VOLUME 1: **TECHNICAL PROPOSAL**

Design Services & Design Services During Construction for a

PERIMETER FLOOD WALL

STV 100 Years | MOTT MACDONALD

July 7, 2016

Mr. Gregory A. Tramontozzi
Executive Director
Passaic Valley Sewerage Commission
600 Wilson Avenue
Newark, NJ 07105

Reference: Request for Qualifications and Proposals for Professional Services for Passaic Valley Sewerage Commission (PVSC) – Design Services and Design Services During Construction for a Perimeter Flood Wall

Dear Mr. Tramontozzi:

Due to Passaic Valley Sewerage Commission's (PVSC's) vital role in protecting the environment and providing a fundamental service its customers rely upon, it must provide uninterrupted operations, 24/7 – a reality underscored by the extensive damage to the plant from Hurricane Sandy in 2012. Inundated by Passaic River floodwaters and without power for 48 hours, PVSC's plant suffered damage on a scale previously inconceivable. In response, PVSC has developed a comprehensive flood mitigation and resiliency plan to protect the plant from similar events. A key part of this plan is building a protective wall around the facility.

To meet this project's challenges, STV Incorporated (STV) and Mott MacDonald (MM) have formed a joint venture (JV), offering PVSC what we believe to be a winning combination:

- The large-scale flood wall design experience of STV, including the recent design of an almost identical flood wall at Coney Island Yard
- The extensive PVSC and other local wastewater utility experience of MM
- A proven track record working together on projects nationwide for 15+ years
- Locally based staff of 1,000+

Just as PVSC is expert in the processing and treatment of wastewater, our team is expert in the delivery of highly complex design and construction projects. We understand the devastating impact Hurricane Sandy had on the Commission, the plant, and most importantly, PVSC customers. Our approach is simple: Deliver exceptional staff —experts in their respective fields—and work in partnership with PVSC's engineering and operations groups, your program management team, contractors, and other engaged consultants to deliver a quality design and end product, while minimizing impacts to ongoing plant operations. Our team is ready to deliver.

Thank you for the opportunity to submit this proposal. We look forward to working with you and the entire PVSC organization to deliver this crucial flood resiliency project. In addition, we hereby acknowlege receipt of Clarification No. 1.

Sincerely,

Kevin A. Pierce, P.E.
JV Principal
STV Incorporated

Albert N. Beninato, P.E.
JV Principal
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TABLE OF CONTENTS

Cover Letter

Executive Summary

Project Approach & Schedule

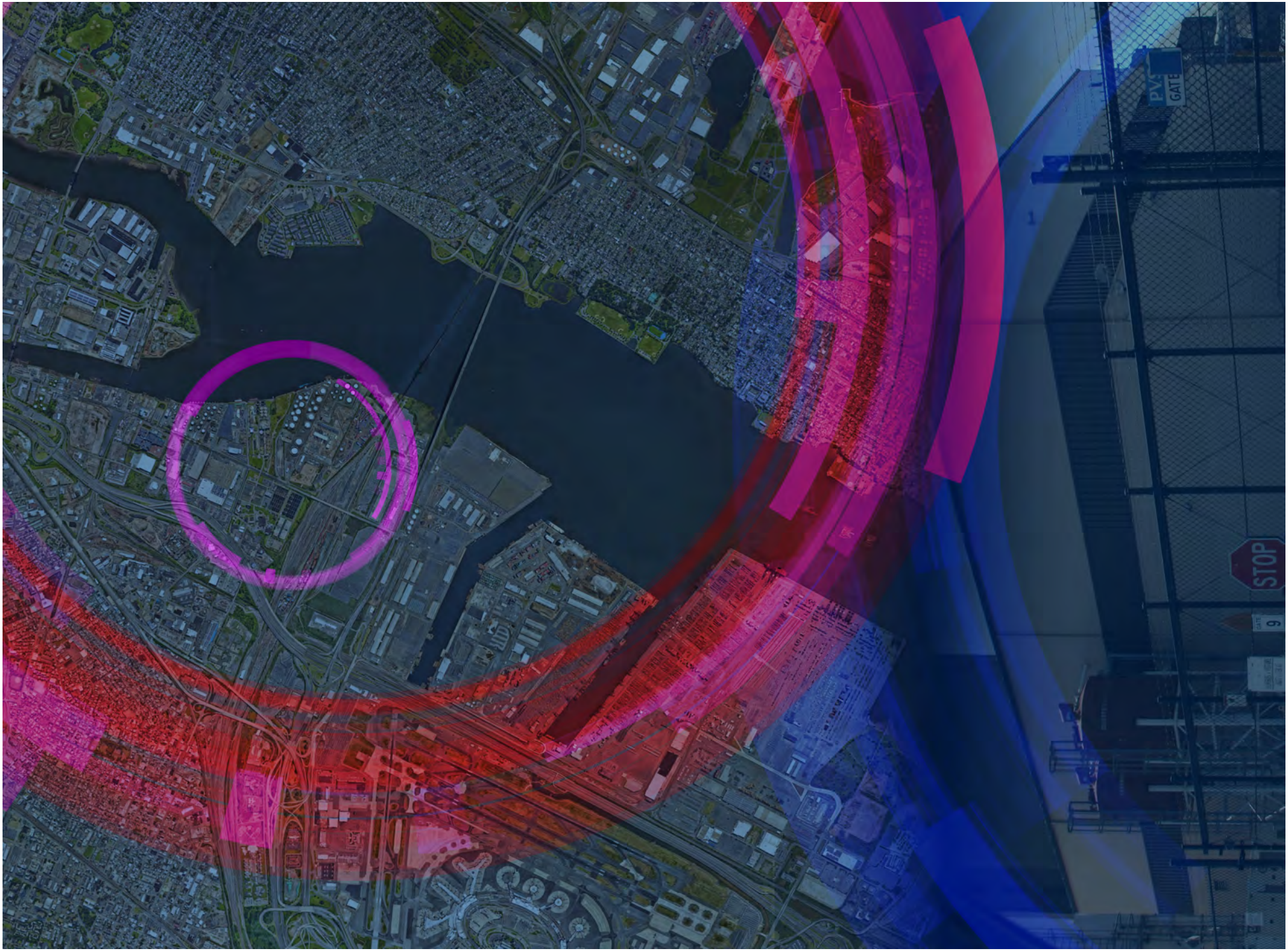
Key Personnel

Similar Experience

PVSC-Other Agency Experience

Man-Day Estimate

Forms and Certifications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EXECUTIVE SUMMARY

The joint venture of STV Incorporated and Mott MacDonald (STV/MM) is well positioned to provide the Passaic Valley Sewerage Commission (PVSC) with design and construction services for this critical flood resiliency project. As you read our proposal, we hope you will agree that our team's knowledge, capability, and experience in the design of flood walls and overall flood resiliency, as well as our knowledge of PVSC and its operations, is unmatched by any of our competitors.

Why Select STV/MM

Briefly, STV/MM offers PVSC:

Staff: Our team is comprised of carefully chosen individuals, including leaders in the industry, all with experience and credentials that are specific and relevant to this flood wall project. Most notably, our team will be led by Christopher Cerino, PE, SECB, a licensed structural engineer and NJ resident, responsible for the management and design of the Coney Island Yard flood wall, which is nearly identical in size, scope, and complexity to this project. Through his extensive post-Sandy resiliency work, Chris has developed an approach that is both practical and rigorous. Much of his technical approach to flood resiliency design is contained in STV's proprietary flood resiliency design handbook, recently co-authored by him. Chris will bring direct knowledge from Coney Island to PVSC and provide valuable insights that will translate into increased value, and reduced cost and time in construction. He will be supported by a breadth and depth of technical resources, drawn from a combined local multidisciplinary staff of more than 1,000, all experts in their respective fields and all selected based on the specific experience they bring to this effort.

Flood Resiliency Design Experience and Knowledge of PVSC: Since its founding over 100 years ago, STV has been a leader in infrastructure design. With the publication in 1960 of one of the original industry guidelines for engineering design, "*Design*", by Edwin Seelye, a handbook used throughout the industry by civil engineers for decades, the firm solidified its role as an industry leader – a reputation the firm continues to build upon to this day. Specifically for this project, and since the devastating impacts of Hurricane Sandy, STV has led the region in the analysis and design of over 70 flood resiliency projects for over 25 regional clients at an aggregate construction cost exceeding $2 billion. This includes the most relevant project to PVSC: the Coney Island Yard flood wall. This experience, coupled with Mott MacDonald's 40 years in providing PVSC with expert professional design and construction services, make STV/MM a powerhouse combination, with the experience and knowledge to get this project done successfully, meaning on time, on budget, and most importantly, with minimal impact to PVSC's operations.

Close Proximity: With a combined aggregate staff of over 1,000 in the NJ/NYC region, STV/MM has all requisite resources in-house and in close proximity to the site. We will base our efforts from STV's nearby office in downtown Newark. This will translate to increased value to PVSC and allow our team to work seamlessly together and with the multitude of PVSC engineering and operations staff, your program manager, contractors, and other consultants who will be engaged in providing services for PVSC's resiliency program.

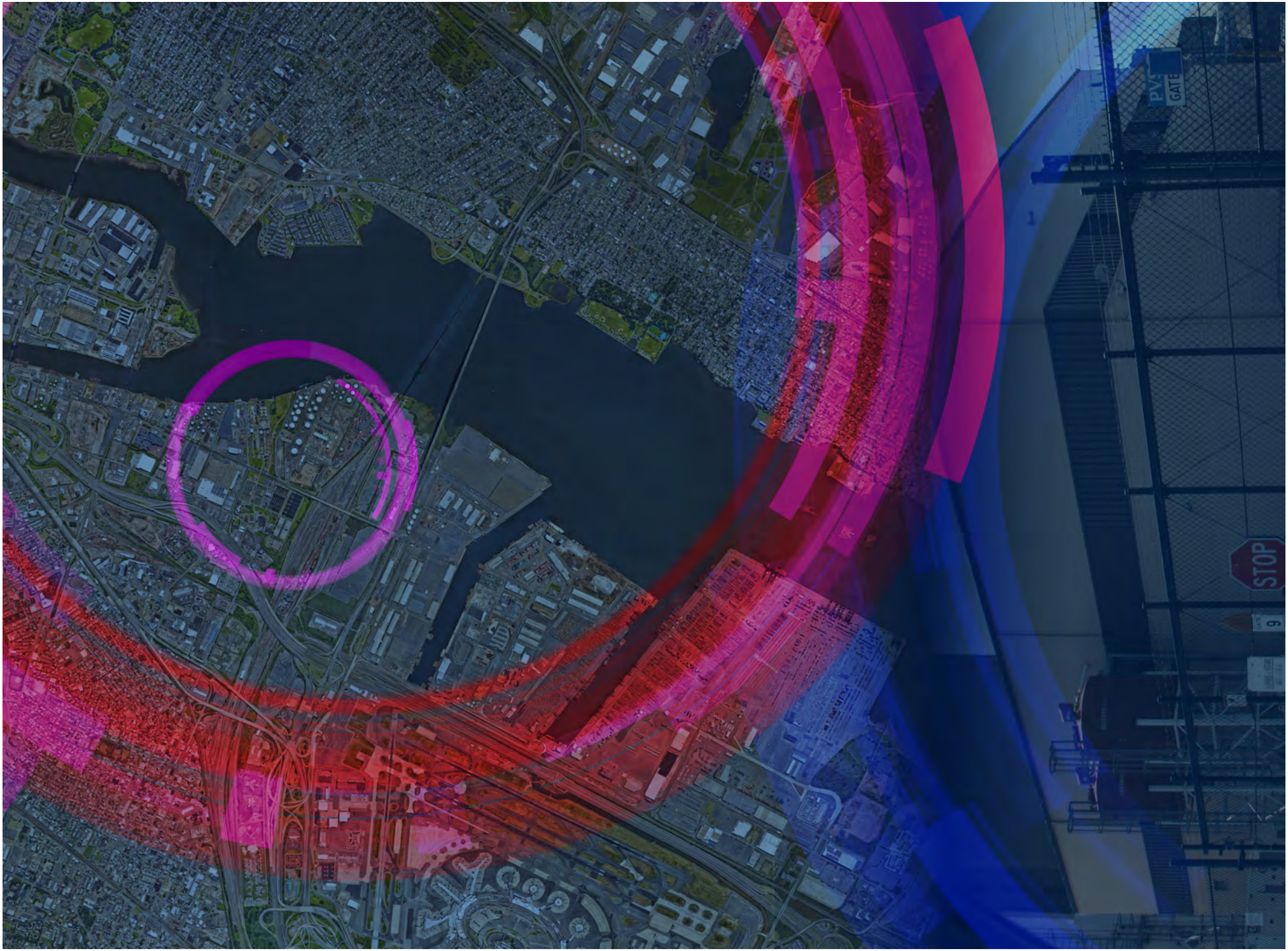
Value: All of the above translates into value to PVSC. Our staff, our knowledge of flood resiliency design, our experience gained in the design of a nearly identical project, our knowledge of the site, and our close proximity to PVSC will enable our team to deliver this design in an expedited manner, with minimal learning curve, all done to the high-quality standards of service expected by PVSC.

Response to Selection Criteria

The following table further summarizes and details the unique attributes, qualifications, and benefits of STV/MM in the context of the selection criteria outlined in the RFP.

SUMMARY RESPONSE TO EVALUATION CRITERIA		
Evaluation Criteria	**How Team Meets Criteria**	**Where to Look**
(a) Technical Competence		
Background, professional qualifications, education and training of the Respondent and its staff to fully understand and deal with the requirements of the project.	• Proven flood wall expertise, including design of an almost identical project (Coney Island Yard flood wall) • Key staff from Coney Island assigned to this project, including our project manager, resiliency advisor, QA/QC manager, lead structural engineer, lead civil designer, lead environmental engineer, lead cost estimator, and others • MM has extensive site-specific familiarity, including ongoing post-Sandy work on PVSC Administration Building • In-house, locally based resources covering all required disciplines and with appropriate experience, education, and other credentials • Extensive post-Sandy experience (60+ resiliency projects totaling $2B+) • Project manager and resiliency advisor have presented at 7 technical conferences on resiliency in urban environments • Authors of recent 40-page resiliency criteria guide • Proposed project manager is a certified Structural Engineer	• Key Personnel • Similar Experience • PVSC/Public Agency Experience
The Respondent's qualifications specifically pertaining to the scope of work outlined in this RFQ/RFP.	• No other competitor can offer virtually identical work on a flood wall of this size • "Lessons learned" on Coney Island – not "over-designing" can save time/money • Modeling expertise	• Project Approach and Schedule • Similar Experience
The Respondent's execution of the requirements and procedures as set forth with the RFQ/RFP.	• Proposal contains all items listed and formatted according to instructions on Page 30 of RFP	• Entire proposal
Geographical location of the Respondent's offices and key personnel.	• Key staff, including PM and Assistant PM, are NJ residents, with support from other locally based staff in NJ/NY metro area • JV project office will be in Newark, NJ – just 2.7 miles from PVSC • JV firms also have offices in Iselin and NYC	• Key Personnel • Similar Experience
(b) Experience		
The Respondent's familiarity with the work, requirements, and procedures of PVSC, including if applicable, PVSC's prior experiences with the Respondent.	• JV members have specific experience with this type of work from previous flood wall design projects, as well as knowledge of PVSC requirements and procedures from extensive experience at PVSC • MM has first-hand experience using PVSC's systems, including PM Web	• PVSC/Public Agency Experience
The Respondent's prior experience with Public Entities and/or Governmental Agencies.	• Both JV firms specialize in design of infrastructure for public agencies • 70% of STV's workload is for public agencies • More than 55% of MM's workload is for public agencies	• PVSC/Public Agency Experience • Similar Experience

SUMMARY RESPONSE TO EVALUATION CRITERIA		
Evaluation Criteria	**How Team Meets Criteria**	**Where to Look**
The ability of the Respondent to demonstrate its experience (and the experience of its staff) with the design of Flood Wall facilities. The Respondent shall have, at a minimum, 10 years of prior experience with the design of flood wall facilities.	STV/MM's work on Coney Island and many other flood wall/barrier projects in response to Hurricane Sandy (PATH, Amtrak, Holland & Lincoln Tunnels, Con Edison, WTC, MBTA, VA, Mantoloking, MCUA Edison)	• Similar Experience
The Respondent must demonstrate a verifiable history of successful projects, similar in size and scope to that proposed. No less than 3 references, with current contact information, shall be provided for relevant projects that have been completed in the last 10 years.	Relevant projects similar in size and scope include: • Coney Island Yard Flood Wall • PANYNJ PATH projects involving flood walls/barrier • Mantoloking Sea Wall • MCUA Edison Pump Station Flood Wall	• Similar Experience
(c) Project Approach/Schedule		
The Respondent's proposed technical approach to meet the requirements and objectives of the RFQ/RFP.	• STV/MM will optimize the hydraulic wave analysis to reduce demands on the wall and provide an accurate factor of safety • Alternate design scheme using sheet-pile walls can be used for a majority of the site, reducing cost, space, and easement issues • The current pile-supported concrete wall scheme can be optimized throughout perimeter if PVSC prefers this concept (and will be required in breaking wave/barge impact zones regardless). • Acoustic/aesthetic treatment can be provided, since the wall abuts several publicly visible areas • STV/MM is familiar with large-scale flood gates, and can provide several options to meet desired strength and operability requirements • Understanding that safety of PVSC staff is of paramount concern and to meet code requirements, STV/MM will provide options for safe ingress/egress, both prior to and during storm events • We provide a list of drawings and specifications as an appendix to Project Approach and Schedule.	• Project Approach and Schedule
The Respondent's proposed schedules, drawing list, & outline specifications.	• STV/MM is aware of the overall timing of PVSC's 4-project resiliency program and prepared to develop the Supplemental Report to Conceptual Design within the first 2 months of NTP • We will complete design and seek permits to allow a Fall 2018 bid advertisement • We envision a construction start date of January 1, 2019 • We believe the 26-month construction schedule can be shortened with an alternate wall design (Although perimeter wall completion must be coordinated with the pump station/power plant/collection system projects, a shortened construction period reduced costs.)	• Project Approach and Schedule • Appendix • Drawing List and Specs
The Respondent's summary of Total Manday Estimate (Attachment G).	• In addition to completing Attachment G/man-day estimates per task, we have identified potential additional work in separate categories for PVSC's consideration	• Man-Day Estimate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PROJECT APPROACH AND SCHEDULE

Project Understanding

The Passaic Valley Sewerage Commission (PVSC) operates a 330-mgd wastewater treatment plant – the largest such facility in New Jersey and among the largest nationwide, serving 1.4 million residents in 48 communities. Due to PVSC's vital role in protecting the environment and providing a fundamental service that its customers rely upon, it must remain operational, 24/7 – a reality underscored by the extensive damage to the plant from Hurricane Sandy in 2012. To mitigate similar destruction, PVSC is undertaking an ambitious resiliency program, which includes building a protective wall around the facility.

The proposed 12,590-foot, 2-zone floodwall will provide perimeter protection for the entire 140+ acre PVSC regional wastewater treatment facility located at 600 Wilson Avenue in Newark, New Jersey. The NJDEP has identified this facility as a critical infrastructure component and recommended that it be protected from future "Sandy-like" surge events.

While the floodwall project has advanced well beyond a concept phase, there are still many key decisions and details to address, develop, and complete. The RFP documents include studies of the existing utility locations, topography, hydraulics, and project coordination, which will all be considered and validated by the final designers. The designers will work closely with PVSC, the community, code officials, contractors, FEMA, other resiliency project teams, and other stakeholders, using 2D drawings and 3D visualizations, to explain and coordinate the project development throughout the life of the design and construction process.

In addition to the wall and gates, the joint-venture team of STV and Mott MacDonald (STV/MM) acknowledges the additional scope items listed in Section 8 of the Basis of Design Report, as well as the Section 11 known conflicts. Many of these topics will be covered in detail in the upcoming approach portion of this section as examples of our knowledge of similar floodwall projects and how we will work together with PVSC to complete the design.

Key Challenges

Based on site visits, as well as our familiarity with the site and PVSC, STV/MM anticipates that there are 6 key challenges for this floodwall project:

- Schedule
- Cost Minimization
- Site Logistics/Construction Phasing
- Safety
- Maintenance of Plant Operations (MOPO)
- FEMA Reimbursable

These were the same challenges for a nearly identical project that our team just completed for New York City Transit's Coney Island Rail Yard (CIY). In several sections, we have highlighted the work performed during the 2-year design and construction at CIY, not because we intend to simply regurgitate the design, but because all of the knowledge gained will be brought to bear on the PVSC project via the same key individuals.

Schedule: While some PVSC assets are protected today by "muscle walls," there is a need to get the permanent protection in place prior to the next design storm. The project schedule relates directly to dollars and disruption, and our knowledge from CIY will allow our design team to quickly present options to PVSC and get the construction documents underway, even if they deviate from what was presented in the RFP. In addition, our alternate wall design

Our approach is based on site visits and our familiarity with the site and PVSC.

approach will save a considerable amount of construction time, both in installation and permitting. While we recognize that there are four separate projects as part of the Sandy mitigation effort, and that these four projects need to be completed simultaneously, completing the wall in a shorter timeframe should result in cost savings to PVSC.

Cost Minimization: The perimeter floodwall is being substantially funded by FEMA through the Hazard Mitigation Grant Program. And although the portion funded by PVSC is minimal, cost savings of any kind is always positive. Upon review of the conceptual drawings, we believe another approach to the wall design could result in significant savings to the overall project. These alternate approaches will be presented to PVSC for acceptance before initiating final design (see discussion regarding geotechnical and perimeter wall design under Task 3).

Site Logistics: We must be cognizant of site issues as we prepare the design, including the close proximity of the wall area to underground utilities, property lines, and new drainage collection systems. To minimize the construction time, it is critical that design solutions are practical, flexible, and constructible, given existing constraints, both above and below grade. The data-gathering and survey phase must identify all obstacles, including those on the "known conflict list" and any others, so that alternate construction details can be provided at below-grade utilities or areas where the use of standard construction equipment is not possible. These situations occurred dozens of times on the CIY perimeter, and our team is very familiar with installations tight to adjacent properties, over utilities, and adjacent to new drainage collection systems.

Safety: PVSC staff and representatives of the design team will be present through many days of active construction conditions. Extensive communication is the key to safety. To that end, our team has supported PVSC for many years during construction projects to keep the Commission aware of construction activities, both ongoing and in the future, so that PVSC employees and workers are knowledgeable about any potential hazards. Of equal importance is the safety of PVSC's staff after the perimeter wall is built. We will review with PVSC several ideas regarding ingress and egress at the various door and gate openings, with an emphasis on security and safety.

MOPO: A perimeter wall for an urban property is very different than an isolated suburban river barrier. This project will need to maintain large volumes of truck and barge traffic, not impede plant operations, consider adjacent property issues, allow for egress for emergency vehicles, comply with code egress requirements, and be coordinated with the other simultaneous storm-hardening projects. The CIY project tackled all of the same issues with detailed phasing drawings, discussions, and 3D simulations, which were used as tools to satisfy a multitude of internal and external stakeholders.

Maximizing FEMA Reimbursables: From CIY and the current resiliency projects at PVSC, our team is very familiar with the requisite design team time reviews, payment audits, project recordkeeping, and use of American-made products that are required to maximize reimbursement for this project.

In summary, STV/MM is very familiar with all aspects needed to complete a project of this type and magnitude. Furthermore, our proposed team is not only working on a current PVSC resiliency/rehabilitation project, but just completed the design of several urban site floodwalls, including one for the Middlesex County Utilities Authority and the other for CIY of identical size and complexity.

Approach

Task 1: Review and Compilation of Data

STV/MM will conduct a thorough field investigation, review, and assessment to verify and confirm documentation supplied by PVSC. Our team will review and field-verify the information provided by PVSC, including, but not limited to:

- Plans and specifications for prior construction contracts
- Shop drawing records
- Operation and maintenance records
- Geotechnical and environmental boring data
- Hydraulic load calculations
- Completeness of above- and below-grade surveys

In addition, STV/MM has already reviewed the conceptual design report prepared for the overall flood control project. Initially, we have identified several items as areas where additional efforts could be required, including supplemental geotechnical investigations along with perimeter alignment of the wall to aid in optimizing the wall design; limited additional survey especially to locate buried utilities; limited hydraulic modeling; and pile installation inspection during construction. It is understood that PVSC does not want work on the design of the facility to proceed until PVSC has accepted any changes that may be proposed by the design team.

Task 2: Project Work Plan

No project as complex as this one can succeed without clear goals, thorough planning, and decisive leadership, while maintaining responsiveness and flexibility. We are committed to the delivery of an exceptional product within the approved schedule.

STV/MM will develop a project work plan for the project, including a schedule and proposed project reporting.

Schedule Development and Control

An overall schedule has been developed for this technical proposal and attached to this section. The schedule will be updated on a monthly basis and submitted along with the payment application. The schedule will be submitted to the Program Manager in Microsoft Project or Primavera P6. STV/MM recognizes that schedule control is an essential element for the successful execution of this project. The schedule will serve as the baseline by which the team's progress will be measured and tracked. Actual progress and resource usage will be continuously reviewed, monitored, and recorded against planned progress to identify deviations from the approved plan, so that we can recommend immediate corrective action, if required. As the project progresses to construction, detailed schedules will be developed and approved in accordance with the project specifications, which will require cost and resource loading. All activities should be resource-loaded (quantity of material to be installed, and manpower requirements, such as crews, major equipment, and crew production rates).

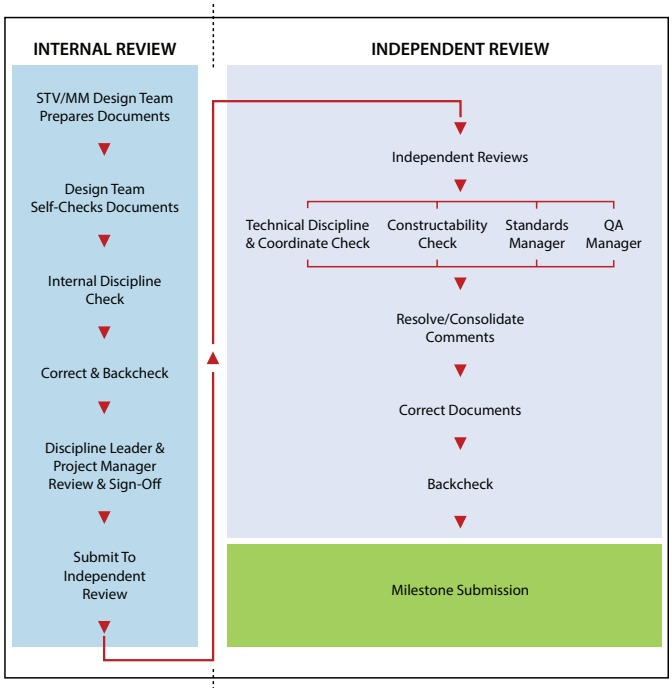
STV/MM understands that the project schedule, for both design and construction, will be thoroughly coordinated at the very early stages of the project. Issues, such as proposed phasing of the work, local approvals, and separate contractor coordination, must all be addressed in order to logically approach the execution of the project. STV/MM has worked through these very same issues on a wide variety of resiliency/flood control projects for numerous clients, and we are confident in our experience and approach.

The project work plan will comply with the requirements of the Program Management Plan, Program Procedures Manual, and Safety Manual.

Quality Plan

The work plan will also include a project-specific Quality Plan, which will include quality assurance/quality control (QA/QC) approach and methodologies to be used to verify that required levels of quality are maintained during the design.

We will implement a comprehensive quality assurance and control (QA/QC) program to ensure that all project activities are carried out in a planned, controlled, orderly and correct manner. The management approach places great emphasis upon staff expertise and experience, the quality of service, the reliability and functional adequacy of all of our deliverables and client satisfaction.



We maintain an in-house Quality Assurance Program that adheres to ISO 9001. This program will be modified to meet the specific needs of this assignment and to comply with PVSC's requirements.

The QA/QC program will provide the means to overview, inspect, and document any project deficiencies and follow procedures to resolve discrepancies and continue to track them until they are resolved.

Task 3: Design Services

Survey

STV/MM will utilize the 2015 Boswell survey data to establish an overall background map of the PVSC site. The Boswell survey is based on an aerial topographic survey conducted by Axis GeoSpatial at a scale of 1"= 50'. We will rely upon receiving the DEM (Digital Elevation Model) to enable us to work in AutoCAD 3D, as well as prepare animation and visualization for use in stakeholder meetings. As the aerial mapping was prepared at a 1"=50' scale, we are concerned about the level of detail and accuracy, especially with regard to the wall construction so close to underground utilities and property lines. As shown on the AECOM/HDR conceptual design, there are numerous above-ground and below-ground structures that are unnamed and not well defined, which will be impacted by the wall construction. We are relying upon additional survey data being available from within the Boswell survey (possibly layers turned off) to provide the needed information to generate a detailed design.

Should the Boswell survey need to be supplemented to assist with the final design, we propose to undertake a detailed existing conditions and field topographic survey to map an approximate 100' wide band, 50' on each side of the proposed floodwall alignments, for a combined length of 12,600 lf. The survey will include the locations and elevations of structures, walls, fences, pavement, curbs, sidewalk, utility poles, trees/vegetation, above-ground utilities, mark-outs of subsurface utilities, types of ground cover, ditches/swales/grade breaks, etc. The locations and inverts of sanitary and storm sewer pipes crossing the alignment will be measured to assist in determining the location and depth of the pipes. We assume we will have free and clear access to the project site for the field survey and that we will have the assistance of PVSC staff, if necessary, to locate and open manhole covers, vaults, and other utilities. We have identified in our cost proposal a separate budget for additional surveying if required.

Available record plans or as-built drawings will be reviewed and utilized to supplement the ground survey with underground information on buried structures, pipelines, electrical duct banks and other utilities. All borings conducted by STV/MM will also be field located and tied into the NJ State Plane Coordinate System.

As noted in the RFP and as confirmed in Clarification No. 1, a boundary survey has been conducted by Boswell Engineering to map the 41 separate lots that comprise the PVSC facility at Wilson Avenue and Doremus Avenue in Newark. STV/MM will rely upon receiving the Outbound Survey in an AutoCAD format for use on the final drawings. It is anticipated that the Outbound Survey will enable the design to show all field measurements to locate existing property corners (pins, monument, etc.) and other extrinsic evidence (building corners, pipe runs, railroad tracks) sufficient to limit the boundaries of disturbance for the contractor.

STV/MM will investigate the believed conflict of the proposed flood wall and the PVSC pumping facility near sta. 1+50 to determine the extent of the flood wall encroachment upon City of Newark right-of-way (Doremus Avenue). An easement from the City of Newark does not seem possible; instead, a partial vacation of the ROW may be needed. STV/MM will prepare an appropriate plan and description for review by the City of Newark.

STV/MM has not included the need to prepare any temporary or permanent easements for either the construction of the flood wall or for permanent relocation of utilities. Should the detailed design reveal the need to obtain such easements, all such situations will be brought to the attention of the Program Manager and PVSC.

The field work and mapping will be performed under the supervision of a New Jersey licensed Land Surveyor. Survey files will be prepared digitally in AutoCAD Civil3D format, at a scale of 1"=10' or 1" = 20', as appropriate, and will be referenced to the New Jersey State Plane Coordinate System (NAD83) and the North American Vertical Datum of 1988 (NAVD88).

Geotechnical

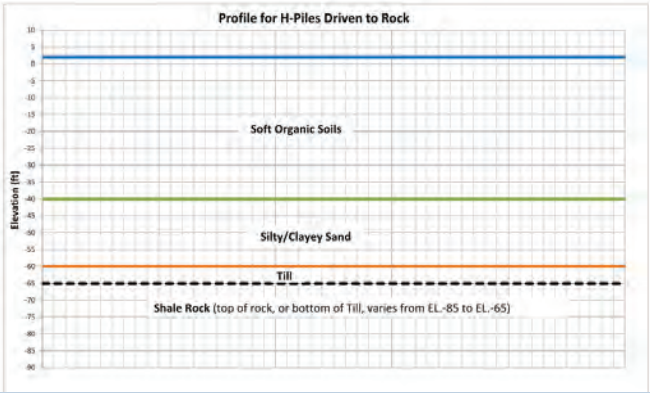
STV/MM recognizes that a personal understanding of the specific site geology is the keystone of successful design, construction, and performance of the proposed flood wall and support structures, which are intended to protect PVSC's critical assets. In addition, a sound understanding of the site geology may assist in optimizing the components of the flood wall system to produce the most cost-effective solution, which still addresses each of the performance needs of PVSC for its flood wall and support systems.

We understand previous site investigations were completed by Warren George in 1978, and AECOM completed a limited investigation in May 2016, which was provided to prospective consultants in a June 2016 report supplied under Clarification 1. Upon review of historic and recent logs, we recognize that subsurface conditions reflect similar conditions for several sites neighboring the PVSC facility, where our team has prior experience. From the site-specific logs provided, a generalized geologic cross-section consists of 5 to 12 feet of fill material, underlain by 14 to 20 feet of tidal marsh soil, 30 to 35 feet of lacustrine (silt and clay) deposits, and 8 to 10 feet of glacial till. Bedrock lies at a depth in the range of 75 feet to approximately 85 feet below ground surface in the area of the proposed power generation building and is comprised of shale of the Passaic Formation (previously known as the Brunswick Formation) of the late Triassic to Early Jurassic systems. This formation is comprised of shale, siltstone, and mudstone with some interbedded conglomerate.

It is noted that groundwater was encountered at approximately 5 feet below grade in most borings, which corresponds to a depth of approximately 1.5 feet above mean sea level, which is represented closely by Newark Bay, east of the site. The recent June 16, 2016 Geotechnical Memorandum supplied as part of Clarification 1 tends to indicate a similar cross-section.

Supplemental Site Investigation

While reviewing the BODR, our team recognized that preliminary investigations to determine proposed flood wall foundation system and sheet-pile wall are based on "generalized" cross-sections of site soils. While this method of analysis does tend to follow the standard practice, a



Source: Basis of Design Report (May 16, 2016), Appendix B – Geotechnical Analysis, Attachment A, p. 82

generalization of the site's cross-section may be inefficient, since the site's depth to rock and depth/thickness of clay is not at a consistent elevation across the site. In fact, the depth to the low-permeability clay layer where the sheeting will terminate into and which is expected to create the impermeable barrier, along with depth to rock where the current proposed micropile or H-piles would be founded, both tend to dip as one travels west away from the Bay and toward Doremus Avenue.

To illustrate the significance of this variation, the profile prepared by AECOM/HDR showing a generalized, linear cross-section used for preliminary design is shown on the next page. To provide comparison, for illustrative purposes, we inputted data for each of the historic borings for both the West and East Ring sites to create a three-dimensional model, showing the non-linearity of the ground conditions and how the subsurface may actually exist using available data.

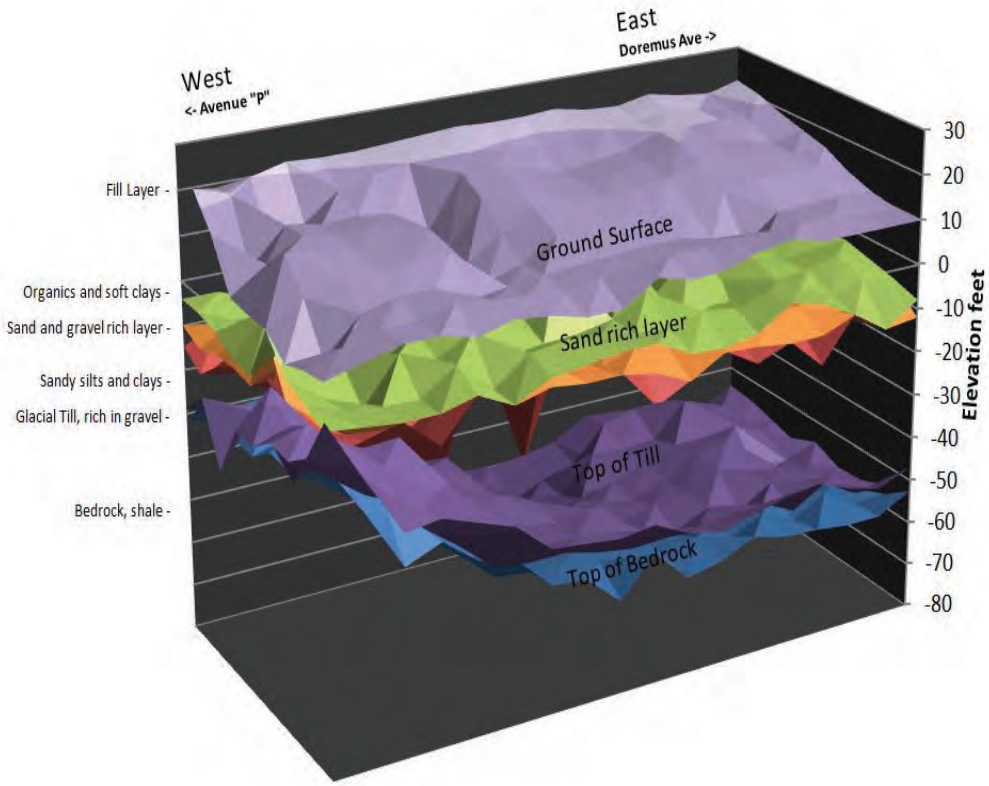
By comparative observation of both figures, the team believes that modeling the subsurface with a non-linear approach will help produce a more efficient foundation design and lead to improved constructability and cost estimating for lengths of foundations and sheet piling for cutoff. As part of our team's strategy, we intend to utilize the existing historic borings and recently conducted borings by AECOM for the site, as well as undertake our own limited investigation. This additional investigation will be focused on supplementing our understanding of the site from a foundation and seepage perspective, as well as establishing the corrosivity potential of the site. Since the sheet piles and foundation elements will be embedded in the upper fill material and are expected to have a minimum 50-year design life, establishing and determining the need for sacrificial thickness of steel for structural elements will be critical in maintaining long-term performance of the system.

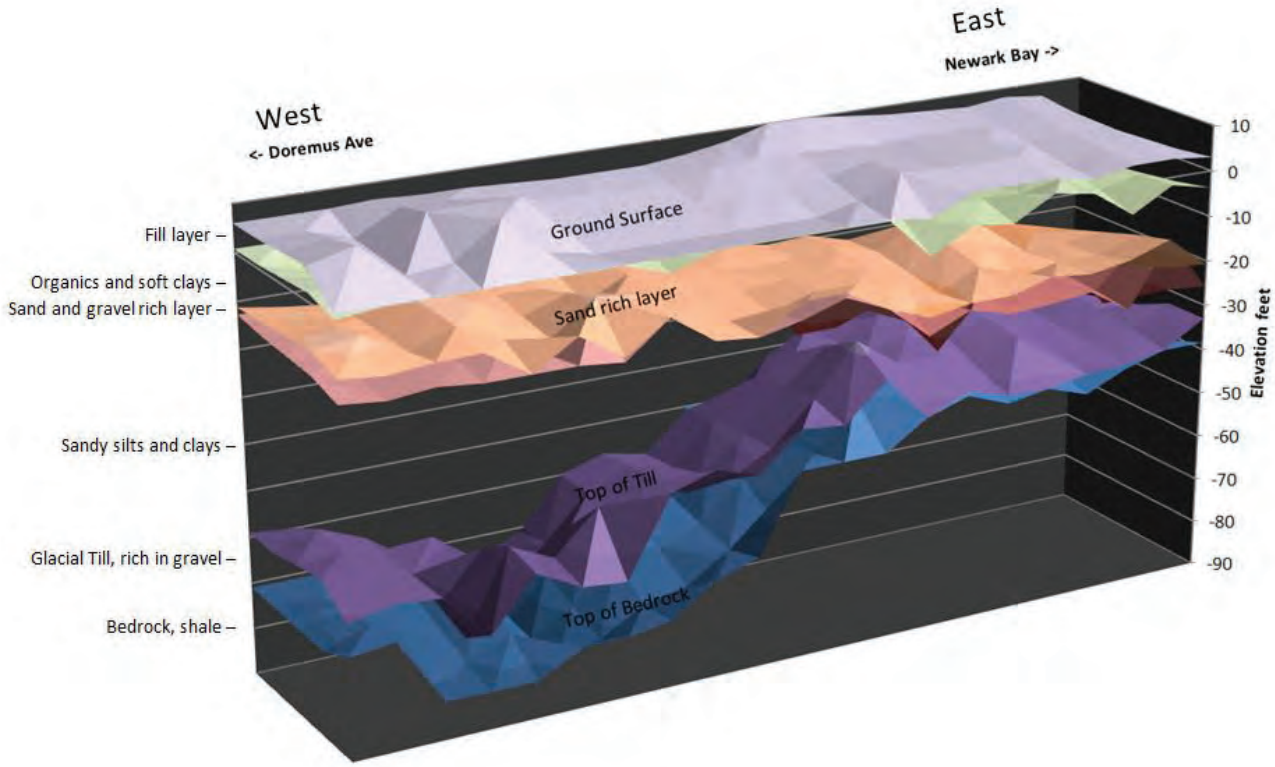
Reviewing AECOM's June 2016 report, it appears that permeability testing to determine seepage rates was only performed in two borings (B-8 and B-12) at 10 and 20 to 25-foot depths. While one of the borings helps to establish the permeability of the berm soils, both borings are located along the perimeter of only the west site. In addition, the permeability results indicate a 2 to 3 magnitudes-of-scale difference between each test, which could cause a substantial difference in the amount of water to be pumped out by emergency pump stations within the facility. Therefore, we emphasize the need for additional borings and testing for the east site and at several other locations. Due to our concern, we have identified in our cost proposal a separate budget for additional boring and soil testing, which will be conducted if approved by PVSC.

Assuming the additional geotechnical work is approved, we will retain and coordinate with a licensed drilling subcontractor to advance geotechnical soil borings to a depth of 100 feet each, or top of rock, using truck-mounted drilling equipment at the site. At this time, a total of 12 borings are proposed, 6 borings each for both east and west sites. Borings would be hand-cleared in the upper 5 feet to avoid shallow utilities and would then be sampled at 5-foot intervals to termination depth. As rock is encountered, a 10-foot rock core would be taken in each bore to determine rock quality and rock strength should the currently proposed rock-socketed micropiles be evaluated and selected as the most efficient foundation system. During the investigation, representative soil samples will be taken in accordance with American Society of Testing Materials (ASTM) Standard D1586 – Standard Test Method for Standard Penetration Testing and Split-Barrel Sampling of Soils. Samples taken during soil borings will be used for laboratory testing to characterize the materials and provide recommendations as they relate to constructability of the foundation system.

STV/MM will coordinate with an accredited geotechnical laboratory to perform the following engineering property and index tests on select representative samples:

- ASTM D422: Particle-Size Analysis/ASTM D4318: Atterberg Limits – Material classification testing
- ASTM D2435: Odometer Consolidating Testing – Utilized to determine long-term settlement and performance of the wall and foundation systems for ancillary equipment (mechanical/control)
- ASTM D5084: In-Situ Permeability Testing – Will be used to determine permeability of material in its natural site condition; essential for accurate seepage analysis modeling
- ASTM D2434: Laboratory Permeability Testing – Used to provide detailed hydraulic conductivity information from controlled lab environment; will supplement in-situ testing





Likely Ground Surface Profile for West Ring Flood Wall Based on Historic 1978 Warren George Borings and AECOM June 2016 Borings

- ASTM D2850: Triaxial Compression – Will be used to determine shear strength of soils for design of foundations and sheet pile wall embedment for various loading conditions
- ASTM G51: Determination of Corrosion Potential – Used to determine sacrificial thickness for steel elements

All work will be overseen by an STV/MM geotechnical representative under the direction of a Professional Engineer licensed in the State of New Jersey. Borings locations will be verified in the field using a Trimble GPS unit and with respect to existing features (buildings, tanks, fire hydrants, etc). STV/MM's drilling subcontractor estimates that the soil borings will be completed over the course of 12 days, assuming that 8 hours of uninterrupted drilling work are allowed each day, and will place a "one-call" utility mark-out request prior to commencement of work. Environmental sampling or disposal of impacted materials is not included in our geotechnical investigation.

Foundation and Flood Wall Considerations

From a foundations and flood wall perspective, we understand the current design concept presented includes a micropile or H-pile-supported exposed concrete flood wall (T-wall), along with a driven-steel sheet pile embedded within the concrete flood wall to provide seepage cutoff. In certain locations, such as around the West Ring along Nutley Street, the concept is modified to tie into the existing earthen berm or be soil-founded, such as above the utility tunnel along Doremus Avenue.

Pending the results of our site investigation program and in concert with available information from others, it is our team's desire to optimize the foundation and flood wall system to rely primarily on the sheet-pile wall for both cutoff and as a structural element to withstand hydrostatic loads. It is anticipated that the sheet-pile wall will only be installed to a depth adequate to support cutoff and prevent excessive movement during flood conditions. Should additional structural capacity be required, king piles, or a combi-wall system of sheet piles with pipe piles, may be used.

During design verification and final design, one key criterion will be the overall stability of the proposed wall system — specifically, rotation and deflection of the T-wall or sheet pile. While the current T-wall concept with battered micropiles will provide a more rigid flood wall foundation than sheet piling alone, the relationship between permissible level of deflection and economy of design should be considered. With less rigidity, the sheet-pile-only alternative would allow more deflection above the ground surface, but would provide significant upfront savings in cost of construction. Where additional rigidity is required, king piles can be added to supplement the wall stiffness and achieve the desired deflection control. While it would add cost to the sheet pile option, the combined total will still be significantly cheaper than a concrete T-wall alternative. The embedment depth of the sheeting and/or king piles would be calibrated to reduce the rotation and deflection at the exposed portion of the wall to an acceptable limit.

The available cost savings of a sheet-pile wall were realized during MM's experience with a related flood wall project to protect Middlesex County Utility Authority's Edison Pump Station. Similar to the PVSC project, a pile-supported concrete T-wall was proposed at the conceptual design stage, and replaced during final design with a stand-alone sheet-pile section, allowing for a greater overall serviceability limit for total wall deformation.

The effects of deflection requirements and relative advantages/disadvantages of each wall type are discussed further in the "Perimeter Wall Design" section; notwithstanding, we intend to evaluate the various configurations and present the various options to PVSC to determine its preference related to constructability, construction cost, and maintenance cost of both systems. The systems will be evaluated to make sure each meets similar performance criteria in accordance with BODR design criteria as the existing proposed design concept.

Seepage and Levee Stability

With respect to earthen embankment (levee) stability and seepage analyses, STV/MM understands the criticality of this element of work, since a well designed superstructure and all related improvements are only as successful as the performance of the wall to limit water ingress into the facility. In this case, the preferential pathway for water is through a conduit of potential seepage below the constructed wall, through the existing tunnel and utility compartments, and through the earthen embankment where the perimeter flood wall will meet existing grade. After conducting field and laboratory testing to establish the hydraulic permittivity, permeability, and transmissivity of the soils present at the site, we will conduct a detailed seepage analysis for multiple loading conditions, including end of construction, steady-state seepage, full flood stage rapid drawdown, and seismic loading with groundwater using the commercially available Seep/W and Slope/W 2012 programs. Pending the results of our site investigation, we may consider a non-linear geologic profile during analyses to determine the seepage under different portions of the site. We propose to confur with PVSC and the Program Manager to understand the tolerable seepage compared to the cost of placing any pump station or water

LOCATION	BASE FLOOD ELEVATION (ft-NAVD88)	SEA LEVEL RISE (ft)	FREEBOARD (ft)	DESIGN FLOOD ELEVATION (ft-NAVD88)	TOP OF WALL (ft-NAVD88)
EAST WALL	14.1	2.6	2.0	18.7 21.0(1)	19.0 21.0(1)
WEST WALL	14.1	2.6	2.0	18.7	19.0

(1) Elevation incorporates consideration for wave run-up and overtopping.

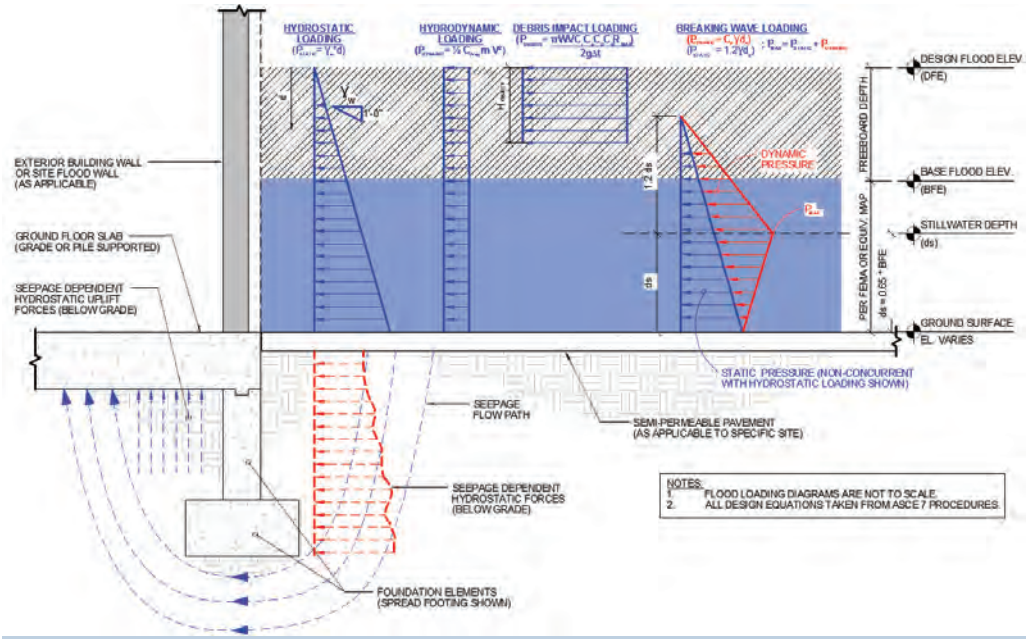
evacuation measures within the confines of the flood wall. By possibly implementing a performance-based standard in consultation with PVSC and the Program Manager, the cost and time for construction, such as shortened sheet-pile lengths, may be reduced.

The existence of numerous utility corridors and underground site features adds a unique element to the evaluation of seepage and cutoff for the proposed wall. Since sheet piles may not be driven through the utilities or underground features, gaps may exist where a preferential pathway may exist for seepage. From MM's experience on Edison Pump Station, where utilities can be taken out of service, the removal of the service, installation of sheet piles, construction of a penetration through the final wall, and reinstatement of the service may be coordinated during design and construction phase. However, where temporary suspension of the service is not possible or if an underground obstruction such as the tunnel exists, some seepage may occur, as bridged features may not be fully watertight to seal. Where a temporary suspension of the service is not possible, or if an underground obstruction, such as the tunnel, exists, a below-grade jet grout curtain can be utilized to seal against the obstruction and address any seepage concerns. Throughout the design and preparation of contract documents, the anticipated quantity of seepage water will be communicated across the project team, so that site drainage and pumping considerations can be taken into account to facilitate serviceable conditions within the flood wall in the event of the design flood condition.

We anticipate completing all planned work in accordance with the design criteria presented in the May 16, 2016 BODR.

Design Criteria

Per the RFP, the base flood elevation (BFE) throughout the site will be based on the FEMA 500-year storm event with a 0.2% annual chance of occurrence. The design flood elevation (DFE), to which protective measures will be employed, incorporates additional depth to account for future sea level rise, wave run-up, and general uncertainty in hydraulic calculations. This elevation will vary around the perimeter of the site between +21.0 and +19.0 NAVD88.



Typical Flood Loading Diagram

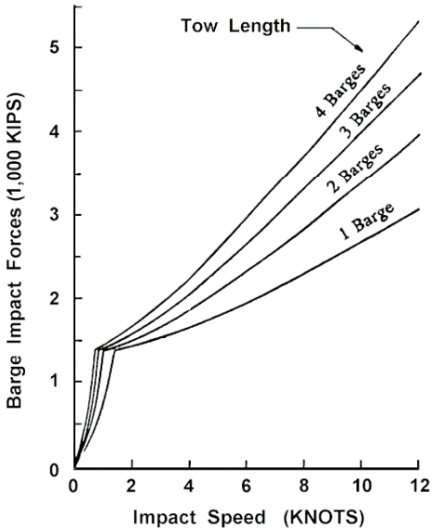


Figure C3.14.11-2—Typical Hopper Barge Impact Forces

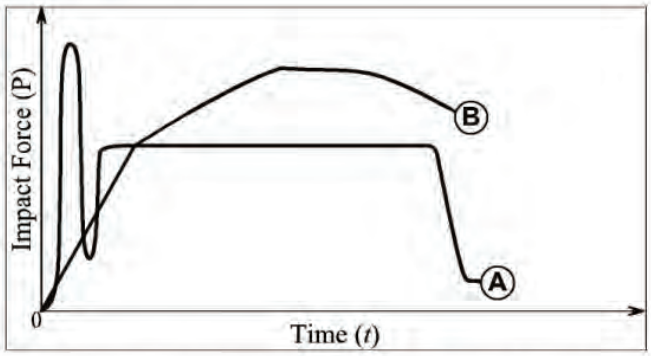


Figure 9: Comparison of Ship Impact Force Time Histories by Woisin (A), and recent research by Pedersen (B)

Table 2: Comparison of AASHTO & Eurocode Ship Impact Forces

Ship Description	Eurocode Displacement Tonnage (tons)	Eurocode Impact Force (kips)	AASHTO Impact Force (kips)
Small Ship	3,000	6,750	6,900
Medium Ship	10,000	18,000	12,300
Large Ship	40,000	54,000	25,800
Very Large Ship	100,000	103,500	41,300

Vessel collision impact magnitudes and time histories

The structural loading for design of the protection systems will incorporate all of the hydrostatic, hydrodynamic, and debris impact associated with the design level flood. The eastern portion of the wall adjacent to Newark Bay requires the most robust system, as it will potentially be exposed to both breaking wave loads and high-intensity vessel collision forces. The RFP provides an in-depth analysis of the near-shore waves that could develop, with a maximum wave height of approximately 3.0 ft. STV/MM will validate this analysis during the design phase in an effort to reduce the demand on the wall and provide an efficient, yet reliable design. (See the following "Wave Modeling" section for an in-depth discussion of the hydraulic analysis that will be performed.)

Additionally, the RFP provides preliminary vessel collision loads of 200 and 400 kips for unusual and extreme load cases, respectively. As the governing code does not explicitly require consideration of these loads, their inclusion in the final design will be discussed with PVSC to determine whether they pose a significant risk to the wall. Should they be included, the impact magnitudes will be refined, considering typical vessel sizes and traveling velocities within Newark Bay, and utilized within a non-linear, dynamic wall analysis. This type of analysis will produce the most realistic representation of the structure/vessel interaction and yield the most efficient wall design.

For the majority of the wall perimeter, the design impact loads will be based on "normal" floating debris objects rather than vessel collisions. The governing codes, most notably ASCE 7, do not explicitly state the calculation methods to be used for debris impact, and instead provide guidance through the commentary and allow for any method that is reliably based on engineering mechanics. The referenced method in ASCE uses an impulse-momentum approach with an assumed 1,000-lb. object and 0.03-second duration of impact. Comparatively, the forces calculated using this method will be several times higher than the 0.50 kips/ft cited in the RFP, though localized over a relatively small width. STV/MM will investigate the

relative magnitude of the code and RFP loads to verify that there is an appropriate factor of safety against failure.

Wave Modeling

AECOM+HDR (the Program Manager) has developed the conceptual flood wall design around the PVSC wastewater treatment plant. The conceptual perimeter flood wall elevations and structural design were based on the coastal engineering analysis presented in the report, "Construction of a Perimeter Floodwall Basis of Design Report – Final Conceptual Design," dated May 16, 2016. The east flood wall system transitions from 21' NAVD on the east side to 20' and finally to 19' NAVD as the wall transitions along the west side. The west flood wall is designed to have a constant elevation of 19' NAVD.

STV/MM's engineers will perform an independent review of the analysis procedure and review assumptions used by the Program Management team and conduct their own coastal engineering analysis. The goal of this review will be to achieve potential cost reduction in the floodwall system design by developing a detailed understanding of hydrodynamic loads acting on the wall, which could reduce structural design requirements of the flood wall. The elevation of the flood wall will be as indicated in the RFP/BODR.

STV/MM will develop the appropriate design conditions for the wave modeling by reviewing the design water level, sea-level rise (SLR), uncertainty in water levels, and wind conditions. The total water level controls the hydrodynamic loads; reducing the design water level will reduce the resulting loads. We will develop an understanding of the storm conditions (base flood elevation and wind conditions) at the site through a review of available data, such as FEMA flood maps, North Atlantic Coast Comprehensive Study (NACCS) Report, and similar data. The SLR and uncertainty in storm surge used by Program Management team will be reviewed against the best science available (e.g., recent Intergovernmental Panel on Climate Change projections result in up to 1 foot less in SLR projects than utilized by PM). It should be noted that the wave heights computed at the east flood wall system were used for computing wave loads on the west flood wall system as well, which seems a conservative assumption.

Upon establishing appropriate design conditions, the wave modeling grid will be developed using the existing FEMA storm surge grid and will be updated to include new topography and LIDAR data to accurately capture the upland details in the grid. Wind waves will be generated using a wind wave generation and transformation model, such as SWAN (or similar) for the 100-year and 500-year conditions from the directions of impact. The waves will be transformed over land to generate a spatial map of appropriate wave heights along the east and west flood wall system. The overland computation is important to determine the reduction in waves that impact the more western portions of the wall.

The wave heights along several cross-sections of both east and west flood wall systems will be used to compute the hydrostatic and dynamic wave loads on the wall using best practices in the Coastal Engineering Manual (CEM) and Minimum Design Loads for Building and Other Structures, Standard ASCE 7 guidance. Preliminary results from the Program Management team indicate that waves are negligible on the west wall and are a minor impact on the western portion of the east wall.

Though not guaranteed without undertaking this independent coastal engineering analysis, it is expected that potential cost savings can be achieved in the flood wall design by using wave heights modeled all along the flood walls rather than three select, conservative locations to compute wave loads.

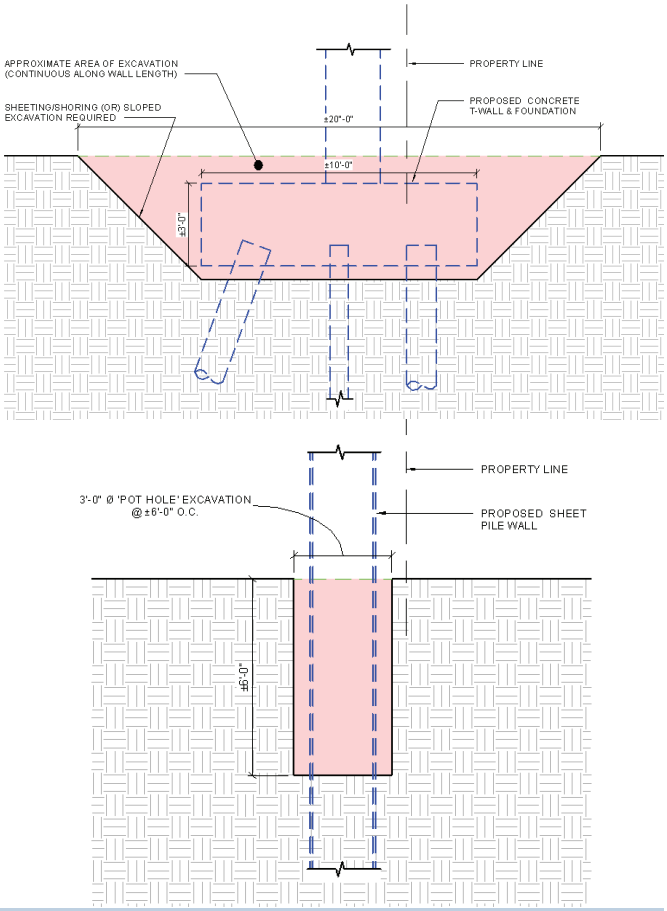
Perimeter Wall Design

As noted previously, the RFP identifies reinforced concrete T-walls supported on battered pile foundations for the vast majority of the perimeter protection. While these walls provide a robust level of strength and rigidity, there are several obvious drawbacks, including:

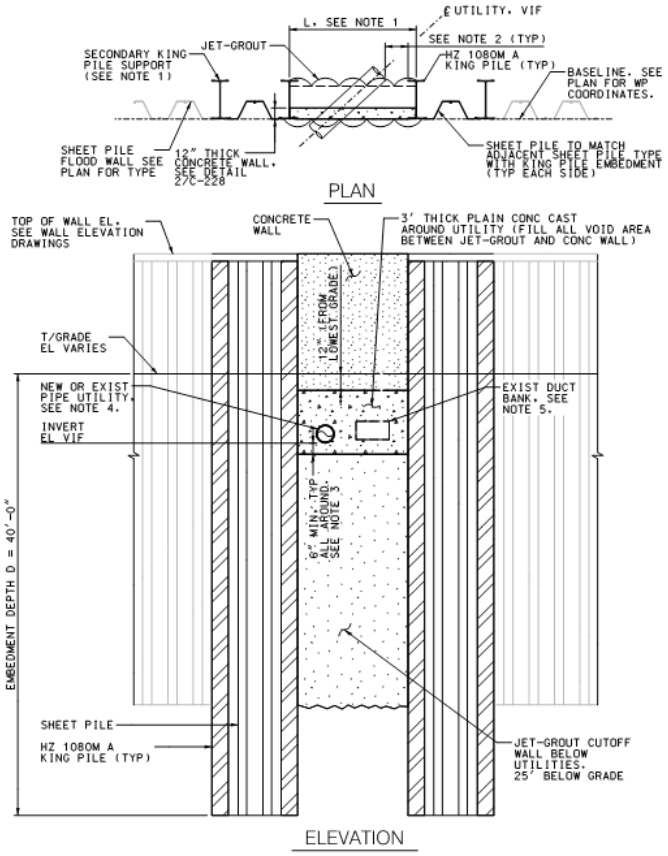
- High construction cost and duration
- Issues with property line infringement from cap and piles
- Significant excavation for pouring of pile cap
- Loss of facility below-grade space at the interior (utility/tree interference)
- Requirement for additional seepage cutoff wall type, such as sheet pile or grout curtain

T-walls will definitely be required in the breaking wave, barge impact, and gate operation zones, but they are generally overkill for the temporary and non-cyclic nature of the normal flood loading elsewhere on the perimeter. Outside this area, an alternative utilizing sheet piles in conjunction with king piles, as needed, for specific structural rigidity to create a combi-wall system, will only be installed to a depth adequate to support cutoff and prevent excessive movement during flood conditions.

The use of sheet piles, which are required for seepage cutoff regardless, significantly reduces the overall construction cost and installation time of the project. A concrete T-wall requires several different construction operations to take place sequentially, while a sheet pile represents a single driving operation.



Comparison of Required Excavation between Wall Types



Typical Detail at Utility Crossing (Excerpted From Coney Island Yard Design Drawings)

T-Wall Installation Procedure

- Excavation / support of excavation for pile cap
- Micropile / H-pile pile driving
- Sheet pile driving (for seepage)
- Formwork installation
- Rebar installation
- Concrete placement

Sheet Pile Wall Installation Procedure

- Local "pot hole" excavations
- Sheet pile driving

In addition, the continuous perimeter excavation can be significantly reduced, requiring only local "pot hole"-type excavations to verify utility locations prior to driving rather than a continuous, wide trench.

Where utility crossing are necessary, segments of concrete wall spanning horizontally between driven king piles can be used, with a below-grade grout curtain to address seepage concerns.

Sheet pile walls have been successfully implemented as bulkhead walls and in several storm resiliency projects throughout the country. However, consideration must be given to the expected performance during a design event. The pile section can be sized to meet strength and stability requirements, but stringent deflection requirements, particularly with respect to grade-level movement and rotation, can lead to inefficient and cost-prohibitive designs. Under a 500-yr + 4.6' water level, it is reasonable to expect a 1" – 2" gap in front of the wall at the grade level for a correctly sized element. As this gap fills with water/bulk materials during a flood, the residual soil deformation will leave the above-grade portion of the wall out of plumb after the water has receded. The resulting work to realign some segments of the wall must be balanced with upfront construction costs when determining preferred wall type. Note that this is strictly a serviceability concern, and does not pose an increased risk of failure that would endanger the assets within the site.

For the eastern wall portions subject to breaking waves and/or vessel collision, a pile-supported wall will be required. Likewise, gate operation zones will utilize this

Rendered view of Coney Island Yard Sheet Pile Flood Wall Concept

WALL TYPE	ADVANTAGES	DISADVANTAGES	APPROXIMATE COST(1)
PILE SUPPORTED CONCRETE WALL	• Robust strength & stiffness	• Large upfront cost • Long installation time • Continuous, wide excavation required for pile cap • Property line infringement	±$10,500 per Linear ft
SHEET PILE WALL	• Reduced cost & material quantities • Faster installation • Reduced excavation • Reduced overall width	• Inadequate strength/stiffness for breaking waves or vessel collision loads • Possible zones of realignment required after extreme storm event • Poor aesthetic appearance without treatment	$3,000 - $5,000 per Linear ft (Sheet Pile Only) $6,000 - $7,500 per Linear ft (Sheet Pile + King Piles)

(1) Costs determined based on Coney Island Yard project and will vary based on site specific conditions. Costs do not include escalation, softcost, contingencies, or architectural treatments.

wall configuration adjacent to the opening to resist the concentrated forces transferred to the pier and to reduce deflections at the gate/support interface. Rather than the T-wall configuration cited in the RFP, we recommend the use of an "L-Wall" with vertically oriented pilings on the outside layer. This would avoid the easements necessary to accommodate the protruding cap edge and the below-grade extent of the battered piles. As previously mentioned, the final design of the collision wall can be optimized utilizing a non-linear dynamic analysis that takes advantage of energy dissipation to reduce wall demands.

The pros and cons of each wall type (noted above) will be discussed with PVSC and the project team to determine the final wall design based on required performance level and acceptable cost and duration of construction. Regardless of the inherent drawbacks, STV/MM can certainly provide the pile-supported concrete wall, should PVSC determine that this is the preferred option.

Perimeter Wall Aesthetics

Much of the perimeter protection lies immediately adjacent to publicly accessible property, making the exterior wall face highly visible. For either the concrete or sheet-pile options, there are several available aesthetic treatment options to address this:

- Precast concrete panels (potentially with inlaid brick)
- Metal panels (with or without perforations/patterns)
- Anti-graffiti coatings
- Exterior grade painting

- Patterned face by means of form liner (cast-in-place concrete wall only)

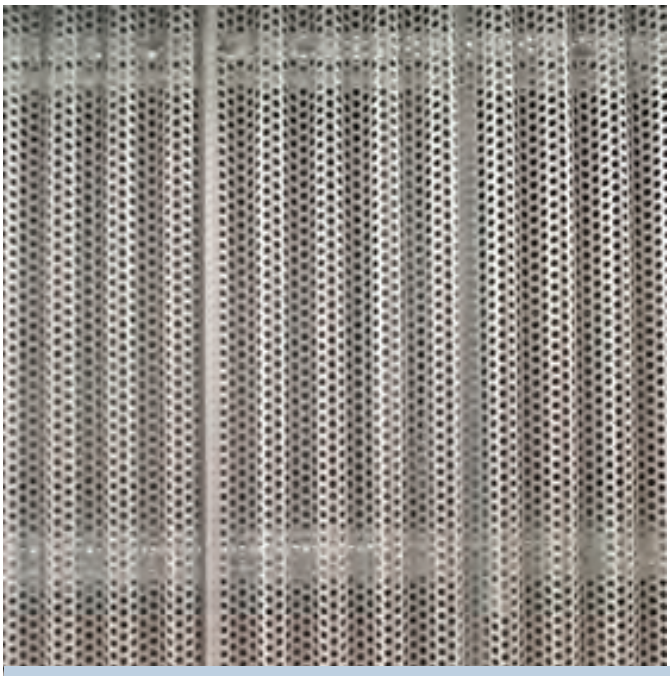
During the design phase, the preferred option will be coordinated with PVSC and stakeholder entities. In the areas without high visibility, an untreated capped sheet-pile or concrete wall can be used to save on overall material costs and future maintenance. It should be noted that the smooth surface of an untreated concrete wall may have undesirable acoustic ramifications for both the interior and exterior of the site. This highly reflective surface typically causes the sound of adjacent traffic or site operations to reverberate to the local area, and wall treatment may be advisable regardless of location. Additionally, these treatments can provide a sacrificial panel that is easily swapped out if damaged or vandalized. (The alternative patching of concrete or grinding to remove graffiti would be a much more labor-intensive process.)

The installation of the flood wall will require removal of a large number of trees along the perimeter, as they would obstruct both construction operations and, in some cases, the wall placement itself. The RFP identifies the replacement of these trees somewhere within the site as an additional scope item that must be addressed by the design team. While the large site certainly has some occupied areas that can accommodate new tree plantings, space is generally at a premium and should be kept available for treatment plant operations and future new construction. An added advantage of using a sheet-pile wall is the available internal space that is saved. Generally, the removed trees can be replaced at or near their original locations after construction is finished. Conversely, the large pile cap width of the concrete wall will preclude use of these areas.

Landscape Design

While this resiliency project is FEMA-funded and must take care to avoid unnecessary costs, PVSC has a responsibility to limit the negative impacts of the wall on the surrounding neighborhood. As such, STV/MM's landscape architects will develop a simple, yet respectful landscape design that softens the aesthetics of the proposed flood wall through the incorporation of plant material. This will be accomplished through the use of a full range of vegetation including shade trees/conifers, ornamental flowering trees, native shrubs, and a variety of ground covers, flowering perennials, and ornamental grasses to make up the planting pallete. Using a diverse plant pallete of varying heights, textures, colors, etc. will help to screen the flood wall and allow the project to meld with the character of the surrounding neighborhood.

To provide a level of "green," STV/MM will also strive to incorporate features to address stormwater just outside of the new flood wall. We envision that the construction of the wall will at many points disrupt the ROW between the curb line and property line, just from the equipment to build the wall. In addition to expecting the need to reconstruct the disturbed area outside of the wall to not only address aesthetics, as described above, an opportunity may arise to improve drainage and stormwater management just outside the flood



Sample and rendering of metal panel wall treatment at Coney Island Yard

wall. As the design progresses STV/MM will present options to PVSC that may include porous sidewalks or planter areas for water recharge. During the 30% or 60% design deliverables, these options can be presented to stakeholders as "goodwill" restoration options. STV/MM will include the approved green options in the final design documents.

Visualizations/Renderings

STV/MM's landscape architects/visualization experts will prepare a combination of photomontage/still renderings of the proposed flood wall and landscape treatment. These still renderings will be presented over existing photographs of the site (roughly 8-10 views throughout the project area) to truly illustrate the existing and proposed final conditions.

Also per the RFP, STV/MM will prepare 3D animation fly-through of the site, illustrating the location and character of the proposed flood wall. Per the clarification issued by PVSC, the base for the animation and renderings will be through the use of Civil3d, current edition. We anticipate utilizing other software (3ds Max) in conjunction with the aerial footage of the space taken by a firm utilizing drone technology.

The animation and renderings will be developed after the 30% submission with the purpose of providing visual aids for use with stakeholder meetings.

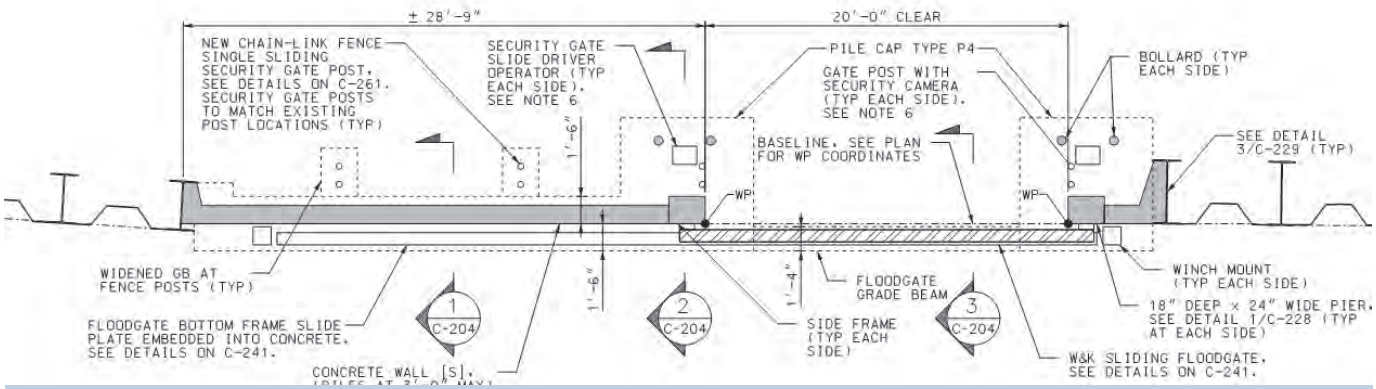
Gate Design

The 9 vehicular access gate locations throughout the site must be maintained after the permanent flood measures are in place. Several commercially available gate types can be used to bridge these gaps, each of which has particular advantages and disadvantages. While they are commonly used in the design of flood protection, deployable measures, such as stop logs, are not discussed here. The difficulties associated with storing, maintaining, and deploying these systems prior to a storm render them impractical for use on a site of this scale and far outweigh the potential savings in upfront cost.

Sliding and swinging flood gates, as manufactured by Waltz and Krenzer, were utilized by STV at the Coney Island Yard project. These gates incorporated steel face plates attached to horizontally spanning wide flange members with welded stiffener plates in between and hard rubber gaskets on the 3 sealing edges. The gates use a 2-stage operating mechanism, whereby they swing/slide horizontally into place and then lower ±2" onto an embedded stainless steel contact plate. This 2-stage approach avoids the undo wear-and-tear on the gate and gaskets that would result from constant friction, and avoids the need for a base trench that requires additional cleaning and maintenance. As indicated in the figure below, the overall gate assembly is supported by reinforced concrete piers and pile caps. The preferred gate location is outboard of the piers, such that the flood loads assist in creating a positive seal; however, the gate can also be

Rendering of Coney Island Yard flood gates

GATE TYPE	ADVANTAGES	DISADVANTAGES
SWINGING GATE	• Simple operation mechanism • Can be automated or manual	• Horizontal clearance required for swing radius and stored position
SLIDING GATE	• Can be automated or manual • Simple operation mechanism	• Horizontal clearance required for stored position
OVERHEAD GATE	• Minimum spatial requirements	• Large overhead structure required to support gate in stored position and resist associated wind overturning forces • Automated operation and back-up power required • Overturning due to wind loads
BUOYANT VERTICAL GATE	• Passive system (no human intervention required) • Minimum spatial requirements • Preferred for rail gates	• For passive option, no deployment of gate prior to storm



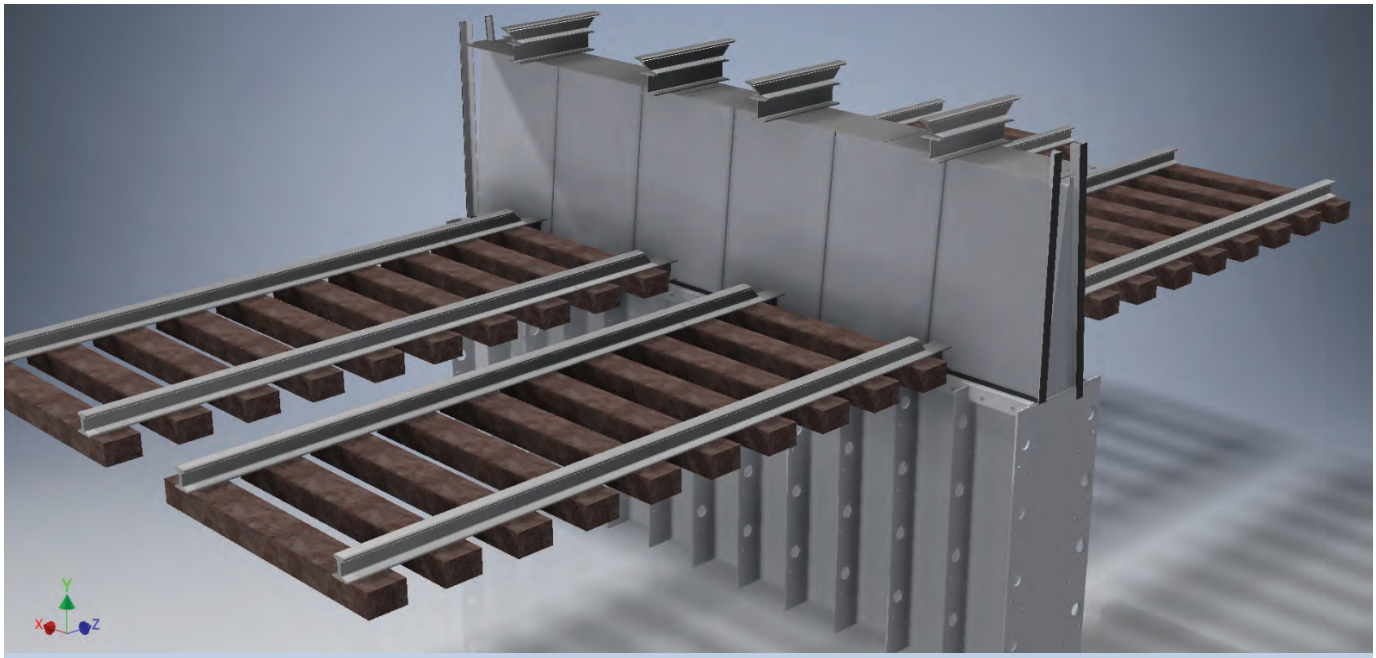
Typical enlarged plan at sliding flood gate

positioned to the interior and the unseating force resisted via the locking mechanism. The lifespan of the primary components for these types of gates is typically on the order of 50 to 75 years, with intermittent replacement of secondary parts, such as gaskets and mechanical components, required as part of general maintenance.

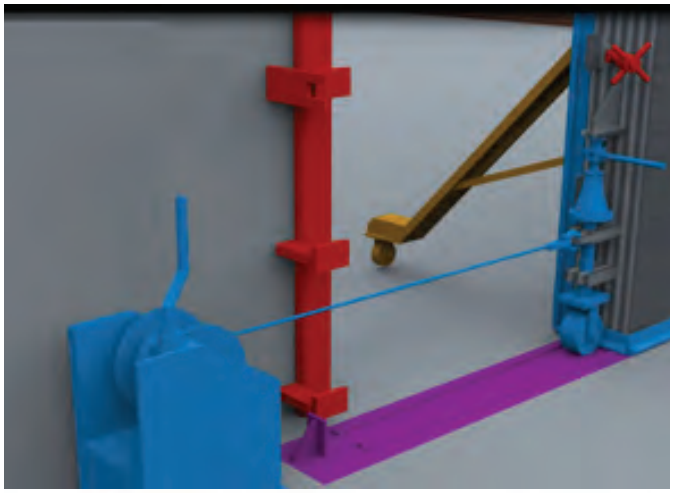
A key component of the flood gate design is the mechanism used for operation. While automated options provide the easiest method of closure (requiring only one individual), supplemental power systems are typically required to make sure the gate can be closed prior to an oncoming storm in the event of a power outage. An optional manual backup system can also be included to address this issue. Our design team will coordinate with PVSC to determine the most user-friendly and cost-effective solution.

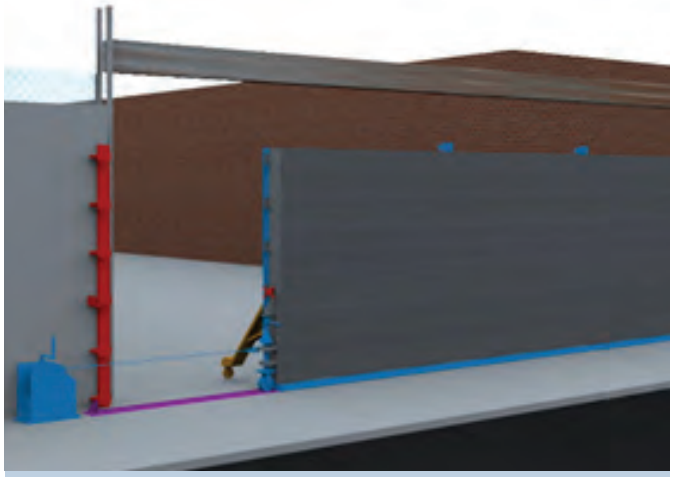
To address this concern at Coney Island, we selected a manually operated gate with the option to automate via an attached handheld drill. A cable is manually drawn across the opening and attached to the gate (sliding in this scenario). The gate is then closed by utilizing the winch to pull the cable/gate to the closed position. The specialized winch mechanism incorporates an input that can be easily attached to any industrial-strength, handheld drill, allowing nearly any employee to accomplish the task. Finally, the gate is lowered onto the bearing plate and sealed using locking mechanisms at either end.

As an alternative to the traditional sliding and swinging gates, a self-activating flood barrier (such as that manufactured by UK Flood Barriers) may be employed. This system incorporates a vertically deployed steel flood gate housed within a pile-supported concrete basin. The gate itself utilizes the oncoming floodwater to raise the gate by means of its natural buoyancy. In addition, the most recent iterations of these systems incorporate "duty assist" features that allow the user to raise the wall, providing the peace of mind that the perimeter protection is closed prior



Rendered view of bouyant floodgate across rails





Rendering of sliding flood gate operation

to the storm. The buoyant barrier is particularly useful at the location of the proposed rail gate by avoiding the need for manually deployed "stoppers" to fill the gaps within the rail.

Standard rail gates can also be customized to address these rail gaps by incorporating hard rubber teeth at the base of the gate. As the gate lowers into position (either from an overhead position, or side position with 2-stage movement), the rubber teeth fill the voids adjacent to the rail. It should be noted that the shape of the rubber cannot perfectly fit the gap, and some amount of leakage can be expected at these locations.

At each gate location, a separate security gate will be installed adjacent to the flood gate to control access to the site during daily use. These security gates will be constructed of typical expanded metal fencing with structural steel pipes, and will incorporate traffic control arms (where applicable) similar to the existing condition. Per the "additional scope items" in the RFP, the operation of these gates will be configured to match the current setup, and additional control options can be provided to meet PVSC's preferences (such as controls for Gates 9 and 10 from cake silo building).

Means of Egress

From STV/MM's experience with flood resiliency, a recurring area of complication is with regard to personnel ingress and egress during a storm event. Logically speaking, the number of persons present at the site during a storm should be minimal; however, the governing codes do not provide relief from the means of egress required in a typical situation, and it must be maintained both before the oncoming storm (after the gates are shut) and during the storm itself. The RFP calls for several personnel flood doors to be installed in the wall adjacent to the vehicular gates, which should satisfy requirements in the first scenario. For accommodation during a storm, STV/MM recommends the use of permanent egress platforms atop the wall at various locations around the perimeter. These platforms would incorporate the stair access and dimensions required by the code, and would allow persons stranded within the site to be picked up by boat or airlifted in the case of an emergency. As the stairs/platforms are permanent, a security gate will be required at the top of the platform, equipped with panic hardware and swinging in the direction of egress to satisfy code mandates.

Electrical/I&C/CCTV

The proposed perimeter flood wall will incorporate several openings for vehicle and pedestrian traffic, which will be protected by rolling flood gates, swing gates, or personnel flood doors. It is anticipated that each access point will require electrical power for site lighting and/or door operations, and must be provided with security via CCTV cameras and door status indication. Although there is an existing CCTV system, construction of the wall may interfere with camera fields of view, making it necessary to relocate some existing cameras, as well as to add supplemental cameras.

The existing PVSC SCADA (supervisory control and data acquisition) system is based on Allen-Bradley ControlLogix and CompactLogix hardware and includes a plant-wide Industrial Ethernet communications (EthernetIP) network. Operator interface is provided through a computer-based Human Machine Interface (HMI) system.

The existing CCTV system includes cameras at openings in the perimeter fence system to monitor traffic and for security, with the cameras controlled and monitored from the security building. Communications is via existing fiber-optic infrastructure.

The existing CCTV and SCADA systems will be expanded to accommodate new and relocated equipment. Functionality and operator interfaces (HMI) will be similar, to the extent possible, to that of existing systems and will maintain a similar "look and feel."

Control panels, including flood wall gate PLCs and Industrial Ethernet switches, will be provided near each new gate for interface with gate actuators, position switches, and other local devices. Control panels will be designed to house the PLCs, SCADA system network switches, and CCTV network switches. Control panels will be integrated into the existing plant SCADA system's Industrial Ethernet network. Interconnections will typically use fiber-optic cable.

New CCTV cameras will be provided at each new gate. The new cameras will be added to the existing CCTV communications network and monitored from the security building. Existing CCTV cameras will be relocated, where necessary, to maintain a clear field of view. Images will be displayed on existing monitors in the security building. The new security cameras will utilize video analytics to alarm the operator in the event that motion is detected. New cameras will be connected to the head end VMS (video management system) via an Ethernet network connection.

The overall design will address control and communication panels, communications network topology, camera configuration and layouts, 48VDC power systems, and uninterruptable power systems (UPSs).

Power will be provided from existing nearby power panels in adjacent buildings for the systems above and for the gate operators. In addition, security lighting will be added on the interior and exterior of the wall in the vicinity of all gates.

Environmental Permitting

STV/MM will make the necessary applications to the appropriate regulatory agencies, to secure the necessary environmental permits for the project. Prior to preparing the permit applications, STV/MM will identify environmental permits/requirements and prepare a permit matrix for submission to PVSC. We are very familiar with the surrounding environmental conditions and the applicable regulatory framework, as permits from the New York District U.S. Army Corps of Engineers and NJDEP Division of Land Use Regulation were successfully secured on behalf of the City of Newark for the reconstruction of Delancy Street, immediately adjacent to the project site.

STV/MM will schedule and attend a pre-application meeting with the NJDEP Division of Land Use Regulation. The purpose of the meeting will be to coordinate agency participation and to confirm permit applicability and specific application requirements, and to significantly shorten the permit application and approval timeframes. The extent of temporary/permanent impacts to freshwater wetlands,

wetland transition areas, and riparian zones that will result from the installation of the wall will be quantified. It is noted that no work is expected to occur in areas below mean high water; as such, U.S. Army Corps of Engineers approvals are not anticipated.

Environmental permits that are anticipated to be required include:

- Upland Waterfront Development Permit: A portion of the proposed wall lies within 100 feet of the mean high-water line of the Newark Bay and will require an Upland Waterfront Development Permit from the NJDEP Division of Land Use Regulation. A comprehensive application for an Upland Waterfront Development Permit will be prepared in accordance with the Coastal Permit Program Rules and Coastal Zone Management Rules found at N.J.A.C 7:7 and N.J.A.C. 7:7E, respectively.
- Flood Hazard Area Permit: The site lies within the tidal floodplain of Newark Bay and is within the jurisdictional limits of the NJ Flood Hazard Area Control Act. As a Waterfront Development Permit is required, a separate Flood Hazard Area Permit is not necessary. However, compliance with the requirements of the Flood Hazard Area Control Act Rules (N.J.A.C. 7:19), including all materials typically required for a Flood Hazard Area Permit, must be included in the Upland Waterfront Development Permit application.
- Freshwater Wetlands Permit: The construction of the proposed permanent flood wall will be involve freshwater wetland areas. The appropriate documentation for a Freshwater Wetlands Permit (Individual or General) will be prepared in accordance with the Freshwater Wetlands Protection Act Rules found at N.J.A.C. 7:7A.
- Hudson-Essex-Passaic Soil Conservation District Approval: Since the project will require the disturbance of more than 5,000 square feet of soil, Soil Erosion and Sediment Control Plan Certification will be required from the Hudson-Essex-Passaic Soil Conservation District. An application to the Hudson Essex-Passaic Soil Conservation District will be prepared.
- NJPDES Stormwater Discharge from Construction General Permit: Since the project will disturb more than one acre of soil, a New Jersey Pollutant Discharge Elimination System (NJPDES) Stormwater Construction Discharge General Permit will be required. STV/MM will prepare and provide the necessary submission to the NJDEP's Bureau of Nonpoint Pollution Control for review and approval.

Task 4: Design Services During Construction (DSDC)

Complete Engineering Support during Construction, from Contract Award through Final Certification

For the construction of the flood wall, STV/MM will provide design services during construction in accordance with the Scope of Work described in the RFP. STV/MM has the site, electrical, I&C, structural, and other engineering capabilities based locally in our NJ offices to successfully implement these services. These capabilities have been demonstrated directly to PVSC on our recent work for the rehabilitation of the 42-inch Kearny-Harrison-Newark Branch Interceptor Sewer Project, Contract No. A841, and our current services for the Administration Building Rehabilitation Project, Contract No. A920.

Construction-phase engineering services will include assistance with the contract execution, construction liaison, third-party coordination, pre-construction and progress meetings, site visits, review of shop drawings, review of proposed substitutions, responses to contractor requests for information (RFIs) or clarifications, review of proposed change order claims and change order recommendations, review of contractor payment applications, and post-construction assistance.

The services to be provided by STV/MM include the tasks applicable to this project as given in the NJDEP Checklist for Architectural/ Engineering Services during Construction for NJEIT-funded projects.

We recognize that the perimeter flood wall is one of four resiliency projects being undertaken by PVSC, including the power plant project, stormwater pump stations, and stormwater collection system. The Program Manager has developed a schedule in which all four projects will be under design and construction concurrently with the goal of completing the construction aspect of each project at about the same time. As part of the design services during construction services, we will be coordinating the construction phase of the perimeter flood wall with the other design engineers, the Program Manager, and PVSC for the duration of the project.

Construction Administration Services

STV/MM will serve as PVSC's representative and provide construction contract administration and field observation services to monitor the contractor's activities and verify conformance to the contract documents. (Field observation and resident engineering services are provided under Task 5.)

STV/MM will conduct a pre-construction meeting, attend monthly construction progress meetings, prepare minutes of meetings, and provide monthly reports to PVSC regarding observations on work in progress. It is assumed that construction progress meetings will be held on a monthly basis.

STV/MM will review and comment on vendors, shop drawing submittals, certificates, catalog cuts, samples, substitute items, and other data the contractor is required to submit and confirm that construction drawings and shop and erection drawings submitted by the contractor are in compliance with the contract documents. We will maintain a shop drawing log for each contract, tracking date of submittals, review comments, return dates, etc. We will perform responsive reviews of contractor RFIs and shop drawings including, but not limited to: checking traffic control plans, contractor-submitted alternatives, sheeting/wall details, construction sequencing plans and schedules. STV/MM will also review change order claims and prepare required documentation relevant to authorized change orders, respond to contractor RFIs, provide specification clarifications/interpretations, prepare elementary sketches and supplementary sketches required to resolve actual field conditions encountered, and review monthly contractor progress payment requests and make recommendations regarding the same. Following contractor completion, STV/MM will prepare punch lists of outstanding work items, and track completion of these items for contract closeout. We will also provide certifications of the contract completion to PVSC, as required.

Upon completion of the contract, STV/MM will prepare record drawings from the set of drawings maintained by the contractor during construction and STV/MM's field inspection records. The record drawings and final notice of acceptability will be provided to PVSC upon completion of the contract.

STV/MM will advise PVSC as to whether the facilities are meeting the project performance standards, prepare a Performance Certification after one year of operation, and advise on appropriate corrective actions if the project performance standards are not complied with. Specific activities included in the RFP for this task are listed below:

- We will send three sets of the contract documents for the contractor's execution and request that the contractor provide all required bonds and insurance documents. We will also review the contractor's insurance and bonds for conformance with the bid documents and provide input to PVSC. Once the contracts are fully executed, STV/MM will prepare and issue a notice to proceed on behalf of PVSC.
- We will set up and conduct a pre-construction meeting with all involved parties. Funding agencies, state and federal regulators, utility companies, and municipal and county representatives, such as town engineers, county engineers, and police, fire, public works, and water/sewer departments, will be invited, as appropriate.
- We will coordinate throughout the project with all involved parties.
- We will conduct monthly job progress meetings and prepare and distribute meeting minutes.
- We will conduct visits to the sites at intervals with sufficient frequency to the progress and quality of the work and keep PVSC informed of the progress of the work. STV/MM will endeavor to provide protection against defects and deficiencies in the work. However, the furnishing of such on-site observation services will not make STV/MM responsible for the constructors means, methods, techniques, sequences and procedures, safety precautions or programs, or the contractor's failure to perform the work in accordance with the contract documents. STV/MM and its designated field representatives will not supervise, direct, or have control over the contractor's work.
- We will monitor and update the construction schedule based on the contractor's schedule submissions.
- We will establish baselines and benchmarks, as appropriate, for locating the work if and where necessary to enable the contractor to proceed.
- We will review and evaluate contractor's proposed manufacturers and vendors, as submitted by the contractor. STV/MM will also attend meeting with the contractor, manufacturers, and vendors as required.
- We will review and process shop drawings (including preparing and maintaining a shop drawing log, routing, distribution and filing). STV/MM will complete reviews within 15 working days for publicly bid contracts and within 24 hours for emergency repairs.
- We will evaluate contractor-initiated substitutions, considering compliance with the design objectives and technical feasibility. STV/MM will prepare a cost estimate of the credit due to PVSC if the substitution is considered acceptable.
- We will require such special inspections or tests of contractor's work as deemed reasonably necessary, and receive and review all certificates of inspections, tests, and approvals required by laws, regulations, and contract documents.
- We will issue determinations of defective and non-conforming work to the contractor, upon consultation with PVSC.

- We will provide interpretations of the contract documents. STV/MM will evaluate and respond to RFIs and Requests for Clarification (RFCs) within 14 days unless it is a particular complex issue requiring additional examination. Up to 10 RFIs are included in our scope of work.
- We will review and process periodic payment requests.
- We will negotiate and recommend change orders and prepare the necessary documentation to process the change orders.
- We will coordinate substantial completion inspections, determine date of substantial completion, and prepare punch list of work to be completed prior to final inspections.
- We will prepare and furnish PVSC with record drawings showing appropriate record information based on project-annotated record documents received from the contractor. STV/MM will furnish paper and electronic copies of the record drawings per RFP requirements.
- We will provide necessary assistance to the PVSC in closing out the construction contracts. STV/MM will coordinate and conduct a final inspection for each construction contract to determine whether the completed work of the contractor is acceptable, so that final payment to the contractor can be recommended. STV/MM will assist in processing final payment application and in making sure the required closeout documentation has been submitted by the contractor and transmitted to PVSC.
- We will provide the certification of meeting the project performance standards after one year of operation of the project and recommend any required corrective actions if the project fails to achieve compliance with the project performance standards.

We have endeavored to estimate the level of effort required to provide complete construction-phase services for this project. Nonetheless, we trust that PVSC recognizes that the costs associated with providing design services during construction are largely dependent upon the performance of the construction contractors, contract durations, and other factors. It is assumed that the construction contractors will conduct the work in a diligent, responsible, and responsive manner. However, STV/MM cannot control the contractor's performance regarding the quality of submissions; excessive RFIs, substitutions, and claims; nonconforming work and required corrections; and contract disputes.

Task 5: Resident Project Representative (RPR)

Monitoring Contractor Work Progress and Quality

For the perimeter flood wall project, STV/MM will provide a full-time Resident Project Representative (RPR) located on the work site. The RPR will be responsible for the day-to-day observation and monitoring of construction activities. These services will include verification of the contractor's conformance to the contract documents and reporting of non-conforming work or deficiencies in the contractor's performance. The RPR will monitor the contractor's progress related to its construction schedule and review the adequacy of the contractor's labor force and equipment. Resident engineering staff will keep orderly site records and maintain detailed logs recording the contractor's daily activities, time expended, and equipment and materials used.

The RFP indicates that the intent is to have an individual RPR on-site full-time for the 550 working days during construction with the provision for an administrative assistant for 2,200 hours to support the RPR. STV/MM acknowledges this requirement, and our cost proposal reflects this level of effort. Our proposed RPR worked on the Mantoloking Dune/Sheet pile wall project as part of the Hurricane Sandy response.

Although not included in Task 5, we believe that additional on-site inspection oversight will be required, especially with regard to sheet-pile or pile-drive foundation for the perimeter flood wall. The RPR will not be able to oversee this critical installation and still perform all other duties of the RPR. We envision that an additional 1,200 man-hours or 150 days of inspection specifically to oversee the installation of sheeting and piles to support the flood wall will be required. Our geotechnical staff will record depths of sheeting, blow counts, and installation performance to confirm the contractor is achieving the required foundations support. As this additional inspection was not specifically requested by the RFP, we have provided an estimate of cost in our proposal for consideration by PVSC under Task 7.

STV/MM will provide protection against defects and deficiencies in the work. However, the furnishing of such on-site inspection services will not make STV/MM responsible for the constructor's means, methods, techniques, sequences and procedures, safety precautions or programs, or the contractor's failure to perform the work in accordance with the contract documents. STV/MM and its designated RPRs will not supervise, direct, or have control over the contractor's work.

Schedule and Drawing/ Specifications Lists

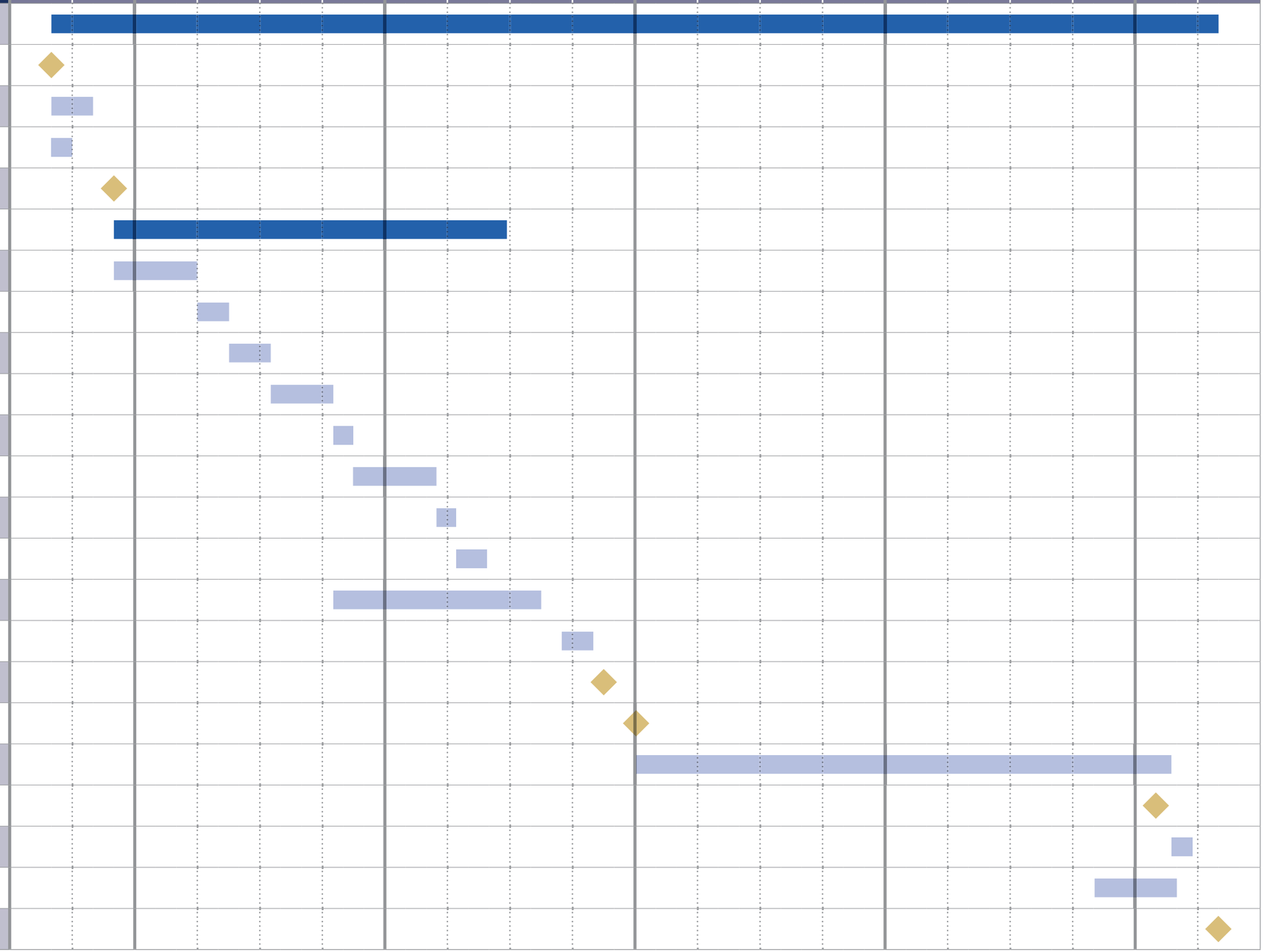
Attached are our project shedule, drawing list, and specifications list.

The attached schedule reflects the project duration as defined in the RFP. However, as noted in our Approach, we are prepared to discuss with PVSC potential time-saving opportunities, based on our experience on similar projects.

Schedule

PROJECT SCHEDULE

Task Name	Start
PVSC Perimeter Flood Wall	Thu 9/1/16
Engineer Notice to Proceed	Thu 9/1/16
Task 1 - Review Data/BODR Report	Thu 9/1/16
Task 2 - Project Work Plan	Thu 9/1/16
Authorization For Design	Wed 11/30/16
Task 3 - Design Services	Thu 12/1/16
Task 3.1 - 30% Design	Thu 12/1/16
Task 3.1 - 30% Review	Mon 4/3/17
Task 3.1 - VE	Tue 5/16/17
Task 3.1 - 60% Design	Tue 7/18/17
Task 3.1 - 60% Review	Tue 10/17/17
Task 3.1 - 90% Design	Thu 11/16/17
Task 3.1 - 90% Review	Thu 3/15/18
Task 3.1 - 100% Submission	Fri 4/13/18
Permits	Tue 10/17/17
Bidding	Mon 9/17/18
Contract Award	Thu 11/15/18
Notice to Proceed	Wed 1/2/19
Construction	Wed 1/2/19
Substantial Completion	Mon 2/1/21
Contract Closeout	Tue 2/24/21
Record Drawings	Mon 11/2/20
Final Acceptance	Sat 5/1/21



Drawing and Specification Lists

Drawing List

#	Sheet #	Drawing Name
		STRUCTURAL
1.		Sheet 1 – Title Sheet
2.		Index Sheet
3.		General Notes/Abbreviations
4.		Overall Site Plan
5.		Enlarged East Side Plan
6.		Enlarged West Side Plan
7.		Site Access and Security- East Side
8.		Site Access and Security – West Side
9.		Maintenance of Plant Operations – Interior Travel Routes
10.		Staging – West Side
11.		Staging – East Side
12.	D-101	DEMOLITION PLAN ZONE 1
13.	D-102	DEMOLITION PLAN ZONE 2
14.	D-103	DEMOLITION PLAN ZONE 3
15.	D-104	DEMOLITION PLAN ZONE 4
16.	D-105	DEMOLITION PLAN ZONE 5
17.	D-106	DEMOLITION PLAN ZONE 6
18.	D-107	DEMOLITION PLAN ZONE 7
19.	D-108	DEMOLITION PLAN ZONE 8
20.	D-109	DEMOLITION PLAN ZONE 9
21.	D-110	DEMOLITION PLAN ZONE 10
22.	D-111	DEMOLITION PLAN ZONE 11
23.	D-112	DEMOLITION PLAN ZONE 12
24.	D-113	DEMOLITION PLAN ZONE 13
25.	D-114	DEMOLITION PLAN ZONE 14
26.	D-115	DEMOLITION PLAN ZONE 15
27.	D-116	DEMOLITION PLAN ZONE 16
28.	D-117	DEMOLITION PLAN ZONE 17
29.	D-118	DEMOLITION PLAN ZONE 18
30.	D-119	DEMOLITION PLAN ZONE 19
31.	D-120	DEMOLITION PLAN ZONE 20
32.	D-121	DEMOLITION PLAN ZONE 21
33.	D-122	DEMOLITION PLAN ZONE 22
34.	D-123	DEMOLITION PLAN ZONE 23
35.	D-124	DEMOLITION PLAN ZONE 24

Drawing List

#	Sheet #	Drawing Name
36.	D-125	DEMOLITION PLAN ZONE 25
37.	S-001	GENERAL NOTES
38.	S-002	GENERAL NOTES
39.	S-003	GENERAL NOTES
40.	S-004	GENERAL NOTES AND LEGEND
41.	S-111	PERIMETER PLAN AND WALL ELEVATION- ZONE 1
42.	S-112	PERIMETER PLAN AND WALL ELEVATION- ZONE 2
43.	S-113	PERIMETER PLAN AND WALL ELEVATION- ZONE 3
44.	S-114	PERIMETER PLAN AND WALL ELEVATION- ZONE 4
45.	S-115	PERIMETER PLAN AND WALL ELEVATION- ZONE 5
46.	S-116	PERIMETER PLAN AND WALL ELEVATION- ZONE 6
47.	S-117	PERIMETER PLAN AND WALL ELEVATION- ZONE 7
48.	S-118	PERIMETER PLAN AND WALL ELEVATION- ZONE 8
49.	S-119	PERIMETER PLAN AND WALL ELEVATION- ZONE 9
50.	S-120	PERIMETER PLAN AND WALL ELEVATION- ZONE 10
51.	S-121	PERIMETER PLAN AND WALL ELEVATION- ZONE 11
52.	S-122	PERIMETER PLAN AND WALL ELEVATION- ZONE 12
53.	S-123	PERIMETER PLAN AND WALL ELEVATION- ZONE 13
54.	S-124	PERIMETER PLAN AND WALL ELEVATION- ZONE 14
55.	S-125	PERIMETER PLAN AND WALL ELEVATION- ZONE 15
56.	S-126	PERIMETER PLAN AND WALL ELEVATION- ZONE 16
57.	S-127	PERIMETER PLAN AND WALL ELEVATION- ZONE 17
58.	S-128	PERIMETER PLAN AND WALL ELEVATION- ZONE 18
59.	S-129	PERIMETER PLAN AND WALL ELEVATION- ZONE 19
60.	S-130	PERIMETER PLAN AND WALL ELEVATION- ZONE 20
61.	S-131	PERIMETER PLAN AND WALL ELEVATION- ZONE 21
62.	S-132	PERIMETER PLAN AND WALL ELEVATION- ZONE 22
63.	S-133	PERIMETER PLAN AND WALL ELEVATION- ZONE 23
64.	S-134	PERIMETER PLAN AND WALL ELEVATION- ZONE 24
65.	S-135	PERIMETER PLAN AND WALL ELEVATION- ZONE 25
66.	S-136	PERIMETER PLAN AND WALL ELEVATION- ZONE 26
67.	S-137	PERIMETER PLAN AND WALL ELEVATION- ZONE 27
68.	S-138	PERIMETER PLAN AND WALL ELEVATION- ZONE 28

Drawing List

#	Sheet #	Drawing Name
69.	S-139	PERIMETER PLAN AND WALL ELEVATION- ZONE 29
70.	S-140	PERIMETER PLAN AND WALL ELEVATION- ZONE 30
71.	S-141	PERIMETER PLAN AND WALL ELEVATION- ZONE 31
72.	S-142	PERIMETER PLAN AND WALL ELEVATION- ZONE 32
73.	S-143	PERIMETER PLAN AND WALL ELEVATION- ZONE 33
74.	S-144	PERIMETER PLAN AND WALL ELEVATION- ZONE 34
75.	S-145	PERIMETER PLAN AND WALL ELEVATION- ZONE 35
76.	S-146	PERIMETER PLAN AND WALL ELEVATION- ZONE 36
77.	S-147	PERIMETER PLAN AND WALL ELEVATION- ZONE 37
78.	S-148	PERIMETER PLAN AND WALL ELEVATION- ZONE 38
79.	S-149	PERIMETER PLAN AND WALL ELEVATION- ZONE 39
80.	S-150	PERIMETER PLAN AND WALL ELEVATION- ZONE 40
81.	S-151	PERIMETER PLAN AND WALL ELEVATION- ZONE 41
82.	S-152	PERIMETER PLAN AND WALL ELEVATION- ZONE 42
83.	S-153	PERIMETER PLAN AND WALL ELEVATION- ZONE 43
84.	S-154	PERIMETER PLAN AND WALL ELEVATION- ZONE 44
85.	S-155	PERIMETER PLAN AND WALL ELEVATION- ZONE 45
86.	S-156	PERIMETER PLAN AND WALL ELEVATION- ZONE 46
87.	S-157	PERIMETER PLAN AND WALL ELEVATION- ZONE 47
88.	S-158	PERIMETER PLAN AND WALL ELEVATION- ZONE 48
89.	S-159	PERIMETER PLAN AND WALL ELEVATION- ZONE 49
90.	S-160	PERIMETER PLAN AND WALL ELEVATION- ZONE 50
91.	S-201	ENLARGED PLAN AT VEHICULAR GATE 1
92.	S-202	ENLARGED PLAN AT VEHICULAR GATE 2
93.	S-203	ENLARGED PLAN AT VEHICULAR GATE 3
94.	S-204	ENLARGED PLAN AT VEHICULAR GATE 4
95.	S-205	ENLARGED PLAN AT VEHICULAR GATE 5
96.	S-206	ENLARGED PLAN AT VEHICULAR GATE 6
97.	S-207	ENLARGED PLAN AT VEHICULAR GATE 7
98.	S-208	ENLARGED PLAN AT VEHICULAR GATE 8
99.	S-209	ENLARGED PLAN AT VEHICULAR GATE 9
100.	S-301	SECTIONS
101.	S-302	SECTIONS

Drawing List

#	Sheet #	Drawing Name
102.	S-303	SECTIONS
103.	S-304	SECTIONS
104.	S-305	SECTIONS
105.	S-306	SECTIONS
106.	S-307	SECTIONS
107.	S-308	SECTIONS
108.	S-309	SECTIONS
109.	S-310	SECTIONS
110.	S-401	TYPICAL FLOOD WALL DETAILS
111.	S-402	TYPICAL FLOOD WALL DETAILS
112.	S-403	TYPICAL PILE DETAILS
113.	S-404	TYPICAL PILE CAP DETAILS
114.	S-405	TYPICAL CONCRETE WALL DETAIL
115.	S-406	TYPICAL UTILITY SPAN DETAILS
116.	S-407	TYPICAL UTILITY SPAN DETAILS
117.	S-408	TYPICAL CONCRETE DETAILS
118.	S-409	TYPICAL CONCRETE DETAILS
119.	S-410	TYPICAL CONCRETE DETAILS
120.	S-501	FLOOD GATE SCHEDULE
121.	S-502	FLOOD GATE DETAILS
122.	S-503	FLOOD GATE DETAILS
123.	S-504	FLOOD GATE DETAILS
124.	S-505	FLOOD GATE DETAILS
125.	S-506	FLOOD GATE DETAILS
126.	S-507	FLOOD GATE DETAILS
		CIVIL
127.	C-101	60" STORM RELOCATION
128.	C-102	60” STORM RELOCATION
129.	C-103	60" STORM RELOCATION
130.	C-104	SIDEWALK & PAVING DETAILS
131.	C-105	SIDEWALK & PAVING DETAILS
132.	C-106	SIDEWALK & PAVING DETAILS
133.	C-107	MISCELLANEOUS CIVIL DETAILS

Drawing List

#	Sheet #	Drawing Name
134.	C-108	MISCELLANEOUS CIVIL DETAILS
135.	C-101	60" STORM RELOCATION PLAN AND PROFILE
136.	C-102	60” STORM RELOCATION PLAN AND PROFILE
137.	C-103	60" STORM RELOCATION PLAN AND PROFILE
138.	C-104	60" STORM RELOCATION PLAN AND PROFILE
139.	C-110	GRADING, DRAINAGE AND UTILITY PLAN- KEY PLAN
140.	C-111	GRADING, DRAINAGE AND UTILITY PLAN- ZONE A
141.	C-112	GRADING, DRAINAGE AND UTILITY PLAN- ZONE B
142.	C-113	GRADING, DRAINAGE AND UTILITY PLAN- ZONE C
143.	C-114	GRADING, DRAINAGE AND UTILITY PLAN- ZONE D
144.	C-115	GRADING, DRAINAGE AND UTILITY PLAN- ZONE E
145.	C-116	GRADING, DRAINAGE AND UTILITY PLAN- ZONE F
146.	C-120	SOIL EROSION AND SEDIMENT CONTROL PLAN- KEY PLAN
147.	C-121	SOIL EROSION AND SEDIMENT CONTROL PLAN- ZONE A
148.	C-122	SOIL EROSION AND SEDIMENT CONTROL PLAN- ZONE B
149.	C-123	SOIL EROSION AND SEDIMENT CONTROL PLAN- ZONE C
150.	C-124	SOIL EROSION AND SEDIMENT CONTROL PLAN- ZONE D
151.	C-125	SOIL EROSION AND SEDIMENT CONTROL PLAN- ZONE E
152.	C-126	SOIL EROSION AND SEDIMENT CONTROL PLAN- ZONE F
153.	C-201	UTILITY PROFILES
154.	C-301	UTILITY CROSS SECTIONS
155.	C-501	SITE DETAILS
156.	C-502	SITE DETAILS
157.	C-503	SITE DETAILS
158.	C-504	UTILITY DETAILS
159.	C-505	UTILITY DETAILS
160.	C-506	SOIL EROSION AND SEDIMENT CONTROL DETAILS
161.	C-507	SOIL EROSION AND SEDIMENT CONTROL DETAILS
ARCHITECTURAL		
162.	A-101	WALL PROFILE / VISUALIZATION RENDERING
163.	A-102	WALL PROFILE / VISUALIZATION RENDERING
164.	A-103	WALL PROFILE / VISUALIZATION RENDERING
165.	A-104	WALL PROFILE / VISUALIZATION RENDERING
LANDSCAPE		
166.	L-101	PERIMETER WALL / EXTERIOR PLANTINGS

Drawing List

#	Sheet #	Drawing Name
167.	L-102	PERIMETER WALL / EXTERIOR PLANTINGS
168.	L-103	PERIMETER WALL / EXTERIOR PLANTINGS
169.	L-104	PERIMETER WALL / EXTERIOR PLANTINGS
		ELECTRICAL
170.	E-101	ELECTRICAL SITE PLAN
171.	E-102	ELECTRICAL SITE PLAN
172.	E-103	ELECTRICAL SITE PLAN
173.	E-104	ELECTRICAL SITE PLAN
174.	E-201	LIGHTING DIAGRAMS & DETAILS
175.	E-202	LIGHTING DIAGRAMS & DETAILS
176.	E-301	SINGLE LINE DIAGRAMS
177.	E-302	SINGLE LINE DIAGRAMS
178.	E-401	MCC & POWER CONNECTION DETAILS
179.	E-402	MCC & POWER CONNECTION DETAILS
180.	E-403	MCC & POWER CONNECTION DETAILS
181.	E-404	MCC & POWER CONNECTION DETAILS
		SCADA / CCTV
182.	I-101	NETWORK RISER DIAGRAMS
183.	I-102	NETWORK RISER DIAGRAMS
184.	I-201	CCTV FIELD VIEW DIAGRAMS
185.	I-202	CCTV FIELD VIEW DIAGRAMS
186.	I-301	CONTROL PANEL LAYOUT & DETAILS
187.	I-302	CONTROL PANEL LAYOUT & DETAILS
188.	I-401	SCADA SITE PLANS & INSTALLATION DETAILS
189.	I-402	SCADA SITE PLANS & INSTALLATION DETAILS
190.	I-403	SCADA SITE PLANS & INSTALLATION DETAILS
191.	I-404	SCADA SITE PLANS & INSTALLATION DETAILS
192.	I-501	SCHEMATIC WIRING DIAGRAM

Specifications List

DIVISION 1 - GENERAL REQUIREMENTS	
00010	Table of Contents
01000	Summary of Work
01010	Drawing Index
01015	Project Milestones
01075	Measurement and Payment
01240	Value Engineering
01250	Contract Modification Procedures
01290	Payment Procedures
01300	Liquidated Damages
01310	Project Management and Coordination
01320	Construction Progress Documentation
01330	Submittal Procedures
01350	Special Procedures
01354	Environmental Protection Procedures
01410	Regulatory Requirements
01430	Quality Assurance
01450	Quality Control
01505	Mobilization
01510	Temporary Utilities
01550	Vehicular Access and Parking
01570	Noise Control
01590	Field Office
01600	Product Requirements
01630	Product Substitution Procedures
01660	Storage and Handling
01720	Preparation
01730	Execution
01740	Cleaning
01750	Starting and Adjusting (Addendum No. 1)
01770	Closeout Procedures
01780	Closeout Submittals
DIVISION 2 – SITE CONSTRUCTION	
02050	Demolition
02070	Selective Demolition
02210	Subsurface Investigation

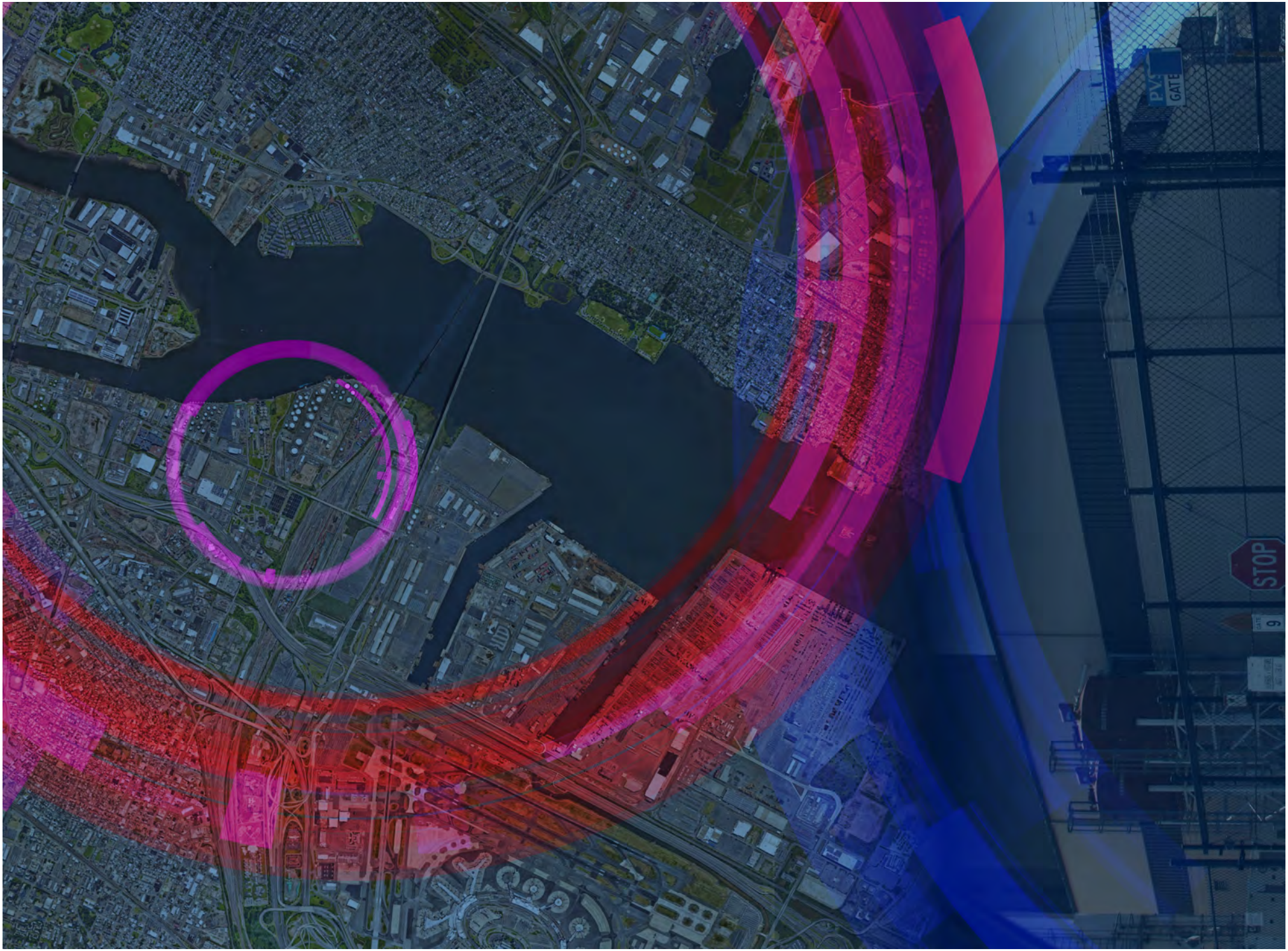
Specifications List

02215	Test Pits
02230	Site Clearing
02240	Dewatering and Drainage
02250	Shoring and Underpinning
02315	Excavation, Trenching, Backfilling, and Compacting
02370	Erosion and Sedimentation Control
02455	Dynamic Pile Testing
02456	Pile Load Tests, Compressive, Lateral and Uplift Loads
02458	Piles, Concrete Filled Steel Pipe
02460	Steel H-piles
02461	Steel Sheet Piling
02920	Lawns and Grasses
02930	Exterior Plants
02936	Fertilizing
02938	Mowing
02940	Watering
02969	Asphalt Restoration
02721	Storm Drainage System
02821	Chain Link Fence
DIVISION 3 – CONCRETE	
03000	Concrete
03100	Concrete Formwork
03200	Concrete Reinforcement
03250	Concrete Accessories
03300	Cast-In-Place Concrete
03340	Precast Concrete
03450	Precast Concrete Manhole
DIVISION 4 – MASONRY	
04813	Brick Masonry Assemblies
DIVISION 5 – METALS	
05000	Metals
05050	Metal Fastenings
05100	Structural Metal Framing
05500	Metal Fabrications
05520	Aluminum Handrails and Guardrails
DIVISION 6 – WOODS AND PLASTICS	
06100	Rough Carpentry

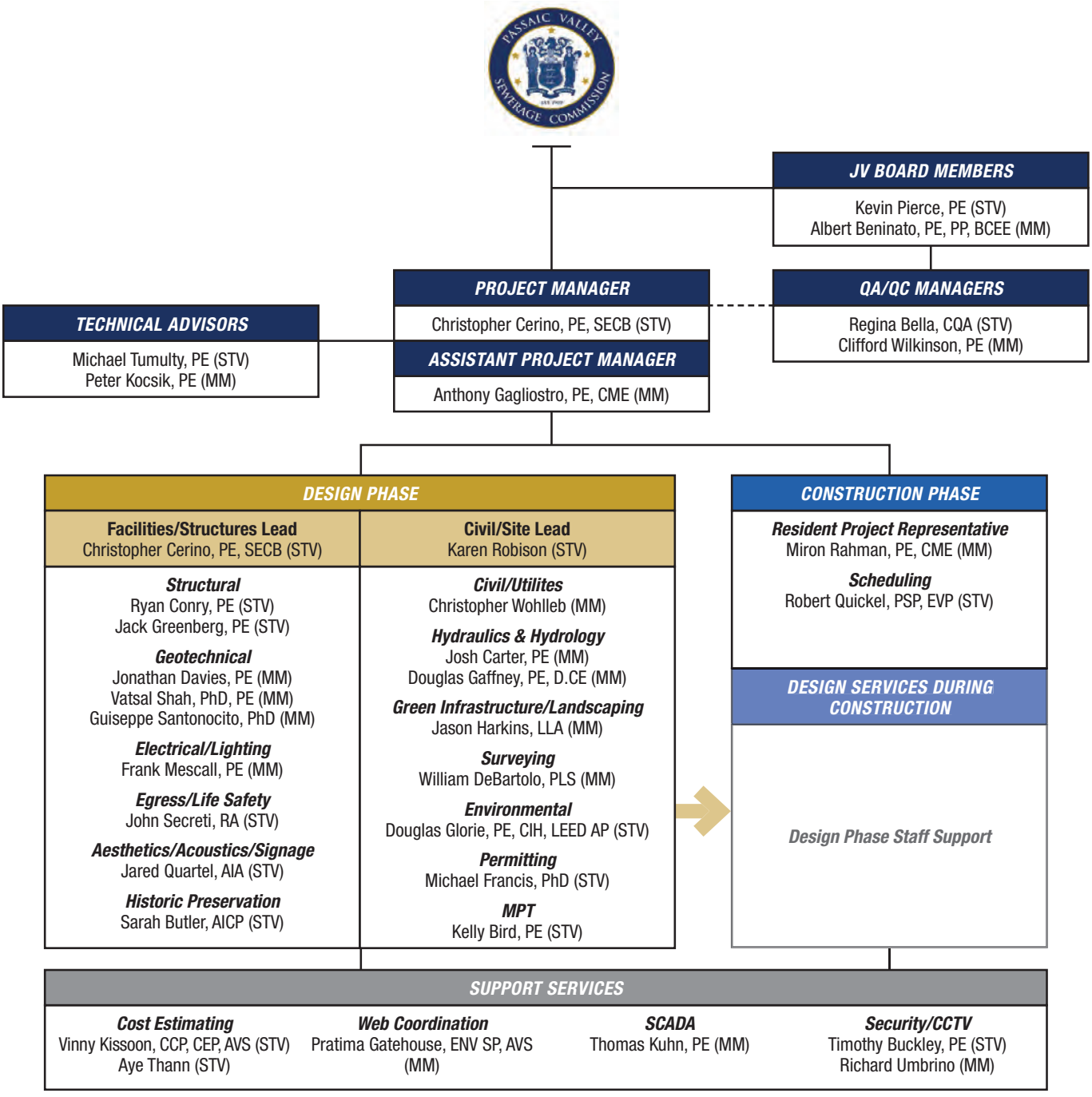
Specifications List

DIVISION 8 – DOORS	
08316	Watertight Hinged Flood Gates
08319	Flood Gates
08710	Door Hardware
DIVISION – FINISHES	
09912	Painting
DIVISION 11 – EQUIPMENT	
10400	Identification Devices
DIVISION 13 – SPECIAL CONSTRUCTION	
13010	Instrumentation and Control General Requirements
13400	Factory Acceptance Testing (FAT)
13401	Functional Description
13405	Site Acceptance Test (SAT)
13410	Instruments
13450	Software and Programming
13920	Network – Hardware
13940	Instrumentation and Control Field Wiring
DIVISION 14 – CONVEYING SYSTEMS	
14650	Hoists
DIVISION 15 – MECHANICAL	
15000	Mechanical General Provisions
15075	Mechanical Identification
15196	Natural Gas Piping
15200	Process Piping
15240	Piping Specialties
DIVISION 16 – ELECTRICAL	
16010	Electrical General Conditions
16060	Grounding and Bonding
16123	600V Wire and Cable
16124	MV Wire and Cable
16130	Raceways and Boxes
16140	Wiring Devices
16150	Electric Motors
16289	Surge Protective Devices
16370	Overhead Electrical Work
16375	Underground Electrical Work
16410	Enclosed Switches and Circuit Breakers

Specifications List	
16425	Master Control Panel and Switchgear
16442	Panelboards
16461	Low Voltage Transformers
16482	Motor Control Centers
16670	Lightning Protection


PVS
GATE
STOP

KEY PERSONNEL



The STV/MM JV has assembled a highly qualified team of engineers, architects, and other technical specialists, all experts in their respective fields, to address the multitude of challenges we anticipate encountering during this complex. All proposed staff have been selected based on their specific qualifications and experience in working on flood resiliency projects and/or with PVSC facilities. Our team features many of the same staff from STV who are responsible for the design of a very similar flood wall in Brooklyn, NY, as well as experts in both wastewater treatment and flood wall/resiliency design from MM. Based on STV/MM's extensive in-house resources, we are well prepared to deliver this project with readily available in-house resources, which will help streamline the work.

Key Personnel Highlights

- Key staff from STV – including our project manager, resiliency advisor, QA/QC manager, lead structural engineer, lead civil designer, lead environmental engineer, lead cost estimator, and others – have proven flood wall on an almost identical project (Coney Island Yard flood wall).
- MM staff has extensive site-specific familiarity, including ongoing post-Sandy work on PVSC Administration Building.
- We offer in-house, locally based resources covering all required disciplines and with appropriate experience, education, and other credentials.
- Our project manager and resiliency advisor have presented at 7 technical conferences on resiliency in urban environments.
- Key staff are authors of recent 40-page resiliency criteria guide.
- Proposed project manager is a certified Structural Engineer.
- Our key staff is composed of NJ residents, with support from other locally based staff in NJ/NY metro area.

Management Team

As shown on the preceding organization chart and described below, we have selected several key individuals to lead our team and provide the interface coordination with PVSC staff and your program manager. All individuals are experienced professionals, selected based on their ability to communicate and coordinate the various work activities. Many have led similar projects successfully, including Coney Island and PVSC projects. We have organized our resources into two groups, one focused on the design effort the other focused on the cost and construction-related efforts.

PROJECT MANAGER
Christopher Cerino, PE, SECB

- 20 years of experience
- Lead Designer for Coney Island Yard Flood Wall
- Extensive flood wall design experience
- Licensed Professional Structural Engineer
- Resident of New Jersey

Our team will be led by **Christopher Cerino, PE, SECB**, who will provide day-to-day management of the entire project, as well as serve as PVSC's primary contact with the STV/MM team. In addition, he will serve as leader of our facilities/structures design team. Mr. Cerino has 20 years of experience in managing the design of large-scale, complex projects. Since Hurricane Sandy, he has been involved in over 50 recovery and resiliency projects in the New York/New Jersey metropolitan area. Most relevant to the design of the PVSC flood wall, he is currently leading the design of post-Sandy improvements at Coney Island Yard in Brooklyn, including a perimenter protection wall that is remarkably similar to PVSC's proposed flood wall. For Con Edison, he is leading the structural design of storm hardening at substations and generating stations, including flood walls at transformer vaults, reinforcement of perimeter walls, and addition of flood doors and other hardening measures to protect critical equipment. Flood walls/barriers have also been a part of several post-Sandy task orders he has worked on for the Port Authority of New York and New Jersey. A skilled project manager, Mr. Cerino is adept at coordinating design efforts among various disciplines and directing teams to successfully prepare and deliver projects on schedule and within budget. He is readily available to be assigned and dedicated to this project full-time.

Chris Cerino, on site at Coney Island Yard: *Our team brings highly applicable experience and "lessons learned" on a very similar project.*

ASSISTANT PROJECT MANAGER
Anthony Gagliostro, PE

- 21 years of experience
- PVSC experience
- Wastewater and stormwater experience
- Resident of New Jersey

As Assistant Project Manager, **Anthony Gagliostro, PE, CME**, will work closely with Mr. Cerino in day-to-day project management and serve as MM's main representative for this project. More specifically, his duties during design will include record data gathering coordination, utility relocation/conflict resolution, and stakeholder coordination, such as with the City of Newark. He will play a larger role during construction, serving as lead in-house engineer and liaison with PSVC's representative regarding issuance of directions to the contractor. Mr. Gagliostro offers expertise is wastewater collection/treatment, having led many large-scale projects involving upgrade and expansion of wastewater facilities for municipalities and regional authorities throughout New Jersey. He is familiar with PVSC's facilities, having led the design efforts for the rehabilitation of the Kearny-Harrison-Newark Interceptor sewer. His projects encompass wastewater management and facilities plans, sewer system evaluations, hydraulic modeling, treatment alternative evaluations, detailed design, and construction-phase services. Mr. Gagliostro has in-depth knowledge of local and state agency regulatory requirements and the financing of projects through the New Jersey Environmental Infrastructure Trust (NJEIT) program. He is also an accomplished project manager, from planning through construction, with particular expertise in managing third-party coordination issues, such as property owner access agreements, permanent easement acquisitions, rail and road crossings, and utility relocations.

TECHNICAL ADVISORS
Michael Tumulty, PE

- 35 years of experience
- Managing Principal for Coney Island Yard flood wall
- Significant flood resiliency experience
- Resident of New Jersey

Peter Kocsik, PE

- 35 years of experience
- Flood resiliency/flood wall experience
- Resident of New Jersey

Michael Tumulty, PE, with 35 years of diverse environmental, civil, and coastal engineering experience, will serve as a special advisor to our team, based on his expertise in the planning and design of infrastructure resiliency to address climate change. Mr. Tumulty's background in coastal engineering includes modeling of storm surges routed into New York Harbor and Newark Bay for the U.S. Army Corps of Engineers and FEMA. He has also conducted investigations and provided designs for shorefront structures in New York, New Jersey, and overseas. Currently, Mr. Tumulty is overseeing the planning and design for protection from sea level rise and tidal flooding at one of the world's largest rail yards, Coney Island Yard in Brooklyn, which includes work on one of the world's largest flood walls. He is also leading STV's environmental team as part of a multi-billion-dollar resiliency program undertaken by the Port Authority of New York and New Jersey related to its PATH transit system in Northern New Jersey.

Peter Kocsik, PE, is a Senior Vice President of MM with extensive experience in the planning, design, and construction of wastewater, water, and stormwater facilities. He has been responsible for numerous sewer system studies and capital improvement programs for sewerage authorities throughout New Jersey, and currently serves as the appointed engineer for several utility authorities. Mr. Kocsik is familiar with NJDEP regulations and permitting requirements, as well as funding agencies, such as NJEIT, USEPA, and FEMA. He has been involved in rehabilitation/resiliency projects at several New Jersey wastewater treatment facilities in the aftermath of both Hurricane Sandy and Hurricane Irene. This includes work for the Middlesex County Utilities Authority, Rockaway Valley Regional Sewerage Authority, and Manasquan River Regional Sewerage Authority.

QA/QC MANAGERS
Regina Bella, CQA

- 25 years of experience
- Quality Manager for Coney Island Yard flood wall
- Significant flood resiliency experience
- Certified Quality Auditor
- Resident of New Jersey

Clifford Wilkinson, PE

- 35 years of experience
- Wastewater facility design specialist
- Provided QA/QC for flood wall in NJ
- Extensive PVSC experience
- Resident of New Jersey

Regina Bella, CQA, of STV is an accomplished QA/QC manager with more than 25 years of experience. Ms. Bella is responsible for creating and monitoring project-specific quality procedures and work instructions to make sure that contractual

obligations are met. Her background includes overseeing the generation, implementation, and administration of QA/QC and project controls for every aspect of design, construction management, and inspection. She is highly skilled in performing internal design verification of package, process, and product audits, while working closely with project managers and design leads to organize and streamline large volumes of deliverables. Most notably, Ms. Bella currently serves as Quality Manager for the Coney Island Yard project, including the flood wall design, as well as several other post-Sandy rehabilitation/resiliency projects in New York City.

Mr. Wilkinson has extensive experience in the design and construction of wastewater facilities, including expansion and modifications for the upgrade of existing facilities, as well as new facilities. Recently, he provided QA/QC review for the design of an 18-foot-high perimeter flood wall and bypass pumping system with elevated controls for the Middlesex County Utilities Authority in New Jersey. The goal was to provide resiliency against flooding to a pump station along the Raritan River. In addition, Mr. Wilkinson has in-depth knowledge of PVSC's facilities, requirements, and procedures, having directed and managed a variety of PVSC projects over the years.

CIVIL/SITE DESIGN LEAD
Karen Robison

- 15 years of experience
- Civil/site design specialist
- Civil designer for Coney Island Yard flood wall
- Lead civil designer for VA hospital flood wall

Karen Robison, a civil designer with more than 15 years of experience, will lead our civil/site design team. She regularly conducts and oversees site inspections, surveying, drainage design and analyses, traffic analyses, and cost estimating. She has also provided site layouts, utility layouts, field surveys, stormwater management design, and sanitary gas and fire protection design layouts for a wide range of facilities. In addition, she is experienced in leading site investigations after natural disasters and coordinating environmental permitting activities with local, state, and federal agencies. Most relevant to her proposed assignment, Ms. Robison led a site investigation to identify key issues and an analysis and comparative evaluation of flood mitigation alternatives, as well as permitting efforts, at the 110-acre Coney Island Yard rail complex in Brooklyn. She also designed a flood barrier wall at a hospital campus in Manhattan for the U.S. Department of Veterans Affairs.

Karen Robison is also among the many STV/MM team members who have gained experience on an almost identical project, at Coney Island Yard.

Technical/Support Team

Our management staff will be supported by a highly experienced, multidisciplinary team, composed of technical specialists carefully chosen to meet the needs of this project. The accompanying experience matrix provides a brief summary of the relevant experience of proposed staff. Detailed resumes of all team members are attached. Office locations are noted on each resume.

Our Commitment to PVSC

STV/MM fully intends to provide all personnel identified in this section for the duration of this project. To that end, we agree to obtain PVSC's concurrence before making any changes to our project team.

Key Staff Matrix

The attached matrix illustrates our proposed project staff's experience with flood walls, other post-Sandy resiliency and rehabilitation work, and PVSC project experience.

Project Staff	Flood Wall Experience	PVSC Experience	Post-Sandy Work
A. Christopher Cerino, P.E., SECB	●		●
Anthony Gagliostro, P.E., CME		●	●
Kevin A. Pierce, P.E.	●		●
Albert Beninato, PE, PP, BCE			
Michael Tumulty, P.E.	●		●
Peter Kocsik, P.E.	●		●
Miron Rahman, P.E., CME	●		
Regina Bella, CQA	●		●
Clifford Wilkinson, PE	●	●	●
Ryan Conry, P.E.	●		●
Jack Greenberg, P.E.	●		●
Jonathan Davies, P.E.			
Vatsal Shah, Ph.D., P.E.	●		
Giuseppe Santonocito, Ph.D.			
Frank Mescall, P.E.	●	●	●
John Secreti, R.A., LEED® AP	●		●
Jared Quartel, AIA			●
Karen Robison, LEED® Green Associate	●		●
Christopher Wohlleb		●	●
Josh Carter, P.E., D.CE	●		
Douglas Gaffney, P.E., D.CE	●		
Jason Harkins, LLA			
William DiBartolo Jr., PLS			
Douglas Glorie, P.E., CIH, LEED® AP	●		●
Michael Francis, Ph.D.	●		●
Kelly Bird, P.E.	●		●
Vinny Kissoon, CCP, CEP, AVS	●		●
Aye Thann	●		●
Robert David Quickel, PSP, EVP			●
Pratima Gatehouse, ENV SP, AVS		●	
Thomas Kuhn, P.E.			
Timothy Buckley, P.E.			
Richard Umbrino, Jr.			

Resumes

A. Christopher Cerino, P.E., SECB

PROJECT MANAGER

Mr. Cerino has over 20 years experience specializing in managing the design of large-scale, complex projects, primarily with a structural engineering focus and more recently, structural engineering as it relates to flood resiliency measures. He has a proven ability to lead and manage a wide range of projects and has focused his efforts during the past several years on the development of structural criteria and designs to protect critical infrastructure from severe flood events. Since Hurricane Sandy, Mr. Cerino has been involved in more than 50 recovery and resiliency projects in the New York metropolitan area. Among these projects is the New York City Transit (NYC Transit) Coney Island Yard, which features a flood wall remarkably similar to PVSC's proposed project. Mr. Cerino is a skilled project manager, adept at coordinating with clients and complex design efforts among various disciplines and directing teams to successfully prepare and deliver projects on schedule and within budget. Mr. Cerino is also skilled in the use of 3D CADD and building information modeling (BIM) to prepare design drawings. In addition, he serves as Director of Structural Engineering in STV's main office.

FIRM
STV

OFFICE LOCATION
NEW YORK, NY

EDUCATION
BACHELOR OF ARCHITECTURAL ENGINEERING, STRUCTURAL EMPHASIS; PENNSYLVANIA STATE UNIVERSITY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY

CERTIFICATIONS
STRUCTURAL ENGINEERING CERTIFICATION BOARD (SECB)

Project Experience

NYC Transit Coney Island Yard Flood Mitigation - Lead Structural Engineer

Led master planning and subsequent development of concept through final design drawings and specifications for flood mitigation measures to protect Coney Island Yard in Brooklyn, NY. The size and complexity of this project is very similar to that of PVSC's flood wall. Total project construction cost is in excess of $350 million, which includes the wall, drainage detention basins, and protection of electrical systems, as well as new pumping stations. The 110-acre complex, which was significantly affected by the storm surge from Hurricane Sandy, encompasses three railroad storage yards, and is used to perform regular maintenance for a fleet of nearly 800 rail cars, and heavy maintenance and overhaul for the approximately 6,000 rail cars in NYC Transit's subway system. The facility was under three feet of saltwater during the storm, and sustained millions of dollars of damage to rail cars, buildings, signals, and switches. Mr. Cerino served as manager of the team responsible for designing a three-mile-long perimeter protection wall, along with other massive drainage improvements, including several pump stations and detention basins. In the interim, a rapid near-term solution was implemented for the 2015 hurricane season. This solution included a smaller perimeter wall, generators, and partial drainage corrections. In addition, Mr. Cerino, along with the firm's project team, performed a full multidisciplinary assessment documenting damage to the facility's electrical systems, tracks, switches, bridges, and 28 buildings.

Con Edison Substation and Generating Plant Storm Hardening Evaluation and Design - Project Manager

Reviewing Hurricane Sandy-related damage at seven substations and five generator station sites throughout New York City. The storm inflicted enormous damage to Con Edison's electric distribution system, interrupting service for roughly 1.4 million New Yorkers and generating more than $500 million in response and restoration costs. To prepare for future storms, Mr. Cerino is managing the effort to evaluate the threat to various substations and generating plants and designing hardening measures to protect critical equipment at each location. He is creating a comprehensive concept design report that will present several options for protecting the critical electrical assets at various storm levels. Structurally, potential protection options include flood gates to fully reinforced facades and foundations, external flood walls, and new structures. Design of the selected options is expected to commence shortly.

NJDPMC CRRNJ Resiliency and New Power Plant - Project Manager

Managing the structural design of resiliency measures at the Central Railroad of New Jersey Terminal (CRRNJ) in Jersey City, NJ, for the New Jersey Division of Property Management and Construction (NJDPMC). The terminal sustained significant damage from Hurricane Sandy and most of the terminal's mechanical, electrical and plumbing (MEP) equipment was damaged. Mr. Cerino is responsible for the design of the new flood-resistant central plant adjacent to the historic structure.

PANYNJ Hoboken PATH Stair Resiliency Stage I Report - Project Manager

Served as Project Manager for feasibility investigation and Stage 1 Report for various flood protection options for all of the PATH entrances at Hoboken Station. The report for the Port Authority of New York and New Jersey (PANYNJ) studied the applicable design flood elevation and provided site-specific recommendations at each entry, considering ease of construction, maintenance, deployment, and overall cost — ultimately providing recommendations to the client for proceeding to final design.

PANYNJ PATH Resiliency for Entrances at Grove Street, Exchange Place, and Newport - Structural Engineering Director

Overseeing the design for protecting headhouse entrances with barrier walls, aquarium glazing, and other special materials that will stop flooding and allow the PANYNJ to continue operating after major events. Newport Station is particularly vulnerable to Hudson River surge flooding. At the headhouse entrances, flooding predicted on the FEMA map elevations would inundate the interior, flow downward, and cause significant service outages and equipment damage. At Grove Street, the main, east, and south canopy entrances would flood, while station elevators would be significantly impacted at Exchange Place. The STV team devised two options, along with cost estimates, for protecting station entrances and equipment from floodwaters. One involves building a 5-foot barrier in front of existing headhouse enclosures. The second option is to demolish the station enclosures altogether and construct new waterproof enclosures that can be closed manually or automatically in advance of a storm event.

PANYNJ Holland and Lincoln Tunnel Flood Protection - Structural Engineering Director

Preparing a tunnel evaluation and flood resiliency report for the PANYNJ's remediation efforts at the Lincoln and Holland Tunnels linking Manhattan's west side to New Jersey. In response to massive damage during Hurricane Sandy, Mr. Cerino is evaluating options for upgrades to increase the flood resistance for these critical points of access to Manhattan. He is considering options according to their cost, setup time during emergencies, level of traffic disruption during construction, ease of use, maintainability, and impact on mandated historic preservation. The systems under consideration to prevent storm surge from entering the tunnels include a floodgate at the tunnel opening, and flood walls around the perimeter of the entrance and exit ramps. During design startup, Mr. Cerino is inspecting the tunnels and their critical support facilities, including pump rooms, ventilation buildings, and minor structural supports for mechanical, electrical, and plumbing systems.

NYC Transit Near-term Flood Protection at 207th Street Yard, Hammels Wye, and Stillwell Terminal - Structural Discipline Lead/Lead Engineer

Overseeing structural and resiliency design efforts to mitigate against flooding as part of repair work at the 207th Street Yard in Upper Manhattan, at the Hammels Wye in Far Rockaway, Queens, and at Stillwell Terminal in Coney Island, Brooklyn, which were all damaged by Hurricane Sandy. This effort includes replacing traction power cables and recommending improvements to provide near-term and long-term flood mitigation for these NYC Transit facilities. The scope also includes preparing a feasibility study for each site to assess various alternatives and recommend the best options for implementation. Mr. Cerino is providing a flood barrier design and access design for varying design flood elevations and uses at the three sites.

NYC Transit 17 Fan Plants and Adjacent Tunnel Flood Mitigation - Structural Engineering Director

Preparing a comprehensive concept design report to present options for protecting critical systems during various storm intensities. Mr. Cerino is responsible for visiting 17 fan plant sites to review damage caused by Hurricane Sandy. He has presented hardening options from floodgates, to fully reinforced facades and foundations, to external floodwalls, to new structures. The team will then design mitigation and resiliency measures for the selected option(s).

Anthony Gagliostro, P.E., CME

ASSISTANT PROJECT MANAGER

Mr. Gagliostro is a project manager with significant experience leading design and construction services for the upgrade and expansion of existing wastewater treatment facilities and rehabilitation of wastewater collection facilities in New Jersey, including large-diameter conveyance and interceptor sewers. His experience includes wastewater management and facilities plans, sewer system evaluations, hydraulic modeling, treatment alternative evaluations, sewer system master plans, capital improvement plans, and sewer rate impact studies, detailed design, and construction phase services. Mr. Gagliostro's project duties routinely include hydraulic analysis of pipelines, pumping systems, and treatment facilities, process equipment selection and design, cost estimating, bid document preparation, and design coordination. He has played key roles in addressing the wastewater and stormwater management problems confronting local government units. He has served as a primary client contact, responsible for day-to-day client communications and project reporting, including the preparation and presentation of monthly progress reports.

FIRM
MOTT MACDONALD

OFFICE LOCATION
ISELIN, NJ

EDUCATION
MASTER OF SCIENCE, ENVIRONMENTAL ENGINEERING; UNIVERSITY OF NORTH CAROLINA AT CHAPEL HILL

BACHELOR OF SCIENCE, CIVIL ENGINEERING; JOHNS HOPKINS UNIVERSITY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY

CERTIFICATIONS
CERTIFIED MUNICIPAL ENGINEER

NASSCO ASSESSMENT CERTIFICATION (PACP/ LACP/ MACP)

Project Experience

PVSC Rehabilitation of Kearny-Harrison-Newark Interceptor Sewer - Lead Engineer

Led the design, bidding, and construction-phase services related to the rehabilitation of approximately 1,400 lf of 42-inch-diameter, non-reinforced concrete pipe with cured-in-place-pipe (CIPP) lining. A portion of the project was undertaken on an emergency basis to correct significant pavement settlement along a segment of the pipe. The project scope was further modified and expanded to include the replacement of an additional 400 lf of interceptor sewer adjacent to the original project area, to address continued roadway subsidence.

City of Elizabeth Restoration and Flood Mitigation for Pump Stations and CSO Netting Chambers - Project Manager

Responsible for managing the design, bidding, and construction-phase services related to restoring the wastewater and stormwater pumping facilities and Combined Sewer Overflow (CSO) netting chambers damaged by Hurricane Sandy in Elizabeth, NJ. Mr. Gagliostro oversaw the development of the construction contract documents for public bidding. The project involved the restoration of flood damage at three pump stations and two netting chambers. Measures to protect the facilities from similar damage in future severe storm events were also incorporated. Mitigation measures included the construction of a concrete flood wall with removable flood barriers and the elevation of electrical equipment. Restoration work included the repair and replacement of existing electrical panels, devices, and wiring; replacement of existing air-handling equipment; access hatch replacements; cleaning of ductwork and wet wells; and miscellaneous equipment and building repairs. He coordinated the scope with the FEMA Public Assistance Grant Program.

Town of Newton Primary Settling Tank Drive and Covers Replacement - Project Manager

Managed the design, bid phase, and construction phase engineering services for the replacement of the covers and sludge collection mechanism drive system for the two primary settling tanks at a 1.2-million-gallon-per-day (mgd) wastewater treatment plant in Newton, NJ. The existing 40-year-old, single-drive unit, which operated both mechanisms, was replaced to restore the system's reliability. The wood planks covering the top of the tanks were replaced as a safety improvement. Two new drive units were provided, one dedicated to each tank. Construction involved process equipment, structural, and electrical work, including replacement of the electrical power and control systems for the drive units.

Town of Newton Wastewater Treatment Plant Roof Replacements - Project Manager

Managed the replacement of the existing roofing systems and appurtenances for five buildings at an active municipal wastewater treatment plant site in Newton, NJ. Mr. Gagliostro managed preliminary design, detailed design, bid phase, and construction phase engineering services for the removal and disposal of existing stone-ballasted ethylene propylene diene monomer (EPDM) roofing systems and the provision of new 7,800-sf fully adhered EPDM roofing systems, including tapered insulation, EPDM membrane, sheet laps, cover boards, tapered and flat insulation, adhesives, and accessory products. Complete roof replacements were furnished, including new coping systems, parapet mounted guardrails, expansion joints, roof hatches, equipment curbs, flashings, crickets, roof drains, and scuppers.

Two Bridges Sewerage Authority UV Disinfection Facilities - Project Engineer

Prepared plant hydraulic model and analyzed upstream hydraulic limitations during wet-weather conditions, and evaluated short- and long-term mitigation measures as part of a project to provide ultraviolet light (UV) equipment and associated effluent pumping for a peak flow of 25 mgd in Lincoln Park, NJ, for the Two Bridges Sewerage Authority. The UV equipment is a two-channel system with low-pressure, self-cleaning amalgam lamps housed within a new pile-supported masonry building. New vertical turbine pumps installed within the existing post-aeration tanks provide effluent pumping when the Pompton River is above flood stage.

Rockaway Valley Regional Sewerage Authority Preliminary Treatment Facilities Modifications - Project Engineer

Prepared contract documents for modifications to preliminary treatment facilities, for the Rockaway Valley Regional Sewerage Authority. The modifications included replacement of existing screening and grit removal equipment, piping, and HVAC equipment, as well as the installation of an odor control system, supervisory control and data acquisition (SCADA) system, motor-operated valves, and grit dewatering facilities. The project also included repair to existing chambers in the sewer system, which were exposed to high H2S concentrations. Performance testing requirements for screenings cleanliness were prepared and included in the contract bid documents to ensure the screenings washer compaction equipment was tested to demonstrate minimum fecal content removal rates.

North Hudson Sewerage Authority Adams Street and River Road Wastewater Treatment Facilities Improvements - Technical Advisor

Provided advisory services during construction of an $800,000 facility improvements project at the Adams Street and River Road wastewater treatment facilities, for the North Hudson Sewerage Authority. Plant improvements included replacement of primary clarifier influent channel isolation gates, replacement of grit washing/classifier units, and piping and equipment repainting, along with other miscellaneous improvements.

Kevin A. Pierce, P.E.

JV BOARD MEMBER

A senior vice president of STV, Mr. Pierce has nearly 30 years of experience managing engineering design and construction-related services for a wide spectrum of large-scale complex projects. He has executed and overseen project and program management contracts, from planning and concept phases through preliminary and final design, as well as guided large construction management efforts and environmental permitting processes. Over the past decade, Mr. Pierce has secured and managed professional service contracts with a combined total of more than $150 million and implemented capital projects with a combined total cost exceeding $3 billion. He has also served in a key client-relationship management role for complex, high-profile projects.

FIRM
STV

OFFICE LOCATION
NEW YORK, NY

EDUCATION
MASTER OF SCIENCE, CIVIL ENGINEERING; RUTGERS UNIVERSITY

BACHELOR OF SCIENCE, CIVIL ENGINEERING; OLD DOMINION UNIVERSITY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW YORK

CERTIFICATIONS
OSHA 30-HOUR

Project Experience

PANYNJ Federally Funded Hurricane Sandy Resiliency Projects IDQ - Principal-in-Charge

Overseeing multidisciplinary design services on an as-needed basis to restore and protect the PATH transit system in Northern New Jersey, under an indefinite quantity (IDQ) contract that is part of a multibillion-dollar resiliency program undertaken by PANYNJ following the devastation of Hurricane Sandy. The firm is providing expertise with railroad and rail systems, electrical/electronics, architectural, structural, civil, geotechnical, environmental, traffic, HVAC, plumbing, and fire protection to address a wide range of vulnerabilities throughout the PATH system. Individual design tasks that Mr. Pierce is facilitating include evaluating flood protection options at the Exchange Place, Newport, and Grove Street stations, along with the Harrison Car Maintenance Facility; studying the best option for constructing a new vehicle storage yard in Jersey City; developing concept plans to extend and elevate tracks at the South Street Yard in Newark; preparing concept plans to raise tracks G and H between the Amtrak flyover and Hackensack Bridge; reviewing a report detailing construction options for a Ninth Street crossover area in Manhattan; and developing conceptual designs to protect traction power and communication equipment at Substation No. 14 in the Harrison Yard. Additional tasks include studying how to implement intelligent transportation system (ITS) applications to facilitate real-time information sharing.

Global Marine Terminal Port Jersey Container Terminal - Project Director/Officer-in-Charge

Responsible for master planning, security planning, and design consultation services for a $25 million wharf extension at the Port Jersey container terminal, at the time the only privately owned and operated container terminal in New York Harbor. The project involved extensive coordination with the Passaic Valley Sewerage Commission (PVSC), whose main outfall pipe crosses the location of the proposed wharf. Extensive and complex geotechnical surveys, including geophysical surveys and borings, were performed to locate the outfall pipe and allow for wharf construction. Mr. Pierce coordinated closely with PVSC's engineering department to satisfy concerns and develop wharf pile installation criteria to minimize risk to PVSC's outfall. He also supervised permitting, design, procurement documents, and construction oversight services. In addition, Mr. Pierce played a key role in successfully obtaining federal funds for the execution of a comprehensive vulnerability assessment.

Empire State Development Corporation Moynihan Station Redevelopment - Project Director

Project Director for Phase I redevelopment of the 100-year-old James A. Farley Post Office into Moynihan Station, one of the largest and most high-profile adaptive reuse and historic restoration projects in the United States. When redevelopment is complete in Phase II, it will be the new home for Amtrak and centerpiece of intercity transportation in the Northeast, transforming a treasured building into an iconic railroad passenger station and mixed-use development befitting New York City, the region, and the nation. Total cost of Phase I construction is $225 million, and the work included extensive coordination with

Amtrak, LIRR, and NYC Transit. The project was funded through various state and federal grants, including the Federal Railroad Administration. Steel and concrete construction for new facilities within the Penn Station train shed required work be completed during 110 weekend track outages and dozens of weeknight outages to maintain normal rail operations. The project includes environmental abatement; extensive demolition; new entrances on 8th Avenue; vertical transportation, including two escalators, eight elevators, and new stairs on Platforms 3 through 11 accessing Tracks 5 through 21; new mechanical and electrical systems, including fire protection/life safety systems, lighting, security, access control, public address, passenger information signage, new permanent and back-up power; static signage; and modern, state-of-the-art finishes.

NYCDDC 34th Avenue Storm Sewer and Water Main Reconstruction REI - Principal-in-Charge

Responsible for resident engineering and inspection (REI) and environmental management services during the installation of new stormwater collection sewers and basins in a residential area of Queens, NY. The $7.8 million upgrades, for the New York City Department of Design and Construction (NYCDDC), cover the area bordering Udall's Cove Park and Land Reserve and near 34th Avenue, Brookside Avenue, and Little Neck Parkway. The work is intended to relieve flooding that has plagued the Little Neck neighborhood and also includes the repair of water mains and the restoration of wetlands. Mr. Pierce is overseeing the construction and inspection of the shallow storm sewer system, which is being built on piles due to the wetlands.

PANYNJ WTC Vehicle Security Center - Project Director

Oversaw conceptual through final design for all phases of the Vehicle Security Center infrastructure, part of the redevelopment of the 16-acre WTC site in Lower Manhattan. Mr. Pierce directed the full design of the $750 million Phase I of the center and tour bus parking facility, the $80 million Phase II of the east basement tour bus parking facility, and the $150 million Phase III of the west bathtub vehicle access (north helix). The scope of work encompassed all structural components, including blast hardening, mechanical and electrical systems, security and communications, security components including vehicle screening, the control center, architectural programming, and the perimeter slurry walls. Mr. Pierce also supervised design of the excavation and all ancillary items for integration with other WTC infrastructure efforts, including the September 11 Memorial & Museum, PATH substation and Transportation Hub, and Towers 1, 2, 3, and 4.

PANYNJ/NYCDDC World Trade Center Campus Security Plan - Project Director

Directed planning from concept through final design of the campus security plan for the 16-acre WTC site in Lower Manhattan, for PANYNJ and NYCDDC. The $350 million program included a comprehensive vehicle access and vehicle interdiction infrastructure along the perimeter of the site. The plan, as originally envisioned and proposed by the New York City Police Department (NYPD), included eight security checkpoints with four entry gates at Washington Street, West Broadway, Trinity Place and Liberty Street and four exits at Vesey, Fulton, Church and Greenwich streets, as well as a security median barrier along Church Street from Cedar Street to just north of Vesey Street. Mr. Pierce provided substantial coordination with stakeholders, including the NYPD, Port Authority Police Department, Port Authority Security Program Management Group, WTC Construction, WTC Redevelopment, New York City Office of the Mayor, and NYCDDC. He oversaw the development of extensive planning level studies and scope definition and design of civil, structural, security, communications, electrical, mechanical, urban design and architectural design elements. The program encompassed all security systems, guard booths, CCTV, access control, vehicle interdiction barriers, fixed bollards, and associated miscellaneous appurtenances.

Albert Beninato, PE, PP, BCEE

JV BOARD MEMBER

Mr. Beninato serves as the Executive Vice President and Managing Director of Mott MacDonald's U.S. East Unit, responsible for the overall management, administration, and operation of more than 35 offices in the eastern United States.

He has more than 35 years of experience on a multitude of civil and environmental engineering projects. His work encompasses the management and design of water and wastewater projects and other public works projects, such as stormwater and drainage projects, road reconstruction projects, recreational projects, and shoreline protection, mitigation, and improvement projects. He has represented the firm in attendance at regular and special meetings of clients related to water and wastewater facilities, and has provided expert testimony during litigation. Mr. Beninato also has extensive experience in regulatory processes related to wastewater treatment and disposal facilities, water supply allocation, and waterworks construction and operation approvals.

He has also represented the firm as an appointed Municipal Engineer, providing consultation and advisory services relating to the broad spectrum of municipal engineering work, including projects involving roads, site development approvals, assessment of development impacts, stormwater assessment, and various grant programs. He has also provided engineering and environmental-related design and permitting services for various park, recreational, and golf course projects.

In addition, Mr. Beninato is experienced in the preparation of feasibility reports for water and wastewater systems, reports upon planning and operations of water systems, and water and sewer rate structures, including revenue analysis and present worth studies.

FIRM
MOTT MACDONALD

LOCATION
ISELIN, NJ

EDUCATION
MASTER OF SCIENCE, ENVIRONMENTAL ENGINEERING; NEW JERSEY INSTITUTE OF TECHNOLOGY

BACHELOR OF SCIENCE, ENGINEERING TECHNOLOGY; NEW JERSEY INSTITUTE OF TECHNOLOGY

ASSOCIATE OF APPLIED SCIENCE, MECHANICAL ENGINEERING TECHNOLOGY; UNION COUNTY TECHNICAL INSTITUTE

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY

PROFESSIONAL PLANNER: NEW JERSEY

CERTIFIED MUNICIPAL ENGINEER: NEW JERSEY

CERTIFICATIONS
BOARD CERTIFIED ENVIRONMENTAL ENGINEER, AAEE

Project Experience

Avalon Borough Municipal Engineering Services - Municipal Engineer
Appointed Municipal Engineer by this municipality in Cape May County, NJ, providing consultation services regarding road reconstruction projects, inlet and beach protection, drainage, public works equipment and buildings, budgets, and miscellaneous municipal projects.

Carteret Borough Capital Improvements Project - Municipal Engineer/Principal-in-Charge
As Municipal Engineer for this municipality in Middlesex County, NJ, led capital improvements projects, which encompassed parks and recreation, roads, drainage projects, and sewer system infrastructure.

Freehold Township Sewer and Water Facilities - Project Manager
Responsible for the planning and design of various facilities for this municipality in Monmouth County, NJ. These facilities include interceptor sewers, water transmission, and regional pumping stations, and the work entailed conceptual planning, project management during design, and project administration during construction. Designs included installation of sanitary sewers at depths between 25 and 35 feet. Mr. Beninato reviewed developer plans of sanitary sewer facilities as part of the Planning Board's Technical Review Committee for conformance with local regulations and requirements.

Woodstown Sewerage Authority Wastewater Treatment Plant Upgrade - Project Manager
Initiated planning for wastewater treatment plant upgrading with consideration for expansion from 300,000 gpd to 500,000 gpd for this utility in Salem County, NJ. This involved negotiations with NJDEP for execution of an Administrative Consent Order. Mr. Beninato attended regular and special meetings of the

authority, oversaw preparation of the Wastewater Management Plan, an extensive stream study for submission to NJDEP for wasteload allocations, application of Discharge Allocation Certificate, and preparation of the Environmental Impact Assessment. He also assisted in developing user cost analysis and obtaining financing through the State Wastewater Loan Program. In addition, Mr. Beninato managed the preparation of plans and specifications for a new wastewater treatment plant involving advanced wastewater treatment, wastewater pumping facilities, and collection system rehabilitation involving lining, and replacement projects.

Avalon Borough Wastewater Treatment Plant Interim Improvements - Project Manager

Provided design and construction engineering services for interim plant improvements for this municipality in Cape May County, NJ. These improvements included raw wastewater pumping, sludge pumping, and improved aeration equipment, chlorine contact tank improvements, additional sludge drying beds, and appurtenances. Mr. Beninato prepared a report on upgrading and expansion of treatment facilities to include additional treatment and equalization. He prepared an operation and maintenance manual for the wastewater treatment facilities. He also managed the design of raw sewage and pumping station rehabilitation programs and sewer system rehabilitation, as well as the preparation of documents for a treatment plant closure and demolition.

NJ Sports and Exposition Authority Monmouth Park Racetrack Wastewater Collection System - Project Manager

Managed a wastewater collection system to capture contaminated runoff in the stable and barn area of the racetrack, as stipulated by an Administrative Consent Order with NJDEP. The project included the controlled collection of all dry-day flow and the “first flush” stormwater from rain events through a gravity collection system and meter chamber to be conveyed to an existing Northeast Monmouth County Regional Sewerage Authority 30-inch-diameter interceptor.

Cape May County Collector Sewer Facilities - Project Manager

Responsible for the conceptual design, regional planning, and development of plans for collector sewer facilities for Cape May County, NJ, which included gravity sewers, pumping stations, and force mains to serve major portions of developed areas of Middle Township through Farmers’ Home Administration grant/loan assistance. Mr. Beninato managed the construction services related to the sanitary sewer projects, as well as the engineering design of water distribution systems in developed areas of the township.

City of Cape May Water Supply System Evaluation - Project Manager

Responsible for the preparation of the report and public presentation regarding Cape May’s water supply system. The report involved review and analysis of historical water use to develop future water demands;the impact of future water demands on distribution, transmission, storage, supply, and treatment; and recommendations for capital improvements, including project costs. The study also involved the evaluation of desalination water treatment technology to address the water quality impacts associated with saltwater intrusion.

Freehold Township Water Master Plan Improvements - Project Manager/Resident Engineer

Prepared specifications and provided resident engineering for chemical and mechanical redevelopment and testing of gravel-packed wells extending approximately 550 feet to the Raritan Formation in Monmouth County, NJ. The scope of work included the installation of corrosion resistant pumping equipment. Mr. Beninato prepared the Master Plan improvements, which included additional supply, treatment, and transmission facilities. He also designed water distribution facilities for developed portions of the township and for the accommodation of county highway improvements.

Michael Tumulty, P.E.

TECHNICAL ADVISOR (RESILIENCY)

Mr. Tumulty has 35 years of experience in environmental, civil, and coastal engineering; water resources management; and environmental remediation. He is an expert in the analysis, design, and development of flood resiliency measures and leads the flood resiliency design group in STV's main office. A coastal engineer, Mr. Tumulty specializes in planning and design for resiliency in infrastructure to address climate change and protect critical infrastructure from flood vulnerabilities. His experience in coastal engineering includes computer modeling of storm surges routed into New York Harbor and Newark Bay for the U.S. Army Corps of Engineers (USACE) and FEMA. Mr. Tumulty has conducted investigations and provided designs for shorefront structures in New York, New Jersey, and overseas. On the environmental front, he has directed numerous site assessments, subsurface investigations, remedial investigations, and remedial designs, and has managed extensive permitting efforts. He is currently managing principal for the planning and design for protection from sea level rise and tidal flooding at one of the largest rail yards in the world, the Coney Island Yard complex in New York City.

FIRM
STV

OFFICE LOCATION
NEW YORK, NY

EDUCATION
MASTER OF SCIENCE, ENVIRONMENTAL ENGINEERING; STATE UNIVERSITY OF NEW YORK AT STONY BROOK

BACHELOR OF SCIENCE, CIVIL ENGINEERING; HOFSTRA UNIVERSITY

COASTAL ENGINEERING COURSEWORK; NEW YORK STATE OCEAN SCIENCE LABORATORY, MONTAUK POINT, NY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY

CERTIFICATIONS
CERTIFIED GROUNDWATER PROFESSIONAL; NATIONAL GROUNDWATER ASSOCIATION (NGWA)

OSHA 40-HOUR HAZWOPER CERTIFICATION

Project Experience

NYC Transit Coney Island Yard Flood Mitigation - Project Principal/Director

Directed the evaluation of alternatives, including a comprehensive condition assessment of 110 acres of rail yard and 28 structures, an FTA grant application, and temporary and permanent flood control design for the Coney Island Yard, a critical New York City Transit (NYC Transit) property in Brooklyn, NY, which operates 24/7, was inundated and half-submerged due to a Hurricane Sandy-generated storm surge. Mr. Tumulty directed all technical disciplines and liaised with the client and other stakeholders, including the USACE, New York State Department of Environmental Conservation (NYSDEC), and the local community board. The 1926 complex, built on former marshland, is among the world's largest railcar storage, repair, and servicing yards in the world. The design includes 2.5 miles of flood walls averaging 12 feet in height, nine major gate structures, new pump station buildings, and extensive drainage controls for protecting the site from future storm surges and other weather-related events. The temporary flood control work was performed according to an expedited schedule, with designs completed in less than two months. This allowed continuous construction throughout 2014, and completion in time for the 2015 storm season. The permanent flood control protection design is ongoing and proceeding under an expedited schedule. The work is being funded in large part by the federal government and has been performed in accordance with all FEMA guidelines and FTA architectural, engineering, and environmental review requirements.

NYC Transit Coney Island Yard SWPPP - Project Director/Manager

Led the preparation of a stormwater pollution prevention plan (SWPPP) for Coney Island Yard. Mr. Tumulty was responsible for all technical, administrative, schedule, and budgeting aspects of the project. His team developed best management practices for stormwater control and staffing, prepared drainage mapping, and identified areas of potential spills or leaks. Mr. Tumulty reviewed the SWPPP for compliance with U.S. EPA and NYSDEC requirements. This task was performed as part of an on-call environmental services contract with NYC Transit.

PANYNJ Federally Funded Hurricane Sandy Resiliency Projects IDQ - Environmental Lead

Providing environmental services on an as-needed basis for the PATH transit system in Northern New Jersey, under an indefinite quantity (IDQ) contract that is part of a multi-billion-dollar resiliency program undertaken by the Port Authority of New York and New Jersey (PANYNJ) following the devastation from Hurricane Sandy. The firm is providing expertise with railroad and rail systems, electrical/electronics, architectural, structural, civil, geotechnical, environmental, traffic, HVAC, plumbing, and fire protection

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Project Experience

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Peter Kocsik, P.E.

TECHNICAL ADVISOR

Mr. Kocsik is a project manager with extensive experience in the planning, design, and construction of various wastewater, water, and stormwater facilities. He has been responsible for numerous sewer system studies and capital improvement programs for sewerage authorities throughout New Jersey, and is currently serving as the appointed engineer for several utilities authorities. Mr. Kocsik is familiar with NJDEP regulations and permitting requirements, as well as funding agencies, such as the New Jersey Environmental Infrastructure Trust (NJEIT), USEPA, and FEMA. As Subdivision Manager for Wastewater Services in Mott MacDonald's headquarters in Iselin, NJ, Mr. Kocsik supervises a staff of engineers, designers, and inspectors involved in the design and construction of new and the rehabilitation of existing sanitary sewer and wastewater conveyance and treatment facilities.

FIRM
MOTT MACDONALD

OFFICE LOCATION
ISELIN, NJ

EDUCATION
MASTER OF SCIENCE, CIVIL ENGINEERING; NEW JERSEY INSTITUTE OF TECHNOLOGY

BACHELOR OF SCIENCE, CIVIL ENGINEERING; NEW JERSEY INSTITUTE OF TECHNOLOGY

ASSOCIATE OF APPLIED SCIENCE, CIVIL ENGINEERING TECHNOLOGY; MIDDLESEX COUNTY COLLEGE

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY

CERTIFICATIONS
OSHA CONFINED SPACE ENTRY

Project Experience

MCUA Edison Pump Station Hurricane Sandy Emergency Response - Project Manager

Led emergency response services for the 85-mgd Edison Pump Station, which was recently renovated under a $30 million project. The station was swamped with 8 feet of water above grade and 42 inches of water in the first floor of the pump station following a devastating storm surge in Raritan Bay and the Raritan River during Hurricane Sandy. All five 500-hp pumps, motor controls, variable-frequency drives (VFDs), and associated equipment were damaged. Mr. Kocsik was responsible for the selection of emergency response contractors, coordinating staffing to provide "around the clock" on-site engineering supervision, and coordinating activities with the Middlesex County Utilities Authority (MCUA) and FEMA. Within eight days of the flooding, a bypass pumping system was installed and placed into operation, ceasing the uncontrolled discharge of raw sewage into the Raritan River. Emergency service continued throughout January 2013 to restore the full pumping capacity of the pump station.

MCUA Edison Pump Station Rehabilitation - Project Manager

Led the rehabilitation of the 85-mgd Edison Pump Station for the MCUA. Improvements included the replacement of five 500-hp sewage pumps, new VFDs, new pump controls, conversion from 2,400-V power to 480-V power, a new load-sharing natural gas generator system, new dual-discharge header, and replacement of valves and piping. Mr. Kocsik also designed a temporary 85-mgd bypass pumping system, convertible to a permanent bypass pumping system.

Rockaway Valley Regional Sewerage Authority Hurricane Irene Interceptor Sewer Replacement - Project Manager

Led emergency response services for the replacement of an interceptor sewer for the Rockaway Valley Sewerage Authority. In August 2011, Hurricane Irene caused extensive flooding in the Rockaway River due to historic rainfall. The river became a torrent, rerouting both the alignment and depth of the river, and washed away a dual 16-inch-diameter gravity sewer pipeline crossing of the river, constructed in the 1920s. Mr. Kocsik coordinated the immediate response to assess the hurricane damage. The $4.8 million remedy includes the construction of a new aerial gravity sewer in one section, along with the construction of a pump station and force main to replace the washed-away interceptor sewer. He also assisted in coordinating the actions of FEMA and in acquiring public assistance funding. Mr. Kocsik also prepared alternate plan reports and numerous regulatory permit applications to satisfy NJDEP and FEMA.

Manasquan River Re gional Sewerage Authority Force Main Failure and Repair - Authority Engineer

Coordinated with the authority contractor to perform emergency repairs to the Manasquan Pump Station in Monmouth County, which sustained extensive flooding damage caused from Hurricane Irene. The nor-

mal 6-mgd flow peaked at over 20 mgd, causing excessive surcharging in the pump station wet well, which indirectly reduced system head, increased pump rates, and resulted in overpressurization of the downstream force main. As a result of the hurricane, a section of 36-inch-diameter force main ruptured within NJ State Highway Route 9 at a major intersection. Repairs were performed during a low-flow (midnight to 6 AM) timeframe. Because the damage could be attributed to Hurricane Irene, Mr. Kocsik prepared documentation to support a request for public assistance to FEMA. The authority was successful in recovering the full cost of the emergency repair. A long-term project to replace 2,200 lf of force main is currently under design.

MCUA Hurricane Sandy FEMA Consulting - Project Manager/FEMA Consultant

Managed the preparation of paperwork to receive FEMA financial aid for the repair of infrastructure at three pump stations and numerous other MCUA facilities that were severely damaged by storm surge that ran up the Raritan River during Hurricane Sandy. Mr. Kocsik guided a team of engineers and other professionals to develop requests for public assistance from FEMA through Category A, Category B, and Category F programs. He has also coordinated long-term restoration options, including mitigation options under both 406 and 404 programs. To date, the long-term restoration is thought to be valued at more than $100 million.

Middle Township Wastewater Management Plan - Project Manager

Prepared a build-out analysis of various sewer service areas within the township to support a county-wide 208 Amendment Study in Middle Township, NJ. Work included evaluation of environmentally sensitive areas, zoning, and currently unsewered developed areas of the township.

Clinton Township Wastewater Management Plan - Project Manager

Prepared a wastewater management plan as part of a pilot program funded by NJDEP in accordance with pending regulations in Clinton Township, NJ. The study included a build-out analysis, the use of geographic information systems (GIS) for mapping and analysis, projection of wastewater flows and necessary facilities, and a comprehensive report.

MCUA Wastewater Reuse Pump Station - Project Manager

Managed the design and construction of a 7-mgd wastewater effluent reuse pump station, for the MCUA. The facility provides a supply of water to a 700-MW power plant located three miles away from the wastewater treatment plant. The $5.5 million facility was built on time to meet the strict schedule of the power plant construction.

Regina Bella, CQA

QA/QC MANAGER

Ms. Bella is an accomplished manager of QA/QC initiatives with more than 25 years of experience in project and construction inspection management. She routinely develops quality management programs for newly awarded transportation, infrastructure, buildings, and facilities projects for the firm's Northeast Region. Ms. Bella's background includes overseeing the generation, implementation, and administration of QA/QC and project controls for every aspect of design, construction management, and inspection, including architectural, structural, civil, mechanical, environmental, and electrical disciplines. She works effectively in a fast-paced environment to prioritize tasks and meet deadlines. Ms. Bella is highly skilled in performing internal design verification of package, process, and product audits, while working closely with project managers and design leads to organize and streamline large volumes of deliverables. She is responsible for creating and monitoring project-specific quality procedures and work instructions to ensure that contractual obligations are met. Ms. Bella also performs quality system audits on construction and inspection projects. Before joining the firm, she worked at the Long Island Rail Road (LIRR) for more than 20 years.

FIRM
STV

OFFICE LOCATION
NEW YORK, NY

EDUCATION
ASSOCIATE OF ARTS, BUSINESS COMMUNICATIONS; ADELPHI UNIVERSITY

CERTIFICATIONS
CERTIFIED QUALITY AUDITOR (CQA); AMERICAN SOCIETY FOR QUALITY

CERTIFIED PURCHASING MANAGER; NATIONAL ASSOCIATION OF PURCHASING MANAGERS (NAPM)

ACCREDITED PURCHASING PRACTITIONER; NAPM

TRAINING
CONTRACT ADMINISTRATION AND CONTRACTING VIA COMPETITIVE SEALED BIDS; NEW YORK CITY PROCUREMENT TRAINING INSTITUTE

Project Experience

NYC Transit Coney Island Yard Flood Mitigation Feasibility Study - Quality Manager

Providing quality oversight during the feasibility study to identify flooding measures at the 110-acre Coney Island Yard rail complex in Brooklyn, NY, which was significantly impacted by the storm surge from Hurricane Sandy. The 1926 complex encompasses three railroad storage yards for New York City Transit (NYC Transit), and is used to perform regular maintenance for a fleet of nearly 800 cars, as well as heavy maintenance and overhaul for the approximately 6,000 cars in the NYC Transit subway system. Ms. Bella is developing the quality plan and training project staff to check project documents for compliance with STV QC procedures.

NYC Transit Coney Island Yard New Cable Bridge and Replacement of Traction Power and Communication Systems - Quality Manager

Providing quality oversight for the design of a new cable bridge and the replacement of traction power and communication cables at Coney Island Yard in Brooklyn, NY, which was significantly impacted by the storm surge from Hurricane Sandy. Ms. Bella is monitoring the implementation of the quality plan and performing product and process audits of all design deliverables. She is responsible for coordinating project deliverables from all disciplines.

NJDPMC CRRNJ Terminal Building Historic Interior and MEP Restoration - Quality Manager

Developed and is currently implementing the quality management program for the restoration of interior materials, finishes, and repairs to mechanical, electrical, and plumbing (MEP) equipment at the Central Railroad of New Jersey (CRRNJ) Terminal in Jersey City, NJ, damaged by flooding caused by Hurricane Sandy. The firm's scope of work for this fast-track New Jersey Department of the Treasury Division of Property Management and Construction (NJDPMC) project includes a conditions assessment; restoration and refurbishment specifications, including redesign or relocation of the MEP systems as needed to prevent future flood damage; scheduling; and construction administration. Ms. Bella is responsible for effective implementation of quality plans and procedures, including preparing product and process audits and reviewing subconsultant performance and deliverables. She is also reviewing procedures for generating design drawings.

NJ TRANSIT Hoboken Terminal and Yard Hurricane Sandy Recovery Program - Quality Manager
Overseeing QA/QC for design and civil, structural, mechanical, electrical, plumbing, and fire protection engineering for restoration and repair of damage to the historic Hoboken Terminal and Yard in Hoboken, NJ, from Hurricane Sandy.

PANYNJ Repair and Rehabilitation Resiliency Projects - Holland and Lincoln Tunnels Task Order #20 - Quality Manager
Provided quality oversight for the Holland and Lincoln tunnels, key arteries connecting Manhattan with New Jersey's highways that sustained saltwater corrosion damage during Hurricane Sandy. STV designed restoration and resiliency repairs to both facilities for the Port Authority of New York and New Jersey (PANYNJ). The firm conducted a thorough review of the facilities, one of which dates to 1927.

NYC Transit 17 Fan Plants and Adjacent Tunnel Flood Mitigation - Quality Manager
Responsible for QA/QC for an engineering feasibility study and design plans and specifications involving multiple disciplines, for storm surge hardening and associated repairs to subway fan plants, emergency exits, access ways, ventilation structures, and other points of storm water entry at 17 critical locations in the New York City area that sustained significant flood damage due to the storm surge from Hurricane Sandy.

NYC Transit Architectural and Engineering Design for the Repair of 12 Circuit-Breaker Houses - Quality Manager
Overseeing QA/QC for the redesign of 12 above-ground circuit-breaker houses along NYC Transit lines in Queens, Brooklyn, and the Bronx, NY, that sustained extensive damage during Hurricane Sandy when water entered through defective roofs, exterior siding, and floor drains, as well as conduit and duct openings. Some of the structures date back to the 1940s and most are constructed of lightweight timber on a concrete floor with metal siding and roofs with built-up membrane, metal fascia flashing, and drainage pipes. All require rehabilitation to protect vital electrical equipment, including DC circuit-breakers, terminal test boxes, telephone and communications equipment, copper bus ducts, wiring, battery switch boxes, lighting, and heating systems.

NYC Transit 53rd Street Tunnel Resiliency Repairs - Quality Manager
Providing QA oversight for design for communications, traction power, and structural repairs for the 53rd Street Tunnel. The tunnel, which carries NYC Transit's E and M lines and connects the Lexington Avenue/53rd Street Station in Manhattan and 23rd Street/Ely Avenue Station in Queens, NY, sustained significant damage during Hurricane Sandy. Ms. Bella's responsibilities include review of all project deliverables prior to their going to the client.

PANYNJ Lincoln Tunnel Bus Ramp Complex Column Strengthening Stage I - Quality Manager
Responsible for QA/QC for the design of measures to protect the ramp network connected connecting the Port Authority Bus Terminal in Midtown Manhattan and the Lincoln Tunnel from progressive and catastrophic collapse. The scope of work for the PANYNJ project includes site inspections to inventory and assess the multiple steel columns, lateral bracing, and other support members, and evaluation of options to protect the ramps from various levels of blast force. Ms. Bella is conducting product and process audits of design deliverables.

Clifford Wilkinson, PE

QA/QC MANAGER

FIRM
MOTT MACDONALD

LOCATION
ISELIN, NJ

EDUCATION
MASTER OF SCIENCE, CIVIL ENGINEERING; NEW JERSEY INSTITUTE OF TECHNOLOGY

BACHELOR OF SCIENCE, CIVIL ENGINEERING; NEW JERSEY INSTITUTE OF TECHNOLOGY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY,

Mr. Wilkinson has extensive experience in the design and construction of new wastewater facilities, as well as expansion and modifications for the upgrade of existing facilities. He is a former Mott MacDonald Executive Vice President, Chief Engineer, and Division Manager for Water and Wastewater Services.

As Principal-in-Charge of Facilities Design Services for municipal and industrial wastewater, he was responsible for project coordination, project scheduling, and quality control/quality assurance. His other responsibilities included oversight of Mott MacDonald's design and drafting support groups, including structural and architectural design, electrical design, instrumentation and control system design, and facilities design engineering. In 2008, Mr. Wilkinson was appointed Mott MacDonald's Wastewater Practice Leader for North America, responsible for technical guidance and oversight for all wastewater projects undertaken by the firm.

Mr. Wilkinson's experience includes the management of wastewater treatment feasibility studies, design reports, development of detailed design drawings, and preparation of specifications. He is also experienced with construction-phase engineering of both large and small wastewater treatment and conveyance facilities, as well as the activities involved in the start-up and troubleshooting of wastewater treatment facilities. He has provided resident engineering services during the construction of numerous pumping and treatment facilities, responsible for process, HVAC, plumbing, and architectural inspection. He supervised construction and demolition activities, monitored project progress, and prepared payment estimates, as well as providing contractor, engineer, and outside agency coordination, and coordination of plant start-up and operating activities. In addition, Mr. Wilkinson has extensive project management experience in heavy site/civil projects, especially related to wastewater treatment plants and pumping stations.

Currently, Mr. Wilkinson is in charge of Mott MacDonald's in-house monthly seminars on various engineering disciplines, design procedures, and project management strategies. He also oversees the firm's team that guides senior engineering students from local universities through an actual engineering study and/or design project.

He has also made presentations to the New Jersey and New York Water Environment Associations and published various technical papers.

Project Experience

MCUA Edison Pump Station Flood Wall - QA/QC Managerr

Provided QA/QC review for the design of an 18-foot-high perimeter flood wall and bypass pumping system with elevated controls for the Middlesex County Utilities Authority (MCUA). The goal was to provide resiliency against flooding to a pump station along the Raritan River.

PVSC Water Pollution Control Facilities - Project Director

Directed major modifications to the 12 final clarifiers for the 330-mgd, activated-sludge secondary wastewater treatment plant. The $17.7 million project included rehabilitation of 36 120-foot-diameter circular sludge collectors, including sandblasting and painting, replacement of sludge collection boxes with stainless steel construction, and miscellaneous mechanical improvements. The project also included the design of a new scum removal system, incorporating new scum removal and baffling systems and new scum pumping, piping, and control facilities. The scum pumping system includes 12 40-hp, progressive-cavity scum pumps with variable-frequency drives (VFDs) and PLC-based controls, as well as extensive piping modifications in the 700-foot-long pump gallery.

PVSC Oxygenation Facility - Project Director
Supervised the completion of various contractual obligations, which a contractor had yet to complete after 10 years. Mr. Wilkinson's responsibilities included the management of engineering services, including construction inspection/observation, preparation of pay estimates, coordination with client and consultants, and negotiations regarding disputed issues.

PVSC Return and Waste Sludge Pumping Station - Project Manager
Responsible for the preparation of specifications and contract drawings to permit the completion of and modifications to the existing facilities. This included the preparing the project's bid documents.

PVSC Sludge Heat Treatment Facility - Project Director
Supervised a project involving the construction of twelve 260-gpm, intermediate-pressure thermal sludge conditioning systems and all related support systems. The $80 million facility is the world's largest facility of its kind. Mr. Wikinson's responsibilities included the review of shop drawings and the supervision of numerous construction inspectors/observers necessary for the complete construction process (structural, architectural, process, piping, instrumentation and controls, HVAC, plumbing, electrical, and site work). Additionally, he supervised and managed start-up, troubleshooting, and training activities.

PVSC Construction Claims - Project Manager
Responsible for claims review and analysis, contractor negotiations, coordination with client's attorneys and drafting of settlement agreements, and preparation of contract change orders.

PVSC Settling Tanks Evaluation - Project Director
Evaluated primary settling tanks, oxygen tanks, nocardia control, oxygen transfer, and influent and outfall hydraulics.

MCUA Edison Force Mains - QA/QC Manager
Provided QA/QC and constructability reviews for the construction of twin 60-inch-diameter force mains installed within a 15-foot-diameter, 4,000-foot-long tunnel beneath the Raritan River. The $78 million project provides primary and secondary conveyance systems between the Edison Pump Station and the MCUA Central Wastewater Treatment Plant. The project includes an expansion to the aerated grit facilities and full replacement of pumps and controls at the 85-mgd Edison Pump Station.

Regional Municipality of Halton Mid-Halton Wastewater Treatment Plant Phase IV/V Expansion - Project Manager , Oakville, Ontario, Canada
Managing the expansion of the plant in Oakville, Ontario, from 75 mL/d to 125 mL/d (20 mgd to 33 mgd). The expansion considers the future expansion phase, which will further increase plant capacity to 175 mL/d (49 mgd). Project expansion elements include, among other items: expanding the North Pump Station, new influent flow distribution chamber, new headworks containing screenings removal and two vortex grit removal units, four new primary clarifiers, two new aeration tanks, four new final secondary clarifiers, new ultraviolet light (UV) disinfection facility for the entire plant capacity, new ferric, caustic and sodium hypochlorite chemical-feed facilities, and a new anaerobic digester and ancillary biosolids improvements. In addition, the project includes the design of a new 6.1-kilometer (3.6-mile) outfall tunnel into Lake Ontario with dispersion field. The design is beign fast-tracked due to the need to bring the facility on-line to avoid disruption to development in the region.

Ryan Conry, P.E.
STRUCTURAL ENGINEER

Mr. Conry is a structural engineer with more than five years of experience developing designs for a wide range of facilities. His background includes analyzing new and existing structural systems for a variety of load types, as well as designing structures to withstand flood events and blasts to meet anti-terrorism standards. Mr. Conry has also performed construction administration services to assist in resolving field issues.

FIRM
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OFFICE LOCATION
NEW YORK, NY

EDUCATION
MASTER OF SCIENCE, STRUCTURAL ENGINEERING; MANHATTAN COLLEGE

BACHELOR OF SCIENCE, CIVIL ENGINEERING; MANHATTAN COLLEGE

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW YORK

CERTIFICATIONS
OSHA 10-HOUR CONSTRUCTION SAFETY AND HEALTH

Project Experience

NYC Transit Coney Island Yard Flood Mitigation - Structural Engineer

Performing structural design services for the development of both near-term and long-term flood proofing measures at the Coney Island Yard complex in Brooklyn, NY, for New York City Transit (NYC Transit). Near-term protection includes the design of floodwalls for a 100-year storm event using sand bags and converted fence structures. Long-term protection includes designs for a Category II hurricane surge using the Sea, Lake, and Overland Surges from Hurricanes (SLOSH) model. Mr. Conry is designing sheet pile walls, reinforced concrete walls, and large-scale vehicular and rail gates for this type of event.

NYC Transit Coney Island Yard Traction Power Upgrade - Senior Structural Engineer

Performed the structural design for an 80-span, 5,000-foot-long steel truss bridge to support new traction power cables throughout the 110-acre site at the Coney Island Yard complex in Brooklyn, NY. The elevated cables will be safe from future flooding events, and will be easily accessible for maintenance and replacement. Due to the congested site and required train clearances, the bridge geometry is very complex, and required optimization of the steel connection details to reduce field erection time and limit track outages. As senior design engineer, Mr. Conry is responsible for performing all of the analysis and leading a four-member team.

MTACC/LIRR East Side Access - Structural Designer

Performed full structural design for a new train wash facility at the Sunnyside Yard in Queens, NY, as part of the $10 billion East Side Access project to extend Long Island Rail Road (LIRR) service to Grand Central Terminal on Manhattan's East Side for MTA Capital Construction (MTACC). The 400-foot-long, steel-framed building features composite floor construction to support equipment lifts, wash equipment, wash bays, and storage. The project also involved designing reinforced concrete retaining walls. As the site involved significant grade variations, Mr. Conry also designed a reinforced concrete pier and retaining wall system that worked in conjunction with the lateral moment frames to resist large soil earth pressures. He also coordinated his work with other ongoing East Side Access activities, as well as new rail alignments.

Con Edison Substation and Generating Plant Storm Hardening Evaluation and Design - Structural Designer

Performed structural engineering services for the development of flood-proofing measures at 13 Con Edison facilities in Manhattan. This required several creative strategies to work within the framework of the old congested buildings, while minimizing station downtime and interior disruption. Strategies included use of fiberglass reinforced panel walls, custom aluminum post and panels barriers, and composite steel/concrete bracing members. The new measures will help protect the power generation and distribution system from severe storms similar to Hurricane Sandy, which inflicted $500 million in flood damage and caused widespread service outages for 1.4 million customers. Mr. Conry analyzed existing structural components for flood loading, designed reinforcing measures, and designed new platforms for elevating essential equipment.

NYSOGS South Beach Psychiatric Center Emergency Response and New Central Services Building - Structural Designer

Designed exterior façade and screen wall support system for the new $41 million, 47,000-sf Central Services Building at the South Beach Psychiatric Center on Staten Island, NY, for the New York State Office of General Services (NYSOGS). The facility will house replacement mechanical equipment needed as a result of severe damage inflicted by Hurricane Sandy in late 2012. Mr. Conry provided quick and efficient pile cap redesigns when the field-verified pile capacities came in significantly below the values recommended by the geotechnical engineer. He also provided foundation analysis and design, along with construction administration services.

USACE USMA Davis Barracks - Structural Designer

Assisted in the structural design of a $192 million, 6-story, 287,000-sf cadet barracks at the U.S. Military Academy (USMA) in West Point, NY, for the U.S. Army Corps of Engineers (USACE). The building will be constructed of a cast-in-place reinforced concrete flat slab, which maximizes the ceiling height in the cadet rooms and provides superior vibration, energy, and acoustic performance. It will also include interior shear walls and exterior moment frames for progressive collapse prevention. The barracks will contain 325 modern cadet rooms as well as ancillary spaces. The entire building is being designed in conformance with current United Facilities Criteria for anti-terrorism/force protection, including blast resistance and life safety requirements. The facility, which has the added complication of being built into a solid rock hillside, will be built by a design-build team based on 100% design documents delivered by the firm. This project required submission of a clash-free 3D model in Revit Structure. Mr. Conry prepared the progressive collapse and blast design using non-linear, static, and dynamic analyses to meet anti-terrorism building standards. He also designed the concrete shear wall and moment frame lateral systems, and assisted in the design of the typical foundation, slab, and column elements.

NYSOGS Kirby Psychiatric Hospital Relocation at the Manhattan Psychiatric Center - Structural Designer

Performed an analysis of existing floor systems comprised of structural steel and two-way concrete joists to determine their inherent load carrying capacity at the Manhattan Psychiatric Center on Wards Island, NY, for the New York State Office of General Services (NYSOGS). The $140 million, 263,000-sf renovation will transform the space into a contemporary forensic psychiatric facility. The challenges are to add new code-compliant engineering systems while maintaining existing operations to the adjacent “B” Tower within the constraints imposed by the existing site and structure. Mr. Conry conducted a preliminary investigation of floor strengthening techniques, and provided cost-effective solutions that included replacing the existing non-structural fill with a composite concrete slab bonded to the existing joists.

KNIC Partners, LLC Kingsbridge National Ice Center Concept Design and Feasibility Study - Structural Designer

Performed a structural analysis of the drill hall floor slab for the proposed Ice Center in the Bronx for the Kingsbridge National Ice Center LLC (KNIC Partners, LLC). When the existing drill hall was found to be deficient, the structural team determined possible options for replacing or reinforcing the floor. Mr. Conry prepared concept framing plans for the new drill hall floor, as well as for a new long-span steel truss system to support elevated rinks. The final concept plans were then used to provide pricing information to the owner for use in developing the project’s financial model.

Jack Greenberg, P.E.

STRUCTURAL ENGINEER

Mr. Greenberg is a structural engineer with more than five years of experience in performing structural engineering analysis and design services for a variety of new construction and renovation projects throughout the New York metropolitan area. His skills include conducting field investigations of structural elements, such as foundations and framing, for their ability to carry current and/or future design loads. Mr. Greenberg has also prepared site reports on observed damage or defects and performed peer reviews of drawings and documents. In addition, he is experienced in the use of building information modeling (BIM) software for structural design.

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OFFICE LOCATION
NEW YORK, NY

EDUCATION
MASTER OF ENGINEERING, CIVIL ENGINEERING; THE COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART, ALBERT NERKEN SCHOOL OF ENGINEERING

BACHELOR OF ENGINEERING, CIVIL ENGINEERING; THE COOPER UNION FOR THE ADVANCEMENT OF SCIENCE AND ART, ALBERT NERKEN SCHOOL OF ENGINEERING

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW YORK

Project Engineer

VA Manhattan Campus Flood Protection - Structural Designer

Performed design research and drafting for preliminary and final design of a floodwall and floodgates to protect the U.S. Department of Veterans Affairs (VA) Medical Center in Manhattan from potential storm-related damage. The $8 million project area encompassed 110,000 sf of the two-block complex. The proposed 5-foot-high, 950-foot-long concrete floodwall was designed to be mounted on piles along the low side of the property, with curb cuts to provide access to the facility's driveway and parking.

NYC Transit Manhattanville Bus Depot Exterior Envelope Restoration - Structural Engineer

Studying site conditions and conducting analysis for development of multiple schemes to repair the existing masonry façade and concrete masonry unit backup wall for this $16 million envelope rehabilitation project for New York City Transit (NYC Transit) in Manhattan's West Harlem area. The scope of work also includes the study and design of emergency flood barriers as a part of NYC Transit's ongoing efforts to incorporate storm hardening into existing critical structures. Mr. Greenberg is preparing and delivering reports and presentations to NYC Transit and completing the calculation package, design drawings, and specifications.

NYSOGS South Beach Psychiatric Center Emergency Response and New Central Services Building - Structural Designer

Designed the foundation and miscellaneous steel features of the new 47,000-sf Central Services Building at the South Beach Psychiatric Center on Staten Island, NY, for the New York State Office of General Services (NYSOGS). The facility will house replacement mechanical equipment needed as a result of damage from Hurricane Sandy in late 2012. Mr. Greenberg managed structural Revit modeling and the documentation process.

NYCSCA Hurricane Sandy Permanent Repairs Assessment - Structural Engineer

Preparing scope reports and structural design for schools affected by Hurricane Sandy in Brooklyn and Queens, NY, for the New York City School Construction Authority (NYCSCA). Mr. Greenberg's assessments include documenting post-Sandy repair conditions and developing scopes of work and potential flood mitigation recommendations at P.S. 288K and I.S. 98K in Brooklyn, and P.S. 043Q and P.S.106Q in Queens. He is working on the project through the design phase, preparing design drawings and specifications, and responding to requests for information (RFIs) during the construction phase.

NYCHA Johnson Houses Renovation Phase I CM - Structural Designer

Provided design reviews for the $45.8 million renovation of 52 apartments and public corridors in six high-rise buildings in Manhattan's East Harlem neighborhood as part of a 3-year construction management (CM)/build requirements agreement with the New York City Housing Authority (NYCHA). The scope of work

included structural repairs for damage caused by water intrusion, as well as interior bathroom and kitchen renovations. Mr. Greenberg's responsibilities included field investigations of structural elements, preparation of site condition reports, and drafting.

Peter Cooper Village/Stuyvesant Town Rehabilitation - Architectural and Structural Designer
Developed design drawings for the $17 million rehabilitation of 56- and 35-building residential complexes and the 80-acre surrounding site on the east side of Manhattan. Peter Cooper Village, located between 20th and 23rd streets houses more than 25,000 residents and its sister development, Stuyvesant Town, houses more than 8,700 residents. Mr. Greenberg coordinated project meetings, established drawings of existing conditions, made site visits, and prepared project submissions to the client. He also designed structural dunnage for the management office.

NYC Transit JFK Bus Depot New Roof and Ventilation System - Structural Designer
Prepared preliminary structural design for upgrades to the roof and heating and ventilation systems at the NYC Transit bus depot near JFK International Airport in Queens, NY. The scope of work included replacement of 146,000 sf of rooftop area with a green-roof-ready structure featuring thicker membranes to prevent water infiltration. Mr. Greenberg also provided engineering support during construction.

NJDPMC New Jersey State Prison West Compound Renovations - Architectural Designer
Prepared building drawings in the design of renovations of the West Compound of the New Jersey State Prison in Trenton, NJ, for the New Jersey Department of Property Management and Construction (NJDPMC). The $6 million capital improvement project will upgrade the prison to meet modern plumbing, electrical, and life safety standards. Mr. Greenberg visited the site and established information of existing conditions necessary for use in design.

DASNY Bronx Psychiatric Center Adult Behavioral Healthcare Center - Structural Designer
Provided design support for a new $100 million, 156,000-sf adult behavioral healthcare center in the Bronx, NY, part of the redevelopment of the 85-acre Bronx Psychiatric Center by the Dormitory Authority of the State of New York (DASNY). Mr. Greenberg's responsibilities included developing a structural analytical model and preparing structural design documents using Revit BIM software. Because of poor local soil conditions, the steel superstructure of the building was founded on piles and required a specially detailed lateral bracing system.

USACE USMA Preparatory School Design-Build - Structural Designer
Performed structural engineering design for the superstructure and foundation of the 256,000-sf U.S. Military Academy (USMA) Preparatory School barracks building in West Point, NY, for the U.S. Army Corps of Engineers (USACE). The structural system of the 3-story building employs masonry bearing walls and hollow-core precast concrete plank floor. The 70,000-sf barracks is one of three linked buildings that comprise the new, $107 million complex. Mr. Greenberg's responsibilities included drafting using Revit BIM software. The facility achieved LEED® certification to the Gold level.

PANYNJ WTC Chiller Plant - Structural Designer
Provided engineering design services for the $90 million World Trade Center (WTC) central chiller plant for the Port Authority of New York and New Jersey (PANYNJ). The 80,000-sf plant, located within the underground footprint of the WTC Memorial in Lower Manhattan, will filter, chill, and distribute water to air-handling units to cool various buildings on the 16-acre site, including the Transportation Hub, the WTC Memorial, and the One WTC tower. Mr. Greenberg prepared as-built drawings of structural elements during construction of the plant.

Jonathan Davies, P.E.

GEOTECHNICAL ENGINEER

Mr. Davies has more than 20 years of experience in the planning, design, and construction management of a variety of geotechnical engineering projects for public and private clients throughout the United States. He is an expert in underground construction, including the repair and refurbishment of tunnels. Mr. Davies' specialized knowledge has required him to interface with most engineering disciplines, including systems, operations, civil/site design, structural, mechanical, electrical, plumbing, and architecture.

FIRM
MOTT MACDONALD

OFFICE LOCATION
BOSTON, MA

EDUCATION
MASTERS OF ENGINEERING, CIVIL ENGINEERING; UNIVERSITY OF SURREY (UK)

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: MASSACHUSETTS

CHARTERED ENGINEER: UNITED KINGDOM

Project Experience

PWD Northern Liberty and Moores Street Sewer Reconstruction - Geotechnical Design Lead

Led geotechnical design for more than 5,000 lf of 10-foot by 10-foot box sewer replacement and 1,300 lf of 84-inch RCP sewer construction for the Philadelphia Water Department (PWD). The project included piled foundation systems for soft ground, spread footings placed directly on bedrock, a pile-supported thrust block, and sheet-pile outfall. The geotechnical design was highly dictated by existing utilities and transitions between varying ground conditions.

Spectra Energy Gas Pipeline Various Projects - Geotechnical Manager

Performing geotechnical engineering services for various Spectra Energy projects at various locations. Mr. Davies has been responsible for managing a team performing ground investigations and reporting and design, including footings and augured pile foundations, and support of excavations and retaining walls. He has also produced designs to mitigate anticipated coal mining-induced movements in Virginia.

MassDOT I-90/I-93 Interchange - Geotechnical Engineer

Provided geotechnical expertise for the assessment of the contractor's differing site conditions claim for the I-90/I-93 Interchange project. A comprehensive review of all historical data available at the time of tendering was performed out to determine what manmade obstructions could reasonably have been expected for the Massachusetts Department of Transportation (MassDOT) project. The assessment was then compared with the face logs of what was actually encountered.

Wisconsin Electric Intake Water Tunnel - Geotechnical Engineer

Providing geotechnical engineering for a design-build tunnel project in Wisconsin, including 9,200 feet of 27-foot-diameter tunnel in dolomitic limestone, and seven shafts up to 250 feet deep. The initial assignments include the assessment of the existing sheet piled dock wall, which will experience significantly increased loading during the construction of the new intake. Mr. Davies provided recommendations for the reconstruction and strengthening works necessary. He also provided geotechnical support for the design of a 180-foot- long, 36-foot-high reinforced concrete dike with gates to allow the water levels in the forebay area to be controlled.

NYCEDC Cross Harbor Freight Movement - Geotechnical Lead Engineer

Led geotechnical engineering for environmental impacts, feasibility study, and preliminary engineering for a $1.8 billion tunnel crossing of New York's Lower Harbor as part of a $7 billion freight corridor for the New York City Economic Development Corporation (NYCEDC). Alignments included linking Brooklyn and Jersey City, NJ, either directly or via Staten Island. Tunneling alternatives considered for main harbor crossing include bored methods using soft ground earth pressure balance tunnel boring machine (EPBM) or slurry methods and immersed tube. The portal-to-portal tunnel length is approximately 30,000 feet for both alignments. Project considerations for the preferred tunnel alignment directly linking Greenville and Brooklyn included maintaining the Greenville Rail Freight Yard during tunnel construction; minimizing

impacts to the existing NYC Transit N/R subway lines; avoiding piled foundations for the elevated Gowanus Expressway viaduct and major utilities including a 15-foot-diameter sewer; and assessing impacts to the 30-story Bay Ridge Towers, surrounding residences, and 8th Avenue LIRR Station, all of which are adjacent to or directly over the tunnel alignment. The project also included the assessment of construction alternatives for a large-diameter cross-over cavern within soft water-bearing soils in Brooklyn, including New Austrian Tunneling Method (NATM) and tunnel jacking in conjunction with ground improvement comprising jet grouting and ground freezing. His responsibilities also included review of all available geotechnical data, characterizing the soil and assigning soil properties. Mr. Davies also designed all shafts and interface structures using slurry wall methods, and completed a settlement analysis for the soft ground tunnel boring machine (TBM) tunnel and its effect on residential areas.

J.F. Kiely Basket Creek Slope Failure - Geotechnical Lead
Led the geotechnical investigation and design of repairs in response to series of slope failures that occurred on a 35-degree slope on the Pennsylvania/New York border containing a large buried high-pressure gas main. The solution used micropiles with a capping beam in the failed areas together with drainage improvements.

Confidential Client Natural Gas Pipeline Routing Study - Lead Geotechnical Engineer
Responsible for developing and implementing a regional routing study and onshore field reconnaissance, which involved evaluating 3,000 square miles (on- and off-shore) for viable pipeline routes. Mr. Davies evaluated and ranked alternatives from a geotechnical perspective for a preferred corridor recommendation.

MassDOT Ames Street Bridge Refurbishment - Geotechnical Design Team Leader
Led the design of the replacement pile foundations for a historic four-arch masonry bridge over the Charles River, for the MassDOT. The adopted solution utilizes bored grouted micropiles cored through the existing structure and founded in bedrock.

South Jersey Gas Stephen Lake Dam Crossing - Geotechnical Engineer
Provided geotechnical engineering services for the installation of 3.82 miles of 20-inch natural gas pipeline, 800 feet of which is in the Stephen Lake Dam. The majority of this length will be installed via open trenching; however, two separate horizontal bores are required underneath the two outfall structures. Mr. Davies produced all designs, which included four large sheet-piled excavations within the dam, predictions of water-flow quantities, and selection of the alignment for the horizontal bores. He also performed an assessment of the slope stability of the dam using the Xstabl program as part of the dam inspection report.

Roslyn Road Recharge Basin - Geotechnical Checker
Provided geotechnical engineering expertise for a tied wall up to 40 feet high, to be built as part of an interchange improvement on Long Island. Mr. Davies' areas of involvement included both design and constructability issues.

MWRA North Dorchester Bay CSO Storage Tunnel - Project Manager/Geotechnical Engineer
Provided construction management of the $150 million Combined Sewer Overflow (CSO) tunnel in South Boston for the Massachusetts Water Resources Authority (MWRA). The project is part of a program to effectively eliminate CSO discharges into the North Dorchester Bay for up to a 25-year storm. The project consists of an 11,000-foot-long, 17-foot-diameter, segmentally lined, soft-ground storage tunnel, along with a dewatering facility, drop shafts, diversion structures, small-diameter near-surface connecting pipes, an odor control structure, and construction mining shafts. The tunnel will be mined with an earth-pressure balance tunnel boring machine in challenging soft-ground conditions.

Vatsal Shah, Ph.D., P.E.

GEOTECHNICAL ENGINEER

Dr. Shah is a skilled geotechnical engineer with expertise in soil and geological investigations and evaluations. As the leader of geotechnical services for Mott MacDonald's Iselin, NJ, headquarters, he supervises soil boring and rock coring activities, and has been responsible for cataloguing samples, evaluating laboratory test results, and providing geotechnical recommendations for foundations, structures, retaining walls, slope stability, and other infrastructure improvements. Dr. Shah's extensive experience includes rock anchor and anchor bolt pull testing; micropile design, installation, and oversight; driven pile and wave equation analyses; soil boring oversight; on-site concrete and asphalt placement oversight and testing; and various construction testing services. He has also performed soil property and classification tests in a laboratory environment to supplement design requirements and specifications; has been involved in monitoring and reporting of various remediation and Superfund sites; and has provided construction and materials oversight services, including the inspection of various soil and rock structures. His additional experience includes the oversight of embankment construction, tunnel lining, stabilization of rock cuts, installation of sheetpiling, stabilization of concrete structures, installation of cement-grouted landslide stabilization systems, and anchor bolt pull testing oversight using center hole jack; observation to ensure consistency with project-specific engineering drawings and specifications; and preparation of load graphs, deformations, and test results. Dr. Shah has been nationally recognized by the American Society of Civil Engineers as the "Face of Civil Engineering" for 2013, as well as Young Engineer of the Year by the New Jersey Society of Professional Engineers in 2012. He serves as an adjunct professor at the New Jersey Institute of Technology, teaching foundation design.

FIRM
MOTT MACDONALD

OFFICE LOCATION
ISELIN, NJ

EDUCATION
DOCTORATE, CIVIL/GEOTECHNICAL ENGINEERING; NEW JERSEY INSTITUTE OF TECHNOLOGY

MASTER OF SCIENCE, CIVIL/GEOENVIRONMENTAL ENGINEERING; NEW JERSEY INSTITUTE OF TECHNOLOGY

BACHELOR OF SCIENCE, CIVIL ENGINEERING; NEW JERSEY INSTITUTE OF TECHNOLOGY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY

CERTIFICATIONS
NJDEP UST CLOSURE, INSTALLATION, SUBSURFACE, TANK TESTING

ACI CONCRETE FIELD TESTING TECHNICIAN - GRADE I

OSHA HAZARDOUS WASTE SITE OPERATIONS

OSHA CONSTRUCTION SAFETY AND HEALTH

Project Experience

Middlesex County Utilities Authority Edison Pump Station - Geotechnical Task Leader

Led geotechnical engineering services for a multi-staged seepage analysis of a proposed flood wall configuration and pile-supported foundation design. Mr. Shah performed permeability and flow modeling for seepage analysis to determine the feasibility of a traditional concrete flood wall without sheet-pile cutoff, resulting in significant cost savings. He was also responsible for axial and lateral pile calculation analyses and for evaluating the capacity to perform under emergency-condition, near-strength-limit state. In addition, Mr. Shah assisted in preparing pile notes and specifications for the flood wall.

World Vision Emergency Liquid Waste Containment and Treatment Facility - Civil/Geotechnical Engineer

Responsible for planning and conducting field investigations, including a topographic survey, site investigation, and subsurface evaluation through test pits and groundwater sampling for site selection, for a liquid waste containment and treatment facility in Port-au-Prince, Haiti. Dr. Shah completed final designs to size the required treatment basins based on incoming nutrient loading. He calculated effluent water quality and treatment rate, and developed a safe method for recharge of effluent water to groundwater. Dr. Shah also developed a report, including detailed engineering drawings, material and construction specifications, and preliminary construction cost estimates. Due to a cholera outbreak in the region attributed partially to the January 2010 earthquake, the project required time-sensitive design and response. The selected technology was required to be non-mechanical, self-sufficient, and suitable to local conditions.

USACE Army Reserve Center - Lead Geotechnical Engineer

Conducted geotechnical investigations and evaluation for this design-build project for the U.S. Army Corps of Engineers (USACE) in Bowie, MD, which involved the construction of a 2-story, 600-member reserve center; an unheated storage building; organization maintenance shop; and approximately 75,000 sf of military equipment parking. The investigation revealed that half of the proposed site required nearly nine feet of additional fill, and that the area was located over a shallow, thick layer of clay from Holocene deposits.

Column loads of 200 kip and shallow foundations were originally anticipated as part of the project, thereby requiring evaluation for oversized spread footings to minimize deep foundation elements.

Denville Township Fire Station Flooding Investigation - Geotechnical Engineer
Responsible for investigating the susceptibility of flooding of existing site soils in Denville Township, NJ. The fire station was flooded during Hurricane Sandy, which resulted in differential settlement along one quadrant of the building. The evaluation revealed existing site soils were of a local formation, which frequently flooded, and that in a storm event, stormwater would be unable to drain to the soils, or dissipate slowly, creating additional water pressure against the foundation of the building. Since runoff stormwater would likely flow from one direction of the building, the build-up of pore water pressure may have been present on one side of the structure, unable to drain for an extended period of time, potentially resulting in differential settlement around the building foundation. Dr. Shah completed a geotechnical report providing additional investigative recommendations to confirm the evaluation.

Clinton Township Multi-Family Homes Development - Geotechncial Engineer
Conducted a feasibility evaluation between two project site alternatives and provided geotechnical recommendations for construction within an area with shallow limestone rock formations in Clinton Township, NJ. Dr. Shah proposed an investigative strategy consisting of test pits to expose rock formations and collect samples for engineering property testing. He coordinated and supervised the investigation and testing program and provided constructability recommendations for shallow trenching of utilities, design of stormwater features, preferred foundation types, and karst mitigation measures.

NJ TRANSIT Summit Substation Subsurface Investigation - Geotechnical Engineer
Responsible for the planning, coordination, and oversight of a subsurface investigation program consisting of soil borings to support geotechnical recommendations for the installation of a new office unit in Summit, NJ. Dr. Shah was also responsible for logging and classifying soil. Concurrently, he conducted environmental sampling during geotechnical borings to assess potential contamination concerns at the project site. In addition, Dr. Shah prepared a geotechnical report with recommendations for potential shallow foundation designs, allowable bearing capacities, settlement, and seismic concerns for the unit.

Confidential Client Jersey Shore Water Pump Station - Design/Field Engineer
Oversaw a subsurface investigation program to collect geotechnical data through soil borings and rock coring to support geotechnical recommendations for the installation of a 6-mile-long pipeline and building footing. The building footing was designed to support a pump station and associated tank structure. Dr. Shah was responsible for logging and classifying soil and rock encountered during borings, and selecting representative samples for laboratory classification to supplement design. In addition, he was responsible for providing a geotechnical report with recommendations on potential foundation designs, allowable bearing capacities, and settlement with regard to the pump station and tank structures.

City of Elizabeth Atlantic Street Recycling Center and Stormwater Improvements - Geotechnical Project Manager
Provided a geotechnical investigations and recommendations related to the design of a new recycling facility, salt dome, record storage facility, and subsurface stormwater detention chamber, in Elizabeth, NJ. The project included the installation of a 7-mg, below-grade precast stormwater detention chamber to alleviate stormwater concerns in the area. To provide efficiency, an environmental due diligence investigation was also conducted to document environmental constraints at the site, which would drive material handling, off-site disposal requirements, and worker safety measures. Dr. Shah provided geotechnical recommendations, including buoyancy calculations of the segmental chamber, support of excavation, and dewatering and control of groundwater.

Giuseppe Santonocito, Ph.D.

GEOTECHNICAL DESIGNER

FIRM
MOTT MACDONALD

OFFICE LOCATION
ISELIN, NJ

EDUCATION
DOCTORATE, CIVIL ENGINEERING/ TRANSPORTATION; UNIVERSITY OF PALERMO, ITALY

DIPLOMA, LAND SURVEYOR; ITG, PALERMO, ITALY

Dr. Santonocito has extensive experience in geotechnical, civil, and structural engineering, particularly in the design and project management of deep excavations, foundation systems, and earth-retaining structures. He has provided planning, structural design, and construction management services for a wide variety of municipal, residential, commercial, and industrial facilities, including stormwater collection and pumping systems, drainage improvements, and pipeline repair/rehabilitation. Dr. Santonocito's project management responsibilities include regulatory compliance, preparation of cost estimates, contract administration, and project budgeting/scheduling. He has developed plans for residential and commercial subdivisions, including the design of drainage schemes to alleviate/eliminate flooding and the evaluation and inspection of the structural conditions of roadway pavement. Dr. Santonocito has been responsible for the preparation of plans, stormwater management reports, and permit applications, as well as coordinating project activities with public utility companies and other consultants. His experience includes the planning, design, permitting, and construction of stormwater and sanitary drainage systems, slope stabilization, landfills, municipal waste disposal and processing facilities, transfer stations, and materials recycling facilities. This includes the design and management of wastewater and stormwater pumping station construction and upgrades, and storm and sanitary sewer construction and rehabilitation. In addition, Dr. Santonocito is highly knowledgeable in various building codes, design manuals, and guidelines, both current and historic, including those of FEMA, American Water Works Association, American Concrete Institute, American Institute of Steel Construction, American Association of State Highway and Transportation Officials, American Society of Civil Engineers, International Building Code, and American Society for Testing and Materials.

Project Experience

ExxonMobil Hydraulic Control System Bayway Refinery SLOU - Senior Project Engineer

Designed the hydraulic control system for the Sludge Lagoon Operable Unit (SLOU) at Bayway Refinery in Linden, NJ, for ExxonMobil. The project included 21 dual pump extraction wells, thousands of feet of buried piping within the SLOU, equalization tank, oil/water separator, and sophisticated instrumentation and controls. The dual pump extraction wells were designed to automatically extract (separately) groundwater for hydraulic control and oil in the SLOU.

Teaneck Creek Restoration at Thomas Jefferson Middle School - Project Manager

Participated in the rehabilitation of Teaneck Creek and determination of flood plain volume, stream channel restoration, and preparation of site plan approval drawings for local municipal approval. Dr. Santonocito also prepared permit applications to the NJDEP.

Somerset County Deepavaal Brook Redelineation - Senior Project Engineer

Assisted with the redelineation of the Deepavaal Brook floodway, a tributary of the Passaic River in Somerset County, NJ. Dr. Santonocito used the HEC-II and HEC-RAS hydraulic model in compliance with NJDEP requirements.

Con Edison Water Vulnerability Analysis of Tunnels and Stations - Project Engineer

Prepared a Design Basis and System Description Report, addressing the water vulnerability analysis associated with the existing oil/water separator and drainage systems for 13 Con Edison sites in New York and New Jersey. The analysis included the review of the Spill Control and Countermeasure (SPCC) Plan, State Pollution Discharge Elimination System (SPDES) permit issued by the New York State Department of Environmental Conservation (NYSDEC), and the preparation of the engineering cost and recommendation.

Bloomfield Township Rehabilitation of Clarks Pond Dam - Senior Project Engineer

Provided design services for the rehabilitation of the Clarks Pond Dam and dredging and restoration of Clarks Pond in Bloomfield, NJ. Services included initial compliance inspection and report to NJDEP and preparation of a cost estimate for the construction required to meet current dam safety requirements. The stormwater management included sheet pile foundation to eliminate seepage under the dam, concrete buttress walls to provide a factor of safety for overturning, downstream channelization, construction of a concrete secondary spillway, and dredging and removal of 20,000 cy of sediments and bank restoration. Dr. Santonocito managed all required permits, prepared public bid documents, and provided construction supervision.

ExxonMobil Bayway Facility Groundwater Remediation - Project Manager

Responsible for the design and implementation of remedial systems to recover free product from groundwater at the ExxonMobil Bayway Facility in Linden, NJ. Dr. Santonocito designed a bulkhead for the petroleum refining facility, provided hydraulic design for a wastewater treatment plant, and prepared engineering cost estimates in support of environmental litigation.

International-Matex Tank Terminals Pipeline Support Bridge - Project Manager

Managed the design of a steel member bridge and reinforced concrete foundation cap over steel piles for International-Matex Tank Terminals in Bayonne, NJ. The 180-foot-long, 30-foot-tall bridge was designed to support multiple 12-inch and 16-inch-diameter pipelines crossing at Constable Hook industrial area over Conrail property. The structural design criteria complies with Process Industry Practices Structural PIP STC01015 and AREMA Guidelines. Dr. Santonocito coordinated with the public utility company and obtained Conrail approval.

General Mills, Inc. Brownfield Remediation of Former Safer Textiles Facility - Project Manager

Managed the remediation of a 6-acre contaminated section and adjacent Meadowlands area on the property of a former textile manufacturing facility in Moonachie, NJ, for General Mills. The remediation included removal and disposal of up to 20 feet of contaminated soil within the roadway and adjacent property. The project scope involved removal and temporary relocation of all utilities within the roadway, sheet-piling and backfilling with certified clean fill, replacement of the utilities, and reconstruction of the roadway in the Meadowlands area. The remediation required temporary relocation of the Losen Slote Waterway. Dr. Santonocito prepared all remediation plans and U.S. Army Corps of Engineers, state, and local permit submittals.

Frank Mescall, P.E.

ELECTRICAL ENGINEER

FIRM
MOTT MACDONALD

OFFICE LOCATION
ISELIN, NJ

EDUCATION
BACHELOR OF SCIENCE, ELECTRICAL ENGINEERING; MANHATTAN COLLEGE

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY

Mr. Mescall has extensive experience providing energy and power-related electrical engineering design services on diverse projects, including wastewater and water facilities for various municipalities and authorities. He has also managed and designed electrical systems for boiler and chiller plants, schools, and high rise structures, as well as fire alarm systems, medium-voltage substations, and power plants. Mr. Mescall's experience includes power distribution, cogeneration, control systems, and pump and motor controls for water and wastewater pumping and treatment facilities. He has performed breaker coordination studies, short-circuit analyses, and load flow analyses. Mr. Mescall's electrical systems design experience includes supervisory control and data acquisition (SCADA), generating paralleling, demand control, power factor correction, power transition, and instrumentation systems. He also has experience designing building power and lighting, switchgears, security systems, generators and emergency power, fire alarms, lightning protection systems, internet and communications systems, and control systems. In addition, Mr. Mescall has observed the installation of electrical wiring, fixtures, and power, telephone, and controls ducts.

Project Experience

PVSC Wastewater Treatment Plant Hurricane Sandy Damage Assessment and Rehabilitation - Electrical Engineer

Identified elements at the PVSC wastewater treatment facility damaged by Hurricane Sandy for FEMA funding documentation and coordinated with contractors to ensure that the $120 million rehabilitation work was performed in accordance with FEMA guidelines. Mr. Mescall prepared the preliminary design of mitigation measures to protect the plant from future similar storms, including an on-site standby power plant to provide the entire facility with power in the event of a utility outage. The preliminary design included provisions for combined heat and power system modifications at a later date.

Two Bridges Sewerage Authority Wastewater Treatment Plant Storm Resiliency - Electrical Engineer

Designed a new electrical substation on an elevated platform above the 500-year flood plain for the Two Bridges Sewerage Authority, NJ. Two new generators with the capacity to power the entire plant at the same elevation were provided. Mr. Mescall also provided similar generator designs at three pump stations in the distribution system.

MCUA Wastewater Treatment Plant - Electrical Engineer

Provided electrical engineering design services for the $20 million plant electrical upgrades for the Middlesex County Utilities Authority (MCUA), NJ. The design included the replacement of 10 unit substations, which were at the end of their useful life and deteriorating rapidly. The project included the reuse of most of the existing 480-V and 15-kV feeders. This required careful coordination of the new equipment with the existing site conditions. As part of the site safety program, a new SCADA system was included in the design to allow for the remote operation of 15-kV and 480-V circuit breakers in each of the new substations.

BCUA Sludge Dewatering Facility - Electrical Engineer

Prepared electrical and instrumentation design services for the sludge dewatering facility and chemical stabilization facility for the Bergen County Utilities Authority (BCUA) in Little Ferry, NJ. Projects included the beneficial reuse of plant effluent for the PSE&G Bergen Generating Station.

MCUA Wastewater Treatment Plant Solar Power Additions - Electrical Engineer

Provided quality assurance and quality control reviews for solar power additions to the MCUA Wastewater Treatment Plant. Mr. Mescall performed a detailed National Electric Code review of electrical design drawings of the 4-MW solar design by a power purchase agreement provider. His responsibilities included review of AC and DC wiring methods, site-required modifications to equipment, and medium-voltage switchgear interconnection details. Mr. Mescall also provided a power systems study for the photovoltaic system.

BNYDC New Substation - Electrical Engineer

Provided design services for a new 27-kV, 15-MW substation for the Brooklyn Navy Yard Development Corporation (BNYDC), NY. Mr. Mescall performed various energy-related studies to determine the feasibility of adding solar, wind, and cogeneration to the site. The new substation was fed from Con Edison with four separate feeders to provide redundant sources of power. The design was revised to protect systems from future flooding after Hurricane Sandy.

Rahway Valley Sewerage Authority Cogeneration Plant - Electrical Engineer

Provided electrical design for a 4.8-MW cogeneration facility, for the Rahway Valley Sewerage Authority. The system utilized waste heat for sludge drying. Four converted diesel engines were utilized to run on blended digester and natural gas. Plant review by the New Jersey Department of Community Affairs (NJDCA) was required. Mr. Mescall also observed start-up testing.

Rowan University Cogeneration Plant - Electrical Engineer

Provided electrical design for a 5-MW cogeneration facility at Rowan University in Glassboro, NJ. The plant design included synchronizing two new turbine generators and coordination with the local utility provider for connection to the new 69-kV substation. Additional design features included controls for continuous emissions monitoring required by air permits. The design also included new site SCADA system and commissioning. All generator and switchgear controls were incorporated into the site SCADA system.

Johnson & Johnson Cogeneration Plant - Electrical Engineer

Designed a cogeneration plant for a Johnson & Johnson pharmaceutical plant in Gurabo, Puerto Rico. The design incorporated the purchase of two 1500-kW diesel generators for use as a standby power source and cogeneration facility. Waste heat was used to supply process heat loads. Mr. Mescall included an urea system in the design for the required selective catalytic reduction system. He designed engines as modular systems, which were fabricated on the U.S. mainland and shipped for reassembly. Mr. Mescall also provided complete commissioning services upon start-up.

NJSDA First Avenue School - Electrical Engineer

Provided electrical design for a new elementary school in Newark, NJ, for the New Jersey Schools Development Authority (NJSDA). The design included implementation of the districts' technology plan and subsequent filing of federal e-rate documentation. The school was designed with the goal of LEED® Silver certification and implemented the latest New Jersey energy rebates for lighting and HVAC systems.

DASNY 500-Bed Dormitory at SUNY Albany - Electrical Engineer

Provided electrical design for a new 500-bed dormitory at the State University of New York (SUNY) at Albany, for the Dormitory Authority of the State of New York (DASNY). The electrical design included normal and emergency power systems. Mr. Mescall also designed complete communications and life safety systems. The dormitory received LEED Silver certification.

John Secreti, RA, LEED® AP

ARCHITECT (EGRESS/LIFE SAFETY)

Mr. Secreti is a senior architect with more than 30 years of experience successfully managing and directing all project phases. While providing technical direction and serving in key project management roles, he has managed an array of activities ranging from initial design development through construction administration. Mr. Secreti has performed code analysis and QA/QC reviews and coordinated with numerous municipal agencies and utilities. He is also well versed in the interpretation and application of zoning, building, and construction codes; the International Building Code (IBC); National Fire Protection Association (NFPA) codes and standards; and ADA compliance guidelines.

FIRM
STV

OFFICE LOCATION
NEW YORK, NY

EDUCATION
BACHELOR OF ARTS, MUSIC; MARYMOUNT MANHATTAN COLLEGE

CERTIFICATE, DESIGN; NEW YORK SCHOOL OF INTERIOR DESIGN

PROFESSIONAL REGISTRATIONS
REGISTERED ARCHITECT: NEW YORK

CERTIFICATIONS
LEED ACCREDITED PROFESSIONAL (AP)

TRAINING
OSHA 10-HOUR CONSTRUCTION SAFETY AND HEALTH

TRACK SAFETY TRAINING; NYC TRANSIT

Project Experience

Con Edison Substation and Generating Plant Storm Hardening Evaluation and Design - Senior Project Architect

Overseeing the production team during the second phase of a multi-phase storm resiliency effort at five substation and six generator station sites throughout New York City. The storm inflicted enormous damage to Con Edison's electric distribution system, interrupting service for roughly 1.4 million New Yorkers and causing more than $500 million in response and restoration costs. To prepare for a future storm, the project team is evaluating the threat to various substations and generating plants and providing design hardening measures to protect critical equipment at each location. Mr. Secreti is providing review for code compliance, detailing, and coordination.

NYC Transit Columbus Circle/Fulton Street Transit Center - Senior Project Architect

Overseeing the production team and dedicated QC review process for 34 subtenant commercial spaces located on the mezzanine level of the 59th Street Columbus Circle Station and 14 subtenant commercial spaces located throughout the Fulton Street Transit Center in Manhattan. Mr. Secreti is providing architectural review of construction documents for compliance with the *New York State Uniform Fire Prevention and Building Code* and *Energy Conservation Construction Code*, ADA guidelines, and NYC Transit design guidelines.

PANYNJ George Washington Bridge Bus Station Redevelopment - QC and Senior Building Code Compliance Reviewer

Oversaw the QC and code compliance review for the $152 million redevelopment of the George Washington Bridge Bus Station in Upper Manhattan for the Port Authority of New York and New Jersey (PANYNJ). Mr. Secreti provided architectural review of construction documents for compliance with the *New York City Construction Codes, Rules of the City of New York*, and ADA guidelines.

NYSOGS Renovation of Building No. 4 at the Harriman State Office Building Campus - Senior Building Code Compliance Reviewer

Performing building code analysis for the $43 million full renovation of a 3-story 157,000-sf building for future occupancy by the New York State Department of Corrections and Community Supervision (NYSDOCCS) in Harriman, NY, on behalf of the New York State Office of General Services (NYSOGS).

NJSDA Elizabeth Academic High School - Senior Technical Coordinator

Managed the production team during the construction of a new 4-story, 132,000-sf high school in Elizabeth, NJ, for the New Jersey Schools Development Authority (NJSDA). The facility consists of approximately 35 classrooms, 10 science labs, a gymnasium, cafeteria, auditorium, and music and art rooms. Mr. Secreti performed code analysis, QA/QC review, detailing, and project coordination.

North Shore LIJ Health System Long Island Jewish Medical Center Katz Women's Hospital - Senior Technical Coordinator

Oversaw the initial make-ready phase for the construction of a new 295,000-sf, 7-story, state-of-the-art obstetrics hospital for the North Shore LIJ Health System on their New Hyde Park, NY, campus. Mr. Secreti managed the extensive coordination of both temporary and permanent relocations and installations of all underground utilities at the site in advance of the construction of the new $300 million, 162-room world-class medical facility. He was responsible for the design and approval of temporary relocations during this phase of work, including meeting with both Nassau County and hospital officials regarding code analysis. Mr. Secreti also managed the detailing for decommissioning an existing fire tower.

New York Times Company/Forest City Ratner Companies The New York Times Headquarters Building - Associate

Directed the project team and the day-to-day activities of the core and shell work, from schematic design through construction administration, during the construction of a new 52-story, 1.5-million-sf Class A commercial office tower located in the heart of Manhattan's Times Square district. The project was a joint development venture between The New York Times Company and Forest City Ratner. The New York Times is the primary tenant occupying approximately 60% of the building. Innovative design elements included the use of an iron-glass custom curtain wall system with a ceramic tube bris de soleil, which allows maximum daylighting while maintaining maximum energy efficiency. The building also has a destination dispatch elevator system and a lobby garden court. Another innovative design attribute is a dramatic open staircase that connects all of the office floors and is protected by a custom-designed horizontal fire shutter. Mr. Secreti reviewed shop drawings and was directly responsible for the review and approval of structural steel drawings. Mr. Secreti maintained a rigorous project schedule, so that he could manage an extensive number of shop drawings reviews. His leadership resulted in successful adherence to strict deadlines. Mr. Secreti's additional duties included project schedule and budget review; code analysis and QA/QC review; project coordination and attendance at all project-related meetings; material research, review, and selection; and site observations.

Jared A. Quartel, AIA

ARCHITECT (AESTHETICS/ACOUSTICS/SIGNAGE)

Mr. Quartel is a sustainably minded architect with 15 years of experience encompassing the design and construction of a wide range of projects. Since Hurricane Sandy, he has become a leader and primary resource within the firm for innovative approaches to flood mitigation conceptualization and design for a multitude of project types and unique client operational requirements with a focus on life safety and asset protection. He has led multidisciplinary teams to perform field surveys and condition assessments and is experienced with all phases of design and construction, from programming and conceptual design through construction administration and project close-out. He has developed comprehensive code and egress analyses using various code sources for urban planning, new construction, and redevelopment projects. Mr. Quartel has researched historic drawings and developed details to preserve the existing character of landmarked buildings. He has also researched energy-efficient and environmentally responsible materials and assemblies. In addition, Mr. Quartel is also adept at designing and producing graphic exhibits and making presentations for clients and public and regulatory agencies.

FIRM
STV

OFFICE LOCATION
NEW YORK, NY

EDUCATION
COURSEWORK TOWARDS BACHELOR OF ARCHITECTURE; BOSTON ARCHITECTURAL COLLEGE

PROFESSIONAL REGISTRATIONS
REGISTERED ARCHITECT: NEW YORK

TRAINING
SAFETY TRAINING; NYC TRANSIT

OSHA 10-HOUR CONSTRUCTION SAFETY AND HEALTH

Project Experience

Con Edison Substation and Generating Plant Storm Hardening Evaluation and Design - Lead Project Designer/Team Leader

Oversaw development of the 2014- 2017 Storm Hardening Measures Conceptual Design Report for several major New York City steam generating stations for Con Edison. The report analyzed the measures taken after Hurricane Sandy devastated the coastal New York City region and inflicted enormous damage to the utility's electric distribution system, interrupting service for roughly 1.4 million New Yorkers and causing more than $500 million in damage and restoration costs. The report expanded the scope to provide a robust defense-in-depth combination of hardening and resiliency as an approach to flood mitigation. Mr. Quartel researched available industry and agency documentation and code requirements, then developed best practice baseline flood mitigation solutions for consistency and tailored them to the individual needs of each station. Custom solutions were devised where best practice models had no precedent. He led the in-house team and consultants for each of the stations from survey through completion of the reports, and coordinated each discipline to produce a cohesive, thorough, and well-designed concept report.

NYC Transit 53rd Street Tunnel Repairs & Resiliency - Architect

Surveying the tunnel system, including ancillary spaces between the tracks and surface areas where ventilation shafts and emergency exits terminate, in an effort to increase their resiliency against future flooding. As a result of Hurricane Sandy, NYC Transit's 53rd Street Tunnel, a critical link in a subway line connecting the boroughs of Manhattan and Queens, was flooded, damaging sensitive electrical equipment. Mr. Quartel researched mitigation methods and discussed hardening options with product manufacturers, to develop strategies for final design solutions. He is designing the solutions and preparing associated documentation, including drawings and specifications, to the client's stringent CAD standards.

Amtrak Gateway Project Hudson Yards Tunnel and Extension & Systems-Level Design - Lead Architectural Designer

Provided architectural design for the partial demolition of a building to allow for tunnel construction to occur as part of the new Hudson Yards project on the West Side of Manhattan. Amtrak is proactively building a new 800-foot, cut-and-cover tunnel placeholder extension under a major commercial development that will serve as part of a larger project to double future rail capacity into Pennsylvania Station. Due to the limited real estate and myriad existing tunnels under a rail yard west of the station, the new tubes can only be routed beneath a portion of an existing Long Island Rail Road (LIRR) train maintenance facility.

The design was complicated by large and expensive built-in equipment used to service the LIRR trains. The equipment locations were surveyed and Mr. Quartel designed a temporary insulated construction fence to maintain a minimum temperature in the building to preserve the equipment, when possible, or relocate it, if necessary.

USACE USMA Davis Barracks - Architectural Designer

Prepared architectural designs for the new $192 million, 6-story cadet barracks on the historic campus of the U.S. Military Academy (USMA) at West Point, NY, for the U.S. Army Corps of Engineers (USACE). This 287,000-sf barracks was designed to house five companies for a total of 650 cadets, with each company occupying a single contiguous floor. The design incorporated sustainable features to address the project's goal of LEED® Silver certification, while relating to the neo-Gothic architectural style of the campus. Prior to construction start, Mr. Quartel documented building surveys of surrounding barracks to compile a record-of-condition, which consisted of photographs and a detailed narrative in a 100-page report. He performed detailed area calculations and code and egress analyses, and developed floor plans, reflected ceiling plans, and egress drawings in Revit. Mr. Quartel prepared the 2,500-page comprehensive project scope design manual, and coordinated all discipline narratives with architecture staff while researching sustainable technologies. He researched energy-efficient window assemblies and curtain wall systems, and coordinated with the structural engineer for blast resistance requirements. Mr. Quartel researched and developed the exterior envelope design concept, including evaluating assembly component products to ensure that minimal thermal bridging and National Fire Protection Association manufacturer testing requirements were met. He also created the site logistics report detailing site safety, construction traffic circulation, proposed staging areas, and pedestrian routing.

NYC Transit Engineering Design and Specifications for Platform Screen Door Pilot - Architect

Overseeing the coordination of multiple design and engineering disciplines during the research and design of platform screen door (PSD) and automatic platform gate (APG) technologies for installation at NYC Transit's Pelham Parkway Station in the Bronx, NY, on the IRT Dyre Avenue Line. The pilot program and subsequent rollout of the PSD and APG technology will be the first use of the technology on a heavy rail transit system in the United States, and will help keep the more than 5 million daily users of the New York City subway system safe. During the preliminary design phase, Mr. Quartel is also responsible for leading the project team and researching similar PSD installations at transit agencies in Paris, France; London, England; Shanghai, China; and Seoul, South Korea. He serves as the project's primary point of contact for the client, other transit agencies, and equipment manufacturers.

MTACC/LIRR East Side Access - Lead Architectural Designer

Designed and coordinated with mechanical, electrical, and plumbing disciplines to prepare 3-D models of the initial massing and materiality concepts using Revit for a new Amtrak train washing facility in Queens, NY, as part of the $10 billion MTA Capital Construction (MTACC) project to extend LIRR service to Manhattan's East Side. Mr. Quartel participated in design activities from conceptual design through design development and coordinated extensively with traction power and industrial engineers to organize the catenary system running through the building and the extensive process equipment necessary for washing trains. Sited in an existing train yard, the tight track alignment constraints and densely clustered utility infrastructure made the siting of a 400-foot-long, 2-track facility a complex task requiring multiple coordination meetings with multiple disciplines. Due to the tight siting, the facility was designed with two levels to accommodate all the necessary tanks and pumps. He also provided full code review and analysis for the project using the Building Code of New York State.

Sarah Butler, AICP

HISTORIC PRESERVATION COORDINATOR

Ms. Butler is a certified planner with more than 20 years of diverse, often involving obtaining approvals related to historic preservation. She has been involved in the management of numerous EA and EIS documents, in compliance with NEPA and federal evaluation procedures. Ms. Butler also has experience in land use analysis, zoning, and traffic issues, including the development of traffic-calming measures and geometric solutions to improve vehicular and pedestrian safety in the New York metropolitan area.

FIRM
STV

OFFICE LOCATION
HOUSTON, TX

EDUCATION
MASTER OF URBAN PLANNING; NEW YORK UNIVERSITY ROBERT F. WAGNER GRADUATE SCHOOL OF PUBLIC SERVICE

BACHELOR OF ARCHITECTURE; RHODE ISLAND SCHOOL OF DESIGN

BACHELOR OF FINE ARTS; RHODE ISLAND SCHOOL OF DESIGN

CERTIFICATIONS
CERTIFIED PLANNER; AMERICAN INSTITUTE OF CERTIFIED PLANNERS (AICP)

Project Experience

DASNY LaGuardia Community College Center IV Parking Garage Demolition - Deputy Project Manager

Assessed environmental impacts associated with demolishing a 1916 parking facility in Long Island City, NY, owned by LaGuardia Community College as part of an on-call agreement with the Dormitory Authority of New York (DASNY). The project involved demolishing the 2-story parking garage, which was in serious disrepair, and replacing it with surface parking. It required obtaining the necessary approvals from the New York State Office of Parks, Recreations, and Historic Preservation and the New York City Landmarks Preservation Commission.

DASNY Hunter College Roosevelt House Renovation CM - Deputy Project Manager

Preparing the assessment of environmental impacts as part of construction management (CM) services for the $23.4 million rehabilitation of the Sara Delano Roosevelt Memorial House for use as a modern conference center by City University of New York's Hunter College on the Upper East Side of Manhattan. The project consisted of the complete rehabilitation of the twin 6-story brownstone landmark building, at one time the residence of the Franklin Delano Roosevelt family, allowing Hunter College to host small conferences and other events and provide housing for temporary guests of the College. Approvals for the rehabilitation were required from the New York State Office of Parks, Recreation and Historic Preservation and the New York City Landmarks Preservation Commission.

NYCSCA P.S. 50 Addition EAF and Supplemental Environmental Studies - Project Manager

Evaluated the environmental impacts associated with a new 372-seat addition to the existing 583-seat P.S. 50 building in Queens, NY. The proposed addition would be built to the rear of the existing school building. Upon completion of the proposed addition, an existing temporary structure would be removed from the school play yard to the east of the existing school building. The existing school building, constructed in 1921, has been determined eligible for listing in the National Register of Historic Places by the New York State Office of Parks, Recreation and Historic Preservation. Ms. Butler managed preparation of the Environmental Assessment Form (EAF) and Supplemental Report as part of an on-call agreement with the New York City School Construction Authority (NYCSCA).

NYCSCA P.S. 170 Addition EAF and Supplemental Environmental Studies - Project Manager

Assessed the environmental impacts associated with creating a 240-seat addition to the existing 557-seat P.S. 170 building in Brooklyn, NY. The proposed addition would be constructed on an existing asphalt paved play yard at the rear of the existing school, and would include the removal of two existing transportable classroom units that are currently occupying a portion of the yard. The existing school building, constructed in 1913, has been determined eligible for listing in the National Register of Historic Places by the New York State Office of Parks, Recreation, and Historic Preservation.

NYCSCA Early Childhood Center EAF and Supplemental Environmental Studies - Deputy Project Manager

Evaluated the environmental impacts associated with demolishing a vacated theater building to create a new 441-seat early childhood center in Brooklyn, NY, as part of an on-call contract with NYCSCA. Construction of the new school facility alleviated overcrowding by providing additional seating capacity for students within Community School District 20. The proposed school building design required a zoning override for bulk, height, and setback. If the school were not to be constructed at the site, the property would be redeveloped for commercial use. Critical factors of the EAF and Supplemental Report that Ms. Butler reviewed included historic impacts, open space, parking, and neighborhood compatibility.

DASNY Kings County Hospital Center Redevelopment - Deputy Project Manager

Assisted in managing the preparation of an EAF and an Environmental Impact Assessment Review to document environmental impacts associated with the construction of a new 7-story (plus basement), 300,000-sf behavioral health center on the Kings County Hospital Center campus in Brooklyn, NY. The project involved the demolition of historic buildings and the displacement of parking. Ms. Butler's analysis of traffic, parking, and historic resources revealed no significant impacts from the proposed new building.

NYCDCP 125th Street River-to-River Rezoning EIS - Planning Task Leader

Contributed to the preparation of an EIS assessing the impacts associated with the proposed rezoning of 125th Street in the Harlem area of Manhattan for the New York City Department of City Planning (NYCDCP). The rezoning would regulate future development on the street to balance and preserve the neighborhood character.

Avalon Bay Communities Avalon Morningside Park - Environmental Planner

Contributed to the preparation of an EA Statement and Supplemental Report to evaluate the effects of constructing a 296-unit housing development on a portion of a site owned and occupied by the Cathedral of St. John the Divine in Manhattan. AvalonBay Communities, the lessee of the project site from the Cathedral, wanted to develop the project site for a new 18-story residential tower and a 168-space garage to serve tenants in the new building and the Cathedral. Because the cathedral was eligible for listing on the State and National Registers of Historic Places, approvals for the development project were required from the New York State Office of Parks, Recreation, and Historic Preservation. Ms. Butler was the lead planner for all analysis focusing on socioeconomic character, historic resources, urban design and visual resources, traffic analysis, air quality, and noise.

NYC Transit Emergency Ventilation Plant at Forsyth and Delancey Streets - Environmental Planner

Led the project team coordination to prepare an Environmental Due Diligence Screening for New York City Transit (NYC Transit) to assess two sites for the construction and operation of a new emergency ventilation plant to serve a segment of subway tunnel between the Independent Line (IND) Division's B/D/N/Q train line service at the Broadway-Lafayette Street Station and the Brooklyn-Manhattan Transit Division's J/M/Z train line service at the Essex Street Station in Manhattan. Ms. Butler's work also entailed collecting existing information on historic resources, land use and open space, hazardous materials, and traffic at both location options to allow for evaluation of the proposed project's impacts on these environmental factors./

Karen Robison, LEED® Green Associate

CIVIL/SITE LEAD

Ms. Robison is a civil designer with more than 15 years of experience involving site supervision and inspections, surveying, drainage design and analyses, highway and roadway design, urban design of bikeway and pedestrian pathways, traffic analyses, and cost estimating. She has provided designs for site grading, pavement, roadways, utility lines, and soil erosion and control. Ms. Robison has also provided site layouts, utility layouts, field surveys, stormwater management design, and sanitary gas and fire protection design layouts for governmental, industrial, and education facilities. In addition, she is experienced in leading site investigations after natural disasters and coordinating environmental permitting activities with local, state, and federal agencies.

FIRM
STV

OFFICE LOCATION
NEW YORK, NY

EDUCATION
BACHELOR OF SCIENCE, CIVIL AND ENVIRONMENTAL ENGINEERING; VILLANOVA UNIVERSITY

CERTIFICATIONS
LEED GREEN ASSOCIATE

TRAINING
OSHA 40-HOUR HAZWOPER

OSHA 8-HOUR HAZWOPER

TRACK SAFETY TRAINING; NYC TRANSIT

Project Experience

NYC Transit Coney Island Yard Flood Mitigation - Civil Designer

Leading a site investigation to identify key issues and an analysis and comparative evaluation of flood mitigation alternatives at the 110-acre Coney Island Yard rail complex in Brooklyn, NY, which was significantly impacted by the storm surge from Hurricane Sandy. The 1926 complex encompasses three railroad storage yards for New York City Transit (NYC Transit), and is used to perform regular maintenance for a fleet of nearly 800 cars, as well as heavy maintenance and overhaul for the approximately 6,000 cars in the NYC Transit subway system. Ms. Robison is assessing constructability, maintenance, economic, and scheduling issues to implement each alternative. Elements evaluated included a perimeter protection floodwall, stormwater detention, pump stations, backflow valves, track drainage, stormwater outfalls, grading, hardening of switches and controls, rainwater harvesting, and “green and blue” roofs for the shops to mitigate and store rainwater. The various flood mitigation measures were presented to NYC Transit, and the perimeter protection wall, stormwater detention, pump stations, track drainage, and backflow devices are being designed to protect the yard from a Sea, Lake, and Overland Surges from Hurricanes Category II storm. Ms. Robison is leading the coordination for the permitting with the New York State Department of Environmental Conservation (NYSDEC), the U.S. Army Corps of Engineers (USACE), and the New York City Department of Environmental Protection (NYCDEP) for the stormwater improvements.

VA Manhattan Campus Flood Protection - Lead Civil Designer

Designed a flood barrier wall along the east and partial north-south borders of this hospital campus in Manhattan for the U.S. Department of Veterans Affairs (VA). Ms. Robison led the redesign of the parking area, to shift the location within the VA property and provide a new access road and curb cuts in coordination with the New York City Department of Transportation (NYCDOT). In addition, she provided design for three pump stations for sanitary and storm sewer services to avoid backflow from the city systems into the facilities. Ms. Robison also coordinated utility connections and a grading plan along Asser Levy Place.

PANYNJ Port Jersey South Power Substation Switchgear Replacement - Design Reviewer

Performed civil engineering design services and provided QC site reviews associated with the switchgear replacement at Building 108, located along the border of Jersey City and Bayonne, NJ, for the Port Authority of New York and New Jersey (PANYNJ). The project, involving the full replacement design of the 5-kV and 480-V switchgear damaged by Hurricane Sandy, requires precisely planned phasing to provide continuous service during the removal of damaged switchgear, transformers, switchboards, and panel boards. The site design also established the flood elevations, utility relocation, and grading for flood protection.

NYSOGS/NYSOMH South Beach Psychiatric Center Emergency Response and New Central Services Building - Lead Civil Designer

Provided site civil design services for the fast-track design-build of a new 47,000-sf Central Services Building at the South Beach Psychiatric Center in Staten Island, NY, for the New York State Office of General Services (NYSOGS) and the New York State Office of Mental Health (NYSOMH). The $41 million building houses core functions that were in the basement of Building 8/9, which were severely impacted by floodwaters from Hurricane Sandy. The new building is raised above the adjacent grade to a height above the 500-year flood plain. The building required the design of all new infrastructure, new roadway, loading dock, retaining walls, extensive grading, new water service for domestic and fire protection, and a new sanitary sewer service. Ms. Robison and her team also developed a stormwater pollution prevention plan (SWPPP) to meet NYSDEC soil erosion and sediment control and water quality and quantity standards. Her team's stormwater management design implemented a combination of a drywell, vegetated swale, and infiltration basin to promote the use of green infrastructure and groundwater recharge.

NYCHA Hurricane Sandy CIP Ocean Bay-Bayside - Lead Civil Designer

Guided civil engineering for the fast-track development and issuance of a site assessment report, and the development of due diligence options to install new mechanical equipment at the steam plant for the 24-building Ocean Bay-Bayside Apartments complex in Queens, NY, part of a capital improvement program (CIP) for the New York City Housing Authority (NYCHA). Due to Hurricane Sandy, seawater flooded the central plant cellar and damaged mechanical, electrical, and plumbing equipment on the first floor of all the buildings. The team assessed three options for replacing or repairing the equipment. Ms. Robison prepared a complete and comprehensive solution for site safety, excavation, backfilling, regrading, and resodding of disturbed areas.

NJ TRANSIT Observer Highway Combined Sewer Outfall - Civil Designer

Designed the roadway, grading, and utility layouts of a new 2,200-foot-long, 12' x 6' box culvert section of sewer along Observer Highway for NJ TRANSIT. The combined sewer, connecting a previously designed and constructed outflow system, was constructed starting at the intersection of Park Avenue and Observer Highway to the Hudson River at the Newark Street Bulkhead in Hoboken, NJ.

PANYNJ Newark Liberty International Airport Terminal B Fourth Electrical Substation - Design Reviewer

Oversaw and reviewed the civil engineering design to provide a new electrical substation and associated distribution network at Newark Liberty International Airport in Newark, NJ. The substation will help support loads for new aircraft ground power units and preconditioned air, as well as future Satellite B1 conversion for international usage. The project included the design of 480-V switchgear, all medium-voltage components, and a utility transformer and bus compartment room to provide an effective electrical power system at the airport. The project scope involved the design of a double-ended switchboard to provide continuous power, as well as a flood-resistant switchgear room that meets FEMA's 100-year flood level guidelines, plus 2.5 feet. Ms. Robison oversaw the site and utility coordination design with the firm's project architect and other engineering disciplines during plans to integrate the services and site access for the upgrade of the airport's power system. She also performed QC for design documents to the 50% level of completion.

Christopher Wohlleb

CIVIL DESIGNER

Mr. Wohlleb is a civil designer with experience in the design of Combined Sewer Overflow (CSO) facilities, sanitary sewer systems, and pumping station facilities for numerous local New Jersey clients, including the PVSC, Bayonne Municipal Utilities Authority (BMUA), Raritan Township Municipal Utilities Authority, Village of Ridgefield Park, Bernards Township Sewerage Authority, and Clinton Township Sewerage Authority. He also has experience providing project coordination and management services and construction phase services, including shop drawing reviews and resident engineering inspections. Mr. Wohlleb is also knowledgeable in the preparation of permit applications.

FIRM
MOTT MACDONALD

OFFICE LOCATION
ISELIN, NJ

EDUCATION
BACHELOR OF SCIENCE, ENGINEERING SCIENCE; NEW JERSEY INSTITUTE OF TECHNOLOGY

BACHELOR OF ARTS, ARCHITECTURE; NEW JERSEY INSTITUTE OF TECHNOLOGY

CERTIFICATIONS
OSHA CONFINED SPACE ENTRY

OSHA CONSTRUCTION SAFETY AND HEALTH

Project Experience

PVSC Kearny-Harrison-Newark Interceptor Rehabilitation - Project Engineer

Assisted in the design and preparation of construction plans and specifications for rehabilitation of several sections of the existing 42-inch Kearny-Harrison-Newark Interceptor. The rehabilitation included bypass pumping, cleaning, internal television inspection, manhole rehabilitation, and installation of a cured-in-place liner in the existing sewer. Mr. Wohlleb performed tabulation and analysis of bid results and made recommendations for contract awards. He also organized and conducted preconstruction meetings with the successful bidders, PVSC, NJDEP, Hudson County, local municipalities, and utility companies. Mr. Wohlleb provided consultation and advice and coordinated construction activities with the contractor and field inspection staff. He was also responsible for reviewing shop drawings for compliance with design plans and specifications, as well as the review and processing of change orders and contractor payment requests.

Raritan Township Municipal Utilities Authority Woodside Farms Pumping Station Rehabilitation - Project Engineer

Assisted in the design and preparation of construction plans for rehabilitation of the Woodside Farms Pumping Station. The rehabilitation included modifications to the existing wet well, including cleaning and lining, and the installation of new submersible sewage pumps and a new raw sewage grinder, new conduits and controls, new valve chamber including piping and valves, and new meter manhole and flow meter, as well as the construction of a new control building, including control equipment and standby generator, and modifications to the access driveway. Mr. Wohlleb performed tabulation and analysis of bid results and made recommendations for contract awards. He also organized and conducted a preconstruction meeting with the successful bidder, Raritan Township, and NJDEP. Mr. Wohlleb provided consultation and advice and coordinated construction activities with the contractor and field inspection staff. He was also responsible for reviewing shop drawings for compliance with design plans and specifications, as well as the review and processing contractor payment requests.

Clinton Township Sewerage Authority Maple Avenue Pumping Station County Route 641 Pumping Station and Stem Pumping Station Rehabilitation - Project Engineer

Assisted in the design and preparation of construction plans and specifications for rehabilitation of three pumping stations. The rehabilitation work at all three pumping stations included the installation of new submersible pumps and controls, piping, and valves. The rehabilitation work at the Stem Pumping Station included the construction of a new access driveway and new control building, cleaning and modifications to an existing wet well, installation of a raw sewage grinder within the wet well, and installation of a new pad-mounted standby generator. The rehabilitation work at the Maple Avenue Pumping Station included construction of a new control building and wet well, abandonment of the existing wet well, and installation of a new standby generator. Mr. Wohlleb performed tabulation and analysis of bid results and made recommendations for contract awards. He also organized and conducted a preconstruction meeting with

the successful bidder, Clinton Township, and NJDEP. Mr. Wohlleb provided consultation and advice and coordinated construction activities with the contractor and field inspection staff. He was also responsible for reviewing shop drawings for compliance with design plans and specifications, as well as the review and processing of change orders and contractor payment requests.

Raritan Township Municipal Utilities Authority Robin Hill Pumping Station Rehabilitation - Civil Designer

Assisted in the design and preparation of construction plans for rehabilitation of the Robin Hill Pumping Station. The rehabilitation work included replacement of the existing sewage force main and modifications to the influent gravity sewer, installation of a new wet well including new submersible sewage pumps, installation of conduits and controls, installation of a new grinder chamber including raw sewage grinder, installation of a new valve chamber including piping and valves, installation of a new meter manhole and flow meter, and installation of a new control building including control equipment and standby generator, modifications to the access driveway, and demolition and abandonment of the existing force main, wet well, valve chamber, and control building. Engineering services also included the preparation and submission of applications for NJDEP Flood Hazard Area and Freshwater Wetlands permits. Mr. Wohlleb performed tabulation and analysis of bid results and made recommendations for contract awards. He also organized and conducted a preconstruction meeting with the successful bidder, Raritan Township, and NJDEP. Mr. Wohlleb provided consultation and advice and coordinated construction activities with the contractor and field inspection staff. He was also responsible for reviewing shop drawings for compliance with design plans and specifications, as well as the review and processing of change orders and contractor payment requests.

BMUA Post-Hurricane Sandy FEMA Assistance - Civil Designer

Conducted inspections at multiple BMUA pump station facilities to assess damage caused by Hurricane Sandy. Mr. Wohlleb prepared damage assessment reports for each facility.

Village of Ridgefield Park Edison Street/Bergen Turnpike Drainage Improvements - Project Engineer

Provided construction phase services for drainage improvements along Edison Street and Bergen Turnpike, for the Village of Ridgefield Park. Work included the removal and replacement of existing CSO lines with larger-diameter piping to provide additional capacity and eliminate a sag. The project also included installation of new stormwater drainage inlets to reduce the potential for street flooding. Mr. Wohlleb performed tabulation and analysis of bid results and made recommendations for contract awards. He also organized and conducted a preconstruction meeting with the successful bidder, the village, and police. Mr. Wohlleb provided consultation and advice and coordinated construction activities with the contractor and field inspection staff. He was also responsible for reviewing shop drawings for compliance with design plans and specifications, as well as the review and processing of change orders and contractor payment requests.

Bernards Township Sewerage Authority Lagoon Valve Chamber at Harrison Brook Sewage Treatment Plant - Project Engineer

Provided construction phase services for a new underground valve chamber at Harrison Brook Sewage Treatment Plant, for Bernards Township Sewerage Authority. The work included the construction of a new underground, cast-in-place concrete chamber to provide access to the lagoon valves, which were buried at this location. Mr. Wohlleb conducted field inspections and coordinated work with the contractor, inspectors, and concrete testing company during construction. He was also responsible for reviewing and processing change orders and contractor payment requests.

Josh Carter, P.E., D.CE

HYDRAULIC/HYDROLOGIC MODELING ENGINEER

FIRM
MOTT MACDONALD

OFFICE LOCATION
NEW ORLEANS, LA

EDUCATION
MASTER OF SCIENCE, CIVIL AND ENVIRONMENTAL ENGINEERING; MASSACHUSETTS INSTITUTE OF TECHNOLOGY

BACHELOR OF SCIENCE, OCEAN ENGINEERING; TEXAS A&M UNIVERSITY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: LOUISIANA

CERTIFICATIONS
DIPLOMATE, COASTAL ENGINEERING

Mr. Carter has nearly 15 years of professional expertise in the human influence on the hydrodynamics and morphology of coastal and riverine environments, including expertise in riverine and coastal processes, morphology, numerical modeling of coastal processes. His other areas of expertise include modeling and analysis of coastal processes, such as wave transformation, coastal circulation, storm surge, sediment transport, coastal morphology, estuarine dynamics, water quality, and vessel-induced hydrodynamics. Mr. Carter has performed all phases of work, from feasibility evaluation and coastal engineering design to construction administration. He is experienced in preparing engineering design for coastal protection structures, including breakwaters, groins, revetments; "living shoreline" concepts; restoration, such as beach and dune nourishment and marsh creation; and industrial applications, such as marine terminals. Mr. Carter is skilled in data acquisition and collection, sophisticated analytical and numerical analysis techniques, and visualization and interpretation of coastal data and hydrodynamic numerical models. He also has extensive coastal engineering physical modeling experience. In addition, Mr. Carter has experience using the following hydrodynamic and coastal numerical models: REF/DIF, STWAVE, SWAN, HWAVE, RBREAK2, and FUNWAVE for wave transformation; RMA2, ADCIRC, M2D, SELFE, ELCIRC, and SHORECIRC for hydrodynamic flow; RMA4, SED2D, LAGRSED, and SEDTRANS96 for transport; VH-PS, VH-PU, VH-WS, and VH-WU for vessel hydrodynamics; NMLONG, SBEACH, and GENESIS for coastal processes and morphology; and Matlab, SMS v8.0+, Surfer, FORTRAN, C++, and MS Excel for pre- and post-processing.

Project Experience

MCUA Edison Pump Station Flood Wall - Coastal Task Leader

Provided coastal engineering design to provide resiliency against flooding to the Edison Pump Station along the Raritan River, for the Middlesex County Utilities Authority (MCUA). Mr. Carter directed the coastal engineering analysis. His team computed the design flood elevation based on review of historical data in order to determine proper wall height. His team then computed wave and hydrodynamic loads on the wall for use in structural design.

Columbia University Storm Surge Assessment - Coastal Engineer

Computed flood elevations for a range of storm conditions at Columbia University's Manhattanville development site as part of a flood risk study Mr. Carter performed a historical analysis of storm events at the project site along the Hudson River. He then developed a hurricane storm surge modeling system and simulated storm surge for various storm events at the site.

Elmer's Island Breach Repair - Coastal Modeler

Computed statistics for waves, winds, water levels, and storm occurrence, at Elmer's Island, LA. Mr. Carter also directed and conducted numerical modeling in support of the analysis and design calculations. Modeling work included circulation modeling, wave penetration modeling, and shoreline morphologic modeling. Results from these analyses were used to develop alternative breach fill solutions. His responsibilities also included the management of field data collection tasks, including topographic/bathymetric surveys, geotechnical field investigation, sediment borrow source investigation, and preliminary and final design assistance.

Kleberg County Kaufer-Hubert Memorial Park Shoreline Protection - Coastal Engineer

Conducted coastal engineering for a beachfront seawall project to preserve and restore the natural resources lost by erosion and increase the quality of use and public safety of the park, as well as for economic development, in Kleberg County, TX. Mr. Carter was responsible for analyzing the local coastal climate including wind and storm surge and calculation of design wave and water level parameters. He also

used the design conditions to determine the crest height of the sheet-pile wall. His other duties included final design drafting and QA/QC of drafting products. In Phase II of this project, he was responsible for construction oversight.

Oakland Middle Harbor Habitat Design - Coastal Engineer

Provided coastal engineering for a habitat restoration project in Oakland, CA, which consisted of dredged material placement, rock and sheetpile containment structures, tidal channels, avian roosting islands designed to provide protection from wave action and enhance circulation within the habitat area, and approximately 45 acres of eelgrass. Mr. Carter was responsible for numerical and analytical analysis of reflection and standing wave formation in front of a proposed sheetpile wall breakwater resulting from vessel passages. The results led to an improved wall design that will reduce the wave heights in the vicinity of the project.

Jefferson Parish Fort Livingston Wave Protection - Coastal Engineer

Developed and evaluated alternative shore protection schemes through extensive wave and hydrodynamic modeling, both numerical and analytical, for a project to protect the shoreline against severe storms in Jefferson Parish, LA.

Caminada Pass Bridge Design - Numerical Modeler

Computed the storm surge elevation, velocities, and wave conditions impacting the project vicinity and specifically the bridge elements, and successfully calibrated the model with measurements from Hurricanes Katrina and Rita, for Caminada Pass Bridge in Louisiana. Mr. Carter used the model to develop detailed wave and water levels impacting various bridge components and alternative designs. He also prepared a technical report upon the completion of the study, which included a description of the methodologies of the engineering analysis, a summary of the results of choice of hurricane design event, and the expected water level and wave conditions impacting the proposed bridge. Results of his analyses were utilized in the computation of wave forces on the bridge by other engineers.

Mandeville Wetlands Protection Project - Project Manager

Managed a project needed to reduce erosion to the cypress wetland, maintain the hydraulic connection with stormwater outfalls that feed into the wetlands and into Lake Pontchartrain in Louisiana, and create a walkway between two adjacent parks. Mr. Carter was responsible for data collection efforts and analysis of existing conditions, including wind and wave climate, tide elevations, and sediment transport patterns. He also directed an Alternatives Analysis (AA) for three alternatives: a rock revetment, a living shoreline, and a hybrid structure that combined the advantages of the revetment and living shoreline concepts.

Busan International New Cruise Terminal - Coastal Engineer

Responsible for the analysis and preliminary design of a vertical-walled breakwater engineered to protect a new cruise terminal in Busan, South Korea. Mr. Carter developed the analysis procedure for determining wave transmission, wave reflection, and wave forces through the vertical multi-wall porous breakwater system. He also developed a 1-D numerical model to predict wave reflection and transmission, and managed and designed the physical model testing to calibrate and verify the numerical model and verify the wave loading on the structure. The federal government of South Korea solicited alternatives for the new cruise terminal, recreational pier, and breakwater. Mr. Carter also assisted in the physical model data acquisition, processing, analysis, and interpretation of the physical and numerical modeling results. The results of the modeling and analysis were used to develop the design criteria for the structure.

Jefferson Parish I-10 Bridge Flood Wall Analysis of Hurricane Forces - Coastal Engineer

Douglas Gaffney, P.E., D.CE

HYDRAULIC/HYDROLOGIC MODELING ENGINEER

Mr. Gaffney serves as Mott MacDonald's Deputy Practice Leader for Coastal Engineering, focusing on coastal protection, restoration, and resilience in the northeast region of the United States. He has extensive experience in the innovative design of riverine, coastal, and waterfront structures; dredging; waterfront inspections; and coastal and geotechnical investigations. Mr. Gaffney has managed the preparation of Environmental Impact Statements (EISs), reconnaissance studies, feasibility studies, preconstruction engineering and design services, testing for dredging materials, and development of engineering tools for stone-filled marine mattresses used in civil engineering applications. He has significant experience with the U.S. Army Corps of Engineers (USACE), as well as the FEMA, and has participated in FEMA post-disaster hazard mitigation and post-storm recovery teams. Mr. Gaffney represented the North Atlantic Division of USACE as a member of the Coastal and Hydraulics Laboratory, Field Review Group. This group met to evaluate and rank research being conducted at the Waterways Experiment Station in Vicksburg, MS. More recently, he participated in writing of portions of the post-Sandy North Atlantic Coast Comprehensive Study. Mr. Gaffney has authored numerous technical papers, and is considered an expert in the use of geosynthetics in coastal engineering. He was also the U.S. Representative to the Permanent International Association of Navigation Congresses Working Group 56, which prepared "The Application of Geosynthetics in Waterfront Areas" report in 2011.

FIRM
MOTT MACDONALD

OFFICE LOCATION
FREEHOLD, NJ

EDUCATION
MASTER OF SCIENCE, MARINE STUDIES/ APPLIED OCEAN SCIENCE; UNIVERSITY OF DELAWARE

BACHELOR OF SCIENCE, MARINE ENGINEERING; MERCHANT MARINE ACADEMY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY

CERTIFICATIONS
DIPLOMATE, COASTAL ENGINEERING

MEMBERSHIPS
NORTHEAST CHAPTER PRESIDENT, AMERICAN SHORE AND BEACH PRESERVATION ASSOCIATION (ASBPA)

Project Experience

NYCEDC Red Hook Integrated Flood Protection Study - Project Manager

Providing engineering support for the Red Hook Integrated Flood Protection Study (IFPS) for a low-lying area which was hard-hit by Hurricane Sandy in Brooklyn, NY. Mr. Gaffney is developing preliminary designs to increase resiliency and provide protection from coastal storms as part of this FEMA Hazard Mitigation Grant Program (HMGP)-funded study for the New York City Economic Development Corporation (NYCEDC). Tasks include waterfront structure evaluations, development of a design basis that outlines FEMA requirements for certification, and development of flood intervention such as flood walls, embankments, and deployable barriers to meet study-specific design flood elevations.

Downe Township Gandys Beach Beachfront Sustainability Project - Project Manager

Developing a plan to enhance both the developed portion of the community and enhance the estuarine habitat at Gandys Beach in Cumberland County, NJ, for this National Fish and Wildlife Foundation (NFWF)-funded project. Mr. Gaffney is working with the NJDEP, USACE, and Downe Township to develop a series of breakwaters that will increase the project life of the USACE's proposed beachfill and provide horseshoe crab spawning habitat and Red Knot foraging habitat. His responsibilities include include coastal analyses, shoreline change mapping, and numerical modeling of alternatives.

NYCDEP Floating Wave Attenuator - Design Engineer

Studied the viability of floating wave attenuators for their effectiveness in reducing marsh island erosion in Jamaica Bay, for the New York City Department of Environmental Protection (NYCDEP). Mr. Gaffney also developed 65% design plans and specifications for the project.

Mosquito Island Coastal Protection - Project Manager

Provided coastal engineering design expertise and on-site assistance during the construction of a low profile groin field to enhance a recreational beach and protect mangroves at Mosquito Island in the British Virgin Islands.

Eustatia Island Shoreline Protection and Restoration - Project Manager
Assessed a chronic erosion problem and developed a shoreline restoration project to function with the natural processes of this carbonate beach on Eustatia Island in the British Virgin Islands. The geosynthetic-based revetment and groin were built in 2010, and successfully weathered a direct hit from Hurricane Earl.

Qatar-Bahrain Causeway Embankment Stabilization - Design Engineer
Provided consulting services on the use of geotextiles within the rock embankments for the proposed 25-mile Qatar-Bahrain Causeway. Mr. Gaffney provided on-site expertise in the selection and full-scale testing of geotextile function and durability during construction of a rock groin.

USACE National Shoreline Erosion Control Development and Demonstration Program - Project Manager
Provided an innovative design for a porous groin field, which was selected by the USACE to provide erosion control at the Gulf State Park Hotel in Alabama. Mr. Gaffney delivered a 30% design of the ridge and runnel porous groin system and recommendations for data collection, numerical modeling, and construction.

USACE Beach and Dune Restoration - Project Manager
Assisted the USACE in the design of the Post-Hurricane Ike beach and dune restoration project in Grand Isle, LA. Mr. Gaffney was requested by the USACE to participate in an agency technical review team to develop plans and specifications and provide on-site assistance during construction. He was instrumental in the selection of polyurea-coated geotextile tubes. Mr. Gaffney was also responsible for the development of the project's operation and maintenance (O&M) manual.

Government of Guyana SRDD Coastal Engineering Improvements - Coastal Engineering Expert
Provided coastal engineering expertise, wave data collection, and on-site assistance for the rehabilitation of approximately 11 miles of riprap revetment and concrete seawall on Guyana's coastal zone, which is extremely low-lying and protected from the Atlantic Ocean by seawalls and revetments. Mr. Gaffney developed options to accommodate anticipated sea level rise, trained staff in the design of groins, anchored steel sheetpile walls and breakwaters for various locations, and evaluated alternative approaches and materials for coastal construction. He also designed an emergency timber bulkhead replacement along the Demerara River, evaluated the cost-effectiveness of using rock from a government-owned quarry for building revetments, and provided capacity building through training to Sea and River Defense Division (SRDD) staff. Mr. Gaffney worked with the technical assistance consultant to foster the use of geographic information systems (GIS) in coastal engineering and reviewed and provided recommendation on SRDD policy and conducted a technical audit of the SRDD condition assessment. In addition, he assisted the Mangrove Action Committee and National Agricultural Research Institute in developing a science-based restoration program and designed innovative coastal structures to protect and restore the mangroves.

Jason Harkins, LLA

LANDSCAPE ARCHITECT

FIRM
MOTT MACDONALD

OFFICE LOCATION
ISELIN, NJ

EDUCATION
BACHELOR OF SCIENCE, LANDSCAPE ARCHITECTURE; RUTGERS UNIVERSITY

ASSOCIATE OF ARTS, COMPUTER INFORMATION SYSTEMS; DEVRY UNIVERSITY

CERTIFICATIONS
LICENSED LANDSCAPE ARCHITECT: NEW JERSEY

Mr. Harkins is a landscape architect with extensive experience in site planning and master planning. He has been involved in a wide range of projects, including parks and recreation planning and design; private, commercial, and residential site development; and wetland restoration for both private and governmental clients. Mr. Harkins has been responsible for all project design stages, from concept design through construction documentation, as well as construction oversight, and the preparation of high-quality plans and 3-D presentation graphics. He has designed projects of varying sizes, ranging from active recreation facilities to passive parks, courtyards, playgrounds, bike/pedestrian trails, and streetscape designs, as well as stormwater best management practices (BMPs) and pond dredging projects. These projects include site layout, grading, drainage, utilities layout, landscaping, and site/accent lighting design, as well as soil erosion and sediment control plans. His expertise includes the design and incorporation of green stormwater infrastructure (GSI) elements into landscape architecture/site design projects to provide potential environmental and stormwater quality and quantity benefits, as well as define spaces and enhance the aesthetics of projects. His designs incorporate various green elements, such as rain gardens, bioretention swales, engineered wetlands, and tree trenches, in ways that enhance the design as integral project components. Mr. Harkins has also been responsible for large-scale GSI planning involving the tributary analyses, site planning, and geotechnical investigations necessary to determine appropriate locations for GSI solutions prior to detailed design. In addition, he has created various types of print and electronic exhibits for use in presentations to municipal planning and zoning boards, which have been instrumental in achieving the approval of multiple projects. These exhibits have included aerial site location maps and overlays, proposed site layout and landscape plan renderings, and 3-D simulations of proposed site improvements demonstrating the anticipated visual impacts of projects.

Project Experience

NYCEDC Newtown Creek Area Green Stormwater Infrastructure - Landscape Architect

Performed GSI planning services, including tributary drainage analyses, management of field data and associated plans/database, and geotechnical submission for more than 700 soil borings in Brooklyn, NY, for the New York City Economic Development Corporation (NYCEDC). Mr. Harkins also prepared contract drawings and specifications for the installation of more than 200 right-of-way bioswales and stormwater BMPs.

NYCDEP Green Stormwater Infrastructure Task Order Contract - Landscape Architect

Performed GSI planning services, including tributary drainage analyses, management of field data and associated plans/database, and geotechnical submission for more than 500 soil borings for various projects in Queens, NY, for the New York City Department of Environmental Protection (NYCDEP). Mr. Harkins also prepared contract drawings and specifications for the installation of ROW bioswales and stormwater BMPs.

City of Philadelphia Green Schoolyards - Landscape Architect

Prepared conceptual plans and presentation graphics for "greening" opportunities at five school sites in Philadelphia, PA. The green techniques developed included porous pavement/playground surfacing, street trees, infiltration basins, rain gardens, orchards, and community gardens.

City of Philadelphia West Philadelphia Green Streets - Landscape Architect

Provided planting design and prepared renderings for the West Philadelphia phase of the Green Streets Program. Mr. Harkins was responsible for the design and plant selection for the streetscape and raised infiltration planter boxes at four areas, and the creation of a rain garden within an existing traffic island.

NYCDEP Rondout West Branch Bypass Tunnel - Landscape Architect
Prepared the landscape plans and renderings (plan view and 3D) for the Rondout West Branch Bypass Tunnel project in Newburgh, NY. Mr. Harkins focused the landscape design on balancing the visual screening requirements of construction activities and the goal of returning the site to its natural state following construction. Native trees and shrubs, along with native seed mixes, were utilized.

NYCEDC Water Siphon Site and Building Landscape Improvements - Landscape Architect
Prepared renderings, design plans, and specifications for site landscaping, including perimeter fencing, and the green roof and green wall system, for the water siphon site and building between Brooklyn and Staten Island, NY. Mr. Harkins was responsible for the preparation of presentation materials for the New York City Design Review Commission. The landscape design and green stormwater elements were designed not only to minimize the physical impact of the site, but also soften the appearance of the building and industrial fencing through wall/roof plantings and native vegetation. The green roof and green walls mitigate stormwater runoff from the building by providing stormwater storage and uptake in the soil media and evapotranspiration from the vegetation, reducing the volume and runoff rate from the site and improving water quality.

Ocean County Wetlands/Transitional Area Restoration - Landscape Architect
Prepared a landscape plan for the restoration of a wetland/transitional area in Jackson, NJ, which was disturbed during the installation of a stormwater pipeline and discharge point. The restoration consisted of native understory herbaceous and woody plantings.

Somerset County Colonial Park Conceptual Master Plan - Landscape Architect
Prepared conceptual designs and ranges of construction costs for the design of various new active and passive recreation facilities at Colonial Park in Somerset County, NJ. New facilities include the development of newly acquired properties as active recreation facilities offering soccer fields, ball fields, cricket pitches, multi-purpose fields, and associated parking, along with pedestrian walking paths and connections to existing park facilities. The design of these recreational facilities focused on maintaining a balance between the recreational needs of the community and preserving the pastoral nature of the site and its surroundings.

Essex County/Essex County Board of Chosen Freeholders Riverfront Park - Landscape Architect
Provided detailed landscape design and site lighting design for a riverfront park in Newark, NJ. Mr. Harkins prepared specifications and assisted in the design of synthetic turf fields for this new $7.6 million, 12-acre park along the Passaic River.

MCIA Open Space Program Environmental Investigations - Landscape Architect
Performed land use evaluation and prepared related mapping for lot yield analysis of various sites in support of the Middlesex County Improvement Authority (MCIA)'s On-Call Engineering Open Space Program. Mr. Harkins provided geographic information system services and site constraints assistance for lot yield, wetlands, and due diligence projects.

William DiBartolo Jr., PLS

SURVEYOR

Mr. DiBartolo, leader of Mott MacDonald's land surveying operations in New Jersey, is experienced in a wide variety of land surveying, geographic information system (GIS), and municipal engineering projects, giving him a multidisciplinary perspective towards project management and execution. His land surveying experience includes a full range of survey services in support of engineering and publicly funded land acquisition projects. These include boundary, topographic, and environmental surveys, as well as deformation/settlement monitoring. Mr. DiBartolo's responsibilities have also included setting property corners, metes and bounds descriptions, parcel mapping for easement and ROW acquisitions, tax map preparation and revisions, ALTA/ACSM surveys, construction stakeout and grade sheet preparation, preparation and review of major and minor subdivision plats and descriptions, and report preparation for legal proceedings. His tax map experience includes maps draw in ink on mylar and AutoCAD, as well as converting existing sheets into AutoCAD format. Mr. DiBartolo is also responsible for yearly tax map maintenance, updates, and drafting revision. In addition, he has experience with global positioning system (GPS) and robotic total station, as well as traditional instrumentation, and has coordinated the location of stormwater outfalls and inlets with mapping grade GPS for inclusion in Tier A municipalities' GIS mapping.

FIRM
MOTT MACDONALD

OFFICE LOCATION
ISELIN, NJ

EDUCATION
BACHELOR OF SCIENCE, SURVEYING ENGINEERING TECHNOLOGY; NEW JERSEY INSTITUTE OF TECHNOLOGY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL LAND SURVEYOR: NEW JERSEY

MEMBERSHIPS
BOARD OF DIRECTORS, NEW JERSEY SOCIETY OF PROFESSIONAL LAND SURVEYORS (NJSPLS)

Project Experience

Village of Ridgefield Park Combined Sewer Asset Inventory Survey - Survey Manager

Coordinated and performed field data collection of the Village of Ridgefield Park's sanitary and storm sewer assets. Mr. DiBartolo captured asset locations using a combination of survey-grade GPS equipment and conventional survey techniques.

Lakewood Township Water and Sewer System Upgrades - Survey Manager

Set control for an aerial survey of a 300-acre section of Lakewood Township. Mr. DiBartolo surveyed 25,000 lf of roadway to obtain utility mark-out and record accurate rim and invert elevations on sanitary and drainage sewer structures.

NJDEP Green Acres Program Surveys - Survey Manager

Performed surveying services as part of the NJDEP's Green Acres Program. Projects included the Daniel Farmland Preservation, Readington Township, Hunterdon County; Madison Community Recreation Center, Florham Park Borough, Morris County; Koehler Pond, Boonton Township, Morris County; and Byrn Estate, Livingston Township, Essex County.

Buckeye Partners/City of Linden Fuel Storage Tank Settlement Monitoring - Survey Manager

Performed settlement monitoring of four new fuel storage tanks during the load testing of each tank in Union County, NJ. Mr. DiBartolo recorded measurements around the perimeter of the tanks simultaneously to monitor settlement and movement to the required accuracy of 1/16 inch (0.005 feet).

International-Matex Tank Terminals Environmental Site Remediation Surveying Support - Survey Manager

Provided surveying support for the site cleanup and remediation of a 600-acre petroleum bulk storage (PBS) and processing facility on the Upper New York Harbor. Mr. DiBartolo provided as-built records and volume calculations of excavations, prepared deed notice area descriptions for remediated areas, and surveyed more than 400 groundwater monitoring wells.

Oxford Township Warren County District Landfill - Survey Manager
Performed as-built survey of approximately 4,400 lf of PVC pipe for a landfill gas collection and extraction pipeline in Oxford, NJ.

Various Clients Monitoring Well Surveys - Survey Manager
Provided monitoring well surveys for various projects throughout New Jersey. These included Garden State Parkway and New Jersey Turnpike Service Stations Richard Stockton, Woodrow Wilson, Molly Pitcher, Vince Lombardi, Montvale, Vaux Hall, Brookdale, and Clifton; and more than 200 Exxon and Shell gas stations.

Morris County Digital Tax Assessment Map - Project Manager
Created a digital tax assessment map and developed a land record database for use by the Borough Tax Assessor and Engineer for Chatham and Wharton, NJ. Individual parcels from the tax map were joined with the land records database using GIS software to create new zoning, open space, and historic district maps.

City of Summit Roadway Reconstruction Projects - Survey Manager
Prepared topographic surveys for roadways for various milling and paving, road and sidewalk reconstruction, and drainage improvement projects in Summit, NJ.

City of Englewood Braydon Street, Lincoln Street, and Johnson Avenue - Survey Manager
Performed a survey of approximately 5,000 lf of roadway to assist with the development of design drawings in connection with roadway reconstruction projects in Englewood, NJ.

Town of Kearny Passaic Avenue Bridge over Passaic River - Survey Manager
Performed an existing conditions survey of a concrete beam bridge over Passaic River. The survey included topography of the bridge deck, abutments, and land below the structure, and a detailed survey of the locations and elevations of individual piers and beams.

NJ TRANSIT Rail Bridge over Passaic River - Survey Manager
Prepared a survey for a proposed Riparian Grant related to upgrades to an existing railroad crossing over the Passaic River in Newark, NJ. The existing structure, piers, and bulkheads were surveyed and mapped with adjoining riparian grants in the project area to show the extent and metes and bounds of the proposed grant.

Morris County Administration Building - Survey Manager
Performed a detailed existing conditions and topographic survey of the side of a county administration building for the design of stormwater drainage improvements in Morristown, NJ.

Scotch Plains Township Brookside Park Pond - Survey Manager
Performed a topographic and hydrographic survey of the Brookside Park Pond and surrounding wetlands. Detailed subsurface topography was required to calculate the volume of sediment to be dredged.

Douglas Glorie, P.E., CIH, LEED® AP

ENVIRONMENTAL ENGINEER

Mr. Glorie is a seasoned environmental engineer with more than 20 years of experience managing a wide range of environmental engineering, remediation, and construction projects for facilities throughout the New York metropolitan area. He is experienced in managing project budgets, technical designs, and staffing for projects involving asbestos surveys, abatement project monitoring, lead-based paint surveys, and microbial investigations. Mr. Glorie is knowledgeable in New Jersey, New York, and federal environmental regulations and standards, including standards for spill prevention, stormwater pollution prevention, and pollutant discharge elimination. He has performed numerous Phase I Environmental Site Assessments (ESAs), Phase II Environmental Site Investigations (ESIs), and property condition assessments. Mr. Glorie has designed field data-entry systems that have substantially reduced reporting time and increased staff efficiency. In addition, he is well versed in the interpretation of construction drawings and specifications, construction finance monitoring, and plan and cost document reviews.

FIRM
STV

OFFICE LOCATION
NEW YORK, NY

EDUCATION
MASTER OF BUSINESS ADMINISTRATION, BUSINESS FINANCE; BARUCH COLLEGE AT CITY UNIVERSITY OF NEW YORK

BACHELOR OF SCIENCE, AGRICULTURAL AND BIOLOGICAL ENGINEERING; CORNELL UNIVERSITY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY

CERTIFICATIONS
LEED ACCREDITED PROFESSIONAL (AP)

CERTIFIED INDUSTRIAL HYGIENIST; AMERICAN BOARD OF INDUSTRIAL HYGIENE

LEAD-BASED PAINT RISK ASSESSOR; EPA

LEAD CERTIFICATION RENOVATION, REPAIR, AND PAINTING; EPA

SUPERVISOR – COMMERCIAL BUILDINGS AND SUPERSTRUCTURES, PLANNER/ PROJECT DESIGNER; NEW JERSEY DEPARTMENT OF HEALTH

Project Experience

NYC Transit Coney Island Yard Flood Mitigation - Environmental Manager

Managing asbestos survey investigations and abatement design as part of a major effort to alleviate and protect against future flooding at the 110-acre Coney Island Yard complex in Brooklyn, NY, which was significantly impacted by the storm surge from Hurricane Sandy. The firm assessed alternatives for New York City Transit (NYC Transit), including perimeter protection, storm drainage system modifications, sump pits and pumps, and raising critical items above the base flood elevation. Mr. Glorie is also managing lead-based paint, universal waste, and PCB caulk survey and design activities.

NYC Transit 17 Fan Plants and Adjacent Tunnel Flood Mitigation - Senior Environmental Engineer

Participating in federal grant writing for the repair of 17 fan plants and adjacent subway tunnels located in Brooklyn, Queens, the Bronx, and Roosevelt Island, NY, which sustained significant flood damage due to the storm surge from Hurricane Sandy. This is a task performed under an indefinite quantity contract to provide architectural/engineering services for NYC Transit. Mr. Glorie is investigating and evaluating alternative solutions, including operational requirements and cost benefits. He is developing the conceptual design and report for the repair of fan plants, emergency exits, and vents to achieve modern ventilation standards, and preparing flood mitigation design to withstand the impacts of a Category 2 hurricane-induced tidal surge.

NYC Transit Coney Island Yard SWPPP - Technical Lead

Prepared a stormwater pollution prevention plan (SWPPP) for the Coney Island Yard, the largest rapid transit yard in the world. The NYC Transit facility, built on former marshlands, covers 110 acres and operates 24 hours a day, 7 days a week. Mr. Glorie was responsible for all technical aspects of the project. He developed the best management practices for stormwater control and staffing, prepared drainage mapping, and identified areas of potential spills and leaks. Mr. Glorie prepared the SWPPP for compliance with EPA and New York State Department of Environmental Conservation (NYSDEC) requirements. This task was performed as part of an on-call environmental services contract.

CompassRock Real Estate Peter Cooper Village Basement Buildback - Environmental Engineer

Provided environmental services to restore basements in 15 high-rise residential buildings of Peter Cooper Village, a massive housing complex on Manhattan's East Side that was seriously damaged by Hurricane Sandy when millions of gallons of highly corrosive saltwater flooded into the property, inundating underground spaces, including laundry rooms, lobbies, and mechanical and equipment rooms. As construction

started, the building owners requested the installation of a vapor barrier within 10 days in anticipation of completing construction of eight of the damaged buildings within a 6-week period. Mr. Glorie researched options for vapor barriers and recommended using Retro-Coat. The barrier was successfully installed to meet the construction schedule and the owner's needs.

Atlantic County Mays Landing Historic Court Complex - Environmental Manager

Managed a predemolition hazardous materials survey and designed remediation plans for asbestos-containing materials, lead-containing paint, polychlorinated biphenyls (PCB) containing caulk, toxicity characteristic leaching procedure (TCLP) materials, and universal waste at the 1964 Jail Building at the Historic Court Complex in Mays Landing, NJ. The purpose of the survey, for the Atlantic County Division of Facilities, was to identify, locate, sample, and assess the condition of building materials that were suspected of containing asbestos, lead and/or PCBs and that would be impacted by the proposed demolition project. Mr. Glorie conducted site inspections and reviewed relevant records and databases. He prepared an updated Phase I ESA that addressed the environmental issues associated with the property. In accordance with NJDEP and ASTM 1527 standards, Mr. Glorie also conducted a current environmental database search for the property and re-evaluated and updated site conditions for the property.

PANYNJ George Washington Bridge Environmental Monitoring - Senior Project Manager

Led the high-volume ambient air-monitoring activities during abrasive blasting operations on the lower level of the George Washington Bridge in New York City for the Port Authority of New York and New Jersey (PANYNJ). Mr. Glorie oversaw multiple monitoring technicians as well as the total suspended particle lead and PM-10 sample collection, DataRAM monitoring, waste management, worker health and safety conditions, Class 1-A containment visible emission assessment by Method 22, and the preparation of monthly reports. Mr. Glorie also conducted Phase I ESAs, forensic engineering studies, and engineering inspections for real estate transactions. He developed field data entry systems that resulted in a 40% reduction in report preparation time.

NJSDA Warminster Building Demolition - Project Manager

Managed the asbestos and lead survey and design as part of the demolition design drawings for the removal of a 4-story, 22,840-sf that the New Jersey School Development Authority (NJSDA) plans to demolish. The multi-bay, L-shaped facility is located on a 48,000-sf property warehouse in West New York, NJ. Mr. Glorie and his team found the building to be in poor condition, with asbestos-containing material, guano, lead-based paint, and PCB-containing lighting fixtures. He designed the abatement of asbestos roofing and lead-based paint on the exterior façade. Mr. Glorie also prepared the Health and Safety Plan to address hazards during construction inspection, including guano, asbestos, lead, universal waste, underground storage tanks, contaminated soil, falls, and electrical hazards.

Atlantic County Mays Landing Historic Court Complex - Environmental Manager

Managed a pre-demolition hazardous materials survey and designed remediation plans for asbestos-containing materials, lead-containing paint, PCB-containing caulk, TCLP materials, and universal waste at the 1964 Jail Building at the Historic Court Complex in Mays Landing, NJ. The purpose of the survey, for the Atlantic County Division of Facilities, was to identify, locate, sample, and assess the condition of building materials that were suspected of containing asbestos, lead and/or PCBs and that would be impacted by the proposed demolition project. Mr. Glorie conducted site inspections and reviewed relevant records and databases. He prepared an updated Phase I Environmental Site Assessment that addressed the environmental issues associated with the property. In accordance with New Jersey Department of Environmental Protection and ASTM 1527 standards, Mr. Glorie also conducted a current environmental database search for the property and re-evaluated and updated site conditions for the property.

Michael Francis, Ph.D.

ENVIRONMENTAL/PERMITTING SPECIALIST

Dr. Francis is an environmental project manager with more than 25 years of experience, including extensive experience in land use planning and environmental evaluation and permitting for major transportation, residential, commercial, and energy clients throughout New Jersey, New York, and several other states. Dr. Francis is familiar with the permitting requirements of the New Jersey Department of Environmental Protection (NJDEP) and the U.S. Army Corps of Engineers (USACE). He has extensive experience in preparing Phase 1 Environmental Site Assessments (ESAs) pursuant to the ASTM International Standard Practice E-1527-05, as well as Preliminary Assessment/Site Investigations pursuant to the New Jersey Technical Requirements for Site Remediation. Dr. Francis's technical expertise includes Environmental Assessments (EAs) and due diligence investigations, asbestos and lead inspections, hazardous site investigations, wetlands investigations/delineations, wetlands mitigation design, regulatory agency permitting, environmental impact statements pursuant to federal, state, and local jurisdictions, and expert witness testimony. He has been successful in securing numerous environmental permits for freshwater and coastal wetlands, waterfront developments, and flood hazard areas, as well as wetlands mitigation plan approvals throughout the Northeast.

FIRM
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OFFICE LOCATION
TRENTON, NJ

EDUCATION
MINI-MASTERS OF BUSINESS ADMINISTRATION; RUTGERS UNIVERSITY, CENTER FOR MANAGEMENT DEVELOPMENT

DOCTOR OF PHILOSOPHY, ENVIRONMENTAL ENGINEERING; KENNEDY-WESTERN UNIVERSITY

MASTER OF ARTS, ENVIRONMENTAL MANAGEMENT; MONTCLAIR STATE UNIVERSITY

BACHELOR OF ARTS, GEOGRAPHY, ENVIRONMENTAL ANALYSIS AND MANAGEMENT; RUTGERS UNIVERSITY

CERTIFICATIONS
LEAD INSPECTOR/RISK ASSESSOR TRAINING/ CERTIFICATION; RUTGERS SCHOOL OF PUBLIC HEALTH

LEAD INSPECTOR/RISK ASSESSOR PERMIT; NEW JERSEY DEPARTMENT OF HEALTH & SENIOR SERVICES

LEAD INSPECTOR/ MANAGEMENT PLANNER CERTIFICATION; PENNSYLVANIA DEPARTMENT OF LABOR & INDUSTRY

TRAINING
OSHA 40-HOUR HAZWOPER

OSHA 8-HOUR HAZWOPER REFRESHER

OSHA 10-HOUR CONSTRUCTION HEALTH AND SAFETY

Project Experience

NYC Transit Coney Island Yard Flood Mitigation - Senior Environmental Project Manager

Providing environmental permitting support to mitigate against flooding at the 110-acre Coney Island Yard rail complex in Brooklyn, NY, which was significantly impacted by the storm surge from Hurricane Sandy. The complex, which opened in 1926 on low-lying tidal land, encompasses three railroad storage yards for NYC Transit, and is used to perform regular maintenance for a fleet of nearly 800 cars, as well as heavy maintenance and overhaul for the approximately 6,000 cars in the NYC Transit rapid transit system. The improvements to the yard will allow it to remain operational during a 100-year rainfall event and undamaged during a Category II hurricane storm surge event. The project also includes a new perimeter wall surrounding the property. Dr. Francis is coordinating with USACE and New York State Department of Environmental Conservation (NYSDEC) for the permits required for a new stormwater outfall structure at Coney Island Creek, as well as several alternatives for rehabilitated and new rail bridges across Coney Island Creek. He will also be responsible for securing regulatory permits for the selected alternatives.

PSE&G Generation Station and Substation Improvements - Senior Environmental Project Manager

Directed the concept, design, and approval of the wetlands mitigation area, as well as the delineation of the wetlands adjacent to three different urban sites in Ridgefield, Newark, and South Brunswick, NJ, containing Public Service Electric and Gas Company (PSE&G) generation stations and substations that were being improved. Dr. Francis also secured environmental permits from NJDEP and USACE.

NYC Transit Emergency Restoration of the A Line - Senior Environmental Project Manager

Provided guidance regarding environmental compliance for the restoration of NYC Transit's A Line near Broad Channel, Queens, NY, which had been washed out by Hurricane Sandy. A large section of damaged track was severely undermined. Dr. Francis inspected and evaluated the condition of the adjacent wetlands and endangered species habitat given the project is in an environmentally sensitive part of the Jamaica Bay ecosystem. He met on-site with representatives from the regulatory agencies and with contractors during the installation of sheet-piling and backfill to stabilize the tracks. Throughout the project, he monitored work to confirm compliance with special permit provisions issued by USACE and NYSDEC.

NYC Transit Charleston Bus Depot Stormwater Outfall - Senior Environmental Project Manager
Provided environmental permitting services to NYC Transit for the renewal and re-issuance of the Nationwide Permit 7 from the USACE New York District for a stormwater outfall to the Arthur Kill. The Charleston Bus Depot in Staten Island, NY, services and maintains 220 express buses. It began operations in early 2011.

DRPA Glassboro-Camden Line EIS - Senior Environmental Project Manager
Conducted the field delineation of freshwater wetlands and waters for the construction of an 18-mile corridor between Camden and Glassboro, NJ. The Delaware River Port Authority (DRPA) project will improve access between Glassboro and Camden/Philadelphia by providing 18 miles of track in an existing Conrail freight corridor. Dr. Francis developed the Hazardous and Contaminated Materials Technical Report and the water resources portion of the Natural Resources Technical Report. He also prepared the water resources impacts narrative and hazardous and contaminated materials impacts narrative for the NEPA EA. Dr. Francis coordinated with USACE and NJDEP to determine jurisdictional limits. He also conducted detailed biological and habitat surveys in the project corridor for threatened and endangered species.

LIRR Ronkonkoma Branch New Main Line Second Track - Senior Environmental Project Manager
Delineated freshwater wetlands and developed the natural resources impacts narrative in the EA for the expansion of the Long Island Rail Road (LIRR)'s 17.9-mile corridor between Farmingdale and Ronkonkoma, NY. The $300 million project to provide an additional 12.6-mile track in the corridor aims to improve customer service and spur transit-oriented development. The Ronkonkoma Branch is one of the LIRR's busiest commuter rail lines but narrows to one track within many locations between the Farmingdale and Ronkonkoma stations, a limitation that stops service and reduces operating reliability in both directions when a train breaks down. Dr. Francis coordinated with the NYSDEC to determine and develop wetlands mitigation strategies.

NYC Transit Fence Removal and Replacement - Senior Environmental Project Manager
Provided environmental investigation and permitting services for the removal of ROW fencing along the Staten Island Railway in Staten Island, NY, in response to an unresolved Notice of Violation and Administrative Order. Dr. Francis coordinated closely with NYSDEC and New York City Department of Environmental Protection (NYCDEP) to advance the project and minimize client construction costs.

CHSRA Los Angeles-to-Anaheim Project EIR/EIS - Senior Environmental Manager
Provided hydrology, wetlands delineation, and hazardous materials QA/QC as part of the preparation of the Environmental Impact Report/Environmental Impact Statement (EIR/EIS) for this multisection project for the California High-Speed Rail Authority (CHSRA) to develop high-speed rail service between major metropolitan areas of the state. Dr. Francis made sure the report was compliant with NEPA and California Environmental Quality Act (CEQA) procedures.

Berkeley Township Sewerage Authority Pinewald Area Sanitary Sewer Project - Senior Environmental Project Manager
Responsible for the wetlands delineation, GPS survey, environmental evaluation, and Coastal Area Facilities Review Act permitting for the proposed sanitary sewer installation, for more than 1,500 acres of project area and more than 60 miles of sewer line in Berkeley Township, NJ.

Kelly Bird, P.E.

TRANSPORTATION ENGINEER (MPT)

Ms. Bird is a transportation engineer with broad experience providing civil engineering services for transportation and highway projects. She possesses a range of experience involving roadway and bridge design and rehabilitation, traffic engineering, construction management, and green infrastructure design systems. Ms. Bird is proficient in maintenance and protection of traffic (MPT) planning, intersection capacity analysis, traffic simulation modeling, and cost estimating. Her experience also includes traffic, pedestrian, and parking analyses, including traffic simulations using Aimsun and VISSIM modeling software and pedestrian simulation using the STEPS program.

FIRM
STV

OFFICE LOCATION
NEW YORK, NY

EDUCATION
MASTER OF SCIENCE, TRANSPORTATION ENGINEERING AND PLANNING; NEW YORK UNIVERSITY POLYTECHNIC INSTITUTE OF ENGINEERING

BACHELOR OF SCIENCE, CIVIL ENGINEERING; PENNSYLVANIA STATE UNIVERSITY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW YORK

Project Experience

PANYNJ Holland and Lincoln Tunnels Repair and Rehabilitation Resiliency Projects - Traffic Engineer

Developing the MPT design during efforts to repair saltwater corrosion damage caused by Hurricane Sandy's storm surge into the Holland and Lincoln roadway tunnel tubes under the Hudson River connecting New York and New Jersey. The federally funded program for the Port Authority of New York and New Jersey (PANYNJ) will involve the repair of steel bents and steel-faced curbing, provide flood protection barriers, and repair piping, valves, wiring, and controls for the stormwater, pumping, and fire suppression systems. Ms. Bird's responsibilities include developing MPT plans that require the coordination of a single-lane closure of the two-lane tunnel roadways during construction hours in compliance with PANYNJ standards. She is designing lane closure schemes for both the Lincoln and Holland inbound and outbound tunnels, during which traffic flow will be maintained in an adjacent lane.

NYC Transit 12 Circuit-Breaker Houses Flood Repair and Resiliency - Traffic Engineer

Prepared work layout plans to repair four New York City Transit (NYC Transit) circuit-breaker houses in Queens and Brooklyn, NY, which sustained extensive damage during Hurricane Sandy. The planned work layout areas provided for the MPT measures while closing roadways and sidewalks within the vicinity of the project. Ms. Bird was responsible for developing detailed MPT plans showing sign locations, traffic barriers, and traffic enforcement agent placement for lane closures and temporary traffic control, as required by the Manual on Uniform Traffic Control Devices. The plans will be submitted for approval by the New York City Department of Transportation Office of Construction Mitigation and Coordination for field implementation.

PANYNJ WTC Transportation Hub - Traffic Planner

Performed pedestrian flow modeling using STEPS software to simulate pedestrian conditions throughout the World Trade Center (WTC) Transportation Hub and PATH Terminal, under both normal and emergency egress conditions, for PANYNJ. The study focused on pedestrian movement throughout the Hub, which will contain 47 escalators and 19 elevators. Ms. Bird identified congested circulation areas to make sure the entire layout operates as a system to maintain an acceptable level of service. She has focused the model results to specific zones, which have been categorized as critical "mixing bowls" that could potentially create severe queuing if not properly sized. One particular condition that Ms. Bird modeled involved the sudden large volumes of pedestrians generated by arriving trains.

Metro-North Moodna and Woodbury Viaduct Rehabilitations - Civil Engineering Designer

Developed MPT plans for construction of priority repairs to the 590-foot Woodbury and the 3,200-foot Moodna viaducts for Metro-North Railroad. The viaducts are about 50 miles north of New York City on the Port Jervis commuter rail line, and both bridges had experienced deterioration of their concrete foundations. Ms. Bird prepared the MPT plans for use during the $5 million rehabilitation of steel deterioration and section loss.

NYSDOT Maintenance Repairs to Various Bridges - Civil Engineering Designer

Prepared MPT plans and provided civil engineering services for the $7.4 million interim rehabilitation of 37 bridges in the Bronx and Staten Island, NY, for the New York State Department of Transportation (NYSDOT). The scope of work included the inspection of riding surfaces and joints, and the inspection of paint at girders and stringers. Ms. Bird prepared the plans, specifications, and estimates submission, which included a detailed design.

TBTA Rockaway Boulevard Overpass and Riis Park Pedestrian Bridge Rehabilitation - Civil Engineering Designer

Provided civil engineering services and developed MPT plans to be enacted during the $11 million effort to rehabilitate the Rockaway Point Boulevard overpass and the Jacob Riis Park pedestrian bridge in Queens, NY, for the Triborough Bridge and Tunnel Authority (TBTA). The raised medians, center median box beam rails, and fascia railings of both structures will be replaced, and minor deterioration of both substructures will be repaired. Ms. Bird was part of the team that evaluated and presented four alternatives to meet rehabilitation objectives during the design brief. She was also responsible for drafting the proposed structural work.

NYC Transit Queens Plaza Flushing Line MPT Plan - Traffic Engineer

Developed work layout and traffic detour plans for the track panel installation on the elevated No. 7 line in Queens, NY, for NYC Transit. The detour plans include the work zone limits; placement of cranes, lay down, and panel staging areas; lane, sidewalk, and crosswalk closures; traffic and pedestrian diversion routes; and the location of traffic mitigation measures, including signs, traffic barriers, variable message signs, and traffic enforcement agents. Ms. Bird coordinated with NYC Transit to develop these plans and gain approval by the NYSDOT. In addition, she conducted field reconnaissance during construction to make sure that the MPT plans were followed or modified.

Miron Rahman, P.E.

RESIDENT ENGINEER

Mr. Rahman has been an integral part of Mott MacDonald's contract administration and construction project management team for many years. Recently, he has been assigned the responsibility of coordinating, scheduling, and providing oversight of the firm's resident inspectors and resident engineers for New Jersey municipal and county public improvement construction projects, including those funded through the NJDOT Municipal Aid program. Mr. Rahman has provided construction administration and observation for wastewater treatment plants, pumping stations, sanitary interceptors with collection systems, stormwater facilities, water supply systems, site developments, and full-depth reconstruction and pavement overlays for municipal roadway reconstruction projects. He has been responsible for the design and construction management of municipal and developer projects and the preparation of as-built record plans. Mr. Rahman's other responsibilities include preparing permit applications, municipal budgeting assistance, procuring funding for capital improvement projects, and reviewing minor and major subdivisions and site plans submitted for planning board approvals for adherence to local land development ordinances, stormwater management, and other regulatory requirements.

FIRM
MOTT MACDONALD

LOCATION
FREEHOLD, NJ

EDUCATION
BACHELOR OF SCIENCE, CONSTRUCTION ENGINEERING; TEXAS TECH UNIVERSITY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY

CERTIFICATIONS
OSHA CONFINED SPACE ENTRY

OSHA OCCUPATIONAL EXP TO BLOODBORNE PATHOGENS

CERTIFIED MUNICIPAL ENGINEER: NEW JERSEY

Project Experience

NJDEP Mantoloking Sea Wall Steel Sheet-Pile and Dune Restoration – Resident Engineer

Oversaw the construction of a critical infrastructure project, which consisted of the construction of approximately 3.75 miles of steel sheet-piling seawall with associated appurtenances. The $25+ million project was funded through the Federal Highway Administration (FHWA) and managed by NJDEP. The project was formulated to protect the communities along with a vulnerable segment of State Highway Route 35, which was devastated and breached during Hurricane Storm Sandy in October 2012. Mr. Rahman's responsibilities included review of shop drawings, material certifications, and daily inspection of overall site activities, including the installation of steel sheet piles. His additional responsibilities included coordination and collaboration with all involved stakeholders and regulatory and funding agencies, preparing daily inspection reports using NJDOT DC-29 forms, preparing bi-weekly payment estimates in accordance with the requirements set by the FHWA and NJDOT, and preparing monthly wage rate inspection report Form DC-126.

Mantoloking Borough and Brick Township Steel Sheet Pile Dune Restoration - Resident Engineer

Responsible for the seawall critical infrastructure project, which consisted of the construction of approximately 3.75 miles of steel sheet piling seawall with associated appurtenances in Ocean County, NJ. The $25+ million project was funded through the Federal Highway Administration (FHWA) and managed by NJDEP. The project was formulated to protect the communities along with a vulnerable segment of State Highway Route 35, which was devastated and breached during Hurricane Sandy in October 2012. Mr. Rahman was responsible for review of shop drawings, material certifications, and daily inspection of overall site activities, including the installation of steel sheet piles. His additional responsibilities included coordination and collaboration with all of involved stakeholders and regulatory and funding agencies; preparation of daily inspection reports using NJDOT DC-29 forms, preparation of bi-weekly payment estimates in accordance with FHWA and NJDOT requirements; and preparation of monthly wage rate inspection report Form DC-126.

Branchburg Townships Neshanic Station Pump Station and Force Main - Resident Engineer

Provided construction observation for a new wastewater pump station and approximately 13,600 lf of 6-inch-diameter force main with multiple air-release chambers in Somerset County, NJ. The project included repairs to township roadways.

Middlesex County Utilities Authority Edison Force Mains/Pump Station Upgrade - Project Engineer

Prepared contract documentation and provided permitting assistance for a project involving the installation of an approximately 4,000 lf tunnel under the Raritan River, within which were constructed two 60-inch-diameter sewage force main connections between the Edison Pump Station and Central Wastewater Treatment Facility in Woodbridge and Sayreville, NJ. As part of the permitting effort, he prepared federal, state, and local permit applications, including U.S. Army Corp of Engineers Nationwide Permit NWP-12, NJDEP-LURP, Upland Waterfront Development Permit, NJDEP-Tideland Conveyance Instrument, One-Fee License, and Conrail Right-of-Way Railroad Crossing Permit.

Cranbury Township Dey Road Pump Station - Resident Engineer

Oversaw construction of a 4.55-mgd suction lift pump station, including Parshall flume chamber, chemical feed equipment and tank, and flow meter chamber in Middlesex County, NJ. Mr. Rahman's responsibilities included shop drawing review and transmittal; preparation of pay estimates; and coordination of monthly progress meetings. Installation of 3,700 lf of 16-inch ductile iron pipe force main was completed under a separate contract.

Ocean County College Infrastructure Improvements Phase II - Construction Engineer and Inspector

Provided construction management and inspection services, including daily inspection and implementation of stormwater management improvements, installation of storm sewer piping, installation of a storm sewer manufactured treatment device, construction of detention and retention basins, and construction of a full-depth loop road and parking lot with drainage swale in Toms River, NJ.

City of New Brunswick Monument Square Park - Project Manager

Provided construction management services for the reconstruction and renovation of Monument Square Park in Middlesex County, NJ. Mr. Rahman's responsibilities included daily coordination with the general site contractor and subcontractors; field inspections; payment applications; payment invoices; change orders; and mediation of site progress meetings with design engineers, contractors, and city officials. He also provided close-out services.

City of Newark Phase IIC, IIG, and IIH Gunite Sewer Rehabilitation - Resident Engineer

Responsible for gunite sewer rehabilitation of existing brick sewers, varying in size and configuration and in cross-sections, ranging from circular to egg-shaped and horse shoe to oval, in Essex County, NJ.

Cranbury Township Municipal Engineering Services - Project Engineer

Provided regular assistance to the Municipal Engineer in Middlesex County, NJ. Mr. Rahman's responsibilities included the preparation of plans and specifications and construction management services, consisting of the preparation of contract documents, payment invoices, estimates, and change orders for numerous NJDOT-funded municipal construction projects. He coordinated and conducted pre-construction meetings with design engineers, contractors, and township officials; and observed the installation of thousands of feet of sanitary sewer and storm drainage systems, as well as the construction of new roadways and road widening projects, including curbs, culverts, and drainage swales. He also performed proof rolls for roads and parking lot construction, and provided general administrative and construction management activities, including the preparation of performance guarantee estimates for site improvements, certificates of occupancy, performance guarantee reduction and release, plot plan reviews, site plan/subdivision review reports for planning and zoning boards, as-built surveys, and coordination with NJDOT and Middlesex County for various roadway improvement projects.

Robert David Quickel, PSP, EVP

SCHEDULER

Mr. Quickel has more than 15 years of experience developing, implementing, and maintaining complex schedules and project controls for significant transportation, facility, and infrastructure projects. He is adept at creating and maintaining cost-loaded and resource-loaded design and construction schedules, reviewing contractors' baseline schedules and schedule updates, and coordinating closely with design and construction management (CM) groups to create and maintain schedule analysis reports. Mr. Quickel has updated schedules based on firsthand knowledge of the construction progress gained from on-site visits. He has experience controlling project costs through Earned Value Management, and is proficient in the use of Primavera and Microsoft Project software to develop and maintain schedules.

FIRM
STV

OFFICE LOCATION
NEW YORK, NY

EDUCATION
BACHELOR OF ARTS, PSYCHOLOGY; UNIVERSITY OF CALIFORNIA, SAN DIEGO

CERTIFICATIONS
EARNED VALUE PROFESSIONAL (EVP); ASSOCIATION FOR THE ADVANCEMENT OF COST ENGINEERING (AACE) INTERNATIONAL

PLANNING AND SCHEDULING PROFESSIONAL (PSP); AACE INTERNATIONAL

TRAINING
PRIMAVERA FOR ENGINEERING AND CONSTRUCTION (P3 E/C) TRAINING PROGRAM; ETRAC SOLUTIONS

Project Experience

NYCHA Hurricane Sandy CM-as-Agent Repairs and Restoration at Manhattan and Brooklyn Housing Complexes - Scheduler

Created project schedules for CM-as-agent repairs to New York City Housing Authority (NYCHA) facilities in Manhattan and Brooklyn that suffered damage during Hurricane Sandy. After the floodwaters receded, 35 developments and one maintenance facility had suffered moderate to severe damage to their mechanical and electrical systems, roofs, and façades from saltwater and sand infiltration. The extensive scope of the damage, which impacted more than 800,000 residents, required a rapid pace of reconstruction in order to efficiently restore NYCHA buildings to full operation. In conjunction with accelerated project management and estimation services, Mr. Quickel developed schedules aiming for a two-week turnover for each impacted building. He scheduled repairs for the Governor Alfred E. Smith Houses, the Lillian Wald Houses, and the Jacob Riis Houses I & II complexes in Manhattan, as well as the Gowanus Houses in the Boerum Hill area of Brooklyn.

NJDPMC Ancora Psychiatric Hospital - Scheduler

Developed the cost-loaded construction schedule for the complete renovation of Elm Hall as part of New Jersey Division of Property Management and Construction (NJDPMC) renovations to the Ancora, NJ, campus to bring it into conformance with Joint Commission on Accreditation of Healthcare Organizations standards. The renovations to Elm Hall included HVAC, plumbing, and electrical systems. Mr. Quickel also provided scheduling for sprinkler, fire alarm, and emergency lighting upgrades at other buildings on the campus. All facilities were occupied during construction, requiring complex phasing.

NJDPMC Trenton Psychiatric Hospital - Scheduler

Provided and maintained construction schedules for the NJDPMC retrofit of automatic sprinkler systems and upgrade of fire alarm systems at Trenton Psychiatric Hospital in Trenton, NJ. Several challenges were met by the implementation of a construction strategy that addressed the restricted swing space availability, the presence of asbestos and lead paint in selected areas, and the need to complete the design and award the construction contract on a fast-track schedule and adhere to budget constraints.

NJSDA West Side High School - Scheduler

Created and maintained design schedules using Primavera Project Planner (P3) for the addition of approximately 162,000 sf of new educational space and the reconfiguration of the existing building to create four smaller "academies" at this high school in Newark, NJ, for the New Jersey Schools Development Authority (NJSDA). Mr. Quickel prepared schedules for the architectural and engineering assessment of the existing structure (Phase I), the determination of program requirements for the new configuration (Phase II), the master plan with four alternative layouts (Phase III), and design and construction documents for the selected alternative (Phase IV).

NJSDA Mount Vernon Avenue Elementary School - Scheduler

Provided and maintained construction schedules for the new $21.7 million elementary school on Mount Vernon Avenue in Irvington, NJ, for the NJSDA. The 93,820-sf school will serve 600 students, along with program spaces for community-oriented public functions. The design called for a 2-wing structure centered on a tall central atrium that will serve as a lively public space.

NJ TRANSIT Meadows Maintenance Complex Facility Expansion - Scheduler

Created a detailed construction schedule for the $75 million expansion of the Meadows Maintenance Complex (MMC) in Kearny, NJ. Mr. Quickel developed construction schedules for numerous shop elements, including a new 10,000-sf bidirectional trainwasher in a separate enclosed building, the expansion of Service and Inspection Building No. 2 to include a third track for inspection and maintenance activities and a 2-ton monorail, and the expansion of the car area in Building No. 1 to accommodate additional car hoist equipment and air brake work. Additional shop elements included wheel truing, a blowdown facility, material storage, a train/car washer, a control tower, fueling stations, administration areas, and employee facilities. Mr. Quickel developed the preconstruction schedule for new electrical services and the expansion of the locomotive shop at the MMC.

NJ TRANSIT Morrisville Yard Phase II - Scheduler

Provided and maintained construction schedules for the $65 million expansion of the Morrisville Yard in Morrisville, PA. The yard allows NJ TRANSIT to store and service trains on the Northeast Corridor line between Trenton, NJ, and New York City. The existing facilities at Morrisville Yard that were built during Phase I remained in operation during construction of the Phase II expansion and improvements, requiring special staging measures and extensive coordination with the client.

PANYNJ WTC Transportation Hub - Scheduler

Created and maintained design schedules and prepared conceptual design and basis of design reports for the design of the $3.2 billion permanent WTC Transportation Hub in Lower Manhattan for the PANYNJ. The hub will include a permanent PATH terminal and pedestrian connections that will significantly improve access to PATH and 11 Lower Manhattan subway lines, as well as state-of-the art safety, security, and environmental enhancements. Mr. Quickel also conducted risk analysis for construction schedules.

PANYNJ WTC Vehicle Security Center and Tour Bus Parking Facility - Scheduler

Developed and updated a detailed design schedule and developed preconstruction schedules for each of the five construction contracts for a PANYNJ vehicle security center and tour bus parking facility at the WTC site in Lower Manhattan. The $533 million project also includes a parking facility to serve 80 tour buses.

PANYNJ One World Trade Center - Scheduler

Analyzed sequencing scenarios and developed strategies for completion of foundations for One World Trade Center in Lower Manhattan for the Port Authority of New York and New Jersey (PANYNJ). Mr. Quickel was also responsible for reviewing the construction manager's schedule for the entire project. The tower is the centerpiece of the new World Trade Center (WTC) complex and includes more than 3.6 million gross sf, 2.6 million sf of which will be available for office space, restaurants, an observation deck, and broadcast facilities. The building will also house below-grade shopping and provide access to the WTC Transportation Hub and the World Financial Center. The facility encompasses a sophisticated array of sustainable design elements, a unique curtain wall system, and advanced building control systems.

Vinny Kissoon, CCP, CEP, AVS

COST ESTIMATOR

Mr. Kissoon has more than 30 years of experience as a cost estimator. With expertise in project controls for transportation, education, civil works, and facility projects, he is adept at reviewing project schedules, coordinating architectural and engineering drawings, conducting constructability reviews, and providing contract administration. Mr. Kissoon's extensive background in cost control includes familiarity with trend and configuration management processes for tracking budgets and generating reports for client and stakeholder review. He also has extensive experience in value engineering and preparing cost analyses for alternatives that are evaluated for constructability, life cycle cost, schedule impacts, traffic operations, public satisfaction, and environmental impacts. These alternatives have potentially saved millions of dollars for clients.

FIRM
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OFFICE LOCATION
NEW YORK, NY

EDUCATION
BACHELOR OF SCIENCE, CONSTRUCTION MANAGEMENT; EVERGLADES UNIVERSITY

BUILDING CONSTRUCTION MANAGEMENT DIPLOMA; NEW YORK UNIVERSITY

CERTIFICATIONS
CERTIFIED COST PROFESSIONAL (CCP); AACE INTERNATIONAL

CERTIFIED ESTIMATING PROFESSIONAL (CEP); AACE INTERNATIONAL

ASSOCIATE VALUE SPECIALIST (AVS); SAVE INTERNATIONAL

QUANTITY SURVEYOR, ROYAL INSTITUTION OF CHARTERED SURVEYORS

TRAINING
METRO-NORTH/LONG ISLAND RAIL ROAD SAFETY TRAINING

COST ENGINEERING FUNDAMENTALS; AACE

Project Experience

NYC Transit Coney Island Yard Flood Mitigation - Lead Cost Estimator

Led cost estimating services for the flood alleviation project at the Coney Island Yard in Brooklyn, NY, which became half-submerged during Hurricane Sandy. The 75-acre rail complex, which was built in 1926 and is located in a low lying tidal area, encompasses three railroad storage yards for New York City Transit (NYC Transit) and is used to perform regular maintenance for a fleet of nearly 800 cars, as well as heavy maintenance and overhaul for the approximately 6,000 cars in the NYC Transit subway system. Mr. Kissoon also finalized the project estimate for submittal to the client.

NYCSCA I.S. 98K Flood Assessment and Mitigation Options - Lead Estimator

Prepared estimates for flood assessment and mitigation options for I.S. 98K (Bay Academy) middle school in the Sheepshead Bay neighborhood of Brooklyn, NY, following the flood surge of Hurricane Sandy. The New York City School Construction Authority (NYCSCA) selected the firm to conduct an inspection of the four-story, 142,000-sf building and prepare a damage assessment report. Mr. Kissoon assisted the inspection team to estimate the cost of damage to the boilers, water heaters, and pumps; electrical services and distribution panels; and fire alarm, lighting, and emergency lighting equipment in the school's basement. The firm's subsequent report detailed all observed architectural (including floors and finishes), structural, mechanical, electrical, and plumbing damage. Mr. Kissoon's estimates for mitigation options included recommendations for repair and replacement based on existing equipment specifications and quantities, as well as the cost of installing flood shielding and relocating critical equipment and program space to minimize the potential for future flood damage.

NYSOGS South Beach Psychiatric Center Emergency Response and New Central Services Building - Lead Estimator

Prepared cost estimates for the new $41 million, 47,000-sf central services building at the South Beach Psychiatric Center in Staten Island, NY, for the New York State Office of General Services (NYSOGS), which is operated by the New York State Office of Mental Health (NYSOMH). Mr. Kissoon coordinated with NYSOMH to prepare estimates during construction of the facility, which houses core functions previously located in the basement of Building 8/9 — including the kitchen, maintenance and warehouse facilities, the emergency generator, boilers, air handling systems, chillers, and main loading dock — that were severely impacted by floodwaters from Hurricane Sandy.

NYU Langone Medical Center Hurricane Sandy Recovery - Lead Estimator

Preparing change order estimates and design bulletin changes for the rehabilitation and repatriation of New York University (NYU) Langone Medical Center in Manhattan following severe flood damage from Hur-

ricane Sandy. As part of ongoing efforts to repair damage at Langone, Mr. Kissoon is overseeing change orders to relocate the admissions office, design bulletin changes for the Medical Science Building repatriation, and an independent estimate for the removal of the Skirball Institute of Biomolecular Medicine's mobile MRI machine. His team is providing and reviewing cost estimates for repairs to all Sandy-related damage within the NYU Langone complex, and has supported estimates for elevating hospital data infrastructure above the floodplain, renovating a central sterile processing facility, and converting an existing structure into a new radiochemistry and cyclotron laboratory. Mr. Kissoon's responsibilities include providing estimates, drafting and reviewing change orders, coordinating the estimating team's responses to issues, and providing change management support for completed construction-phase work.

NYCHA Hurricane Sandy CM-as-Agent Repairs and Restoration at Manhattan and Brooklyn Housing Complexes - Senior Estimator

Leading cost estimation and constructability review efforts during a construction management (CM)-as-agent contract to restore housing facilities in Manhattan and Brooklyn that had suffered flooding, sand and saltwater infiltration, and wind damage during Hurricane Sandy for the New York City Housing Authority (NYCHA). Mr. Kissoon is managing and producing cost estimates for the repair or replacement of damaged building components and the installation of minor mitigation measures, such as flood barriers, at five developments on Manhattan's Lower East Side: Pedro Albizu Campos Plaza II, the Governor Alfred E. Smith Houses, the Lillian Wald Houses, and the Jacob Riis Houses and Jacob Riis Houses II complexes, as well as the Gowanus Houses in the Boerum Hill neighborhood of Brooklyn. Mr. Kissoon is leading a six-person team, providing management oversight of constructability reviews and cost estimating in coordination with construction management personnel and NYCHA's project management oversight (PMO) staff. Due to the need for ongoing rapid response to critically damaged systems, estimates and reviews are being performed during a condensed two-week schedule. Mr. Kissoon's team has been instrumental in preventing significant cost overruns identified during the effort's constructability review process.

NYCHA Hurricane Sandy CM-as-Agent Queensbridge and Parkside Houses Repairs and Restoration - Senior Estimator

Managing cost estimating efforts for the latest phase of a CM-as-agent contract to repair and restore housing facilities damaged by Hurricane Sandy for the NYCHA. Having provided estimates and reviews for repairs to numerous NYCHA complexes to date, Mr. Kissoon is currently leading the firm's cost estimation efforts for repairs and upgrades to the 3,142-unit Queensbridge Houses in Long Island City, NY, and the 879-unit Parkside Houses in the Bronx, NY. Mr. Kissoon is leading a six-person team, managing and contributing to estimates in coordination with construction management personnel and NYCHA's PMO staff. His team is providing estimates on an extremely compressed timetable to enable rapid responses to specific critical conditions identified at the two complexes.

NJDPMC Five Motor Vehicle Agency Facilities - Cost Estimator

Performed cost estimating services for the New Jersey Division of Property Management and Construction (NJDPMC) for the design and construction administration for a prototypical 7,000-sf Motor Vehicle Agency Office Building using a preliminary floor plan provided by the Motor Vehicle Commission. He also site-adapted the facility to five existing vehicle inspection stations located throughout the state in Flemington, Freehold, East Brunswick, Lakewood, and Randolph.

Aye Thann

COST ESTIMATOR

Ms. Thann has more than 20 years of experience providing estimating services for engineering and architectural projects, including heavy and light rail systems, station design, and roadwork. Her background includes developing pricing estimates, takeoffs, and change orders for structural, architectural, civil, mechanical, and utility work. Ms. Thann is also adept at providing quality assurance/quality control (QA/QC) of junior estimators' work.

FIRM
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OFFICE LOCATION
NEW YORK, NY

EDUCATION
BACHELOR OF ENGINEERING, MECHANICAL; RANGOON INSTITUTE OF TECHNOLOGY, RANGOON, BURMA/ MYANMAR

TRAINING
BOOKKEEPING & ACCOUNTING; PROFESSIONAL CAREER DEVELOPMENT INSTITUTE

QUANTITY SURVEYING & CONTRACT ADMINISTRATION; NGEE ANN POLYTECHNIC

COMPUTER SOFTWARE; ADVANCED COMPUTER TRAINING CENTER

Project Experience

VA Facility Assets Protection Program - Senior Estimator

Performed QC of takeoffs and estimates for architectural and structural design of a floodwall around the U.S. Department of Veterans Affairs (VA)' Manhattan Medical Center, under a task-order contract. The firm is designing a 5-foot-high, 50-foot-long concrete floodwall around the hospital and a driveway. The project covers 110,000 sf of the 2-block complex. The floodwall will be mounted on piles around the property's low side, while curb cuts will provide access to the driveway and parking.

NYCSCA Construction Projects - Senior Estimator

Developing cost estimates for architectural and structural work for New York City School Construction Authority (NYCSCA) projects after damage from Hurricane Sandy. Ms. Thann is preparing estimates for work at P.S.106Q, P.S.186Q, and Queens Metropolitan High School in Queens; P.S.75M and P.S.43M in Manhattan, P.S.132K, P.S.288K, and I.S.98K in Brooklyn; and I.S.229X in the Bronx.

PANYNJ WTC Streets and Utilities - Senior Estimator

Developed take-off and pricing estimates for the preliminary and final design for utility work, landscaping, and grading of Liberty Park, part of the $250 million restoration of the original street grid through the 16-acre World Trade Center (WTC) site for the Port Authority of New York and New Jersey (PANYNJ). In an area with many ongoing projects, the firm is working closely with PANYNJ and other stakeholders to identify the benefits of various options for construction packaging, sequencing, and staging of the project.

MTACC/LIRR East Side Access - Senior Estimator

Performing takeoffs, estimates, and reconciliation on architectural, civil, structural, and utility work using HCSS for the $10 billion project to provide Long Island Rail Road (LIRR) service to the East Side of Manhattan for the Metropolitan Transportation Authority Capital Construction (MTACC). For the new terminus in Grand Central Terminal, the firm developed conceptual design for train platforms, cross-passageways, and entrance ways, with consideration given to the intermodal requirements of the terminal, which presently serves Metro-North Railroad and NYC Transit subway lines. Ms. Thann has prepared estimates for architectural and structural work for two escalators and the installation of one elevator between the new concourse level and the Biltmore room, including the modification of framing plans at the suburban level, express level, and street level. She is also developing takeoffs and estimates for several components of the overall project, including the concourse and cavern facility fit out, 38th Street vent building, 44th Street vent building, 50th Street vent building, Harold Interlocking structures, expansion joint repair, Madison Yard clearance, Manhattan tunnel, Queens bore tunnel, 48th Street entrance, Plaza Interlocking facility, Mid-Day storage facility, Manhattan tunnel and 63rd Street tunnel, and track and third rail.

Trust for Governors Island Governors Island Resident Engineering and Design Review - Senior Estimator

Developing estimates for the demolition of abandoned barracks, warehouses, and support buildings on Governors Island in New York Harbor, part of the first phase of infrastructure improvements under a $300 million capital program. The firm is reviewing abatement and demolition procedures for 18 buildings and stabilization measures for 52 historic buildings. Stabilization efforts include building envelope repair, life-safety upgrades, and masonry repairs to deteriorating pathways.

MTA Civil Engineering Design Services - Senior Estimator

Prepared pricing for architectural, structural, and utility work for improvements to the Baltimore/Washington International (BWI) Thurgood Marshall Airport rail station, including construction of 9 miles of a fourth main line track. This is part of a task-order contract to provide architectural and engineering design services to the Maryland Transit Administration (MTA). In addition to designing the station building and track improvements, the firm developed alternatives for a bridge at Patapsco River, a replacement overhead bridge, and more than 35 structure modifications along the corridor. The station introduces a new center platform with a fourth main line track platform and track modifications to allow high-speed and intercity trains to use any of the tracks, as well as improved elevator and stair towers and a new station building designed to meet LEED® standards.

POLA Pacific Harbor Line Maintenance Facility - Senior Estimator

Provided QC of estimates for the design to replace the Pacific Harbor Line maintenance facility at the Port of Los Angeles (POLA). The new, 8,200-sf facility will accommodate the Pacific Harbor Line's growing fleet of ultra-low emission vehicles. The $90 million maintenance building will house two covered inspection pits, a fueling track, sanding facility, an oil/water separator, and storage and employee welfare areas. The project also includes a 5,000-sf prefabricated office building that will house administrative offices, a dispatching center, support spaces, a conference room, and employee welfare spaces.

MTA Capital Construction Subway Station Improvements - Estimator

Prepared budget and detail estimates for renovations to subway stations, including Knickerbocker Station in Brooklyn and Bowling Green and Whitehall Street stations in Manhattan. The work included improvements to platforms, stairs, and roofs. Ms. Thann's responsibilities included performing material takeoffs for architectural, structural, civil, utilities, and mechanical, and preparing estimates for cost comparisons.

MTA 1265B Purple Line GEC - Senior Estimator

Providing QA/QC of takeoffs for the preliminary through final engineering services for a new 16-mile east-west light rail system in the northern Washington, D.C., suburbs, under a general engineering consultant (GEC) on-call contract with the MTA The Purple Line, with an estimated cost of $1.9 billion, will connect Metro subway, commuter rail, Amtrak, and local bus routes inside the Capital Beltway from Bethesda in Montgomery County, MD, east to New Carrollton in Prince George's County, MD, with 21 stations.

RCTC Perris Valley Line - Senior Estimator

Prepared takeoffs and estimates on architectural, civil, structural, and utility work for engineering services to the Riverside County Transportation Commission (RCTC) to initiate Metrolink commuter rail service on the Perris Valley Line, which runs 24 miles from Riverside to Perris, CA. Ms. Thann developed estimates for the design of four stations, roadways, and a layover facility, as part of the $247.2 million project.

CATS Lynx Blue Line Extension Light Rail Project - Senior Estimator

Provided QC of take-off estimates for the final design of the 9.3 mile extension of the Blue Line, the first major rapid transit line in Charlotte, NC, for the Charlotte Area Transit System (CATS). The $1.16 billion extension links Center City to the Charlotte campus of the University of North Carolina.

MTA-1264B Red Line Program Management Consultant - Senior Estimator

Conducted QA/QC of estimates for program management of the design, construction, and startup of the 14.6-mile Red Line in Baltimore. The light rail line was designed to have 19 stations and connect to existing public transit, including subway, light rail, train, and local bus routes. Powered by an overhead contact system, it was designed to run for nearly 10 miles at street level in dedicated lanes, except in downtown Baltimore where it will travel underground. The project was stopped in 2015 due to funding shortage.

Pratima Gatehouse, ENV SP, AVS

WEB COORDINATOR

Ms. Gatehouse is a project manager with significant experience leading projects for wastewater conveyance and treatment facilities includes aeration systems for improved process efficiency, process piping, mass transfer and pumping equipment replacement, and Combined Sewer Overflow (CSO) mitigation. Her responsibilities include coordinating multidisciplinary staff, developing schedules, procurement, and budget management in construction and engineering environments. Ms. Gatehouse has gained considerable experience with the requirements and procedures of various federal, state, and local governing and regulatory agencies, including the New York City Department of Environmental Protection (NYCDEP).

FIRM
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OFFICE LOCATION
ISELIN, NJ

EDUCATION
MASTER OF SCIENCE, ENGINEERING; PENNSYLVANIA STATE UNIVERSITY

BACHELOR OF MECHANICAL ENGINEERING; PENNSYLVANIA STATE UNIVERSITY

CERTIFICATIONS
ASSOCIATE VALUE SPECIALIST (AVS); SAVE INTERNATIONAL

ENVISION SUSTAINABILITY PROFESSIONAL (ENV SP); INSTITUTE FOR SUSTAINABLE INFRASTRUCTURE

Project Experience

PVSC Wastewater Treatment Plant Upgrade - Project Manager

Led the design, fabrication, installation, and start-up of aeration equipment for the 330-mgd PVSC wastewater treatment facility in Newark, NJ.

Two Bridges Sewerage Authority 25-MGD Wastewater Treatment Plant Upgrades - Project Manager

Supervised the design, fabrication, staged installation and start-up, and performance testing of open air surface aeration equipment for the 25-mgd wastewater treatment facility in Morris County, NJ, for the Two Bridges Sewerage Authority.

Two Bridges Sewerage Authority 35-MGD Wastewater Treatment Plant Improvements - Project Manager

Providing project control support for the construction management of new preliminary treatment and electrical upgrades at the 35-mgd treatment plant in Morris County, NJ. Ms. Gatehouse is managing scope changes based on the Two Bridges Sewerage Authority's requests during the construction phase.

Orange County Sanitation District Wastewater Treatment Plant Upgrades - Project Manager

Led the design, fabrication, installation, and testing of aeration equipment and controls systems for the 129-mgd, high-purity oxygen secondary treatment process at the Orange County Sanitation District wastewater treatment plant in Huntington Beach, CA.

City of Tampa Howard F. Curren Advanced Wastewater Treatment Plant Upgrade - Project Manager

Supervised the multi-stage aeration tank cleaning and repair, design, fabrication, installation, start-up, and performance testing of aeration equipment for the 96-mgd Howard F. Curren Advanced Wastewater Treatment Plant in Tampa, FL. Extensive sediment had collected in the aeration tanks at the plant. Ms. Gatehouse specified energy-efficient equipment for the high-purity oxygen secondary treat for installation.

Mixing and Mass Transfer Technologies Wastewater Treatment Facilities - Project Manager

Managed the design, fabrication, installation, and testing of equipment for up to five concurrent municipal or industrial wastewater treatment customers in State College, PA, for mixing and mass transfer technologies. Ms. Gatehouse initiated and coordinated monthly project reviews and managed a new product development from concept and pilot scale to successful full-scale installation.

NYCDEP Borden Avenue Pumping Station Upgrade - Project Manager

Responsible for the design; permitting; design services during construction; and public, interagency, and client relations for an upgrade to the 3.9-mgd Borden Avenue Pumping Station in Queens, NY. Ms. Gatehouse developed, managed, and controlled the project budget, schedule, subcontractors, and reporting. She also coordinated multiple design disciples, project offices, and NYCDEP departments to achieve a high-quality, efficient design. The upgrade includes converting a dry well to a wet well and the replacement of all equipment, process piping, and electrical equipment, in addition to rehabilitation of the building for improved environmental health and safety concerns and to meet NYCDEP standards.

NJDCA RREM Grant Disaster Recovery Program - Project Manager

Responsible for the production start-up of geotechnical, survey, and site specific design at various sites for the New Jersey Department of Community Affairs (NJDCA) Renovate, Rehabilitate, Elevate, and Mitigate (RREM) Grant Disaster Recovery Program. Ms. Gatehouse generated standard operating procedures (SOPs), forms, and other homeowner documents to facilitate program management of the pre-construction aspects of the program. She also managed site-specific design of more than 100 homes in an accelerated timeframe.

NYCDEP East River CSO Abatement Facilities - Project Manager

Responsible for the project closeout, focused on habitat and vegetation monitoring in Brooklyn, Queens, and the Bronx, NY. Ms. Gatehouse managed the budget, schedule, subcontractors, and reporting, including monthly NYCDEP reporting and invoicing. The primary objective of the more than 15-year project is to meet, to the extent feasible and practicable, New York State Department of Environmental Conservation's (NYSDEC) multiple-phase approach to CSO abatement facilities in Alley Creek, Bronx River, Hutchinson River, and Westchester Creek.

NYCDEP Newtown Creek Water Quality Facility - Project Manager

Managed the design, permitting, and construction support of multiple buildings and aeration systems to aerate Newtown Creek in Brooklyn, NY. Ms. Gatehouse developed, managed, and controlled the project budget, schedule, subcontractors, and reporting, including NYCDEP monthly reporting (PMIS) and invoicing. She also coordinated multiple design disciples, project offices, and NYCDEP departments to achieve a high-quality, efficient design. The primary objective of the project is to meet, to the extent feasible and practicable, NYSDEC Class SD water quality criteria for dissolved oxygen in Newtown Creek and its tributaries.

Nittany Biodiesel/Bulldog Biodiesel Production Plant - Project Manager

Led the construction of a $22 million production plant, under budget and on schedule, incorporating multiple design changes during construction, in State College, PA, and Ellenwood, GA, for Nittany Biodiesel and Bulldog Biodiesel. Ms. Gatehouses's responsibilities included equipment selection and procurement, subcontract negotiations, and budget and schedule preparation and management in a fast-paced, rapidly changing environment. She created and managed a BQ9000 program, including SOP creation for processes in accordance biodiesel industry ISO requirements. She also reviewed process data for cost and time reduction, which led to a 25% reduction in use of the most expensive raw material.

Thomas Kuhn, P.E.

SCADA SYSTEMS ENGINEER

FIRM
MOTT MACDONALD

OFFICE LOCATION
ISELIN, NJ

EDUCATION
MASTER OF SCIENCE, PROFESSIONAL AND TECHNICAL COMMUNICATIONS; NEW JERSEY INSTITUTE OF TECHNOLOGY

BACHELOR OF SCIENCE, ELECTRICAL ENGINEERING; NORWICH UNIVERSITY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW JERSEY

Mr. Kuhn is an electrical engineer with extensive experience with electrical and control systems engineering projects, with particular expertise in automation and control systems for process control. His experience includes detailed design, programming, integration, and commissioning of many programmable logic controller (PLC)-based control systems, supervisory control and data acquisition (SCADA) systems, databases, and control system networks for various water/wastewater, transportation, pipelines, pharmaceutical, chemical, oil/gas, nuclear power, and renewable energy projects. His controls experience ranges from simple electro-mechanical control systems to complex, networked, state-of-the-art PLC and SCADA control systems. His electrical engineering experience includes electrical motor controls, low-voltage power distribution, and electrical instrumentation design. Mr. Kuhn's technical design and integration skills include PLC programming (ladder, function blocks, SFC, add-on instructions), SCADA and HMI/OIT programming, computer and server configuration, control system networking design and configuration/commissioning, database design and programming (access, SQL server), control system reporting methods, and virtualization configuration and design. During his 14 years with the U.S. Food and Drug Administration (FDA), he became highly proficient in the authoring of specifications, reports, user manuals, and other technical communications, and developed corporate standards for the design of various instrumentation and controls (I&C) components.

Project Experience

PVWC Emergency Backup Power and Water Storage Facilities - Engineer of Record (sign/seal)

Provided instrumentation and controls (I&C) design for two new 2.5-mg concrete water storage tanks, and the instrumentation design for emergency power systems at the 120-mgd Little Falls water treatment plant, for the Passaic Valley Water Commission (PVWC), NJ. Mr. Kuhn designed and developed P&IDs, panel designs, schematics, and construction specifications in coordination with instrumentation engineers and electrical engineers at a partner engineering firm.

City of Cape May SCADA System Upgrades - Engineer of Record (sign/seal)

Provided detailed SCADA system upgrade design for a 2-mgd reverse osmosis (RO) water treatment plant in Cape May, NJ. The design basis for this upgrade includes upgrades of obsolete PLC equipment utilizing manufacturer upgrade kits with prewired cables. This provides for a low risk installation with minimal downtime. The design also includes upgrades of application software and enhancement of data logging and reporting. The project is currently under construction.

Air Liquide Hydrogen Plant Water Treatment System Controls and Equipment Upgrades - Project Design Engineer, Programmer, Commissioning Engineer

Provided design services for upgrades to controls and equipment for the water treatment system used in the supply of conditioned water to nearby industrial companies and in the manufacture of industrial gases in Bayport, TX. Mr. Kuhn assisted with the design of panel modifications and control retrofit using newly introduced Ethernet communications for PLC. He also prepared custom logic diagrams, which incorporated wiring schematics and programming logic into one document. The control systems included automatic power backup system, automatic sequencing of cation/anion/mixed bed regeneration, emergency bypass water supply, specialized acid/caustic ratio controls, and sand/anthracite filter controls.

Brookhaven National Labs Potable Water Treatment Plant - Project Design Engineer, Programmer, Commissioning Engineer

Assisted with the design of a modern PLC-based, SCADA-interfaced automatic control system to replace the existing early generation hybrid PLC and manual control system in Long Island, NY. The control design

features included automatic sequencing for regeneration and cleaning of sand and anthracite filters, pump and valve controls, and the aeration tower. Mr. Kuhn programmed and commissioned the control system on site in phases to maintain continuous potable water production. The project also included a partial PLC interface to integrate separately supplied sub-system controls from another vendor.

IPL Water Treatment Plant Steam Generation Plant Hoosier Dome/RCA Dome - Project Design Engineer, Programmer, Commissioning Engineer

Assisted with the design and drafting of logic diagrams, electrical panel mechanical layouts, instrument upgrades and specifications, testing of electrical control panels, PLC and SCADA programming, and site commissioning for the replacement of the existing manual electrical controls of the main condensate water treatment system with an automated SCADA/PLC-based control system for Indianapolis Power and Light (IPL). The controls and instrumentation were designed to replace existing mechanical relay controls with computer and PLC controls. Mr. Kuhn designed the panel to tie into existing wiring and mechanical controls with minimal disruption to plant operation.

American Water Military Services Picatinny Arsenal Water and Wastewater SCADA Evaluation - Senior Project Engineer, Engineer of Record (sign/seal)

Performing a detailed evaluation of SCADA and control systems for the Picatinny Arsenal's entire water and wastewater systems in Morris County, NJ, including wells, pumping stations, lift stations, and water treatment plant. Mr. Kuhn's responsibilities include an evaluation of telemetry and controls at more than 40 water and wastewater sites throughout the facility, theoretical/modeled and physical path study evaluation for problem communication sites, evaluation of future sites, master planning, future project estimating and scheduling, and preparation of a comprehensive engineering report of findings and recommendations.

DC Water Anacostia Pump Station Spill Header Retrofit - Project Engineer

Provided control and electrical design support for the pump station spill header retrofit, for the District of Columbia Water and Sewer Authority (DC Water). Mr. Kuhn conducted a site visit and investigations to plan control-related changes. He modified existing electrical and control drawings in cooperation with in-house/local office staff to provide a complete retrofit design.

Timothy Buckley, P.E.

COMMUNICATIONS SYSTEMS ENGINEER

Mr. Buckley is an electrical systems engineer with proven experience designing and implementing security, telecommunications, and electrical systems. His experience with the Port Authority of New York and New Jersey (PANYNJ), where he was the lead electrical field engineer in charge of spearheading electrical technology operations for two years, as well as his work for the Metropolitan Transportation Authority (MTA) has provided him with vast knowledge of public agency security regulations. Mr. Buckley is skilled in developing systems for surveillance, access control, and intrusion detection at strategic locations within rail stations, tunnels, and platform areas. He also has experience managing electrical and technology projects in the field and making sure that all project work conforms to contract drawings and specifications. One such project is the Integrated Electronic Security System/Command, Communication, and Control (IESS/C3) program, which deployed new security systems and infrastructure across the MTA to enhance security.

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OFFICE LOCATION
NEW YORK, NY

EDUCATION
BACHELOR OF ENGINEERING, COMPUTER ENGINEERING; VANDERBILT UNIVERSITY

PROFESSIONAL REGISTRATIONS
PROFESSIONAL ENGINEER: NEW YORK

Project Experience

PANYNJ JFK International Airport Badging Office Communication Systems - Project Manager/Technical Lead

Leading the systems design for a new badging office at JFK International Airport in Queens, NY, for the PANYNJ. Mr. Buckley coordinates surveys of the facility to identify and understand the functionality of the office and he works closely with architects and other trades involved in redevelopment efforts. The current design expands and upgrades the existing systems to a new standard, and deploys a new queue management system to handle the hundreds of new or replacement badge requests that must be processed. The systems include interfaces with existing access control and intrusion detection; CCTV; new IP telephone expansion; and the queue management system, similar to those found at departments of motor vehicles. Mr. Buckley is directing a team of junior engineers on the technical aspects of the project and handling all project management duties.

PANYNJ JFK International Airport Checked Baggage Area Surveillance System - Technical Lead

Led security design development for the installation of a security surveillance system using a fiber-optic infrastructure for the checked baggage inspection system and bag makeup room areas of passenger Terminals 1, 2, 3, 4, 7, and 8 at JFK International Airport in Queens, NY. Mr. Buckley prepared preliminary design drawings and system requirements for the feasibility report. He performed a survey of the existing fiber-optic infrastructure to connect the new CCTV system to Building 14, which houses the CCTV head-end, and new supervisory control and data acquisition (SCADA) system head-end equipment, as well as extend the existing network into each of the terminals. This initiative was made possible by an Other Transaction Agreement between the U.S. Department of Homeland Security and the PANYNJ.

PANYNJ PABT Stage III CCTV Surveillance - Technical Lead

Leading the design effort to identify areas in and around the 5-story, 1.5-million-sf Port Authority Bus Terminal (PABT) in Midtown Manhattan, for the PANYNJ. Mr. Buckley's team is designing a new digital IP camera system and its required infrastructure. The system will be managed from the existing head-end while allowing for future expansion.

NYC Transit Mother Clara Hale Bus Depot Design-Build - Communication Room Layout and Conduit Infrastructure Designer

Led the design of the communication room layouts of a new $262 million bus depot in Manhattan for New York City Transit (NYC Transit). Mr. Buckley's design addressed the HVAC, plumbing, fire protection, and electrical systems. The 3-story, 390,000-sf depot houses diesel-fuel buses, maintenance areas, and an administrative wing. The design was created using 3-D BIM and includes specifications for the grounding, room equipment racks, room configuration, conduit, cable, and tray systems. The depot achieved LEED® Gold certification.

NYCDDC WTC Campus Security Plan - Resident Engineer

Overseeing engineering services and supervising security initiatives at the World Trade Center (WTC) in Lower Manhattan for the New York City Department of Design and Construction (NYCDDC). The goal of the project is to help preserve the safety of the WTC and its tenants by creating vehicle inspection areas at all entrances to the campus. To accomplish this goal, utilities must be relocated and new conduits, cabling, and light poles must be installed, as well as retractable secure barriers, bollards, and other physical security elements. Mr. Buckley's responsibilities include reviewing and approving all submittals; issuing field change notices and change orders; resolving and overcoming field conditions; coordinating with the contractor; coordinating the relocation of utility conflicts; and coordinating activities with stakeholders.

PANYNJ PATH Stage III CCTV and Access Control for Substations and Communication Rooms - Project Manager

Leading the design effort to survey and identify locations that require access control or additional CCTV cameras throughout eight locations in New York and New Jersey on the PATH system, for the PANYNJ. Mr. Buckley is supervising hardware selection for the locations. He is coordinating with the client so that the systems meet their requirements and are fully capable of interfacing with and expanding existing systems. The design achieved its 30% milestone approximately one month early, is now at 75%, and progressing to 90%.

MTA IESS/C3 - Lead IESS Designer

Performed site surveys to determine the optimal location for the installation of devices and associated communication room equipment throughout New York as part of MTA's IESS/C3 program, which will enhance security while providing security operators incident management response and recovery capabilities across the MTA infrastructure. Mr. Buckley attended customer meetings to discuss design questions and concerns, as well as to gather information regarding the integration of legacy systems. He authored contractual letters and requests for information to clarify varying site conditions and contractual discrepancies. He also attended additional work order (AWO) negotiation meetings and generated scopes of work for the customer to issue AWOs to cover discrepancies in the original request for proposal (RFP) documents. Mr. Buckley reviewed project requirements and made sure these were met through the design. He also functioned as the day-to-day supervisor for 20 other team members.

Confidential Client Station Complex ESS Capital Security Program IDIQ Task Order - CCTV Access Control and Communications System Designer

Conducting site surveys and identifying locations for cameras and equipment in preparation for the design of an enhanced electronic security system (ESS) at a complex multi-line subway station, part of an indefinite quantity (IDQ) security task-order contract. Mr. Buckley is assisting with the development of the engineering design documents for the ESS and providing design process reports; specifications; electronic security device, access controller, and reader device locations; conduit routings, schedules, and penetrations; electrical load calculations and design; and uninterruptible power supply design to support the ESS equipment. Mr. Buckley's design must contend with low headroom and limited space inside communication rooms. In addition, he must be mindful of the subway station's historic elements.

Richard Umbrino, Jr.

CCTV SYSTEMS DESIGNER

FIRM
MOTT MACDONALD

OFFICE LOCATION
ISELIN, NJ

EDUCATION
BACHELOR OF SCIENCE, INDUSTRIAL DESIGN; KEAN UNIVERSITY

CERTIFICATIONS
OSHA CONFINED SPACE ENTRY

Mr. Umbrino has significant experience preparing design drawings and contract specifications for Instrumentation and Control (I&C) components, including piping and instrumentation diagrams (P&IDs), control panel layouts, instrument specifications, and wiring, schematic, and data network diagrams, including fiber optic backbones, Ethernet networks, fault-tolerant ring networks, and star networks for water and wastewater treatment, pumping, and storage facilities, vehicular tunnels, laboratories, pharmaceutical production facilities, industrial facilities, office buildings, data centers, commercial retail spaces, restaurants, and municipal buildings. He is particularly proficient in the area of security systems, such as access control, cyber security, and video surveillance and communication systems, utilizing radio frequencies such as Ethernet radio (spread spectrum), cellular technology such as evolution data optimized (EV-DO), and long term evolution (LTE) for a wide range of telemetry control projects. Mr. Umbrino's experience includes a variety of electrical components, including medium-voltage and low-voltage power distribution, power monitoring, grounding, lighting, lightning protection, fire alarm, access control, telecommunications, and CCTV security. He has particular proficiency in the area of low-voltage power distribution and video surveillance. Mr. Umbrino's construction administration responsibilities include arranging site meetings, punch list development, resolving construction concerns from clients, and meeting with contractors and vendors. He performs shop drawing reviews, prepares construction correspondence, including responses to requests for information (RFIs), coordinates field inspection activities, and performs building inspections to verify quality of workmanship and compliance with the National Electrical Code (NEC) and the National Fire Alarm Code. He also coordinates the acceptance and issuance of new electrical service permits with major utility companies.

Project Experience

Cape May County "Town Watch" Surveillance System - Project Engineer

Prepared contract design drawings and specifications for a CCTV surveillance system, which remotely monitored visual displays recorded at nine key intersections in Avalon Borough, Cape May County, NJ. Activity was monitored for a six-month duration, and allowed for the archiving of digital displays of vehicle license plates and facial recognition of pedestrian activity. All CCTV cameras were internet protocol (IP)-based and connected via wireless network utilizing Ethernet radio (spread spectrum). The only exception was the Avalon Elementary School, where six CCTV cameras connect to an existing multimode fiber-optic network, which links to the police department. Video was encoded and processed at each camera and streamed over the wireless network to the network video recorder for recording, playback, and real-time display in the police department 911 dispatch call center.

Two Bridges Sewerage Authority Wastewater Treatment Plant CCTV Systems - Project Engineer

Prepared contract design drawings and specifications for a CCTV system expansion of an existing IP-based, pan-tilt-zoom camera network in Lincoln Park, NJ. Cameras were connected via a new multimode, fiber-optic cable network and ultimately terminated in the existing control room. New software and programming were also included.

Bernards Township Sewage Authority Wastewater Treatment Facility Cyber Security Audit - Project Engineer

Provided network communications design at the Bernards Township Sewerage Authority wastewater treatment facility in Somerset County, NJ. The SCADA system provides monitoring and control for the wastewater treatment facility, including monitoring of its remote stations. Mr. Umbrino assisted with locating system vulnerabilities and providing remediation as required per the NIST800-82 standard (guide to industrial control systems security). He also performed an assessment of the local plant network and remote communications provided over a Verizon FiOS system.

Region of Halton Mid-Halton Wastewater Treatment Plant Expansion - Project Engineer

Assisted with the preparation of I&C and SCADA systems for the expansion of the treatment plant from 75,000 to 125,000-mld, including conceptual and detailed design in Oakville, ON. The expansion included an expanded sewage pumping station, new headwork treatment, new primary clarifiers, aeration tanks, secondary clarifiers, a new ultraviolet light (UV) effluent water disinfection facility, and an expanded digestion and biosolids handling facility. The chemical system, energy, and administration building facilities were expanded with new process equipment and new PLC control panels, including upgrading by replacing the existing old PLC 5/20 series with new Allen-Bradley Control Logix series PLCs. The entire SCADA network was also upgraded by creating a complete new fiber-optic network using new network distribution enclosures and upgraded servers.

Morris Township Woodland and Butterworth Sewage Treatment Plants SCADA Systems and Bubbler Control Panel Upgrades - Project Engineer

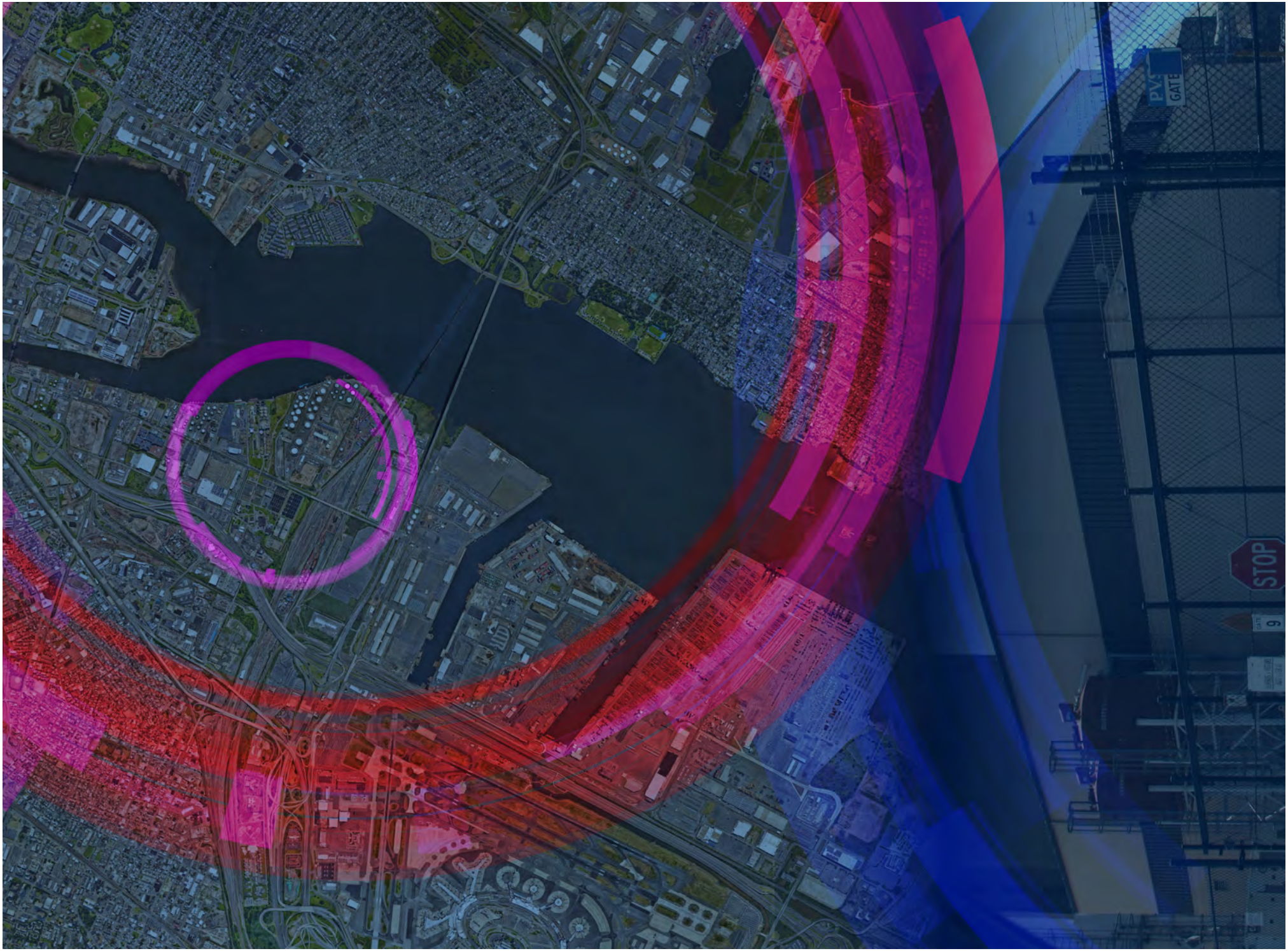
Assisting with the design, bid, and construction phases for the upgrade of the SCADA system and bubbler control panels at these sewage treatment plants in Morris Township, Morris County, NJ. Mr. Umbrino's design-phase responsibilities included preparing 100% design drawings and specifications for public bid. He is currently providing construction-phase services, including client contact, supervision of field inspectors and office engineers, contractor coordination, and shop drawing review.

Morris Township Woodland Sewage Treatment Plant Wastewater Treatment Plant Upgrades - Project Engineer

Assisting with the design, bid, and construction phases for the SCADA system upgrades to the wastewater treatment plant in Morris Township, Morris County, NJ. The project includes construction of a new grit building with vortex grit separators and classifier; new biofilter odor control facilities; installation of mechanical bar screen and submersible mixers; replacement of raw sewage pumps, process piping, and valves; incorporation of new equipment into the existing SCADA system; and site work. Mr. Umbrino's design-phase responsibilities included preparing plans and specifications, reviewing calculations and equipment selection, coordinating with other disciplines, and coordinating with the client. The project is being funded by the New Jersey Environmental Infrastructure Trust (NJEIT) Loan Program. His bid-phase responsibilities included preparing and submitting permit applications and NJEIT Loan Program submittals.

Verona Township Wastewater Treatment Plant Control Systems Upgrade - Designer

Prepared and developed contract design drawings and specifications, including a fault-tolerant, fiber-optic Ethernet network utilizing Verona Township's business network for the installation of a replacement SCADA system serving the wastewater systems of the existing plant in Essex County, NJ. The drawings consisted of P&IDs, network diagrams, wiring diagrams, control panel layouts, and instrument details. The project consisted of the replacement of the obsolete GE Series 5 PLCs with modern hardware, as well as the construction of a communication network linked to the PLCs and a personal-computer-based human-machine interface (HMI). The new control system maintains the existing functionality and operability, while providing capability for future expansion.


PVC
GATE
STOP

SIMILAR EXPERIENCE

The STV/MM JV

The joint venture (JV) of STV Incorporated (STV) and Mott MacDonald (MM) was specifically formed to meet the needs of PVSC's flood wall project. As the lead firm of the JV, STV will be contractually responsible for all work under this contract, including the work of any subconsultants, should the need for such services arise.

The unique strengths of the STV/MM JV are summarized in the graphic below:

> No other competitor can offer virtually identical work on a flood wall of this size, giving us the unique ability to apply valuable "lessons learned" that can save PVSC considerable time and money.

The STV/MM Joint Venture

- Combines the large-scale flood wall experience of STV and the PVSC and other local wastewater utility experience of Mott MacDonald
- Proven track record working together on projects nationwide for 15+ years
- Combined locally based staff of 1,000+

STV

- Based in NYC, with local office in Newark, NJ
- Locally based staff (NYC/NJ) of 640
- Leading experts in public infrastructure engineering/ architecture
- Current experience on almost identical project (Coney Island Yard flood wall)
- Additional flood wall/barrier experience
- Extensive post-Sandy resiliency experience
- 70% of workload is for public agencies

Mott MacDonald

- Global leader in infrastructure engineering
- Four NJ offices, with locally based staff totaling 400+, including staff of 330 in Iselin
- Proven track record with PVSC for 40+ years
- Ongoing post-Sandy work for PVSC
- Extensive wastewater plant experience
- Local flood wall/barrier experience
- Additional post-Sandy resiliency experience
- More than 55% of workload is for public agencies

As shown in the map at right, STV and MM both have offices in close proximity of PVSC. While we anticipate the majority of meetings with PVSC to occur at PVSC's offices, we plan to use the STV Newark office to stage project-specific workshops, technical meetings, and presentations; it will also serve as a base for any field-related site visits. Staff resources available between the STV and MM offices in NJ and NY total more than 1,000. Between the two firms, all required disciplines, including structural, civil, and geotechnical, will be readily available and in close proximity to the site. In addition, all key personnel are New Jersey residents, which will facilitate immediate response to PVSC requests to meet, as the need may arise over the course of the project.

STV and MM both have offices in close proximity of PVSC, which will greatly facilitate coordination.

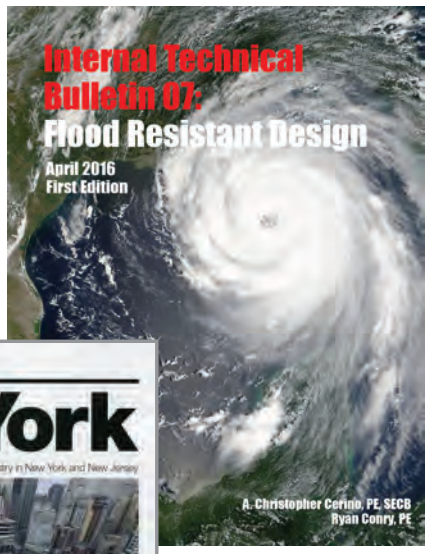
Firm Profiles

STV

For more than 100 years, STV Incorporated (STV) has helped develop some of North America's most notable projects. Offering services in engineering, architecture, planning, and construction management, the firm can shepherd a project from concept planning through final design, construction, and post-occupancy. The firm offers clients a broad range of multidisciplinary expertise, and immediate access to a large, talented pool of engineers, architects, planners, and support resources. STV's mission is to create exceptional value for each client and perform all services with integrity, vision, innovation, quality, and environmental sensitivity.

Through perseverance and strategic alliances, STV has grown from a one-man shop in 1912 to a firm of more than 40 offices throughout North America. While based in nearby New York City, STV's office in Newark, NJ, will serve as our project office for this contract.

STV is large enough to offer a full range of A/E/C services, while still delivering personal attention with tailored solutions for every client. And because STV is an employee-owned company, employees have a personal stake in the success of the firm's projects and are motivated to satisfy each client.



(Top) STV recently issued this bulletin presenting current flood-resistant design criteria.

(Bottom) ENR New York named STV ***Design Firm of the Year*** *in 2015.*

RESILIENCY EXPERTISE

Of particular relevance to PVSC's proposed flood wall project, STV is among the leading consultants in terms of volume of post-Sandy recovery and resiliency work. Most notably, STV is responsible for the design of a flood wall at Coney Island Yard, which is almost identical to PVSC's proposed flood wall in terms of wall length and site acreage. Highlights of that project are presented later in this section.

STV has also been called upon by numerous other clients with post-storm rehabilitation, as well as resiliency planning and design. Examples are provided throughout this section.

STV has extensive post-Sandy experience (NYC Department of Buildings assignment shown above).

Mott MacDonald

Mott MacDonald (MM) is a $2 billion global management, engineering, and development firm. It is one of the world's largest employee-owned companies, with 16,000 employees and over 180 offices delivering sustainable outcomes for clients in 150 countries worldwide. MM works on projects in the water and wastewater, transportation, buildings, power, oil and gas, environment, education, health, international development, and digital infrastructure sectors.

Mott MacDonald in North America (a division of MM) is a vibrant infrastructure development and engineering company 2,300 staff within 62 offices, including one in nearby Iselin, NJ.

MM has helped a number of NJ municipalities in the aftermath of Hurricane Sandy, including extensive work for Perth Amboy.

MM offers services to its clients in the following areas:

- Alternative procurement advisory services
- Asset management
- Aviation
- Buildings
- Coastal
- Education
- Environment
- Fire and life safety
- Highways and bridges
- Information management
- Pipelines
- Power
- Ports
- Project delivery
- Rail and transit
- Site development
- Sustainability
- Transportation planning
- Tunnels
- Visualization
- Wastewater
- Water

RESILIENCY EXPERTISE

MM is composed of professional specialists who are equipped to implement the engineering analysis and conceptual design, environmental data collection and assessments, and construction services needed for this project. The impact of Hurricane Sandy, as well as other natural events, has highlighted the importance of enhancing the resiliency of infrastructure at a time when the impact of weather is more and more severe and unpredictable. The acquisition of Coastal & Harbor Engineering by MM in 2014 provided additional capabilities that have allowed the firm to better serve clients as they predict, prepare, and prevent dangerous and costly situations caused by future disasters. Projects that MM has worked on encompass flood control, restoration, bank stabilization, and infrastructure improvements, from feasibility studies through construction.

In May 2015, Mott MacDonald hosted a "Meeting the Resiliency Challenge" symposium where professionals from the company and from forward-thinking clients, including PVSC, met to share ideas and experience related to increasing the resilience of public infrastructure and coping with climate change and other impacts.

MM offer in-depth knowledge of PVSC's facilities based on 40 years of experience.

PVSC TRACK RECORD

As described in the PVSC/Public Agency Experience section, a key strength that MM brings to this team is its long record of work PVSC, which gives them insight into the agency's needs and preferences, and in-depth knowledge of its facilities and customer base.

Our Joint History

While STV/MM is a new joint venture (JV), the two firms have worked together in various capacities on many other projects, which will facilitate our working together as a JV.

Our joint work over the past 15 years includes the following projects in which STV served as prime consultant or JV partner, with MM as subconsultant: Amtrak Los Angeles 8th Street Maintenance Facility, Utah Transit Authority University Line Design-Build, NYC Transit Indefinite Quantity A/E Design and CM Consultant Services, Utah Transit Authority Jordan River Service Center Yard and Shop, San Joaquin Regional Rail Commission ACE Equipment Storage and Maintenance Facility, Town of Huntersville US 21/Gilead Road Improvements, and Metro Airport Connector AA/Draft EIR/EA.

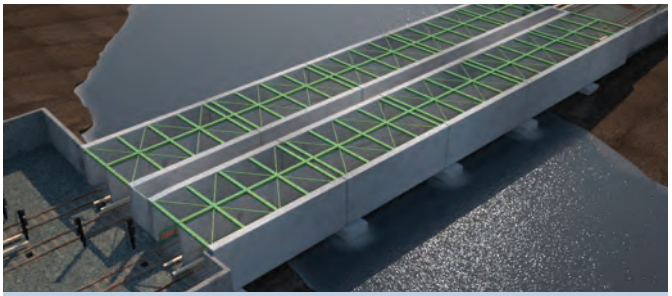
Examples of projects where MM served as prime consultant, with STV as subconsultant include: NJ TRANSIT Wesmont Commuter Rail Station EA, Metrolinx Eglington-Black Creek MSF, and Sound Transit Seattle Transit University Link CM.

Project Examples

Coney Island Yard Flood Wall

Brooklyn, NY

At 110 acres, Coney Island Yard is among the world's largest rail yards.



At 2.6 miles in length, the permanent flood wall designed by STV is among the world's largest.

The temporary wall features TrapBag and HESCO barriers, as well as barriers affixed to existing fencing.

To protect the perimeter of the yard on a short-term basis, STV designed a temporary 12,000-lf wall.

Following Hurricane Sandy, STV was selected by New York City Transit to design interim and permanent protection measures at its 110-acre Coney Island Yard in Brooklyn, which is among the world's largest rail yards. Initial work included an award-winning feasibility study, followed by a condition assessment.

The firm's design of temporary perimeter protection employed various methods, such as TrapBag and HESCO barriers, as well as barriers affixed to existing fencing. To assure that the interim system was kept in a state of good repair, STV's included provisions in the specifications for obtaining contractor services for repair and maintenance of the flood protection barrier for at least five years following installation. The specifications also included requirements for maintenance, inspection, repair, and a drill for emergency response activities, such as deploying temporary flood barriers at nine gates and at a creek crossing during a storm advisory.

STV has also completed conceptual design and is currently developing final design of permanent facilities. The firm developed a schematic layout of a floodwall with gates around the site's entire perimeter, consisting of approximately 12,000 feet of wall with nine flood gates, featuring cost-saving sheet-pile construction. As the design developed, one of the flood gates would become approximately 70 feet wide and 12 feet high, possibly the largest flood gate in the New York metropolitan area.

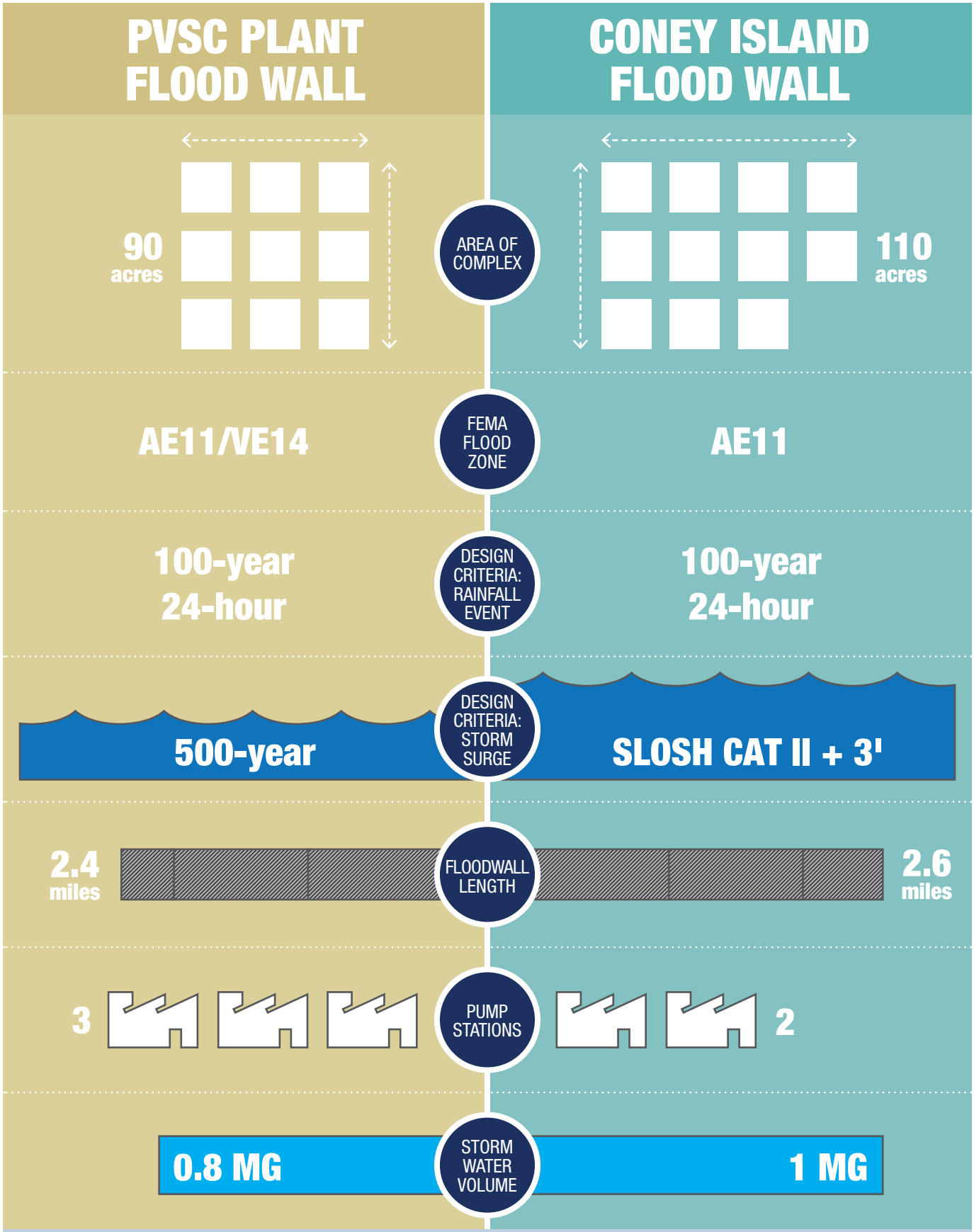
PROJECT HIGHLIGHTS

- At 2.6 miles, almost identical to PVSC's proposed floodwall
- Project being managed/designed by same key staff proposed at PVSC
- Features cost-saving sheet-pile construction and state-of-the-art flood gates
- Successfully completed near-term floodwall and now completing design of permanent wall
- Initial work won ACEC-NY Engineering Excellence award and featured in NYCT Museum

As shown in the graphic on the following page, this flood wall is remarkably similar to PVSC's proposed flood wall.

REFERENCE:

DURATION:
2013- 2020



PVSC's proposed flood wall and the Coney Island Yard flood wall have many characteristics and criteria in common

PANYNJ/PATH Resiliency Program

Various Locations, NY and NJ

The Port Authority of New York and New Jersey (PANYNJ) operates and maintains tunnels, bridges, and rail lines in a 1,500-square-mile area in the two states. Many of these facilities were devastated by Hurricane Sandy, and half of that damage was inflicted on the Port Authority Trans Hudson (PATH) commuter rail system. In response, PANYNJ launched a $3 billion resiliency program and selected STV as one of a select group of consultants to carry out the work on a task-order basis. Several of STV's task orders have encompassed flood walls or barriers, including:

- PATH Exchange Place, Newport, and Grove Street Stations Flood Protection: STV is working with PANYNJ to provide innovative resiliency barriers at six high-traffic portals into the PATH system.
- PATH Harrison Car Maintenance Facility Concrete Sea Wall: This includes the design of a 2,700-lf permanent flood protection wall adjacent to PATH tracks, as well as the evaluation of further protection required to prevent "back door" flooding of the area behind permanent walls.

Harrison Car Maintenance Facility: A permanent flood wall is included in the design.

- Hoboken Station Flood Resiliency for Exterior Stairs: STV evaluated alternative flood barrier protection devices for six exterior stairways, focusing on minimizing deployment time and disruption.

Hoboken Station: STV evaluated barrier options as part of a flood resiliency study focusing on exterior stairways.

PROJECT HIGHLIGHTS

- Includes design of post-Sandy resiliency improvements at nine facilities
- Improvements include installation of flood walls at transformer vaults, reinforcement of perimeter walls, and addition of flood doors and exterior refuge areas for code-required egress

- Tracks G and H between Amtrak Flyover and Hackensack Bridges: STV recommended the construction of flood protection walls on outboard sides of these tracks, taking into consideration long-term sea level rise and freeboard.
- Rehabilitation/Resiliency at Holland and Lincoln Tunnels: STV conducted an in-depth evaluation of 1,000 lf of permanent flood walls, 10,000 lf of deployable barriers, and full perimeter and portal protection options for these historic tunnels, and is currently designing the recommended barriers based on FEMA criteria plus additional elevation for safety factor, wave action, and sea level rise, to prevent inundation during future storms, with a primary consideration for minimal operational impact.
- World Trade Center Vehicle Security Center: After considering an array of flood barrier technologies, STV designed a 1,500 lf of flood barriers based on USACE and FEMA guidelines.

Lincoln Tunnel: STV evaluated a wide range of flood walls and barriers for this vital transportation link, and is currently designing the recommended barriers.

REFERENCE:

DURATION:
2014- Ongoing

Mantoloking Sea Wall
Mantoloking, NJ

For this successfully completed sea wall project, MM provided a full range of engineering services, from emergency planning through construction.

After the storm surge from Hurricane Sandy cut through the narrow section of the Barnegat Peninsula in Mantoloking, MM was retained to develop an emergency plan to restore New Jersey Route 35, which was breached in three places. The recommended solution was the construction of a 3.5-mile-long sea wall, for which MM was retained to provide assistance with design, financing, and construction observation. This would be the largest and longest coastal resilience sheeting project ever constructed in New Jersey.

Initial wtolokingork included analysis of founding soil conditions, cross-island aquifer water transport, environmental impacts, anticipated wave conditions, end effects and materials to determine the optimum design of the sheet-pile wall system. This required close coordination with the NJDEP and the U.S. Army Corps of Engineers (USACE).

Construction began in July 2014 at the foot of the Mantoloking Bridge. Two crews, one working to the north and one to the south, used specialized pile drivers to embed 45-foot-long steel sheets manufactured from A690 marine steel into the beach. Crews constructed about 150 feet of sea wall per day. The toe of each sheet was driven to 30 feet below sea level. The top elevation of the wall at +15 NAVD88 matched FEMA's 100-year storm level. Any steel sheeting potential exposed above-ground would later be covered with sand.

PROJECT HIGHLIGHTS

- Design of seawall to withstand 100-year storm
- At 3.5 miles, the largest coastal resilience sheeting project in NJ
- Coordination with NJDEP to meet environmental constraints
- Successfully completed January 2015

The project was substantially completed in January 2015. (Installation of final 400 feet was delayed by the discovery of historical timbers along the alignment, suspected to being part of a Scottish shipwreck from the 1800s.)

The marine-grade steel used in the wall is expected to have a minimum lifespan of 75 years and withstand another storm of the magnitude of Sandy. The project has received praise from NJDEP and a local mayor:

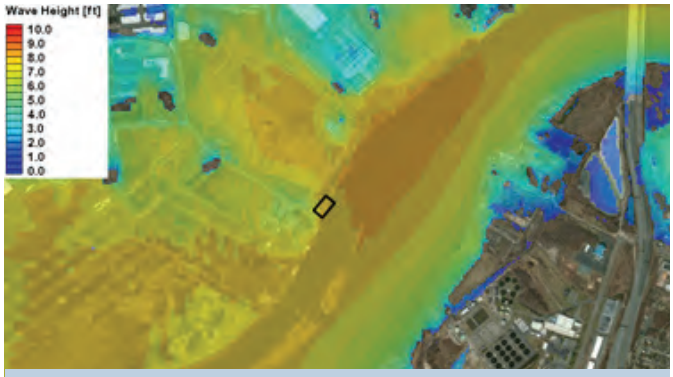
> "This project will help protect a segment of coastline that was breached during Superstorm Sandy, especially offering protection to Route 35 and residents and businesses that were battered by Sandy. Coupled with the forthcoming coastal protection project by USACE, this particularly vulnerable section of the Jersey Shore will be more resilient for future severe weather events."
>
> ***NJDEP Commissioner Bob Martin***

> "Eight thousand of our homes not only here on the barrier island, but on the mainland, were flooded, and this wall will protect that from happening again."
>
> ***Mayor John Ducey, Brick Township***

REFERENCE:

DURATION: 2014 - 2015
2013- 2020

Edison Pump Station/Flood Wall
Woodbridge, NJ



MM conducted extensive hydraulic and hydrologic modeling during the planning phase of this project.

Following Hurricane Sandy, MCUA relied upon MM to restore the Edison Pump Station and protect it from future storms via a flood wall.

The 85-mgd Edison Pump Station, which is owned and operated by the Middlesex County Utilities Authority (MCUA), is located just 100 feet from the mean high-water line of the Raritan River and subject to frequent flooding. During Hurricane Sandy, the site was inundated with storm surges in excess of seven feet above grade, which completely flooded the station's lower levels and partially or completely submerged all electrical systems, rendered the facility inoperable. In response, MCUA proposed constructing a flood wall at the Edison Pump Station on the banks of the Raritan River to increase resiliency to handle future storms.

But first, MM was called upon to provide emergency engineering services to restore facility operations. This work consisted of mechanical and electrical pumping system design, contractor coordination, inspection, and operations support, as well as completion of project worksheets necessary to obtain FEMA reimbursements.

Following restoration of pumping services, MM provided permanent restoration and mitigation design services. In addition to the design of electrical and mechanical systems, MM was tasked with developing a system to protect the facility from 500-year storm events. The design included a facility perimeter flood wall with various flood gate access points for plant personnel and vehicles. The flood wall encapsulates the one-acre property to the 500-year flood elevation at approximately 16 feet above grade.

PROJECT HIGHLIGHTS

- Design of flood wall and gate to withstand 500-year storm
- Based on extensive modeling, and calculation of impact loads for waves on walls using ASCE and USACE guidelines
- Recommended wave and hydrodynamic loads to be used in flood wall design

MM developed expected flood elevations based on newly available FEMA flood projection and verified their magnitude through statistical analysis. Then, after developing an understanding of the flood conditions at the site due to storm surge, fluvial discharge, and wave impacts, those conditions were utilized to determine hydraulic and hydrodynamic loads on the flood wall along with expected flood elevations. Modeling was conducted using the SWAN wave model and a dynamic hurricane wind field, to determine wind wave generation and transformation at the nearshore project area. As part of this effort, MM also calculated the impact loads for waves on the walls using the ASCE flood load design method and the USACE's Coastal Engineering Manual.

In a note to MM's project manager:

> "Your progress at Edison Pump Station is a testament to your engineering and managerial abilities. As we approach near completion, I wish to extend my accolades to you and your team in a job well done."
>
> ***Herman Zablatzky, MCUA***

REFERENCE:

DURATION:
2012- Ongoing

ADDITIONAL FLOOD WALL/BARRIER EXPERIENCE (PAST 10 YEARS)		
Project	**Firm**	**Key Points**
Con Edison Design of Storm Hardening at Substations and Generating Stations	STV	Includes design of post-Sandy resiliency improvements at nine facilities. Improvements include installation of flood walls at transformer vaults, reinforcement of perimeter walls, and addition of flood doors and exterior refuge areas for code required egress.
Investigation of Damage from Hurricane Sandy at Amtrak Facilities in Queens, Manhattan, New Jersey Meadowlands, and Railroad Tunnels/Ventilation Structures Leading to New York Penn Station	STV	Recommendations included: • Installing flood-resistant hatches and bulkheads at vulnerable ventilation buildings and pump rooms • Rehabilitating floodgates protecting Penn Station • Installing waterproof bulkheads at all cross-passages at LIRR Westside Yard • Raising portal approach walls to prevent water from entering East River tunnels • Constructing a perimeter wall high enough to keep back floodwaters at Empire Tunnel substation
NYC Transit Manhattanville Bus Depot	STV	Designing deployable flood barriers to extend along width of parking area, along with the lengthening and reinforcing of walls along two sides of site. Design is based on SLOSH modeling.
Massachusetts Bay Transportation Authority Fenway Station & Green Line Subway Portal Resiliency Upgrades	STV	Conducted analysis to reinforce and raise 380-foot-long portal walls by 3.5 feet above floodplain.
U.S. Department of Veterans Affairs Manhattan Campus Flood Protection	STV	Designed five-foot-high, 950-foot-long concrete floodwall. Design plans reflect the need to keep the facility operational during construction.
Metro-North Substation and Rail Yard Facilities Resiliency Improvements	STV	Providing design and construction support for resiliency improvements, including deployable barriers, at 10 sites, to meet 500-year storm levels.
Elizabeth River Flood Control Project	MM	Involves 3.8 miles of levees and floodwalls protecting surrounding communities from the Elizabeth River during major storms. Designing repairs and reconstruction of certain areas, including drainage control structures. Also retained to convert part of flood wall into a riverwalk trail, featuring steel-sheeting retaining walls along several sections.
Elliott Bay Seawall Replacement Project	MM	Evaluated historic sea level rise and conducted comparison with sea level rise trends. Conducted wind analysis and numerical wave modeling. Designed 3,700-lf sea wall.
NYCEDC Red Hook Integrated Flood Protection System	MM	Composite project of over 21,000 lf with a mix of T-wall, I-wall, and earthen berm designs. Performed geotechnical reviews of soil conditions and seepage tolerance calculations to determine necessary depth of flood wall foundations. Structural designs account for wave and impact loadings in accordance with ASCE.
Spectra Energy Pipeline Hot-Tap Cofferdam	MM	Conducted extensive modeling. Designed cofferdam to protect the construction site from wave action.
Ship Bottom Regulator Station Upgrades and Storm Hardening Improvements	MM	Design of gas infrastructure enclosure for protection of the station Structure provides aesthetic benefits, and abates sound and odor for adjacent properties

Additional Relevant Experience

In addition to the projects described above, STV and MM have been responsible for numerous other relevant projects in recent years. These include other projects that involve flood walls/barriers, as well numerous other projects in the aftermath of Hurricane Sandy involving rehabilitation and a variety of improvements to increase resiliency to withstand future storms.

Presented below is a table providing an overview of our additional work related to flood walls and barriers, followed by a list of some of our other post-Sandy resiliency/rehabilitation projects.

Additional Post-Sandy Projects

STV

- CompassRock Real Estate LLC Peter Cooper Village and Stuyvesant Town Renovations
- DASNY South Beach Psychiatric Center New Residential Building
- NJDPMC Central Railroad of New Jersey Terminal Building Restoration
- FTA Hurricane Sandy Competitive Resiliency Grant Program
- LIRR West Side Yard Resiliency Repairs
- NJ TRANSIT Hoboken Terminal and Yard Hurricane Sandy Recovery Program
- NYCDOB Hurricane Sandy Emergency Structural Inspections
- NYC Rapid Repair Program for Hurricane Sandy Damage
- NYCSCA Hurricane Sandy Public School Damage Assessments and Environmental Remediation
- NYCSCA I.S. 98K Flood Assessment and Mitigation Options
- NYC Transit 53rd Street Tunnel Repairs and Resiliency
- NYC Transit Circuit-Breaker Flood Repair and Resiliency
- NYC Transit Rockaway Park Yard DC Traction Power System Repair
- NYC Transit Repair of Traction Power DC Positive Feeder System at Coney Island Yard
- NYC Transit Reconstruction of Jamaica Bus Depot
- NYC Transit Fan Plant Flood Mitigation and Resiliency Upgrades
- NYC Transit Emergency Restoration of A Subway Line
- NYU Langone Medical Center Hurricane Sandy Recovery
- PANYNJ PATH Storage Yard for Railcars
- PANYNJ PATH Extension of South Street Yard
- PANYNJ PATH Ninth Street Crossover Area
- PANYNJ PATH Substation #14 Resiliency
- PANYNJ PATH Rail Transit System Transportation Technology Implementation
- PANYNJ PATH Hoboken Station Under-Platform Fan Replacement
- PANYNJ Installation of Portable Trailer-Mounted Generators at PATH HCMF and C-Yard
- PANYNJ Hurricane Sandy Response at World Trade Center Transportation Hub
- PANYNJ Port Jersey South Power Substation Switchgear Replacement
- U.S. Coast Guard Academy Roof Replacements Design-Build
- Ventnor City Hall Emergency Building Assessment

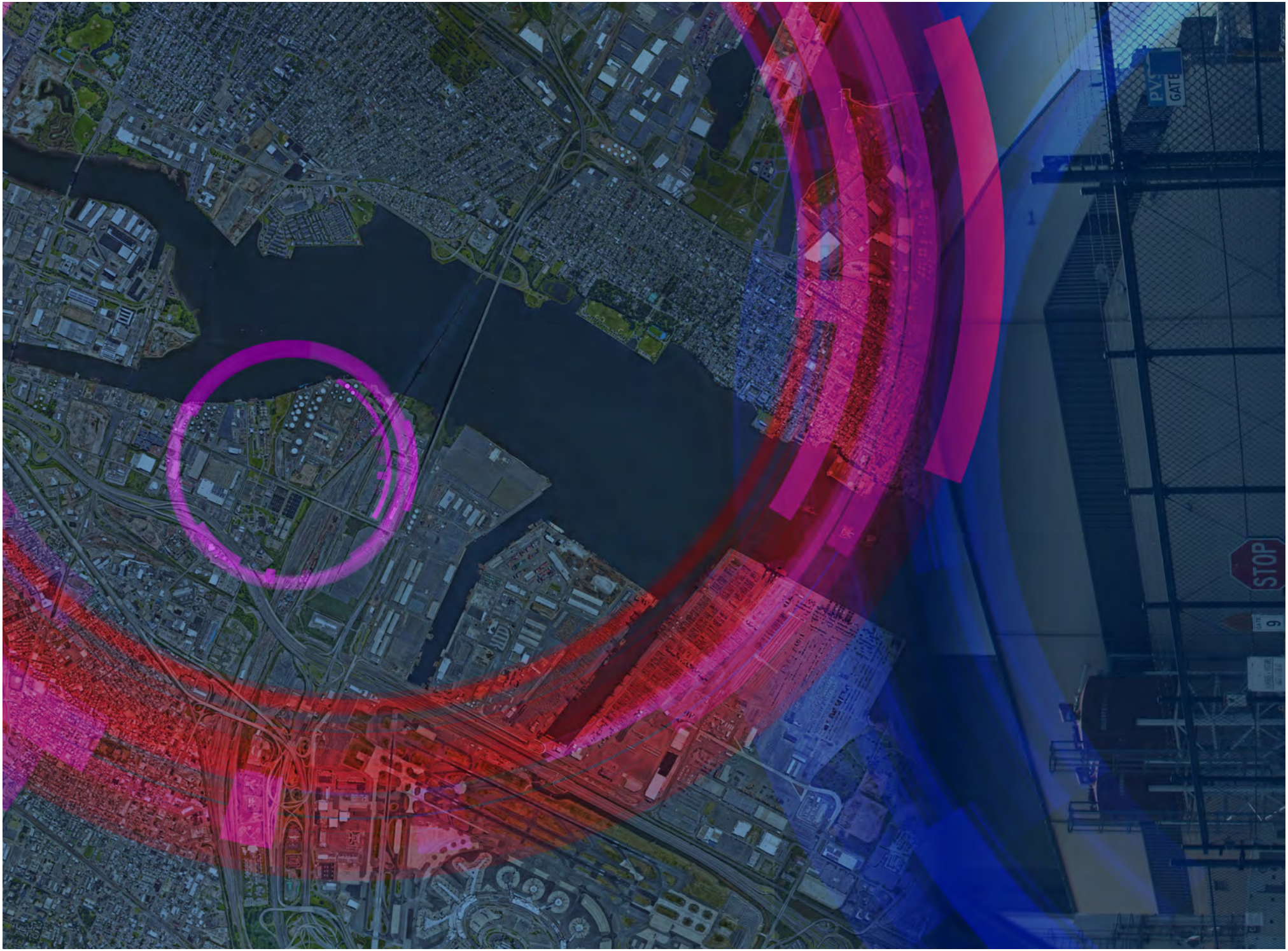
STV performed surveys and condition assessments of all structures and systems for restoration of the historic Hoboken Terminal and Yard.

MM

- PVSC Administration Building Rehabilitation
- NJDOT NJ State Route 35 Emergency Response, Evaluation and Repairs (Pt. Pleasant Beach to Island Beach State Park, Ocean County, NJ; approximately 90 repairs, including major breaches of the barrier island along 13 miles)
- Borough of Mantoloking Emergency Response Services
- Borough of Mantoloking Pre-Demolition Environmental Assessment
- Borough of Mantoloking Wastewater Pump Station Reconstruction
- Borough of Mantoloking Dune Replenishment
- MTA Bridges and Tunnels Design and Construction Support Services for Brooklyn Battery Tunnel

- MTA Bridges and Tunnels Hugh L. Carey Tunnel Replacement of Storm-Damaged Traffic Signal Control System
- National Park Services Sandy Hook Resiliency Repairs
- MCUA South Amboy Pump Station Generator Repair
- MCUA Emergency Response Services
- Borough of Avalon Hurricane Sandy Emergency Response Services
- NYC Transit Flood Repairs at Stillwell Avenue Terminal
- NYC Transit Repair and Rehabilitation of Four Circuit-Breaker Houses
- NYC Transit Cranberry Tube Rehabilitation
- NYC Transit Greenpoint Tube Inspection and Signal Replacement Emergency Contract
- City of Newark Pequannock Aqueduct Emergency Repairs
- NJ TRANSIT Port Imperial Ferry Terminal Dredging
- City of Perth Amboy Boatyard/Promenade
- City of Elizabeth Wastewater Pump Station Emergency and Final Repairs
- U.S. Coast Guard Substation Electrical Repairs, Bayonne, NJ
- New York City Department of Homeless Services Renovation of Residential Shelters
- Borough of Bay Head Emergency Response Services
- Jersey City Municipal Utilities Authority Emergency Response Services
- City of Bayonne Emergency Response Services
- NJDPMC Repair Design Absecon Inlet South Jetty
- US Department of Interior/NFWF/NJDEP Gandy's Beach – Hurricane Sandy Grant, Building Ecological Solutions to Coastal Community Hazards

MM was extensively involved in post-Sandy reconstruction work in Perth Amboy, NJ.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PVSC/PUBLIC AGENCY EXPERIENCE

As described below, the STV/MM Joint Venture offers both extensive experience with and knowledge of PVSC's facilities and long histories of repeat work for numerous other public agencies.

PVSC Experience

Mott MacDonald (MM) has an extensive track record with PVSC spanning over 40 years. In the last 10 years alone, the firm's projects for PVSC total more than $10 million in fees (see list below). Over the years, the firm has established good working relations with many PVSC staff, from the Chief Engineer, Plant Operations Director, and Line Operations Superintendent to the electrical staff and liquid waste acceptance staff. We recognize that a successful project always requires communication – both offering opinions and listening to suggestions. We also understand the goals of PVSC and procedures under which PVSC operates. Our team's long-term experience with PVSC is a positive one, benefitting PVSC in the form of successful projects.

MM has extensive experience at PVSC's facilities, spanning more than 40 years, including a long list of projects in the last decade alone.

In addition, based on MM's PVSC experience, as well as extensive work for other wastewater utilities throughout New Jersey, we are familiar with local regulations and funding requirements as they pertain to PVSC.

PVSC Resiliency Experience

Most notably, MM recently designed and is currently providing construction-phase services, including resident engineering, for the rehabilitation of PVSC's Administration Building, which had been extensively damaged by flooding resulting from the Hurricane Sandy storm surge. The basement was completely submerged and first floor was flooded up to four feet above ground level. All mechanical and electrical systems in the basement and first floors were flooded became inoperable, along with damage to furniture, walls, plaster, wood framing, and carpeting.

The project will both rehabilitate the building and mitigate future damage from occurring should another Sandy-like storm cause flooding at the site.

PVSC Projects in Past 10 Years

Following is a list of PVSC projects for which MM has been responsible over the past 10 years:

- Design and Construction-Phase Services for Post-Sandy Administration Building Rehabilitation
- CSO Permit Tasks, including Trunk Metering, Cultural Resource Study, Environmental Assessment, Public Participation, and General Coordination
- Design, Permitting, and Construction Engineering of Satellite Monitoring Stations on Trunk Sewers
- CSO General Permit Characterization Study, Facilities Inventory, Drainage Analysis, and SIIA Grant Submission and Administration
- Witco Prior Site Remediation Studies Review and Recommendation
- Witco Site Remediation Studies Field Data Monitoring
- Skimmer Boat Storage and Unloading Facility Site Evaluation, Cultural Resource Study, Site Remediation, and Design Services
- Skimmer Boat Storage and Unloading Facility Dredging and Environmental Permit Assistance
- Passaic River Superfund Environmental and Site Investigation Work Plan Review
- CSO General Permit Development of CSO Long-Term Control Plan and Report
- Assistance with Contaminated Soil Disposal Associated with Construction
- Conversion of Existing SWMM Model to InfoWorks CS Model
- PVSC Service Area Watershed Water Quality Evaluation and Assessment
- North Arlington Skimmer Facility Site Remediation
- North Arlington Pre-Dredging Sediment Sampling, Evaluation, and Remediation Plan
- North Arlington Skimmer Facility Design and Dredging Modifications

- Design of Final Clarifier Rehabilitation/Modifications
- North Arlington Skimmer Facility Construction-Phase Services
- Preparation of Contract Documents for Procurement of Sampling and Skimmer Vessels
- USEPA 308 Letter Response Assistance
- Proposed Market Street Regulator Modifications Hydraulic Analysis
- North Arlington Skimmer Facility Remediation Action Report
- Witco Site Investigations and Remediation Action Plan, including LSRP Review
- Design and Construction-Phase Services for Planned and Emergency 42" Branch Interceptor Sewer Rehabilitation
- Response to USEPA Questions and Requests for Data
- Wallington Pumping Station Asbestos Site Remediation
- North Arlington Skimmer Facilities Bi-Annual Remediation Certification
- Review and Monitoring of 72" Force Main for Honeywell Site Remediation
- LSRP Assistance on Conrail Contamination Issues
- PVSC Local Limits Study on SIU Required by NJPDES Permit
- Review and Development of Stay and Adjudicatory Hearing Request on Final NJDPES Permit
- CSO Assistance with Monitoring and Updates to InfoWorks Model and Characterization Study Work Plans on Land and Regional Receiving Waters

Other Public Agency Experience

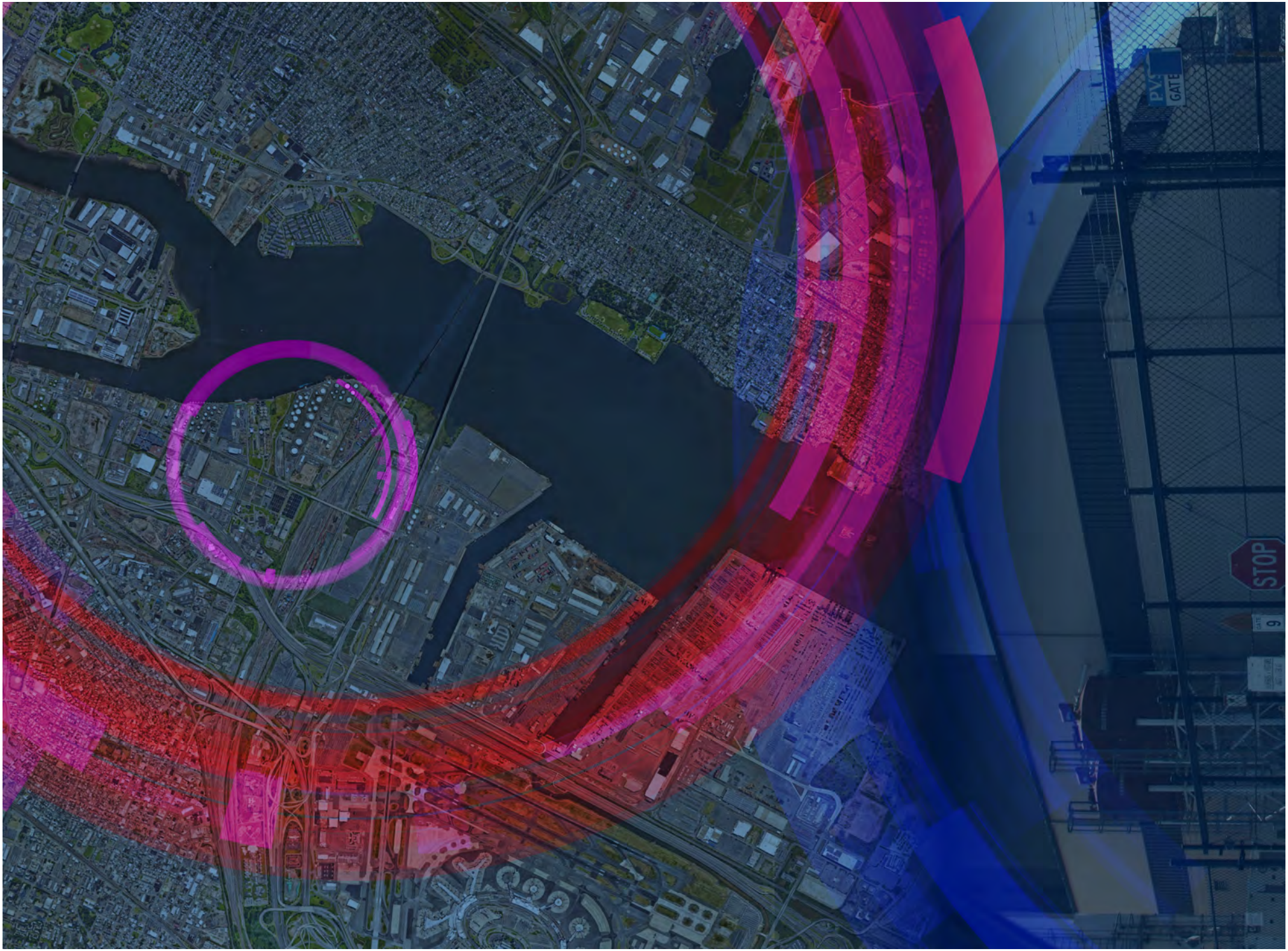
A large majority of the JV firms' workload is for public agencies. Although STV has not yet worked for PVSC, the firm has served a long list of public agencies nationwide over the course of many years and almost countless projects. For example, STV's long-term clients in the New York/New Jersey metropolitan area include the Port Authority of New York and New Jersey, NJ TRANSIT, all of the New York MTA agencies, NYC Department of Design and Construction, NYC Housing Authority, and NYC School Construction Authority, among many others. Here is just a small sampling of some recent and ongoing post-Sandy projects for public agencies for which STV is responsible:

- **NJ TRANSIT:** Hoboken Terminal and Yard Hurricane Sandy Recovery Program
- **Ventnor City, NJ:** City Hall Emergency Building Assessment
- **Port Authority of New York and New Jersey:** One World Trade Center and National September 11 Memorial and Museum Hurricane Sandy Recovery
- **New York City Department of Buildings:** Hurricane Sandy Emergency Structural Inspections
- **New York City Housing Authority:** Hurricane Sandy Program Management
- **New York City School Construction Authority:** Hurricane Sandy Public School Damage Assessments and Environmental Remediation
- **New York City Transit:** 53rd Street Tunnel Repairs and Resiliency
- **Long Island Rail Road:** West Side Yard Resiliency Repairs
- **New York State Office of General Services:** South Beach Psychiatric Center Emergency Response and New Central Services Building
- **U.S. Coast Guard:** Coast Guard Academy Roof Replacements Design-Build

The Similar Experience section identifies additional examples, although a complete list of public agency clients and projects would be too voluminous to include in this proposal.

Since both JV firms have worked so extensively for public-sector clients, we offer a keen understanding of the challenges faced by such agencies, including providing continuous service to the public, 24/7. For instance, we understand the need to address increasingly stringent regulations, budget constraints, public safety and acceptance, and myriad other issues – these days, not least of which is dealing with the impacts of climate change.

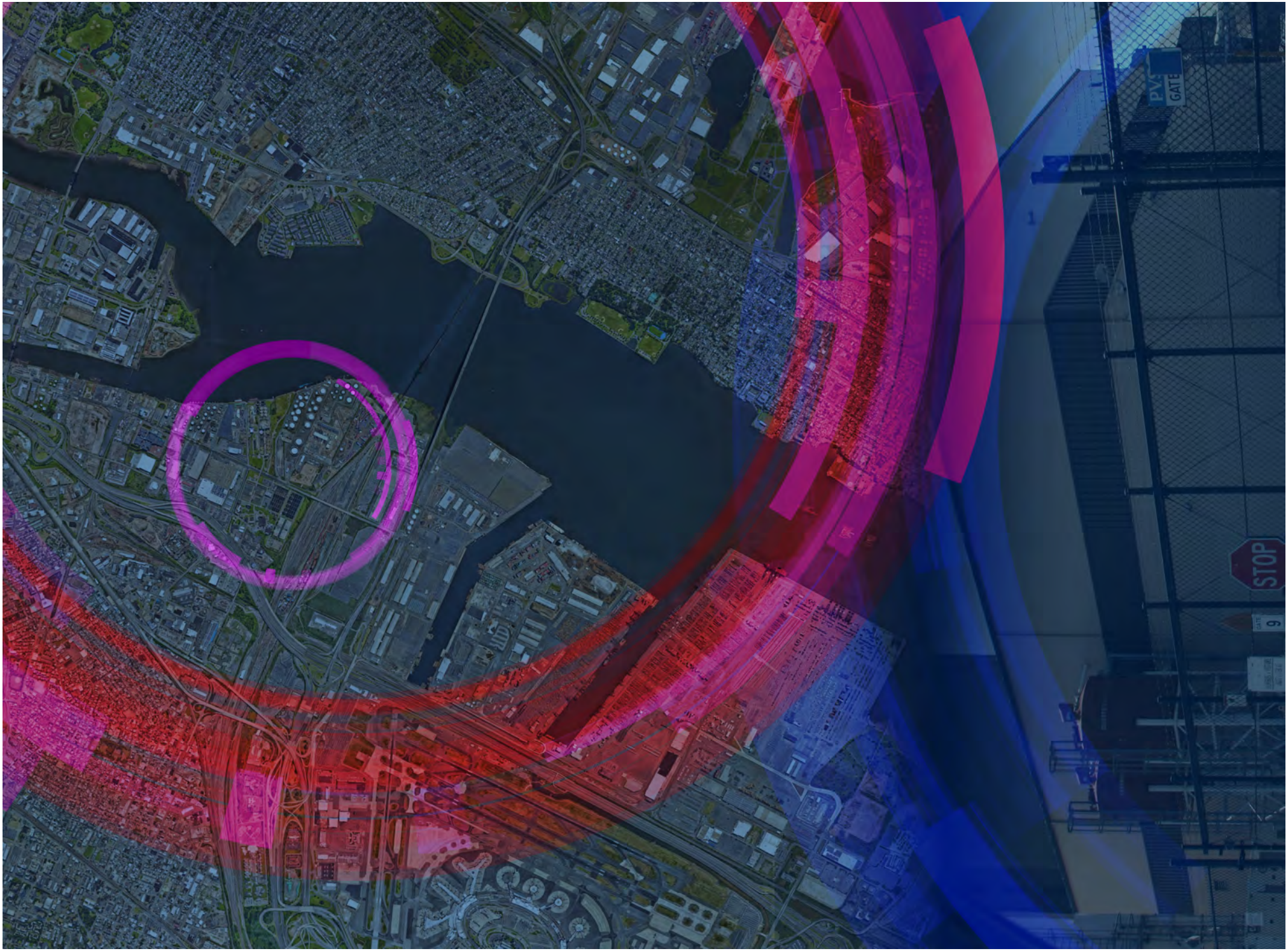
Man-Day Estimate



Attachment G

SUMMARY OF TOTAL MANDAY ESTIMATE

	Estimate of Mandays									
DESCRIPTION OF WORK	**Project Principal**	**Project Manager**	**Project Engineer**	**Principal Engineer**	**Sr. Engineer/ Scientist**	**Engineer**	**Designer/ Drafter**	**Technician**	**Support**	**Total Mandays**
Title ------>										
Staff Name ----->										
Task 1 - Investigation & Conceptual Design (Tasks)										
1.1 Investigations	5.9	10.3	17.8	15.4	12.5	3.5	0.0	20.0	12.5	97.8
Task 2 - Project Work Plan and Reporting										
2.1 Project Work Plan and Reporting	3.6	3.3	5.6	3.0	0.0	3.5	0.0	0.0	0.0	19.0
Task 3 - Design Services										
3.1 Design	81.5	156.0	317.4	425.5	82.8	423.0	81.5	254.4	27.5	1849.5
3.2 Meetings	28.1	20.0	11.9	12.5	7.5	0.0	0.0	7.5	0.0	87.5
3.3 Value Engineering	4.5	2.0	4.8	0.0	0.0	0.0	0.0	2.0	0.0	13.3
3.4 Permitting	8.9	10.0	23.6	27.5	0.0	26.9	0.0	11.3	0.0	108.1
3.5 Bidding Assistance	2.0	5.0	0.0	0.0	5.0	0.0	7.5	5.0	0.0	24.5
Subtotal	125.0	193.0	357.6	465.5	95.3	449.9	89.0	280.1	27.5	2082.9
Task 4 - Design Services During Construction										
4.1 Notice to Proceed	1.1	2.5	2.4	2.5	2.5	1.6	0.0	1.0	0.0	13.6
4.2 Liaison and Administrative	25.9	57.3	5.4	2.5	137.5	1.6	0.0	1.0	0.0	231.1
4.3 Meetings	10.8	29.0	9.5	10.0	0.0	8.1	0.0	4.3	0.0	71.6
4.4 Baselines and Benchmarks	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	5.0	10.0
4.5 Approval of Manufacturers/vendors	1.4	7.0	2.4	2.5	3.0	1.6	0.0	1.0	0.0	18.9
4.6 Shop Drawings	4.0	9.0	10.0	16.5	11.0	8.1	2.3	19.3	0.0	80.1
4.7 Contractor Initiated Substitutions	1.4	6.0	2.4	2.5	5.0	6.6	0.0	1.0	0.0	24.9
4.8 Testing	0.0	0.0	0.0	0.0	5.0	0.0	0.0	0.0	0.0	5.0
4.9 RFI's & Field Orders	4.8	15.5	7.6	13.5	45.0	5.4	2.3	2.6	0.0	96.6
4.10 Change Orders	2.6	6.5	4.8	5.0	10.0	3.3	0.0	11.6	0.0	43.8
4.11 Payment Requests	0.9	4.3	2.4	2.5	0.0	1.6	0.0	20.5	0.0	32.1
4.12 Start-Up Sevices	0.0	0.0	0.0	0.0	8.0	0.0	5.0	15.0	0.0	28.0
4.13 Post Construction Assistance	1.5	11.5	0.0	4.0	20.5	0.0	20.0	17.5	0.0	75.0
Subtotal	54.3	148.5	46.8	61.5	252.5	38.0	29.5	94.8	5.0	730.8
Task 5 - Resident Project Rep.										
Resident Project Representative	0.0	0.0	0.0	0.0	550.0	0.0	0.0	0.0	0.0	550.0
Part Time Adminstrative Assistant	0.0	0.0	0.0	0.0	0.0	0.0	0.0	275.0	0.0	275.0
Coordinate Specialty Inspection Services & Testing	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Subtotal	0.0	0.0	0.0	0.0	550.0	0.0	0.0	275.0	0.0	825.0
									Total Manday Estimate	3755.4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STV

STATE OF NEW JERSEY
BUSINESS REGISTRATION CERTIFICATE

Taxpayer Name:	STV INCORPORATED
Trade Name:	
Address:	205 WEST WELSH DRIVE DOUGLASSVILLE, PA 19518-8713
Certificate Number:	0058421
Effective Date:	
Date of Issuance:	September 28, 2015

For Office Use Only:

20150928100930359

Date: July 7, 2016

Mr. Gregory A. Tramontozzi
Executive Director
Passaic Valley Sewerage Commission
600 Wilson Avenue
Newark, New Jersey 07105

Dear Mr. Tramontozzi:

The undersigned hereby submits the enclosed proposal for the position of **DESIGN SERVICES AND DESIGN SERVICES DURING CONSTRUCTION OF A PERIMETER FLOOD WALL.**

The undersigned hereby undertakes and promises to provide services for **DESIGN SERVICES AND DESIGN SERVICES DURING CONSTRUCTION OF A PERIMETER FLOOD WALL** and to do all work requested as appropriate and required herein as well as the contract documents concerning the same, including all written amendments and changes thereto, if any, which are incorporated herein by reference and made a part of this proposal.

SIGNATURE	STV Incorporated BUSINESS NAME
Kevin A. Pierce,P.E. Type or Print Full Name	JV Principal Title
	July 7, 2016 Date
212-777-4400 Telephone Number	[redacted] Fax-Telephone Number

ATTACHMENT A

CERTIFICATION OF INSURANCE

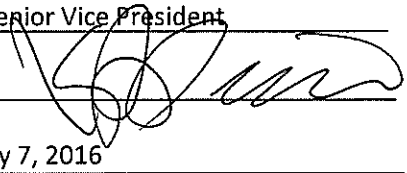
I HEREBY CERTIFY THAT MY OFFICE CARRIES INSURANCE ADEQUATE TO COVER PASSAIC VALLEY SEWERAGE COMMISSION ("PVSC") AND PROTECT PVSC FOR ANY ERROR OR OMISSION BY THE UNDERSIGNED THAT CREATES LIABILITY TO PVSC. THIS INCLUDES ERRORS AND OMISSIONS POLICY AND ANY OTHER TYPE OF POLICY WHATSOEVER THAT CAN BE UTILIZED TO PROTECT THE INTERESTS OF PVSC. I HAVE ATTACHED HERETO COPIES OF THE DECLARATION PAGES OF EACH SUCH POLICY THAT I ASSERT DOES OR CAN PROTECT ANY ERROR, OMISSION OR ACTIVITY IN WHICH I OR ANYONE FROM MY OFFICE MIGHT ENGAGE ON BEHALF OF PVSC.

I FURTHER CERTIFY THAT THE POLICIES OF INSURANCE THAT ARE CARRIED BY MY OFFICE SHALL CONTINUE TO BE CARRIED DURING THE ENTIRE TERM OF MY APPOINTMENT AS **DESIGN SERVICES AND DESIGN SERVICES DURING CONSTRUCTION FOR A PERIMETER FLOOD WALL**, IN THE EVENT THAT MY OFFICE IS SELECTED TO SERVE IN THAT CAPACITY. IN THE EVENT THAT THE DECLARATIONS PAGE(S) SUBMITTED HEREWITH SHOWS THE POLICY OR POLICIES OF INSURANCE WILL LAPSE DURING THE COURSE OF THE TERM OF MY APPOINTMENT, I WILL PROVIDE TO PVSC A COPY OF THE RENEWAL POLICY DECLARATION PAGE. I FURTHER CERTIFY THAT THE RENEWED POLICY SHALL HAVE THE SAME OR GREATER LIMITS OF LIABILITY AS THE ONE PROVIDED FOR THE BEGINNING OF MY APPOINTMENT.

CERTIFYING OFFICIAL:

NAME: Kevin A. Pierce, P.E.

TITLE: Senior Vice President

SIGNATURE: 

DATE: July 7, 2016

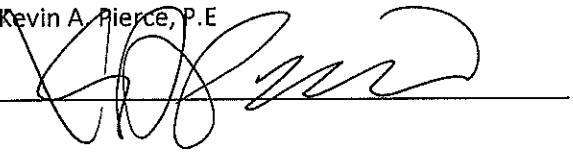
ATTACHMENT B

CONFLICT OF INTEREST CERTIFICATION

THE UNDERSIGNED CERTIFIES TO PASSAIC VALLEY SEWERAGE COMMISSION ("PVSC"), COUNTY OF ESSEX, STATE OF NEW JERSEY THAT IN PERFORMING SERVICES TO PVSC HE/SHE IS AWARE OF NO CIRCUMSTANCE THAT WOULD CONSTITUTE A CONFLICT OF INTEREST, FINANCIAL OR OTHERWISE, BETWEEN HIMSELF/HERSELF (OR HIS/HER FIRM) AND THE INTERESTS OF PVSC. THE UNDERSIGNED CERTIFIES THAT HE/SHE HAS MADE A SEARCH OF HIS/HER FIRM'S CLIENT BASE AND HAS EXECUTED THIS CERTIFICATION SUBSEQUENT TO SUCH SEARCH.

THE UNDERSIGNED ACKNOWLEDGES THIS IS A CONTINUING CERTIFICATION, AND SHALL REMAIN IN EFFECT FOR THE TERM OF THE SERVICES CONTAINED IN THE SOLICITED REQUEST FOR PROPOSAL. 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 FALSE, PVSC IS FREE TO TERMINATE ANY PROFESSIONAL SERVICES AGREEMENT ENTERED INTO WITH THE UNDERSIGNED AND/OR HIS OR HER FIRM.

Applicant Kevin A. Pierce, P.E

Signature: 

Typed:

Firm Name: STV Incorporated

Title: Senior Vice President

Date: July 7, 2016

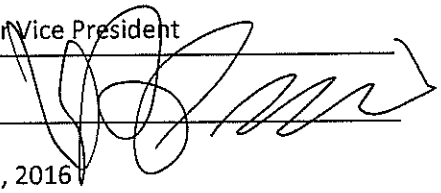
ATTACHMENT C

I HEREBY CERTIFY THE INFORMATION CONTAINED IN THIS PROPOSAL IS CORRECT AND ACCURATE TO MY PERSONAL KNOWLEDGE. I AM MAKING THIS CERTIFICATION IN GOOD FAITH.

CERTIFYING OFFICIAL:

NAME: Kevin A. Pierce, P.E

TITLE Senior Vice President

SIGNATURE: 

DATE: July 7, 2016

ATTACHMENT D

State of New Jersey
Division of Purchase and Property
Two-Year Chapter 51 / Executive Order 117 Vendor Certification and Disclosure of Political Contributions

CHAPT 51/EO 117-1

For AGENCY USE ONLY

General Information

Solicitation, RFP or Contract No. _____ Award Amount _____

Description of Services _____

Agency Contact Information

Agency _____ Contact Person _____

Phone Number _____ Agency Email _____

Part 1: Vendor Information

Full Legal Business Name: STV Incorporated
(Including trade name if applicable)

Business Type

☒ Corporation ☐ Limited Partnership ☐ Professional Corporation ☐ General Partnership
☐ Limited Liability Company ☐ Sole Proprietorship ☐ Limited Liability Partnership

Address 1: 225 Park Avenue South Address 2: _____

City: New York State: New York Zip: 10003 Phone: 212-777-4400

Vendor Email: Kevin.pierce@stvinc.com Vendor FEIN: [redacted]

Part 2: Public Law 2005, Chapter 51/ Executive Order 117 (2008) Certification

I hereby certify as follows:

1. On or after October 15, 2004, neither the below-named entity nor any individual whose contributions are attributable to the entity pursuant to Executive Order 117 (2008) has solicited or made any contribution of money, pledge of contribution, including in-kind contributions, company or organization contributions, as set forth below that would bar the award of a contract to the vendor, pursuant to the terms of Executive Order 117 (2008).

   a) **Within the preceding 18 months**, the below-named person or organization has not made a contribution to:

      (i) Any candidate committee and/or election fund of any candidate for or holder of the public office of Governor or ***Lieutenant Governor***;
      (ii) Any State, county, ***municipal*** political party committee; OR
      (iii) Any ***legislative leadership committee***.

   b) **During the term of office of the current Governor(s)**, the below-named person or organization has not made a contribution to

      (i) Any candidate, committee and/or election fund of the Governor or ***Lieutenant Governor***; OR
      (ii) Any State, county or ***municipal*** political party committee nominating such Governor in the election preceding the commencement of said Governor's term.

   c) **Within the 18 months immediately prior to the first day of the term of office of the Governor(s)**, the below-named person or organization has not made a contribution to

      (i) Any candidate, committee and/or election fund of the Governor or ***Lieutenant Governor***; OR
      Any State, county, ***municipal*** political party committee of the political party nominating the successful gubernatorial candidate(s) in the last gubernatorial election.

PLEASE NOTE: Prior to November 15, 2008, the only disqualifying contributions include those made by the vendor or a principal owning or controlling more than 10 percent of the profits or assets of a business entity (or 10 percent of the stock in the case of a business entity that is a corporation for profit) to any candidate committee and/or election fund of the Governor or to any state or county political party within the preceding18 months, during the term of office of the current Governor or within the 18 months immediately prior to the first day of the term of Office of Governor.

Part 3: Disclosure of Contributions Made CHAP 51/ EXO 117 -2

☒ **Check this box if no reportable contributions have been made by the above-named business entity or individual.**

Name of Recipient		Address of Recipient	
Date of Contribution		Amount of Contribution	
Type of Contribution (i.e. currency, check, loan, in-kind			

Contributor Name					
Relationship of Contributor to the Vendor					
Contributor Address					
City		State		Zip	

If this form is not being completed electronically, please attach pages for additional contributions as necessary. Otherwise click "Add a Contribution" to enter additional contributions.

Part 4: Certification CHAPT 51/EO 117-3

I have read the instructions accompanying this form prior to completing this certification on behalf of the above-named business entity. 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.

I understand that this certification will be in effect for two (2) years from the date of approval, provided the ownership status does not change and/or additional contributions are not made. If there are any changes in the ownership of the entity or additional contributions are made, a new full set of documents are required to be completed and submitted. By submitting this Certification and Disclosure, the person or entity named herein acknowledges this continuing reporting responsibility and certifies that it will adhere to it.

(CHECK ONE BOX A, B or C)

(A) ☐ I am certifying on behalf of the above-named business entity and all individuals and/or entities whose contributions are attributable to the entity pursuant to Executive Order 117 (2008).

(B) ☐ I am certifying on behalf of the above-named business entity only.

(C) ☐ I am certifying on behalf of an individual and/or entity whose contributions are attributable to the vendor.

Signed Name _____ Print Name Kevin A. Pierce, P.E.

Phone Number 212-777-4400 Date July 7, 2016

Title/Position Senior Vice President

Agency Submission of Forms

The agency should submit the completed and signed Two-Year Vendor Certification and Disclosure forms, together with a completed Ownership Disclosure form, either electronically to cd134@treas.state.nj.us, or regular mail at Chapter 51 Review Unit, P.O. Box 039, 33 West State Street, 9th Floor, Trenton, NJ 08625. The agency should save the forms locally and keep the original forms on file, and submit copies to the Chapter 51 Review Unit.

ATTACHMENT E

STATEMENT OF OWNERSHIP
NOTICE FOR CORPORATIONS AND PARTNERSHIPS

Chapter 33 of the Public Laws of 1977 (N.J.S.A 52:25-24.2 et seq.) provides that no Corporation or Partnership shall be awarded any State, County, Municipal or School District contracts for the performance of any work or the furnishing of any materials or supplies, unless prior to the receipt of the proposal or accompanying the proposal of said corporation or partnership there is submitted a statement. The statement shall set forth the names and home addresses of all stockholders in the corporation or partnership who own ten percent (10%) or more of its stock of any class or all individual partners in the partnership who own ten percent (10) % or greater interest therein. If one or more such stockholder or partner is itself a corporation or partnership, the stockholders holding 10% or more of the corporation stock, or the individual partners owning 10% greater interest in that partnership, as the case may be shall also be listed. See below:

STOCKHOLDER OR PARTNERSHIP DISCLOSURE STATEMENT

CONSULTANT: (CHECK ONE)

____SOLE PROPRIETORSHIP ____PARTNERSHIP __X__CORPORATION

____JOINT VENTURE ____OTHER-specify_____

Please check the appropriate paragraph:

( ) I certify that the list below contains the names and home addresses of all individuals holding 10% or more ownership of the undersigned. If no, so state.

(X) I certify that no one individual owns 10% or more of the undersigned.

STV Incorporated
NAME OF CONSULTANT

_____ Kevin A. Pierce, P.E.
SIGNATURE OF PRESIDENT, VICE PRESIDENT **PRINT NAME**

THIS STATEMENT MUST BE SIGNED BY A DULY AUTHORIZED COMPANY OFFICIAL SIMULTANEOUS WITH THE CONTRACT TO BE ENTERED WITH PASSAIC VALLEY SEWERAGE COMMISSION

Senior Vice President
TITLE

OWNERS

NAME:
HOME
ADDRESS:

NAME:
HOME:
ADDRESS:

PERCENTAGE OF OWNERSHIP:_____ **PERCENTAGE OF OWNERSHIP:__**

PLEASE ADD ADDITIONAL SHEETS FOR NAMES IF NECESSARY

STV Incorporated is a wholly-owned subsidiary of STV Group, Incorporated. STV Group, Incorporated is wholly-owned by the STV Employee Stock Ownership Plan (STV ESOP). STV ESOP c/o STV Group, Incorporated, 205 West Welsh Drive, Douglassville, Pennsylvania, 19518. There are no individuals within the STV ESOP that hold 5% or more of the outstanding STV ESOP Shares.

ATTACHMENT I

ACKNOWLEDGEMENT OF RECEIPT OF CLARIFICATIONS

The undersigned Respondent hereby acknowledges receipt of the following clarifications to the Request for Qualifications and Compensation (Fee) Proposal. By indicating date of receipt, Respondent acknowledges the submitted qualifications and proposal takes into account the provisions of the issued clarification(s). Note that the PVSC's record of clarification(s) issued shall take precedence and that failure to include provisions of changes in qualifications and proposal may be submit for rejection of the qualifications and proposal.

PROFESSIONAL SERVICES FOR DESIGN SERVICES AND DESIGN SERVICES DURING CONSTRUCTION FOR A PERIMETER FLOOD WALL

Directions: Complete Part I or Part II, whichever is applicable

PART I: LISTED BELOW ARE THE DATES OF ISSUE FOR EACH CLARIFICATION RECEIVED IN CONNECTION WITH THIS RFQ/RFP:

CLARIFICATION #1, DATED June 23 , 2016

CLARIFICATION #2, DATED _____ , _____

CLARIFICATION #3, DATED _____ , _____

CLARIFICATION #4, DATED _____ , _____

PART II: ____ NO CLARIFICATION WAS RECEIVED IN CONNECTION WITH THIS RFQ/RFP.

DATE: July 7, 2016

NAME Kevin A. Pierce, P.E., Senior Vice President SIGNATURE _____

Attachment J

DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN

RFP/BID: Bidder/Offeror: STV Incorporated

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 with the Passaic Valley Sewerage Commission must complete the certification below to attest, under penalty of perjury, that the person or entity's, subsidiaries, or affiliates is not identified on a list created and maintained by the N.J. Department of the Treasury as a person or entity engaging in investment activities in Iran pursuant to P.L. 2012, c. 25 ("Chapter 25 List") The Chapter 25 list is found on the Division'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 will render a bidder's proposal non-responsive.

If PVSC finds a person or entity to be in violation of the principles which are the subject of this law, it 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 person or entity.

PLEASE CHECK THE APPROPRIATE BOX:

☒ I 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.

☐ 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 New Jersey Department of Treasury 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 nonresponsive 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 boxes below.

Name:_____ **Relationship to Bidder/Offeror:**_____

Description of Activities:_____

_____

_____

Duration of Engagement: _____ **Anticipated Cessation Date:**_____

Proposer Contact Name:_____ **Contact Phone Number:**_____

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) Kevin A. Pierce, P.E.
Signature
Title Senior Vice President
Date: July 7, 2016

Mott MacDonald

STATE OF NEW JERSEY
BUSINESS REGISTRATION CERTIFICATE

Taxpayer Name:	HATCH MOTT MACDONALD, LLC
Trade Name:	
Address:	111 WOOD AVENUE SOUTH ISELIN, NJ 08830-4112
Certificate Number:	1169109
Effective Date:	August 01, 2005
Date of Issuance:	August 22, 2013

For Office Use Only:

20130822155027031

Date: July 7, 2016

Mr. Gregory A. Tramontozzi
Executive Director
Passaic Valley Sewerage Commission
600 Wilson Avenue
Newark, New Jersey 07105

Dear Mr. Tramontozzi:

The undersigned hereby submits the enclosed proposal for the position of **DESIGN SERVICES AND DESIGN SERVICES DURING CONSTRUCTION OF A PERIMETER FLOOD WALL.**

The undersigned hereby undertakes and promises to provide services for **DESIGN SERVICES AND DESIGN SERVICES DURING CONSTRUCTION OF A PERIMETER FLOOD WALL** and to do all work requested as appropriate and required herein as well as the contract documents concerning the same, including all written amendments and changes thereto, if any, which are incorporated herein by reference and made a part of this proposal.

SIGNATURE	Mott MacDonald BUSINESS NAME
Albert N. Beninato, P.E. Type or Print Full Name	JV Principal Title
	July 7, 2016 Date
973-912-2410 Telephone Number	N/A Fax-Telephone Number

ATTACHMENT A

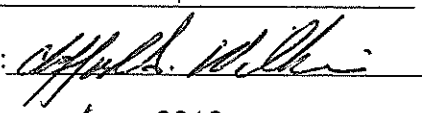
CERTIFICATION OF INSURANCE

I HEREBY CERTIFY THAT MY OFFICE CARRIES INSURANCE ADEQUATE TO COVER PASSAIC VALLEY SEWERAGE COMMISSION ("PVSC") AND PROTECT PVSC FOR ANY ERROR OR OMISSION BY THE UNDERSIGNED THAT CREATES LIABILITY TO PVSC. THIS INCLUDES ERRORS AND OMISSIONS POLICY AND ANY OTHER TYPE OF POLICY WHATSOEVER THAT CAN BE UTILIZED TO PROTECT THE INTERESTS OF PVSC. I HAVE ATTACHED HERETO COPIES OF THE DECLARATION PAGES OF EACH SUCH POLICY THAT I ASSERT DOES OR CAN PROTECT ANY ERROR, OMISSION OR ACTIVITY IN WHICH I OR ANYONE FROM MY OFFICE MIGHT ENGAGE ON BEHALF OF PVSC.

I FURTHER CERTIFY THAT THE POLICIES OF INSURANCE THAT ARE CARRIED BY MY OFFICE SHALL CONTINUE TO BE CARRIED DURING THE ENTIRE TERM OF MY APPOINTMENT AS **DESIGN SERVICES AND DESIGN SERVICES DURING CONSTRUCTION FOR A PERIMETER FLOOD WALL**, IN THE EVENT THAT MY OFFICE IS SELECTED TO SERVE IN THAT CAPACITY. IN THE EVENT THAT THE DECLARATIONS PAGE(S) SUBMITTED HEREWITH SHOWS THE POLICY OR POLICIES OF INSURANCE WILL LAPSE DURING THE COURSE OF THE TERM OF MY APPOINTMENT, I WILL PROVIDE TO PVSC A COPY OF THE RENEWAL POLICY DECLARATION PAGE. I FURTHER CERTIFY THAT THE RENEWED POLICY SHALL HAVE THE SAME OR GREATER LIMITS OF LIABILITY AS THE ONE PROVIDED FOR THE BEGINNING OF MY APPOINTMENT.

CERTIFYING OFFICIAL:

NAME: Clifford S. Wilkinson, PE
Executive Vice President
TITLE: Mott MacDonald, LLC

SIGNATURE: 

DATE: July 1, 2016

ATTACHMENT B

CONFLICT OF INTEREST CERTIFICATION

THE UNDERSIGNED CERTIFIES TO PASSAIC VALLEY SEWERAGE COMMISSION ("PVSC"), COUNTY OF ESSEX, STATE OF NEW JERSEY THAT IN PERFORMING SERVICES TO PVSC HE/SHE IS AWARE OF NO CIRCUMSTANCE THAT WOULD CONSTITUTE A CONFLICT OF INTEREST, FINANCIAL OR OTHERWISE, BETWEEN HIMSELF/HERSELF (OR HIS/HER FIRM) AND THE INTERESTS OF PVSC. THE UNDERSIGNED CERTIFIES THAT HE/SHE HAS MADE A SEARCH OF HIS/HER FIRM'S CLIENT BASE AND HAS EXECUTED THIS CERTIFICATION SUBSEQUENT TO SUCH SEARCH.

THE UNDERSIGNED ACKNOWLEDGES THIS IS A CONTINUING CERTIFICATION, AND SHALL REMAIN IN EFFECT FOR THE TERM OF THE SERVICES CONTAINED IN THE SOLICITED REQUEST FOR PROPOSAL. 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 FALSE, PVSC IS FREE TO TERMINATE ANY PROFESSIONAL SERVICES AGREEMENT ENTERED INTO WITH THE UNDERSIGNED AND/OR HIS OR HER FIRM.

Applicant

Signature: _____
Clifford S. Wilkinson, PE

Typed:

Firm Name: Mott MacDonald, LLC

Title: Executive Vice President

Date: July 7, 2016

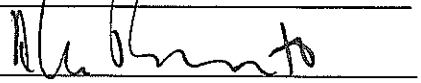
ATTACHMENT C

I HEREBY CERTIFY THE INFORMATION CONTAINED IN THIS PROPOSAL IS CORRECT AND ACCURATE TO MY PERSONAL KNOWLEDGE. I AM MAKING THIS CERTIFICATION IN GOOD FAITH.

CERTIFYING OFFICIAL:

NAME: Albert N. Beninato

TITLE Executive Vice President

SIGNATURE: 

DATE: June 21, 2016

ATTACHMENT D

State of New Jersey
Division of Purchase and Property
Two-Year Chapter 51 / Executive Order 117 Vendor Certification and Disclosure of Political Contributions

For AGENCY USE ONLY

General Information

Solicitation, RFP or Contract No. _____ Award Amount _____

Description of Services _____

Agency Contact Information

Agency _____ Contact Person _____

Phone Number _____ Agency Email _____

Part 1: Vendor Information

Full Legal Business Name: Mott MacDonald LLC
(Including trade name if applicable)

Business Type

☐ Corporation ☐ Limited Partnership ☐ Professional Corporation ☐ General Partnership
☒ Limited Liability Company ☐ Sole Proprietorship ☐ Limited Liability Partnership

Address 1: 111 Wood Avenue South Address 2: Suite 500

City: Iselin State: New Jersey Zip: 08830 Phone: (973) 379-3400

Vendor Email: americas@mottmac.com **Vendor FEIN:** [redacted]

Part 2: Public Law 2005, Chapter 51/ Executive Order 117 (2008) Certification

I hereby certify as follows:

1. On or after October 15, 2004, neither the below-named entity nor any individual whose contributions are attributable to the entity pursuant to Executive Order 117 (2008) has solicited or made any contribution of money, pledge of contribution, including in-kind contributions, company or organization contributions, as set forth below that would bar the award of a contract to the vendor, pursuant to the terms of Executive Order 117 (2008).

   a) **Within the preceding 18 months,** the below-named person or organization has not made a contribution to:

      (i) Any candidate committee and/or election fund of any candidate for or holder of the public office of Governor or ***Lieutenant Governor***;
      (ii) Any State, county, ***municipal*** political party committee; OR
      (iii) Any ***legislative leadership committee.***

   b) **During the term of office of the current Governor(s),** the below-named person or organization has not made a contribution to

      (i) Any candidate, committee and/or election fund of the Governor or ***Lieutenant Governor***; OR
      (ii) Any State, county or ***municipal*** political party committee nominating such Governor in the election preceding the commencement of said Governor's term.

   c) **Within the 18 months immediately prior to the first day of the term of office of the Governor(s),** the below-named person or organization has not made a contribution to

      (i) Any candidate, committee and/or election fund of the Governor or ***Lieutenant Governor***; OR
      Any State, county, ***municipal*** political party committee of the political party nominating the successful gubernatorial candidate(s) in the last gubernatorial election.

PLEASE NOTE: Prior to November 15, 2008, the only disqualifying contributions include those made by the vendor or a principal owning or controlling more than 10 percent of the profits or assets of a business entity (or 10 percent of the stock in the case of a business entity that is a corporation for profit) to any candidate committee and/or election fund of the Governor or to any state or county political party within the preceding18 months, during the term of office of the current Governor or within the 18 months immediately prior to the first day of the term of Office of Governor.

Part 3: Disclosure of Contributions Made

☒ **Check this box if no reportable contributions have been made by the above-named business entity or individual.**

Name of Recipient		Address of Recipient	
Date of Contribution		Amount of Contribution	
Type of Contribution (i.e. currency, check, loan, in-kind			

Contributor Name	
Relationship of Contributor to the Vendor	
Contributor Address	
City	State Zip

If this form is not being completed electronically, please attach pages for additional contributions as necessary. Otherwise click "Add a Contribution" to enter additional contributions.

Part 4: Certification

I have read the instructions accompanying this form prior to completing this certification on behalf of the above-named business entity. 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.

I understand that this certification will be in effect for two (2) years from the date of approval, provided the ownership status does not change and/or additional contributions are not made. If there are any changes in the ownership of the entity or additional contributions are made, a new full set of documents are required to be completed and submitted. By submitting this Certification and Disclosure, the person or entity named herein acknowledges this continuing reporting responsibility and certifies that it will adhere to it.

(CHECK ONE BOX A, B or C)

(A) [X] I am certifying on behalf of the above-named business entity and all individuals and/or entities whose contributions are attributable to the entity pursuant to Executive Order 117 (2008).

(B) [ ] I am certifying on behalf of the above-named business entity only.

(C) [ ] I am certifying on behalf of an individual and/or entity whose contributions are attributable to the vendor.

Signed Name  Print Name Albert N. Beninato, PE

Phone Number (973) 379-3400 Date June 21, 2016

Title/Position Executive Vice President

Agency Submission of Forms

The agency should submit the completed and signed Two-Year Vendor Certification and Disclosure forms, together with a completed Ownership Disclosure form, either electronically to cd134@treas.state.nj.us, or regular mail at Chapter 51 Review Unit, P.O. Box 039, 33 West State Street, 9th Floor, Trenton, NJ 08625. The agency should save the forms locally and keep the original forms on file, and submit copies to the Chapter 51 Review Unit.

MOTT MACDONALD, LLC

STATEMENT OF OWNERSHIP

Mott MacDonald, LLC, a Delaware limited liability corporation, is a wholly-owned subsidiary of Mott MacDonald Group, Inc., a Delaware corporation. Mott MacDonald Group, Inc. is 100% owned by Mott MacDonald International, Ltd., a corporation of the United Kingdom.

MOTT MACDONALD, LLC

By: _____

Albert N. Beninato, P.E.
Executive Vice President

ATTACHMENT I

ACKNOWLEDGEMENT OF RECEIPT OF CLARIFICATIONS

The undersigned Respondent hereby acknowledges receipt of the following clarifications to the Request for Qualifications and Compensation (Fee) Proposal. By indicating date of receipt, Respondent acknowledges the submitted qualifications and proposal takes into account the provisions of the issued clarification(s). Note that the PVSC's record of clarification(s) issued shall take precedence and that failure to include provisions of changes in qualifications and proposal may be submit for rejection of the qualifications and proposal.

PROFESSIONAL SERVICES FOR DESIGN SERVICES AND DESIGN SERVICES DURING CONSTRUCTION FOR A PERIMETER FLOOD WALL

Directions: Complete Part I or Part II, whichever is applicable

PART I: LISTED BELOW ARE THE DATES OF ISSUE FOR EACH CLARIFICATION RECEIVED IN CONNECTION WITH THIS RFQ/RFP:

CLARIFICATION #1, DATED June 23, 2016

CLARIFICATION #2, DATED _____, _____

CLARIFICATION #3, DATED _____, _____

CLARIFICATION #4, DATED _____, _____

PART II: ___ NO CLARIFICATION WAS RECEIVED IN CONNECTION WITH THIS RFQ/RFP.

DATE: July / , 2016

NAME Clifford S. Wilkinson, PE SIGNATURE _____

Executive Vice President
Mott MacDonald, LLC

Attachment J

DISCLOSURE OF INVESTMENT ACTIVITIES IN IRAN

RFP/BID: **Bidder/Offeror:** Mott MacDonald LLC

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 with the Passaic Valley Sewerage Commission must complete the certification below to attest, under penalty of perjury, that the person or entity's, subsidiaries, or affiliates is not identified on a list created and maintained by the N.J. Department of the Treasury as a person or entity engaging in investment activities in Iran pursuant to P.L. 2012, c. 25 ("Chapter 25 List") The Chapter 25 list is found on the Division'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 will render a bidder's proposal non-responsive.

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PLEASE CHECK THE APPROPRIATE BOX:

☒ I 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.

☐ 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 New Jersey Department of Treasury 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 nonresponsive 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 boxes below.

Name:_____ **Relationship to Bidder/Offeror:**_____

Description of Activities:_____

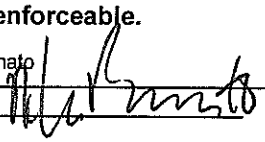
_____

_____

Duration of Engagement: _____ **Anticipated Cessation Date:**_____

Proposer Contact Name:_____ **Contact Phone Number:**_____

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) Albert N. Beninato
Signature 
Title Executive Vice President
Date: June 21, 2016

VOLUME 2: **COMPENSATION PROPOSAL**

Design Services & Design Services During Construction for a

PERIMETER FLOOD WALL

STV 100 Years | MOTT MACDONALD

July 7, 2016

Mr. Gregory A. Tramontozzi
Executive Director
Passaic Valley Sewerage Commission
600 Wilson Avenue
Newark, NJ 07105

Reference: Request for Qualifications and Proposals for Professional Services for Passaic Valley Sewerage Commission (PVSC) – Design Services and Design Services During Construction for a Perimeter Flood Wall

Dear Mr. Tramontozzi:

The joint venture of STV and Mott MacDonald (STV/MM) has prepared the enclosed fee estimate for the referenced RFP. Our estimate is based on a detailed review of the scope of work, as well as our experience in design and construction of similar projects. We have reviewed the information provided by PVSC, including available geotechnical reports, survey, 30% design drawings, and the Basis of Design Report prepared by AECOM/HDR. Based on that review, we've identified the following items as areas where additional efforts could be required, along with an estimated cost. In addition, we believe the $450,000 allocated budget allowance is an adequate and reasonable number to cover potential unforeseen contingencies. We are prepared to discuss these items in detail with your engineering staff at the appropriate time.

Contingency Items:

1. Geotechnical Investigations: Historical boring and soils data, supplemented with limited recent borings. We believe the design and construction process could benefit from added geotechnical investigations along the proposed wall perimeter. This would provide added certainty to the conditions along the specific alignment to a deeper depth than the existing investigations, reduce potential for unforeseen conditions during construction, determine the soil corrosivity, and aid in optimizing wall design. We estimate the added cost to be $50,000 to perform 12 borings and geotechnical laboratory testing.
2. Survey: If additional surveying is required along the perimeter to obtain topographic and detailed site conditions, STV/MM anticipates that the additional surveying could be performed for approximately $62,000.
3. Installation Inspection: Given the importance of installation on the long-term performance of the wall, we strongly recommend added inspection be included during construction. We estimate the potential need for 1,200 man-hours at a cost of approximately $130,000. This inspection will provide additional oversight for all construction activities, since special inspections are not required by code for this type of structure.

In addition, in the preparation of our fee estimate, we've made the following assumptions:

1. Costs include escalation for a design mid-point of late 2017 and construction mid-point of 2020.
2. Our costs assume a standard PVSC lump-sum contract and task breakdown, with billings on a percent complete and milestone basis. We assume labor rates and timecard back-up are not required.
3. Our costs include all incidentals for local travel and other ancillary items required to execute the scope of work.

1037 RAYMOND BOULEVARD, SUITE 200
NEWARK, NJ 07102-5425
TEL: (973) 642-2201 FAX: (973) 642-3245

4. We have not included costs for reproduction of drawings, reports, and estimates for distribution as this is included in Task 6.
5. We assume workspace, computers, and other field items required by on-site staff during the construction phase will be provided by PVSC or the contractor.

Thank you for the opportunity to submit this cost proposal. We look forward to working with you and the entire PVSC organization to deliver this important flood resiliency project.

Sincerely,

Kevin A. Pierce, P.E.
JV Principal
STV Incorporated

Albert N. Beninato, P.E.
JV Principal
Mott MacDonald

Attachment H

SUMMARY OF COST PROPOSAL

Title	Estimate of Cost									
	Project Principal	Project Manager	Project Engineer	Principal Engineer	Sr. Engineer/ Scientist	Engineer	Designer/ Drafter	Technician	Support	Total Labor Cost
2016 Rates (Task 1 & 2)	**$ 270**	**$ 210**	**$ 190**	**$ 160**	**$ 130**	**$ 110**	**$ 85**	**$ 95**	**$ 75**	
Task 1 - Investigation & Conceptual Design (Tasks)										
1.1 Investigations	$ 12,690	$ 17,220	$ 26,980	$ 19,680	$ 13,000	$ 3,080	$ -	$ 15,200	$ 7,500	$ 115,350
Task 2 - Project Work Plan and Reporting										
2.1 Project Work Plan and Reporting	$ 7,830	$ 5,460	$ 8,550	$ 3,840	$ -	$ 3,080	$ -	$ -	$ -	$ 28,760
2017-2018 Rates (Task 3)	**$ 282**	**$ 219**	**$ 199**	**$ 167**	**$ 136**	**$ 115**	**$ 89**	**$ 99**	**$ 78**	
Task 3 - Design Services										
3.1 Design	$ 183,962	$ 273,874	$ 504,118	$ 569,149	$ 89,933	$ 388,991	$ 57,914	$ 202,025	$ 17,243	$ 2,287,207
3.2 Meetings	$ 63,484	$ 35,112	$ 18,862	$ 16,720	$ 8,151	$ -	$ -	$ 5,957	$ -	$ 148,286
3.3 Value Engineering	$ 10,157	$ 3,511	$ 7,545	$ -	$ -	$ -	$ -	$ 1,588	$ -	$ 22,802
3.4 Permitting	$ 20,033	$ 17,556	$ 37,526	$ 36,784	$ -	$ 24,714	$ -	$ 8,935	$ -	$ 145,548
3.5 Bidding Assistance	$ 4,514	$ 8,778	$ -	$ -	$ 5,434	$ -	$ 5,330	$ 3,971	$ -	$ 28,027
Subtotal	$ 282,150	$ 338,831	$ 568,052	$ 622,653	$ 103,518	$ 413,705	$ 63,243	$ 222,475	$ 17,243	$ 2,631,869
2019 - 2021 Rates (Tasks 4 & 5)	**$ 299**	**$ 233**	**$ 211**	**$ 177**	**$ 144**	**$ 122**	**$ 94**	**$ 105**	**$ 83**	
Task 4 - Design Services During Construction										
4.1 Notice to Proceed	$ 2,695	$ 4,658	$ 4,003	$ 3,549	$ 2,883	$ 1,586	$ -	$ 843	$ -	$ 20,217
4.2 Liaison and Administrative	$ 61,982	$ 106,664	$ 9,061	$ 3,549	$ 158,587	$ 1,586	$ -	$ 843	$ -	$ 342,271
4.3 Meetings	$ 25,751	$ 54,030	$ 16,014	$ 14,195	$ -	$ 7,929	$ -	$ 3,582	$ -	$ 121,502
4.4 Baselines and Benchmarks	$ -	$ -	$ -	$ -	$ 5,767	$ -	$ -	$ -	$ 3,327	$ 9,094
4.5 Approval of Manufacturers/vendors	$ 3,294	$ 13,042	$ 4,003	$ 3,549	$ 3,460	$ 1,586	$ -	$ 843	$ -	$ 29,777
4.6 Shop Drawings	$ 9,582	$ 16,768	$ 16,857	$ 23,422	$ 12,687	$ 7,929	$ 1,697	$ 16,225	$ -	$ 105,166
4.7 Contractor Initiated Substitutions	$ 3,294	$ 11,179	$ 4,003	$ 3,549	$ 5,767	$ 6,465	$ -	$ 843	$ -	$ 35,100
4.8 Testing	$ -	$ -	$ -	$ -	$ 5,767	$ -	$ -	$ -	$ -	$ 5,767
4.9 RFI's & Field Orders	$ 11,378	$ 28,878	$ 12,853	$ 19,164	$ 51,901	$ 5,246	$ 1,697	$ 2,212	$ -	$ 133,330
4.10 Change Orders	$ 6,288	$ 12,110	$ 8,007	$ 7,098	$ 11,534	$ 3,172	$ -	$ 9,798	$ -	$ 58,006
4.11 Payment Requests	$ 2,096	$ 7,918	$ 4,003	$ 3,549	$ -	$ 1,586	$ -	$ 17,278	$ -	$ 36,431
4.12 Start-Up Sevices	$ -	$ -	$ -	$ -	$ 9,227	$ -	$ 3,771	$ 12,643	$ -	$ 25,640
4.13 Post Construction Assistance	$ 3,593	$ 21,426	$ -	$ 5,678	$ 23,644	$ -	$ 15,082	$ 14,750	$ -	$ 84,173
Subtotal	$ 129,953	$ 276,673	$ 78,806	$ 87,300	$ 291,223	$ 37,085	$ 22,247	$ 79,859	$ 3,327	$ 1,006,473
Task 5 - Resident Project Rep.										
Resident Project Representative	$ -	$ -	$ -	$ -	$ 634,348	$ -	$ -	$ -	$ -	$ 634,348
Part Time Adminstrative Assistant	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 231,781	$ -	$ 231,781
Coordinate Specialty Inspection Services & Testing	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -
Subtotal	$ -	$ -	$ -	$ -	$ 634,348	$ -	$ -	$ 231,781	$ -	$ 866,129
								Total Labor Cost		$ 4,648,581

Summary of Costs

Description	Cost
Task 1 - Review & Compliation of Data	$ 115,350
Task 2 - Project Work Plan & Reporting	$ 28,760
Task 3 - Design Services	$ 2,631,869
Task 4 - Design Services During Construction (DSDC)	$ 1,006,473
Task 5 - Resident Project Representative (PRP)	$ 866,129
Task 6 - Other Direct Costs	$ 50,000
Task 7 - Allowances * **(See Letter for Additional Services)**	$ 530,000
Task 8 - Admin of PVSC Funding Requirements	$ 30,000
TOTAL PROJECT COST	$ 5,258,581