Land Planning/ Design and Cultural Resources	36 months	30-50%	2009-2013	N/A
USACE-IDCs: Plumb Beach Coastal Shoreline Storm Damage Reduction Project, Brooklyn, NY $2M	USACE	Study, Schematic, Construction	Enviromental Planning, Land Planning/ Design and Cultural Resources	18 months	30%	2010-2013	N/A

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Laura Baird**
TITLE Community Relations
FIRM OMA*AMO

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Rebuild By Design Hudson River - Feasibility Phase New Jersey, USA Fee confidential	N/A	Feasibilty study	Associate-in-Charge	12 months	50%	2015 - 2017	NJDEP Henk WJ Ovink, Principal ' Rebuild by Design' Senior Advisor to the Secretary of Housing and Urban Development [redacted]
RFK Stadium-Armory Campus Masterplan Washington DC Fee confidential "	N/A	Schematic design	Associate-in-Charge	16 months	50%	2015-present (on-going)	Events DC [redacted] Director, Strategic Initiatives Events DC | Office of the President and CEO [redacted]
East Harbour Masterplan Toronto, USA Fee confidential	Adamson Associates	Schematic design	Associate-in-Charge	20 months	50%	2015-present (on-going)	First Gulf Development [redacted] Director of Planning & Development [redacted]
Walter E Washington Convention Center Streetscape Washington DC Fee confidential	Beyer Blinder Belle	Schematic design	Associate-in-charge	6 months	50%	2016 - present (on-going)	Events DC [redacted] Director, Strategic Initiatives [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Jeff Brizendine**

TITLE FEMA Certification

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Risk Mapping, Assessment & Planning (MAP) Standard Operations Task Order – Levee Support $1,300,000	AECOM	Responsible for all levee related issues encountered by the team in FEMA regions IV, VIII, and IX; coordination amongst the three Regional Service Centers (RSCs), with the other PTS teams on nationwide issues, and with FEMA on national policy issues.	Control Account Manager	24 months	10%	2010 - 2012	FEMA [redacted]
Levee Certification Inspection, Waterloo, IA $328,000	AECOM	Evaluation of all hydraulic structures that were part of the levee system as well as overall site/condition inspections	Lead hydrology/ hydraulics & civil engineer	3 months	25%	2010	City of Waterloo [redacted]
Blue Lake Wastewater Treatment Plant, MN $78,000	AECOM	Project Management and the evaluation of the hydraulic structures that were part of the levee system, overall site/ condition inspections, and the assessment report.	Project Manager	18 months	25%	2010-2011	MCES [redacted]
Levee Periodic Inspection, Ft. Wayne, IN $397,000	AECOM	Evaluation of all hydraulic structures that were part of the levee system as well as overall site/condition inspections	Lead hydrology/ hydraulics & civil engineer	3 months	25%	2010	United States Army Corps of Engineers – Detroit District [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Kevin Hamby**
TITLE HUD Compliance Specialist/JD
FIRM Remora Consulting, LLC

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
RBD New Meadowlands $120,000	AECOM/ State of new Jersey	Administration/Develop Policies and Procedures for HUD Compliance and Federal Cross cutting Requirements along with Montioring	Draft policies and monitor program	19 months (ongoing)	10%	12/15 - current	AECOM [redacted]
Update to Analysis of Imediemtns to Fair Housing San Marcos $20,000	AECOM/ San Marcos, Texas	Adminsitration/Conduct review of Fair Housing issues in San Marcos, Texas	Research and write update to AI	3 months	20%	02/17-current	AECOM [redacted]
North Carolina Resiliency Program $25,000	AECOM/ North Carolina	Adminsitration/Review propsoals fro Housing concerns and draft language for additional requests	Review requests and draft additonal funding information	3 months	10%	02/17 - 05/17	AECOM [redacted]
NYC Build it Back Program $600,000	AECOM/New York City	Adminsitration/Develop polciies and procedrues to meet HUD compliance requirements and montir program	Draft policies and monitor program	24 months	100%	1/14 - 12/15	AECOM [redacted]
New York Rising Housing Program $150,000	AECOM (URS)/State of New York	Administration/Develop Policies and Procedures for HUD Compliance and Federal Cross cutting Requirements	Draft policies and advice key staff on compliance issues	8 months	50%	8/13-1/14	AECOM [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Richard Renzi**

TITLE Health & Safety

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Floodwall Program Management Services $12M	AECOM/ State of new Jersey	Program Management	Program Health & Safety Manager	38 months (ongoing)	10%	03/15 -current	Passaic Valley Sewage Commission [redacted] Director of Public Safety & Security [redacted]
Wastewater Resiliency Program $400M	AECOM/New York City	Program and Construction Management	EHS Program Manager	19 months (ongoing)	15%	07/15-current	NYC DEP Bureau of Engineering and Design [redacted]
Hurricane Sandy	AECOM/New York City	Program Management and Construction Repairs	Program Safety Officer	4 months	10%	11/12 - 02/13	NYC DEP Bureau of Engineering and Design [redacted]
Stormwater Mgmt On-Call Services, Various Locations $10.3M	AECOM	Project Management	Health & Safety Officer	24 months	10%	2004-2006	California Department of Transportation
World Trade Center Recovery Services, NY, NY.	AECOM	Safety assessment and review	Health & Safety Support	12 months	10%	2001-2002	FEMA

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Dean Challes**

TITLE Quality Manager

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Wastewater Resiliency Program; New York Metro Area $350 Million	AECOM/ New York	Design and ConstructionProgram Management	Program Quality Manager	projected to be 60 months (ongoing)	60%	07/16 -current	New York City Dept. of Environmental Protection
Various National Natural Disaster Recovery Operations $Various Costs	AECOM/New York City	Inspection, Evaluation, SOW, Construction Estimates, Reports	Program/ Project Manager	60 months	100%	01/05-09/11	U.S. Dept. of Homeland Security Federal Emerency Management Agency
Iraq Reconstruction Program $17 billion	Various Firms	Program Management	Program Management Consultant	11 months	100%	05/83 - 09/85	Southern California Rapid Transit District
LA County Fire an Sherrif Stations $10 - 20 Million	Various architecture-engineering firms	Program Management; Design and Construction Management	Project Manager	22 months	100%	02/02-12/03	Los Angeles County Dept. of Public Works
Margaret Sellers Mail Processing and Distribution Center $350 Million	Stickler Architects, San Diego	Construction Management	Project Manager; Construction Manager	28 months	100%	05/92-09/94	U. S. Postal Service
LA Century Freeway Green Line $2 Billion	AECOM/Los Angeles	Construction Management	Construction Manager	22 months	100%	03/90-01/92	Los Angeles County Transportation Commission

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Steven Li**

TITLE Coastal Modeling

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Lower Manhattan Coastal Resiliency, Lower Manhattan, NYC Construction Cost: $4M	AECOM/ New York City	Study	Technical leader of Coastal Engineering/ Intergrated Coastal Storm & Inland Drainage Modeling System	16 months (ongoing)	25%	06/16 -01/2017 (current)	NYEDC [redacted], Senior Project Manager [redacted]
Rebuild By Design Meadowlands Flood Protection Project, Meadowlands, New Jersey $20.6M (ongoing)	AECOM/New Jersey	Study	Technical leader of Coastal Engineering/ Coastal Storm Modeling	>12 months	25%	08/17-09/11	New Jersey Department of Environmental Protection [redacted]
Indian River Inlet Coastal Hydraulic and Scour Study, Delaware Design-build cost: $149,970,400	AECOM/ Virginia	Study, Design & Construction	Technical leader of Coastal Engineering/ Coastal Storm Modeling	14 months	50%	06/08 - 09/09	Delaware DOT [redacted]
Coastal Flood Study for TBTA Project, New York, NY. Study and Design Cost: $2.5 million	AECOM/New York	Study	Technical leader of Coastal Engineering	8 months	25%	02/14-06/14	[redacted] Brox Whitestone Bridge Facility Engineer [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Mark Gonski, PE**

TITLE Flood Control

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
NJ American Water Raritan Millstone WTP Flood Protection $5M	AECOM	Design of Plans and Specifications, and Engineering during Construction	Senior Structural Engineer	12 months	20%	2015-2017	PVSC [redacted]
Hurricane & Storm Damage Risk Reduction Reaches LPV 109, New Orleans, LA; $250M	URS(AECOM)	Engineering and Design during Construction	USACE Senior Structural Engineer	18 months	10%	2012-2014	USACE [redacted]
Hurricane & Storm Damage Risk Reduction Reaches LPV 103-105, New Orleans, LA; $250M	URS (AECOM)	Engineering and Design during Construction	USACE Senior Structural Engineer	12 months	10%	2011-2013	USACE [redacted]
Harvey Floodgate, Harvey LA $42 Mil	USACE	Design Report and Design for Construction P&S	USACE Technical Manager and Structural Engr	72 months	50%	1999-2005	USACE New Orleans District [redacted]
Western Clossure Complex FloodGate, New Orleans, LA $900M	USACE	Design and Design during Construction	USACE Technical Manager and Structural Engineer	48 months	40%	2008-2013	USACE New Orleans District [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Brandon Cappellari, RLA, ASLA, LEED, AP**

TITLE Landscape Architecture/Urban Design

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Lower Manhattan Coastal Resiliency, NY, NY. $7.2 M	AECOM	Landscape architecture, urban design, engineering & environmental services.	Technical Advisor	12 months	10%	12/16 - current	NYCEDC
World Trade Center Public Realm Master Plan, NY, NY.	AECOM	Construction documentation leadership, design assistance, and client coordination support.	LA	24 months	10%	06/09 - current	PAYNYNJ
PANYNJ, Liberty Park- World Trade Center District, NY, NY. $60M	AECOM	Design Services	Lead Construction Administrator	24 months	40%	10/11 - 06/16	PAYNYNJ
Dumbo Plaza, NY, NY. $4.5M	AECOM	Design Services	Lead Technical Designer	24 months	70%	03/12 - current	NYCDDC
Pulaski Street Park, Jersey City, NJ. $700K	AECOM	Design Services	Lead Technical Designer	24 months	50%	03/12 - current	NJDOT
Wellness & Event Center, Newark, NJ. $1M	AECOM	Design Services	Deisgn Lead & Technical Advisor	12 months	50%	02/15 - current	NJIT
Governors Island Phase 1 Park & Public Space, $80M	AECOM	Construction Administration	Construction Administrator	36 months	20%	05/15 - 05/18	Trust for Governors Island

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **John Dromsky-Reed, PE**

TITLE Stormwater Management/Green Infrastructure

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Five Towns Drainage Study; Nassau County, NY $1.2 million	AECOM(URS)	Drainage Improvements and Coastal Flood Protection Analysis for 9 communities in Nassau County, NY	Project Manager, QAQC	20 months	50%	Nov 2015 - present (ending July 2017)	Nassau County, DPW [redacted]
USACE IDCs: Green Brook Channel Improvements Flood Damage Reduction Project, Somerset County $550K	AECOM(URS)	H&H Analyses; Plan formulation; Conceptual Plans	Project Engineer	192 months	5%	Jan 1999 - Jun 1014	USACE [redacted]
South River Flood Control Project; Middlesex County, NJ $200 million	AECOM(URS)	Revalidation of project; updated project layout; updated cost estimate; interior drainage analysis	Project Manager	12 months 14 months	80%; 5%	01/01 - 12/01 06/14 -current	USACE [redacted]
Floodplain Mapping; New Jersey $1.5 million	AECOM(URS)	Detailed studies in the Hackensack-Passaic Basin; Bergen County NJ countywide DFIRM	Project Manager, QAQC	47 months	25%; 5%	10/11-12/13 12/13-current	NJDEP [redacted]
Flood Data Analysis, under HMTAP; New York State $6.6 million	AECOM(URS)	540 stream miles of detailed study; creation of 116 flood recovery maps for over 200 communities	Project Manager, QAQC	30 months	25%	6/07-12/09	FEMA Region 2: [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Matt Jones**

TITLE Stormwater Management/Green Infrastructure

FIRM Magnusson Klemencic Associates

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Presidio Tunnel Tops, San Francisco, CA Const Cost: $100,000,000	James Corner Field Operations	Concepts through Design Development	Civil Managing Principal	37 months	15%	02/15 - 05/17	James Corner Field Operations [redacted]
NuSkin Headquarters Expansion, Provo, UT Cont Cost: $40,000,000	NBBJ	Full Design and Construction Administration	Civil Project Manager	31 months	28%	03/12 - 10/14	NBBJ [redacted]
Governors Island Park and Public Space, New York, NY Const Cost: $200,000,000	West 8	Schematic Design and Design Development	Civil Design Engineer	12 months	30%	07/10-07/11	West 8 [redacted]
Non-potable Water Reuse Practice Guide	Urban Fabrick	Guide Book working group participant and contributing author	Working Group Participant and Contributing Author	23 months	7%	05/15 - 04/17	Urban Fabrick [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Douglas Kubovic**
TITLE Site/Civil Engineering
FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Jamaica Bay Green Infrastructure, Queens, NY $7.4M	AECOM	Green Infrastructure Design	Project Engineer	20 months	50%	2015-2018	NYCDDC [redacted]
Pump Houses 2 and 3 Storm Related Repairs, LaGuardia Airport, Queens, NY $367K	AECOM	Schematic Design	Civil Engineer	4 months	30%	2015	PANYNJ [redacted]
Pump Houses 2 and 3 Storm Related Repairs, LaGuardia Airport, Queens, NY $366K	AECOM	Schematic Design	Civil Engineer	4 months	20%	2015	PANYNJ [redacted]
Andrew Haswell Green Park, Manhattan, NY	AECOM	Schematic Design	Civil Engineer	4 months	30%	2013	NYCEDC [redacted]
Brooklyn Bridge Park Corporation/ MVVA, Brooklyn Bridge Park Project, Brooklyn, NY	AECOM	Schematic and Final Design	Civil Engineer	60 months	60%	2004-2014	MVVA [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Drew Ganges**
TITLE Site/Civil Engineering
FIRM Magnusson Klemencic Associates

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Olympic Sculpture Park, Seattle, WA, Const Cost: $30,000,000	Weiss/ Manfredi	Concepts and Full Design	Civil Principal-in-Charge	38 months	20%	12/01 - 02/05	Weiss/Manfredi
Governors Island Park and Public Space, New York, NY Cont Cost: $200,000,000	West 8	Schematic Design and Design Development	Civil Principal-in-Charge	24 months	20%	07/10 - 07/12	West 8
San Ysidro U.S. Land Port of Entry, San Ysidro, CA, Const Cost: $405,000,000	The Miller Hull Partnership	Masterplanning and Concept Design	Civil Principal-in-Charge	15 months	20%	11/9/09-2/11	The Miller Hull Partnership
Peoria Complete Streets Masterplan, Peoria, IL, Const Cost: Confidential	The Office of James Burnett	Masterplanning	Civil Principal-in-Charge	7 months	15%	02/14 - 09/14	The Office of James Burnett
Elliott Bay Seawall, Seattle, WA $250,000,000"	Parsons Corporation	35% Design through 100% Design	Civil Managing Principal	31 months	30%	04/12 - 11/14	Parsons Corporation

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Philipp Sieber**
TITLE Construction Administation
FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Demolition Consultant (TC-008) $700,000 to date	URS	Program Management/ Construction Administration	Program Manager	39+ months (ongoing)	20%	2/14 - current	
PSE&G Resource Recovery and Environmental Compliance $10,000,000	URS	Program Management/ Construction Administration	Project Manager	29+ months	40%	07/11-12/16	
NJDEP CDBG-DR Program $1,400,000	URS	NJDEP Tier 2 Environmental Assessments	Project Management/ Field Staff Coordination	5 months	20%	09/13 - current	
Hess Marcellus Shale Well Sites $5,474,462	URS	Design and Construction Management	Construction Manager	3 months	100%	10/07 - 12/15	
Dubai Aerospace $114,000	URS	Environmental Due-Diligence	Project Manager	3 months	40%	10/07-12/07	
Remedial Action Project Texaco Oriente Region $30,000,000	URS	Project Management/ Remediation and Restoration/ Construction Administration	In-Country Project Manager	30 months	80%	01/96-08/98	

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Paul W. Moulton, PE**

TITLE Mechanical/Electrical Engineering

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Nutrient Removal Evaluation & Cost Estimate, 11 Various Sites, NJ Harbor $500K	AECOM	Nutrient reduction cost estimation study	Mechanical Engineer	N/A	N/A	N/A	Passaic Valley Sewerage Commission
John J. Carroll Water Treatement Plant Design, Malborough, MA	AECOM	design, construction administration, and resident inspection for ultraviolet (UV) disinfection facilities	Mechanical Design	11 months	30%	06/08 - 05/09	Massachusetts Water Supply Authority
Dalecarlia and McMillan Water Treatment Plant Improvements, Washington, DC.	AECOM	design, construction services, and comprehensive operations and training services	Lead Mechancial Design Engineer	12 months	80%	1981-1985	USACE
Croton Water Treatment Plant, Pump Stations, and Residuals Facility Design, New York, New York.	AECOM	design & construction services	Mechanical Engineer	120+ months	2-5%	2007-2017	New York City Department of Environmental Protection

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **John C. Volk, PE**

TITLE Geotechnical Engineering

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
USACE Hurricane Protection Office, Hurricane & Storm Damage Risk Reduction Reaches LPV 105-110, New Orleans, LA $170 Million	AECOM	Assessed shear strength of subsurface soft clay soils for Levee reaches LPV 105 to 108.	Lead Geotechnical Engineer	64 months	40-75%	09/06 - 11/13	USACE [redacted]
USACE Hurricane Protection Office Engineering & Design of Levee Enlargement Reaeh, LPV 111, New Orleans, LA $170M	AECOM	Review of deep mixing methods and investigation of land-side slope failure..	Technical Reviewer	6-11 months	0-20%	11/06 - 06/11	[redacted]
Virginia DOT, Maryland State Highway & FHWA, Woodrow Wilson Bridge, Alexandria, VA $1.5M	AECOM	Oversee the section designers in ground improvement on approximately 3 miles of construction	General Engineering Consultant	11 years	average 10-30 hrs/week for 11 years	2000 - 2011	Virinia DOT [redacted]
Atlantic City-Brigantine, NJ Connector $190 Million	AECOM	Geosynthetic-reinforced embankment design for 2 miles of highway.	Lead Geotechnical Engineer	98-01 months	12-32 hrs	1998 - 2001	Yonkers Construction [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Chris Venezia**

TITLE Environmental Engineering

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Former Manufacturing Facility - Branchburg, NJ $600K	AECOM	NJ ISRA Compliance/ Remediation	Project Manager/ Senior Techncial Review	86 months	20%	12/09-current	[redacted] Celanese [redacted]
Elizabeth Viaduct, Elizabeth, NJ $98K	AECOM Transportation	NJ Site Remediation Compliance	Senior Technical Review	11 months	5%	06/16-current	[redacted]
NJ Transit - Hudson Tunnel, Jersey City, NJ $132K	SYSTRA	NJ Site Remediation Compliance/Remediation	Project Manager/ Senior Techncial Review	22 months	10%	08/15-current	[redacted]
NJ Transit - Trans Hudson Express Tunnel, Jersey City, NJ $900k	THE Partnership (AECOM part of Joint Venture)	NJ Site Remediation Compliance/Remediation	Project Manager/ Senior Techncial Review	57 months	10%	11/10-08/15	[redacted]
GSA - Belle Meade Army Depot - Hillsborough, NJ $8MM	AECOM	Remedial Design	Deputy PM/Senior Regulatory Reviewer	16 months	15%	08/15-12/16	[redacted]
Griffin Pipe - Florence, New Jersey	AECOM	NJ ISRA Compliance Remediation	Project Manager/ Senior Techncial Review	59 months	60%	02/10-07/15	Amsted Industries [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Sherri Albrecht**
TITLE Permitting
FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Rebuild by Design Meadowlands $4M (includes design)	AECOM	Environmental Impact Statement	NEPA Compliance & Permitting Support	12 months	0% to 50%	2016 - 2017	
Passaic Tidal-Coastal Storm Damage Reduction $280,000	HDR/URS Joint Venture	Environmental Assessment	NEPA Compliance & Permitting Support	14 months	0% to 50%	2016-2017	USACE
Raritan Millstone Water Treatment Plant Flood Protection $2.1M (includes design)	AECOM/New Jersey	Design & Permitting	Environmental Permitting	14 months	0% to 50%	2013 - 2014 & 2017	New Jersey American Water
PVSC Flood Protection $3.9M (includes design)	AECOM/New Jersey	Design & Permitting	Environmental Permitting	24 months	25%	2015-2017	
Teterboro Airport - New Airport Traffic Control Tower (FAA) $ 450,000	AECOM/New Jersey	Design & Permitting	Wetland Delineation, Environmental Permitting, Mitigation Design	60 months	10% to 100%	2011-2015	FAA
South River Storm Damage Reduction	HDR/URS Joint Venture	NEPA Compliance and Permitting	NEPA EA preparation & Permitting/ Coastal Consistency	16 months	30%	2013-2015	
USCG Hurricane Sandy Recapitalization Projects	AECOM	NEPA Compliance and Permitting	NEPA EA preparation & Permitting/ Coastal Consistency	16 months	30%	2013-2014	US Coast Guard

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Niels Benavides, AIA**

TITLE Architecture

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Queens Supreme Court, 88-11 Sutphin Boulevard, Queens NY	AECOM	Design Development, Contract Documents, NYC Landmark Approvals	Lead Architect	9 months	10%	09/13- 09/17	NYC Department of City Wide Administative Services
PS#51M Replacement School , NY, NY	AECOM	Construction Administration, Project Close out, NYC Green Schools Guide	Lead Architect	17 months	70%	04/12 - 09/13	NYC School Construction Authority [redacted]
Rikers Island Cogeneration Power Plant Building, Rikers Island, NY $19M	AECOM	Study, Schematic, Construction Administration, Public Design Commission Presentation	Lead Architect	10 months	20%	09/09 - 10/13	NYPA/NYC Dept of Corrections [redacted]
Wards Island Water Pollution Control Plant, Boiler Building, Wards Island, NY $60M	AECOM	investigations for restoration, rehabilitation and renovation	Lead Architect	8 months	60%	03/10 - 11/11	NYPA/NYC DEP [redacted]
NYC School Construction Authority, Renovations $10M	AECOM	on-call scoping, design and construction support	Project & Program Manager	8 months	80%	10/16 - current	School Construction Authority [redacted]

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Donald E. Ehrenbeck, PP, AICP**

TITLE NEPA Compliance

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Amtrak Gateway Systems Level Design: NEPA Program Development, NY-NJ $110K	AECOM	A series of incremental infrastructure projects designed to improve current service, create new capacity & strengthen system resiliency.	Environmental Documentation	8 months	20%	1/15 - 8/15	US National Railroad Passenger Corporation Amtrak HQ
Newark Liberty International Airport Terminal A Redevelopment Program $2 Billion	AECOM	Preparation of a NEPA Environmental Assessment (EA); two FAA Short-Form EAs; and a Categorical Exclusion Document for the redevelopment of buildings.	Environmental Documentation	63+ months	100%	03/12 - current	Port Authority of New York and New Jersey
Rail Freight Capacity and Needs Assessment to Year 2040	AECOM	Study that assessed the capacity of the rail network in the NJTPA Region.	Associate in the study	8 months	20%	2011	New Jersey Transportation Planning Authority
Access to the Region's Core, NEPA EIS $26K	AECOM	Study & analysis of Socioeconomics, Environmental Justice, Secondary & Cumulative Impacts anticipated.	Supervisor/ QA/QC to the Analysis	12 months	50%	2006-2008	New Jersey Transit
NEPA Documentation & Planning	AECOM	Preparation of over 50 NEPA EIS's/EA's for various agencies within the DOJ.	Enviromental Documentation	120 months	100%	1995-2005	Department of Justice

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Shruthi Ashokan**

TITLE Schuduling

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Interchange 6-9 widening Program $2.7 Billion	AECOM	Project Controls/Cost control	Scheduler/ Office Engineer	96 months	100%	2009-current	NJ Turnpike Authority
Resiliency Program, Newark, NJ. $3.8M	AECOM/HDR	Project Controls/Cost control	Project Controls Engineer	36 months	20%	2014-current	Commission
Statewide Construction Support Services & CPM Scheduling Services $3.6M	AECOM	Scheduler	Project Controls Engineer	24 months	50%	2006-2009/2013-2017	NYSDOT
Prospect Street Bridge, Morris County, NJ. $3.1M	AECOM	Scheduler	Project Controls Engineer	24 months	100%	2014-2016	NJDOT
Route 80 from Route 46, Cherry Hill, NJ. $12.8 M	AECOM	Scheduler	Project Controls Engineer	48 months	60%	2008-2009/2015-2017	NJDOT
Route 46, Rockfall Mitigation, Warren County, NJ. $14.6 M	AECOM	Scheduler	Project Controls Engineer	24 months	60%	2014-2016	NJDOT

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Jay Bayersdorfer, PE**

TITLE Cost Estimating

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Goldman-Sachs, 200 West Street and Jersey City, 30H – 50H $5.4M	AECOM	Early study cost estimates for flood protection.	Cost Estimating	2 months	30%	03/16 - 03/2017	Goldman-Sachs
City of Yonkers Wastewater Treatment Plant $92K	AECOM	Early study cost estimates for flood protection element for the plant.	Cost Estimating	2 months	30%	04/14 - 06/15	West Chester County Department of Public Works
PANYNJ, World Trade Center Site $60M	AECOM	Early study cost estimates for flood protection elements for the new World Trade Center Site.	Cost Estimating	7 months	30%	09/03 - 10/15	PAYNYNJ
MTA New York City Transit (NYCT), Substation Site in Rockaways, NY	AECOM	Implementation of mitigation/ resiliency measures	Cost Estimating	3 months	30%	03/15 - current	MTA NYCT
NJDOT, Rt 52 Causeway, Somers Point & Oceant City, NJ $250 Million	AECOM	Study & Construction Administration	Cost Estimating	3 months	30%	08/09 - 06/15	New Jersey Department of Transportation
NYCEDC, East Midtown, NY, NY $12M	AECOM	Construction Administration	Cost Estimating	5 months	30%	07/11 - 07/15	New York City Economic Development Corporation

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Thomas Elsroth, PE**

TITLE Transportation Engineer

FIRM AECOM

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Westchester Avenue Bridge - Bronx, NY $45M Const.	AECOM	Final Design and PS&E Plans	Project Manager	30 months	25%	2014 - 2016	NYCDOT-Division of Bridges -
East 175th Street Bridge, Bronx, NY - $12M Const.	AECOM	Preliminary design plans, Final Design Plans and PS&E Plans	Project Manager	Since 2013	15%	2014- present	NYCDOT-Division of Bridges -
Preliminary Design - Three Bridges - Bronx, NY - $2M design fee	AECOM	BRPR Design Report for three separate bridges in Bronx, NY	Project Manager	36 months	15%	2011 - 2014	NYCDOT-Division of Bridges -
Westchester Avenue Bridge - Bronx, NY - $6M design fee	AECOM	Multiple design reports, Preliminary Design, Feasibility Studies, constructability studies, Final Design (not built)	Project Manager	2004 to 2014	25%	2004 - 20014	NYCDOT-Division of Bridges -

KEY TEAM MEMBER PROJECT EXPERIENCE DATA SHEET

NAME **Andrew Raichle, PE**

TITLE Access/Easements/Land Surveying

FIRM Matrix New World Engineering

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 DURING DURATION BASED UPON A 40 HOUR WEEK	DATES OF THE TEAM MEMBER'S INVOLVEMENT IN THE REFERENCED PROJECT	CLIENT NAME CONTRACT PERSON AND PHONE NUMBER
Newark Bay Wetland Restoration, Newark, NJ Const Cost: $2M	Andrew Raichle, P.E.	Design, permitting, construction administration	Principal / Engineer of Record	14	15%	02/16 - present	City of Newark
Redevelopment of Former Military Ocean Terminal Bayonne, NJ Const. Cost=$500M	Andrew Raichle, P.E.	Design, permitting, construction administration	Principal / Engineer of Record	180	20%	01/00 - Present	City of Bayonne
Maintenance Dredging Claremont Channel Jersey City, NJ Const. Cost=$4M	Andrew Raichle, P.E.	Design, permitting, construction administration	Principal / Engineer of Record	24	10%	02/14-02/16	SIMS Metal Management
Shipyard Pier & Marina Hoboken, NJ Const. Cost: $2.5M	Andrew Raichle, P.E.	Design, permitting, construction administration	Principal / Engineer of Record	36	10%	02/14-02/17	Shipyard Associates,
River Terminal Industrial Park Resiliency Project Kearny, NJ Const. Cost: $5.0M	Andrew Raichle, P.E.	Design & Permitting	Principal / Engineer of Record	18 months	10%	05/14-12/16	River Terminal Development

3 Project Approach

Our approach is founded on three principles: Collaboration, Efficiency and Flexibility, so that we may seamlessly continue the ongoing work with DPMC/DEP that began with the Rebuild by Design Competition, and achieve an implementable project for a more resilient and secure Hudson River waterfront.

AECOM: A Roadmap to 2022

Value to DPMC/DEP
The right approach to implementation of an independent utility by 2022

Collaborative – We create alliances between our clients and our transdisciplinary teams. We have built our management team around the DPMC/DEP structure and we have the ability to begin working with you right from Day 1, which will save time. We recognize that effective communication between our managers and our technical leads, both with you and internally among our AECOM team, is key to the success of this project. We know the engagement of stakeholders and the community will support the continuation of the design process within the project schedule.

Efficient – We will design to budget. Our experience with large-scale projects with limited funding has shaped our approach on complex projects. We will execute the project by determining the keep level of detail to be implemented at the right time so we can make the right design decisions. This practice has proven crucial in implementing projects on time and on budget, producing further cost savings and schedule productivity for our clients.

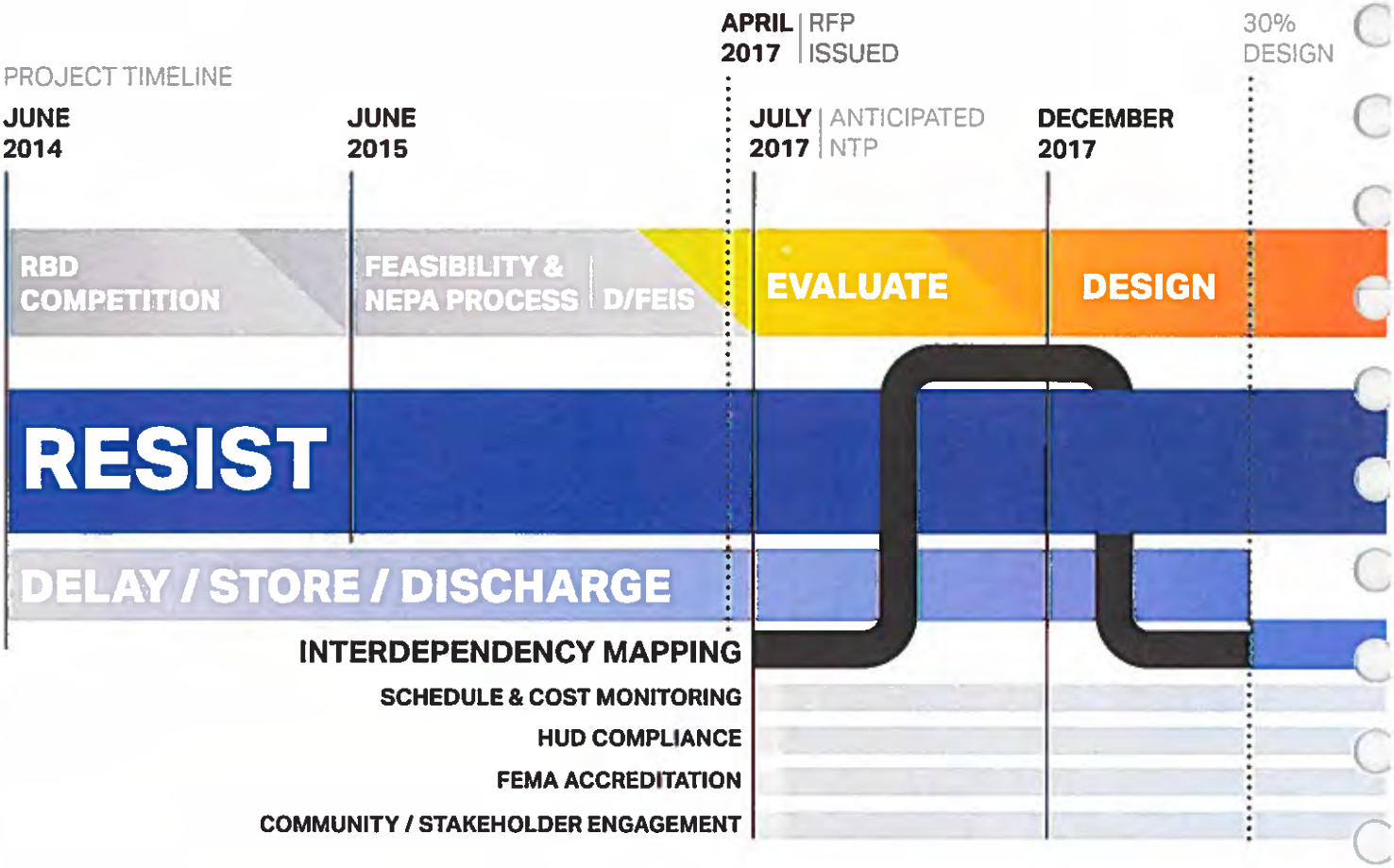
Flexible – We can adapt to the project challenges. Our methodology is predicated on our understanding of the prior RBD Hudson River work, as well as our involvement with other multidimensional resiliency projects. Our approach includes a rapid and succinct evaluation phase and interdependency mapping, so that we can be flexible in the final design process and ensure that existing and current local projects are considered and incorporated. Our prudent tactics will support our ability to derive further design solutions that could save both time and money.

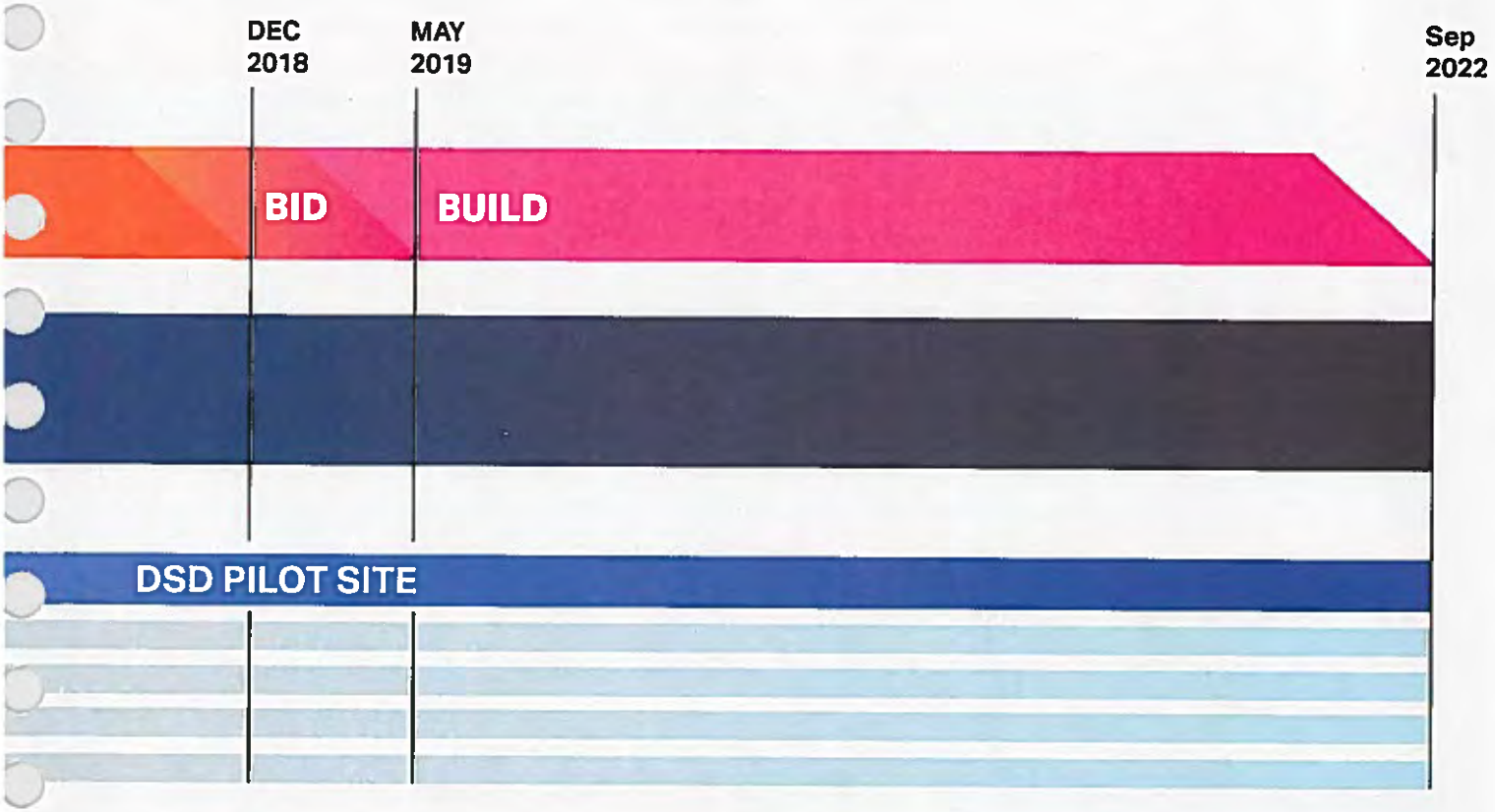
We are committed to providing you with the same level of collaboration, efficiency and flexibility that are the hallmarks of our success on the RBD Meadowlands project and other term contracts for DPMC/DEP.

Roadmap to 2022

We recognize the significant accomplishments of the State and project stakeholders on the RBD Hudson River Project over the last few years. We appreciate the hard work that has gone into managing the process from concept through the Feasibility Study and Draft/EIS, building stakeholder consensus along the way. The heavy lift of creating a viable Preferred Alternative and getting to the Record of Decision (ROD) is almost done. AECOM is ready, willing, and able to now step in and work in partnership with DPMC/DEP to move the project into the next phase, through final design and construction, to the ultimate goal of creating an independent utility by September 2022.

COLLABORATIVE **EFFICIENT** **FLEXIBLE**





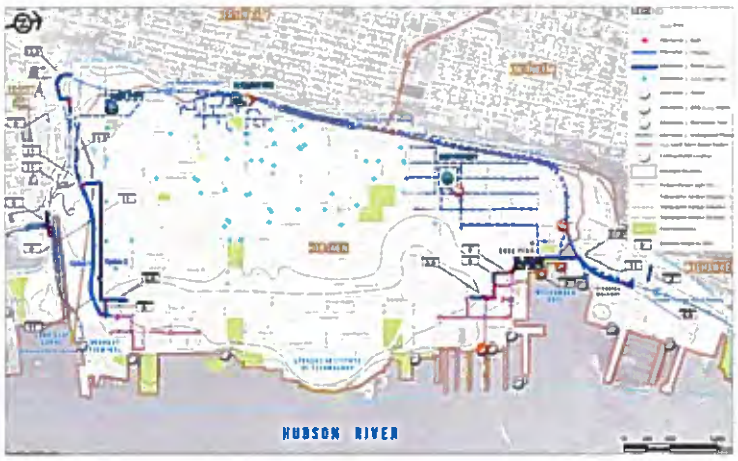
As depicted by the bold loop, interdependency mapping will play a crucial role in distilling and prioritizing system information. Starting in evaluation and continuing through to the 30% design submittal, this mapping will inform the design, creating a concise and clear communication tool for conveying complex information to a widespread audience, including stakeholders.

The narrative and graphics in this section demonstrate AECOM's overall project approach for the RBD Hudson River Project. We present a project understanding and project implementation plan, finishing with our procedures for the reliable execution of term contracts (items a-g from the RFP). Our team's definitive goal is simple—to build upon the work of the DPMC/DEP and stakeholders to successfully execute the design and construction of the Resist components and DSD Pilot project.

Project Understanding

The Hudson River Project was initiated under an innovative design competition, Rebuild by Design (RBD), established by the President's Hurricane Sandy Rebuilding Task Force. The Sandy Task Force launched the RBD competition in 2013, in partnership with the U.S. Department of Housing and Urban Development (HUD), the Rockefeller Foundation, and several NGOs and academic institutions. The overall goal of RBD was to develop ideas to improve physical, ecological, economic, and social resilience in regions affected by Hurricane Sandy by leveraging global experts and local understanding and plans. The competition sought to promote innovation by developing flexible solutions that would increase regional resilience and be consistent with local plans and needs. The Hudson River Project was selected as one of the competition's six winning concepts; it was developed as a comprehensive urban stormwater strategy with the goal of reducing frequent flooding due to storm surge, high tide, and heavy rainfall.

Following the competition phase of the RBD program, HUD then allocated an additional $230 million to the State of New Jersey through the Community Development Block Grant Disaster Recovery (CDBG-DR) program for the first phase of the "Hudson River Project: Resist, Delay, Store, Discharge." New Jersey incorporated this project into its CDBG-DR Action Plan and assigned implementation of the project to NJDEP.



Together with our team's experience with HUD, DPMC/DEP, NJ TRANSIT, and the affected local communities, we are well positioned to continue the project development and complete this effort successfully within the required schedule to secure access to the HUD funding.

Josh Sawislak, AECOM's Global Director of Resilience and our Compliance Technical Advisor on this project, served on the President's Hurricane Sandy Rebuilding Task Force that developed the RBD competition and AECOM Team members OMA and Royal HaskoningDHV were the firms who developed the award winning RBD concept.

Project Area

The RBD Hudson River Project area is comprised of the entire City of Hoboken, with portions extending into southern Weehawken and northern Jersey City. The approximate boundaries of the project are the Hudson River to the east; Baldwin Avenue (in Weehawken) to the north; the Palisades to the west; and 18th Street, Washington Boulevard and 14th Street (in Jersey City) to the south.

Hoboken, Jersey City, and Weehawken are vulnerable to flooding as a result of coastal surge, rainfall, high tides, low topography, surface runoff, a prevalence of impervious surfaces, antiquated sewer infrastructure, interconnections between sewersheds, and insufficient pumping capability. Combined, these instances pose the highest flood risk in the southwest portion of the project area and at catch basin flood points.

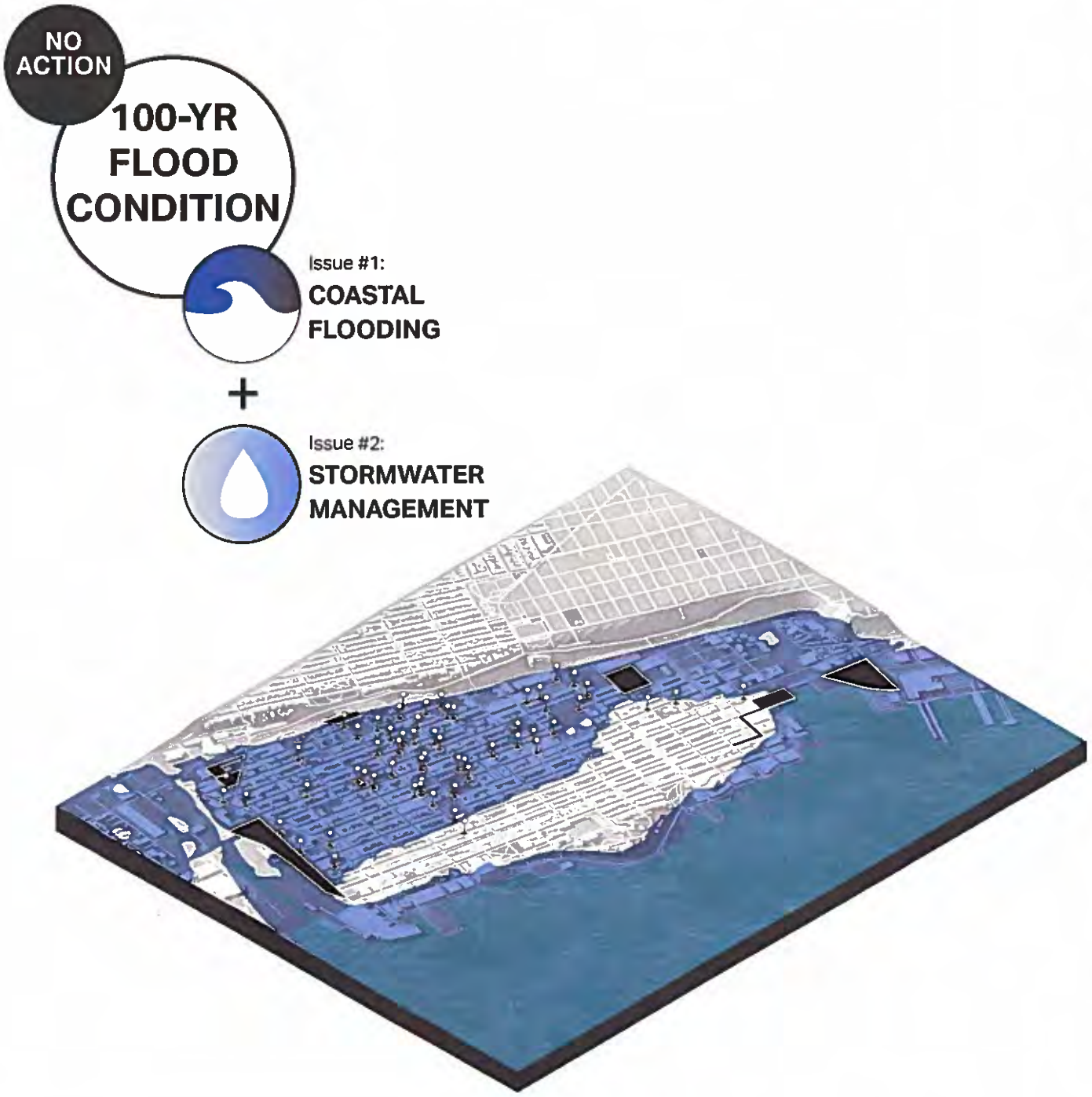
Storm surge and wave run-up along the Hoboken waterfront, as well as interior flooding, post-Hurricane Sandy.

Much of Hoboken's west side was built on filled wetlands, and a river was located on the City's western perimeter. The lowest areas of the City are located in the southwest, which is less than three feet above sea level. The highest point in the City is located in the east at Castle Point. Surface stormwater flows generally follow the topography, leading to the west and southwest parts of the City, with additional flows coming from higher elevations in neighboring communities. These lower areas have become high risk areas in storm and coastal surge events.

Hurricane Sandy resulted in extensive damage due to coastal flooding, which happens with much less frequency than stormwater impacts, but can devastate widespread areas of the City and cause significant economic damage and safety concerns. Stormwater flooding, as exhibited by Hurricane Irene, often occurs during heavy rain events, occurring with much greater frequency and less severe impacts, but with significant property damage and threat to health and safety.

What are we trying to solve?

Hoboken, Jersey City, and Weehawken are susceptible to flooding from both coastal storm and intense rainfall events. The graphic below depicts the 'No Action' alternative reflecting the FEMA FIRM special flood hazard areas subject to inundation by the 1% annual chance flood (100-year flood). The RBD Hudson River Project seeks to implement flood risk and stormwater management strategies to create a robust level of protection. AECOM will implement these strategies, protecting people, homes, businesses, and infrastructure, increasing resilience throughout the affected communities.



The project area is also going to be effected by the inevitable effects of sea level rise.

"Sea level rise is predicted to increase in the frequency and intensity of coastal flood events. As sea level rises, so will high tide levels and the base flood elevations along the City's coastline overtopping the existing bulkheads, particularly during storm surges. Studies have shown that in the mid-1800s, there was a 1% annual chance of a bulkhead being overtopped by a storm surge within the New York Harbor area; today there is a 20 to 25% annual chance. Rising sea level also means that the sewer system outfalls and other critical infrastructure will be closer to mean sea level, and will be inundated more frequently during high tides. As the vertical distance between the elevation of the water and the elevation of the outflows decreases, less intense storm surge (which happen with greater frequency than stronger storms) will have the ability to inundate the outflows, thereby reducing the ability of the system to properly drain stormwater." *Source: "Flooding Information." hobokennj.gov. http://hobokennj.gov/departments/environmental-services/storm-flood-zones*

The current combined sewer system on which Hoboken relies for its stormwater management is overburdened during even moderate rainfall events. When these concentrated stormwater events occur, the combined sewage flow volume exceeds the limited treatment volume capacity of the combined sewer system. Once capacity has been exceeded, the combined sewage overflows into the Hudson River through the various outfalls located along Hoboken's waterfront. In combination with outfall overflow, the sewer system backs up into basements and streets, causing localized flooding in the low lying areas of Hoboken in the west and southwest.

Feasibility Study

The State engaged Dewberry to develop both a Feasibility Study and the development of a Draft EIS (DEIS) and Final EIS (FEIS) for the RBD Hudson River Project's "Resist, Delay, Store, and Discharge" comprehensive plan. The Feasibility Study used a screening level of analysis to evaluate alternatives, conceptually develop plans, and determine if the presented solutions were institutionally viable. In this phase, preliminary level life-cycle costs were prepared, determination of the benefits derived including losses prevented, social, and environmental gains and potential revenues were generated.

A group of solutions were conceptually designed and aimed at meeting the goals and objectives of the RBD Hudson River concept of risk reduction and flood risk management to the people, the environment and the region as a whole. The screening level analysis identified a small subset of the best solutions for further refinement. Ultimately, a Preferred Alternative recommendation was selected, intended to take into account all aspects of the project, not just the quantifiable benefit cost ratio. The Preferred Alternative outlines a multi-faceted approach intended to address flooding from both major storm surge and high tides well as from heavy rainfall events.

The Resist structure also known as the "Alleyway Alternative", would accomplish coastal storm risk reduction by being constructed further inland. The Resist barrier would travel along the east side of Garden Street and continue along the alleyway midway between 15th and 14th streets, from Garden Street to Washington Street. The feature would continue south along Washington Street, ending between 14th and 13th Streets. The structure will begin again at the end of Washington Street meeting Observer Highway. At the project's current stage, two options—Option 1 and Option 2—have been recommended, where the structure will either continue down Observer Highway or behind the LCOR land redevelopment. This preferred plan proposes 19 to 23 gates, the fewest of the comparable alternatives. Under Alternative 3, 85-percent of the persons residing within the FEMA preliminary one-percent annual chance (100-year) floodplain would receive coastal storm flood risk reduction benefits.

The Resist structure is integral to the protection from coastal storm surge events. The Delay, Store, Discharge (DSD) components will address interior stormwater management—flooding from rainfall events.

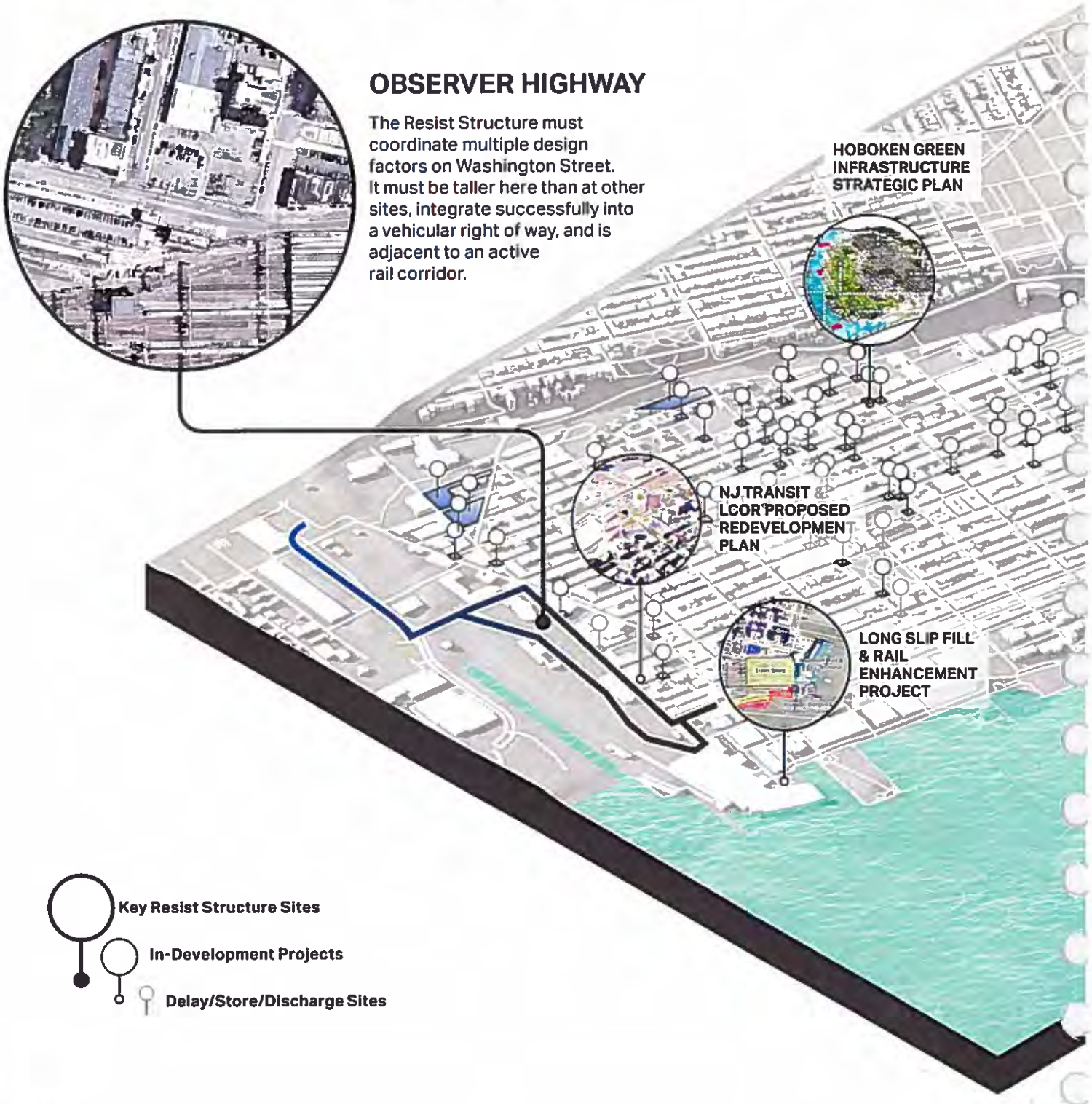
> You know, I'm really excited, 2017 is gonna be a big year. I'm very excited to keep moving forward with Rebuild by Design, thrilled that we have a consensus on an alignment for it, on track to keep that moving forward, that will protect our city from the flooding.

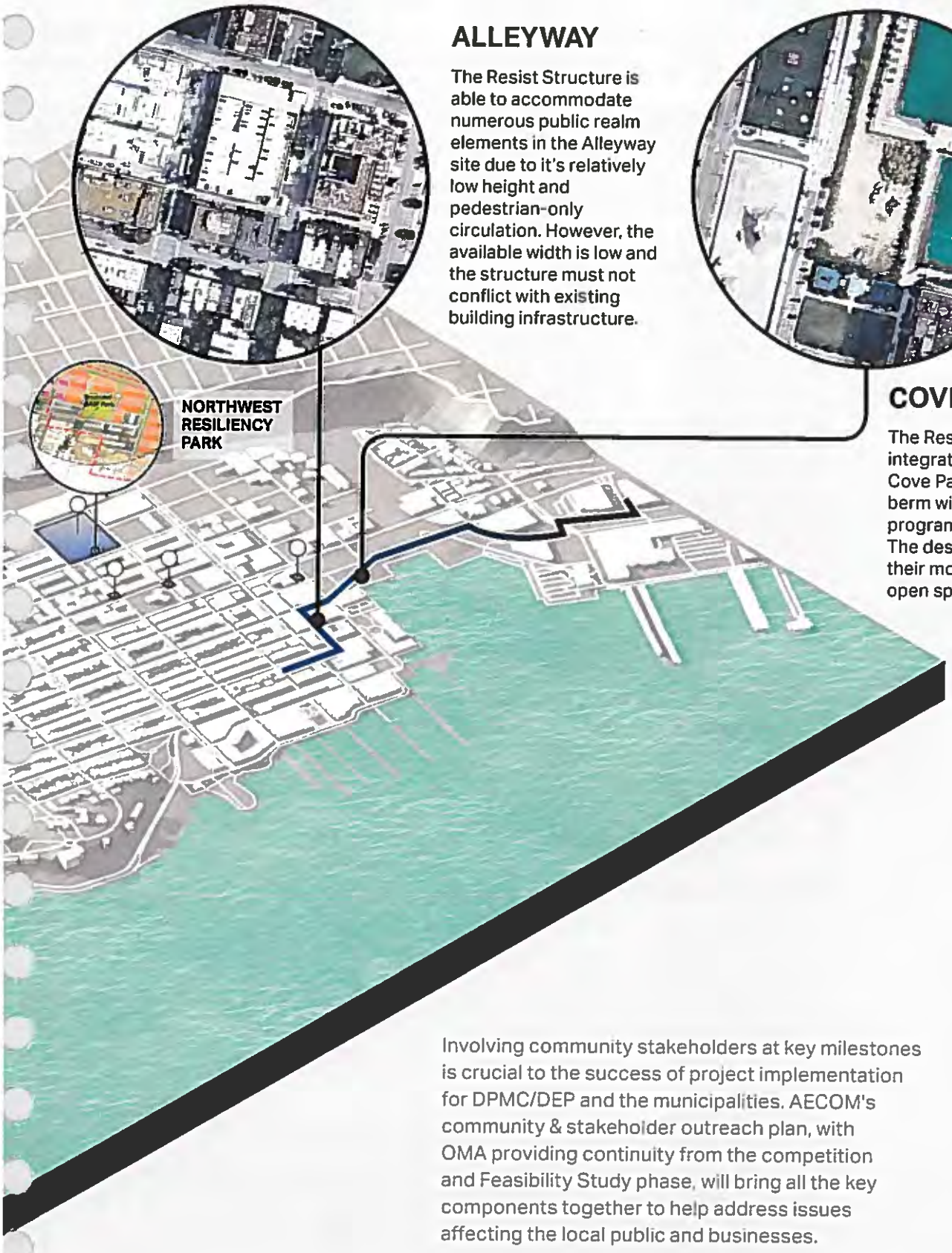
Dawn Zimmer, Mayor, City of Hoboken

AECOM's transdisciplinary team is ready to integrate urban design and engineering to bring the Preferred Alternative's Resist concept to fruition.

Understanding the Communities

The Preferred Alternative alignment of the Resist alignment sits within a complex series of urban conditions within Jersey City, Hoboken and Weehawken. Along the southern portion, the Preferred Alternative shows two options for the alignment at the railyard. Along the northern portion, the alignment expands into a public park along Weehawken Cove. In between sit the Delay/Store/Discharge sites as well as adjacent projects currently in-development. Within the urban fabric, the Preferred Alternative alignment seeks to minimize impacts to existing conditions, leverage adjacent projects and respect established circulation routes.





ALLEYWAY

The Resist Structure is able to accommodate numerous public realm elements in the Alleyway site due to it's relatively low height and pedestrian-only circulation. However, the available width is low and the structure must not conflict with existing building infrastructure.

COVE PARK

The Resist Structure is integrated throughout the Cove Park site as a raised berm with rich park programming on either side. The design factors are at their most flexible on this open space site.

Involving community stakeholders at key milestones is crucial to the success of project implementation for DPMC/DEP and the municipalities. AECOM's community & stakeholder outreach plan, with OMA providing continuity from the competition and Feasibility Study phase, will bring all the key components together to help address issues affecting the local public and businesses.

Environmental Impact Study

In accordance with 24 CFR 58.1(b)(1), the State of New Jersey, acting through the New Jersey Department of Community Affairs (NJDCA), has assumed environmental compliance responsibilities for the Hurricane Sandy CDBG-DR programs on behalf of HUD. The NJDCA has designated NJDEP as the lead agency to assist with the environmental review, including demonstration of compliance with the NEPA. The project's federal funding requires that it comply with NEPA, which outlines the public process whereby an agency analyzes a proposed action to determine how the proposed action impacts the environment, and whether other reasonable alternatives are available to reduce, minimize or provide mitigation for unavoidable impacts.

The DEIS for the RBD Hudson River Project evaluates the environmental impacts associated with the project. The document evaluates three Build Alternatives and a No Action Alternative. Each Build Alternative includes Resist, as well as DSD components. While the current HUD-allocated of funding only includes the Resist element and a pilot DSD project, the DEIS evaluates all components of the project. The result of this analysis led to the recommendation of Alternative 3 as the Preferred Alternative.

The DEIS has been published and it is anticipated that at the time this contract is awarded, the Final EIS (FEIS) will have been completed and Record of Decision (ROD) for the RBD Hudson River Project will have been signed. Within the ROD, the State will have selected an alternative, provided their rationale for that selection, and identified the mitigation measures, environmental permits, and other environmental requirements they have accepted to implement as part of that selected alternative. Our approach to NEPA compliance for the project is provided under the Implementation Plan section.

Scope of the RFP

AECOM understands that the scope of the Hudson River Project as defined in this RFP is to evaluate and build upon the Feasibility Study and D/FEIS in order to determine the best, most cost-effective way to design and construct the Preferred Alternative. The selected consultant will provide a complete design for the Resist element of the project and one Pilot DSD site (location to be determined) under a term contract that must be constructed and functioning as an independent utility by September 2022.

We have studied the relevant documents, and understand all the requirements of the project. But more importantly, we have been participating in HUD's Rebuild by Design program since its inception and as such, we understand the urgency and challenges ahead, and we know how to get the work done under this term contract.

RBD Meadowlands Project, where AECOM and its subconsultants are successfully meeting similar challenges in collaboration with DPMC/DEP.

We understand the general requirements of the design and construction activities to be performed under this contract to include the following major components:

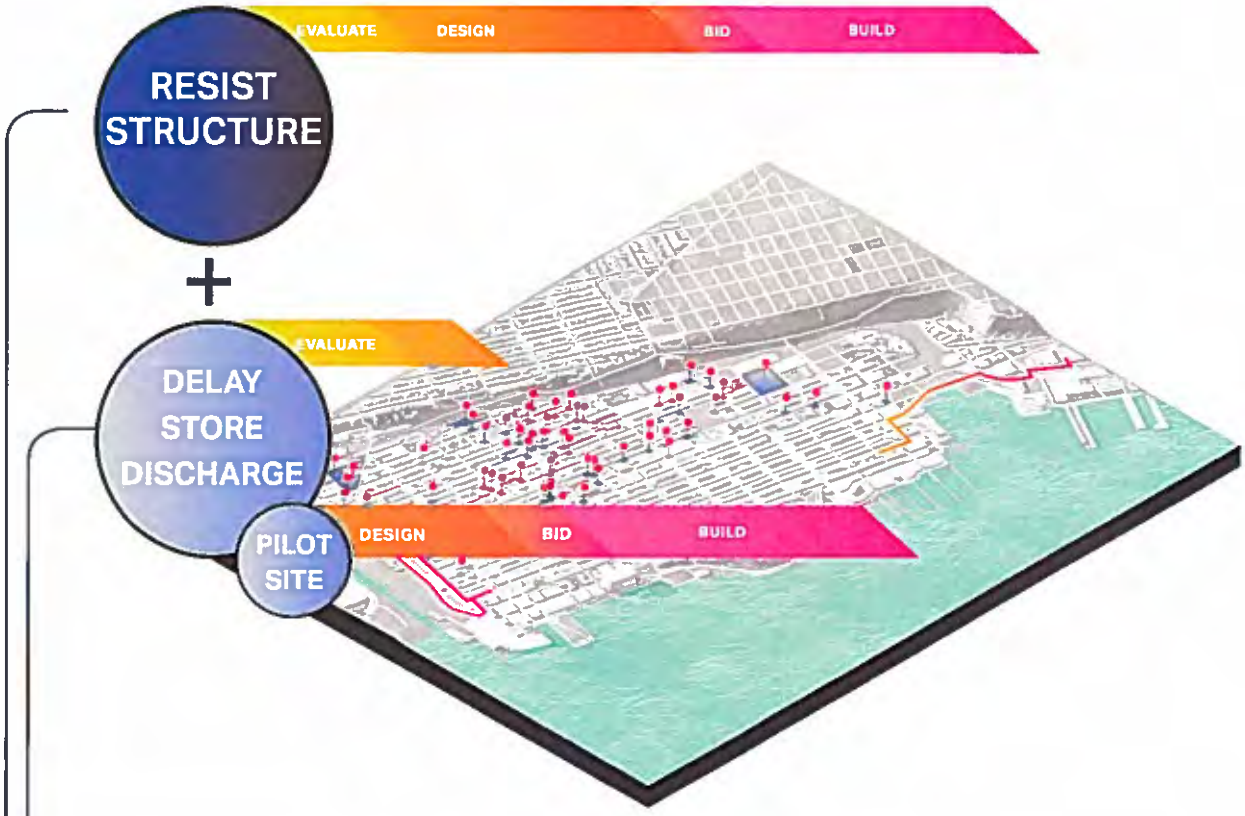
- Investigations and modeling
- Design of the Preferred Alternative - Resist Structure and Pilot DSD Project
- Permitting
- Determination of access and/or easements requirements
- Preparation of design and construction schedules and cost estimates
- Bidding administration and services
- Construction administration and oversight services
- Community and stakeholder relations
- FEMA Accreditation

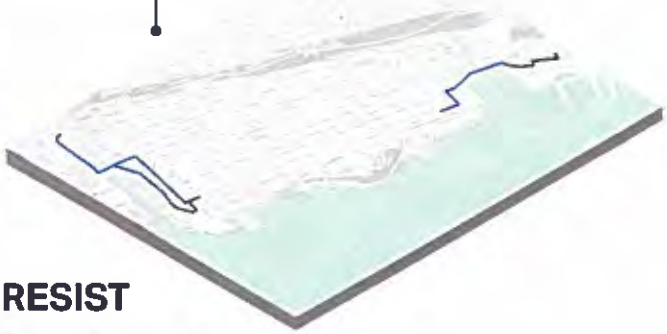
Working with two of our specialty subconsultants, OMA and Royal HaskoningDHV, who developed the initial vision for this project, will provide continuity to the RBD process. AECOM's in-house staff, with the support of our other specialty subconsultants (Matrix, MKA, Remora, Stevens), further our capacity to convert these ideas to civil infrastructure solutions.

The main focus of the project will be the implementation of the Resist structure and the development of a pilot DSD project to meet the primary objective of protecting the community. While we will focus on meeting the flood protection objective with the funds that are currently available, we will also look for opportunities to enhance the economic, social and ecological fabric of the community.

The Scope

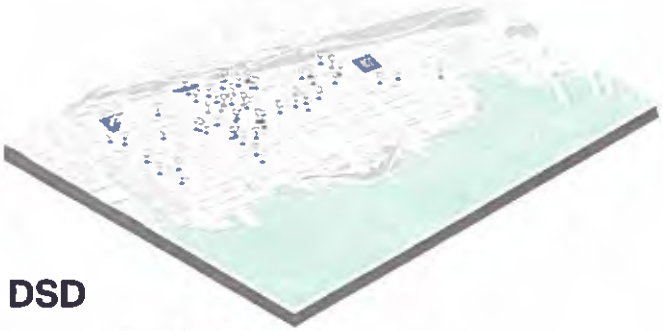
The multifaceted scope of work requires professionals from various disciplines working in concert to meet an aggressive schedule while working towards a defined construction cost. AECOM's transdisciplinary team approach focuses our professionals on the singular goal of delivering an implementable project to protect the affected municipalities. Urban designers, engineers, public outreach professionals, compliance experts, cost estimators, and schedulers working together through the iterative design process will efficiently execute the project's design and construction.





RESIST

The Resist Structure - composed of two sections of structural flood protection and its adjacent sites - will protect the project site from coastal inundation.



DSD

The DSD sites are a network of interior green infrastructure strategies that will protect the project site from fluvial flooding associated with rainfall.

FEMA Accreditation of the Resist Structure

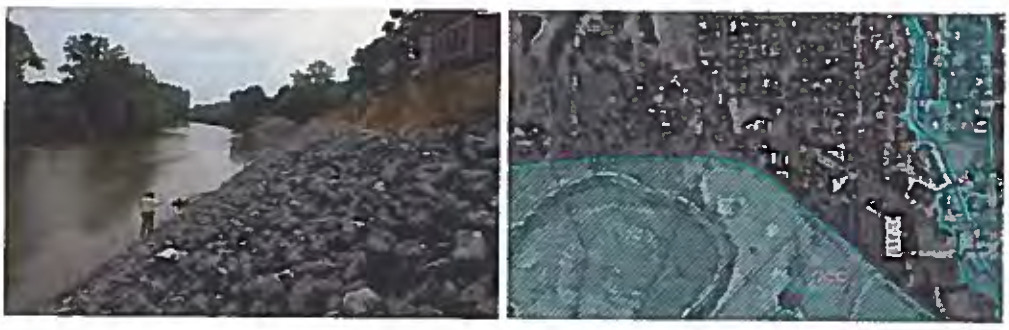
Value to DPMC/DEP
Seamless from design through construction to accreditation

In order for the citizens and businesses protected by the Resist structure to take full advantage of the benefits offered, the structure must be accredited by FEMA as providing the necessary protection. Accreditation is only available to certified structures. As referenced in the Feasibility Study and required by 44 CFR 65.10, all elements of the Resist structure(s) will be subject to that criteria for the three major component areas: Engineering Analysis, Interior Drainage Analysis, and Operations and Maintenance.

AECOM has a strong background of successful accreditations across the United States. Our success is based on several key factors:

- **Practical experience** – AECOM has been involved in the successful FEMA accreditation of numerous systems across the country. We offer a complete package of the necessary expertise and services to certify a structure in anticipation of accreditation. We are well versed in how systems are constructed and function, and both FEMA and USACE standards.
- **A strong working relationship with FEMA** – AECOM has been heavily involved in the both the policy and technical aspects of FEMA's accreditation program through both Map Modernization and Risk MAP, assisting in the formulation of the current program and helping to shape the program moving forward.
- **Expertise in the mapping of flood control structures on FEMA floodplain maps** – AECOM continues to be at the forefront of the evolving mapping standards for flood control structures. We are heavily involved in supporting the development of policies that impact how structures are mapped and how they impact NFIP premiums. AECOM has assisted numerous communities in meeting the necessary standards to take full credit for their systems on FEMA DFIRMs.

AECOM's depth in flood control structure design and construction, as well as accreditation, provides the State with a seamless transition throughout the entire project lifecycle.



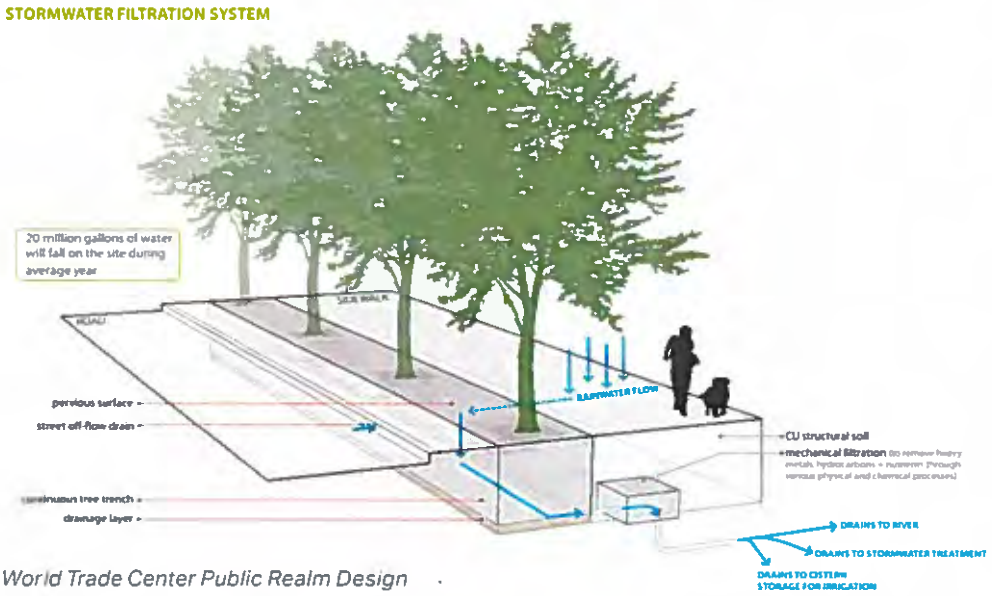
Under FEMA's RiskMAP and Map Mod programs, AECOM has completed in excess of 24,000 miles of detailed study, 39,000 miles of limited detailed study, 130,000 miles of approximate, and 14,000 miles of coastal studies leading to the completion of 39,000 FIRM panels for over 6000 communities covering over 1700 counties.

DSD "Future Projects"

This RBD Hudson River RFP is for implementation of the first phase of the RBD Hudson River Project, the Resist component and one DSD Pilot project. We understand that the municipalities and other local agencies or partners will be responsible for the implementing the "Future" DSD components. In fact, this work has already begun by the City of Hoboken, including a recently issued a RFP for Professional Services for the Northwest Resiliency Park and Municipal Parking Garage Project (RFP 17-07), a site depicted as a "Future" component of the DSD portion of the Preferred Alternative.

According to the RFP, the City plans to develop a park (Northwest Resiliency Park), as well as an above-ground parking structure. The proposed park will utilize green infrastructure to reduce stormwater runoff, non-point source pollution, localized flooding and the number of combined sewer overflow (CSO) events. Funding for this project is anticipated to come from a combination of a low-interest loan through the New Jersey Environmental Infrastructure Financing Program (NJEIFP) administered by the NJDEP New Jersey Environmental Infrastructure Trust (NJEIT) and a bond from the Hoboken Parking Utility.

AECOM is familiar with NJEIT funding requirements for flood control projects. The NJAW Raritan-Millstone Treatment Plant Flood Control project, designed by AECOM, was implemented with over $38M in NJEIT funds.



World Trade Center Public Realm Design

It is understood that, if selected, AECOM will need to coordinate with the City and the City's consultants, along with DPMC/DEP, to ensure that implementation of existing DSD projects, as well as other "Future" DSD projects that are undertaken during the performance period of this contract, are fully coordinated with the RBD Hudson River Project.

Overall Project Schedule

We understand to meet the HUD funding requirements, the State must construct an independent utility that meets the project needs by September 2022. As detailed in our plan to meet the project schedule under our procedures for the reliable execution of term contracts at the end of this section, we will utilize our collaboration, efficiency, & flexibility to meet the project schedule.

Project Implementation Plan

AECOM: Roadmap to 2022, our project approach, embodies the most efficient and flexible path to implementing an independent utility that meets the RBD Hudson River Project needs by 2022. It demonstrates **our team is well equipped to deliver this project on time and within budget.**

As part of this approach, we have developed a specific project implementation plan that will build on the work that has been done previously in the Feasibility Study and D/FEIS. The goal is to arrive at the best and most cost-effective methodology to design and construct the required elements of the Preferred Alternative. It creates a blueprint for completing all project phases efficiently and on schedule, so that the final design will meet HUD requirements, be accredited by FEMA, and ultimately protect the local communities.

Community & Stakeholder Outreach

Key to the implementation plan is the continual engagement of the communities and project stakeholders. Successful community engagement is transparent and inclusive, iterative and proactive. It invites community residents and stakeholders to be true design partners. It equips them with the information and inspiration they need to help shape the future of their neighborhoods. This project offers an opportunity to build on past efforts, target community feedback to specific design solutions, and ensure an equitable and inclusive process that will lead to concrete, community-defined benefits.

Since the inception of the RBD Hudson River Project, our subconsultant OMA has been actively engaging a range of stakeholders through presentations, workshops and meetings. The team spent long days and nights presenting, listening and even teaching resilience through the lens of politics 101, and mediated differences between groups through the shared objective of resilience.

Infrastructure projects disrupt communities, but a good communications program that informs, communicates the need, benefits and process, goes a long way toward building goodwill and consensus among stakeholders. We appreciate that without stakeholder consensus, it will be far more difficult to move forward with this project.

The AECOM team, in a collaborative approach with OMA, as our community relations specialist, will continue to lead an extended series of intimate collaborations between clients, engineers, architects and other crucial participants.

Throughout the course of the RBD Hudson River process, decisions have been made based on the considerable amount of work accomplished. There have been and will continue to be established, specific points for when and how community members may meaningfully weigh-in on the project. Our community relations team will balance opportunities to provide feedback with the need to stay on schedule. We will create materials to make complex projects and processes understandable and engaging, enlisting DPMC/DEP to weigh in on both key issues and what resonated with the community in the Feasibility Study and D/FEIS phase.

The AECOM team will be involved in all aspects of the public outreach and participation process of the Hudson River Project. NJDEP's Citizen Outreach Plan (COP), assisted in establishing the framework of public involvement and outreach strategies to facilitate collaboration with the general public, including vulnerable and underserved populations in the project's planning, design, and implementation process.

As OMA has been involved with the project since its inception, OMA will continue to employ an inventory of communication tools to help educate, enrich, harmonize and illuminate a dynamic engagement process.

Public engagement is the intersection of stakeholders, content, and the mechanics to foster positive interaction.

The engagement group, led by OMA, will be guided by the following commitments:

- **Clearly delineate the parameters** for actionable community input in the process.
- **Be transparent** regarding both the opportunities and trade-offs that the project presents.
- **Clearly communicate project limitations** such as cost, time, and approval process.
- **Connect this phase of the project** to the previous phase as well as other previous and ongoing post-Sandy resiliency planning and projects in the area.
- **Provide interactive and understandable information** regarding flood protection strategies and interventions.
- **Engage** the broadest, most diverse swaths of the study area.
- **Use creative and interactive methods** to elicit community feedback where actionable.
- **Incorporate community input** in engineering strategies where possible.

Value to DPMC/DEP

Lessons learned and strong relationships from earlier phases

All outreach performed by the AECOM team will be in complete coordination with DPMC/DEP and be in accordance with Section 4 of Action Plan Amendment Number 12, Substantial Amendment for the Third Allocation of CDBG-DR Funds: Rebuild By Design (http://www.renewjerseystronger.org/wp-content/uploads/2015/04/APA-12-RBD-Amendment-4-22-15.pdf), the Citizen Participation Plan applicable to CDBG-DR funded projects http://www.renewjerseystronger.org/wpcontent/uploads/2014/11/CITIZEN_PARTICIPATION_PLAN_3-13-13.pdf), and the RBD Hudson River Project Citizen Outreach Plan (http://www.state.nj.us/dep/floodresilience/docs/rdb-hudson-coplan-final.pdf).

The public outreach strategy will build upon the collaborative planning and community outreach conducted during earlier project phases, capitalizing on what went well, as well as learning from those aspects that require improvement. Our intimate knowledge of local issues, particularly as related to existing environmental resources and infrastructure, will allow us to quickly build confidence and maintain our strong relationship with engaged stakeholders.

Our past experience on projects of similar scale and complexity in the Metropolitan area, such as the RBD Meadowlands Project, the New York/New Jersey Harbor Navigation Improvement Study EIS (for the USACE – New York District), the LMCR for NYCEDC, and the Hudson-Raritan Estuary Comprehensive Restoration Plan (for the USACE – New York District), will allow us to recommend proven outreach strategies and communication methods that have been well-received by local agencies and organizations.

A very relevant example is on our recent and ongoing work on the RBD Meadowlands Project. AECOM, as an extension of DPMC/DEP staff, has consistently engaged the public meaningfully and built project consensus among a variety of competing public interests and concerns through implementation of sound public involvement strategy and tactics. We developed the Guidance for Public Involvement (GPI) early in the process, which, along with the Citizen Outreach Plan, established the framework of public involvement and outreach strategies to facilitate collaboration with the general public. The GPI provided a successful and mutable "roadmap" to guide the success of this public outreach program. We also helped facilitate meetings of an Executive Steering Committee and regular meetings of the Citizen Advisory Group (CAG), and prepare informative monthly newsletters.

Gathering public input on areas of flooding at a CAG Meeting.

We've consistently demonstrated our unique ability to blend robust engineering, sound science, and integrated information concerning RBD projects in a manner that builds public trust and confidence in DPMC/DEP's ultimate ability to deliver an effective, balanced solution.

Evaluate, Design, Bid, Build

The key phases of our implementation plan are predicated on our understanding of the work completed to date on the RBD Hudson River Project. We recognize the need to review existing data and determine gaps, analyze that data at a final design level, execute the final design, prepare construction documents, administer the bid process, and support DPMC/DEP and the CMF during the construction process. To this end, our technical approach focuses on four key segments – evaluate, design, bid, & build.

Evaluate

The Feasibility Study was an assessment of inventory, modeling, analysis, formulation and design at a conceptual level for the array of alternatives to arrive at a Preferred Alternative. The data, mapping, assessments, and information collected and used for the phase was the appropriate level of detail for those critical decisions. However, the level of detail used for the Feasibility Study, **is not the same level of detail needed for full design, implementation and construction.** Further development of the plan, the models, and the design will require a higher level of detail.

AECOM will not reinvent the wheel on the work that has already been performed for the RBD Hudson River Project or any existing resources, studies, models, tools and information. We will evaluate the level of detail and applicability of the data, and identify any voids in the content that are needed to continuously progress the project forward in an effective, efficient and resourceful way. We will **build off and expand the level of detail** to get the project through final design and construction.

Our depth of knowledge and experience on similar projects, and the sophisticated analytic tools our team has developed for this area, such as our hydrodynamic model for the Lower Manhattan Coastal Resiliency Project (LMCR), will allow us to get to the work faster, more precisely, and with more certainty. Our first value-add approach is to fast-track our evaluation phase, getting us to the design component of the project more efficiently and quickly — **saving both time and money.**

We Will Find Time & Cost Savings With...

TWO VALUE-ADD APPROACHES

EVALUATION
FAST TRACK

DESIGN & CONSTRUCTION
EFFICIENCIES

GOAL
TIME & COST SAVINGS

VALUE-ADD APPROACH 1:

Evaluation Fast Track

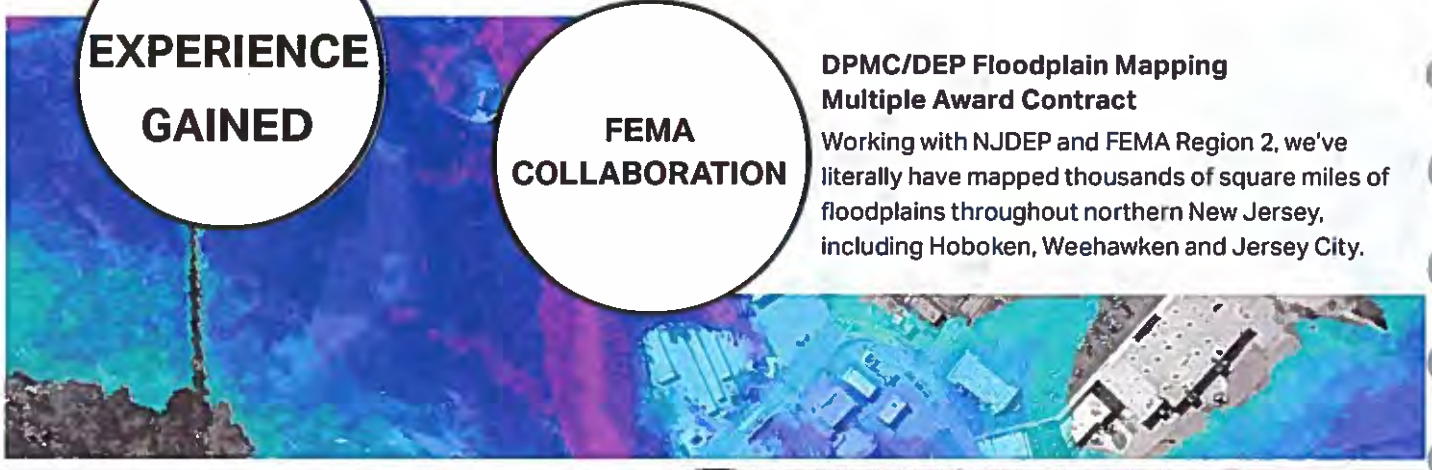
Our team is well equipped to deliver this project on time and within budget. In fact, our depth of knowledge and experience on complex projects, and the sophisticated analytic tools our team has developed for this area will allow us to get to the work faster, more precisely, and with more certainty. This means that our evaluation phases, can be fast-tracked, getting us to the design component of the project more efficiently and quickly—saving both time and money. Below are a few key examples of how our depth of experience will provide added value from the moment the project starts:

EXPERIENCE GAINED

FEMA COLLABORATION

DPMC/DEP Floodplain Mapping Multiple Award Contract

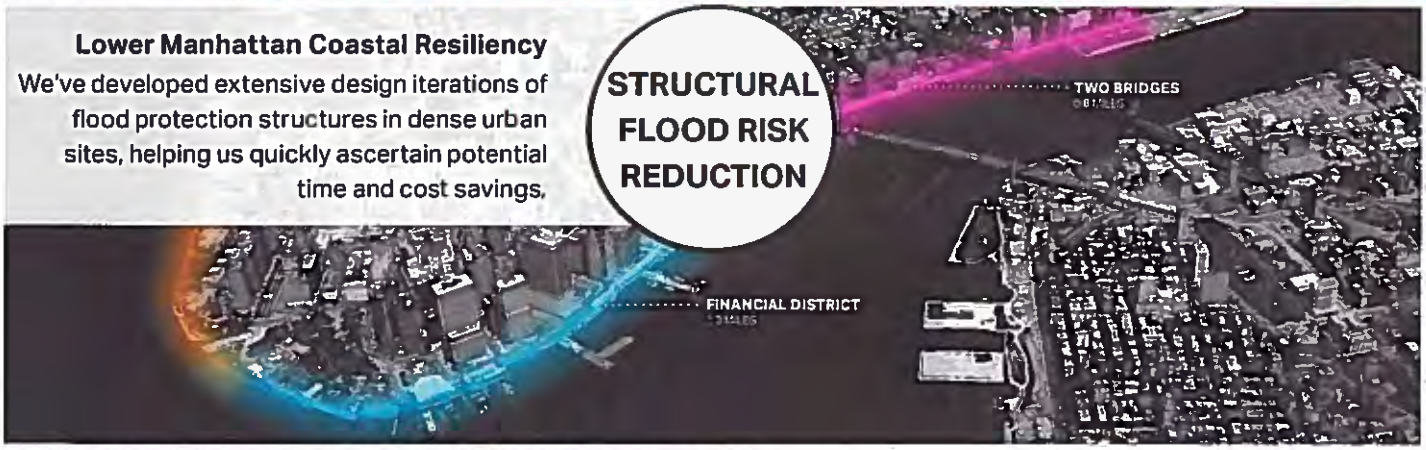
Working with NJDEP and FEMA Region 2, we've literally have mapped thousands of square miles of floodplains throughout northern New Jersey, including Hoboken, Weehawken and Jersey City.



Lower Manhattan Coastal Resiliency

We've developed extensive design iterations of flood protection structures in dense urban sites, helping us quickly ascertain potential time and cost savings.

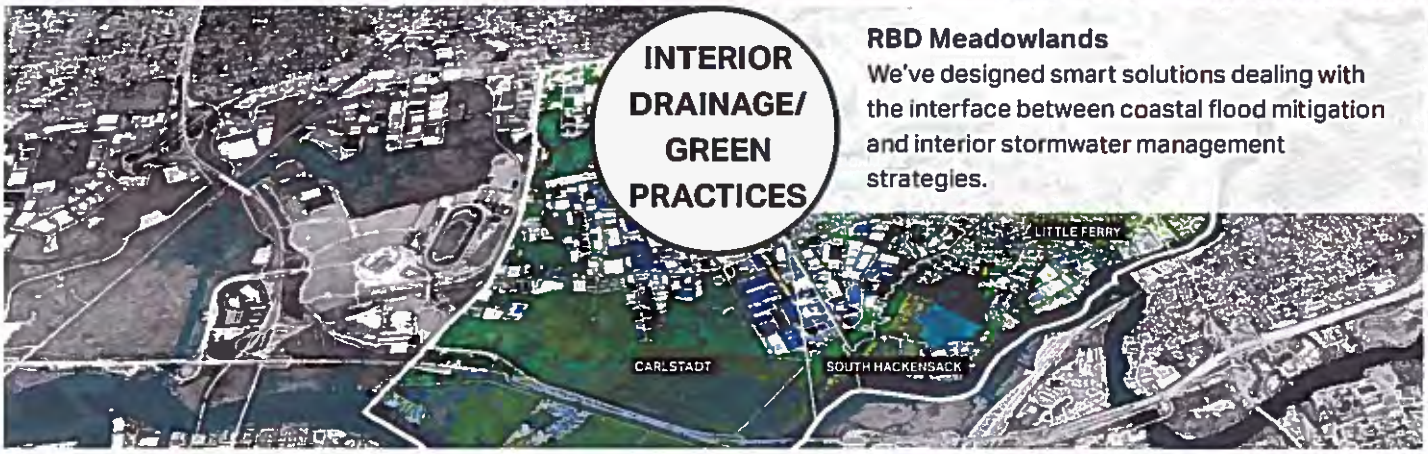
STRUCTURAL FLOOD RISK REDUCTION



INTERIOR DRAINAGE/ GREEN PRACTICES

RBD Meadowlands

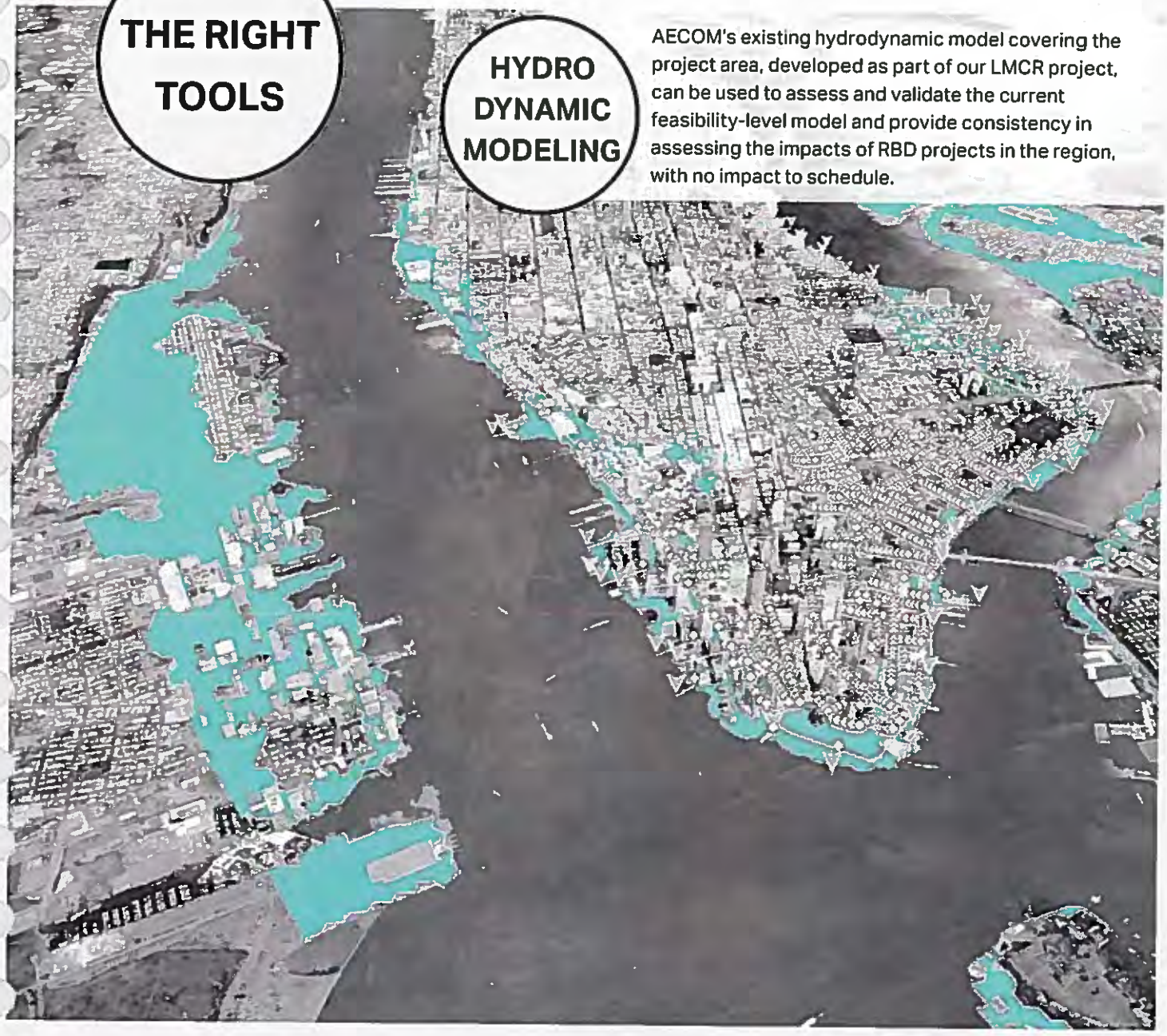
We've designed smart solutions dealing with the interface between coastal flood mitigation and interior stormwater management strategies.



THE RIGHT TOOLS

HYDRO DYNAMIC MODELING

AECOM's existing hydrodynamic model covering the project area, developed as part of our LMCR project, can be used to assess and validate the current feasibility-level model and provide consistency in assessing the impacts of RBD projects in the region, with no impact to schedule.



Below are the steps that we will take to evaluate the Preferred Alternative at a final design level:

Existing data review & gap analysis

- **Review the existing relevant data and documents,** including the Feasibility Study and D/FEIS reports, existing site area topography, land uses, structures and facilities, and site constraints and opportunities. This will provide a comprehensive and accurate understanding of the flooding problems encountered in the project area, as well as the opportunities and constraints to the project.
- **Assess and fill necessary data gaps, based on our data and document review.** If necessary we can collect additional data such as: geotechnical borings, land surveys or traffic counts. We will work with DPMC/DEP and private utility companies to identify critical existing infrastructure within the study area limits. We will determine if any access/land easement issues could impact the components.
- **Develop interdependency mapping,** a key efficiency facet of our implementation plan. We will map out the components of the Preferred Alternative and overlay existing, relevant local projects. This will allow us to consider the interdependencies between the multiple facets of the proposed design, existing local projects, and "Future" DSD projects. This step is also a key touchpoint to engage the community. The technical, logistical, and community relations data garnered from this straightforward, effective effort, will support our ability to derive further **design enhancements that will save both time and money.**

Review and optimize the existing MIKE models

Today's complex projects require equally comprehensive solutions to very unpredictable and changing forces of nature. Modeling has long been used to understand, analyze and represent these forces for us to have successful outcomes. It is a very powerful tool to help us make the decision we need to make for a specific project, but not to make the decision for us. As such modeling is not an end result but a tool, when used properly. We are keenly aware of the challenges that modeling can create but we have the knowledge and tools to resolve them. AECOM will use these tools to optimize our results to support the design process.

One of the main challenges of modeling is to include specific forcing mechanism and introduce them simultaneously into the modeling environment. Solving a storm surge, stormwater and interior drainage independently may provide certain answers but, looking into these events simultaneously is critical for the final design. We are the experts on coupling these models/modules to resemble the real world scenarios as accurately as one can.

We have many other models at our disposal based on the applicability and the need. For example, we were partners for the FEMA RAMPP modeling group, using the ADCIRC modeling. We have successfully used this model to generate the boundary conditions for our MIKE 21 model for the RBD Meadowlands and LMCR projects.

We will first evaluate the MIKE Urban and MIKE 21 models as detailed in the sections below. We will eliminate any communication issues between the dynamically coupled models and increase the efficiency for production runs. This will be critical specifically for use during the design process. We will use the coupled models in the evaluation and design of the interior drainage improvements to meet FEMA accreditation requirements for the project.

Coastal Modeling: AECOM possesses multiple computing environments from which to obtain and analyze results, and modify as necessary. These include multi-core computing platforms and network clusters with enhanced graphic-use interface features to exponentially increase the computing power. We have the capability to run models efficiently to help us get to a cost effective solution. We propose efficiency in the development of the model by:

- **Maximizing** the use of data already acquired during the previous regional studies;
- **Comparing** the results of the RBD Hudson model to our existing model(s); and
- **Augmenting** and improving upon the review of findings and selecting the best tool for the purpose.

Value to DPMC/DEP
Current, local knowledge applied to RBD Hudson River

AECOM understands the challenges presented by the complex coastal environment and the flooding mechanisms present within the coastal study area. Our coastal experts are ready to make available their local, regional, and national storm surge knowledge, acquired across past studies, to put forth technically defensible and high quality coastal products within a timely schedule.

We will look into intricacies of the existing MIKE 21 model prepared for the Feasibility Study, and will compare and swap if we feel necessary with our existing LMCR MIKE 21 model for the same area. Our experience with other RBD projects shows that there may be benefits to using a self-generated model than trying to modify and adjust another model. More often than not, this will bring an unbiased view of looking at the same problem from a different perspective.

This, again, will be done by using our existing LMCR model as a secondary authenticator, **eliminating the need to rely solely on updating the existing RBD Hudson River model to the final design level.** We recognize even small modifications in design parameters may result in significant cost savings, and our current, existing model will provide us the basis to assess these modifications.

For RBD Meadowlands project, AECOM has been working on comprehensive modeling for both from storm surge and fluvial events. For coastal modeling, MIKE 21 hydrodynamic and spectral wave modules and HEC-HMS, HEC-RAS and Infoworks models have been used for fluvial events. As these models have different platforms, data and input exchange, they need to be thoroughly coordinated. For the storm surge modeling, we modified an existing model that was generated for the project at its early stages by one of our subconsultants and built efficiencies into the model that significantly reduced run times and accuracy allowing the model to now be used for design purposes.

The RBD Meadowlands Project demonstrated value to DPMC/DEP through the success in evaluating, calibrating, and updating coastal models to bring them into full compliance with a project's needs.

The accuracy of the input data along with the calibration and verification process is key to the success of any modeling effort. For the RBD Meadowlands, we discovered the data gaps and inconsistencies space between and were able to finalize the current phase of the model, prepare outputs to support the fluvial modeling team and get ready for the next phase of the project—detailed design.

Similar to RBD Hudson River, the LMCR study is advancing recommendations from comprehensive plans, which include engineering, planning, landscape architecture, urban design, environmental planning, cost estimating, economic analysis, and public engagement services. This project builds upon previous planning efforts for Lower Manhattan to deliver a detailed, feasible, and comprehensive flood protection concept design and advanced planning for the study area. The study area is divided into four sub-areas for which we are developing four distinct flood protection scopes of work with supporting technical analyses and implementation strategies of independent utility using a defined capital budget to be determined and under the direction of the City. AECOM has developed an integrated model using MIKE model system to evaluate the existing conditions and follow-on assessments of proposed coastal resiliency alternatives on coastal hydrodynamics and interior drainage. The integrated MIKE model system uses various modules within the system interface to simulate stormwater, coastal hydrodynamics, water quality and ecological processes.

Our LMCR MIKE21 coastal model is directly applicable to RBD Hudson River Project, giving AECOM a substantial head start advantage over other teams.

One of the important project criteria is climate change as it relates to the design criteria. Sea level rise, changes in the intensity of the rainfall are amongst the most important climate change factors for this project. Our team is experienced and knowledgeable in this area as we have worked and synthesized specific criteria for each project. We have analyzed and used various criteria and further considered the nonlinearity of the sea level rise for risk assessment with a goal of optimizing our design.

Understanding the critical importance of both schedule and design compliance under multiple agencies, we have optimized the process to leverage existing modeling to facilitate creation of a technically acceptable and defendable storm surge study within an aggressive schedule. As noted in our approach, we will use existing data and study material where appropriate, improving with newly available data beyond the scope of the completed Feasibility Study.

Value to DPMC/DEP

Current relevant experience provides fast track evaluation, moving the project quickly into final design and construction

Our regional expertise and recent experience in analysis and design of similar systems in LMCR and RBD Meadowlands resiliency projects gives us a considerable knowledge base from which to draw for the evaluation and design approach for this project.

Stormwater & Interior Drainage Modeling: AECOM has direct, local practice evaluating and designing the interior drainage works for both riverine and coastal projects in complex urban drainage systems for flood resilience. We have prepared plans and specifications for design and rehabilitation of interior drainage systems nationwide for major flood protection systems. These systems capture, store and discharge stormwater from internal drainage systems, including drainage pump stations from 10 cfs to over 3000 cfs. We have utilized multiple modeling tools to route flows through the interior drainage works and to define residual flooding limits, such as DHI's MIKE modeling system (MIKE Flood, MIKE Urban & MIKE 21), USACE's HEC-RAS and HEC-HMS models. The combined experience of our team's technical experts will provide for proficiencies and support our fast-track approach. Below are the steps we will take to evaluate and optimize the existing MIKE Urban model:

- **Review existing stormwater/combined sewer network and other existing data.** We will review the existing Combined Storm Sewer (CSS) network prepared from the North Hudson Sewer Authority (NHSA) model with data collected during the Feasibility Study modeling efforts and additional data from the NHSA, other agencies and City of Hoboken. We will also evaluate locations of existing utility networks and possible penetration points between protected and non-protected side of Resist Alignment. This effort will help identify hot spot locations along the alignment for additional investigation and areas of critical impact on interior drainage flooding.
- **Review and update existing MIKE Urban model** for the project area and feasibility design for integrated coastal and fluvial system modeling with additional data and design specific needs. Our team will apply the two-prong strategy for all phases of project to enhance the Feasibility Study analyses to the design needs: 1) we will update the existing MIKE Urban models, filling data gaps from the Feasibility Study with additional available data from agencies and surveys and 2) we will refine hydrologic and hydraulic computations based on additional data and update the base models for the project.
- **Further evaluate the interior drainage mitigation need** in the areas on the west side of the Resist alignment, as well as needs for separation of existing sewer connections between on the east side of Resist alignment and the protected side of the City. We will evaluate possible separation of the storm sewer from the CSS that will reduce the wet weather flows to the regulators and existing pump station, improving their performance.
- **Update and optimize the feasibility MIKE Urban and Pond Pack Models with additional data, focus on the project detailed design needs and FEMA accreditation requirements.** The interior drainage system as proposed in the Preferred Alternative will be a critical component of the overall project and will be a component of FEMA's flood control structure accreditation process. We will optimize the appropriate drainage components to meet the FEMA requirements for interior drainage analysis and inundation mapping to minimize residual flooding. We will also evaluate different DSD sites as proposed in the Feasibility Study to identify the most beneficial site to be advanced as the DSD Pilot project. We will promote the use of green/grey infrastructure and provide recommendations to design team for various alternatives.

Landscape Architecture & Urban Design

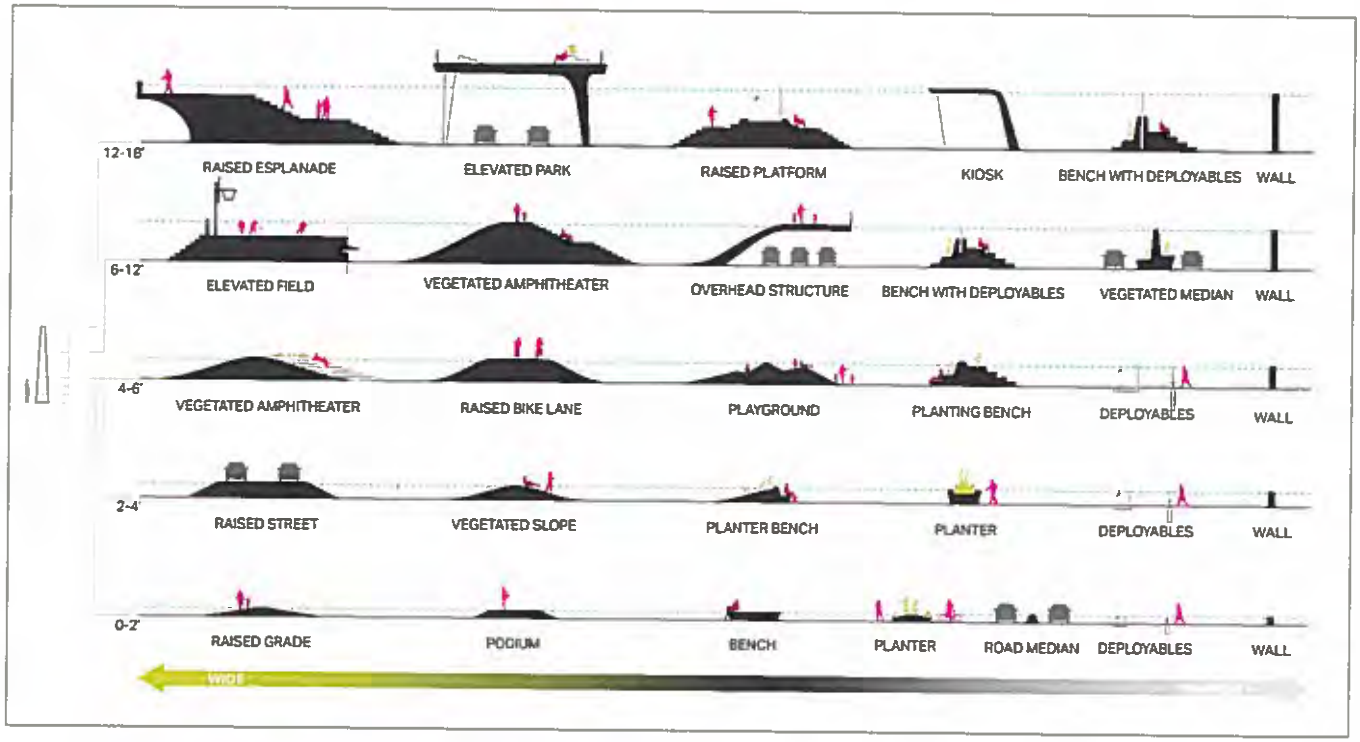
In our view, design acts as the integrator at multiple scales and between the different aspects of the project. Our designers thrive at taking large scale systems information and efficiently scaling it down to site design solutions at the intersection of risk management and human well-being. It is the responsibility of our designers, during the evaluation phase, to ensure that the urban design aspects of the Resist structure are intelligently addressed and accurately implemented. The complex task of retrofitting the Resist structure into the city's streets, buildings and edges, will be the medium for our designers to innovate and affirm a full response.

Our designers will not look at this urban landscape in one dimension, but rather as an opportunity to maximize the multiple dimensions needed in urban flood risk reduction. We thrive in this dense and stacked condition and enjoy this form of escalated problem solving and collaboration with the community. Design will play a role in visualizing the different issues, such that they can be discussed and improved upon by the community and stakeholders.

The inventory of the project area's built environment will be critical during this phase from a spatial perspective. The urban landscape and the dimensional requirements for zoning, easements, setbacks, right-a-ways, utility corridors, transportation and transit corridors, within dense mixed use, creates a platform of opportunity and constraints for the project elements to fit functionally and safely in the space provided, while retaining the aesthetics and cultural identity of the neighborhoods. Our designers will be tasked with finding the equilibrium between the mixed use demands, the spatial demands of the urban landscape, and the Preferred Alternative.

AECOM's team of landscape architects and urban designers will work with the project areas zoning and land use permitting requirements to arrive at a desirable solution. We will include in our design approach any potential land development plans (LCOR), transit rehabilitation (NJ TRANSIT), master plans (City of Hoboken's Green Infrastructure Strategic Plan), and other activities going on in the project area. This will ensure that the projects are designed in tandem, optimizing the limited space in this dense urban environment.

Through our approach, AECOM will work with DPMC/ DEP and the community to maximize public amenities **within budget**.



Value to DPMC/DEP

Proud legacy of sound protection through an integrated public amenity

In summary, evaluation is where modeling and life safety design merges with mixed use, added value, and place making. This is where our designers work with our engineers to understand the full spectrum of inputs, above ground, alongside, and below ground, so that the Resist structure is successfully nested in the urban context of the project area on time and within budget. Based on our previous experiences with this type of project, we will focus on fast-tracking an analysis of the Preferred Alternative, as part of an integrated urban design and landscape architecture approach. This approach prioritizes protection, and balances sound engineering with design, that is responsive to the place and the community.

Through our experience on projects such as LMCR and RBD Meadowlands, we are a uniquely qualified to quickly identify these types of balanced opportunities for enhancements to the Preferred Alternative for both the Resist components and the DSD Pilot project — **yielding significant time and cost savings, while still providing a robust, thoughtful approach to the entire project.**

For the LMCR project, after a thorough analysis and review, we realized design efficiencies and cost savings at the foundations of floodwall structures under a certain height. We found additional improvements above ground for lower portions of the Resist element itself. These important insights have allowed the LMCR project to maintain a focus on robust engineering and an elevated level of urban design, while keeping within schedule and budgetary constraints.

Site Remediation

Earthwork and disturbance of subsurface environments on the RBD Hudson River Project will encounter contaminated materials that require management. Based on preliminary studies, the project will encounter more than 45 Recognized Environmental Conditions (REC) and about 137,000 tons of contaminated soil that may need to be managed within the study area. RECs include contaminated soil, and historic fill, underground storage tanks, underground piping and groundwater. Contaminated groundwater may be encountered in excavations and/or be encountered during dewatering. In addition to RECs, there is a high potential in urban areas for currently unrecognized impacts to also be encountered.

New Jersey has developed technical guidance that requires contamination encountered during projects of this nature to be handled in a manner that is protective of human health and the environment and consistent with current laws, regulation, and guidance. When more than 200 cubic yards of impacted material are excavated, New Jersey requires that the remediation process be overseen by a licensed site remediation professional (LSRP). Our LSRP staff will work with our engineers to determine activities required to comply with New Jersey's Technical Requirements for Site Remediation (NJAC 7:26 E) and the Administrative Requirements for Site Remediation (NJAC 7:26C). LSRP services may also include:

- Planning and oversight of sampling activities;
- Preparation of preliminary assessment/site investigation documents; and
- Preparation and submittal of appropriate SRP plans, forms, and a final linear construction report (which would occur in the design phase).

Value to DPMC/DEP

Upfront LSRP planning will proactively mitigate "show stopper" delays

AECOM is fully equipped to provide LSRP and remedial services. Our team includes more than 17 NJDEP LSRPs that are fully trained and experienced with the Site Remediation Reform Act process (SRRA; N.J.S.A. 58:10C-1 et seq.), NJAC 7:26E and NJAC 7:26C.

AECOM LSRPs provided linear construction oversight for the NJ Turnpike 6 to 9 widening project (left), and four separate routes that comprise the 30 mile long PSE&G Northeast Grid project (right).

Access & Easements

The proposed RBD Hudson River Project lies within multiple jurisdictions and ownership. Design and construction of the project will require the acquisition of rights to investigate, travel across, and construct temporary and permanent facilities upon these lands. The process of property rights acquisition requires a multi-phase investigation and negotiation/permitting, with key components that include those described below.

Needs Assessment. The first step in the acquisition of rights is to determine the land areas that are necessary to access and construct the project. With input from engineers and construction specialists, our team will develop a project property inventory that identifies those properties that are necessary to construct the project and maintain it in the future. This investigation will consider the relationship between the proposed work, property boundaries, and ownership. Where project design elements are flexible, the siting of improvements will be adjusted to favor publicly held lands to avoid costly acquisitions.

The deliverable for the needs assessment will be a mapped and itemized inventory of properties necessary for project implementation. The nature of the proposed rights for each property will be identified, and will include the delineation of both temporary (e.g., staging) and permanent (e.g., infrastructure). This stage of the work will rely upon readily available property mapping and ownership inventories available through online resources.

Ownership Outreach. In consultation with DPMC/DEP, we will support the contact and engagement of property owners to initiate the property rights acquisition process. For each property in question, a survey map will be produced that identifies the subject property boundary and the location, size and nature of all proposed easements, acquisitions and/or permanent improvements on the subject property.

Final Acquisition. In accordance with the terms of the negotiated property rights acquisitions, we will produce required agreement exhibits, including property surveys to be prepared and sealed by a New Jersey licensed professional surveyor. We will also provide the necessary engineering input for the agreement language, including those terms necessary to ensure that access for future maintenance of the project can be achieved.

It is noted that rights to investigate properties will be necessary in advance of the final rights to build and maintain the project. In particular, the right to enter properties for purposes of geotechnical, survey, and environmental investigations will be necessary early in the design process.

Review the Resist Components

We will evaluate the feasibility-level design for the Resist structure and suggest enhancements and efficiencies based on the following parameters:

- Durability – robust to last over the required design life with only minimal routine maintenance
- Adaptability for future change in conditions (i.e. Sea Level Rise)
- Ease of construction – can be bid on and constructed by non-specialty contractors

- Materials and cost – find efficiencies in material types, modular designs, installation methods, and reductions in robustness needs based on further evaluation
- Protection of utilities
- Minimal impact on utilities – adaptability to avoid major utility crossings, both underground & overhead
- Minimal impact to traffic flows
- Minimal impact to the built environment
- Public realm – consideration for context and opportunities for placemaking
- Green/sustainable elements – consider across the Resist components, focusing on materials & public amenities
- Construction duration – limit or properly schedule long lead items, common materials, routine work methods
- Ease of operation and low maintenance costs – routine maintenance and periodic testing
- Phasing ability – consider implementation in phases by protection level

Review the DSD Components

Based on the results of the MIKE Urban model, we will evaluate the DSD sites and make detailed recommendations on several options for the DSD pilot site. AECOM will use the existing City of Hoboken's Green Infrastructure Strategic Plan (2015) during this process. We will focus on the following parameters:

- Durability – solid to last over the required design life, withstanding both weathering and public interaction
- Adaptability for future change in conditions (i.e. increased storm intensity)
- Ease of construction – can be bid on and constructed by non-specialty contractors
- Materials and cost – find efficiencies in material types and installation methods
- Minimal impact on utilities – adaptability to avoid major utility crossings, both underground & overhead
- Minimal impact to traffic flows
- Minimal impact to the built environment
- Public realm – consideration for context and opportunities for placemaking
- Construction duration – limit or properly schedule long lead items, common materials, routine work methods
- Ease of operation and low maintenance costs—focused on substrates, plant materials, hard-scape
- Phasing ability – consider the potential to connect to other DSD sites and expand in the future

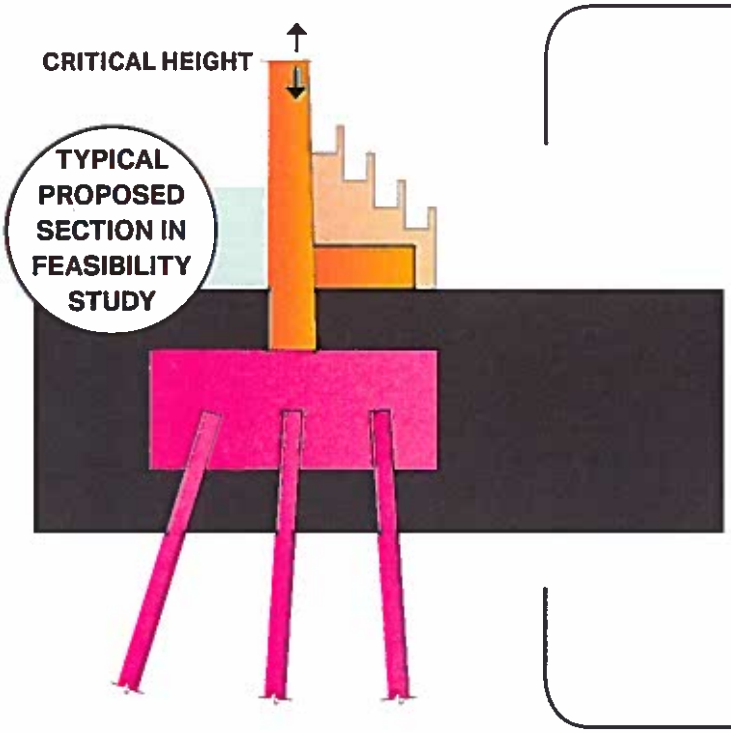
VALUE-ADD APPROACH 2:

Design & Construction Efficiencies

Experience from similar resiliency projects we've lead, such as RBD Meadowlands and Lower Manhattan Coastal Resiliency, has challenged us to think differently about the design and development of Resist-type structures. Finding opportunities for efficiency and cost savings, while maintaining a commitment to contextual, multi-purpose urban interventions, has been crucial to our past successes. We will bring this same innovative approach to the development of the Resist structure, enhancing both the development process and the final construction.

FOR EXAMPLE...

The Feasibility Study employs a typical section throughout the Resist structure. Through our past experience designing flood protection structures in dense urban environments, we've learned that the critical variable in determining time and cost savings is the height of the wall. To demonstrate this at a conceptual level, the below scenarios show how we can find efficiencies in the typical Resist profile.



If the wall is ***TALLER THAN*** the Critical Height, efficiencies can be found ***ABOVE-GROUND***

The above-ground portion of the Resist Structure, as-proposed, features a typical wall with discrete attached public realm amenities.

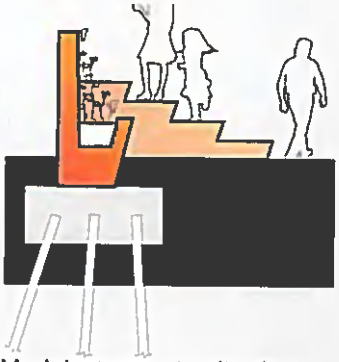
If the wall is ***SHORTER THAN*** the Critical Height, efficiencies can be found ***BELOW GROUND***

The below-ground portion of the Resist Structure, as-proposed, features a high engineered footing with a seepage cutoff wall and micro-piles.

...here are some ***ALTERNATIVE APPROACHES*** (in section)

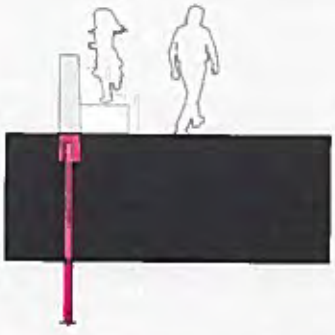
An Integrated Planter Unit in a single mold provides cost and installation efficiencies compared to attached discrete planting elements

An Integrated Amphitheater Unit in single mold provides provide cost and installation efficiencies for maximum public realm amenity

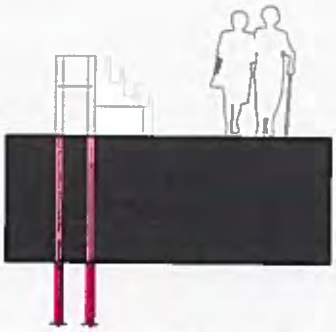


Modular precast units that are easily interchangeable and replaceable provide cost and installation efficiencies while providing maximum flexibility to site context.

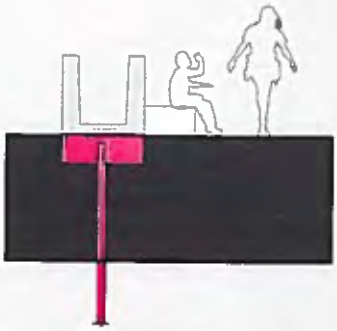
...here are some ***ALTERNATIVE APPROACHES***



A Sheet Pile Footing with concrete cap provides adequate support for the Resist structure while maintaining the required level of protection



Double Sheet Pile Footing with cross brace could provide support and width for program elements



Minimal Concrete Footing integrated with program element with single seepage cutoff wall

On the Peoria Complete Streets Masterplan, MKA worked with the landscape architect to plan the low-impact design retrofit of 57 city blocks undergoing a street diet and public space upgrade. The LID insertions planned by MKA take the runoff generated by these streets off of the City's combined sewer system, and make a substantial contribution to the City's CSO reduction targets.

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Finalize Evaluation Recommendations

Our multidisciplinary team will finalize their recommendations for the Preferred Alternative Resist and DSD Pilot project components. They will look at the project area as a single dynamic system, as well as concentrate on the specific requirements for their discipline design. Where transdisciplinary collaboration is needed, it will be actioned.

Design

As we transition out of evaluation, our team will focus on developing the detail and integrity needed to achieve a final-level of design. The design phase will focus on how the design elements truly merge, interface, and function. We will rely on our established interdependencies and evaluation results to determine the final required levels of protection, wall heights and foundations, and DSD Pilot project components, integrated through the urban design elements. For both the Resist structure and the DSD Pilot project, AECOM will prepare construction design packages for the Resist and DSD Pilot design at the 30%, 65%, 95% and 100% design completion stages. Further detail is provided in the construction design packages section.

Our experience with large-scale projects with limited funding has shaped our design approach. We will determine the right level of detail to be implemented at the right time so we can make the right design decisions. This practice has proven crucial in implementing projects on time and on budget, producing further cost savings and schedule productivity. In this regard, our second value-add approach is to consider opportunities and constraints associated with the various aspects of the feasibility-level design of Preferred Alternative to create design and construction efficiencies.

Lessoned learned from similar resiliency projects we've led, such as RBD Meadowlands and LMCR, have forced us to think differently about the design and development of Resist-type structures. Finding opportunities for efficiency and cost savings, while maintaining a commitment to contextual, multi-purpose urban interventions, has been crucial to our past successes. We will bring this same innovative approach to the development of the Resist structure, enhancing both the development process and the final construction.

As outlined below, the design phase will first establish design criteria, then focus on the Resist components, drainage components (both in support the Resist design's interior drainage and the DSD Pilot project), site-specific efficiencies, construction cost estimates, permitting & regulatory compliance, construction design package.

Development of Design Criteria

There can be complexities when introducing new and impactful infrastructure into a well-established and thriving urban environment, and we will consider this as part of the design process. A successful design includes consideration of a number of factors. One of the ways to address this concern is to develop clear-cut design criteria. AECOM will take a comprehensive review of the regulatory requirements, building codes, design standards, and other guidance documents. Our technical discipline leads will work together to apply these factors to the site conditions and project goals to establish a set of design criteria for the Resist components and DSD Pilot site.

Resist Components

In looking to refine the Resist components as part of the final design level process, AECOM will consider opportunities and constraints associated with the **alignment** as shown in the Preferred Alternative, such as:

- **Location of subsurface utilities** such as existing interceptors, air vent pipes, major electric conduits and others that can be costly and difficult to relocate.
- **Existing soil conditions** and presence of high groundwater.
- **Integrity of existing embankments** that are part of the "Resist" alignment.
- **Limited available area for construction** (such as alleyway and sidewalks).
- **Integration of public amenities** to create contextual, multi-purpose, urban interventions.
- **Building openings** such as entrance to businesses, building, garages and others.
- **Vehicular and pedestrian circulation** during normal and storm conditions.
- **Proximity to existing buildings foundation.**

As the lead for the winning strategy for the RBD Hudson River competition, OMA will play a central role in the development of design criteria and solutions. Royal Haskoning DHV, also a member of the winning RBD competition team, will provide key insights relating to flood alleviation and risk management.

Comparison of before (left) and during (right) Hurricane Irene for a floodwall in Green Brook.

We will also look into opportunities and constraints associated with the height as shown in the Preferred Alternative. The recommended design elevation for the Resist structure is a combination of the design storm surge elevation, uncertainty, and estimated sea level change. For the portions of the structure subjected to wave attack, the design elevation also includes consideration of wave height and run up and overtopping. Some of the important structure height design elements that we will look to fine-tune include:

- **Storm surge evaluation:** We will review the currently set elevation within the context of the project requirements and under the federal guidelines. The traditional solution to account for uncertainty in these values is to increase design factors of safety or to increase the quantity and quality of information. The latter solution is performed through techniques such as expanding the data base, eliminating or minimizing measurement errors, and using traditional statistical analyses. Uncertainty is inherent in any future-oriented planning effort. In the case of coastal flood protection or coastal defense projects, the problem is characterized by hazards that arise from many random natural processes and systems.
- **Waves:** During extreme storm events the storm surge elevations will exceed the waterfront near-bay banks potentially exposing the flood control structure to locally-generated (fetch-limited) wind waves. The assessment of the effects of waves is an important consideration for estimating wave loading and derivation of a reasonable crest elevation. In order to estimate wave heights along the flood control structure, where there is meaningful exposure, a coupled MIKE 21 wave will be used to cover the portion of Hudson River centered on the project area.
- **Wave run-up and overtopping:** Wave run-up refers to the height above the water surface elevation reached by the swash. Run-up is a very complex phenomenon that is known to depend on the incident wave conditions (height, period, steepness, direction), and the nature of the beach, levee, or wall being run-up (e.g., slope, reflectivity, height, permeability, roughness). Wave overtopping refers to the volumetric rate at which run-up flows over the top or crest of a slope, the beach, levee, or vertical wall. If not accounted for in the design, wave run-up and overtopping as a result of incorrectly designed

walls may result in significant interior flooding, scour and erosion, and could ultimately contribute to the failure of the flood control structure. These types of structures are typically designed to limit wave overtopping below 0.1 cfs/lf (cubic feet per second/linear foot). For the RBD Hudson River top of floodwall elevation in the coastal wave area, we will determine the amount of overtopping as a function of stability and the need for the pumping capacity on the protected side.

- **Sea level rise (SLR):** SLR in inherently part of all the design considerations provided in this section and AECOM will consider the non-linear variations within the project area. If there is a significant improvement to the project values, we will make it part of our design criteria.

Development of a FEMA-accredited Design Flood Elevation (DFE): The FEMA 44 CFR 65.10 requires the use of the maximum design flood elevation (DFE) as obtained from these four scenario cases.

- **Case 1:** 1-percent-annual-chance still water elevation + 2 feet freeboard (minimum requirement)
- **Case 2:** 1-percent-annual-chance base flood elevation (BFE) + 1 foot freeboard
- **Case 3:** 1-percent-annual-chance still water elevation + 1 foot freeboard + maximum wave run up
- **Case 4:** 1-percent-annual-chance still water elevation + wave crest height as freeboard to minimize wave overtopping from 1-percent-annual-chance wave

Value to DPMC/DEP
Strategic partnering for specific local experience

The current DFE for the Resist structure in the preferred Alternative 3 varies from 15.0 feet to 17.9 feet (NAVD88). AECOM will review the modeling and DFEs in the Feasibility Study, and once validated, we will work with FEMA to obtain a certified flood elevation, and design the flood protection as required to assure accreditation now and throughout the design life of the project.

It should be noted, that FEMA Region 2 is currently in the process of revising the coastal modeling and mapping for the Hudson River in the project area. AECOM is involved in this process and will ensure that the RBD Hudson River Project is designed with the revised modeling in mind and in coordination with Region 2 activities.

Other key elements of the Resist design for which will look for opportunities and constraints include:

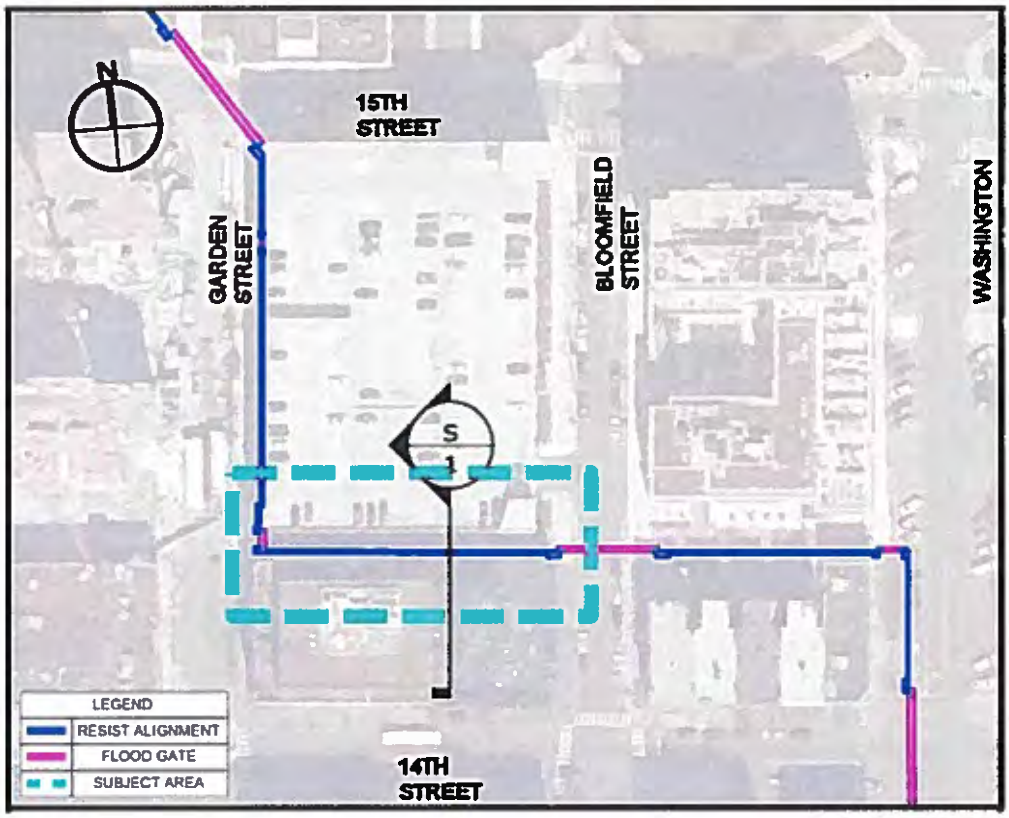
Closure structures: Gate closures are typically required to close openings that remain in the line of protection after construction has been completed. Gate closures can occur at locations where railroads, high use roadways, or major commercial or industrial complexes need direct access to their sites during normal non-flooding conditions.

There are 19 to 23 potential gates proposed in the Preferred Alternative. These gate locations may be adjusted based on the identified opportunities and/or constraints. For example, the gate near 15th Street and Garden Street was diagonally placed in the intersection as shown in below graphic. We will evaluate the feasibility of such configuration and recommend improvements for design and construction. We will further evaluate the Preferred Alternative's Options 1 and 2 alternative's near the NJ TRANSIT Hoboken Terminal and determine which option will be carried out for design and construction.

It is anticipated that these gate closure elements will be designed in accordance with USACE's ETL 1110-2-584, EM 1110-2-1705, and other pertinent local guidance and standards. Closure gate heights will be based on field requirements, but in general sill elevation will be set as high as possible (based on field geometry) to avoid frequent closures that create obstructions to traffic flow.

Three gate types are anticipated to be evaluated as options that include swing gates, a roller gates, and in less dynamic locations an automatic, self-rising gate. The automated gate will be a manufactured item and the location of these gates will be determined by limitations from the manufacturer.

Alan Blumberg, professor of at Stevens Institute of Technology and Hoboken resident, is our coastal modeling technical advisor. His specific technical knowledge of the project area, as well as the region, will be an invaluable resource for the team.



Pump Stations: Pump stations will be required for the Resist structures interior drainage system. AECOM will evaluate the pumping requirements with and without the Future DSD components in place and optimize the design of the pump stations. Since the DSD components will not be designed and built in conjunction with the Resist elements, the pump station designs will need to be sized to account for the maximum design flow conditions, accounting for existing and future conditions.

Value to DPMC/DEP
Demonstrated success in finding workable, efficient, green solutions

DSD Components

While AECOM understands that the full design of the DSD components of the Preferred Alternative are not part of this RFP, we do anticipate the need to advance the design of these components past the Feasibility Study design level. The DSD components will play an integral role in the overall stormwater management, so it will be necessary to advance the design of the "Future" DSD sites to an appropriate level to support the design of the interior drainage component of the Resist structure and selected DSD Pilot project site.

Once the DSD Pilot project site has been selected based on AECOM's detailed recommendations, the site will be progressed to final design level. We anticipate the following will be required for final design of the DSD Pilot site:

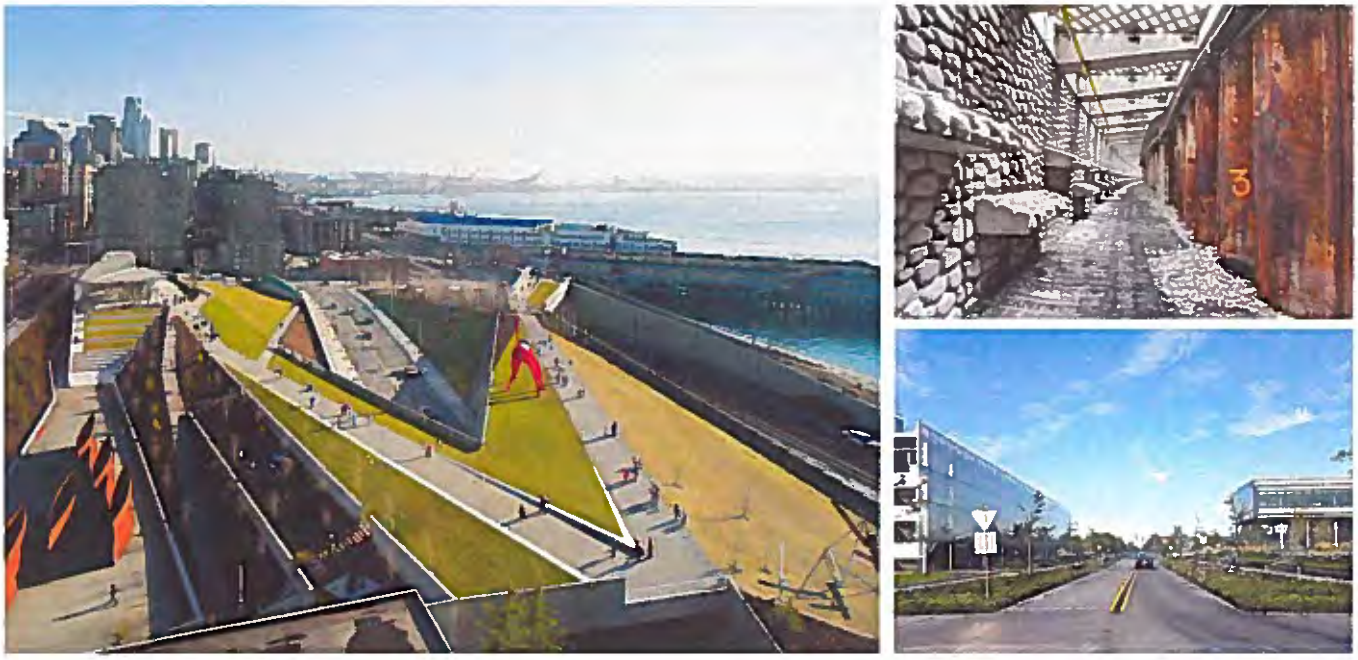
- Site layout, including integration with the public realm;
- Geotechnical design, including permeability tests and calculations;
- Green design & sustainability;
- Final stormwater calculations;
- Traffic control and staging;
- Materials selection; and
- Sequencing and shutdowns plan.

Green Design & Sustainability

Integration of green and sustainable elements is engrained in the AECOM culture. From simple things like recycling and automatic timers, to turning off lights after work hours, to designing sustainability master plans and constructing LEED-certified buildings, we are a leader in green design and sustainably in our industry.

For this project, our green design and sustainability efforts will focus on selection of materials. Our approach for both the Resist and DSD Pilot aspects will be to look for interventions that are intuitive, not forced, and that build on the existing sense of place.

Our passion for identifying "two-fers" whereby a given space can accommodate at least two functions will optimize the outcome of the design.



From top left to lower right: Olympic Sculpture Park, Seattle; Elliot Bay Central Seawall; Nuskin Headquarters Expansion, Provo

Olympic Sculpture Park in Seattle (MKA), the team needed to buttress a dilapidated portion of seawall and restore a salmon migration corridor within the same footprint. Soil needed to create the topographic vision of the lead designer was carefully specified, sourced, and placed in the site and also served as the required environmental cap without the need for complicated and expensive liners.

The collaborative efforts of AECOM and MKA on the Elliot Bay Central Seawall resulted in a new pedestrian promenade and salmon migration corridor stacked together, featuring light penetrating sidewalk panels, which bring the needed natural light to the habitat below the public space.

On the Nuskin Headquarters Expansion project in Provo, our team planned landscape amenities to serve double duty as Low Impact Development (LID) stormwater infrastructure, with up to the 100 year storm now discharging into the ground via infiltration, rather than running off uncontrolled.

We will use experience and lessons learned from LMCR, RBD Meadowlands and Green Brook flood resiliency/mitigation projects in the designs of project elements which are suitable for deployment in highly urban environment like City of Hoboken.

Site-specific Efficiencies

We presented our first value-add approach - evaluation 'fast track' – and how it leads to our second value-add approach - design & construction efficiencies. Next we will demonstrate applications of the design & construction efficiencies approach for specific components of the Resist structure, exhibiting the associated benefits.

Applying Our Approach...
TO THE SITE.

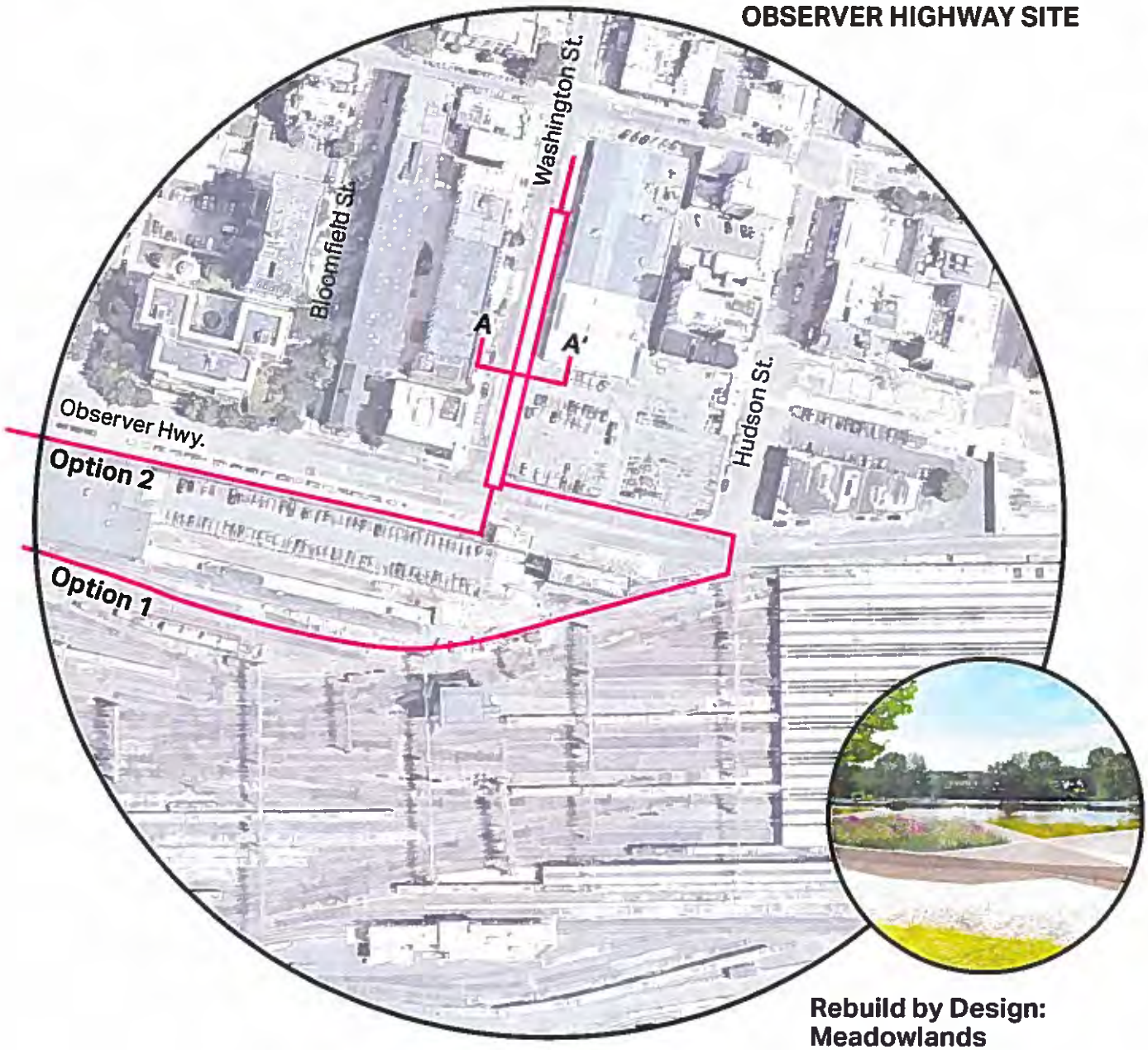
What appears on the following pages represents several thoughts that apply to RBD Hudson River Project. The best alternative was selected during the Feasibility Study and D/FEIS phase—now our charge is moving the project forward. These concepts are intended to display our creative engineering design process and dedication to public space. They are ideas at various levels of exploration, with no intention to imply that we are locked into preconceived notions for the sites. We want to share with you how our creative thinking will save you time and money.

DIVING DEEPER:

Let's Focus on the ***WALL.***

Our past experiences designing flood protection structures to above-critical heights have taught us that time and cost efficiencies are found in the design of the above-ground wall component. As illustrated in the Feasibility Study—and our geotechnical and structural analysis have shown—at and above this critical height, the foundation must be robust.

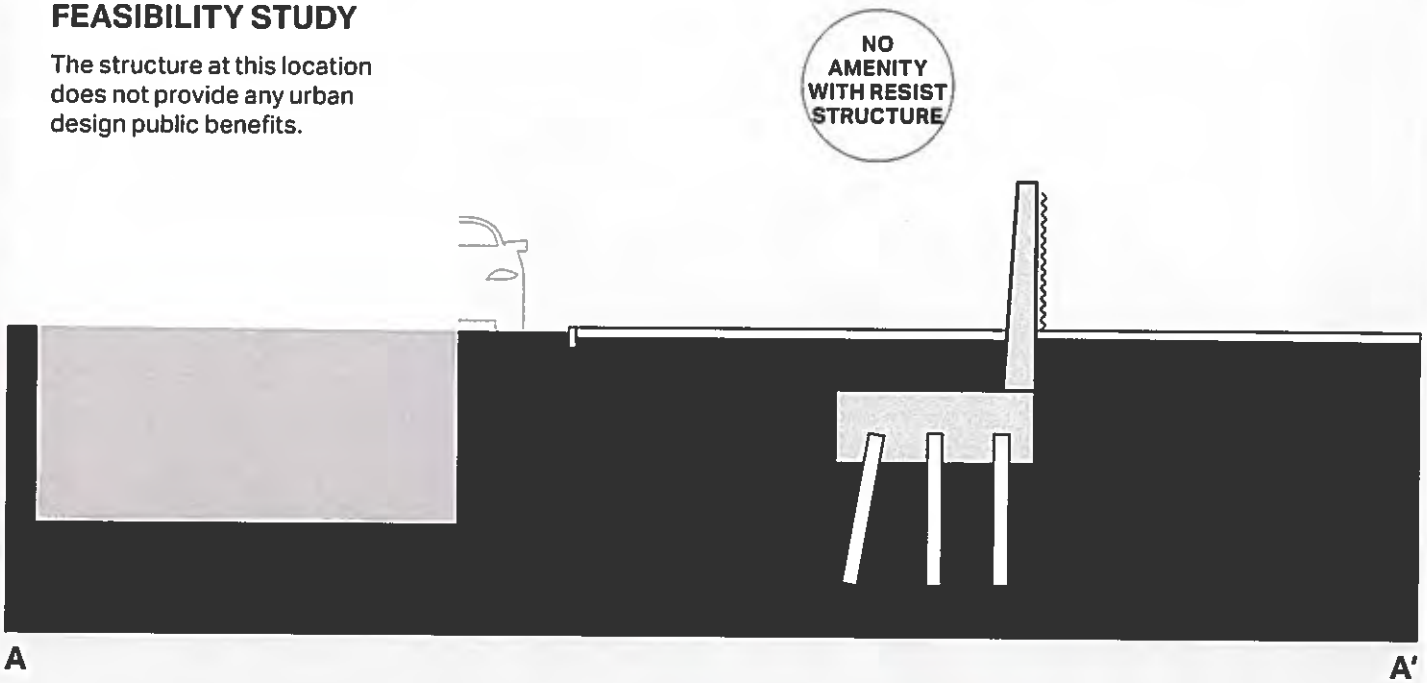
For example, let's focus on the Observer Highway portion of the Resist alignment. Here, the structure must strike a balance between a constructed height of 11'-0" and providing public amenity to the community.



Rebuild by Design: Meadowlands
Design study showcasing modular planter wall units

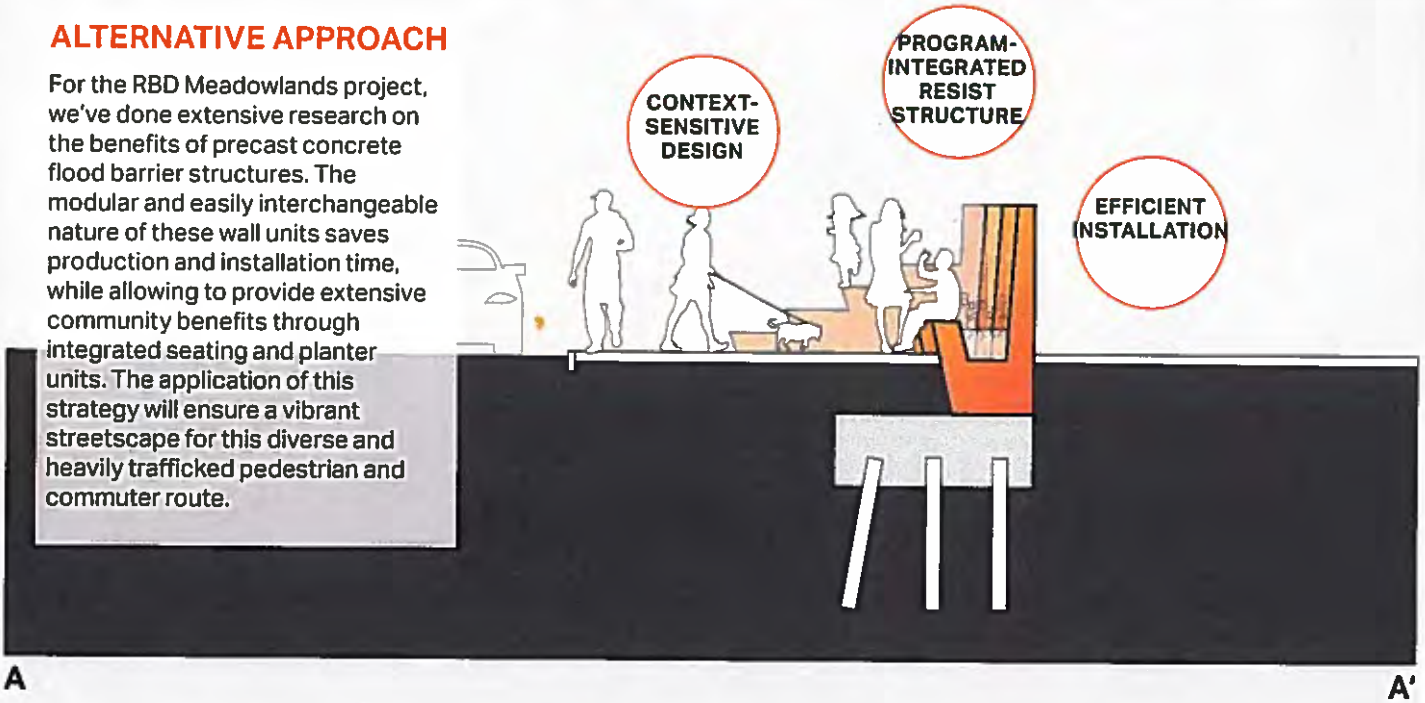
FEASIBILITY STUDY

The structure at this location does not provide any urban design public benefits.



ALTERNATIVE APPROACH

For the RBD Meadowlands project, we've done extensive research on the benefits of precast concrete flood barrier structures. The modular and easily interchangeable nature of these wall units saves production and installation time, while allowing to provide extensive community benefits through integrated seating and planter units. The application of this strategy will ensure a vibrant streetscape for this diverse and heavily trafficked pedestrian and commuter route.

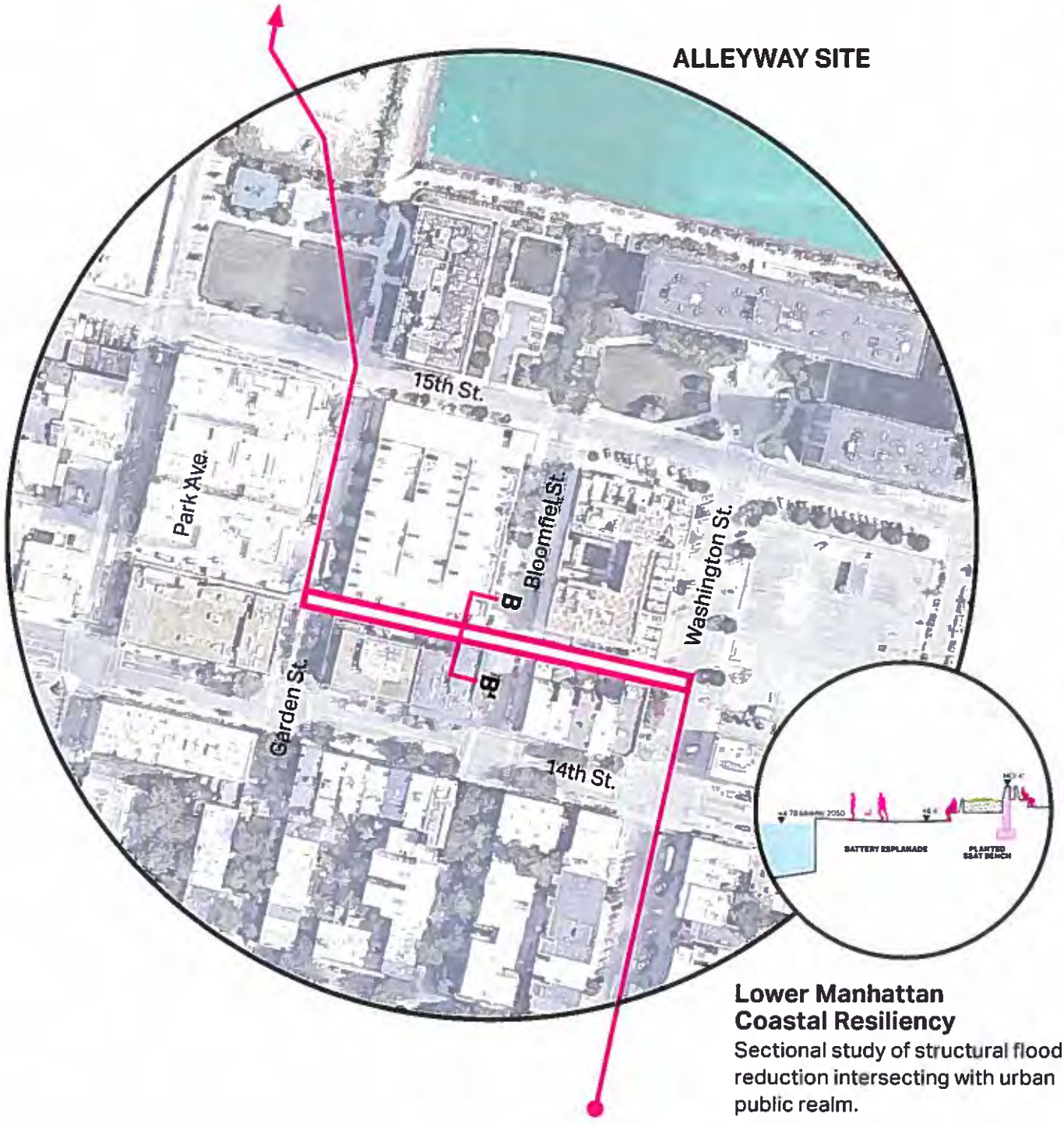


DIVING DEEPER:

Let's Focus on the ***FOOTING.***

Our past experiences designing flood mitigation structures in dense urban environments have taught us that the bulk of cost and time savings is found below ground. Over-engineered footings and utility conflicts are major, yet avoidable, hurdles to the efficient completion of the Resist structure.

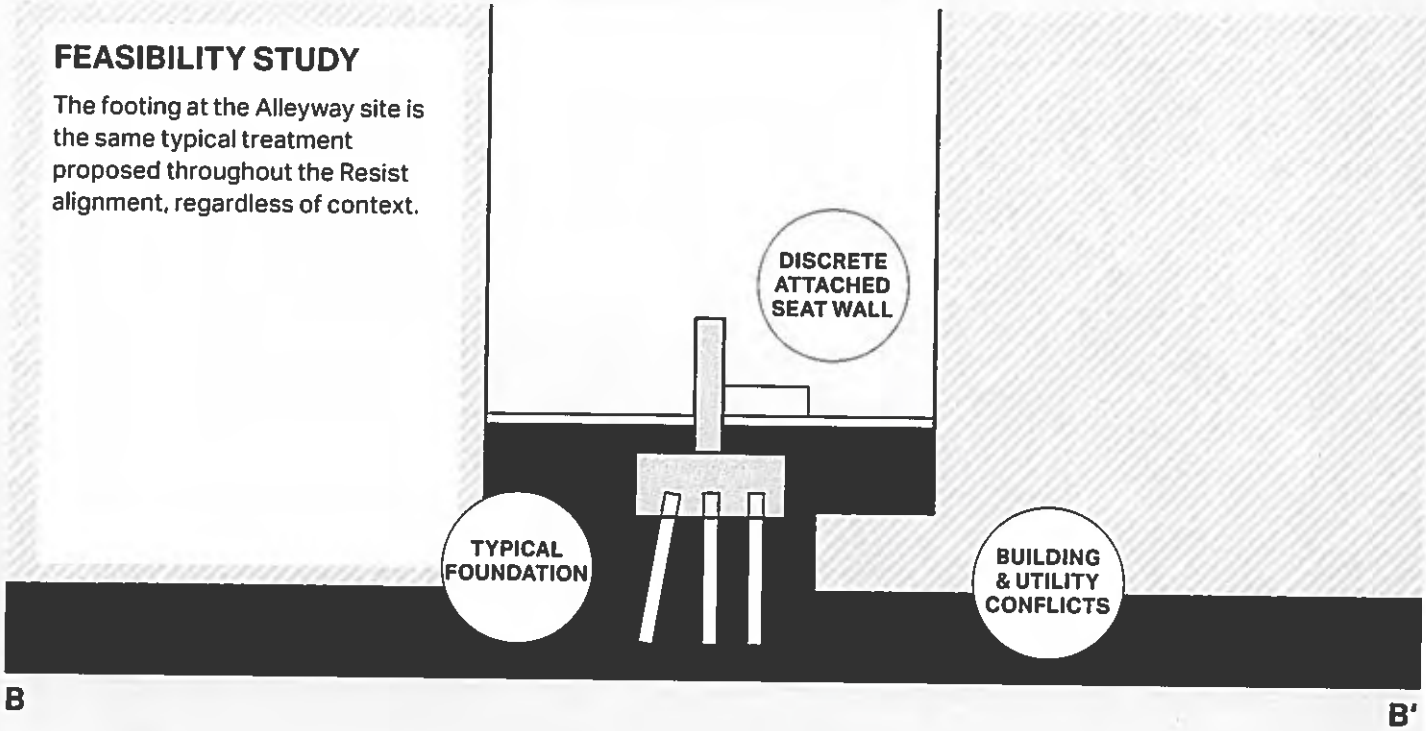
For example, let's focus on the Alleyway portion of the alignment, between Washington and Garden Streets. This is an ideal alignment from a neighborhood impact standpoint, but does pose its own challenges with its narrow right-of-way.



Lower Manhattan Coastal Resiliency
Sectional study of structural flood reduction intersecting with urban public realm.

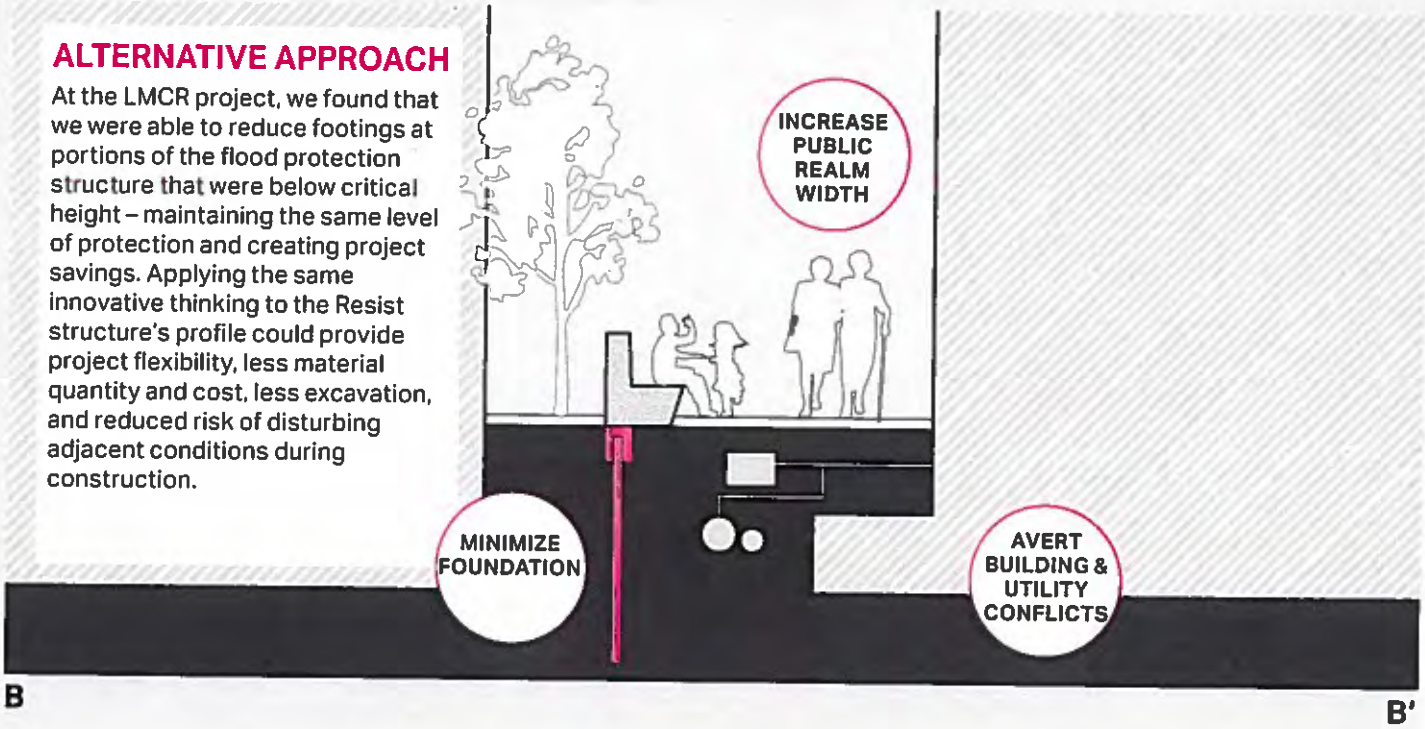
FEASIBILITY STUDY

The footing at the Alleyway site is the same typical treatment proposed throughout the Resist alignment, regardless of context.



ALTERNATIVE APPROACH

At the LMCR project, we found that we were able to reduce footings at portions of the flood protection structure that were below critical height – maintaining the same level of protection and creating project savings. Applying the same innovative thinking to the Resist structure's profile could provide project flexibility, less material quantity and cost, less excavation, and reduced risk of disturbing adjacent conditions during construction.

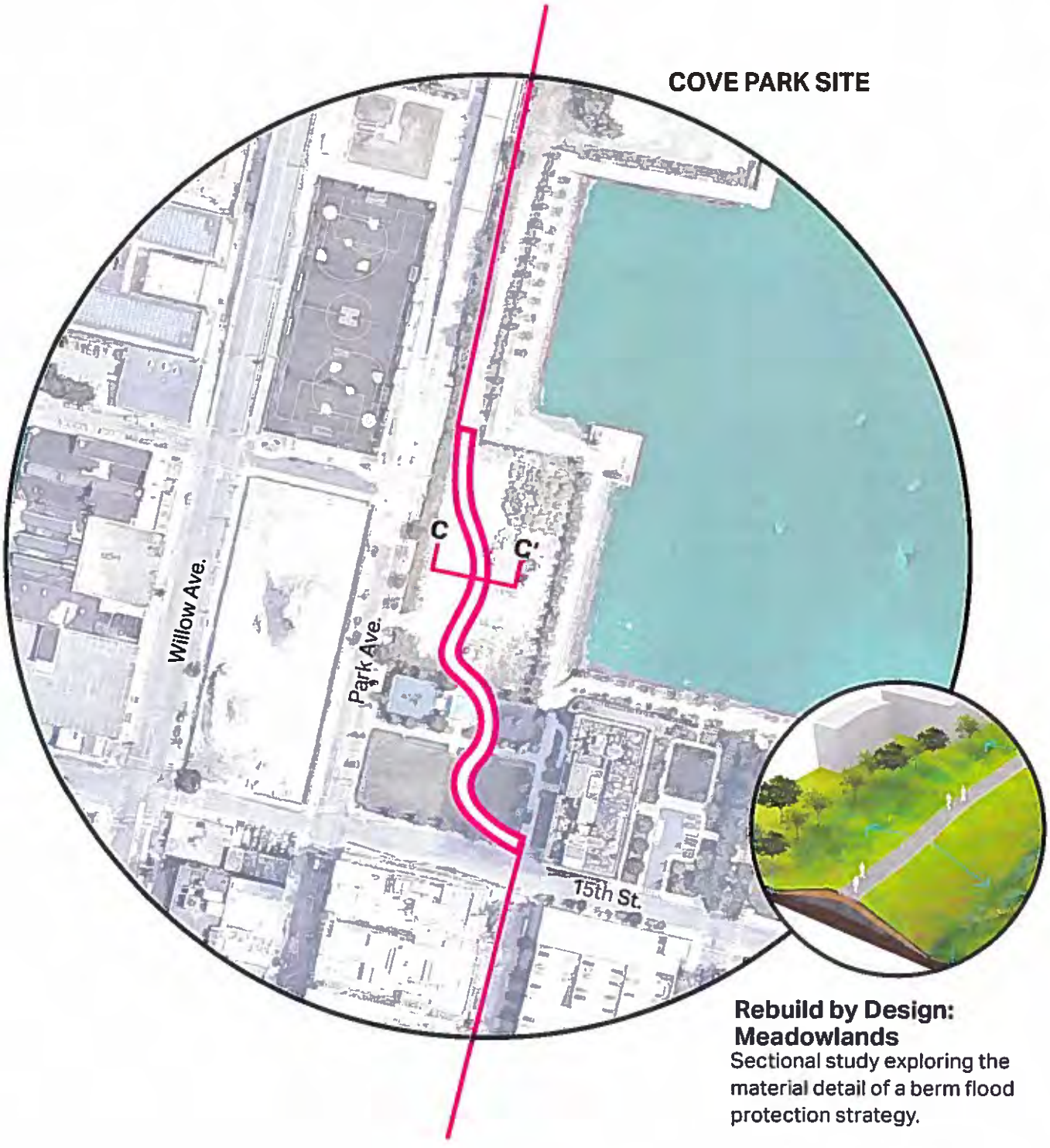


DIVING DEEPER:

Let's Focus on ***MATERIALITY.***

Our past experiences with both RBD Resiliency projects in the Meadowlands and Lower Manhattan have allowed us to study earthwork solutions to coastal flooding. Time and cost savings can be found in the sectional material exploration of the berm.

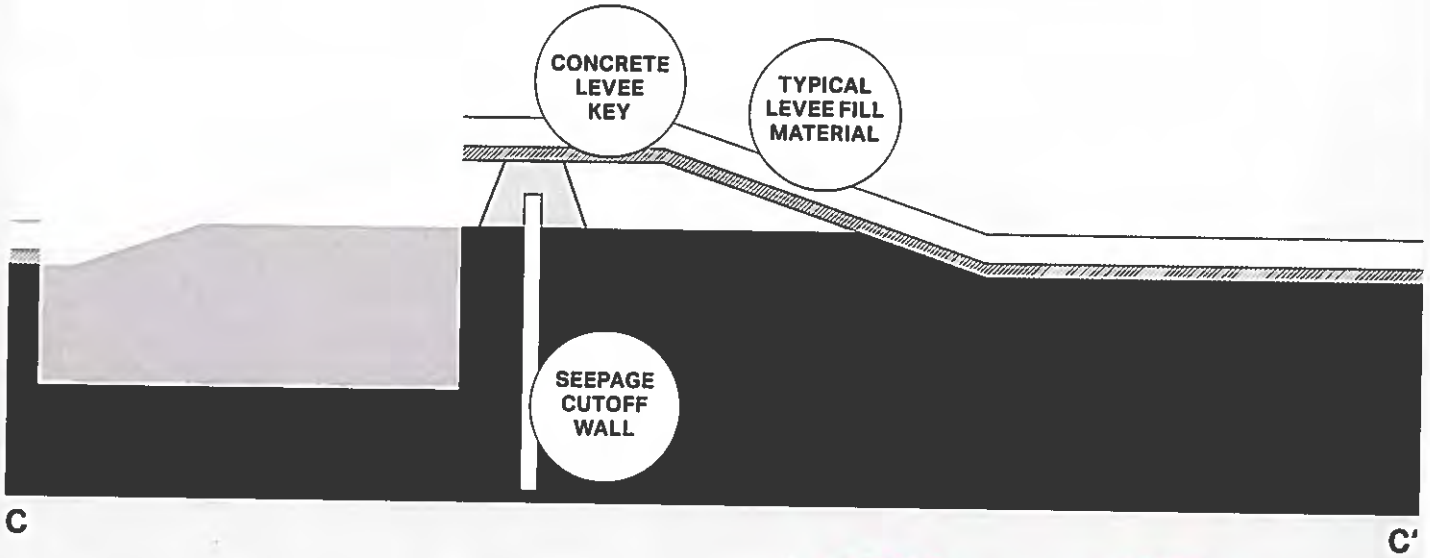
For example, let's focus on the Cove Park site. This open space site allows the Resist structure to expand laterally into a richly programmed neighborhood park built around a raised walkway.



Rebuild by Design: Meadowlands
Sectional study exploring the material detail of a berm flood protection strategy.

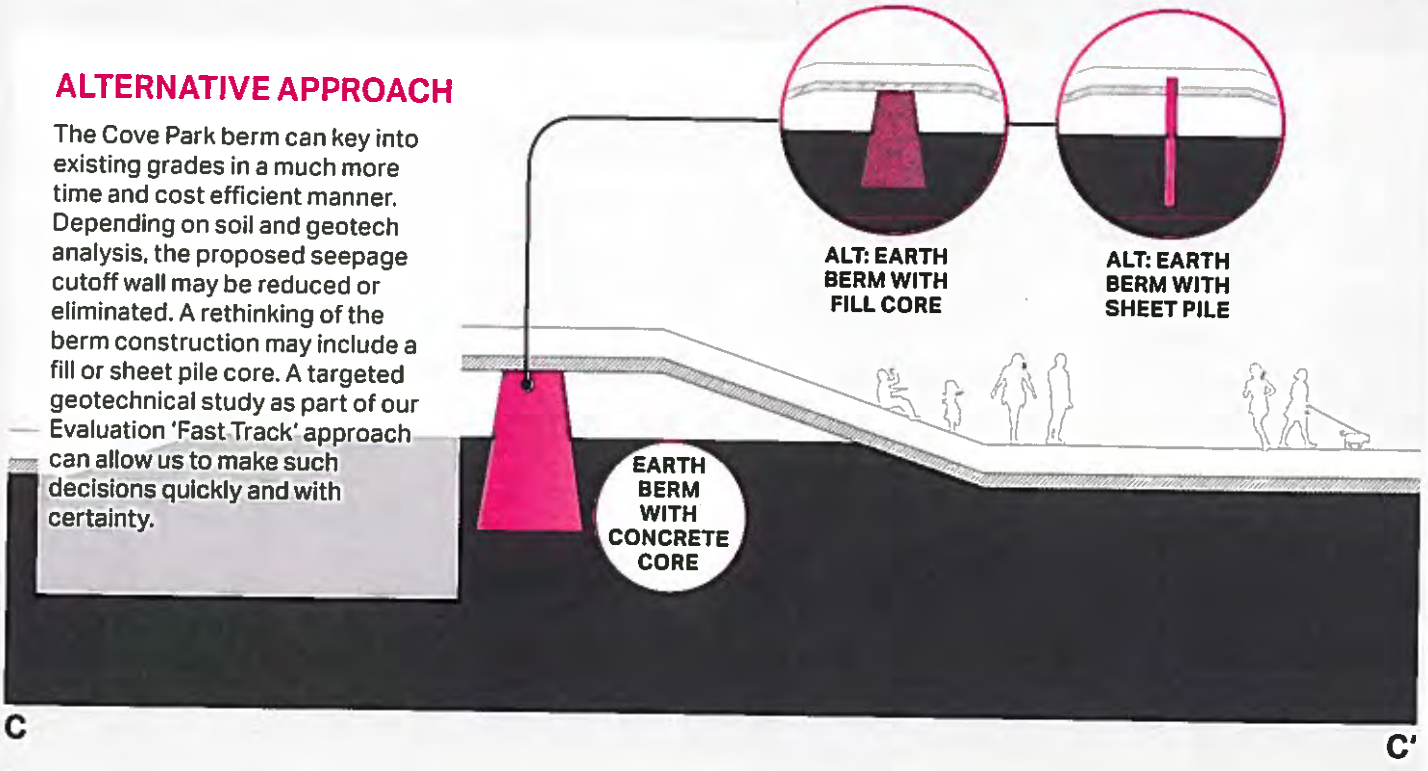
FEASIBILITY STUDY

The berm intersects existing grade with a highly engineered solution.



ALTERNATIVE APPROACH

The Cove Park berm can key into existing grades in a much more time and cost efficient manner. Depending on soil and geotech analysis, the proposed seepage cutoff wall may be reduced or eliminated. A rethinking of the berm construction may include a fill or sheet pile core. A targeted geotechnical study as part of our Evaluation 'Fast Track' approach can allow us to make such decisions quickly and with certainty.



Construction Cost Estimates

Starting with the design phase, we will develop construction costs estimates. The estimates will be refined at each stage of the design to ensure that we continue to Design to Budget.

An accurate construction cost estimate begins with the early identification of project 'cost drivers' when many of the details of the project are still unknown. These 'cost drivers' may include heavily staged, schedule driven and/or site-specific elements. In developing estimates, we derive costs from the "bottoms up" using local experience and the approach/methodology of both contractors with who we have worked and AECOM's own construction professionals.

The estimates will be developed with the intent for them to be used for cost control during design, evaluation of bids, control of negotiations, and to serve as a guide in establishing a schedule of payments. Therefore, the estimates will be consistent with the best estimating practice of the construction industry and reflect the anticipated cost to perform the work and include all reasonable costs, which an experienced and well-equipped contractor might encounter.

AECOM has the resources and expertise to produce thorough, detailed and accurate cost estimates utilizing advanced and proven estimating methods. Our methodology is to approach cost estimating from a contractor's perspective, using estimators with extensive contractor experience. Our maintenance of a cost database provides significant benefits to our clients, as we adjust with due consideration for local site specific project conditions and encumbrances. These methods and experience provide for more accuracy at each design milestone, leading to more contractor bids within the expected estimate range.

AECOM is currently working with NJDEP and the USACE to obtain the required permits for the USACE Port Monmouth Flood Control project in Port Monmouth, NJ

Permitting & Regulatory Compliance

The RBD Hudson River Project lies within the highly regulated urban coastal zone, so compliance with environmental and land use planning regulations is a primary design consideration. Components of the project will be regulated by the State, federal, and local municipalities.

The NJDEP's Flood Hazard Area and Stormwater Management regulations are particularly relevant to the proposal, and will govern design decisions. Likewise, portions of the project near the water's edge will be subject to the State's Coastal Zone Management Rules, and handling/management of contaminated soils and groundwater will occur under the oversight of the NJDEP's Site Remediation Program. In addition, those elements of the project that directly impact the local community will be of paramount concern. Principally, these concerns will include the project's impact on stormwater management, viewsheds, public access to the waterfront, accessibility (vehicular, pedestrian, bicycle), and general quality of life issues.

The initial phase of permitting for the project will occur immediately upon authorization, and will consist of a desktop study to identify all applicable regulatory programs, as well as mapping of potential development constraints. We will complete these tasks within several weeks of authorization, and they will then be available for consideration in the design development process. The initial phase will also identify all required technical studies necessary for permit application submittal, including stormwater modeling, structural certifications, viewshed and traffic studies, environmental investigations, etc., so that they may be integrated into their respective design disciplines.

A description of the regulatory programs and the potential permits and approvals anticipated to be required for the development of the project is presented below:

Federal Permits and Approvals. The project would likely require work (e.g. filling, dredging, etc.) within navigable waters and wetlands, it is envisioned permits to satisfy Section 10 and Section 404 would be necessary.

- **Section 10 of the 1899 Rivers and Harbors Act.** The project may require authorization from the USACE for construction of structures within or that affect navigable waters of the United States (WOUS); the excavation and/or deposition of material in navigable WOUS; and/or any obstruction or alteration of these waters. The landward extent of navigable WOUS is the mean high water elevation in tidal waters or the Ordinary High Watermark in freshwater systems.
- **Section 404 of the Clean Water Act.** It is unlawful to discharge dredged or fill material into WOUS, unless a permit is obtained from the USACE. The USACE retains Section 404 jurisdiction for all tidal and interstate WOUS in NJ (known as non-delegable waters). A Section 404 Permit is needed for the filling of WOUS up to the USAC High Tide Line (generally the spring high water line), including wetlands within 1,000 feet of any mean high water line (MHWL). In 1994, the NJDEP assumed regulatory authority under Section 404 for most non-tidal waters and wetlands in NJ.

State Permits and Approvals. NJDEP will exercise regulatory oversight of the project through multiple vehicles of jurisdiction, as described below:

- **Flood Hazard Area Control Act (NJAC 7:13) and Stormwater Management Rule (NJAC 7:8).** The entirety of the project will occur within the Flood Hazard Area Control Act (FHCA) jurisdiction. The principal purposes of the FHCA is to ensure that development within flood hazard areas improves and/or does not exacerbate tidal and fluvial flooding. The FHCA regulation also provides a vehicle by which NJDEP enforces the State's Stormwater Management Rule (NJAC 7:8).

  The RBD Hudson River Project is, of course, a flood risk management project and is fundamentally in compliance with the regulation. However, the proposed Resist component impacts on stormwater will need to be scrutinized.

These include analysis of both hydrologic and hydraulic impacts, as well as stormwater quality. In addition, the FHCA regulation will require engineering certifications that the proposed facilities are structurally designed to withstand the 100-year flood event. The FHCA also includes provisions for regulation of areas where soil is to be disturbed within 50 feet of the water (the "riparian zone"), as well as site remediation activities in the flood hazard area.

With respect to the Department's review of flooding hydrology/hydraulics, applications require a detailed analysis of the existing flooding problem that is to be mitigated. At a minimum, this analysis must include the following:

1. The frequency and intensity of flooding;
2. The number of homes, businesses and other facilities historically affected by flooding;
3. A cost-benefit analysis for the proposed flood risk management project, which includes a comparison of any adverse environmental impacts that may be caused by the project with the benefits for flood relief for each investigated alternative;
4. A discussion regarding which storms the flood risk management project is designed to mitigate and why these storms were selected;
5. If the flood risk management project is not designed to alleviate flooding for the 100-year flood and/or the flood hazard area design flood, a demonstration as to why this is not feasible and/or possible; and
6. All hydrologic and hydraulic calculations necessary to demonstrate the viability of the project.

- **Coastal Zone Management Rules (NJAC 7:7).** Limited areas of the project located within 500 feet of the mean high water line will require review under the Coastal Zone Management Rules. These comprehensive rules and regulate a wide range of environmental and land use considerations. Rules that are particularly relevant to the project include the following:
  - Public Access to the Waterfront
  - Scenic Resources and Design
  - Hudson River Waterfront Area
  - Coastal Engineering
  - Buffers and Compatibility of Uses

- **Water Quality Certificate.** NJDEP has been delegated regulatory authority under Section 404 of the Federal Clean Water Act for most non-tidal waters and wetlands in NJ. An application for the discharge of dredged or fill material is reviewed by NJDEP for water quality consistency under Section 401 of the Federal Clean Water Act to ensure the discharge does not negatively affect water quality.

- **NJDEP Site Remediation Program.** The Office of Site Remediation (OSR) regulates the disruption and/or remediation of contaminated sites. Linear development projects such as the proposed Resist project are governed under a particular program known as "Linear Construction," and the Site Remediation Program has provided Technical Guidance for the Linear Construction in a 2012 publication. The implementation of Linear Construction in known or potentially contaminated areas is required to be overseen by a New Jersey LSRP, as described in the previous section of our approach. We have assigned an LSRP to the project, who will oversee the applicable investigations, design specifications, and reporting, coordination and notification requirements with the NJDEP.
- **NJPDES Stormwater Construction Permit.** As part of the Soil Erosion and Sediment Control Plan certification for the project (described later in this document), the State will issue a General Permit for Construction Activities for the work. This is an online application that can be made with a simplified form, after the local Soil Conservation District issues their approval.
- **NJPDES Construction Dewatering Permit.** Dewatering that is necessary to construct the proposed improvements is likely to exceed the thresholds that mandate application for a dewatering permit. The permit application will report anticipated dewatering volumes, which will be estimated by the design team. Likewise, coordination with the project's LSRP will be necessary to determine if any dewatering material requires special handling or disposal.

  The wetlands and waters of the US that may be impacted by the project elements within the project area are located along the western edge of Hoboken and along the waterfront in Weehawken Cove. Any regulated activities within the waters along Weehawken Cove would require a coastal wetlands permit. Any activities within freshwater wetlands would require a Letter of Interpretation (LOI) to verify the location and extent of the freshwater wetlands and potentially a freshwater wetlands permit. Depending on the extent and nature of activities within freshwater wetlands, a general or individual permit would be required. Individual permits may require public hearing. The timeline for approval of a complete application is 180 days.

  The flood hazard area floodplain is regulated under the Flood Hazard Area Program. Development within the flood hazard are would require an individual flood hazard area permit from NJDEP. The timeline for approval of a complete application is approximately 90 days. If a public hearing is required the timeline may be extended. A water quality certification from NJDEP would also be required to support a permit application submitted to USACE under the Section 404 of the Clean Water Act.
- **NJDEP Bureau of Tidelands Management:.** Certain improvements may lie on lands that were formerly flowed by the tide and subject to a State Claim. As part of the NJDEP regulatory process, we will investigate whether any State Tidelands Claims exist. If such claims exist, an application for a Tidelands Instrument in favor of the ultimate project owner will be made.

Value to DPMC/DEP

Set the standard for NJDEP permitting

Local Permits and Approvals Certification and coordination with two specific local stakholders will be necessary:

- **Hudson-Essex-Passaic Soil Conservation District.** Certification and coordination with two specific local stakeholders will be necessary. It is assumed the construction activities will disturb more than 5,000 square feet of soils, so the project will require certification from the regional soil conservation district. The application for this certification will include soil erosion and sediment control plans, a stormwater report, and the required application forms and fees.
- **NJ Transit.** Certain of the improvements will occur on and/or across properties and facilities owned and controlled by NJ TRANSIT. We will coordinate the design and environmental investigation tasks with NJ TRANSIT, and will identify and apply for any applicable permits required for project implementation.
- **Permit Timing:** Due to the number of permits and approvals this project will require, it is imperative to initiate pre-application meetings with the regulatory agencies early in the process for any project component that has the potential to encroach upon regulated resources. We anticipate scheduling pre-application meetings with the relevant agencies as soon as possible in the project timeline to engage the regulators as important project stakeholders that are critical to the project's success and timely implementation.

Development of permit application materials would begin early on in the design process, and will develop in complexity and completeness in parallel to the 30%, 65%, 95%, and 100% design stages. In order to expedite the regulatory process, we will pursue the submittal of permit applications based on the 65% design submittal. Upon submittal, the applications have a wide range of approval timelines, and can range from as little as 60 days to over 1.5 years. We will coordinate with regulator agencies to ensure a timely review, and to responds in a timely manner to any requests for additional information or clarification. We will update the permit package as necessary for the 95% and 100% stages.




AECOM's extensive portfolio of infrastructure projects throughout the State of New Jersey, such as the NJ Turnpike Authority's Interchange 6-9 Widening Program, has given us the requisite expertise in permitting for these types of programs. We can leverage this experience to ensure that this task does not impact the schedule for the RBD Hudson River Project.

AECOM served as a member of the Environmental Consultant team for the $2.3 billion NJ Turnpike Interchange 6 to 9 Widening program. AECOM developed a permitting program and implemented a permitting process based on early and ongoing agency coordination, dissemination of permitting requirements to the team and development of a solution that minimized environmental impacts while best meeting project purpose and need. Once permit applications were submitted, it took only six months to acquire permits for approximately 123 acres of wetland impacts, 449 acres of deforestation and 38 stream crossings.

National Environmental Policy Act (NEPA) Compliance: AECOM anticipates that at the time this contract is awarded, the FEIS and ROD for the RBD Hudson River Project will have been completed and signed. Within the ROD, the State will have selected an alternative, provided their rationale for that selection, and identified the mitigation measures, environmental permits, and other environmental requirements they have accepted to implement as part of that selected alternative. As the NEPA process for this project is currently only at the DEIS phase, there are still several unknowns concerning the ultimate result of this NEPA process.

During the evaluation, design, bid and build phases, AECOM will be vigilant to ensure the project is progressing in compliance with the FEIS and ROD. The approach that AECOM will take concerning ongoing compliance with NEPA is simple and clear. This approach is fully based on the requirements and guidance provided within the NEPA (42 United States Code [USC] 4321 et seq.), the President's Council on Environmental Quality (CEQ) Regulations Implementing the Procedural Provisions of NEPA (40 CFR Parts 1500-1508), and the Department of Housing and Urban Development's (HUD) NEPA regulations (24 CFR Parts 50 and 58). This approach is also fully consistent with current CEQ guidance concerning the "Appropriate Use of Mitigation and Monitoring" dated January 14, 2011.

In overview, this approach consists of the following basic steps:

- **Review and understand the data and analysis** presented in the FEIS and the requirements and commitments articulated in the ROD.
- **Prepare an appropriate and clear environmental Mitigation, Permitting, and Monitoring Plan (MPMP),** if not completed already, to ensure all requirements from the ROD are understood, clearly articulated, scheduled in conformance with the overall project (design) schedule, and appropriately resourced. Ultimately, the MPMP will be an important component of the overall project implementation plan and schedule. The MPMP is a required component of the NEPA process in accordance with 40 CFR Parts 1505.2 and 1505.3. These regulations further specify that the results of monitoring should be made available to the public, upon request (40 CFR Part 1505.3(d)).

- **Ensure public/stakeholder outreach is planned and executed** in conformance with this MPMP to maintain the public involvement nexus and feedback/input loop, as well as to keep the public informed concerning ongoing NEPA-related activities.
- **Conduct required data gathering,** studies, permitting, mitigation implementation, and monitoring in conformance with the MPMP and in lockstep with the overall project schedule, so as to not delay ultimate project performance.
- **Engage NEPA leadership meaningfully** within all project discussions and planning meetings to continue to ensure NEPA-related requirements are dovetailed within the overall program, and to adapt and evolve these requirements to and with any changing conditions.
- **Monitor the evolution of the design process** to ensure that the design maintains conformity with the alternative analyzed in the FEIS and selected in the ROD. Should deviations occur, work with the NJDEP to determine if supplemental NEPA analysis is necessary, and if so, complete that supplemental analysis in a timely and legally compliant fashion.

Critical to the success of the NEPA process will be four overarching components:

- **Ensure all mitigation commitments accepted in the ROD are implemented and monitored to completion per applicable regulations.** This includes conducting any necessary additional studies, permitting processes, and similar efforts. As identified in the RFP at Section 7.2, these may include collecting supplemental data from a variety of sources, such as "reports, studies, plans and information concerning: natural features; property ownership; easements; topography; subsurface conditions (geotechnical and contaminant); zoning and current land use; infrastructure; utilities; traffic/circulation patterns; environmental and historic resources; floodplain; hydrologic, tide and flood control structures and waterfront structures; known locations of critical wildlife habitats, endangered and threatened wildlife species and/or wildlife species of special concern; demographics and economic information needed to comply with Executive Order 12898..."

  These requirements will be clearly understood by the AECOM team, based on the FEIS, ROD, and Feasibility Study, early in the evaluation phase. These requirements will be captured, sequenced, and scheduled in the MPMP, as part of the overall implementation plan.
- **Ensure all follow-on environmental surveys, such as wetlands delineations or cultural resources studies, are conducted as early as possible.** This will facilitate and expedite any required permitting requirements, as well as identify any "show stoppers" or need for design adaptation early in the design process, saving time and money over the project lifecycle.
- **Ensure all required and appropriate environmental permits are obtained in a timely fashion.** As codified in the MPMP, and in conformance with sound

NEPA practice, engage pertinent regulators as early as possible in the process, ensure regulatory requirements are thoroughly understood, prepare complete application packages, and secure permits in a timely fashion. AECOM will remain fully engaged and highly responsive throughout the permitting processes to facilitate and streamline these processes to the extent possible, working closely with DPMC/DEP.

- **Monitor the design process consistently and regularly to ensure it conforms with the ROD.** This is a critical component in order to maintain NEPA compliance while ensuring ultimate project delivery on time. Changes to the design that meet any of the following criteria could potentially trigger the need for a supplemental NEPA analysis, likely in the form of a Supplemental Environmental Assessment (EA) tiered from the FEIS (see 40 CFR Parts 1502.20 and 1508.28):
  - The design represents a substantial change from the ROD-selected alternative such that its impacts have not been appropriately or fully analyzed within the FEIS.
  - The design would result in different impacts than analyzed in the FEIS, or affect the requirements for mitigation or environmental permitting.
  - Environmental regulations or requirements associated with the selected alternative change in such a way that these changes affect or alter impacts previously determined to be less than significant, but now may now be considered significant and need to be re-evaluated.
  - Environmental conditions change within the selected alternative's region of influence (ROI) such that impacts not previously anticipated could occur. Examples include if a local master plan changes, if new or different development occurs, or if a species potentially present in the area becomes listed under the Federal ESA and may be affected by the project.
  - During construction, the nature of the resulting effects, in reality, is in excess of those analyzed and predicted by the FEIS.

As demonstrated through our extensive prior work for the DPMC/DEP, AECOM maintains unparalleled NEPA experience, expertise, and capability in-house. We are not only deeply knowledgeable about the regulations, we are highly adept at understanding, implementing, and adapting to changes while achieving NEPA compliance. We seamlessly integrate NEPA considerations with the engineering and design process, achieving the necessary balance between environmental considerations and engineering feasibility, while striving to minimize adverse environmental effects.

Value to DPMC/DEP

Flexibility to adapt based on in-depth NEPA experience and expertise

Our deep bench of NEPA expertise provides the NJDEP with confidence that AECOM can rapidly adapt to changing conditions and surge requirements, inherent to any large, rapid, and publicly sensitive project.

Construction Design Packages

AECOM will prepare engineering design and construction plans, specifications, cost estimates, schedule, permits, and a design documentation report (DDR) that will precisely depict and define the selected flood risk protection & DSD pilot design, components, construction materials and alignments at the 30%, 65%, 95% and 100% design completion stages. Designs will be discussed with DPMC/DEP at each design stage submittal and revised accordingly.

Design Documentation Report. The DDR will document the final design and as such, it will include all pertinent and relevant information about the design and design process. Below is a typical Table of Contents for a DDR:

1. **Project Description**
   - A. Project Name & Location
   - B. Project Description
   - C. Alignment and Survey
2. **Pertinent Data**
   - A. Project Purpose
   - B. Project Design Goals
   - C. Physical Features
   - D. Controlling Elevations
   - E. Construction Cost
3. **References**
   - A. Project-Specific Criteria
   - B. Project Reports & Design Related Documents
   - C. References
   - D. Computer Programs
4. **Engineering Studies, Investigation, and Design**
   - A. Field Investigation and Data Collection
     - Topographic Surveys and Survey Control
     - Structural Data
     - Coastal Data
     - Geotechnical Data
     - Hydraulic and Hydrologic Data
   - B. Design Features
     - Structural Design
     - Coastal Design
     - Geotechnical Design
     - Hydraulic and Hydrologic Design
5. **Cost Estimate**
   - A. Method
   - B. Basis of Cost Estimate
   - C. Risks
   - D. Uncertainties

Bid

The bid phase consists of activities associated with the bidding and contract negotiation process. AECOM understands that the construction contracts will be advertised for bid by DPMC/DEP based on the construction documents provided by the design team, and awarded to the lowest responsible bidder. Implementation of this phase will require a series of well managed tasks that require interface with DPMC/DEP, the potential bidders, and the awarded contractor.

AECOM prepared an extensive DDR for the USACE-New York District's Sandy Hook to Barnegat Bay Beach Erosion Control project.

Preparation of Bid Packages

AECOM's implementation of the bid process begins with developing and preparing a complete construction bid package(s). The bid package(s) will contain the bid form and supporting documents, including, but not be limited to the 100% design plans, specifications, schedule, permits, and DDR. We will print, copy, reproduce, collate, affix, bind, assemble, package, mark, transport, mail, and distribute the package to potential bidders. We will also assist will bid advertisement. The schedule will define dates for a pre-bid meeting, the bid due-date and a post-bid meeting. We understand that reproduction and printing costs associated with the bid packages are not included in the loaded rates and that an allowance will be designated as part of the work order for reproduction and printing costs, based on three competitive vendor quotes which we will obtain.

USACE Contract No. W912DS-12-D-0002-0015
for the Loch Arbour to Elberon, NJ under the Sandy Hook to Barnegat Beach Erosion Control Project, including Final Outfall Design
Long Branch, Deal, Allenhurst, and Loch Arbour, NJ

Design Documentation Report (DDR)
for Contract 2 – Corrected Final Design Submittal

Submitted May 2019

Prepared for:
U.S. Army Corps of Engineers, New York District

Prepared by:
edesteam, LLC & AECOM

AECOM prepared an extension DDR for the USACE-New York District's Sandy Hook to Barnegat Bay Beach Erosion Control project.

Pre-Bid Meeting

AECOM will participate with DPMC/DEP and the CMF in a pre-bid meeting with potential bidders. The purpose of this meeting is to explain the bid requirements and entertain questions about the bid and bid documents. We will prepare the meeting agenda and will have representatives of relevant disciplines at the meeting to address bidder's questions. It is anticipated that bidders will be required to submit questions on the bidding documents in writing following the pre-bid meeting. Immediately after the end of the questions period, we will prepare and distribute a bulletin to potential bidders to supplement, clarify and amend as needed requirements of the original bid documents. The bulletin will contain minutes of the pre-bid meeting, answers to bidders questions (either presented during the meeting of afterwards in writing), and any other pertinent information.

Should revised construction plans, specifications or schedule be required during the bid process, our technical staff will be ready and available to prepare these documents.

Bid Evaluation & Award

Following receipt of bids, AECOM will assist DPMC/DEP with the review and evaluation of bids, and will participate on a post-bid review interview and certification meeting with the apparent low bidder. The purpose of this meeting is to confirm that the bidder understands the project scope, submitted pricing, qualifications and ability to perform the project. Furthermore, the bidder will be requested to certify in writing that they understand their contractual responsibility to comply with the Contract Documents.

As with the pre-bid meeting, we will prepare the meeting agenda and will have representatives of relevant disciplines at the meeting to address questions from the apparent low bidder and potential awarded contractor. We can assist DPMC/DEP with providing a bid/protest litigation witness and/or with contract negotiations as needed. In addition, AECOM's corporate legal staff is available to conduct a risk analysis of the contract language and make recommendations to DPMC/DEP for strengthening of your position.

Following DPMC/DEP's selection, AECOM will provide a bid award recommendation letter.

Build

Construction Administration Phase

The final phase of the overall contract comprises the construction administration support services to DPMC/DEP, and it begins once DPMC/DEP issues a Notice to Proceed (NTP) to the awarded contractor. Tasks associated with this phase include pre-construction assistance, construction assistance and close out.

AECOM is now ranked fifth on Engineering News-Record's (ENR) list of the Top 400 Contractors, up from sixth in 2016. We don't just design projects, we build them.

Pre-Construction Assistance

Following the NTP, AECOM will assist during pre-construction activities by attending and assisting DPMC/DEP and the CMF with the pre-construction or partnering meeting with the awarded contractor to familiarize them with the interrelationship between DPMC/DEP, the CMF, awarded contractor and its subcontractors, and other agencies and/or public or private entities, as well as the role of AECOM. During this meeting it is anticipated that the CMF will address:

- The project control and scheduling system established for the project, including definition of significant project milestones.
- The basis for reporting, preparing and processing progress payments and monitoring continuous coordination of construction activities.

- DPMC/DEP procedures which the awarded contractor is to follow during the course of their contract.
- Environmental, health and safety requirements.
- Contract plans and specifications.

Inspections, including AECOM's inspection milestone requirements to the awarded contractor so that everyone has a clear direction and understanding of the inspection process, quality standards, and the expectations of the inspectors.

We provided construction oversight at the USACE-New York District's Sandy Hook to Barnegat Bay Beach Erosion Control project, including dewatered construction of twin 8-foot RCP outfall extensions.

Construction Assistance

AECOM's role during the construction phase will consist of oversight of actual construction activities to verify the progress and quality of the various aspects of the awarded contractor's work. We understand that the use of public funding for this project instills a responsibility to strictly monitor all work and ensure that all expectations are met. The inspectors will ensure that the scope of services plan is followed and that site safety procedures are clear and enforced; will collect applicable documentation and integrate into the project file; and will ensure pictorial documentation. Any departures from the scope of services will be brought to the immediate attention of the CMF and DPMC/DEP. The inspection frequency will depend on the various stages of construction, but we anticipate at least one site visit per week. Additional inspections can be performed when specific issues arise that are best addressed by the design team. We will generate standard weekly status reports, and submit to the DPMC/DEP.

In addition, we will participate in conferences and meetings as needed; address RFIs requested by the CMF; review shop drawing submissions they deem to be best addressed by the design team; and, assist with review of other documents, such as payment or change order requests, construction material and product substitution submittals, permit compliance, and contract document clarifications and modifications.

Contract Close Out—September 2022

At the completion of construction activities AECOM will conduct a final punchlist walkthrough with the awarded contractor and the CMF, and prepare a punchlist report. We will then conduct a final inspection to ensure all items identified in the punchlist report were addressed.

In addition, AECOM will coordinate with the awarded contractor, DPMC/DEP, and the CMF to collect all contract close-out documents and confirm that funds were used for their intended purpose. We will ensure all expenditures were adequately documented and within the contracted amounts.

Value to DPMC/DEP

Demonstrated expertise in flood risk management studies/design/ accreditation

Project Compliance

Project compliance involves two main components — FEMA accreditation and HUD compliance.

FEMA Accreditation

The FEMA accreditation process will actually begin during the evaluation process and continue through design and construction. In order for the structure to be considered for accreditation with the National Flood Insurance Program, the Resist components and the interior drainage system must be designed and constructed to the applicable engineering standards. AECOM will work with DPMC/DEP to ensure that the design and the constructed flood risk management measures meet the requirements for FEMA accreditation. We will support DPMC/DEP during the application process.

AECOM has the technical experience in supporting the recent effort by USACE and FEMA to simplify and systematically link together the inspection and evaluation process for Public Law 84-99 programmatic inclusion and FEMA's accreditation process associated with the NFIP.

Our team has performed studies and evaluations that have been specifically intended to determine levee performance.

Recently completed AECOM flood control projects include: remediation design, modifications, inspections, FEMA accreditations. Left: Floodwall as part of flood protection for NJ American Water plant in Bridgewater. Right: Part of LPV 111 Levee Reach system design by AECOM New Orleans Flood Control Group.

Recent flood risk management studies performed by AECOM have included the exploration of site surface and subsurface conditions to assess seepage, erosion, slope stability, and design event freeboard. The study results were used to establish the preliminary scope and estimated cost of improvements necessary to achieve their desired level of flood protection.

HUD Compliance

The AECOM team is dedicated to meeting or exceeding HUD and federal cross cutting contract requirements and considers it to be an important part of the overall project process. The RBD Hudson River Project has the challenge of being in a highly populated high household income (median of $114,381 according to ACS) urban core area within the New York City MSA. The density could add potential cost to the program to comply with HUD requirements for public involvement and procurement as the advertising costs may be higher. The AECOM team will look for mechanisms to meet or exceed the public information and equal opportunity contracting requirements as efficiently as possible.

Specifically, for Section 3 compliance, there are community partners to work with like the Hoboken Housing Authority for individual hiring to meet the State of New Jersey Section 3 Plan. The AECOM team will also work with HUD guidance to determine if a wider net—maybe an adjoining MSA—can be used to fulfill HUD participation requirements. The AECOM team will also work with the New Jersey African American and Hispanic Chambers to look for DBE and Section 3 individuals and contractors that meet HUD requirements. We will also work with One Stop New Jersey and low income housing programs for individual hiring under Section 3.

Our team's approach to meeting the compliance standards is to build HUD requirements into the program start-up. Under this approach, HUD compliance is an integral part of the process in each phase. Subcontractors are made aware contractually of the requirements and then trained on HUD concerns prior to beginning work on the project. In addition, meeting HUD reporting requirements are included in subcontracts and those working on the project receive training on how to implement and maintain a system in their offices that fit into the overall project record keeping and reporting management. The AECOM team also has developed a system to periodically monitor the subcontractors and the AECOM processes to ensure compliance with HUD requirements. Part of our process includes a HUD like monitoring review of the program to look for potential findings or concerns prior to HUD's arrival for reviews conducted by people who have been through the HUD and HUD OIG monitoring process. Part of the review includes recommending waivers if necessary or any concerns about delays in the process that impact timelines or funding drawdowns.

We have specifically met the HUD compliance requirements using the Rebuild by Design and other HUD rules, regulations and policy guidance in the State of New Jersey RBD New Meadowlands program. Our team has also completed projects utilizing similar efforts in New York City Build it Back (BiB), New York State Rising, and the State of Texas CDBG-DR programs among other programs utilizing HUD funds. Our team includes a former state housing agency General Counsel with more than 12 years direct experience with HUD compliance programs.

The benefit of this experience and creative approach is to limit any negative consequences to the State of New Jersey regarding HUD implementation of program requirements. In addition, being well versed in HUD goals for their compliance programs, where necessary, out team can look at creative solutions to challenges and work with HUD to obtain their desired outcomes—even in a high income urban area. By complying with HUD program guidance and policy issuances, New Jersey has a clean program that should meet HUD program monitoring requirements without additional delays.

Development of Operation and Maintenance (O&M) procedures

AECOM knows that once this design is built, it will have to be operated and maintained to ensure its full function and designed level of protection. Decisions around these considerations require a higher level of attentiveness towards both present and future conditions, and to the cost it will take to operate and maintain. The long term responsibility of this system's design will be shared by the community, agencies, and municipalities that host it. The life of these structures will demand a long-term ability to sustain, both structurally and financially.

To meet these needs, AECOM will develop separate operation and maintenance procedures for the Resist components and DSD Pilot project. Maintenance requirements and operational procedures will be documented in an O&M manual. Our community relations experts will assist our technical staff in the layout, verbiage, and content of the manual, considering the audience and intended users. The O&M manual will include photos as needed to clearly describe the operation.

While AECOM understands that the HUD funding cannot be used for O&M, this document will be critical to municipality, authority and/or agency that eventually takes on the responsibility for operating and maintaining the constructed project features.

Case Study & Lessons Learned Document Development

On October 16, 2014, HUD's Office of Community Planning and Development (CPD) published a Federal Register Notice (79 FR 62182) providing an allocation of CDBG-DR funds for RBD projects.

AECOM understands that the Federal Register Notice requires the submission of a case study for each RBD project prior to grant closeout. Therefore, the Case Study and Lessons Learned Document for the RBD Hudson River Project will be developed based on Notice CPD-16-06, titled "Guidelines for Implementation Case Study and Lessons Learned Document". The document will be detailed, but also readable for a broad audience, including appropriate illustrations, photographs, and other graphic elements to enhance readers' understanding of the project.

It is anticipated that the case study and lessons learned document will consist of the following primary components:

1. Project Description

2. Implementation

In this section, AECOM with input from DPMC/DEP will describe the overall implementation process, beginning with the project conception and ending with construction completion. The implementation will be broken down into phases, such as feasibility, environmental review, design, etc. For each phase, the document will discuss the following, if applicable:

- The goals and deliverables of the stage;
- Structure of the project team, including the decision chain;
- Roles of external stakeholders outside of implementation team;
- Implementation services required and the procurement approach to fulfill these needs.
- Community outreach efforts, including challenges and/or specific tactics that were successful;
- Successes achieved;
- Challenges encountered and how they were resolved.
- How were various key aspects of the project funded? Was there anything unique or innovative about the sources of funding that were used?
- How was the project related to an overall recovery and resilience plan and to other recovery and resilience projects?

3. Project Analysis

In this section AECOM will explore with DPMC/DEP the RBD Hudson River Project elements that presented particularly complex challenges and describe how these challenges were resolved. Topics may include, long-term ownership, maintenance and operations plans; navigating multiple municipal jurisdictions within the project area; budget and timeline challenges; compliance with applicable codes and other regulations.

In particular, AECOM will analyze risk and how the RBD Hudson River Project sought to reduce risk to its involved communities. AECOM will describe the level of risk reduction achieved by the project and articulate how DPMC/DEP balanced the level of risk reduction with other project considerations, such as urban design, budget limitations, and environmental impacts. It will answer questions such as: How were these decisions made? How did the grantee prioritize some risks over others?

As we are doing with the RBD Meadowlands project, currently only one of seven RBD projects taking this course, we will approach the case study and lessons learned document incrementally as part of each work order. This approach has proven successful in efficiently and accurately documenting the implementation process.

4. Lessons Learned

The lessons learned component of the document is an opportunity for DPMC/DEP to reflect on processes and decisions made over the course of the project's life. AECOM will approach this topic broadly with DPMC/DEP in order to share challenges and/or accomplishments stemming from a variety of issues (e.g., navigating federal, State, and local procurement laws; developing strategies for implementing projects on short timeframes; constructing projects in dense urban settings). This component will serve as a learning tool for both federal agencies funding future infrastructure projects and future grantees implementing projects.

Reliable Execution of Term Contracts

A. The consultant's procedures in completing assignments under this term contract, including approaches used on similar contracts or projects

AECOM's established working relationship with DPMC/DEP, our in-depth knowledge of FEMA/HUD/USACE processes and requirements, and our extensive experience on RBD projects will enable us to provide the efficiency and flexibility needed to successfully complete any and all assignments under this contract, on schedule and within budget.

For consultant services for the demolition of residential properties as part of the State's Blue Acres program, AECOM's most recent DPMC Consultant Interim Performance Summary resulted in a score of 100% in every category: "Always exceeds the contract requirements and frequently provides a high level of performance."

Delivering the Project

Timely and successful work order completion will require ongoing coordination among DPMC/DEP, the project manager, the deputy project manager, the technical advisors, the technical discipline leads, and the technical support leads assigned to each aspect of a work order (see subsection B for specifics on our project team organization). For this term contract, we will institute the following protocols, similar to those we have used successfully on the RBD Meadowlands contract:

- **Work order format:** At the inception of the project, a standardized work order format will be developed in collaboration with DPMC/DEP to ensure consistency and completeness. These formats will cover technical,

administrative, logistic, and other procedural matters. These formats will be updated by AECOM as part of our continuous improvement program and as agreed to by DPMC/DEP.

- **Monthly progress reports** will be prepared by the deputy project manager and reviewed by the project manager, then delivered to the DPMC/DEP project manager to keep him/her apprised of the project.
- **Technical assignments:** As work orders are received from DPMC/DEP, the project manager will meet with the deputy project manager and appropriate technical discipline lead(s) to discuss the technical needs for the assignment based on experience level and work load. Each deliverable defined by the work order statement of services will be assigned the appropriate technical discipline lead or technical support lead. Technical leads will have input into the development of scope, fee, and schedule for work orders, ultimately prepared by the deputy project manager and project manager.
- **Special Problem Reports (SPR),** though rare, will be prepared for any difficulty or unanticipated event that may jeopardize a work order's technical quality, schedule or, rarely, budget. Each SPR will document the nature and size or extent of the problem and a proposed course of action. Should the proposed course of action involve a change in work scope, the AECOM project executive will immediately advise the DPMC project director to discuss appropriate corrective actions. If a change in work scope is not judged appropriate, we will adjust our approach internally to resolve the problem.

Executing Individual Work Orders

Identifying technical resources for individual work orders will be done quickly, typically with no more than two or three days needed to assemble a team. Each work order will be managed as follows:

- **Meet to discuss work order:** If appropriate, the project executive and project manager will meet with DPMC project director and DEP project manager to discuss the work order assignment. Such a discussion may be helpful in further determining specific requirements of the assignment, identifying available data, and assessing explicit concerns that may not have been described in full detail in the initial scope of services related to the assignment.
- **Assign technical lead:** The project manager and deputy project manager assign work order technical leads from the team, considering work load, and type and level of resources required. Technical leads provide input on specific technical resources required. While AECOM as the prime is responsible for the final work products on all work orders, a specific work order or significant task within a work order may be assigned to one of the subconsultants in its entirety to perform the work in order to minimize coordination and facilitate production. In this case, the subconsultant will be treated as a technical lead and report directly to the project manager. They will meet with DPMC/DEP if necessary to clarify Statement of Work (SOW).

To date nine work orders have been completed on the Blue Acres program, with 85 homes demolished. We have worked very closely with the DPMC team and have acquired a detailed understanding of the DPMC design, bidding and construction administration processes.

- **Review and compile information for work plan:** The project manager and deputy project manager review and compile the information provided by the technical leads, completing the work plan and preparing the work order fee proposal. The project executive will review the proposal before its submission to DPMC/DEP. The project executive and project manager will discuss the proposal and SOW with DPMC/DEP as necessary to reach a mutually agreeable position.
- **Review need for specialty subconsultants:** Beyond the distribution of work between AECOM and its subconsultants, the project manager will consider the need to use local and/or specialty subconsultants to meet the needs of the Scope of Work and to meet the project's small business objectives. If additional services such as drillers, testing laboratories, etc. not already part of our project team or considered in the "all-inclusive labor rates" are deemed necessary or to be in DPMC/DEP's best interest, AECOM has a FAR-compliant procurement system (see subsection B) in place to bring on the necessary local and/or specialty subconsultants to provide DPMC/DEP with cost-effective specialized experience.
- **Conduct internal kickoff meeting:** After appropriate DPMC/DEP personnel approve the technical resource needs for each work order, an internal kickoff meeting will be held for the assigned technical team. The project manager and deputy project manager will develop a project plan, adding specifics as necessary for each work order. While the project plan will be available to all assigned staff throughout the duration of the project, key aspects and work order specifics will be reviewed during the kickoff meeting. Project plan elements include: staff structure, document controls, scope and deliverables, risk register, schedule, and budget.
- **Maintain project control:** Throughout the duration of each work order, the project manager will be responsible for final product quality within the contractual time and budget requirements, with review and approval from the project executive. Through our internal, fully integrated delivery system — ePM, a proven vehicle for maintaining project control (described later in this section) — the project management team and technical leads will all have access to weekly reporting of current and cumulative costs and labor hours by category (direct labor), travel and other direct costs.
- **Submit deliverables:** Deliverables, as defined by the work order and other documents required under the provisions of the work order, will be submitted to DPMC/DEP only after following our quality control protocols as described in subsection D.

RBD New Meadowlands—5 work orders to date

DPMC/DEP Floodplain Risk Mapping)—3 work orders to date

USACE-NYD Multidisciplinary Services IDC—hundreds of work orders since

FEMA HMTAP—over 1,000 work orders

As mentioned earlier in our proposal, we have held several contracts with DPMC/DEP, and similar agencies, and have successfully delivered many work orders using these protocols and process.

Value to DPMC/DEP

Proven work order process and protocols

Work Order Demobilizing and Debriefing

The final step of each work order is the team's demobilization and debriefing. Each debriefing will consist of two parts:

- **First, DPMC/DEP and AECOM team staff will hold a debriefing.** Frank and open discussions will be held with the entire team, and suggestions will be made as to where and how team performance could have been improved and initial submissions strengthened. These debriefings should help determine if work order requirements were met, and, of equal importance, if the term contract selected service performance area goals and objectives were met. If not, the debriefing will be a mechanism to sharpen the team's skills and the DPMC/DEP interaction and help AECOM better understand the State's requirements for future work orders as part of our continual improvement process.
- **The second stage of a debriefing will take place between the DEP project manager and the quality assurance officer.** Again, the purpose of this debriefing will be to improve future assignments. We have found that clients are often more open and frank with regard to their likes and dislikes of how the work order was accomplished when speaking to the QA officer, who is outside of the project production team. We will use feedback from these sessions to improve our performance on future assignments.

We believe that our straightforward work order approach and clearly delineated responsibilities will yield maximum value to DPMC/DEP and the project area's other stakeholders.

Collaborative

"Thank you for the work that Philipp Sieber is doing for us at DPMC with the DEP Blue Acres Program. [Philipp] has never let us down."

Walter Fernandez
Assistant Deputy Director, DPMC

Efficient

Flexible

"The A/E team [AECOM in JV] was always very cooperative and responsive to the needs of the Corps and the project. I would recommend them in the future."

Angelo Trotto, Chief Civil Works Section, USACE-NY District
IDC for Engineering Services, Somerset & Middlesex Counties

We have a strong commitment and dedication to ensuring our DPMC/DEP projects are successful, and believe our record of performance in conducting work order assignments demonstrates our ability to deliver these services effectively on time and on budget.

Managing Risk: Cost and Schedule Controls

As a public company, AECOM places strong emphasis on tracking cost, schedule and performance metrics on a weekly/monthly schedule, and we receive outside audits for compliance with this program, ensuring effective work order cost monitoring and providing early feedback to AECOM management on impending variances.

Contingencies are integrated with a risk register in ePM, which provides for planned risk mitigation as part of the project plan. This benefits both the AECOM team and our client if schedule deviations occur or estimated cost at completion shows a potential overrun, a process is already in place for the project executive and project manager to immediately act to bring schedule or cost back in line with expectations. This preparation not only saves valuable time, but can often head off potential issues before they occur.

To accomplish our day-to-day activities, AECOM staff use a single, internal platform that holds all of the electronic applications that enhance our daily work experience. From working with legal to set up contracts with subconsultants, to staying connected with the latest and most relevant technical news and information, to accessing key employee tools and applications — everything we need is in one dedicated and secure system.

One of the key applications from which our clients directly benefit is our newly implemented and fully integrated project delivery/management system – ePM (short for electronic project management). ePM combines multiple facets of business function — financial, contractual, risk, scheduling — all in one tool. Our project managers are able to more effectively manage resources and schedules, promote team collaboration, and monitor and mitigate risks, all from within ePM.

For this term contract, AECOM will use ePM to manage all aspects of the project. Finance and schedule management are discussed below; quality control and risk are discussed in subsection E.

Cost Management

AECOM uses consistent financial systems and tools across the majority of our global offices, all of which are linked through ePM, enabling our management and financial staff to work concurrently using up-to-date actuals and estimates.

AECOM's cost management system is built upon a cohesive set of tools, with all data centralized in one database, guaranteeing the seamless integration of cost information from timecard entries through reports and invoices. It ensures our project managers and customers have consistent, accurate, and timely accounting, reporting, invoicing, and other information at their fingertips. This provides the backbone of our DCAA-approved cost accounting system.

AECOM builds all work order costs by determining time needed to perform the task, then applying loaded rates by personnel level converted to a lump sum cost to be approved by DPMC/DEP. If additional services for drillers, testing laboratories, or other specialty subcontractors are needed, or for reproduction costs associated with major deliverables and distribution, an allowance will be computed once the SOW is determined. An important aspect of our cost management is assigning the appropriate staff for each work order — not untrained staff and not overqualified and costly staff.

Our project managers use ePM to establish project budgets, which allows for a range of simple to extremely detailed work breakdown structures (WBS), all linked to the project schedule. For this project, we would set up a single project WBS with each work order as a separate task with detailed subtasks. We have found that this structure is most effective for managing term contracts with work order assignments, due to ePM's functionality for monitoring and reporting at both the project- and task-by-task level.

From experience gained on existing term contracts with DPMC/DEP, as well as multiple local and national indefinite delivery/ indefinite quantity (ID/IQ) contracts with USACE, AECOM has the expertise to properly estimate the hours required to conduct the types of tasks expected for this project.

Value to DPMC/DEP

Fully integrated, effective project controls

ePM is used to track financial performance and make financial projections of "estimated costs at completion" (EACs) on a weekly, bi-weekly or monthly basis, as appropriate to the project. **The estimated cost is compared to the actual costs to arrive at a current level of performance and to assign actual percentage of completion for progress each month.** As the schedule and budget are linked, the project manager, working with technical leads, can further track project progress using ePM's earned value management application, both at the project-level or down to specific subtasks within work orders. If the EAC and/or earned value projections appear to be outside of prescribed variances, corrective actions are taken.

Schedule Management

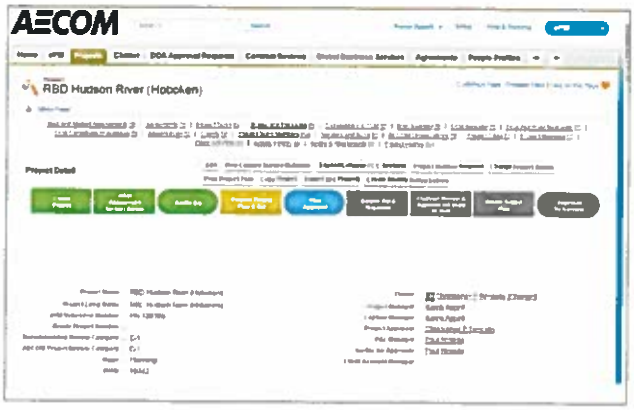
AECOM develops realistic schedules for completion of large-scale projects and their associated tasks. We will prepare an overall project schedule at the start of the project and incorporate specific work order schedules into the overall schedule as they are assigned. To mitigate for project delays, our schedulers work directly with technical leads to identify potential schedule issues and integrate mitigation plans whenever possible.

For term contract projects such as this, there are multiple benefits to splitting the work orders into specific tasks, yet rolling them up under a **single project schedule**. As task-specific dates flux throughout the project duration, technical discipline leads can update durations and dates for specific tasks as necessary, while the schedule functionality within ePM will show how these changes impact the overall schedule, and where adjustments may need to occur. The ability to drill down into detailed work order schedule, while keeping visibility over the greater project schedule, further supports our teams in delivering each work order on time and keeping the overall project schedule on track.

Project Monitoring and Continual Improvement

Performance data for each project is updated daily in ePM, viewable in various graphs, charts, and reports through the Project Dashboard application. This functionality provides the necessary tools for AECOM teams to quickly understand progress and trends, identify potential issues, and communicate status to our clients. It will be the basis for all of the information required in the monthly progress reports to DEP. ePM enables finance and operations management to work with project managers and technical discipline leads to track and employ corrective actions in real time.

AECOM employs a stringent monthly review process, where multiple project metrics, important to the viewpoints of both AECOM and our clients (e.g., end dates, estimates to complete, earned value), are measured against baselines established during the planning phase. An important part of a performance-based organization is continual improvement, and the use of the Plan, Do, Check, Improve concept. AECOM continually reviews lessons learned to inform our standard operating procedures.



The dashboard will translate information from the entire project into visually rich presentations to show multiple results together. AECOM has implemented dashboards like this on many programs and projects around the world.

The result of continual improvement is higher quality and lower costs, which is often rewarded with more work. We believe AECOM's continued relationship with DEP and DPMC is proof of the success of our continual improvement efforts.

B. Identification of individuals and subconsultants on the consultant's team who will be responsible for the various tasks associated with the work order assignments, including who will oversee the work, serve as the liaison with the State, and provide procedures for selecting and managing subconsultants

Based on experience gained from working on numerous indefinite delivery term type contracts, we know that a key to successfully managing and performing on a term contract, where multiple work orders are issued, is to be able to expand and reduce staff to meet the ever changing demands of the contract and to bring the right resources to bear as the project progresses. With more than 500 employees in New Jersey, backed by a global force of more than 85,000, AECOM has the depth and breadth of staff to meet these requirements.

Value to DPMC/DEP
Flexible, efficient organization backed by ample resources

Critical to successfully executing the Hudson River Project for DPMC/DEP will be the expertise embedded within the project team and how it's managed and used effectively throughout the duration of the project. The organizational structure that we've developed is shown in Section 1 of this proposal. You'll notice in the chart that our team is organized into four distinct levels: 1) Project Management, 2) Compliance, 3) Technical Leadership, and 4) Technical Support.

These levels were established to create an efficient communication protocol, a system of checks and balances, and a seamless transition of knowledge and data across offices and our subconsultants that will allow us to ensure the successful completion of the Hudson River Project for DPMC/DEP. The roles and responsibilities of the four levels are described below.

Project Management

Chris, Karen and Heather have already established a collaborative partnership in their development of AECOM's proposed approach for RBD Hudson River Project.

The Project Management level consists of our project executive, Chris Benosky, project manager, Karen Appell, and deputy project manager, Heather Morgan. The individuals in this level of our team have the experience and corporate support to draw from whatever disciplines are required to successfully execute this project.

Chris will be responsible for the oversight of this term contract and for coordination with the DPMC project director and DEP Program Manager. Karen will manage the overall project and act as the main contact for the execution of the work. She will manage our team and monitor the day-to-day status of the work in progress. As a NJ-licensed professional engineer, Karen will oversee the technical services performed on each assignment under this term contract. She will serve as the direct liaison with the State throughout all project phases and coordinate and report to the DEP project manager on the issued project assignments.

Our deputy project manager, Heather Morgan, will support Karen in all facets of project management. She will specifically be responsible for preparing monthly progress reports, preparing meeting agendas and meeting minutes, and managing our specialty subconsultants, with input and sign off from our project manager.

Value to DPMC/DEP

In-depth understanding of compliance issues— no learning curve

Subconsultant Management: After working with our legal team to secure contracts for each of our strategic subconsultants, Heather will document the contractual terms and obligations within the Agreements application in AECOM's ePM system. The overall budget aspects of the subconsultant's work are entered and then monitored through the ePM purchase order application, which assigns specific costs to specific tasks within the WBS. By allotting separate subtasks for subconsultants within the WBS, specific work durations and internal review periods for subconsultant tasks are assigned and easily managed. Costs are measured by a progress report each month (built from the individual subconsultants standard accounting system and practices) that accompanies their invoice. Heather will review the progress report and Karen will approve it, prior to invoicing DPMC/DEP per an agreed payment schedule established at the start of the work order.

When it comes to the need to select subconsultants or subcontactors through a competitive bidding process, Heather will manage our FAR-compliant process to obtain competitive quotes. The process includes scoping the needed services,

soliciting three bids, and analyzing the bids to assure the best value for the State. She will support Karen in coordinating with the DEP project manager in the selection approval process.

Compliance

Compliance is an important level of leaders that interface between our project management and technical leadership. Accordingly, as shown on the organization chart, our compliance team consists of OMA and Remora Consulting, LLC, and three AECOM staff.

The compliance team will ensure that we are engaging the community and stakeholders, following the FEMA accreditation process, meeting HUD requirements throughout the project duration, following a strict health and safety plan, and that the product that we deliver to the State meets AECOM's robust quality procedures and standards.

Technical Leadership

Within the technical leadership level, our technical discipline leads, as outlined in the organization chart, will be responsible for leading specific tasks within the overall project framework, reporting to the project management team (and more specifically to our project manager) and overseeing with their senior technical staff and the technical support leads to accomplish the technical components within the assigned work orders.

Value to DPMC/DEP

Expert technical leads, proven in their respective fields

Embedded in the technical leadership level we have a team of technical advisors, including both senior-level AECOM staff and specialty subconsultants, who will provide both local and nationally-recognized expertise in their respective fields. The technical advisors will be included in our initial internal kickoff meeting and internal project progress meetings so they remain integrated and abreast of the overall project progress. They remain available as resources to the technical discipline leads and will perform quality control functions and independent technical reviews of the work where necessary and appropriate.

Technical Support

To further support the work orders we anticipate coming out of the Hudson River Project, we have assembled a fourth level of technical support leads. These staff and subconsultants represent additional key disciplines we believe will be required to support the primary technical discipline leads. In some cases, we have paired an AECOM staff member with a specialty subconsultant to provide further strategic technical support. This group will oversee their senior technical staff and will work directly with the technical discipline leads to execute the technical work under each of the assigned work orders.

How will this all work?

The technical leads will act in a technical capacity, as well as a management capacity, for the technical task and will be directly responsible to the project manager and deputy project manager for all matters relating to technical, cost, and schedule performance for each deliverable.

The technical leads will report to the project management team during weekly internal meetings, where project and technical performance will be discussed. If deemed appropriate, the project manager will facilitate further communication between the technical lead and DEP project manager (or other appropriate DPMC/DEP contact) for that particular work order. If changes require additional resources beyond the dedicated team, the project executive, and technical advisors if necessary, will be consulted to bring the necessary corporate resources to bear on the issue.

We are confident that the team organization and management approach that we've developed will lead to the successful execution of the Hudson River Project for DPMC/DEP in its mission under this RBD program to increase resiliency and protect people, homes, businesses, and infrastructure within the Hoboken, Jersey City, and Weehawken area.

> "AECOM closely managed the design which allowed the Corps to award the construction contract before ARRA funds expired."

Angelo Trotto,
Chief Civil Works Section,
USACE-NY District
IDC for Engineering Services,
Somerset & Middlesex
Counties (Green Brook flood
mitigation project)

C. Consultant's plan for meeting the project schedule

There are three key elements of the AECOM team's plan for meeting the project schedule.

Value to DPMC/DEP
The right tools and expertise to get to 2022

The collaborative team organization and management approach we have developed for this project are predicated on the need to execute the required technical work within a tight timeline. We have purposely structured our team with AECOM as the lead firm, complementing our staff capacity and expertise with specific, strategic subconsultants. The approach will afford a collaborative team that works collectively on design approach and deliverables, yet delivers efficiencies in management and communication due to the tight administrative structure. It will also allow us to foster our Design to Budget approach to achieve the right design decisions within the project parameters.

Our efficient organizational and technical approach provides the State with an unmatched readiness to begin work immediately upon award. We are already trained and knowledgeable in DPMC/DEP, RBD, and HUD protocol, goals, and requirements through our current and past projects, such as RBD Meadowlands. Our established and robust relationships with DPMC/DEP and other project stakeholders will facilitate communication and understanding of the needs of all involved; and our in-house experience on similar large-scale projects for DPMC/DEP and other federal/state/local clients has provided us with the tools, protocols, processes and lessons learned to mobilize seamlessly and start delivering from Day 1.

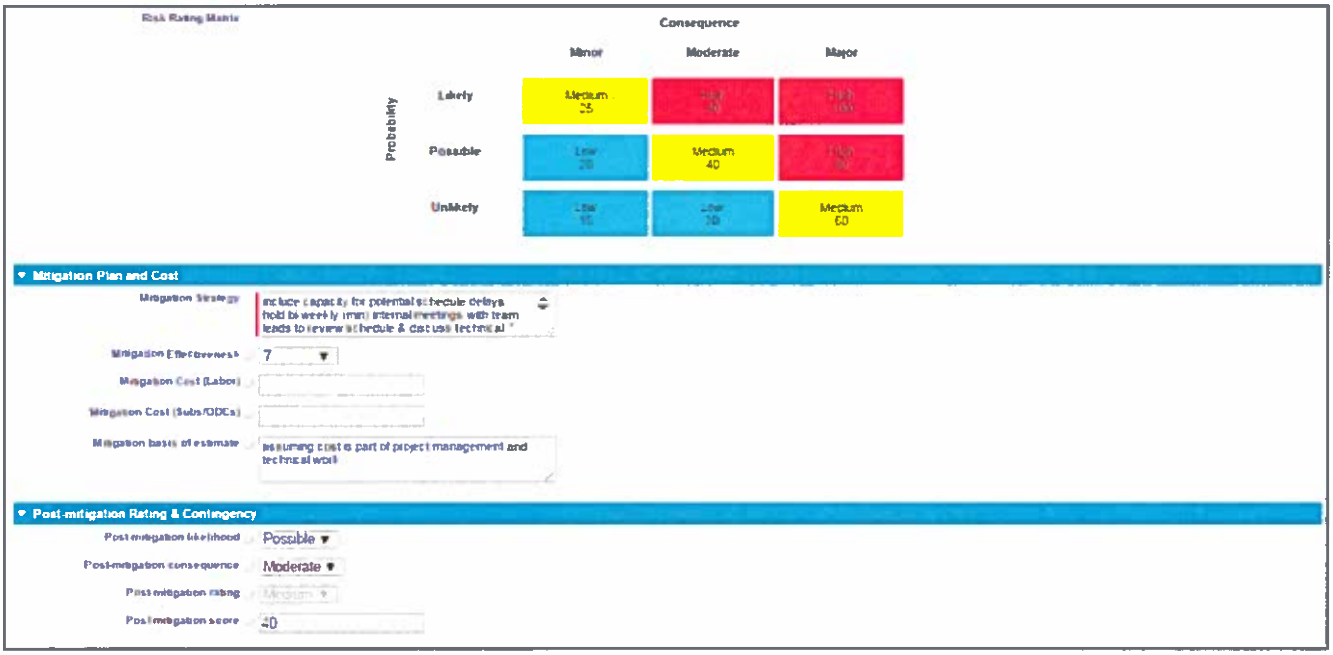
Our flexibility and capacity to fully execute the Hudson River Project with our depth of in-house resources, which allows us to assign a team independent of the RBD Meadowlands project, so that both projects can be effectively delivered in parallel. Chris Benosky, serving as the project executive on both projects, will provide continuity and consistency to DPMC/DEP and the RBD program. We are already familiar with the technical data from the project area through our past experience, including the existing coastal model for the area developed as part of our LMCR project, and our dedicated staff will have full access to the institutional knowledge and lessons learned by AECOM and its partners on comparable local and national projects.

Our organizational approach, ability to instantly start work, and key staff dedicated to this project, will serve as the foundation for meeting the project schedule, while achieving the goals of the Preferred Alternative within the allocated budget.

D. The consultant's contingency plans for dealing with problems and correcting errors that occur

While AECOM prides itself on problem avoidance through the use of experienced and highly trained managers, automated tools, risk mitigation, and formal quality control procedures, we also recognize that problems or unanticipated events may occur that could affect technical quality, schedule or budget. A project of this scale, with multiple, simultaneous assignments, can be especially vulnerable if a proper contingency plan is not prepared and implemented.

We have structured the team such that when a divergence is noted, we have the resources to make staffing adjustments and take corrective actions. Our strategic subconsultants were selected to further our team's depth for their specific disciplines. Furthermore, our established protocols and use of ePM to facilitate schedule and budget monitoring enable us to take corrective actions before issues become insurmountable and impact project deliverables.



To deal with potential problems and correct any errors that occur, we will implement the following contingency protocol. However, if selected, it is standard practice to develop project-specific contingency plan (as part of the overall project plan) to address the potential risks we identify.

Contingency Protocol

The intent of the contingency protocol is to identify shortfalls and document appropriate changes in either a process improvement plan or a corrective action plan. Process improvement plans will be used to document changes to established procedures that are not meeting expectations, while corrective action plans will be used when the problem is not the established procedures, but the execution of these procedures and policies. If at any point during the execution of work on this term contract it is indicated that the AECOM team is not meeting expectations, either through feedback from internal or external QC checking results, the work order feedback process or as a result of progress reports, we will initiate the following protocol:

- **Communicate issue** – AECOM approaches assignments in the spirit of partnering and believes the first step to success when solving problems is transparency. Therefore, if and when a problem is discovered, the first step will be for the project manager to notify the project executive and then immediately contact the DEP project manager to discuss the apparent issue. If appropriate, the project executive will immediately advise the DPMC project director and DEP program manager, and both will become involved in these discussions.
- **Analyze cause** – The next step in this process will be a root cause analysis. The project executive, project manager and deputy project manager will research the issues with the appropriate technical leads to determine if the problem is systemic or simply a failure of execution of procedures and policies.
- **Review issue** – Our technical advisors will review the types and source of errors to determine if they indicate an error trend, which may require follow-up activities such as a topic-specific training session, process improvement/ documentation, or staff reassignment.
- **Determine solution** – The fourth step is to determine a proposed solution. Once the root cause is determined, the project manager and deputy project manager will meet with the technical leads to brainstorm solutions and formulate the appropriate corrective course of action. The proposed corrective action will be reviewed with the project executive and then discussed with DPMC/DEP.
- **Implement corrective action** – Finally, once a viable solution is selected, it will be implemented and the success/effectiveness of this solution will be monitored to assure the issue/problem has been completely resolved. Formal process improvement/corrective action plans will be prepared to document and communicate these activities and distributed internally to all AECOM team members.

While the above protocol represents a multi-step process, our team fully grasps the need for the swift identification and correction of problems and errors as they may arise. Depending on the level of error, the details above are expected to be implemented over a short time period (i.e., half a day to three days) so as to avoid project schedule delays, but with enough specificity so that the problem is identified and analyzed, with the solution implemented and documented.

E. The consultant's policies and procedures for maintaining quality control and conducting inspections and oversight of the work

AECOM believes that quality is everyone's job — from the CEO to the project manager to the field technician. It is an attitude, a culture, and a way of life, part of everything we do, every day. It is inherent in the way we execute work for both ourselves and our clients.

Maintaining Quality Control

AECOM's approach to quality control is founded in continual process improvement concept of PLAN, DO, CHECK, ACT. We have a long-standing corporate culture that emphasizes our commitment to quality. As one of the few ISO 9001-certified professional and technical services firms in North America, AECOM developed its QMS to address the standards requirements, and we confirm compliance through formal auditing and verification.

AECOM offers a proven quality management system (QMS) that is certified to the internationally renowned ISO 9001:2008 standard, yet sufficiently flexible to address the specific requirements of this project.

AECOM's world-class quality program contains both the tools to execute and the means to confirm the processes are being followed. We consistently apply a set of global quality practices throughout the firm, regardless of where work is performed or managed. AECOM's QMS is built upon the eight foundational principles that lie at the core of the ISO standard, providing a strong footing for positive results. This provides our clients with greater confidence that the quality of our services and deliverables will meet or exceed our clients' requirements and expectations.

The general components of AECOM's approach to project quality management, and the responsible parties for planning and implementing this approach, are depicted below.

Phase	Planning and Approach	Design and Development	Checking	Review	Verification
Responsible parties	Project Manager Project Director Lead Verifiers Project Quality Rep	Discipline Leads Discipline Staff	Discipline Reviewers	Lead Verifier Project Manager Project Director Peer Teams	Project Quality Rep Project Manager
Activity	Establishment of: -Codes & Standards -Design Methodology -Software Validation -Deliverable Format -Project Limits -Scope of Work -Quality Review Team -Quality Review Schedule -Technical Approach	Preparation of: -Calculations -Drawings -Reports -Plans/Exhibits -Quantities -Specifications -Cost Estimates -Schedules	Detailed Check of: -Calculations -Drawings -Reports -Plans/Exhibits -Quantities -Specifications -Cost Estimates -Schedules -Discipline Interfaces	Senior Level Review of: -Discipline Deliverables -Level of Completeness -Constructability -Change Order Potential -Claim Potential	Verification of: -Adherence to QC Process -QC Documentation -Compliance with Contract -Readiness to Release
Output/Record	Project Plan Project Kickoff Meeting Technical Approach Review	Work Products Self-checking	Work Product Mark-ups Comment Resolution	Comment Resolution	Technical Quality Review Record

For each project undertaken, quality control procedures including the following:

- Develop a project-specific project plan, which incorporates controls, standards and quality review processes from the project inception.
- Review the project plan with project team members at the project kickoff meeting and revisit as necessary during subsequent project meetings.
- Schedule and identify specific technical quality review staff, notifying these staff at project (or work order) inception to confirm their availability and verify their technical competence, and assign budget for these technical reviews.
- Perform detailed checks of all contracted deliverables, including computations, using existing checklists established for our NFIP-related work.

- Conduct Independent Technical Reviews (ITR), where appropriate, to validate compliance with standards and processes. Independent technical reviewers are assigned based on their professional expertise and the nature of the work to be performed. ITRs play a somewhat different role in the QC process in that they are intended to verify overall contract and standards compliance and provide a broad review of technical approach as opposed validation of actual calculations, which are under the purview of detailed checking.
- Adjust the project plan as necessary throughout the project duration.
- Apply metrics-based continual process improvement systems to meet or exceed all performance goals.

The project plan is developed and the Technical Quality Review (TQR) process is scheduled, initiated, and documented through the deliverables and TQR application in ePM. This provides for both consistency and record documentation of our process across all of our global geographies.

Conducting Inspections and Oversight of the Work

Quality Team

Our quality management system empowers project staff at all levels of the project team. While AECOM's project manager is ultimately responsible and accountable for the quality of work delivered to the client, they are supported by specific technical quality review staff as defined in our QMS procedures.

- **Reviewer** – This person is responsible for performing the technical accuracy and completeness check of the deliverable, qualified based on discipline, experience and registration/certification. There may be multiple reviewers depending on the scope and breadth of the deliverable. (Cannot be the document originator.)
- **Independent Reviewer** – If deemed necessary based on project risk and scope, this person conducts a special independent review of the work product for compliance with scope, regulatory requirements, and consistency with accepted professional practice. (Cannot be the document originator.)
- **Interdisciplinary Reviewer** – If deemed necessary based on project risk and technical complexity, this person checks for potential design conflicts, interfaces, gaps, and incompatibilities between disciplines. (Cannot be the document originator.)
- **Lead Verifier** – Through a high-level examination, the person who determines if the work product is correct and complete. This person verifies that review comments have been appropriately addressed and the reviews have followed the technical quality review process. (Cannot be the document originator.)
- **Project Quality Manager (PQM)** – If deemed necessary based on project risk, size, and/or duration, this person assists the project manager with implementing AECOM's quality process, ensuring that technical quality reviews are being completed on time and according to our QMS.

- **Approver** – This person, as identified in the project plan, is responsible for the final review and release of deliverables to our clients. (Typically the PM or the PQM.)

Technical Quality Review Process

Formal quality checking and review are key functions of the AECOM QMS. These procedures focus primarily on technical correctness and completeness of the work at each stage of delivery. Important quality checking and review roles are assigned to qualified individuals at the start of every project and are documented in the project plan. As each delivery stage approaches, the project manager mobilizes the team to carry out the responsibilities assigned. Quality checking activities, which are all documented with two-level approvals, include:

- Checking calculations to verify correctness and completeness of mathematics, methodology, selection of software, application of standards and codes, and general approach.
- Checking drawings within each discipline to confirm design layout, dimensions and details. Potential interferences, conflicts and interface issues are resolved through interdisciplinary reviews.
- Checking specifications for content and application, as well as compliance with the prescribed format, and for consistency throughout the specifications.
- Checking studies/reports for content, logic, clarity and soundness of recommendations, as well as grammar, punctuation and format.

Quality Assurance

Quality Assurance is integrated within the AECOM culture with a robust corporate quality assurance manual and program. AECOM's quality assurance/quality control (QA/QC) program ensures the quality of all aspects of our work meets our clients' technical and contractual requirements and objectives. QA/QC for contracted deliverables is performed in accordance with contract and work order-specific requirements, as well as following our QMS process through ePM. The AECOM QA/QC program includes the following elements:

- **Quality culture**, emphasizing a continual quality improvement philosophy. The project executive will assist DPMC/DEP through formal and informal partnering concepts and in the review and improvement of all processes affected by the contract. Our project executive and project manager will meet with DPMC/DEP regularly to ensure that the project teams are meeting or exceeding expectations.
- **A QA/QC organization** staffed with experienced personnel, with reporting lines independent of the project structure to ensure an unbiased review of each work element.
- **A corporate QA manual** and standard operating procedures that contain comprehensive guidance to our technical staff on all aspects of a project and the QA/QC process.

Value to DPMC/DEP

Proven expertise with DPMC/DEP and RBD processes will focus the team on executing the project's design

- **Monitoring of contract performance** by the project management team. AECOM is dedicated to continual improvement by listening closely to the needs of our clients.
- **Periodic quality assurance audits** by our quality assurance officer, Dean Challes, to assure adherence to QA/QC procedures. Technical quality review staff includes the assignment of a project quality representative (PQR), who can provide quality assurance at the deliverable-level.
- **Client feedback** to enhance our continual improvement cycle, in addition to ongoing quarterly review meetings throughout the contract and periodic "how are we doing" calls from our quality officer and management team, the final step in our Quality Management process. At least annually, DPMC/DEP will be solicited feedback regarding our performance, which will include a brief questionnaire geared to illicit responses targeting project specific areas for potential improvement. The results of the questionnaire will be fed back to the project team as part of AECOM's continual improvement process.

AECOM achieves continual improvement in the effectiveness of the QMS through top-down management promotion of the program, dissemination of the quality objectives, evaluation of and response to audit results, analysis of objective data, implementation and evaluation of corrective and preventive actions, and management review. To date, the AECOM procedures have been used effectively to guide the QA/QC program on other projects performed by AECOM for the State.

F. The consultant's understanding and knowledge of DPMC and NJDEP procedures and processes

AECOM has held several past term contracts with the DPMC/DEP and we are very familiar with the contracting protocols, reporting procedures, invoicing processes and forms. Presently, AECOM is working for DPMC/DEP on a similar large-scale term contract (RBD Meadowlands Project – TC-001) in which we are performing the same services that are required for the Hudson River Project. We are also working on TC-007 Floodplain Mapping Multiple Award Term Contract (DPMC Project P1066-00) in which we are performing surveying services, hydraulic and hydrologic services, and preparing floodplain mapping depicting flood risk.

These and other ongoing experiences with DPMC/DEP term contracts and projects demonstrate our knowledge of the agencies' contracting procedures and the interrelationship between DPMC, the State's contracting agent, and DEP, the contract's end user.

The AECOM team is familiar with the procurement, design, code review, and construction policies and procedures employed by DPMC. Our team's knowledge of the specific forms, meetings and other requirements will help streamline our work under this contract and meet the project schedule and budget.

We are familiar with the standard DPMC processes and requirements for a typical design, bid, and construct project, including the design and permit submission requirements and bidding and award procedures (including the consultant's responsibility for items such as pre-proposal meetings, and recommendations for award). We routinely work with various departments within NJDEP, including the Division of Land Use Regulations, Engineering & Construction, Division of Dam Safety and Flood Control and Bureau of Flood Resiliency. Since NJDEP is the local sponsor on the New Jersey flood risk management projects we execute for the USACE, we routinely interface with their staff. AECOM meets regularly with NJDEP for the RBD Meadowlands Project.

As a large firm, we often represent clients with NJDEP's Division of Land Use Regulation (DLUR) permit applications for flood hazard area permits and general and individual wetland permits. As part of a resiliency project for American Water in Bridgewater, New Jersey, we secured permits to increase the height of their flood control structure systems and were able to secure a letter of map amendment from FEMA. In the past few years, we worked with the Federal Aviation Agency to secure the flood hazard area permit for a new control tower that includes a new bridge crossing for access. In connection with this permit, AECOM has designed an offsite wetland mitigation project. Our familiarity with the department's procedures and staff will enable us to hold open and frank discussions during pre-application meetings, which will allow us to address concerns early and expedite the permitting process.

In addition, AECOM's legacy companies have had a continued presence in New Jersey since the early 1960's and have participated in the environmental programs since the days of the Clean Air Act (1970), Clean Water Act (1972) and the RCRA (1976) programs. In the State of New Jersey, AECOM has worked under the various site cleanup programs such as Environmental Cleanup Responsibility Act (ECRA) and subsequently the Industrial Site Recovery Act (ISRA).

Our team's local environmental professionals, including 17 NJDEP licensed site remediation professionals (LSRPs), have gained their expertise not only through our project work, but also through a long history of working with NJDEP.

AECOM is a leading firm in New Jersey for performing groundwater and soil remediation assessments and obtaining NJDEP approval of remedial investigation work plans, remedial action workplans, and associated permitting.

Value to DPMC/DEP

Decades of NJDEP experience in site remediation will deliver timely decisions

Value to DPMC/DEP

Rely on the team's expertise in HUD compliance to increase efficiency by limiting HUD monitoring visits

Kevin Hamby of Remora Consulting, LLC, is our designated HUD compliance lead, with over 12 years of direct experience with CDBG-DR funding in both the public and private sector. His experience also includes providing guidance under the Sandy Congressional enabling legislation and the subsequent HUD Notice of Funding published March 5, 2013.

G. The consultant's knowledge and familiarity with HUD requirements noted in section 2.0 and in the statement of assurances for the Rebuild By Design - Hudson River Project, annexed to the RFP document

Even with AECOM's long history of working with federal funds, because of the complexity of HUD Sandy CDBG-DR funding, our team includes a HUD compliance lead to work closely with the necessary departments of New Jersey government.

The AECOM team has significant experience with Davis Bacon reporting and will provide either full reports or full access to New Jersey personnel to ensure that HUD's Davis Bacon requirements are met, whichever is preferred by DPMC/DEP.

Both Kevin and AECOM staff have worked to develop plans to meet the affirmatively furthering fair housing (AFFH) rules required for HUD grants. HUD recently adopted an AFFH Final Rule that applies to Sandy CDBG-DR infrastructure and other non-housing programs. Our compliance lead has direct experience with the major components of the final rule through work on other programs monitored by civil rights groups and HUD FHEO. We will work with the State to address the impediments identified in the State of New Jersey Analysis of Impediments to Fair Housing and as necessary relate them to this project to prevent complaints from being filed by civil rights groups or HUD FHEO.

AECOM has specifically met the HUD compliance requirements noted in section 2.0 and in the statement of assurances for the Rebuild By Design - Hudson River Project and other HUD rules, regulations, and policy guidance in the RBD Meadowlands Project. In fact, the 4-5-17 revised statement of assurances for the Rebuild By Design - Hudson River Project was forwarded to our RBD Meadowlands team by DPMC/DEP for compliance on that project as well and we are currently working under those specific guidelines. Our team has also completed projects using similar efforts in New York City BiB, New York State Rising, and the State of Texas CDBG-DR programs among other programs using HUD funds.

For the RBD Meadowlands Project, our team has worked on the HUD compliance and record keeping to meet HUD standards, including the published funding requirements. In addition to policy development and compliance planning, to limit gaps in implementation of a compliance plan, our team conducts program reviews in a HUD-style monitoring visit for the contractor and subs and produces a report making recommendations or identifying gaps in compliance. The review process is designed to limit any concerns or findings from HUD monitoring visits.

TC 003 TERM CONTRACT RATE SCHEDULE
BY PERSONNEL LEVEL

NAME OF FIRM: AECOM Technical Services, Inc.

INSTRUCTIONS

Provide a LOADED hourly rate ($ per hour; no cents please) below for all Personnel included in each of the Levels listed. Please refer to the RFP for a description of each of the personnel types by level. Your proposal may be considered unresponsive if you leave blanks.

PERSONNEL TYPE/DISCIPLINE	TERM CONTRACT HOURLY RATES PER CONTRACT PERIOD		
	BASE (3 YEARS)	EXTENSION OPTION – YRS 4/5	EXTENSION OPTION – YR 6
LEVEL 7	$220	$233	$240
LEVEL 6	$196	$208	$214
LEVEL 5	$167	$177	$182
LEVEL 4	$134	$142	$146
LEVEL 3	$102	$108	$111
LEVEL 2	$83	$88	$91
LEVEL1	$58	$62	$63
AVERAGE RATE (ALL LEVELS) Please calculate for Levels 7 -1	$137	$145	$150

Authorized Signature: _____

Christopher Benosky, PE, CFM

RETURN THIS COMPLETED DOCUMENT TO DPMC

(PAGE 2 OF 5)

TC - 003
REBUILD BY DESIGN TERM CONTRACT
HUSDON RIVER PROJECT

Consultant AFFIDAVIT

IMPORTANT - PLEASE READ, SIGN AND PROVIDE INFORMATION REQUESTED BELOW

Affidavit: I, being duly sworn upon my oath, hereby represent and state the foregoing information contained in the Term contract Proposal and any attachments thereto the best of my knowledge are true and complete. I acknowledge that the State of New Jersey (Owner) is relying on the information contained herein and thereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of any contracts with the Owner, or its contractors, to notify the Owner in writing of any changes to the answers or information contained herein. I acknowledge that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreements(s) with the Owner and that the Owner, at its option, may declare any contract(s) or sub-contract(s) resulting from this certification void and unenforceable.

Signature of the Consultant below attests that the Consultant has read, understands and agrees to all terms, conditions and specifications set forth and referenced in the TC – 003 Term Contract Request for Proposal (RFP) including the Statement of Assurances for Rebuild by Design TC – 003, Consultant Agreement & General Conditions to the Rebuild By Design Term Contract TC-003. Signature of the Consultant signifies that a contract is established immediately upon notice of award by the State of New Jersey for any or all of the items and the length of time indicated in the proposal. Failure to accept a contract award, to hold prices or to meet any other terms or conditions as defined in the Request for Proposal and subsequently the Notice of Award, during the term of the contract, shall constitute a breach of contract and may result in termination, suspension or debarment from further contractual agreements with the Owner.

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

Firm Name: AECOM Technical Services, Inc.

Signature: _____ Print Name: Christopher Benosky, PE, CFM

Title: Vice President Date: 5/25/2017

ATTESTED: Sworn and subscribed to before me on the 1st day of June, 2017.

Signature: _____
(Notary Public-Not an Officer of the Firm)

ADWOA FAAKYE
Notary Public, State of New York
No. 01FA6206838
Qualified In New York County
Commission Expires August 1, 2017

RETURN THIS COMPLETED DOCUMENT TO DPMC

MAC BRIDE PRINCIPLES COMPLIANCE CERTIFICATION

Pursuant to Public Law 1995, c.134, a responsible consultant selected, after public bidding, by the Director of the Division of Property Management and Construction, pursuant to N.J.S.A. 52:32-2, must complete the certification below by checking one of the two representations listed and signing where indicated. If a consultant who would otherwise be awarded a contract or agreement does not complete the certification, then the Director may determine, in accordance with applicable law and rules, that it is in the best interest of the State to award the contract or agreement to another consultant who has completed the certification and has submitted a fee proposal within five (5) percent of the most advantageous fee proposal. If the Director finds the consultant to be in violation of the principles which are the subject of this law, he shall take such action as may be appropriate and provided for by law, rule or contract, including, but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the consultant in default and seeking debarment or suspension of the consultant.

I certify, pursuant to N.J.S.A. 52:34-12.2, that the entity for which I am authorized to bid:

_____ has no ongoing business activities in Northern Ireland and does not maintain a physical presence therein through the operation of offices, plants, factories, or similar facilities, either directly or indirectly, through intermediaries, subsidiaries or affiliated companies over which it maintains effective control; or

__x__ will take lawful steps in good faith to conduct any business operations it has in Northern Ireland in accordance with the MacBride principles of nondiscrimination in employment as set forth in N.J.S.A. 52:18A-89.8 and in conformance with the United Kingdom's Fair Employment (Northern Ireland) Act of 1989, and permit independent monitoring of their compliance with those principles.

I certify that the foregoing statements made by me are true. I am aware that if any of the foregoing statements made by me are willfully false, I am subject to punishment.

Christopher Benosky, PE, CFM

Signature of Consultant

Dated: 6/12/2017

RETURN THIS COMPLETED DOCUMENT TO DPMC

STATE OF NEW JERSEY
DIVISION OF PROPERTY MANAGEMENT AND CONSTRUCTION
DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN

PROJECT NUMBER P1155-00 BIDDER AECOM Technical Services, Inc.

*Pursuant to Public Law 2012, c. 25, any person or entity that submits a bid or proposal or otherwise proposes to enter into or renew a contract must complete the certification below to attest, under penalty of perjury, that neither the person or entity, nor any of its parents, subsidiaries, or affiliates, is identified on the Department of Treasury's Chapter 25 list as a person or entity engaging in investment activities in Iran. The Chapter 25 list is found on the Division of Purchase and Property's website at http://www.state.nj.us/treasury/purchase/pdf/Chapter25List.pdf. Bidders **must** review this list prior to completing the below certification. **Failure to complete the certification may render a bidder's proposal non-responsive.** If the Director finds a person or entity to be in violation of law, s/he shall take action as may be appropriate and provided by law, rule or contract, including but not limited to, imposing sanctions, seeking compliance, recovering damages, declaring the party in default and seeking debarment or suspension of the party.*

PLEASE CHECK THE APPROPRIATE BOX:

[X] I certify, pursuant to Public Law 2012, c. 25, that neither the bidder listed above nor any of the bidder's parents, subsidiaries, or affiliates is listed on the N.J. Department of the Treasury's list of entities determined to be engaged in prohibited activities in Iran pursuant to P.L. 2012, C. 25 ("Chapter 25 List"). I further certify that I am the person listed above, or I am an officer or representative of the entity listed above and am authorized to make this certification on its behalf. I will skip Part 2 and sign and complete the Certification below.

OR

[ ] I am unable to certify as above because the bidder and/or one or more of its parents, subsidiaries, or affiliates is listed on the Department's Chapter 25 list. I will provide a detailed, accurate and precise description of the activities in Part 2 below and sign and complete the Certification below. Failure to provide such will result in the proposal being rendered as non-responsive and appropriate penalties, fines and/or sanctions will be assessed as provided by law.

Part 2: PLEASE PROVIDE FURTHER INFORMATION RELATED TO INVESTMENT ACTIVITIES IN IRAN

You must provide a detailed, accurate and precise description of the activities of the bidding person/entity, or one of its parents, subsidiaries or affiliates, engaging in the investment activities in Iran outlined above by completing the box(es) below.

Name _____ Relationship to Bidder/Offeror _____
Description of Activities _____
Duration of Engagement _____ Anticipated Cessation Date _____
Bidder/Offeror Contract Name _____ Contact Phone Number _____

List Additional Activities on Separate Sheet

CERTIFICATION: I, being duly sworn upon my oath, hereby represent and state that the foregoing information and any attachments thereto to the best of my knowledge are true and complete. I attest that I am authorized to execute this certification on behalf of the above-referenced person or entity. I acknowledge that the State of New Jersey is relying on the information contained herein and thereby acknowledge that I am under a continuing obligation from the date of this certification through the completion of any contracts with the State to notify the State in writing of any changes to the answers of information contained herein. I acknowledge that I am aware that it is a criminal offense to make a false statement or misrepresentation in this certification, and if I do so, I recognize that I am subject to criminal prosecution under the law and that it will also constitute a material breach of my agreement(s) with the State of New Jersey and that the State at its option may declare any contract(s) resulting from this certification void and unenforceable.

Full Name (Print): Christopher Benosky, PE, CF< Signature: _____

Title: Vice President Date: 6/12/2017

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CERTIFICATE OF EMPLOYEE INFORMATION REPORT

Certification 3838

RENEWAL

This is to certify that the contractor listed below has submitted an Employee Information Report pursuant to N.J.A.C. 7:27-1.1 et. seq. and the State Treasurer has approved said report. This approval will remain in effect for the period of 15-JUL-2015 to 15-JUL-2018

AECOM TECHNICAL SERVICES, INC
4840 COX ROAD
GLEN ALLEN VA 23060

Robert A. Romano,
Acting State Treasurer

Public Law 2005, Chapter 92
Formerly: Executive Order 129

SOURCE DISCLOSURE CERTIFICATION FORM

Bidder: AECOM Technical Services, Inc.

I hereby certify and say:

I have personal knowledge of the facts set forth herein and am authorized to make this Certification on behalf of the Bidder.

The Bidder submits this Certification as part of a bid proposal in response to the referenced solicitation issued by the State of New Jersey, Department of Treasury, Division of Property Management and Construction (DPMC), in accordance with the requirements of Public Law 2005, Chapter 92, (N.J.S.A. 52:34-13.2 et seq., superseding Executive Order 129 (2004)).

The following is a list of every location where services will be performed by the bidder and all subcontractors.

Bidder or Subcontractor	Description of Services	Performance Location(s) by Country
See attachment A		

Any changes to the information set forth in this Certification during the term of any contract awarded under the referenced Project Number will be immediately reported by the Bidder to the Contract Compliance Unit in the DPMC, Department of Treasury, State of New Jersey, PO Box 034, Trenton, NJ 08625.

I understand that, after award of a contract to the Bidder, it is determined that the Bidder has shifted services declared above to be provided within the United States to sources outside the United States, prior to a written determination by the Director, Division of Property Management and Construction, that extraordinary circumstances require the shift of services or that the failure to shift the services would result in economic hardship to the State of New Jersey, the Bidder shall be deemed in breach of contract, which contract will be subject to termination for cause under its contract with DPMC.

I further understand that this Certification is submitted on behalf of the Bidder in order to induce DPMC to accept a bid proposal, with knowledge that the State of New Jersey and DPMC are relying upon the truth of the statements contained herein.

I certify that, to the best of my knowledge and belief, the foregoing statements by me are true. I am aware that if any of the statements are willfully false, I am subject to punishment.

Bidder: AECOM Technical Services, Inc.
[Name of Organization or Entity]

By: _____ Title: Vice President

Print Name: Christopher Benosky, PE, CFM Date: 6/12/2017

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Attachment A

Public Law 2005, Chapter 92
Formerly: Executive Order 129

SOURCE DISCLOSURE CERTIFICATION FORM

The following is a list of every location where services will be performed by the consultant and all sub-consultants.

Bidder or subcontractor	Description of Services	Performance Location(s) by Country
AECOM Technical Services, Inc.	Prime consultant (involved on all services)	United States
AECOM Architects & Engineers (NJ), Inc.	Architecture/engineering	United States
OMA*AMO Architecture P.C.	Community relations Landscape architecture Urban design	United States
Magnusson Klemencic Associates (MKA)	Site/civil engineering Green infrastructure	United States
Matrix New World Engineering, Inc.	Survey Geotechnical engineering Landscape architecture	United States
Royal HaskoningDHV	Coastal and riverine management	United States
Remora Consulting, LLC	HUD grant compliance	United States