RESOLUTION DIRECTING WORK TO HAZEN AND SAWYER FOR ENGINEERING SERVICES DURING CONSTRUCTION FOR THE H6 H7 PHASE 2 PROJECT

MOTIONED BY: Marotta
SECONDED BY: Guzman

WHEREAS, the North Hudson Sewerage Authority (hereinafter "Authority") is a public body, duly formed under the Sewerage Authorities law, constituting Chapter 138 of the Laws of New Jersey of 1946, as amended (Chapter 14A of Title 40 of the New Jersey Statutes Annotated) and possesses the powers set forth therein; and

WHEREAS, Hazen and Sawyer has been selected under resolution 20-114 to provide engineering services for various capital projects required throughout its service area that must be performed in order to maximize the performance of its waste water treatment facility, the capacity of its combined sewer system and/or to comply with its New Jersey Pollution Discharge Elimination System (NJPDES) permit; and

WHEREAS, Hazen and Sawyer has submitted a proposal (Exhibit "A") to provide Engineering Services During Construction for the H6 H7 Phase 2 Project; and

WHEREAS, the Facilities Review Board has considered this request and proposal and recommends the approval of the full Board.

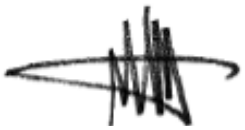
NOW THEREFORE, BE IT RESOLVED that the Authority, as recommended by the Facilities Review Board, directs Hazen and Sawyer to provide professional engineering services during construction for the H6 H7 Phase 2 project not to exceed $657,357.

DATED: DECEMBER 16, 2021

RECORD OF COMMISSIONERS' VOTE

	YES	NO	ABSENT
Commissioner Kappock	x		
Commissioner Marotta	x		
Commissioner Gardiner	x		
Commissioner Friedrich	x		
Commissioner Guzman	x		
Commissioner Velazquez	x		
Commissioner Barrera			x
Commissioner White	x		

THIS IS TO CERTIFY THAT THIS RESOLUTION WAS DULY ADOPTED BY THE NORTH HUDSON BOARD OF COMMISSIONERS ON DECEMBER 16, 2021.



_____

SECRETARY

Hazen and Sawyer
99 Wood Avenue South, 8th Floor
Iselin, NJ 08830 • 732-491-2810

November 16, 2021

Ms. Belissa Vega, QPA
North Hudson Sewerage Authority
1600 Adams Street
Hoboken, NJ 07030

Re: H6/H7 CSO Long-Term Control Plan Phase 2: Engineering Services During Construction

Dear Ms. Vega:

The H6/H7 CSO Long-Term Control Plan Phase 2 construction is a critically important project for the North Hudson Sewerage Authority (NHSA), involving the second phase of construction for a high-level storm sewer system in the H7 Drainage Basin, 30-inch diameter force main, emergency generator, stormwater pumps, pump controls and appurtenances. The pumps, pump controls, and generator will be installed within the Controls Building and Pump Station being constructed during Phase 1 of the H6/H7 project.

From our work overseeing construction for the first phase of this project, we know that its success is crucial to protecting public health, minimizing public disruption, as well as protecting the environment, and we are committed to assisting NHSA in the successful implementation of this important effort.

To this end, we have assembled a team of proven construction experts to ultimately deliver NHSA the best possible project in both a cost-effective and time-efficient manner. Our team includes many of the personnel who participated in the Phase 1 construction oversight.

Eamon Kelly, CCM, our proposed Project Director, and **Shawn Brennan, PE, CCM,** our proposed Resident Engineer, provide over 57 years of combined construction management experience. Eamon leads Hazen's construction management projects in the New York City metropolitan area, and Shawn has led several of Hazen's largest and most challenging construction projects for NYC, as discussed in detail later in this proposal (see Firm Experience, Section 3). They are currently working together in overseeing and inspecting the construction of the Phase 1 facilities for the H6/H7 LTCP, and will continue to collaborate on the Phase 2 work, to deliver this project on time while meeting all other NHSA goals and objectives.

Both Eamon and Shawn have extensive experience working on projects where Hazen was not the Design Engineer, as they have been doing for Phase 1. They are committed to ensuring that the Phase 2 project is a success, and will help deliver this project from construction commencement to its start-up and commissioning, while proactively addressing construction issues and risks as early as possible following project commencement. Working closely with **Kevin Haney, PE, BCEE**, the proposed ESDC Manager, and other assigned project team professionals who have assisted with Phase 1, Eamon and Shawn will strive to execute this project in a collaborative, timely and cost-effective manner.

In addition to being led by these seasoned construction professionals, the Hazen team offers NHSA several other important advantages:

- **Continuity of knowledge and performance,** by assigning people who you know and trust and who have demonstrated their commitment to success from our work on Phase 1 of this project.
- **Proven ability to address changes and challenges as they arise**, as we have done throughout our work on Phase 1. Our ability to think creatively and quickly respond to design and field issues has resulted in cost-effective solutions that benefit NHSA and protect its best interests.
- **Construction prowess in resolving issues resulting from unforeseen conditions**, as gained from our extensive work on similar projects in urban areas, such as New York City. Our Phase 1 team has helped NHSA recover the project schedule after some difficulties and delays were encountered during construction, and completion is now targeted to be on time.

If awarded this contract, we will provide a thorough review of the design documents in advance of the kickoff meeting, at no charge to NHSA. We know that it is critical for the LTCP Phase 2 project to stay on schedule, and we are aware that issues not addressed with the Design Engineer and client before construction bids are received can often result in increased construction change order costs and future maintenance costs, as well as delays in project schedule. Our advance review will help avoid these costly changes and delays, and our due diligence throughout the project's duration will minimize construction risks.

We acknowledge that we have read the Request for Proposal and are able to provide the necessary personnel and other resources to provide the required services. No changes in our proposed team members are anticipated, and none will be made without the Authority's approval.

We are committed to providing quality engineering services during construction, and hope that we can continue to put our resources and experience to work for you on this important project, as you embark on its second phase. Please do not hesitate to contact me directly at (732) 439-6362, should you require any additional information.

Sincerely,

William S. Gettings, PE, MBA, BCEE
Associate Vice President, NJ Office Manager

H6/H7 CSO Long-Term Control Plan Phase 2: Engineering Services During Construction

Introduction

This proposal details Hazen's proposed role and the costs required to effectively fulfill the requirements of NHSA's RFP for the H6/H7 CSO Long-Term Control Plan Phase 2 construction-related services. We have assembled the requisite staff and resources to provide the bidding, construction administration, resident engineering, and special inspection services for this critical project. Our team includes the staff who are currently participating in Phase 1 of this project, thus ensuring continuity and performance.

Construction of New Control Building in Phase 1

As requested by the RFP, our proposal provides details to our scope of work, cost, schedule, personnel, and firm experience. These topics are presented in the proposal in the following order, which we believe best illustrates the benefits our team provides NHSA:

- **Section 1: Project Understanding**
- **Section 2: Proposed Team and Organizational Chart**
- **Section 3: Firm Experience**
- **Section 4: Scope of Work**
- **Section 5: Project Schedule**
- **Section 6: Cost Proposal**
- **Appendix A: Resumes**
- **Appendix B: Detailed Project Schedule**
- **Appendix C: Cost Spreadsheet**

1. Project Understanding

The City of Hoboken relies on a 19th century combined sewer system for its stormwater management, which flows to NHSA's treatment plant in Hoboken, NJ. Currently, Hoboken's combined sewer system is insufficiently sized to handle the flows received during heavy rainfall events. During severe storms, when the combined sewage flow volume exceeds the limited treatment volume capacity of the wastewater treatment plant, or the carrying capacity of the combined sewer system conveyance piping, a portion of this combined sewage overflows into the Hudson River through the various outfalls located along Hoboken's waterfront. Several of these outfalls are located below the high tide level. When heavy rain coincides with a high tide in the Hudson River, excess stormwater cannot be discharged into the river, and stormwater flooding occurs in the streets, causing localized flooding in the lowest-lying areas.

In 2015, the NJDEP issued a Final NJPDES for the NHSA plant, which required the development of an approvable CSO LTCP by June 1, 2020. NHSA developed and submitted its plan in compliance with this deadline, and has embarked on implementation of the Plan. Phase 1 of this project, with which Hazen is assisting NHSA, involves the construction of the Pump Station, Control Building, and Pretreatment Area, along with a portion of the force main. Work is currently about 60% complete. Despite some difficulties encountered as construction progressed, the schedule has recovered and Phase 1 "onsite" project work covered in the agreement between the City of Hoboken and NHSA is expected to be completed on time; there is "offsite" work that will continue beyond February 2022 that is not part of the agreement. Phase 2 involves construction of the remainder of the 30-inch diameter force main, along with installation of an emergency generator, stormwater pumps, pump controls, and appurtenances. The stormwater pumps, pump controls, and emergency generator will be installed within the Controls Building and Pumping Station being constructed during Phase 1 (see photo, right).

Pump Station being installed in phase 1.

Construction will be performed in a dense urban area, with community facilities and residences nearby. Our team has successfully delivered similar projects involving mechanical and conveyance in highly urban areas such as New York City, and is adept at dealing with the types of issues such construction typically involves. Our team members have proven their ability throughout our work on Phase 1 of this project, and will also carry forward their experience in dealing with the local constituents and the City of Hoboken, as gained during Phase 1. Plans and specifications for Phase 2 of this work have been prepared by the NHSA's Design Engineer, and NHSA is now prepared to go forward with this contract.

2. Proposed Team and Organizational Chart

The Hazen team is an ideal partner to successfully deliver this project. Our team offers senior staff with extensive CM delivery credentials and proven track records on all project tasks. The personnel proposed for this project were selected based on their qualifications, past accomplishments, and in-depth knowledge of similar projects and their associated challenges. Most of these people participated in Phase 1 of this project and have demonstrated their performance and capabilities. Resumes for all project team personnel are provided in **Appendix A**. Our proposed **Organization Chart** is presented below.

Our Project Team will be led by **Eamon Kelly, CCM,** as Project Director. Eamon is Hazen's Construction Management Service Group Lead for the Northeast. With over 35 years of experience in construction management including significant at-risk construction experience, he has established many of Hazen's proactive and collaborative CM policies and procedures. **In addition to serving as Project Director for Phase 1 of the H6/H7 LTCP project,** Eamon was Project Director for the Gowanus Pump Station Improvements, which is featured in the Firm Experience (Section 3) of this proposal. Eamon also has experience from the commercial and institutional construction markets, where he managed at-risk and lump sum work. Dealing with critical cost and schedule issues daily has provided him with extensive insight into risk management.

Eamon has worked with our proposed Resident Engineer **Shawn Brennan, PE, CCM** on numerous projects, including NYCDEP's Gowanus Pump Station Improvements and Paerdegat CSO Facility (see Section 3). **Eamon and Shawn are also currently working together on the Phase 1 construction.** Their track record of teamwork will ensure clear communications and enhance project delivery. As demonstrated throughout Phase 1, they are a team that NHSA can depend on to deliver. With over 22 years of construction management experience, Shawn brings his understanding of construction in urban areas, along with his proven organizational and leadership abilities. Further details on Shawn can be found on the following page.

Mark Supplee, PE will serve as a Design Liaison for this project, working with Paul and Eamon. **Prior to joining Hazen, Mark served as the Design Manager on the NHSA H6/H7 LTCP CSO project.** He has performed similar services during construction for below-grade detention and pumping facilities. This experience provides Mark with a robust understanding of the design work completed for this project and will be instrumental in reaching out to the Design Engineer for information to move this project successfully forward to completion. Construction Inspection will be provided by **Michael Murray.** Mike has 25 years of experience guiding multi-million-dollar civil construction projects for state and city agencies. His expertise includes construction inspection, cost estimating, site management, schedule and budget control, and contract negotiations. In addition to serving as Resident Engineer for the City of Bethlehem, NY's Clapper Road WTP upgrade, **Mike has been serving as Site Inspector for the NHSA's H6/H7 LTCP Phase 1 construction, working closely with Shawn Brennan and Eamon Kelly.** His collaboration with them for the Phase 2 work will further ensure continuity of knowledge and performance.

Kevin Haney, PE, BCEE, serving as ESDC Manager, will oversee the ESDC Services team. Kevin brings over 38 years of experience in construction management for many complex design-build construction projects. He has worked as field superintendent in charge of scheduling, managed various trades, quality control, commissioning, on-site client relations, and maintaining a continuous workflow**. In addition to serving as ESDC Manager for the LTCP Phase 1 project,** Kevin led the study, design and construction of the Sayreville Pump Station Repairs (Sayreville, NJ), and provided inspection of RAS piping for replacement at the Two Rivers Water Reclamation Authority (Monmouth Beach, NJ).

French and Parrello Associates (FPA) will serve on our team as a subconsultant, to perform special inspections – the same role as for the Phase 1 construction. They will be an integral part of inspection team, and provide technical advice as needed.

Shawn Brennan, PE, CCM

Our proposed Construction Manager, Shawn Brennan, has over 22 years of experience involving the construction of wastewater and stormwater infrastructure in urban areas. He has overseen the construction of numerous heavy civil and mechanical projects, ranging from large CSO pumping station facilities for major cities to smaller municipal stormwater management improvements. He served as Resident Engineer for several major recent wastewater and stormwater improvement projects for New York City, including the Gowanus Pump Station and the Paerdegat CSO Facility. He brings his wealth of knowledge from these projects and in-depth construction expertise to the proposed H6/H7 LTCP Phase 2 project.

22+
Years
of CM
Experience

1 Paerdegat Combined Sewer Overflow (CSO) Facility

Shawn served as Deputy Resident Engineer for construction of this major facility, which will receive CSO from a drainage area of approximately 6,000 acres. The project encompassed large CSO facilities, several new buildings, and an Ecology Park, along with new Con Edison electrical service and 2000-kW emergency generator system, extensive street and sidewalk restoration, and pump-around to maintain plant flows throughout the project. Construction also involved deep foundation excavation and slurry walls for four 5-million gallon CSO retention tanks. Shawn oversaw construction of the concrete influent channels and headworks with 20 mgd in-line storage capacity, new structures, and all electrical, mechanical and process equipment. He managed 20 field office staff/inspectors; coordinated operating bureau, construction operations, and various city/federal agencies; tracked permits; ensured Environmental Health and Safety compliance, and oversaw shop drawing reviews. The facility was placed into service several months ahead of the City's consent order schedule.

2 Newtown Creek WRRF

Shawn served as Design Engineer for this multi-billion dollar final upgrade of the 310-mgd Newtown Creek WRRF over a 15-year period, from July 1998 through July 2013. The project entailed implementation of improvements to the activated sludge and secondary treatment process, enabling NYCDEP to achieve treatment goals at significant savings vs. conventional treatment. Throughout construction, the plant was maintained in continuous service to treat the influent sewage. The CM team was responsible for project administration, construction scheduling, change order control, contract audits, microfilming, constructability reviews, and resident inspection. The CM team successfully coordinated field activities involving 24 prime contractors and their subcontractors for multiple concurrent projects at the site, and oversaw 60 technical and inspection personnel. The Hazen team was instrumental in the management of all field operations, seamlessly maintaining workflow while minimizing impacts on plant operations and the surrounding community.

3 Gowanus Pump Station

Shawn served as Resident Engineer for construction of this $150 million CSO pumping station, which has improved water quality in the Gowanus Canal, and has enabled the NYCDEP to consistently meet NYSDEC water quality standards in the canal. The project involved reconstruction of the Gowanus Canal Flushing Tunnel and building and pumping stations; replacement of mile-long sewer force main within the flushing tunnel; reconstruction of the CSO Screenings area; and construction of new electrical service building and wastewater pumping station. The project spanned multiple distinct work areas throughout downtown Brooklyn, with the major facility components incorporated on a tightly congested site. As Resident Engineer, Shawn was responsible for construction QA/QC and inspections; he also oversaw the administration of contractor payment requisitions, prepared and negotiated change orders, tracked project schedule and performance, managed 15 field office staff/inspectors, conducted risk assessment and management, and chaired stakeholder's meetings.

All three projects won prestigious industry awards

ACEC American Council of Engineering Companies

CMAA Metro New York Chapter

ACEC New York
American Council of Engineering Companies of New York

1 **The Paerdegat CSO Facility won an ACEC-NY Diamond Award in 2012 for Engineering Excellence. Hazen designed and oversaw construction for the CSO Facility, which has reduced CSO discharges and significantly improved water quality in the Paerdegat Basin.**

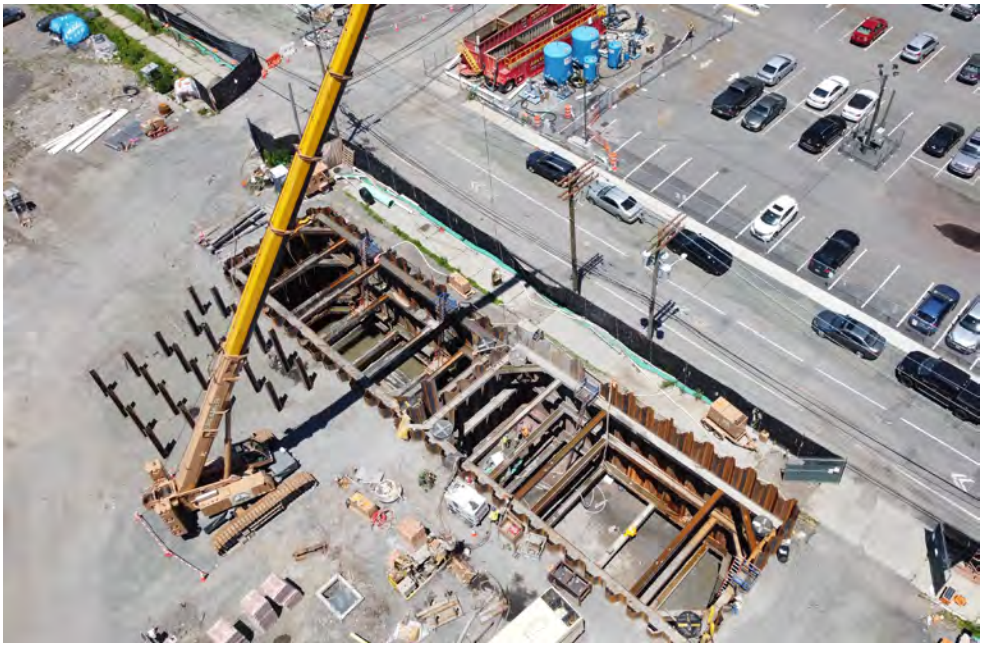
2 **Newtown Creek WRRF won ACEC National Recognition in 2014, having also been awarded ACEC-NY Diamond Award that year. The Hazen team applied innovative design and construction techniques and a groundbreaking method of wastewater treatment that pushes the limits of the activated sludge process. This has enabled NYCDEP to achieve its secondary treatment goals almost two years ahead of schedule.**

3 **Gowanus PS was bestowed a CMAA Project of the Year - Large Infrastructure in 2017. Hazen provided construction management services to help the NYCDEP implement this project and consistently meet NYSDEC water quality standards in the Gowanus Canal.**

Hazen

3. Firm Experience

Hazen's position as an industry leader is built on over 70 years of work directly relevant to the scope outlined in NHSA's RFP. From the smallest study to billion-dollar plant upgrades, we approach each assignment with the same focus and commitment to providing robust, cost-effective solutions. Our commitment to providing our clients with solutions that exceed their expectations is highlighted in the projects exhibited on the following pages. Our successful execution of each assignment is a result of a company-wide culture that focuses on safety, providing on-time delivery, and ensuring that we provide the highest quality results **re**gardless of project scope or complexity.



As noted in Section 2: Project Team, **Hazen has been working with NHSA on the construction of the H6/H7 LTCP Phase 1 facilities, overseeing installation of the Pump Station and other new buildings, as well as a portion of the new force main. Our team members have been and are currently assisting NHSA with both construction administration and resident inspection services, coordinating closely with Authority personnel as well as those of the Design Engineer and Contractor performing the construction work.** (See photo above.)

In addition to demonstrating their commitment to and performance on the Phase 1 project, our proposed team members have significantly contributed to the success of the following five projects, which are similar in nature and challenges to those of the proposed project. These projects are just a small representative sample of our depth of experience in construction management of wastewater and stormwater facilities, and include:

- Gowanus Pump Station and Force Main CM
- Newtown Creek WWRF Upgrade CM
- Manhattan Pump Station Upgrade CM
- Bay Park Sewage Treatment Plant
- Paerdegat Pump Station and CSO Facility CM

Project descriptions for each of these projects are provided on the following pages.

Gowanus Pump Station and Force Main: CM Services

Brooklyn, NY

Hazen is assisted NYCDEP with several important goals and objectives in this award-winning project, which includes water quality improvements in the Gowanus Canal via upgrading the Flushing Tunnel, CSO screening system, and wastewater pumping stations on a very congested site.

This project, which met all consent order dates despite impacts from Hurricane Sandy as well as significant differing site conditions and Department of Buildings intervention due to a compromised building foundation, will enable NYCDEP to consistently meet NYS Department of Environmental Conservation water quality standards in the Gowanus Canal. The project spanned multiple distinct work areas throughout downtown Brooklyn with the major facility components incorporated on a tightly congested site. For this project, Hazen provided procurement assistance, construction management and resident engineering inspection, quality control, environmental health and safety oversight, project controls and schedule management, community outreach, and startup/commissioning services.

The new Flushing Tunnel pumping system was upgraded from an average flow of 154 mgd to 215 mgd, with a peak of 252 mgd at high tide. The 12-foot diameter tunnel was shutdown and dewatered for the duration of the construction to facilitate the installation of the new 33-inch force main within the tunnel, several access structures, and tunnel brick.

Project Profile

Construction Completion: 2015

Total Fee: $21M

Project Cost: $170M

Key Elements

- Wastewater pumping station
- Force main upgrade
- Heavy subsurface and street work

Core Project Team

Eamon Kelly, CCM
Project Director

Shawn Brennan, PE, CCM
Acting Resident Engineer

Mark Supplee, PE
Technical Advisor

Rose Jesse, CPE
Cost Estimating Manager

Jared Lewis, CSP
Environmental Health and Safety Manager

Reference

Mr. Kevin Clarke, PE
Portfolio Manager
NYCDEP, BEDC
96-05 Horace Harding Expressway
Corona, NY 11368
(718) 595-5995

1010-576

Hazen

repairs. In addition to inspection of the tunnel work itself, our team oversaw the coordination and relocation of utilities (water, sewer, telecom, gas, and electrical), ensured that the contractor complied with all NYC DOT of Construction Mitigation and Coordination stipulations, posted the requisite signage, maintained pedestrian safety, and secured the Maintenance and Protection of Traffic (MPT) at the end of each work day. The CM also conducted regular meetings with the impacted neighborhoods to ensure their concerns regarding noise, vibrations, working hours, access to driveways, garbage collection and snow removal, were addressed.

Proactive CM Approach

To meet the consent order dates on this project, the CM developed innovative solutions to project issues including:

Temporary Control Panel to Overcome Hurricane Sandy Delays

- The City committed to reactivate the Flushing Tunnel by December 31, 2013. The CM developed an expedited action plan that involved both the Design Engineer and the Contractors with the goal of reactivating the Flushing Tunnel by December 31, 2013.
- This plan involved the use of a temporary local control panel that utilized the same Flushing Tunnel pump controls, which could be installed independent of the main system control panel. This allowed the Flushing Tunnel pumps to be powered and connected to the level sensor flow controls and operated while the main system control panel conduit and wire were still being installed.
- The Flushing Tunnel was successfully placed into operation on December 18, 2013, two weeks ahead of the City's December 31, 2013 deadline.

Monitoring Plans to Address Subsurface Conditions

- The contract-specified support of excavation required the installation of driven sheet piles and jet grout plug columns. There were inherent risks with this type of installation including settlement of adjacent structures or utilities, differing subsurface conditions, and subsurface obstructions.
- The CM implemented a number of innovative solutions to address these risks, which included installation of an automated motorized total station monitoring system to monitor for signs of movement providing the CM and NYCDEP on demand data, and implementation of a survey crew to provide real-time survey monitoring of the feeder ductbank that provided all power to the Gowanus interim oxygen transfer system and wastewater pump station.

Our proactive CM approach to geotechnical concerns and significant areas of work proved beneficial. The CM, in conjunction with the contractor, developed a contingency plan to temporarily control groundwater intrusion into the flushing tunnel in the event of leakage during rehabilitation. When leakage into the tunnel did occur during demolition work, the rapid implementation of this plan resulted in quicker control of groundwater infiltration which prevented subsidence of the surrounding soil, allowing time for a permanent repair and maintaining the structural integrity of all surrounding structures. Our understanding of bringing in qualified staff for the changing CM tasks, as the project progressed, and providing extensive training to all staff are carried forward into all ongoing and future CM work.

Manhattan Pump Station

New York, NY

Hazen developed and implemented resiliency upgrades, including influent screen and pump replacement, to keep New York City's largest wastewater pump station operational during a six-year construction period.

Hazen led facility planning, design, and DSDC services to upgrade the Manhattan Pump Station (MPS), which screens and pumps approximately 60% of Newtown Creek WRRF's influent flow. As the City's largest continuously operating wastewater screening and pumping station, MPS has an average flow of 150 mgd and a firm peak capacity of 400 mgd. The $236 million construction project commenced in 2005 and was substantially completed in October 2011 to meet the consent order.

The original facility included five pumps, each rated for 100 mgd. However, electrical capacity limitations only permitted operation of up to three pumps for a firm capacity of 300 mgd. The upgrade included five vertical centrifugal pumps, each rated for 100 mgd. Hazen sequenced the construction schedule so the new electrical system and third pump came on-line nearly concurrently to maintain the 300 mgd pumping capacity required during construction. This allowed NYCDEP to release the fourth and fifth existing pumps so the Contractor could simultane-ously replace them to expedite completion of the pump and electrical upgrades, increasing the firm capacity to 400 mgd. Hazen's innovative design and construction solutions were instrumental to meeting the substantial completion consent order milestone.

Project Profile

Planning and Design: 2001-2004
Construction NTP: January 2005

Substantial Completion:
October 2011

Planning, Design and DSDC Fee:
$23.5M

Construction Cost: $270M

Key Elements

- Pump station
- Tight site / urban area
- Resiliency
- Construction sequencing

Core Project Team

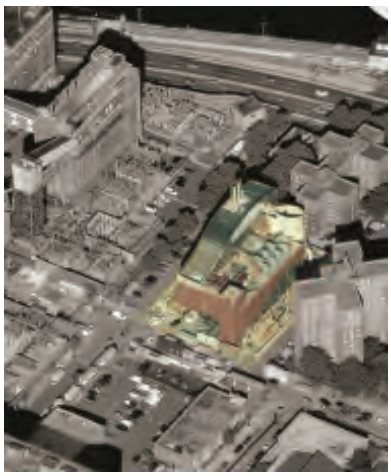
Michael Stallone, AIA, NCARB, LEED AP
Lead Architect

Shawn Brennan, PE, CCM
Design Engineer

Reference

Kenneth Moriarty, PE
Executive Director, Wastewater Capital Program
NYCDEP
96-05 Horace Harding Expy.
Corona, New York 11368
(718) 595-6238

An ACEC award winning design and construction, the pump station is located on a tight site, near the East River, with community facilities and residences nearby.



1010-576

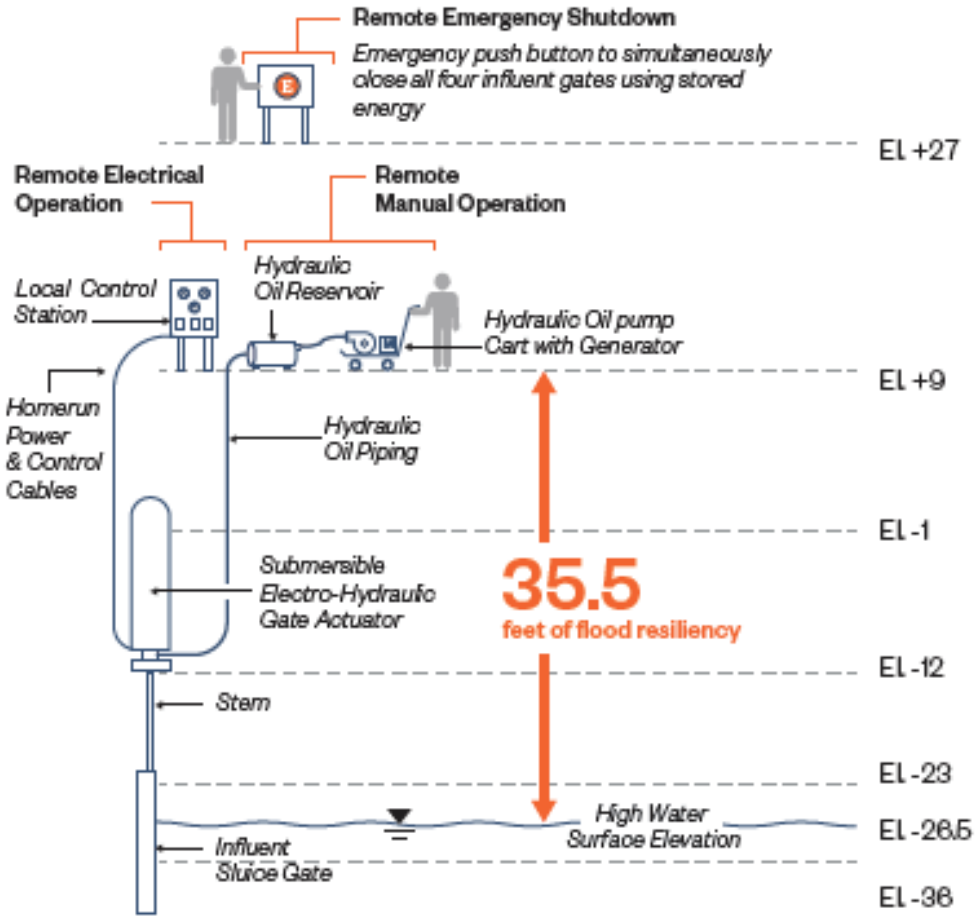
Hazen

Manhattan Pump Station Resiliency Features

In 2012, after the sluice gate actuators were installed, NYCDEP issued new actuator design guidelines to improve safety and accessibility. Hazen worked closely with DEP and the Contractor to modify the actuators to provide 36 feet of resiliency against flooding by adding:

- Remote electric operation from control panels at grade
- Manual operation with a hydraulic cart at grade in the event of a power failure
- An emergency pushbutton in the control room to simultaneously close all four influent sluice gates using stored energy under emergency conditions to protect the station and personnel

To provide resilient EHS systems, an aspirating gas detection system was installed to monitor gas levels throughout the screenings facilities. The gas detection panel was installed above the design flood elevation (DFE) and sample tubing was extended to continuously draw and monitor samples from the lower elevations. Similarly, a new linear heat detection system was installed for fire detection. Both of these critical life safety systems have demonstrated their resiliency by withstanding subsequent flooding events.



Newtown Creek WRRF Upgrade: CM Services

Brooklyn, NY

Hazen assisted the NYCDEP in implementing several major improvement programs over the past 20 years at the 310-mgd Newtown Creek Wastewater Resource Recovery Facility (WRRF), including the design and construction of an $8.5-billion plant improvement program to meet secondary treatment standards and increase wet weather capacity, as required by a NYS consent order. We served as Construction Manager/Resident Engineer over the three-year construction period. Our efforts resulted in the new facilities being placed in service well ahead of consent decree deadlines.

- Several dozen Hazen construction management (CM) experts were on site - from project inception - to help coordinate 46 prime contractors for 13 major projects, all at a very tight site with little space available for staging and laydown.
- Our team oversaw and inspected multiple construction projects simultaneously in all areas of the plant. They tracked progress, identified schedule variances, and implemented recovery measures, reviewed change orders and progress payments, and served as NYCDEP's "eyes and ears" on a daily basis.

Facing Challenges and Implementing Solutions

Site constraints made coordination of the numerous simultaneous construction contracts a very complex endeavor. Our CM team implemented several effective cost-cutting and space-saving solutions, resulting in a program that met treatment goals almost two years ahead of schedule.

- Contracts were carefully staged and coordinated to ensure continuous plant compliance with interim permit limits during construction, from mid-1996 through the end of 2015.

Project Profile

Construction Completion: 2011

Project Cost:$4.5B

Key Elements

- Constrained site
- Tight schedule
- Complex project

Core Project Team

Shawn Brennan, PE, CCM
Design Engineer

George Markou, PE
Electrical DSDC

Reference

Kenneth Moriarty
Executive Director, WWCP
NYCDEP, BEDC
kmoriarty@dep.nyc.gov
(718) 595-6238

1010-576

Hazen

- Bar Screens were on the critical path for the completion of construction for the Manhattan Pump Station, which conveys flows to the Newtown Creek WRRF. When Hurricanes Rita and Katrina destroyed the Bar Screen factory in Texas, Hazen worked with the contractors to establish a workaround plan, allowing NYCDEP to maintain plant operations and meet the established consent order deadlines.
- As issues affecting project schedule arose, we convened meetings with NYCDEP and contractors to quickly resolve them and avoid/minimize any schedule impacts.

Completion of Work and Project Closeout

We assisted the City in overseeing all testing, startup and commissioning work, and operator training, as well as project closeout activities – punchlists, as-built drawing preparation, and O&M Manual submittal. As a result of our efforts as Construction Manager, all work was completed on time, meeting over 30 consent order milestones.

Scope of Construction Work

- Main Sewer Pumps
- Diversion and Other Flow Control Structures
- Primary and Secondary Screens, Grit Equipment
- Electrical Substations/Transformers
- Motor Control Centers
- Primary, Secondary and Final Settling Tanks
- RAS/WAS Systems
- Odor Control
- SCADA systems
- Digesters and Thickening Centrifuges
- HVAC Systems
- Reconstruction of the Manhattan Pump Station
- New Blower Building
- Upgrade of Electrical Facilities
- New Visitor Center
- New Boiler Building and Hot Water Distribution System
- New Disinfection Facilities
- Nature Walk

Bay Park Sewage Treatment Plant: PM Services

East Rockaway, NY

Hazen is uniquely positioned with the resources to provide innovative solutions that ensure efficiency and long-term reliability.

Hazen, in a joint venture, is leading program management efforts for emergency and long-term repairs as well as future storm resilience solutions for the Bay Park Sewage Treatment Plant (STP). This 70-mgd STP was severely flooded by the storm surge of Hurricane Sandy, resulting in a complete shutdown of operations at the facility for several weeks. After providing emergency construction management in the immediate aftermath of the storm, Hazen was formally selected to provide program management services to facilitate the delivery of a wide variety of additional projects required to fully repair and harden the plant against future storm events.

The project included management of multiple concurrent construction contracts under our program management contract. Consisting of over 20 construction contracts it will return the plant and supporting pump stations to full capacity while protecting assets from future flooding. Facilities being reconstructed or improved include raw and effluent pump stations, grit handling and screenings facilities, final settling tanks, electrical substations, and the storm hardening of some 40 off-site pump stations.

We have self-performed CM services on a number of in-plant projects, and oversee third-party CM firms on others. Our onsite team has managed changing project types and workload as the program has moved from initial

Project Profile

Time Period: 2013-Ongoing

Construction Value: $830M

PM Contract Value: $96M

Key Elements

- Pump stations
- Environmental health and safety
- Resiliency
- Urban area

Core Project Team

Eamon Kelly, CCM
Program Management Lead

Jared Lewis, CSP
Environmental Health and Safety Manager

George Markou, PE
Electrical Lead

James Soroush
Project Controls

Reference

Vincent Falkowski, PE, CCM
Deputy Commissioner for Environmental Programs
Nassau County DPW
3340 Merrick Road
Wantagh, NY 11793
(516) 571-7515

Hazen

emergency response toward final completion of plant improvement and resiliency projects. We are currently managing 8 individual construction projects under the program with a construction value of over $75 million.

Coordination With Plant Operations (MOPO)

This $800 million program consists of over 20 construction contracts ranging from $660,000 to $97 million, many being implemented concurrently, that will return the plant and supporting pump stations to full capacity while protecting assets from future flooding. This is being accomplished while maintaining full plant capacity and treatment capabilities. As such, many construction program elements in each of the contracts must be closely coordinated with the plant operator to maintain the schedule without impacting plant performance. Many of the individual projects are interrelated and cannot be completed or started without support from other projects or existing systems. Most critical is the need to coordinate the plant's electrical infrastructure upgrade with ongoing construction projects to ensure sufficient power is available to support the additional processes and equipment. Our team leads this effort, coordinating with the 3rd party design and CM firms as well as the plant's operator to bring new equipment on line without jeopardizing the continued reliable operation of the plant.

Emergency flood response

New electrical substation

South stormwater pump station

Financial Management

Hazen is also responsible for cost control and monitoring of the overall program budget, including compliance with grant limits and requirements. Currently the mitigation phase of the program is projected to be completed below the funding limits, allowing additional plant improvement projects to be accomplished. Acting as the owners' agent, we lead efforts in the review and approval of all program related change order and payment requests and review and approve all program related payments for the County prior to payment. We also assist third-party CM firms in the negotiation of change orders and are responsible for presenting all change order requests to the County Legislature for approval prior to registration.

Safety

In order to manage safety on such a robust capital program we have assigned a full-time safety officer to oversee the safety practices of the individual contractors and to assure that all work is performed in the safest manner. One of the initiatives established by Hazen includes monthly contractor and third-party CM safety coordination meetings. These meetings helped set expectations for third party CM firms regarding requirement to monitor contractor safety performance, minimum contractor requirements, coordination of overlapping activities between projects, as well as serving as a tool to disseminate lessons learned from accidents/incidents or regulatory updates across the program.

Paerdegat Pump Station and CSO Facility: CM Services

Brooklyn, NY

CSO discharges had long been a major source of pollution entering Paerdegat Basin, often causing violations of state water quality standards for dissolved oxygen, coliform, floatables, and settleable solids. CSO sediments built up in the head of the Basin, lowered dissolved oxygen levels causing nuisance odors in the surrounding community. Hazen was retained by NYCDEP to serve as the Construction Manager (CM) throughout all four construction phases of this $404M project. Project elements included the construction, start up, and commissioning of a new CSO facility that was designed to contain flows during storm events and significantly reduce pollutant loadings by minimizing CSO discharges.

The overall Paerdegat Pump Station project encompassed significant CSO facilities, a collections facility building, and Ecology Park. Work included a pump around system to maintain flow, installation of a new Con Edison electrical service, a new 2000kW emergency generator system, significant street and sidewalk restoration, and maintenance and protection of traffic.

Project Highlights:

- Significant coordination required with Con Edison to ensure that the new electrical service was available in time for equipment start up.
- Hazen oversaw the deepest cutoff slurry wall in the area – 200 feet deep and 1,900 feet long – in a densely populated area where the groundwater table was only 10 to 15 feet below grade.

Project Profile

Construction Completion: 2016

Total Fee: $24M

Project Cost: $404M

Key Elements

- Deep excavations and street work
- Installation of new pumping systems, bar screens, and grinders

Core Project Team

Eamon Kelly, CCM
Project Director

Shawn Brennan, PE, CCM
Deputy Resident Engineer

William Gettings, PE, BCEE, MBA
Project Manager

George Markou, PE
Technical Advisor, Con Edison Liaison

Michael Stallone, AIA, NCARB, LEED AP
Lead Architect

Kevin Ward, CEP, CERP
Permitting DSDC

Daniel Sheeran, PE
Sitework

Norman Bartley, PE
HVAC

Reference

Roy Tysvaer, PE
Portfolio Manager
NYCDEP, BEDC
Horace Harding Expressway
Corona, NY 11368

1010-576

Hazen

Phases and Scope of Work:
Phase I: New Influent Channels

- Rehabilitation of existing pump station
- Redirected six channels for regulators and new outfall structure with a total storage capacity of 10 mg

Phase II: Foundations and Structures

- Four underground retention tanks with a 20-mg off-line capacity
- Cutoff wall to reduce dewatering
- Dredging mouth of Basin to provide barge access for removal of soils and materials delivery

Phase III: CSO Facilities

- Aboveground structures
- Screening building with six mechanical bar screens
- Odor control building housing five carbon vessels and associated HVAC systems
- Collection facility building with maintenance garage, crew quarters and administrative office space
- Pump back buildings: Installed three 18 mgd CSO pumps, two 4.3 mgd grit pumps, and a bridge crane system for maintenance in addition to the replacement of new pumps
- 2000kW 277/480V standby emergency generator system
- Con Edison transformer vault and associated network protectors
- Restoration of streets, maintenance and protection of traffic (MPT)

Phase IV: Natural Area Park and Wetland Restoration

- New natural area and Ecology Park, which included a boardwalk, benches, and a storm water recovery system with sprinkler and shoreline wetland restoration totaling 53 acres
- New sidewalk, curbing, lighting, and decorative fencing

- Facility improvements had to be constructed while maintaining operation of existing pumping facilities. In addition, the complex construction needed to be executed within a tight construction site.
- Extensive excavation and dewatering was required to install subsurface facilities. The high groundwater table posed significant challenges. We evaluated alternative construction methods for foundation excavation and dewatering, and conducted a test-pumping program to identify designs that minimized the lowering of groundwater levels and impact on the area. A 200-foot deep slurry wall was ultimately constructed as a coffer dam to minimize groundwater dewatering and mitigate dewatering the surrounding neighborhood during construction.

Project Completion and Successes

- The project was completed ahead of the NYSDEC order on consent deadline.
- Community outreach efforts helped DEP maintain its good neighbor reputation with the public.
- Peripheral areas surrounding the site were not impacted from site dewatering.

4. Scope of Work

The scope of services presented in the RFP are reproduced below and on the following pages, to confirm that Hazen will perform all the required activities unless specifically identified as the responsibility of the Design Engineer. Please note that we have annotated the scope of services below in **orange bold**, to highlight some of the assumptions we have made regarding various tasks and activities.

4.1 Bid Phase Services

Hazen will assist NHSA during the bid phase as described below. Per the schedule in the RFP, this work is expected to be completed within 90 days of publication of the Advertisement for Bids.

- Coordinate with the Authority and prepare a recommendation to advertise the project to the Board.
- Prepare a bid schedule and submit same to NJDEP.
- Prepare the bid advertisement for publication. The Authority will advertise the project and pay any advertisement costs.
- Notify the following State agencies of the advertisement: NJDEP Municipal Finance and Construction Element, NJDEP Office of Equal Opportunity and Public Contract Assistance, and the New Jersey Department of the Treasury Office of Equal Opportunity and Public Contract Assistance.
- Reproduce the Bid Documents and forward the documents to the Authority's Purchasing Agent for distribution. Coordinate the posting of electronic copies of the Bid Document with the Purchasing Agent. Provide copies of Contract Documents for use by the Authority and the Authority's Operations Firm, Assume that the following paper copies will be required:
  - 10 sets of specifications;
  - 10 sets of full-size contract drawings; and
  - 10 sets of half-size contract drawings.
- Assume the Design Engineer will make available PDF copies of the construction documents for the Engineer's use. **The documents made available by the Design Engineer will be ready for reproduction, and no additional editing or formatting will be required.**
- Coordinate with Authority's Purchasing Agent regarding the Plan Holders list and their contact information.
- Keep a record of all inquiries for information requested by, and clarifications made to Plan Holders during the Bid Phase. **We assume that all inquiries will be made to the attention of Dr. Richard Wolff, Executive Director, and forwarded to Hazen by same.**
- Prepare all clarifications and up to a maximum of two addenda as required to clarify or modify the Contract Documents.
- Distribute up to a maximum of two addenda to all plan holders via fax or overnight mail and keep copies of all distribution records. **Addenda will be forwarded by email return receipt.**
- Seek and gain approval by NJDEP for all project addenda prior to issuance to Plan Holders.
- Conduct and attend a pre-bid conference and site tour for Plan Holders and prospective bidders. Perform all coordination required for the pre-bid conference, including but not limited to; NJDEP

notification, stakeholder notification, utility notification, City notification and property owner notification. **We assume that all public outreach regarding the proposed work is being performed by other NHSA representatives. Hazen can provide public outreach as an additional service upon request.**

- Prepare minutes of the pre-bid conference.
- Conduct the public bid opening at the offices of the Authority. Engineer will provide two attendees at the bid opening.
- Evaluate the bids and provide a detailed written recommendation of award to the Authority.
- Present the bid report to the Authority Board at two separate meetings.
- Prepare and submit all bid correspondence to the NJDEP Municipal Finance and Construction Element, seeking their authorization to award the project.
- Prepare a notice to the State Comptroller in accordance with NJSA 52:15C-10, advising them of a contract award.

4.2 Construction Phase Services

Hazen will perform services during construction as described below.

Task 1 - Contract Execution and Pre-Construction Meeting

- Prepare and distribute all necessary paperwork required for execution of the Contract between the Contractor and the Authority. **We assume that NHSA's legal counsel and insurance consultant will advise NHSA upon the acceptability of the bidder's insurance, and its construction bonds.**
- Provide five paper copies of the Contract for execution.
- Schedule and conduct a pre-construction conference with the Authority, Contractor, NJDEP, and key stakeholders.
- Prepare minutes of the pre-construction conference and distribute same.
- Prepare and issue a Notice to Proceed to the Contractor.

Task 2 – Resident Engineering/Inspection

Hazen will provide a Full Time Inspector to perform the services described below:

- Observe the on-site construction work when the Contractor's field activities are in progress to ensure that the work is being completed in accordance with the Contract Documents. This includes, but is not limited to, the removal of excavated materials, installation of support of excavation systems, construction dewatering, pile installations, concrete placement, precast structure placement, conveyance pipe installation, pump installation, and mechanical and HVAC work. **We anticipate that the Contractor will work a standard 1-shift, 8-hour day, except for overnight activities described as follows.**
- Coordinate with the Contractor and City of Hoboken regarding street closures and maintenance of traffic control and pedestrian flow.
- Maintain project records, diaries, daily inspection reports/pictures, and documents.
- Conduct inspections and develop punchlists.

- Witness and record the results of all functional and performance tests.
- Respond to public complaints, including contacting complainants, determining solutions; prepare letters, etc. in accordance with the Authority's policies, which requires timely action by the Engineer.

We understand that the Authority will provide office space at the Adams Street WWTP and internet service for Hazen's Field Staff during the course of the work. This facility can be used for project meetings. Hazen will provide office supplies, computer equipment, etc. to the onsite staff.

Task 3 - Authority's Agent During Construction

Hazen will perform the following:

- Aid the NHSA's General Contractor to obtain construction permits from the City of Hoboken.
- Act as Authority's Agent regarding Contractor's compliance with the contract documents.
- Oversight of the Contractor's compliance with NJDEP's program for Socially and Economically Disadvantaged individuals and generate, review, and submit all required forms to NJDEP for this program.
- Act as Authority's Agent regarding the Authority's and Contractor's compliance with New Jersey Department of Treasury Office of Equal Opportunity and Public Contract Assistance requirements. Generate, review and submit all required forms to the NJDEP for this program.
- Obtain and keep on file all records related to the NJDEP's program for Socially and Economically Disadvantaged individuals and the New Jersey Department of the Treasury Office of Equal Opportunity and Public Contract Assistance requirements.
- Obtain and keep on file all Certified Payroll records obtained from the Contractor.
- Obtain and keep on file the Initial Project Workforce Report and the Monthly Manning Reports.
- Submit two paper copies of the Contractor's complete payment application and two additional paper copies of the Engineer's invoice to provide Services During Construction to the Authority's designated representative on a monthly basis.
- Administer the American Iron and Steel provisions of the contract documents.
- One year after the final acceptance of the Work, prepare, execute and submit to the Authority and NJDEP a Certificate of Performance on NJDEP form CCS-006.
- Administer the permits and approvals obtained for the project; including, but not limited to: NJDEP Flood Hazard Area Permit, HEP – Soil Erosion and Sediment Control certificate, Construction Permits, and Zoning certificate.

Task 4 - Construction Administration

Hazen will provide administration of the Contract and represent the Authority in observing the Contractor's compliance with the Contract Documents. Hazen will perform the following:

- Review the Contractor's Health and Safety plan.
- Coordinate with the various utility companies.
- Meet with the Contractor's representatives and the Authority to assist in implementing the construction progress. Hazen will act as initial interpreter of the requirements of the Contract

Documents and judge the acceptability of the work and make decisions on all claims of the Authority and Contractor relating to the acceptability of the work or the interpretation of the requirements of the Contract Documents pertaining to the execution and progress of the work. **We assume that face-to-face meetings required for this task will occur as part of the monthly progress meeting. Additional meetings will be held via conference calls and final determinations will be documented via letters.**

- Conduct monthly progress meetings with the Contractor to review and record the progress of the work, and to resolve any problems with the project. Conduct additional meetings as necessary to resolve conflicts or specific problems. Hazen's Project Manager will chair all meetings and submit minutes of meetings to all attendees. **Our proposed budget is based on 12 monthly progress meetings for this task.**
- Provide construction specialists to observe the on-site construction work as necessary for specialized work.
- Review, certify and process the Contractor's payment requests on a monthly basis. Prepare a payment application cover letter, engineer's summary payment certificate, Authority payment voucher and submit with recommendations and supporting documentation to the Authority for processing. **Our proposed budget assumes 12 payment requests for the project.**
- Submit a monthly progress report prepared in accordance with the Authority's format outlining all pertinent activities during the month, including but not limited to work performed, milestones, problems, pending change orders and claims, and time delays. The monthly progress report will contain a financial summary of the Construction contract as well as a financial summary of the Engineer's contract with the Authority. Submit the monthly progress report to the Authority one week prior to the Board meeting. **Our proposed budget assumes 12 progress reports will be required for the project.**
- Attend the Authority's Facility Service Committee meetings on an as needed basis to discuss problems with the project, present construction change orders and answer questions from the Authority on the project. **Our proposed budget assumes 4 meetings for this task.**
- Provide Construction Management supervision and control of the resident inspection team to ensure quality control and assist with all problems.
- Provide technical interpretations of the Contract Documents and evaluate requested deviations from the approved design or specifications per the Division of Work responsibilities for the Engineer and Design Engineer.
- Maintain project records, diaries and documents.
- Respond to all Contractor Requests for Information (RFIs) and provide written responses to the Contractor. **Our proposed budget is based upon 40 RFIs for this task.**
- Provide technical review of shop drawings, diagrams, illustrations, catalog data, schedules and samples, the results of tests and inspections, and other data which the Contractor is required to submit, per Table 2 of the RFP, for responsibility of work for the Engineer and Design Engineer. Submitted material will be reviewed for general conformance with the design concept of the project and general compliance with the information given in the Contract Documents. Such review is not intended as an approval of the submittals if they deviate from the Contract Documents or contain errors, omissions, and inconsistencies, nor is it intended to relieve the Contractor of his full responsibility for Contract performance, nor is the review intended to ensure or guarantee lack of inconsistencies, errors, and/or omissions between the submittals and

the Contract requirements. **Our proposed budget assumes 46 submittal reviews for this task, this includes all initial and subsequent reviews.**

- Prepare and administer all necessary Field Orders.
- Prepare and administer all necessary Work Change Directives.
- Assist in negotiating, with the Contractor, the scope and cost of a reasonable and customary number of change orders. Prepare such change orders as may be required and submit them to the Authority for approval. Following approval by the Authority and the Contractor, administer same with the Contractor. Submit all change orders to the NJDEP Municipal Finance and Construction Element for their review and approval**. Our proposed budget is based upon 20 PCOs and 4 change orders.**
- Administer all allowance items in the Contract.
- Meet with representatives of the Authority and appropriate regulatory agencies when requested and necessary for consultation or conferences in regard to construction of the project. **Our proposed budget assumes that most of the aforementioned consultations will be handled via conference/skype calls. All other business regarding regulatory agency issues during construction are anticipated to be discussed as an agenda item at regular monthly progress meetings.**
- Recommend the acceptability of the work and issue a Certificate of Substantial Completion along with a punch-list upon the Contractor achieving the project milestones.
- Prepare routine letters, memorandum, reports, change orders and miscellaneous paperwork as directed by the Authority for signature by the Authority.
- Respond to public complaints, including contacting complainants, determining solutions, prepare letters, etc. in accordance with the Authority's policies and procedures, which requires timely action by the Engineer.
- Make a final review of the construction to determine if the Work has been completed in conformance with the intent of the Contract Documents. Facilitate a final inspection of the Work by the Contractor, Authority, NJDEP and other appropriate regulatory agencies so they may make the final observation of the construction.
- Upon final acceptance of the Work, prepare and submit a Certification to the New Jersey State Department of Environmental Protection certifying that the project has been completed in accordance with the intent of the Contract Documents. Hazen will use NJDEP form WQM-005 to certify the work.
- Review record drawings provided by the Contractor of changes to the work. **Our proposed budget assumes that the Design Engineer will provide CAD drawings for the Contractor's use and that the Contractor will provide all of their markups on the same drawings.**
- Prepare a final set of record drawings in electronic format.
- Provide appropriate technical assistance during start-up, functional testing, and performance testing. Verify operation of individual valves, common equipment and individual systems and subsystems.
- Facilitate training of the Authority's Operations Firm by the equipment manufacturer's representatives. Provide training to the Authority's Operations Firm on the operation of the entire facility as a system. **Our proposed budget assumes that all training will occur during the 12-month construction period and will be observed by a Hazen representative.**

- Prepare a project-specific Operations and Maintenance Manual to include an overall process operational description, ancillary system operational descriptions, and individual maintenance needs. **Our proposed budget assumes that the Design Engineer will provide copies of all functional descriptions for the facility instrumentation and control system for Hazen's use in preparing the O&M Manual.**
- Assist in negotiating final payment for construction and submit a final letter report upon which final settlement and termination of the Construction Contract can be based. Document proceedings of all final settlement negotiations and record basis for final payment.
- Prior to recommending release of Final Payment, ensure the Contractor has furnished all administrative items required by the Contract Documents, and verify there are no outstanding liens, or claims.
- Prepare and submit all required close-out documentation required for each permit which has been, or will be, necessary for the project. These include but are not limited to; local construction permits. **Our proposed budget assumes that the Contractor will provide documentation of all inspections performed by permitting agencies and will provide copies of all approvals from the same agencies.**
- Provide the Authority with a complete electronic file in PDF format of all documents that they prepared on behalf of the Authority that is included in this RFP.

Task 5 – Special Inspections

Hazen will administer and oversee the special inspections and special testing of the Contractor's work, as required by the NJUCC, the City of Hoboken Construction Code Office, the prevailing adopted IBC, and as may also be identified in the contract documents. Engineer shall have the proper certifications and licenses to perform the special inspections, or Engineer shall subcontract the work. If work is subcontracted, the subcontractor shall possess a New Jersey Public Works Contractor Registration and New Jersey Business Registration. Subcontractor shall have a minimum of two inspectors on staff qualified by DCA for each category of work.

It is our understanding that subcontracted special inspection services entities need only possess a New Jersey Business Registration and that the New Jersey Public Works Contractor Registration is not required.

All special inspection work shall be performed under the direct supervision of a Professional Engineer licensed in the State of New Jersey. Special inspection reports shall be signed and sealed by a Professional Engineer licensed in the State of New Jersey. **Our proposed Technical Advisor, Robert Knotz, PE (French & Parello Associates) is licensed in New Jersey; he will sign and seal the special inspection reports.**

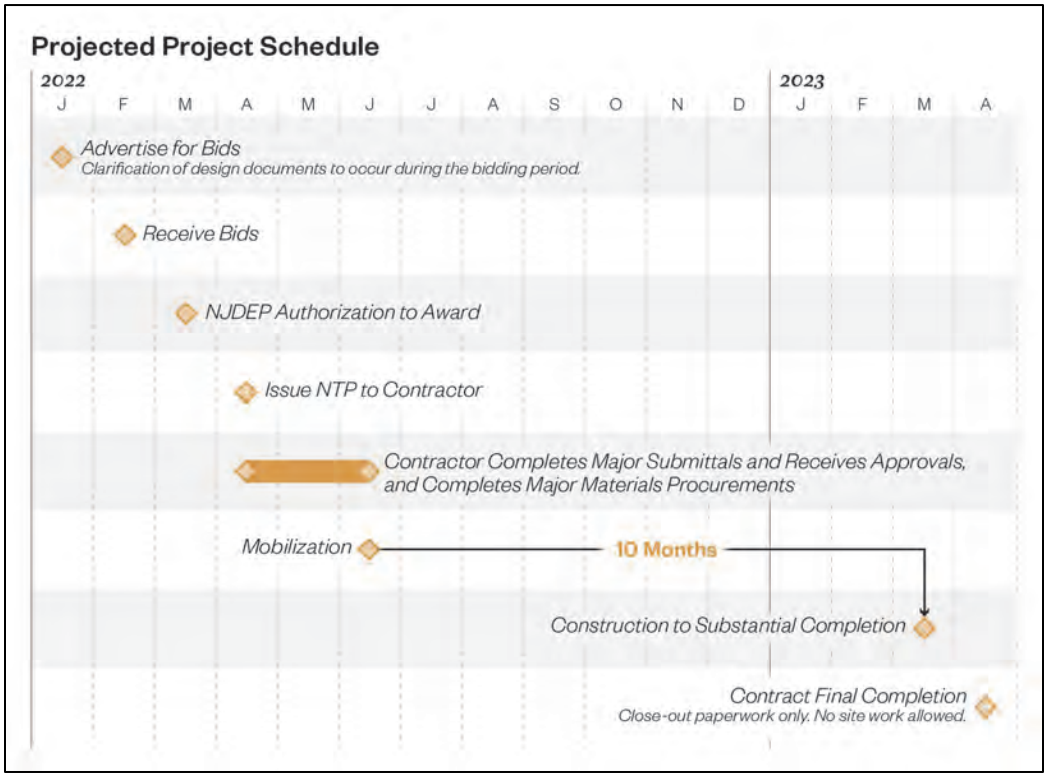
Additionally, based on our review of the Phase II project plans and specifications, we know that Owner-supplied structural special inspections governed by IBC Sections 1704 and 1705 are required for the project. The statement of special inspections within the project plans include periodic inspection of anchors and dowels post-installed in hardened reinforced concrete members, periodic inspection of anchors post-installed in masonry, periodic identification of aluminum markings to confirm ASTM

standards and verification of aluminum member manufacture's certified mill test reports. We estimate that 80 hours will be required to complete these required Owner-supplied structural special inspections. This includes 16 four-hour site visits for periodic inspection of anchors and dowels post-installed in hardened reinforced concrete members and masonry, as well as 6 two-hour site visits for periodic identification of aluminum markings to confirm ASTM standards and verification of aluminum member manufacture's certified mill test reports. Four hours have been included for office engineering and coordination of the structural special inspections.

We acknowledge that significant amounts of reinforced concrete for utility improvements are proposed for the Phase II project; however, the non-building-related utility work will not fall under required IBC Owner-supplied structural inspection responsibilities. For this reason, we expect that the Owner-supplied structural special inspection level of effort for Phase II of the project will be significantly less than that of Phase I. Our estimated hours for this task, as shown in **Section 6: Cost Proposal**, reflects this expectation.

5. Project Schedule

The graphic below depicts the project schedule, following the timetable stated in the RFP.



As the above schedule shows, we will maximize the amount of work conducted in parallel to minimize the project duration and ensure permit compliance. As required by the RFP, we have also developed a Detailed Project Schedule, as presented in Appendix B. The detailed schedule depicts the anticipated sequence of construction, and demonstrates our in-depth understanding of the project and experience working in the project area.

The notes below apply to both the above and the detailed project schedules:

- The Critical Path to Project Completion is driven by activities relating to the force main installation work on both Adams Street and 15th Street.
- To meet the schedule outlined in the RFP, the Contractor will have to mobilize onto Adams Street in early June 2022. The Contractor will therefore need all submittal approvals and permits relating to this work in advance, reducing the timeframe for procurement.
- If additional permitting is required for mobilization, such as NJDEP Water Allocation Temporary Dewatering permit, potential impacts to the proposed schedule would have to be evaluated.
- Procurement of long lead equipment and materials such as the Generator, Pumps, and storm drain manholes and inlets will be critical to the schedule. Delays in the procurement of these items will impact Project Completion.

6. Cost Proposal

Table 1 (below) provides the cost proposal, prepared in accordance with the requirements of the RFP. The table presents a breakdown of our estimated maximum, not-to-exceed fee by task, along with anticipated reimbursable expenses (Other Direct Costs, or ODCs) and subcontracted costs.

The task breakdown demonstrates that the total hours estimated for each task fall within the respective ranges cited in the RFP. The total of **3,306** labor hours projected for completion of all work also falls within the range presented in the RFP.

Our total estimated fee for this project is **$657,357**. This includes all labor and expenses, as well as estimated salary rate increases over the approximately two-year project duration. It also includes the allowance for services by the Design Engineer.

Table 1: Proposer's Bid Format: Breakdown of Cost and Labor Hours by Task

Phase and Task Description		Proposed Labor Hours	Proposed Cost, $
Bid Phase Services			
Bid Services – Labor		180	32,456
Bid Services – Other Direct Costs and Printing			5,500
Construction Phase Services			
Task 1	Contract Execution and Pre-Construction Meeting	58	11,184
Task 2	Resident Engineering/Inspection	1,880	341,519
Task 3	Authority's Agent During Construction	148	29,058
Task 4	Construction Administration	960	172,511
	Total Other Direct Costs		**3,330**
Task 5	Special Inspections (Subcontracted Services)	80	11,800
	Total, Bid Services + Tasks 1-5	**3,306**	**607,357***
Design Engineering Services – Allowance			**50,000**
	Project Total Cost		**$657,357***

*Rounded to the nearest dollar

Work will be invoiced on a monthly basis, based on actual time expended. Reimbursable expenses will be billed at cost, with no administrative markup.

Additional cost information is provided in **Appendix C: Cost Spreadsheet**. which indicates the billable hours for each of our project team members, along with ODCs, for the bid period services and each of the five construction period tasks outlined in the RFP and described in Section 4 of this proposal.

Appendix A: Resumes

Eamon Kelly, CCM

Vice President

Mr. Kelly heads the Construction Management group for the Northeast region. He also serves as the main point of contact with clients and, in turn, manages all internal project management/ construction management resources for Hazen.

Education

BE, Mechanical Engineering, Manhattan College, 1983

Certification/License

Certified Construction Manager (CCM)

Areas of Expertise

- Project/program management
- Construction management
- Resident engineering inspection
- Cost and scheduling
- Estimating and purchasing

Experience

- 37 total years
- 24 years with Hazen

Professional Activities

Construction Management Association of America

New Jersey Water Environment Association

New York Water Environment Association

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ

Project Director for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Paerdegat Pump Station and CSO Facility: CM Services, New York City Department of Environmental Protection (NYCDEP), Brooklyn, NY

Project Director. Performed cost and schedule reviews, processed RFIs, coordinated with NYDOT and NYC Parks, performed inspections of excavation, formwork, concrete placement, installation of reinforcement, backfill, roadways, and landscaping. Negotiated and coordinated RFI/CO submissions from the general contractor relating to area of responsibility. Participated in design and construction analysis. Ensured high quality standards while maintaining mandated scheduled deadlines. Monitored daily work activities to maintain safety standards in accordance with NYCDEP, NYC Building Codes, and OSHA standards.

Bay Park Sewage Treatment Plant: PM Services, Nassau County DPW, East Rockaway, NY

Program Management Lead for Nassau County in the Superstorm Sandy Recovery Program at the Bay Park facility. Involved in the establishment of the construction management (CM) oversight program, including establishment of the CM budget, and development of CM standards as well as standards for QA/QC and third-party RFPs.

Hazen

Gowanus Pump Station and Force Main: CM Services, NYCDEP, Brooklyn, NY
Project Director serving as primary point of contact for both client and construction contracts on consent driven project involving complete upgrade of existing Gowanus Pump Station, including a new sewage pump station, new electrical service, new pumping system for flushing of environmentally-sensitive Gowanus Canal, and new CSO improvements including installation of hydraulically actuated bending weirs.

Tarrytown Pump Station and Force Main, Westchester County, NY
Project Director for CM services. The project included installation of screening equipment, 48" force main, and emergency generator. Replacement included four pump station effluent pumps.

Main Sewage Pump Controls and Piping Replacements, NYCDEP, Queens, NY
Project Director serving as primary point of contact for both client and construction contracts on complicated project affecting the Bowery Bay Wastewater Resource Recovery Facility's continued ability to meet permit requirements. Led initial CM emergency response to leakage in the facility's primary forcemain.

Storm Sewer and Water Main in 183rd Street, New York City Department of Design and Construction (NYCDDC), Queens, NY
Project Executive serving as the point of contact for staffing, budget, and quality control issues as related to the performance of the construction management team for this storm sewer and water main project at 183rd Street in Queens. Provided insight and direction on critical project related issues.

Installation of Water Mains and Appurtenances, NYCDDC, Queens, NY
Project Executive. Hazen is providing Construction Management Services for the installation of distribution water mains of various sizes, as well as required appurtenances, throughout Long Island City and Astoria, Queens. Services include inspection, QA/QC, cost control, site safety, and serving as liaison between NYC agencies and utilities. Interaction with the community, especially the many school districts located throughout the busy project area, is an important project component.

East Region Projects, NYCDEP, New York, NY
Project Director providing structure and framework for the firm's approach to management of assignments from the City's Bureau of Wastewater Treatment. Through selective assignment of personnel, careful management of schedules, and diligent oversight of costs, only 42% of the contract budget has been expended over the 75% of contract duration with no adverse effects on coordination with City operating staff, safety, or quality control.

William Gettings, PE, MBA, BCEE

Associate Vice President

Mr. Gettings has 30 years of experience in water infrastructure. His projects have included planning, budgeting, design, technical evaluation, operations support, regulatory compliance, scheduling, and construction management.

Education

MBA, Montclair State University, 2004

BS, Civil Engineering, University of Rhode Island, 1991

Certification/License

Professional Engineer: NJ, NY, VA

Board Certified Environmental Engineer

Areas of Expertise

- Wastewater conveyance, treatment, and discharge
- Project and construction scheduling
- Energy conservation

Experience

- 30 total years
- 12 years with Hazen

Professional Activities

New Jersey Association of Environmental Authorities

- Education and Conference Committee Chair

Water Environment Federation

American Water Works Association

- Technical Program Committee

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority (NHSA), Hoboken, NJ
Project Manager for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

18th Street CSO Outfall, NHSA, Weehawken, NJ
Project Director. Directed construction and final testing of the new 18th Street outfall warning light system by providing coordination between the contractor and Authority operations. Successfully negotiated contractor's final change order with compensatory damages.

Adams Street Wastewater Treatment Plant Site Improvements, NHSA, Hoboken, NJ
Project Manager for construction services. Directed the design and construction of Hoboken's first rain gardens. Designed the front wall replacement and collaborated with Authority's Engineer on new sitting area, which eliminated the cost of removing former underground pile cap.

Paerdegat Pump Station and CSO Facility: CM Services, New York City Department of Environmental Protection (NYCDEP), Brooklyn, NY
Project Manager for NYCDEP's 30-mgd Paerdegat Basin Water Quality Facility. Finalized the design of seven tide gates, forty-eight flushing gates, four 15-mgd pump-back pumps, and five 1.4-mgd grit pump-back pumps. Responsibilities also included the design upgrade of the Paerdegat Pumping Station, which encompassed an influent channel grinder rated at over 57-mgd and a two-ton bridge crane.

Hazen

Meadowmere and Warnerville Pumping Station and Dual Force Mains, NYCDEP, Queens, NY

Project Manager. Responsible for design and permitting of the Warnerville pumping station, which was designed to complement the area's aviation heritage (the facility is situated nearby JFK International Airport). The design included forward thinking structural/architectural, mechanical and elevated electrical and I&C to provide resiliency due to the facility's proximity to Jamaica Bay. Managed hydraulic modeling to confirm design of the gravity sewers in Meadowmere and Warnerville, as well as dual force main for several potential operating scenarios. Trenchless technologies were employed for sewer and force main construction, minimizing traffic impacts to this highly traveled area of Rockaway Blvd. Microtunneling was used for 1,800 feet of 12-inch-diameter gravity sewer, to connect Meadowmere and Warnerville, and horizontal directional drilling was used for 5,000 feet of dual force main. Additionally, an innovative technique known as helical micropiling was used for narrow roadways, where space was very limited, and in areas with poor soils. The use of trenchless technologies vs. traditional open-cut construction resulted in cost savings, as well as diminished impact to area residents. The project was completed within budget and on schedule. The project won an ACEC New York award and has been operating successfully.

Port Richmond Combined Sewer Throttling Facility, NYCDEP, Staten Island, NY

Project Manager responsible for the final design of NYCDEP's Port Richmond East Interceptor Throttling Facility. The project involved constructing an underground structure over an existing 84-inch combined sewer. Design plans and specifications included a pre-fabricated gate, a Trident electro-hydraulic actuator with associated controls to the Port Richmond facility. The design also involved the relocation of utilities and significant traffic planning with the New York City DOT.

Wastewater Pumping Station Reconstruction, NYCDEP, New York, NY

Project Manager for an engineering services contract for the reconstruction of three wastewater pumping stations. Managed the design team, including architectural, structural, mechanical, electrical, HVAC, instrumentation, and geotechnical engineers. Project reconstruction tasks included environmental review, facility planning, pre-final design services, and construction services for these stations that ranged in size from 1.0 mgd to 35 mgd.

Shawn Brennan, PE, CCM

Senior Associate

Mr. Brennan specializes in the construction management of complex heavy civil and mechanical projects as well as large pumping station facilities in excess of $100 million.

Education

BS, Civil and Environmental Engineering, Villanova University, 1999

Certification/License

Professional Engineer: NY

Certified Construction Manager (CCM)

DDC Watermain Inspection Certification

ICC Certified Structural Steel and Bolting Special Inspector

OSHA 30 Hour Construction Training

FEMA IS-00100.b Incident Command Training

Areas of Expertise

- Construction management
- Wastewater pumping station upgrades
- Resident engineering inspection
- Cost and scheduling
- Risk management

Experience

- 22 total years
- 17 years with Hazen

Professional Activities

American Water Works Association

Water Environment Federation

American Society of Civil Engineers

Construction Management Association of America

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ
Resident Engineer/Construction Manager. Overseeing construction administration and resident inspection for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Gowanus Pump Station and Force Main: CM Services, New York City Department of Environmental Protection (NYCDEP), Brooklyn, NY
Resident Engineer for construction of $170 million CSO pumping station. Work includes the reconstruction of the Gowanus Canal Flushing Tunnel and building and pumping stations; replacement of mile-long sewer force main within the flushing tunnel; reconstruction of the CSO Screenings area; and construction of new electrical service building and wastewater pumping station. Duties include resident engineering inspection, administration of contractor/construction management (CM) payment requisitions, change order preparation/negotiations, schedule review/implementation, coordination of monthly progress meetings with client and contractors, management of 15 field office staff/inspectors, quality assurance/quality control, risk assessment and management, and chairing stakeholders' meetings.

Newtown Creek WRRF Upgrade: CM Services, NYCDEP, Brooklyn, NY
Design Engineer for the installation of five new 105-mgd wastewater pumps, sequenced to occur while keeping the existing wastewater resource recovery facility (WRRF) plant online. Modifications to main sewage pumping station and corresponding work included: hydraulic calculations, pump design and selection, mechanical systems design for facility, demolition of existing facility, and civil and site design.

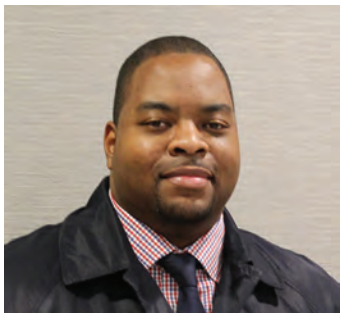
Hazen

Manhattan Pump Station, NYCDEP, New York, NY
Design Engineer for the upgrades to the pumping station from 300 mgd to 400 mgd. Involved with installation of five new 100-mgd vertical turbine pumping units while keeping the existing plant main wastewater pumps online. Work included: hydraulic calculations, headworks design, pump design and selection, mechanical systems design, and demolition activities. Coordinated with operating bureau and construction operations and various City/federal agencies. Also serving as Community Liaison with the local community and advising NYCDEP with permit tracking/compliance, environmental health and safety compliance, and shop drawing controls.

Paerdegat Pump Station and CSO Facility: CM Services, NYCDEP, Brooklyn, NY
Deputy Resident Engineer for $360 million CSO facility. Work includes deep foundation excavation and slurry wall construction for four 5-million-gallon CSO retention tanks, three process buildings, crew/administrative building, and community board building. Also includes construction of concrete influent channels and headworks with 20 mgd in-line storage capacity, construction of process buildings, crew facilities and community building, including all electrical, mechanical and process equipment. Also involves 30,000 CY of basin dredging and construction of 40 acres of Natural Area Park. Duties included administration of contractor/CM payment requisitions, change order preparation/negotiations, schedule review/implementation, coordination/monthly progress meetings with client and contractors, management of 20 field office staff/inspectors, quality assurance/quality control, coordination between operating bureau and construction operations, coordination between construction and various City/federal agencies, permit tracking/compliance, environmental health and safety compliance, and shop drawing controls.

Westchester Creek CSO Modifications, NYCDEP, Bronx, NY
Resident Engineer responsible for oversight of the construction of CSO modifications within the City street right-of-way at two very busy intersections on Eastchester Road in the Bronx. Project involves excavation and expansion of two existing CSO overflow chambers at Morris Park Avenue and Waters Place. Work includes deep excavations and support of excavations, reinforced concrete construction, installation of FRP weirs, utility relocations, backfilling, site restoration, and paving.

North River WRRF, NYCDEP, Manhattan, NY
Construction Manager. Coordinated initial emergency response CM effort on behalf of NYCDEP. Managed installation and startup of temporary pumping system to provide sufficient pumping capacity to prevent wet weather bypass. Coordinated field inspection and assessment efforts for critical plant and life safety systems.



Jared Lewis, CSP

Associate

Mr. Lewis is an expert in identifying and mitigating operational hazards, while maintaining operational efficiency. He has close to 20 years of safety experience developing, implementing, and monitoring risk-based programs at many wastewater facilities.

Education

BS, Business Management, St. John's University, 2006

Certification/License

Certified Safety Professional (CSP)

Associate Safety Professional

OSHA 500 Authorized Trainer for Construction

FDNY Certified Construction Site Fire Safety Manager

Areas of Expertise

- Safety inspection
- Code compliance
- Strategic planning/analysis
- Records management
- Risk management
- Budget analysis
- Corporate governance
- Site security
- Plant operations

Experience

- 18 total years
- 5 years with Hazen

Professional Activities

American Society of Safety Professionals

Board of Certified Safety Professionals

H6/H7Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ

Environmental Health and Safety Manager for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Bay Park Sewage Treatment Plant: PM Services, Nassau County DPW, East Rockaway, NY

Environmental Health and Safety Manager. Provided safety oversight, conducted periodic site visits, and accident/incident follow up, as needed. Hazen is providing program management and preliminary design services for the 70-mgd Bay Park facility. Design and construction management (CM) services included a phased total plant upgrade for this facility, which serves a population of 590,000 within a 70-square mile service area. This facility was crippled by Superstorm Sandy in October 2012. Hazen in a joint venture Arcadis provided emergency construction management in the immediate aftermath of the storm. In response to a consent order requirement, Hazen also conducted an asset management assessment of the facility.

Gowanus Pump Station and Force Main: CM Services, New York City Department of Environmental Protection (NYCDEP), Brooklyn, NY

Environmental Health and Safety Manager. Provided oversight and conducted regular site visits assisting with accident/incident investigations and other project related safety needs. Hazen provided CM services to assist NYCDEP with several important goals and objectives, including the improvement of water quality in the Gowanus Canal by upgrading the

Flushing Tunnel, CSO screening system, and wastewater pumping stations along with associated facilities such as new hydraulically actuated bending weirs and wastewater force main.

Croton Falls Pump Station, NYCDEP, Carmel, NY
Environmental Health and Safety Manager. Conducted regular site visits and assisted in EHS Management Plan implementation and other project related safety needs. Hazen is providing CM services to assist the NYCDEP with several important goals and objectives, including demolition of the existing hydraulically driven pump and turbine system adjacent to the Croton Falls Dam and construction of the new electrically powered 150-mgd pumping system.

Bowery Bay Main Sewage Pump Controls and Piping Replacements, NYCDEP, New York, NY
Environmental Health and Safety Officer. The project initially began when Hazen led the emergency team that responded following the observed leakage from one of the facility's three main sewage force mains. A full rupture of the force main or a collapse of the adjacent area would have rendered the facility incapable of pumping sewage resulting in a dry weather bypass. Immediately, the team directed contractor resources to provide bypass pumping systems around the damaged force main and in supplement to existing facility pumping systems so that full treatment could be maintained. The team subsequently worked around the clock for weeks, to implement, modify, and improve the bypass pumping system and to address changing process needs resulting from the modifications required to address the emergency.

Westchester Creek CSO Regulator Modifications, NYCDEP, Bronx, NY
Environmental Health and Safety Officer. Providing periodic site visits as well as contractor JHA and program development assistance. Hazen is providing CM services for the for the modifications to two regulators located on Eastchester Road in the Borough of the Bronx, as part of NYCDEP's long term CSO Control Plan. Work is being performed is in one of the busiest thoroughfares in the borough. Construction of the regulator modifications will require an extensive amount of subsurface and foundation work. Project includes excavation and backfill of structures and trenches, sheeting and dewatering as required, protection of existing utilities relocation of BWSO 12-inch water mains, and sanitary manhole and piping. Management of the Maintenance and Protection of Traffic Plan (MPT) and coordination with the DOT is paramount to the success of this project.

Mark Supplee, PE

Senior Associate

Mr. Supplee has over 20 years of experience focused on interdisciplinary engineering management of water/wastewater/CSO/ stormwater treatment process and conveyance related design, construction, and operations.

Education

MS, Engineering, John Hopkins University, 2005

BS, Engineering, Rensselaer Polytechnic Institute, 2000

Certification/License

Professional Engineer: NY, PA, MA

Areas of Expertise

- Project, design, and construction management
- Design and construction of water, wastewater, CSO, stormwater, and reuse facilities
- Pump stations
- Solids processing

Experience

- 21 total years
- 2 years with Hazen

Professional Activities

New York Water Environment Association

- Board chairperson

Hydraulic Institute

- Committee member

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ
Construction Management Design Liaison. Constructing stormwater collections system, grit and TSS removal process, equalization tank, and 30-mgd pumping station beneath the City of Hoboken's Northwest Resiliency Park. Working on the construction management and DSDC team, serving as a design liaison responsible for: constructability/biddability reviews, coordination between the engineer of record, the authority, the Contractor, and other site stakeholders. Also responsible for investigating/evaluating the technical merits of contractor claims and providing QAQC of change orders and job site communications. This work is a follow-on to the preceding design of this facility wherein served as design manager, leading the preparation of the basis of design report of a new stormwater collections system, grit and TSS removal process, equalization tank, and 30-mgd wet pit submersible type pumping station to be constructed beneath the City of Hoboken's Northwest Resiliency Park.

Gowanus Pump Station and Force Main: CM Services, New York City Department of Environmental Protection (NYCDEP), Brooklyn, NY
Technical Advisor on an assessment for the constructed Gowanus Tunnel Flushing System. The Gowanus Tunnel Flushing System, designed by others, conveys brackish water from the East River's Buttermilk Channel to the Gowanus Canal in order to flush the canal for canal water quality improvement purposes. This nominal 300 mgd-formed suction inlet submersible axial flow type pump station conveys tidally influenced flows. Assessments included determination of as constructed flows and investigation of saltwater corrosion on pump materials of construction.

Tarrytown Pump Station and Force Main Replacement, Westchester County, NY
Technical Advisor. Provided technical oversight and internal advisory services to the design and construction administration teams pertinent to past changes to the pump rotating mechanism that were made pursuant to variances in the factory acceptance test performance data. Reviewed and advised regarding pump and system vibration data and maintenance

Hazen

service records. Developed recommendation to subcontract MSI to assist with independent assessment of pump vibrations via enhanced motion imagery, modal analysis, fast Fourier transform full spectrum vibration analysis, instrumented hammer impact testing for the purpose of determining pump-machine natural frequencies, and finite element analysis to vet proposed corrective measures.

Bowery Bay Main Sewage Pump No. 4 Vibration Study, NYCDEP, Queens, NY

Technical Advisor for a vibration assessment of the Bowery Bay High Level Main Sewage Pump No. 4 which is a replacement "in kind" wound rotor motor resistor bank variable speed drive pump that experiences undesirable levels of vibration at higher speeds. Guided a team of specialists, including pumping, hydraulics, and vibration technicians in the development and execution of a field vibration study to diagnose the root cause of vibrations in this pump and to propose potential mitigative measures to resolve the condition.

Conner Street Pump Station Upgrade, NYCDEP, New York, NY

Mechanical Discipline Lead for the design of the Conor Street, 154th Street, and 233rd Street Pump Stations located in the Queens and Bronx. Providing direction, technical supervision, and oversight for the facility planning and Basis Of Design Report (BODR) development for a replacement confined style sanitary/combined pumping station with an approximate 20-mgd capacity via dry pit submersible pumps; a 3-mgd structural conversion from dry pit to wet pit submersible baffle wall style combined sewage station; and replacement circular 2-mgd stormwater pump station designed to maintain a Bronx River Highway underpass in a dry state, via conveyance of separated storm flows, and discharge to an infiltration basin with an overflow to the Bronx River.

Southeast Wastewater Treatment Plant Effluent Pumping Station, Philadelphia Water Department, PA

Technical Advisor on the design of a 600-mgd treated effluent pumping station for the Southeast Wastewater Treatment Plant, where future projected flow increases and rising tidally influenced receiving water body led to the determination that the current gravity flow effluent will not serve near term and future plant conveyance needs.

Experience Prior to Hazen

Wastewater Resiliency Plan, Climate Risk Assessment and Adaptation Study, NYCDEP, NY

Project Engineer focused on the pumping stations associated with this study to assess flood risk posed to DEP's 14 wastewater treatment plants and 96 pumping stations, in the face of future climate change. Conducted a triple bottom-line analysis and developed adaptation recommendations to minimize flood risk and prolonged service interruption, while balancing feasibility, resiliency, and cost.

Kevin Haney, PE, BCEE

Associate

Mr. Haney has over 35 years of experience performing design, specification, installation and startup of a wide range of facilities. He is also well-versed in cost estimating for new construction and facility upgrades.

Education

MS, Mechanical Engineering, Fairleigh Dickinson University, 1987

BS, Mechanical Engineering, Fairleigh Dickinson University, 1985

Certification/License

Professional Engineer: NJ

Board Certified Environmental Engineer (BCEE)

Areas of Expertise

- Mechanical equipment and systems
- Construction management
- Water and wastewater treatment
- Startup and commissioning
- Instrumentation control, and electrical equipment and systems
- Constructability reviews

Experience

- 36 total years
- 5 years with Hazen

Professional Activities

Water Environment Federation

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ

ESDC Manager. Providing engineering services for design and construction (ESDC) for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Original Sayreville Pump Station Rehabilitation, Middlesex County Utilities Authority, Sayreville, NJ

ESDC Manager for $8.7 million rehabilitation work to the original Sayreville Pump Station. The project involved a complete evaluation of alternatives for the rehabilitating the screening and pumping equipment, as well as mechanical, electrical, instrument and control systems for the pump station, originally constructed in 1955, and abandoned since the early 1980s. Upon completion of the evaluation and recommendations to the Authority, the final design included installation of new mechanical bar screens; sluice gate rehabilitations; installation of new pump suction, discharge and control valves; installation of all new piping inside the station; installation of new heating and ventilation systems and ductwork; refurbishment of an existing carbon adsorber and FRP fan odor control system; new pump control panels; new variable speed drives to replace the liquid rheostat variable-speed controllers; new process instrumentation; and a programmable logic controller based SCADA system. Work on this project included design and preparation of specifications and drawings for new equipment, instrumentation, heating and ventilation, electrical and controls. Work also included preparation of engineers' estimates for the cost of construction and preparation of design revisions as requested by the Authority during the construction period.

Hazen

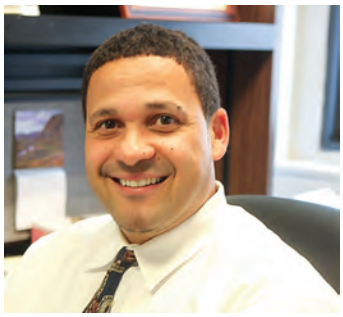
Foxborough Force Main Phase 1 Improvements, Old Bridge Municipal Utilities Authority (OBMUA), NJ
ESDC Manager. The project consisted of the installation of approximately 800 LF of 8-inch-high density polyethylene sewage force main by directional drilling, installation of approximately 530 linear feet of 8-inch ductile iron pipe force main and fittings by trenching methods; installation of four manholes and appurtenances including valves, bypass connection, magnetic flow meter and clean-out equipment. Provided construction services including owner and contractor coordination, shop drawing review, change order review, project oversight, construction observation, pay estimate review, and punch list preparation.

CSO Facility Plumbing Design, New York City Department of Design and Construction, Westchester County, NY
Project Engineer. Responsible for the plumbing design for two CSO facilities in Westchester, NY. The work included sizing domestic water and sanitary sewer lines for the above ground Control Building and design of an ejector station to pump the sanitary and odor control system blowdown wastes to a nearby sanitary manhole.

Farrington Road Pump Station Bypass Connection, OBMUA, NJ
Project Manager. Responsible for the upgrade of an existing force main bypass connection at the Authority's Farrington Road Pump Station. The work included design and specification for piping upgrades and for the installation of a pre-cast concrete chamber over the bypass connection. Additional responsibilities included providing assistance during bidding, project oversight, shop drawing review, contractor and Owner coordination during pump station bypass operations, pay estimate review, construction observation, and punch list preparation.

Force Main Repairs, Township of Ocean Sewerage Authority, Oakhurst, NJ
Construction Manager. Provided construction oversight for replacement of approximately 300 LF each of 18" and 20" HDPE force main piping by directional drilling method. This work was performed to replace previous sections of directionally drilled piping that had been damaged by other work performed in the vicinity. The work also included observation of cut-in and tie-in work to existing HDPE and ductile iron force main piping.

Shadyside Pump Station, OBMUA, NJ
Project Engineer. Responsible for the design of heating and ventilation, electrical, and controls for the Shadyside Pump Station. This new pump station included a pre-cast wet well with wet-well-mounted pumps and controls, and a Control Building to house a SCADA panel and an emergency generator. Assisted with the processing of RFIs and PCOs and provided shop drawing reviews during construction.



Norman Bartley, PE

Senior Associate

Mr. Bartley serves as Hazen's HVAC Department Manager and has over 30 years of experience. His responsibilities include HVAC system design for large wastewater and drinking water treatment facilities.

Education

BS, Mechanical Engineering, University of North Carolina at Charlotte, 1988

Certification/License

Professional Engineer: NY, NC, FL, MA, GA, TX, VA, NH

Areas of Expertise

- HVAC
- Power generation
- Fire protection
- Mechanical system design

Experience

- 32 total years
- 13 years with Hazen

Professional Activities

The American Society of Heating, Refrigerating and Air-Conditioning Engineers

National Fire Protection Association

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ
HVAC Engineer for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Paerdegat Pump Station and CSO Facility: CM Services, New York City Department of Environmental Protection (NYCDEP), Brooklyn, NY
HVAC Lead. Provided engineering support and approval of system testing and balancing of the odor control system. Tasks include development of HVAC diagrams, drafting process and instrumentation diagrams, finalizing equipment sizing, reviewing submittals, and handling RFI responses. The plant uses horizontal activated carbon vessels. The total airflow is 106,000 cfm for the odor control system.

Gowanus Pump Station and Force Main: CM Services, NYCDEP, Brooklyn, NY
HVAC Engineer of Record for the design for the Gowanus CSO facility, which included the 60,000-cfm odor control system. The odor control system utilizes activated carbon media vessels. The design also includes the ventilation systems, both supply and exhaust, for the various classified and unclassified areas. The heating system utilized two 100% fire tube boiler systems.

Green Stormwater Infrastructure - Venice Island, Philadelphia Water Department, PA
HVAC Lead. Hazen was tasked with designing a 3.75-MG CSO detention facility on Venice Island, in the Manayunk section of the city. Responsible for the design of the HVAC and odor control systems for the Manayunk

Hazen

CSO facility. This included HVAC for the CSO tanks, blower area, and electrical rooms. The design included compliance with NFPA 820 ventilation requirements including hazardous exhaust systems.

Decant Facility Upgrades, Passaic Valley Sewerage Commission, Newark, NJ

HVAC Lead in the upgrade and re-design of the decant sludge treatment facility. This design includes providing new ventilation and cooling in the stair tower building between the six 88-foot diameter decant tanks. The design also includes an upgrade to the odor control system that serves the six decant tanks. Negative pressure is maintained in the tanks to capture the odors and new fiberglass reinforced piping conveys the air to regenerative gas-fired afterburners to treat and exhaust the air via a stack

Haskell Street Wastewater Treatment Plant Upgrades, El Paso Water, TX

HVAC Lead. Performed a condition assessment and smoke tests to determine the efficacy of the HVAC supply and exhaust systems for the headworks facility and sludge storage tanks covers. The evaluation included carbon and wet scrubber odor control systems. The carbon system served the sludge tank metal covers and the wet scrubbers served the headworks facility. The report provided detail design recommendations for the HVAC supply, exhaust, and carbon systems. The report recommended the use of bio-trickling filters to replace the wet scrubbers.

North River WRRF, NYCDEP, New York, NY

HVAC Lead. Led a team of HVAC engineers and inspectors during the emergency post-fire response and recovery effort at this wastewater resource recovery facility (WRRF). Identified and prioritized corrective actions for HVAC Contractors. Worked with NYCDEP plant personnel to access the damage and proposed short-term fixes.

Bowery Bay WRRF, NYCDEP, Queens, NY

HVAC Lead. Completed final designs and performance testing of a new hot water boiler system for this 150-mgd facility. Installed a heat sink to allow full load boiler testing. Modified the fuel oil delivery system to meet fuel oil quantity requirements. Also modified the draft control and the combustion air systems as needed to obtain the necessary permits from the NYC Department of Buildings and NYCDEP's Division of Air Resources for emission compliance

Rose Jesse, CPE

Senior Associate

Ms. Jesse has over two decades of experience, with proven success in the areas of cost estimating, budgeting, scheduling, document control, and project controls. She oversees Hazen's estimating team, providing transparent, defensible cost estimates by utilizing real data on cost and knowledge of construction.

Education

BS, Civil Engineering Technology, Rochester Institute of Technology, 1996

Training/Certification

American Society of Professional Estimators (CPE)

OSHA 10 & 30 hour Construction Outreach

Risk Management (AACE)

Cost and Schedule Control (AACE)

Earned Value Management (AACE)

Areas of Expertise

- Construction cost estimating
- Constructability review
- Risk assessment
- Construction sequencing/ scheduling

Experience

- 24 total years
- 6 years with Hazen

Professional Affiliations

Project Management Institute

Association for the Advancement of Cost Engineering International

National Association of Women in Construction

New York Water Environment Association

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ
Cost Estimating Manager for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Gowanus Pump Station and Force Main: CM Services, New York City Department of Environmental Protection, Brooklyn, NY
Cost Estimating Manager. Prepared preliminary cost estimates for micro-tunnelling to support wastewater treatment systems. Performed review of all cost estimates associated with CSO facilities, including demolition, construction, and restoration.

Madbury Backwash Tank and Pump Station, City of Portsmouth, NH
Cost Estimator. The project for the Madbury Water Treatment Plant was a multidisciplinary design initiative. In addition to the pump station, the entire plant was constructed under the City of Portsmouth's sustainability program. The project received LEED silver certification in 2011.

East Side Coastal Resiliency, New York City Department of Design and Construction (NYCDDC), New York, NY
Cost Estimator. Provided technical guidance and best practice input on the construction, scheduling, and sequence of operations for the installation of combined sewer facilities and flood management appurtenances.

Hazen

Stormwater Modelling and Design Implementation Services, City of Fort Lauderdale, FL
Cost Estimating Manager. Prepared cost estimates for various drainage, pump station, and sea wall installations in several neighborhoods including Southeast Isles and Edgewood for the City of Fort Lauderdale. The program is focused on resilient adaptation to climate change and the inclusion of innovative and regional solutions. The work includes data collection; hydraulic/hydrologic stormwater modeling; and design, permitting, and construction services for stormwater capital improvement projects resulting from the revised stormwater master plan.

Piscataway Wastewater Treatment Plant Pump Station Upgrades, WSSC Water, Accokeek, MD
Cost Estimator. Prepared cost estimate for the construction of a new 60-mgd raw wastewater pump station and force main.

Eltingville Pump Station, NYCDDC, Staten Island, NY
Cost Estimator. Conducted a thorough review of pump station estimate prepared in Sage Estimating software (Timberline). The project includes temporary bypass station, bypass pumping, and replacement of main sewer line.

High and Low Pressure Reclaimed Final Effluent Pump Systems Upgrades, DC Water, Washington DC
Cost Estimator. Provided estimating for the upgrade of the effluent pumping system. Work included replacement of vertical turbine pumps, motors and VFDs, HVAC systems, instrumentation and electrical modifications. Value of the project is estimated to be approximately $10M.

Decant Facility Upgrades, Passaic Valley Sewerage Commission, Newark, NJ
Cost Estimator for the condition assessment and conceptual design for repairs and modifications to the existing sludge storage, off-loading, and pumping facilities as well as the Zimpro biosolids handling system's decant facility. Project included a multi-discipline site inspection and analysis of existing data.

Nut Island Headworks Odor Control, HVAC, and Energy Management Systems Upgrades, Massachusetts Water Resources Authority, Quincy, MA
Cost Estimator for removal, replacement and upgrades to the existing odor control wet scrubber system, removal and replacement of all HVAC equipment and duct work, and replacement of the building management system at the Nut Island Headworks Facility.

Victor Levin, PE

Senior Associate

Mr. Levin has 40 years of specialized experience in hydraulic and process study and design of water and wastewater treatment systems. He has participated in all aspects of the design of treatment plants, including pump stations, backwash water, and sediments processing.

Education

MS, Environmental Engineering, Manhattan College, 1996

BS, Civil Engineering, Institute of Civil Engineering, Russia, 1981

Certification/License

Professional Engineer: NY

Board Certified Environmental Engineer (BCEE)

Areas of Expertise

- Process and hydraulic design of wastewater and water treatment plants.
- Pumping systems design
- Cost estimating.

Experience

- 40 total years
- 23 years with Hazen

Professional Activities

American Academy of Environmental Engineers

American Society of Civil Engineers

Water Environment Association

Manhattan Pump Station, New York City Department of Environmental Protection (NYCDEP), New York, NY
Mechanical Engineer. Performed a hydraulic study of the 400 mgd capacity pumping station discharging into 8.5-foot diameter, 8000-foot-long tunnel connecting it to the Newtown Creek Wastewater Resource Recovery facility (WRRF). Performed hydraulic study of the pump station and the tunnel for normal operating and surge conditions. Helped prepare the conceptual design of the pump station renovation, including mechanical and cost studies of the upgrade.

Secondary Bypass and Sludge Recycle Reroute, Passaic Valley Sewerage Commission, Newark, NJ
Mechanical Lead. Participated in a design of 320 mgd primary effluent bypass. The design included bypass structure, flow meter vault, final clarifier connecting chambers, sludge train recycle box and valve vault and supporting mechanical equipment. Designed centrifuge centrate and sludge thickener supernatant return reroute to primary clarifier influent conduits. Participated in the design of screens to provide screening to primary effluent. Also performed thickened sludge pumping system evaluation and hydraulic study to replace aging equipment and increase capacity, under a separate task.

Piscataway Wastewater Treatment Plant Pump Station Upgrades, WSSC Water, Accokeek, MD
Mechanical and Process Engineer. Performed evaluation of dewatering process options for the facility upgrade to replace aging equipment and increase capacity. Wrote a report comparing improvement options and recommending the most cost-effective upgrade strategy.

Hazen

Tallman Island WRRF Headworks Upgrade, NYCDEP, Queens, NY
Mechanical Engineer for WRRF upgrade. Participated in design of improvements in the forebay and screening area of this 160-mgd facility. The work included replacement of the main influent gates, screen channels' effluent gates, stop log grooves and miscellaneous screen channel and forebay modifications.

Port Richmond WRRF Storm Mitigation Loan Program, NYCDEP, Staten Island, NY
Mechanical Lead for designing sump pumps and process pumps replacement with submersible type pumps at the 120-mgd WRRF. Designed 96" slide gate for protecting the plant from being flooded through outfall. Worked on evaluation of hydraulic and operational impacts of the designed improvements.

East Delaware Release Chamber, NYCDEP, New York, NY
Mechanical Lead. Designed replacement of valves and pipes in the 500-mgd facility. The work included installation of 42 inch cone valves, 60 inch butterfly valves, rehabilitation of flow control Polyjet valves, and installation of a 20 inch gate valve. Designed temporary 55-mgd barge mounted pumping system, developed sequence of unwatering and refilling of the intake tunnel and the facility.

East Side Coastal Resiliency (ESCR), NYCDEP, New York, NY
Project Engineer. Participated in different phases of the design for flood protection of the Lower East Side of Manhattan, extending from East 23rd Street to Montgomery Street from a 100-year storm surge event. Designed an emergency pump station, interceptor gate chambers, and parallel conveyance isolation chambers.

Bay Park Sewage Treatment Plant, Nassau County DPW, East Rockaway, NY
Project Engineer. Post Superstorm Sandy, participated in a review of vulnerability of the plant to extreme weather events and participated in a development of proposed mitigation measures in anticipation of future extreme weather events.

Simone Manzo, PE

Senior Associate

Mr. Manzo has 21 years of structural engineering experience. He has worked on a wide array of projects ranging from municipal and privately-owned water treatment facilities to ports and commercial structures.

Education

MS, Civil Engineering, Manhattan College, 2004

BS, Civil Engineering, Manhattan College, 2000

Certification/License

Professional Engineer: NJ, CT, DC, MA, NY, PA, TX, VA, UT

Construction Document Technologist

Confined Space Entry Certified

OSHA 10-hour Certified

Areas of Expertise

- Structural engineering
- Pumping stations
- Process aeration
- Master planning

Experience

- 21 total years
- 2 years with Hazen

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ
Structural Engineer for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Gowanus Pump Station and Force Main: CM Services, New York City Department of Environmental Protection (NYCDEP), Brooklyn, NY
Lead Structural Engineer for shop drawing review and design services during construction for the removal and installation of pumps.

233rd Street, Conner Street, and 154th Street Pump Stations, NYCDEP, New York, NY
Lead Structural Engineer for the assessment, evaluation, and rehabilitation of existing pump stations.Upgrades include concrete repair and rehabilitation of wet wells, dry pits, and repurposing of superstructures; and replacing existing pumps and pump pads. New monorail was designed utilizing and strengthening existing steel and concrete structure.

Cedar Creek Digester Cleaning Digester 5, SUEZ, Nassau County, NY
Lead Structural Engineer for the assessment, evaluation, and rehabilitation recommendations for the existing Digester 5 inspection. Tasks included entering a confined space for concrete wall and steel roof member inspections. Critical items were identified during site inspection and report indicating all recommendations provided.

Kensico Lab Rehabilitation, NYCDEP, Westchester County, NY
Structural Lead Engineer for the repurposing of an existing lab facility to serve as the main headquarters for Kensico staff. Tasks include evaluation of existing structure for new use and loading. Also providing evaluation of concrete, steel, and masonry superstructure for revised loading.

Hazen

FAC Ashokan Project, NYCDEP, New York, NY
Lead Structural Engineer responsible for review of inspection reports for existing stone and concrete super structures and conduits. Providing client facility plan evaluation including structural design criteria and recommendation evaluations.

Lower Catskill Aqueduct, NYCDEP, Westchester County, NY
Lead Structural Engineer for the repair and rehabilitation of 5 existing siphon chamber superstructures and multiple culvert retaining wall structures. Tasks include evaluation of existing structure for new use and loading. Also providing evaluation of concrete, steel, and masonry superstructure for revised loading. Design of new steel truss framing to replace existing steel trusses.

Experience Prior to Hazen
Water District No. 3 Gate of Heaven Pumping Station Design, Westchester County, NY
Lead Structural Engineer for new pump station design and construction. Pump station is a concrete structure with a pre-engineered steel superstructure. Existing buried aqueduct was reviewed for new superimposed loading. Civil re-grading of the site required the design and construction of a 10-foot tall cantilever retaining wall for roadway access to the facility.

Hillview Reservoir Cover, NYCDEP, Yonkers, NY
Structural Engineer for the design of a 90-acre precast concrete cover to the Hillview Reservoir. Design included nonlinear stress analysis for braced precast concrete frames and precast concrete double tees. Nonlinear analysis was performed on a specialized computer program (Perform-3D) and peer reviewed by experts in the seismic field from the University of San Diego in California. The cover was analyzed for three seismic events: 500-year, 2500-year, and 5000-year. The cover was designed in accordance with established codes such as ASCE 41-06, Seismic Rehabilitation of Existing Structures. Design also included ring wall design that acted as a retaining wall for the soil and a security wall to prevent intrusion into the reservoir.

Bus Depots Flood Mitigation and Resiliency, Metropolitan Transportation Authority of New York, NY
Senior Design Engineer for the rehabilitation and flood mitigation upgrades to the MJ Quill Bus Depot. Design effort included strengthening existing concrete walls for code prescribed flood loading, strengthening masonry walls for flood loading, and designing roof screen for protection of windborn debris.

George Markou, PE

Senior Associate

Mr. Markou has been responsible for the planning and design of electrical distribution, lighting, control, and energy improvement systems for many of the firm's projects over the past 32 years. His duties involve coordination with electric utility companies and compliance with the National Electrical Code in tandem with local building codes and industry standards.

Education

MS, Electrical Engineering, Polytechnic University, 1996

BE, Electrical Engineering, City College of New York, 1988

Certification/License

Professional Engineer: NY, CT, MA, PA

Areas of Expertise

- Civil electrical distribution, SCADA, lighting, and control
- Energy conservation and cogeneration

Experience

- 32 total years
- 32 years with Hazen

Professional Activities

American Water Works Association

Institute of Electrical and Electronics Engineers

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ

Electrical Engineer for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Bay Park Sewage Treatment Plant: PM Services, Nassau County DPW, East Rockaway, NY

Electrical Lead. Led the design effort under two phases of the improvements to the electrical distribution system, as part of Nassau County's efforts to protect its critical infrastructure at the Bay Park Sewage Treatment Plant (STP). The STP generates its own power via four main generators, each rated at 3600kW, 2400V, 60hz; the electrical load requires two generators to operate in parallel. On March 1st, 2012 the STP lost one generator and was unable to operate any two generators at their full capacity, significantly reducing the generator power to less than what was required to operate. Hazen was called in by Nassau County and had two engineers on site and a Contractor to assess the situation and bring two generators online, all within an hour. Also responsible for leading the coordination with the contractor and the County, while working seven days a week. In approximately one week's time, two generators were running at full capacity.

Hazen

Gowanus Pump Station and Force Main: CM Services, New York City Department of Environmental Protection (NYCDEP), Brooklyn, NY
Technical Advisor for design services during construction for a new electrical distribution system, including new Con Edison service, 480V switchgear, motor control centers and power distribution panels for a new CSO Facility. The project also includes new LED lighting and communication and control systems providing an energy efficient design and reducing operating costs.

Newtown Creek WRRF Upgrade: CM Services, NYCDEP, Brooklyn, NY
Electrical DSDC. Designed the electrical systems for the plant upgrade of the Newtown Creek Wastewater Resource Recovery Facility's (WRRF) Main Building North Addition Manhattan Pumping Station, Brooklyn Queens Pumping Station, and the South Control Battery. Led electrical for the design joint venture for design services during construction.

Paerdegat Pump Station and CSO Facility: CM Services, NYCDEP, Brooklyn, NY
Technical Advisor, Con Edison Liaison. The project included the construction, start up, and commissioning of a new CSO facility designed to contain flows during storm events and significantly reduce pollutant loadings by minimizing CSO discharges. Work included a pump around system to maintain flow, installation of a new Con Edison electrical service, a new 2000kW emergency generator system, significant street and sidewalk restoration, and maintenance and protection of traffic.

Plantwide Replacement of Electrical Power Cables, Passaic Valley Sewerage Commission, NJ
Electrical DSDC for the investigation of existing conditions, conceptual designs, final design, and shop drawing review of the replacement of 15kV medium voltage cable, low voltage communication system cables including copper and fiber optic cables for SCADA, MIS, CCTV, and Fire Alarm networks damaged during Hurricane Sandy. Due to the constraint site, temporary power from generators was required to ensure uninterrupted power to facilities that included a single power source along with temporary communications while the permanent were replaced.

Bowery Bay WRRF, NYCDEP, Astoria, NY
Electrical Lead for flood protection measures at the Bowery Bay WRRF. The work includes raising existing electrical infrastructure, that presently is located below the flood elevation, and sealing all conduits entering tunnels and structures below the flood elevation. Also assisting in the implementation of other safe, reliable, sustainable and low maintenance flood protection measures.

Daniel Sheeran, PE

Associate

Mr. Sheeran is the firm's Northeast Civil Discipline Leader and has 16 years of design experience specifically on water and wastewater facility projects. He also has worked on numerous projects within the congested utility corridor of city streets and understands the coordination required with the multiple stakeholders in the public right-of-way.

Education

MS, Civil Engineering, Manhattan College, 2012

BS, Civil Engineering, Manhattan College, 2005

Certification/License

Professional Engineer: NY

Areas of Expertise

- Civil site planning and design
- Permitting and inter-agency coordination
- Design services during construction
- Civil shop drawing review

Experience

- 16 total years
- 13 years with Hazen

Professional Activities

New York Water Environment Association

American Water Works Association

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ
Civil Engineer for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Paerdegat Pump Station and CSO Facility: CM Services, New York City Department of Environmental Protection (NYCDEP), Brooklyn, NY
Sitework. Performed detailed earthwork analysis for difference phases of construction and developing plans and figures for regulatory approvals. Performed calculations pertaining to soil per location rates. Provided design services during construction for review of site civil related shop drawings. Performed field inspections during construction to review the damage done by significant rainfalls events and Superstorm Sandy. Aided with the development of revised design documents associated with erosion and sediment control repairs after intense storm events.

Gowanus Pump Station and Force Main: CM Services, NYCDEP, Brooklyn, NY
Civil Engineer and QA/QC Reviewer. Provided support to the site civil design effort for the demolition and site preparation contract for the Gowanus CSO Facility. Provided QA/QC review of site civil drawings and specifications, specifically to the right-of-way work, including sewers, water mains, and associated structures. Oversaw effort for the development of specifications associated with site civil design, requirements for the abandonment of water, sewers, and utility abandonment per applica-

Hazen

ble NYC codes, and temporary and permanent fencing requirements for sites under construction. Assisted with the coordination of mass mailing and alignment meeting effort for four construction contracts impacting multiple agencies including NYC Parks, Con Edison, and National Grid. Provided QA/QC over permitting and approval documents including the Stormwater Pollution Prevention Plan and submittals to the City's Bureau of Water & Sewer Operations.

Bowery Bay WRRF, NYCDEP, Queens, NY
Civil Discipline Lead overseeing staff on the civil site design for the resiliency improvements to Bowery Bay Wastewater Resource Recovery Facility (WRRF). Assisted in development of subcontracts with surveyor. Provided oversight over the development of civil contract drawings and coordinated with disciplines for installation of flood walls around existing infrastructure including emergency generators and the electrical substation. Reviewed and coordinated new flood walls and elevated stairways for impacts to existing site features and utilities. Conducted QA/QC reviews of contract documents.

Connor Street Pump Station and Force Main, NYCDEP, Bronx, NY
Civil Discipline Lead overseeing the development of the Facility Plan sections associated with the replacement of approximately 4800 LF of an existing 24-inch sanitary force main. Reviewed design alternatives utilizing available GIS data and record drawings. Coordinated cost estimates for each alternative. Evaluated potential for trenchless crossing of the I-95 corridor. Assisted in the procurement of survey and geotechnical investigations.

Port Richmond WRRF, NYCDEP, Staten Island, NY
Civil Site Design Discipline Lead overseeing staff on the civil site design for the resiliency improvements to the Port Richmond Wastewater Resource Facility. Assisted in development of subcontracts with the surveyor. Provided oversight over the development of civil contract drawings and coordinated with disciplines for installation of flood walls around existing infrastructure. Coordinated relocation of site utilities and water mains. Reviewed and coordinated new flood walls and impacts to existing buried infrastructure. Conducted QA/QC reviews of contract documents.

East Side Coastal Resiliency, New York City Department of Design and Construction, New York, NY
Civil Discipline QA/QC Reviewer. Oversaw and coordinated the civil site design for multiple project elements including parallel conveyance, storage conveyance, storage tank emergency pump station, and interceptor gates. Performed QA/QC reviews on all project elements including sanitary force main design for the pump station, parallel conveyance sewer pipelines and structures, and provided input for utility relocations and agency impacts to proposed infrastructure.

James Soroush

Senior Field Coordinator

Mr. Soroush has 17 years of experience in construction management with an emphasis in wastewater treatment facilities. He possesses broad knowledge in construction practices including scheduling, project controls and administration, cost estimating and inspections.

Education

MS, Construction Management, Drexel University, 2015

BS, Public Relations, Oswego State University, 2003

Certification/License

Permit Authorizing Individual

Project Management Information System

Automated Procurement Tacking

Permit Tracking Database Training

OHSA 10-hr class

Areas of Expertise

- Project controls
- CPM scheduling
- Change orders
- Construction management
- ePMIS

Experience

- 17 total years
- 13 years with Hazen

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ

Project Controls Support for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Bay Park Sewage Treatment Plant: PM Services, Nassau County DPW, East Rockaway, NY

Project Controls Support on the program management team for the Hurricane Sandy Recovery Effort and Related Infrastructure program in Nassau County, New York. The $830+ million program consists of the design and construction of permanent repairs and rehabilitation to damaged facilities, including potential storm mitigation measures. The affected facilities include: Sludge dewatering building; outfall pump station; fire protection building; electrical distribution system including switchgear, substations, and MCCs; effluent screening and disinfection building; grit building; plant-wide odor control systems; final clarifiers including RAS and WAS pumps, sludge and scum collector drives; life safety systems; plant-wide HVAC systems; process air blowers; auxiliary power generation; primary tank scum and sludge collectors and pumps; digester facility; sidestream demmonification facility; and related sewage pump stations and collection systems. Responsible for project controls including CPM schedule analysis and reporting, and claim and delay mitigation and analysis with associated documentation.

Hazen

Westchester CSO Modifications, NYCDEP, Bronx, NY
Assistance Resident Engineer for the CSO modifications of CSO-29 and CSO-29A which includes deep excavations to raise the overflow weir crest, extend the overflow and combined sewers, and relocation of utilities. Responsible for the project controls, including CPM schedule and delay analysis with associated documentation and reporting, change management and cost control, ePMIS administration, and the safety of the project. Also assisting the Resident Engineer in submittal and specification review and implementation, safety, and coordination amongst project staff, contractors, and field operations.

Bowery Bay and Port Richmond WRRFs, NYCDEP, Queens/Staten Island, NY
Project Controls Support during the design phase for flood resilient upgrades to Bowery Bay and Port Richmond Wastwater Resource Recovery Facilities (WRRFs)- to provide a more flood resilient facility with safe, reliable, sustainable and low maintenance flood protection measures. The project involved elevating existing and/or installing new mechanical and electrical equipment and installing flood protection barriers and reinforced walls throughout the facility. Responsible for Master Project Schedule and reporting from facility planning/design to procurement, construction and close-out phases including P80 Analysis on both schedule and costs, for risk mitigation during design and construction.

Eltingville Pump Station, NYCDEP, Staten Island, NY
Project Controls Support during the design phase for this rehabilitation and upgrade of the Eltingville Pump Station which included installation of temporary and permanent force mains; interim pump station; and upgrades to the existing pump station, including wet well, dry well, roof/exterior, electrical and screenings room. Responsible for project controls including planning and development of the construction schedule for design at each stage of design and performing a P80 Risk analysis for risk mitigation during design.

Fritz Island Wastewater Treatment Plant Upgrade, City of Reading, PA
Project Controls Support for this $150M+ rehabilitation of the Fritz Island facility, including upgrades to metering vaults, primary and final clarifiers, odor control system, new aeration reactors, blower building, new mixed liquor distribution structure, new RAS and WAS pump station, sludge blend tanks, gravity belt thickener, sludge holding tank, administration building, chlorination and declorination systems, and HVAC and electrical system upgrades throughout. Responsible for project controls, including CPM schedule analysis and reporting and claim and delay mitigation and analysis with associated documentation.

Michael Stallone, AIA, NCARB, LEED AP

Senior Associate

Mr. Stallone has 42 years of experience in architectural planning, design, and construction management of water and wastewater facilities. Many of his projects have involved green infrastructure and achieved LEED certification.

Education

BA, Architecture, New York Institute of Technology, 1980

Certification/License

Registered Architect: NJ, DC, NC, SC, GA, NH, NY, VT, MA, PA, CT

LEED Accredited Professional (AP)

AIA, American Institute of Architects

NCARB, National Certified, Architect

Areas of Expertise

- Architectural design
- Construction management
- Project budgeting and scheduling
- Restoration and remediation of existing structures
- Building code analysis
- Environmental building design

Experience

- 42 total years
- 21 years with Hazen

Professional Activities

American Institute of Architects

The National Trust for Historic Preservation

NYC Department of Buildings Code Adoption Program

ACE Mentoring

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ

Architect for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Manhattan Pump Station, New York City Department of Environmental Protection (NYCDEP), New York, NY

Lead Architect for complete modernization of facility, which serves the Newtown Creek Wastewater Resource Recovery Facility (WRRF). This $214 million project was the winner of a Design Excellence Award from the NYC Art Commission as well as the 2003 Kenneth Allen Memorial Award. The design incorporates several “green” architectural elements and features expensive walls of glass to allow light to enter.

Paerdegat Pump Station and CSO Facility: CM Services, NYCDEP, Brooklyn, NY

Lead Architect for design of the Collection Facilities South, a multipurpose building that was designed for needs of both the community and the environment in mind while remembering the heritage of the area. The building is constructed atop new CSO tanks, reducing both footprint and costs and minimizing excavation. The main building houses crew quarters.

Hazen

Gowanus Pump Station and Force Main: CM Services, NYCDEP, Brooklyn, NY

Architect for this project to improve water quality in the Gowanus Canal by reducing the volume of CSO discharged to the canal and increasing the volume of flushing water from the East River to the canal. Construction includes a new CSO Pump Station and Screening Chamber, an upgraded Flushing Tunnel Pump Station, and a new Service Building. This facility is currently operational.

North Yonkers Pump Station, Westchester County DPW, NY

Architect for the rehabilitation of the historic pump station's brick tower. The 1930s original construction of the North Yonkers Pumping Station chimney was utilized to exhaust gases produced during incineration of wastewater screenings. Use of the chimney was discontinued in the 1960s. The tower had become structurally unstable and brick was defoliating from the exterior. Devised an interior concrete shaft and utilized restoration strategies to restore the brick tower to its original condition.

Bay Park Sewage Treatment Plant: PM Services, Nassau County DPW, East Rockaway, NY

Architect. Responsible for design of replacement electrical substations and other structures damaged during Hurricane Sandy. The design incorporates all the latest measures in infrastructure resiliency and storm hardening techniques.

Avenue V Pumping Station Upgrade and Expansion, NYCDEP, Brooklyn, NY

Architect. Responsible for architectural design and historic restoration services for this $130-million project, which includes several sustainable aspects. The project site was comprised of the original 1912 Beaux Art Style pump station, a condemned wet well superstructure 1916, a 1960s beiger brick addition that abutted the pump station, and a garage. Following an in-depth investigation of the symptoms of failure in the architectural terra cotta system, resolved the issues associated with water infiltration within the system. Devised a rain screen cavity wall system to reduce water infiltration and allow water that enters the cavity to weep out to the exterior. The architectural terra cotta was supported from stainless dove tail slotted anchors secured to the concrete ring beam. Repair of the damaged section of architectural terra cotta utilized restoration mortar and special coating to replicate the glazing of the original material, thus retaining the original character of the structure. These design strategies were accomplished while maintaining the pump station in full service.

Kevin Ward, CEP, CERP

Senior Associate

Mr. Ward is an environmental scientist with specialized experience in ecological restoration, wetland delineation, water and sediment quality analysis, CSO abatement, stormwater BMP controls, and environmental assessment and permitting.

Education

MS, Oceanography, University of Maine, 1988

BS, Environmental Science, Keene State College, NH, 1983

Certification/License

Certified Ecological Restoration Practitioner

Certified Environmental Professional

Certificate of Completion, Rutgers University Wetland Delineator Program

Areas of Expertise

- Natural resource assessment
- Wetland delineation
- Wetland mitigation design
- Ecological restoration design
- Water and sediment quality assessment
- Regulatory compliance

Experience

- 38 total years
- 26 years with Hazen

Professional Activities

Academy of Board Certified Environmental Professionals

- Certification Review Board

Society of Wetland Scientists

Society for Ecological Restoration

New York State Wetlands Forum

H6/H7 Long-Term Control Plan Phase 1, North Hudson Sewerage Authority, Hoboken, NJ

Permitting Lead for the initial phase of construction of a high-level sewer system in the H7 Drainage Basin, which includes a pump station and wet well, mechanical and electrical control building, hydro-dynamic separation (vortex) pretreatment units, and piping and appurtenances. The project is crucial to protecting public health, minimizing public disruption, and protecting the environment by reducing stormwater flooding in the lowest-lying areas within the City of Hoboken.

Paerdegat Pump Station and CSO Facility: CM Services, New York City Department of Environmental Protection (NYCDEP), Brooklyn, NY

Permitting DSDC for the design and development of a 52-acre habitat restoration project on undeveloped land surrounding Paerdegat Basin. Responsible for selecting appropriate ecological communities for these new parks based on the coastal setting, developing detailed plant species lists and quantities for each of the communities, and developing design drawings and specifications for the project. Provided DSDC to ensure the parks were built as designed. Prior to initiating design efforts, conducted vegetation surveys that mapped existing vegetation surrounding the basin, water and sediment quality surveys, and surveys of benthic invertebrates and fish within the basin in support of the environmental impact statement for the Paerdegat Basin CSO Facility Plan.

City-Wide Long-Term CSO Control Planning, NYCDEP, New York, NY

Task Leader. Responsible for developing the Long-Term CSO Control Plans for Coney Island Creek in New York Harbor and Bergen and Thurston Basins in Jamaica Bay. Evaluated CSO controls on a cost and performance basis in relation to New York State water quality criteria and developed Waterbody/Watershed Facility Plans in accordance with US EPA guidelines.

Hazen

East Side Coastal Resiliency Project, New York City Department of Design and Construction (NYCDDC), New York, NY
Permitting and Natural Resources Task Leader for $1.4B projects to implement integrated coastal flood protection system for an approximately 2.4-mile area of Manhattan adjacent to the East River. The ESCR project received $338 million in funding from the U.S. Department of Housing and Urban Development as part of the post-Sandy Rebuild by Design Competition. Led the natural resources assessments and analyses for the ESCR Environmental Impact Statement (EIS) that complies with NEPA, SEQRA, and CEQR regulations. Overseeing the permitting effort with USACE and NYSDEC, including completing consultations with USFWS, NOAA-NMFS, and NYNHP for threatened, endangered, and rare species.

Bergen Basin Sewer Reconstruction, NYCDEP, Queens, NY
Permitting Task Leader for the construction of a new wet weather interceptor in the Jamaica Wastewater Treatment Plant drainage area that increased combined sewer overflow capture. Prepared environmental documents associated with the microtunneling operation including an Environmental Assessment, NYCDEP dewatering permits, and a Long Island Well dewatering permit from the New York State Department of Environmental Conservation. Also provided DSDC services during construction to coordinate landscape restoration efforts with the New York City Department of Parks and Recreation.

Pumping Station Landscape Design, Town of Briarcliff Manor, NY
Task Leader. Led wetland mitigation and ornamental landscape design efforts at a new raw water pumping station. Responsible for conducting wetland delineation surveys, developing detailed plant species lists and quantities, and developing design drawings that specify the spacing and placement of plant material.

Staten Island Bluebelt, NYCDEP, Staten Island, NY
Task Leader. Responsible for regulatory coordination, natural resource and drainage area assessments, identification of pollution sources, wetland evaluations, landscape design, preparation of local, state, and federal permit applications and environmental assessments for this award-winning $200 million water quality improvement program.

Jake Dudley

Field Representative, Construction & Material Testing Services

Mr. Dudley has more than 14 years of experience as a Field Representative with FPA. He has performed field and laboratory testing services on a variety of projects. His assignments have included the sampling and testing of both fresh and hardened concrete, nuclear density testing of soil and asphalt, in-situ properties of soils, fire proof testing, pile installation, coring of asphalt and concrete and verification of reinforcing steel. He has also performed construction observation services for several market areas including commercial and industrial buildings. Mr. Dudley has performed these tasks at building and roadway construction projects, as well as landfill liner and cap projects and hazardous waste remediation sites. In addition, he has performed quality control testing of more than 1,000,000 cubic yards of fill placement during the construction of Stafford Park and closure of the Stafford Landfill.

Mr. Dudley has extensive experience on large landfill projects, including verification of geosynthetic liner placement and testing, and performance of various in-situ tests. Mr. Dudley is certified by New Jersey Chapter of the American Concrete Institute as completing the Concrete Field Technician Level I Course, as well as Nuclear Density Certified and Certified in Asphalt Paving Construction by NJ SAT.

CAREER SNAPSHOT

- 14 years of experience

EDUCATION

- AS, Brookdale Community College

SPECIALIZED TRAINING

- DCA Special Inspector, Concrete Placement, Reinforced Concrete
- American Society of Civil Engineers Grade ET 3
- American Concrete Institute, Field Testing Grade I
- New Jersey Chapter of the American Concrete Institute, Concrete Construction Technology Course Certified Technician
- Occupational Safety and Health Administration 40 Hr Training for Hazardous Site Workers
- New Jersey Society of Asphalt Technologies, Certified Asphalt Paving Construction Technologist
- Troxler Nuclear Density Gauge Certification
- Occupational Safety and Health Administration 10 hr Construction Industry Outreach
- National Institute for Certification in Engineering Technologies, Highway Construction Level II

PROJECT EXPERIENCE

Stafford Business Park/Landfill
Stafford, New Jersey
Field Representative responsible for observation and testing of fill placement, waste relocation assessment and cap installation verification, as well as testing for the closure of a 55 acre municipal solid waste landfill.

Meadowlands American Dream
East Rutherford, New Jersey
Field Representative responsible for observation of reinforcing steel, fill placement and concrete testing.

Monmouth College MAC Center
West Long Branch, New Jersey
Field Representative responsible for daily field reports of construction activities for the owner, concrete testing, reinforcing steel verification, subgrade approval, and fire proofing.

Newark International Airport, Terminal Access Roads
Newark, New Jersey
Field Representative responsible for monitoring of HMA with a Troxler nuclear gauge to verify proper compaction. levels.

Riverview Assisted Living Facility
Plainsboro, New Jersey
Field Representative responsible for observation of subgrade preparation, fill placement, reinforcing steel, fill placement and concrete testing including post-tensioned concrete testing for an approximately 500,000 square foot assisted living facility.

Robert Hansen

Senior Field Representative, Construction & Material Testing Services

CAREER SNAPSHOT

- 25 years of experience

SPECIALIZED TRAINING

- DCA Special Inspector, Concrete Placement, Reinforced Concrete
- American Society of Civil Engineers, Grade ET3
- Occupational Safety and Health Administration 40 hour Health & Safety Training, 8 hour Supervisor Certified Confine Space Entry Certification
- New Jersey Chapter of the American Concrete Institute Concrete Construction Technology Course, Certified Technician
- New Jersey Society of Asphalt Technologists, Certified Asphalt Paving Construction Technologist
- Troxler Nuclear Density Gauge Certified
- Windsor Probe Concrete Systems

Mr. Hansen has over 25 years of full service project experience performing field representative functions for both the Construction Phase Services & Materials Testing and the Environmental Groups. Mr. Hansen's experience includes Resident Engineering services and Senior Field Representative tasks. Mr. Hansen has been involved in fill placement, asphalt placement, concrete placement, pipe installation, seismic refraction analysis, test boring and test pit inspection, exploration for buried debris and has performed various soils testing in our in-house soils laboratory, including installation and operation of a sealed double ring infiltrometer. He has performed construction observation services for several market areas including commercial and industrial buildings, residential developments, and waterfront development projects that included pile installation, boardwalk construction, surcharge placement and monitoring, wick drain installation, and other earthwork operations. He has extensive experience in large reinforced concrete projects, including verifying reinforcement placement, sampling of concrete, inspecting pre-cast concrete placement, structural steel and cold form framing. Mr. Hansen has provided many quality control services for the erection and construction of the Mercer County Arena in Trenton.

Mr. Hansen has also provided both construction quality control and quality assurance programs as well as resident services for various projects constructed throughout New Jersey. He has been involved most recently as the Resident during the construction of the new warehouse Building M for South Jersey Port Corporation's Beckett Street Terminal located in Camden, New Jersey. His responsibilities included preparation of daily reports, reviewed change order requests and invoices for process, chaired progress meetings, processed Requests for Information and performed project close out. Responsibilities also included the provision of a liaison between the Contractor, Project Engineer and the owner.

Mr. Hansen has performed sheer and destructive testing for geo-membrane at Kin-Buc Landfill under the direction of the United States Army Corps of Engineers. Mr. Hansen has also performed quality control testing on the placement of fill, clay, and drainage material on Phase II of the Middlesex County Landfill expansion. He has also worked as part of a Resident Engineering Quality Assurance Team, overseeing installation and testing more than 30 acres of a double composite landfill liner system on several phases of Middlesex County Landfill. He was also the field representative performing quality assurance audits on the Monmouth County Landfill and reporting to the New Jersey Department of Environmental Protection during the construction of landfill liner systems that incorporate geo-synthetic clay liners as secondary containment.

PROJECT EXPERIENCE

Union County Milling and Resurfacing
Union County, New Jersey
Senior Field Representative responsible for asphalt compaction verification and coring operations. This included density testing of the HMA overlay as well as layout of coring locations, obtaining cores, patching and traffic control.

Building M, South Jersey Port Corporation, Beckett Street Terminal
Camden, New Jersey
Resident Engineer responsible for preparation of daily reports, review of change order requests and invoices for processing, chairing of progress meetings, processing of Requests for Information (RFI's) and performing project close out. His responsibilities also included acting as the liaison between the Contractor, Project Engineer and the Owner.

Union County Milling and Resurfacing
Union County, New Jersey
Senior Field Representative responsible for asphalt compaction verification and coring operations. This included density testing of the HMA overlay as well as layout of coring locations, obtaining cores, patching and traffic control.

2005 State Funded Overlay Program Burlington County Road Resurfacing
Burlington County, New Jersey
Senior Field Representative responsible for coordinating asphalt coring operations for the HMA overlay. This included obtaining cores, patching and traffic control.

Summit Roadway Reconstruction
Union County, New Jersey
Senior Field Representative responsible for field operation during the investigation of an existing roadway for the purpose of redesign. The investigation included the performance of roadway coring, test borings and the performance of Ground penetrating radar (GPR).

Jersey City Medical Center
Jersey City, New Jersey
Senior Field Representative responsible for monitoring the installation of wick drains and surcharge verification the placement of reinforcing steel and concrete testing.

Sovereign Bank Arena
Trenton, New Jersey
Senior Field Representative responsible for reviewing the placement of reinforcing steel and concrete testing. Also responsible for reviewing the installation of structural steel, reviewing and testing sprayed on fireproofing, and, reviewing the installation of roofing materials.

Kin-Buc Landfill
Edison, New Jersey
Senior Field Representative responsible for reviewing the placement of reinforcing steel and concrete testing. Also responsible for reviewing the installation of structural steel, reviewing and testing sprayed on fireproofing, and, reviewing the installation of roofing materials.

Meadowlands American Dream
East Rutherford, New Jersey
Field Representative responsible for observation of reinforcing steel, fill placement and concrete testing.

Robert Knotz, PE

Senior Project Manager, Geotechnical Engineering

Mr. Knotz's experience in Engineering Design and Construction Administration includes work in public and private sectors, specializing in Geotechnical Engineering. His responsibilities include project coordination and implementation, performing engineering analyses, foundation and retaining wall design, dam and hydraulic structure design, report preparation, and the preparation of plans and specifications. Mr. Knotz has also served as the overall project manager on multi-disciplinary projects overseeing geotechnical, environmental, site planning, permitting and building design engineering tasks for various projects. This has allowed him to develop strong project coordination skills and the ability to serve as a Client's single point of contact.

Mr. Knotz has participated in a variety of projects that have included buildings, bridges, storage tanks, earth retaining structures, bulkheads, dams, pipelines, highway embankments, pedestrian walkways/trails and roadways. His involvement has included inspections, construction monitoring, and engineering analysis and design. The scope of engineering analyses includes slope stability, settlement and consolidation, seismic analyses, lateral earth pressures, bearing capacity evaluation, and construction and permanent dewatering evaluations. He has performed geologic assessments of project sites known to have karst features, identifying the potential formation of sinkholes through the dissolution of carbonate rock. Design work has included shallow and deep foundations, earth retaining structures, soil and rock anchor design, soil improvement projects, pavements, and under drain system design.

Mr. Knotz has performed evaluation and design of various earth retaining structures including cantilever and anchored seawalls, gabion wall systems, reinforced concrete gravity structures, and mechanically stabilized earth walls. His involvement has included the evaluation of external and internal stability, slope stability, structural design, and the preparation of construction plans and specifications.

Mr. Knotz has been involved in a variety of industrial projects including petroleum pipelines and major facility upgrades at petroleum/chemical storage storage facilities as well as rail transportation, marine and port facilities throughout the northeast United States.

Mr. Knotz has also been involved in a variety of water resources projects including dams, hydraulic structures, and spillways. He has participated in dam rehabilitation, stability analyses and seepage analyses as well as regular and formal dam inspections including preparation of Visual Inspection Checklists and Inspection Report Summaries. Mr. Knotz has also prepared Operation and Maintenance Manuals and Emergency Actions Plans.

CAREER SNAPSHOT

- Over 17 years of experience
- Multi-discipline management experience
- Expertise with earth retaining structures
- Expertise in foundation engineering
- Extensive experience at industrial facilities

EDUCATION

- BS, Civil Engineering, Rutgers University
- BS, Physics, Richard Stockton College

REGISTRATIONS/ LICENSES

- Professional Engineer NJ, PA, CT, MA, RI, NC, VA, WV, OH

SPECIALIZED TRAINING

- NJDCA Special Inspector, Reinforced Concrete
- OSHA 10-Hour General Industry Safety
- OSHA Certified Space Training
- Transportation Worker Identification Credential (TWIC)

AFFILIATIONS

- American Society of Civil Engineers (ASCE)
- Association of State Dam Safety Officials

PROJECT EXPERIENCE

Kinder Morgan Liquid Terminals
Various Locations, New Jersey, New York, Pennsylvania, Virginia, Delaware
Project Manager responsible for the development and coordination of subsurface exploration programs to facilitate geotechnical assessments for pipelines, pipeline rack supports, storage tanks, buildings, equipment pads and dikes.

CSX Terminals
Various Locations, New Jersey, Delaware
Project Manager responsible for the development and coordination of subsurface exploration programs to facilitate geotechnical assessments for buildings, canopies and equipment pads.

Buckeye Partners, Containment Design, Port Reading Refinery
Various Locations, New Jersey
Project Manager responsible for developing a cost-effective program that complied with the regulatory requirements for spill containment and drainage system management for tank fields within the refinery.

Passaic Valley Sewerage Commission, Decant Facility Rehabilitation
Newark, New Jersey
Project Manager responsible for the development and coordination of geotechnical, environmental permitting and surveying services related to the project. FPA prepared NJDEP, FAA and Soil Erosion permit packages and performed a subsurface exploration program and a geotechnical assessment in connection with the construction of new equipment related to the decant tank rehabilitation. FPA also performed survey services consisting of the development of models of existing conditions of the decant facility based on data captured through 3D laser scanning using Autodesk Revit.

Pleasure Bay Interceptor and Pump Station
Monmouth Beach, New Jersey
Project Manager responsible for the development and coordination of a subsurface exploration program consisting of test borings to facilitate a geotechnical assessment for a proposed sewer interceptor pipe.

Princeton Medical Center
Plainsboro, New Jersey
Project Manager responsible for the development and coordination of a subsurface exploration program consisting of test borings and test pits to facilitate a geotechnical assessment for the 150 acre hospital complex.

Williamsport Petroleum Pipeline
Trout Run, Pennsylvania
Project Manager responsible for the development and coordination of a subsurface exploration program and the performance of a geotechnical engineering analysis in connection with a petroleum pipeline that was installed utilizing horizontal directional drilling (HDD). The planning of the installation of the proposed pipeline required the consideration of the varying surface terrain and subsurface conditions along the alignment as well as the presence of existing utilities, wetlands and open waters.

TOSA Deal Outfall
Borough of Deal, New Jersey
Project Manager responsible for the development and coordination of a subsurface exploration program consisting of test borings to facilitate a geotechnical assessment for a proposed sewer outfall. The project includes the replacement of approximately 1,200 linear feet of existing ocean outfall piping situated within the Atlantic Ocean with new 36-inch diameter steel pipe.

New Jersey American Water, Swimming River Treatment
Middletown, New Jersey

Project Manager responsible for design phase, including coordinating and performing a terrestrial/marine geotechnical exploration and environmental sampling for the replacement of a main distribution pipe bridge with new distribution pipes below the outlet channel of Swimming River Dam, preparation of a geotechnical report, the development of deep foundation recommendations, preparation of design documents and construction drawings. as concrete construction.

Michael Schappert, PE

Manager of Field Services, Construction & Material Testing Services

Mr. Schappert draws upon 17 years of experience in Engineering Design, Construction Administration, and Construction Management & Supervision including work in Public and Private sectors. Industries served include Transportation, Municipal, Industrial (Nuclear/Fossil Power, Refinery, Cogen), Residential, and Commercial. Mr. Schappert utilizes broad and thorough understanding of the Construction and Civil Engineering Industries to approach projects with a keen sensitivity toward constructability, cost consciousness, technical rigor, and the overall importance of complete and thorough contract documents coupled with precise project execution and management.

Mr. Schappert began his career in FPA's Geotechnical Department gaining experience with the design and construction of deep foundations such as micro piles, driven piles and large diameter drilled shafts, as well as various methods of ground improvements such as Deep Cement Soil Mixing, Jet Grout Soil Mixing, and Deep Dynamic Compaction. Subsequently, Mr. Schappert has worked in the firm's Building Design Services, Transportation Infrastructure, and Construction Engineering groups. Responsibilities have included performing engineering analyses, performing all aspects of design, report preparation, and development of construction plans and specifications from inception to final deliverables. This work has included extensive involvement on construction sites in roles as both a Construction Manager and Quality Assurance Inspector. Responsibilities have included the direct supervision of Resident Engineers and Inspectors on various Transportation and Water Resources projects.

Mr. Schappert has also worked for a major regional Heavy Highway/Site Civil Contractor as a Project Engineer, Project Manager and Site Manager. This experience provides him insight on constructability, a basis for communicating with contractors during dispute resolution, and the ability to anticipate potential issues before they arise so as to minimize potential exposures to the client. In this capacity Mr. Schappert has directly supervised the installation and relocation of various utility infrastructure improvements including large and small diameter HDPE pipe, ductile iron pipe, welded steel pipe, high and low voltage electrical duct, and various structural systems in general. As part of his Construction work, Mr. Schappert has compiled compliance documentation packages as well as step certification packages.

CAREER SNAPSHOT

- Special Inspections
- Experience with Heavy Highway Construction
- Experience in Infrastructure Improvements

EDUCATION

- BS Civil Engineering, Clemson University

REGISTRATIONS/ LICENSES

- Professional Engineer NJ, NY, PA, DE

SPECIALIZED TRAINING

- ACI:Grade I Field Technician, Strength Testing Technician, Aggregate Testing Technician Level 1, Laboratory Testing Technician Level 1, Laboratory Testing Technician Level 2
- ICC B1 Residential Building Inspector, M1 Residential Mechanical Inspector, Spray Fireproofing Inspector
- NJDCA Special Inspector: R-Con, P-Con, SM, SW, SB, SM, SAF
- QC Resource Nuclear Density Training
- OSHA 10hr General Construction
- CAIT Design of ADA Curb Ramps
- CAIT Compliance to ADA in the Public Right of Way
- CAIT Grant Management for Federal Aid Projects

PROJECT EXPERIENCE

American Dream Meadowlands
East Rutherford, New Jersey
Project Manager responsible for coordination of all special inspection resources for concrete, structural steel, masonry and fireproofing on a $2B addition to an existing Entertainment and Retail Complex. Work included coordinating steel fabrication shop inspections in 30 facilities in the US, Canada, and China.

Atlantic Highlands Harbor Dredge Project
Atlantic Highlands, New Jersey
Project Engineer responsible for a variety of tasks associated with ongoing maintenance dredging at the Atlantic Highlands Harbor. The project included a Geotechnical Subsurface Investigation, stability analysis for earthen embankments associated with the Confined Disposal Facility, preparing construction documents, and preparing bidding documents. Played an integral role in all aspects of the project. Typical tasks included coordination of the subsurface investigation, slope stability analysis, designing and drafting site plans and details, development of contract/bid documents, development of bid specifications, and the development of technical specifications.

Marina Thermal Facility Hot Water Improvement
Atlantic City, New Jersey
EPC Site Manager responsible for replacing approximately 1,600 feet of hot water piping that services the Borgata Hotel and Casino. The design included driven pile foundations for the pipe run and structures, two road crossings, and two overhead structures. Responsibilities included daily coordination with the operating plant, daily coordination with the Borgata facilities management, procurement, scheduling and site supervision. Tie-ins were made during a month long hot water system outage during which additional responsibilities included managing night shift work as well as acting as both General and Mechanical Superintendent for the EPC Contractor.

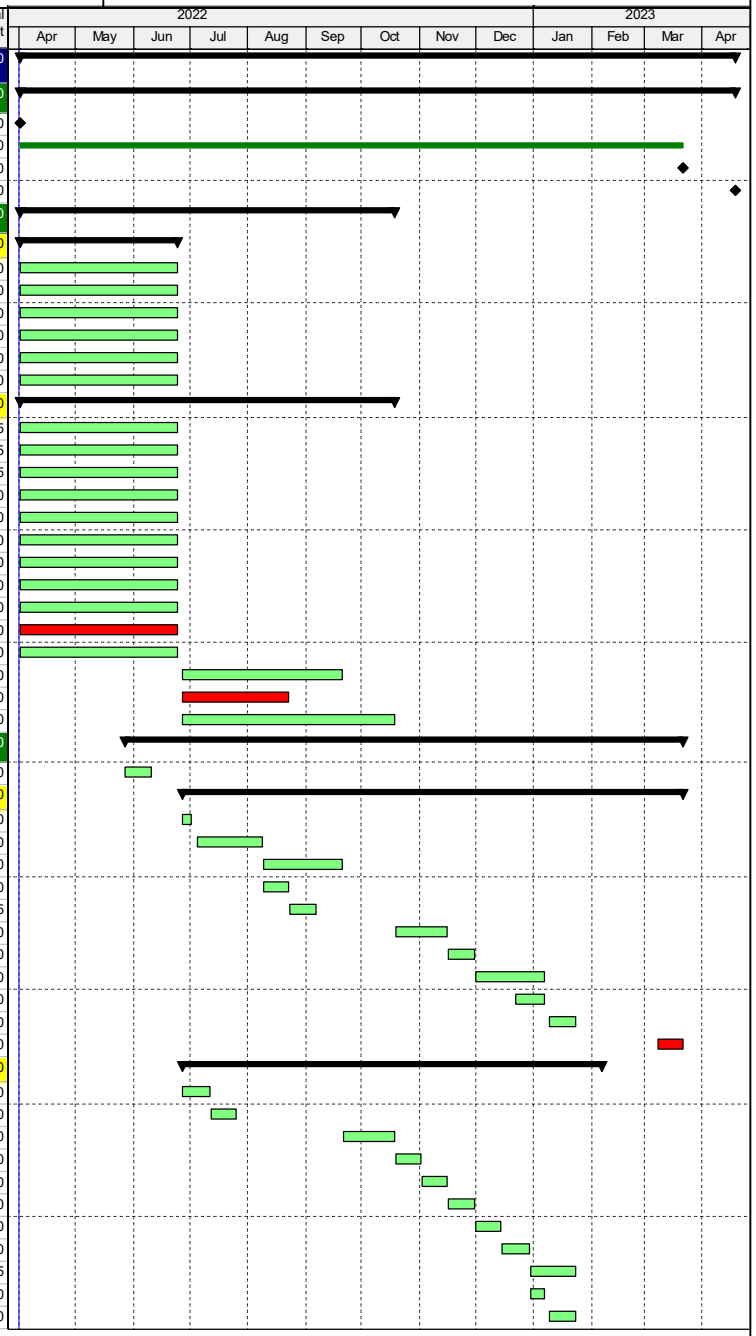
Hudson Transmission Project Site Prep
Ridgefield, New Jersey
Project Manager responsible for the demolition of an approximately 120,000 square foot warehouse facility, the excavation and remediation of environmentally impacted historic fill, the import of approximately 70,000 tons of clean fill to cap the site, and installation of various stormwater runoff and site improvements. Responsibilities included project buy-out, development and execution of subcontracts, reviewing invoices, preparing bills to the client and day to day oversite of construction activities.

PP&L Montour Scrubber Discharge Pipeline
Danville, Pennsylvania
Project Engineer responsible for the review of all drawings, construction documents, and contract documents associated with a 12 mile pipeline installed to carry wastewater from a coal burning power plant to a discharge point on the Susquehanna River in central Pennsylvania. Daily responsibilities included co-ordination of survey and quality assurance personnel, developing requests for information and submittals, identifying field conditions that deviated from plans, and interacting with Construction Crews to assure proper installation without impacting production.

Hope Creek Nuclear Plant Spent Fuel Storage Facility
Hancocks Bridge, New Jersey
Project Engineer responsible for the review of all drawings, construction documents, and contract documents associated with a 26 Million Dollar Spent Fuel Storage Facility at the Salem and Hope Creek Nuclear Generating Facilities in Hancock's Bridge, New Jersey. Acted on behalf of the contractor in a Construction Management role to review technical aspects of the project and develop submittals and requests for information to assure that materials could be ordered and issues could be identified prior to impacting the schedule. Coordinated extensive Quality Assurance and Quality Control efforts meeting stringent guidelines imposed by the Client and the U.S. Nuclear Regulatory Commission. Typical daily responsibilities included the co-ordination of survey, interaction with subcontractors, and documentation of As-Built Conditions.

Appendix B: Detailed Project Schedule

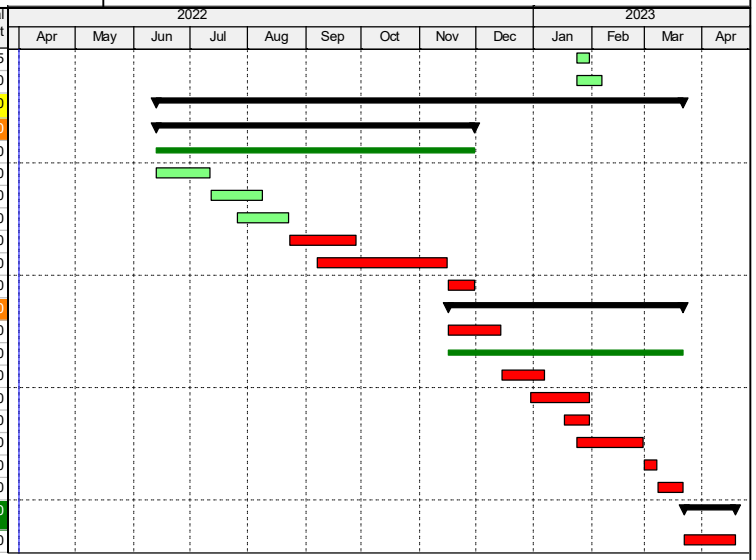
Activity ID	Activity Name	Rem Dur	Start	Finish	Total Float
H6/H7 CSO Long Term Control Plan - Phase 2 - Proposal		265	01-Apr-22	18-Apr-23	0
Milestones		383	01-Apr-22	18-Apr-23	0
A1000	Notice to Proceed	0	01-Apr-22		0
A1010	Contract Duration	355	01-Apr-22	21-Mar-23	0
A1410	Substantial Completion	0		21-Mar-23	0
A1430	Final Completion	0		18-Apr-23	0
Procurement / Submittals		140	01-Apr-22	18-Oct-22	90
Division 01 - General Conditions		60	01-Apr-22	24-Jun-22	130
A1020	Submit & Approve MPT Plan	60	01-Apr-22	24-Jun-22	10
A1030	Submit & Aprove Work Permits	60	01-Apr-22	24-Jun-22	10
A1040	Submit & Approve Environmental Health & Safety Plan	60	01-Apr-22	24-Jun-22	10
A1110	Submit & Approve Equipment Testing Procedures	60	01-Apr-22	24-Jun-22	110
A1060	Submit & Approve O&Ms	60	01-Apr-22	24-Jun-22	130
A1920	Coordination with PSEG for Gas Service	60	01-Apr-22	24-Jun-22	110
Divisions 02 - 44 - Detailed Specifications		140	01-Apr-22	18-Oct-22	90
A1070	Submit & Approve Concrete Submittals (incl. F/R/P)	60	01-Apr-22	24-Jun-22	55
A1080	Submit & Approve Metal Submittals (Anchors, Metal Fabs, Railings & Gratings)	60	01-Apr-22	24-Jun-22	165
A1090	Submit & Approve HVAC Submittals	60	01-Apr-22	24-Jun-22	155
A1570	Submit & Approve Site & Street Work Submittals (incl. Paving, Curbing, Restoration, etc.)	60	01-Apr-22	24-Jun-22	100
A1830	Submit & Approve Finishing Submittals (Painting & Coating)	60	01-Apr-22	24-Jun-22	60
A1850	Submit & Approve Plumbing Equipment & Accessories	60	01-Apr-22	24-Jun-22	170
A1870	Submit & Approve Electrical & Instrumentation Submittals (incl. SCADA)	60	01-Apr-22	24-Jun-22	100
A1880	Submit & Approve Generator Submittals	60	01-Apr-22	24-Jun-22	20
A1890	Submit & Approve Force Main Submittals (incl. Steel & Helical Piles)	60	01-Apr-22	24-Jun-22	20
A1900	Submit & Approve Collection System Submittals	60	01-Apr-22	24-Jun-22	0
A1910	Submit & Approve Pumps & Associated Piping and Valves	60	01-Apr-22	24-Jun-22	30
A1140	F&D Generator	60	27-Jun-22	20-Sep-22	20
A1150	F&D Collection System Materials	40	27-Jun-22	22-Aug-22	0
A1580	F&D Pumps & Associated Piping and Valves	80	27-Jun-22	18-Oct-22	30
Construction		205	27-May-22	21-Mar-23	0
A1170	Mobilization	10	27-May-22	10-Jun-22	10
Pump Station		185	27-Jun-22	21-Mar-23	0
A2060	Installation of 48" Knife Gate Valve - Lower Level PS	5	27-Jun-22	01-Jul-22	50
A2040	Installation of Concrete Splitters, Benching & Dividers - Lower Level PS	25	05-Jul-22	08-Aug-22	50
A2050	Installation of Pump Discharge Piping, Valves & Supports - PS	30	09-Aug-22	20-Sep-22	50
A2150	Installation of Electrical Conduit & Cable Tray - PS	10	09-Aug-22	22-Aug-22	70
A2130	Installation of Electrical Equipment, Panels & Junction Boxes - PS	10	23-Aug-22	06-Sep-22	105
A2030	Installation of (3) Stormwater Pumps & Associated Appurtenances - PS	20	19-Oct-22	15-Nov-22	30
A2020	Installation of (2) Dewatering Pumps & Associated Appurtenances - PS	10	16-Nov-22	30-Nov-22	30
A2090	Installation of Instrumentation & Pump Controls - PS	25	01-Dec-22	06-Jan-23	30
A2140	Installation of Electrical Cable & Terminations (incl. I&C) - PS	10	22-Dec-22	06-Jan-23	30
A2070	Installation of SS Grating, Supports & Aluminum Ladder - Intermediate Level PS	10	09-Jan-23	23-Jan-23	30
A2370	Pump Station & Force Main Start-up & Testing - PS	10	08-Mar-23	21-Mar-23	0
Control Building		155	27-Jun-22	06-Feb-23	20
A1940	Installation of Acoustic Insulation - Generator Room - CB	10	27-Jun-22	11-Jul-22	60
A1930	Demolition of Metal Stud Walls - CB	10	12-Jul-22	25-Jul-22	60
A1960	Installation of Emergency Generator & Associated Accesories - CB	20	21-Sep-22	18-Oct-22	20
A1950	Installation of Louvers (East & West Wall) - CB	10	19-Oct-22	01-Nov-22	20
A1970	Installation of Gas Service (Meter, Regulator & Piping to Generator) - CB	10	02-Nov-22	15-Nov-22	20
A2110	Installation of Electrical Equipment, Panels & Junction Boxes - CB	10	16-Nov-22	30-Nov-22	20
A2000	Installation of Electrical Conduit & Cable Tray - Electrical Room CB	10	01-Dec-22	14-Dec-22	20
A2100	Installation of Instrumentation - Electrical Room CB	10	15-Dec-22	29-Dec-22	20
A1990	Installation of HVAC - CB	15	30-Dec-22	23-Jan-23	25
A2160	Installation of Level Instrumentation within 1MGD Underground Storage Tank	5	30-Dec-22	06-Jan-23	20
A2120	Installation of Electrical Cable & Terminations - Electrical Room CB	10	09-Jan-23	23-Jan-23	20



Remaining Level of Effort
Actual Level of Effort
Critical Remaini...
Remaining Work

Hazen

Activity ID	Activity Name	Rem Dur	Start	Finish	Total Float
A1980	Installation of Plumbing Piping & Fixtures - CB	5	24-Jan-23	30-Jan-23	25
A2010	Start-up & Testing of Emergency Generator - CB	10	24-Jan-23	06-Feb-23	20
Force Main		195	13-Jun-22	21-Mar-23	0
Adams St. Work		120	13-Jun-22	30-Nov-22	0
A2180	Installation of MPT & Traffic Controls (Adams St. Closure Phases 1 - 3) - Adams St.	120	13-Jun-22	30-Nov-22	0
A2350	Perform Utility Relocations - Adams St.	20	13-Jun-22	11-Jul-22	10
A2250	Installation of Piles - Adams St.	20	12-Jul-22	08-Aug-22	10
A2260	Installation of Concrete Pile Caps - Adams St.	20	26-Jul-22	22-Aug-22	10
A2220	Installation of Storm MHs, Inlet Structures & Piping - Adams St	25	23-Aug-22	27-Sep-22	0
A2230	Installation of 30" & 36" DIP Force Main - Adams St.	50	07-Sep-22	15-Nov-22	0
A2270	Restoration - Backfill, Compaction & Roadway Restoration - Adams St.	10	16-Nov-22	30-Nov-22	0
15th St. Work		85	16-Nov-22	21-Mar-23	0
A2360	Perform Utility Relocations - 15th St.	20	16-Nov-22	14-Dec-22	0
A2380	Installation of MPT & Traffic Controls (15th St. Closure Phases 1 - 4) - 15th St.	85	16-Nov-22	21-Mar-23	0
A2290	Installation of Piles - 15th St.	15	15-Dec-22	06-Jan-23	0
A2300	Installation of Concrete Pile Caps - 15th St.	20	30-Dec-22	30-Jan-23	0
A2320	Installation of Special Structures, Inlet Structures & Piping - 15th St.	10	17-Jan-23	30-Jan-23	0
A2310	Installation of 30" DIP Force Main - 15th St.	25	24-Jan-23	28-Feb-23	0
A2340	Installation of Wet Tap & Back Flow Prevention Valve & Connection to Existing 48" RCP Outfall - 15th St.	5	01-Mar-23	07-Mar-23	0
A2330	Restoration - Backfill, Compaction & Roadway Restoration - 15th St.	10	08-Mar-23	21-Mar-23	0
Post Construction		20	22-Mar-23	18-Apr-23	0
A1420	Close-out	20	22-Mar-23	18-Apr-23	0



Remaining Level of Effort
Actual Level of Effort
Critical Remaini...
Remaining Work

Hazen

Appendix C: Cost Spreadsheet

North Hudson Sewerage Authority
Engineering Services H6/H7 CSO Long Term Control Plan Phase 2 - Engineering Services During Construction
November 16, 2021

Employee		Eamon Kelly	William Gettings	Kevin Haney	Jared Lewis	Shawn Brennan	Lorraine Salamanca	Mark Supplee	Kevin Ward	Rose Jesse	Brian Como	James Soroush	Daniel Sheeran	Imtiaz Karim	Michael Stallone	David Fong	Simone Manzo	Derrick King
Position		Project Director	Project QA/QC	DSDC Manager	Health and Safety Manager	Resident Engineer	Document Control	Design Liason	Environ-mental Permitting	Cost Estimating Lead	Cost Estimating	Scheduling/ Project Control	Civil Lead	Civil	Architect-ural Lead	Architect-ural	Structural Lead	Structural
Hourly Rate		$ 229.36	$ 336.12	$ 226.89	$ 263.08	$ 185.00	$ 132.72	$ 280.64	$ 249.44	$ 286.79	$ 205.17	$ 206.39	$ 196.93	$ 142.93	$ 290.69	$ 247.32	$ 258.49	$ 213.60
Task	**Description**	**Subtotal Hours**	**Hours & Costs**															
0	***Bidding Services***																	
	0.1 Notifications and Advertisements	4	-	-	4	-	-	-	-	-	-	-	-	-	-	-	-	-
	0.2 Bidding Administration	34	-	2	8	-	-	24	-	-	-	-	-	-	-	-	-	-
	0.3 Addenda Preparation	38	-	2	8	-	-	24	-	-	4	-	-	-	-	-	-	-
	0.4 Prebid Meeting, Minutes, Etc.	26	4	-	10	-	-	12	-	-	-	-	-	-	-	-	-	-
	0.5 Bid Opening	18	-	-	10	-	-	8	-	-	-	-	-	-	-	-	-	-
	0.6 Bid Evaluation, reporting, meetings	60	8	2	16	-	-	32	2	-	-	-	-	-	-	-	-	-
	Subtotal Hours	**180**	**12**	**6**	**56**	**-**	**-**	**100**	**2**	**-**	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Subtotal Costs		**$ 2,752**	**$ 2,017**	**$ 12,706**	**$ -**	**$ -**	**$ 13,272**	**$ 561**	**$ -**	**$ 1,147**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
1	***Contract Execution and Pre-Construction Meeting***																	
	1.0 Contract Execution & Pre-Const Meeting	58	6	4	20	-	4	24	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subtotal Hours	**58**	**6**	**4**	**20**	**-**	**4**	**24**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Subtotal Costs		**$ 1,376**	**$ 1,344**	**$ 4,538**	**$ -**	**$ 740**	**$ 3,185**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
2	***Resident Inspection***																	
	2.1 Resident Inspection	1,880	-	-	-	-	1,760	120	-	-	-	-	-	-	-	-	-	-
	2.2 Misc Weekend/overnight work	-		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subtotal Hours	**1,880**	**-**	**-**	**-**	**-**	**1,760**	**120**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Subtotal Costs		**$ -**	**$ -**	**$ -**	**$ -**	**$ 325,592**	**$ 15,927**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
3	***Authority's Agent During Construction***																	
	3.1 Compliance with Contract Documents	88	16	8	60	-	-	-	4	-	-	-	-	-	-	-	-	-	-
	3.2 Agency Compliance	60	-	-		-		60	-	-	-	-	-	-	-	-	-	-	-
	Subtotal Hours	**148**	**16**	**8**	**60**	**-**	**-**	**60**	**4**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Subtotal Costs		**$ 3,670**	**$ 2,689**	**$ 13,613**	**$ -**	**$ -**	**$ 7,963**	**$ 1,123**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
4	***Construction Administration***																	
	4.1 Construction Coordination and Meetings	24	4	-	12	8	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.2 Additional Inspections by Specialists	74	-	-	40	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.3 Pay Request Review	10	4	-	6	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.4 Monthly Progress Report	16	4	-	12	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	4.5 RFIs and Interpretations	120	4	-	12	-	-	24	-	-	-	-	-	4	16	-	-	4	8
	4.6 Submittal Review	400	-	-	24	-	-	48	-	-	-	-	12	8	80	-	-	8	64
	4.7 Field Orders, Work Changes, PCOs, COs.	184	4	4	12	-	-	12	-	-	4	16	-	8	40	-	-	4	16
	4.8 Record Drawings	12	-	-	4	-	8	-	-	-	-	-	-	-	-	-	-	-	-
	4.9 Startup, Testing and Training	48	-	-	16	-	-	8	-	-	-	-	-	-	-	-	-	-	-
	4.10 O&M Manual	36	-	2	8	-	-	16	-	-	-	-	-	-	-	-	-	-	-
	4.11 Punchlist, Sub Compl, Final Pay, Closeout	36	2	2	16	-	-	16	-	-	-	-	-	-	-	-	-	-	-
	Subtotal Hours	**960**	**22**	**8**	**162**	**8**	**8**	**124**	**-**	**-**	**4**	**16**	**12**	**20**	**136**	**-**	**-**	**16**	**88**
	Subtotal Costs		**$ 5,046**	**$ 2,689**	**$ 36,756**	**$ 2,105**	**$ 1,480**	**$ 16,458**	**$ -**	**$ -**	**$ 1,147**	**$ 3,283**	**$ 2,477**	**$ 3,939**	**$ 19,438**	**$ -**	**$ -**	**$ 4,136**	**$ 18,796**
5	***Special Inspections***																	
	5.0 Special Inspections	80	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
	Subtotal Hours	**80**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**	**-**
	Subtotal Costs		**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**	**$ -**
	Total Hours	**3,306**	**56**	**26**	**298**	**8**	**1,772**	**428**	**6**	**-**	**8**	**16**	**12**	**20**	**136**	**-**	**-**	**16**	**88**
	Total Costs		**$ 12,844**	**$ 8,739**	**$ 67,612**	**$ 2,105**	**$ 327,811**	**$ 56,806**	**$ 1,684**	**$ -**	**$ 2,294**	**$ 3,283**	**$ 2,477**	**$ 3,939**	**$ 19,438**	**$ -**	**$ -**	**$ 4,136**	**$ 18,796**

North Hudson Sewerage Authority
Engineering Services H6/H7 CSO Long Term Control Plan Phase 2 - Engineering Services During Construction
November 16, 2021

		Victor Levin	Nick Bowen	George Markou	Youssef Abdallah	Norman Bartley	Samuel Barrese	Robert D. Knotz	Mike Schappert	Joseph Rymer, Adam French				
Employee														
Position		Mechanical Lead	Mechanical	Electrical / I&C Lead	Electrical / I&C	HVAC / Plumbing Lead	HVAC / Plumbing	Senior Project Manager - Special Inspections	Project Consultant - Special Inspections	Resident Engineer - Structural Masonry/ Steel Special Inspections		Subcontracted Services	Other Direct Costs	
Hourly Rate		$ 242.99	$ 105.08	$ 291.44	$ 124.18	$ 304.95	$ 164.99	$ 195.00	$ 195.00	$ 120.00	$ -			
Task	**Description**													**Cost Totals**
0	***Bidding Services***													
	0.1 Notifications and Advertisements	-	-	-	-	-	-	-	-	-	-	$ -	$ 5,000	$ 5,908
	0.2 Bidding Administration	-	-	-	-	-	-	-	-	-	-	$ -	$ -	$ 5,673
	0.3 Addenda Preparation	-	-	-	-	-	-	-	-	-	-	$ -	$ -	$ 6,820
	0.4 Prebid Meeting, Minutes, Etc.	-	-	-	-	-	-	-	-	-	-	$ -	$ 200	$ 4,979
	0.5 Bid Opening	-	-	-	-	-	-	-	-	-	-	$ -	$ 150	$ 3,481
	0.6 Bid Evaluation, reporting, meetings	-	-	-	-	-	-	-	-	-	-	$ -	$ 150	$ 11,096
	Subtotal Hours	-	-	-	-	-	-	-	-	-	-			
	Subtotal Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 5,500	$ 37,956
1	***Contract Execution and Pre-Construction Meeting***													
	1.0 Contract Execution & Pre-Const Meeting	-	-	-	-	-	-	-	-	-	-	$ -	$ 200	$ 11,384
		-	-	-	-	-	-	-	-	-	-	$ -	$ -	$ -
		-	-	-	-	-	-	-	-	-	-	$ -	$ -	$ -
	Subtotal Hours	-	-	-	-	-	-	-	-	-	-			
	Subtotal Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 200	$ 11,384
2	***Resident Inspection***													
	2.1 Resident Inspection	-	-	-	-	-	-	-	-	-	-	$ -	$ 1,200	$ 342,719
	2.2 Misc Weekend/overnight work	-	-	-	-	-	-	-		-	-	$ -	$ -	$ -
	Subtotal Hours	-	-	-	-	-	-	-	-	-	-			
	Subtotal Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,200	$ 342,719
3	***Authority's Agent During Construction***													
	3.1 Compliance with Contract Documents	-		-	-	-	-	-	-	-	-	$ -	$ -	$ 21,094
	3.2 Agency Compliance	-	-	-	-	-	-	-	-	-	-	$ -	$ -	$ 7,963
	Subtotal Hours	-	-	-	-	-	-	-	-	-	-			
	Subtotal Costs	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 29,058
4	***Construction Administration***													
	4.1 Construction Coordination and Meetings	-	-	-	-	-	-	-	-	-	-	$ -	$ 550	$ 6,295
	4.2 Additional Inspections by Specialists		-	24	10	-	-	-	-	-	-	$ -	$ 440	$ 17,752
	4.3 Pay Request Review	-	-	-	-	-	-	-	-	-	-	$ -	$ -	$ 2,279
	4.4 Monthly Progress Report	-	-	-	-	-	-	-	-	-	-	$ -	$ -	$ 3,640
	4.5 RFIs and Interpretations	-	-	16	32	-	-	-	-	-	-	$ -	$ -	$ 21,279
	4.6 Submittal Review	4	32	24	96	-	-	-	-	-	-	$ -	$ -	$ 66,290
	4.7 Field Orders, Work Changes, PCOs, COs.	8	8	8	40	-	-	-	-	-	-	$ -	$ -	$ 32,834
	4.8 Record Drawings	-	-	-	-	-	-	-	-	-	-	$ -	$ -	$ 2,388
	4.9 Startup, Testing and Training	-	-		24	-	-	-	-	-	-	$ -	$ 440	$ 8,112
	4.10 O&M Manual		-	2	8	-	-	-	-	-	-	$ -	$ 500	$ 6,687
	4.11 Punchlist, Sub Compl, Final Pay, Closeout	-	-	-	-	-	-	-	-	-	-	$ -		$ 6,885
	Subtotal Hours	**12**	**40**	**74**	**210**	-	-	-	-	-	-			
	Subtotal Costs	**$ 2,916**	**$ 4,203**	**$ 21,567**	**$ 26,077**	$ -	$ -	$ -	$ -	$ -	$ -	$ -	$ 1,930	**$ 174,441**
5	***Special Inspections***													
	5.0 Special Inspections	-	-	-	-	-	-	4	12	64	-	$ 1,000		$ 11,800
	Subtotal Hours	-	-	-	-	-	-	**4**	**12**	**64**	-			
	Subtotal Costs	$ -	$ -	$ -	$ -	$ -	$ -	**$ 780**	**$ 2,340**	**$ 7,680**	$ -	**$ 1,000**	$ -	**$ 11,800**
	Total Hours	**12**	**40**	**74**	**210**	-	-	**4**	**12**	**64**	-			
	Total Costs	**$ 2,916**	**$ 4,203**	**$ 21,567**	**$ 26,077**	$ -	$ -	**$ 780**	**$ 2,340**	**$ 7,680**	$ -	**$ 1,000**	**$ 8,830**	**$ 607,357**

Subtotal	$ 607,357
Design Engineer Professional Services	$ 50,000
Total Proposed Cost	**$ 657,357**