JULY 16, 2015

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Hardesty & Hanover | Gannett Fleming

Request For Proposal (RFP) No. 15-044
Design, Engineering and Construction Assistance Services for the Replacement of the

RARITAN RIVER DRAWBRIDGE

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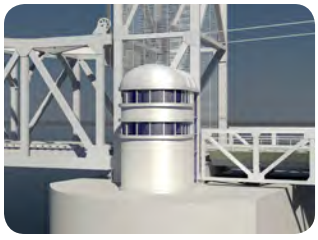

SECTION 1

Cover Letter

New Jersey Transit
One Penn Plaza East
Newark, NJ 07105-2246
Attn: Taishida S. Chapman

July 16, 2015

Re: **RFP No. 15-044 – Design, Engineering & Construction Assistance Services for the Replacement of Raritan River Drawbridge**

Dear Ms. Chapman,

The **Hardesty & Hanover/Gannett Fleming Joint Venture** is pleased to submit this proposal for the Design, Engineering and Construction Assistance Services for the Replacement of Raritan River Drawbridge. Our Team has been assembled to deliver the project goals of this contract by offering proven project management, the highest technical expertise in movable bridge and rail systems design, experience in navigating the environmental review process, and true constructability know-how. We are committed to meeting the project objectives and delivering this contract on schedule to meet the FTA grant requirements.

Our Joint Venture combines the resources and technical expertise of two nationally renowned firms, whose roots are planted in this region, have outstanding portfolios of rail/transit projects, and strong relationship with NJ TRANSIT. Established over 125 years ago, **Hardesty & Hanover** (H&H) is one of the most accomplished bridge firms nationwide, with a reputation of excellence and creativity. **H&H's movable bridges are known for their longevity, reliability and being maintenance-friendly**. Many have been in service for nearly a century, like the *NJ TRANSIT's Lower Hack* and *Amtrak's Dock Lift Bridge* in Newark. H&H is also known for pushing the technological boundaries, having designed some of the largest, state-of-the-art movable bridges in the world. Examples include the signature *Woodrow Wilson Memorial Bridge* over the Potomac River in Maryland and the *Jacques Chaban-Delmas Bridge* in France, which is the longest vertical lift bridge in Europe.

Gannett Fleming (GF) is one of the leading firms in global rail and transit industry, with extensive expertise in rail systems and some of the **best resources in catenary, traction power, signals/train control, telecommunications, security, and rail operations**. GF has a long-standing relationship with NJ Transit, having delivered critical projects, such as the *Portal Bridge* and the on-going *Superstorm Sandy Substation Hardening/Resiliency Program* at six locations including the Bay Head Rail Yard.

H&H and GF have a strong history working in tandem to deliver the engineering for award-winning railroad movable bridges. This includes Amtrak's ***Niantic River Bridge*** and MNR's *Peck Bridge*. H&H's lengthy portfolio of railroad movable bridges includes the recently completed *Port River Bridges* (2008) and the *Jacques Chaban-Delmas Bridge* (2013). Additionally, H&H has five other railroad movable bridges currently in final design or construction.

Recognizing that **construction staging, and, in particular, foundation work will be a major focus areas of this project**, our Team includes **Haley & Aldrich**, a leading geotechnical firm currently working on some of the largest bridge replacement projects in the region, including the *Goethals* and *Kosciuszko Bridge*. Bringing the contractor's insight to the design process, our Team also includes **Griffin Engineering**, a construction engineering firm, who has hands-on knowledge of the existing site conditions.

Our hand-picked key project staff bring the right mixture of experience, personal enthusiasm, and commitment to teamwork and partnership with NJ TRANSIT necessary for the project success. Our proposed **Project Manager, Visha Szumanski, PE**, who has served in high-level technical and management roles on complex rail/transit projects, such as the *Second Avenue Subway* and *Penn Station Redevelopment*, will be **100% dedicated** to the management of this project. She is well known to NJ TRANSIT having successfully delivered TOC contracts. She will be assisted by two Deputies: **Rich Cross, PE** (GF), who delivered the design for the *Portal Bridge* and **David Tuckman, PE** who is one of the leading design managers at H&H.

We believe that we have the right team to meet the challenges of this contract and we are excited about this opportunity to assist NJT in this major capital improvement project.

Very truly yours,

Paul Skelton, Principal (H&H)
Hardesty & Hanover/Gannett Fleming JV

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SECTION 2

Qualifications of Firms

SECTION 2: QUALIFICATIONS OF FIRMS

The Hardesty & Hanover/Gannett Fleming Joint Venture Team combines the resources of two firms who are the **industry front-runners in their respective focus areas for this project: Movable Bridges – Hardesty & Hanover; and Rail Systems – Gannett Fleming**. The JV partners will be assisted by highly qualified specialty subconsultants, including many certified DBE firms.

HARDESTY & HANOVER

Established in 1887 and ranked in the top 15 in ENR's list of bridge engineering firms, Hardesty & Hanover is one of the **most seasoned, reputable, and accomplished bridge engineering firms** in the region. H&H's portfolio includes many landmark structures in the region over last 125 years. H&H offers a host of engineering services for **bridges, tunnels, rail/transit, highways and special structures**, including feasibility studies, structure design/rehabilitation, and mechanical/electrical services for movable bridges. Our multi-discipline staff of expert engineers and architects combine in-depth knowledge of the most current technologies with the firm's historical perspective to develop creative and efficient solutions, which can be successfully implemented in environmentally sensitive areas.

H&H is world renowned for expertise in **MOVABLE BRIDGES**. The firm designed the **first vertical lift bridge in the US**, the *Halsted Street Bridge* in Chicago, **built in 1894**, which had a lift height of 150ft. Since that day, H&H has been continuously pushing the technological limits of movable bridge engineering, designing record breaking structures, such as the *Tomlinson Lift Bridge, CT*, which is the **heaviest lift span in the Northeast**, and the *Chaban-Delmas Lift Bridge in France*, **featuring the longest lift span in Europe.**

RAIL & TRANSIT has always been at the center of H&H engineering practice. **The first railroad bridge designed by H&H was built 125 years ago** (*Red Rock Bridge* over Colorado River). To this day, H&H continues to be the leading expert in rail movable bridge and provide rail clients with innovative, efficient and dependable designs for structures carrying passengers and freight throughout the North America. **In the last ten years alone, H&H has delivered over 50 projects involving railroad structures** on the Northeast Corridor, for NJ TRANSIT, Amtrak, Metro-North, ConnDOT and MBTA. H&H's most recent **movable railroad bridge projects**, include:

- **Niantic River Bridge**, CT (**2013**) – 140 ft. single leaf bascule on Amtrak's Northeast Corridor. Considered by Amtrak to be one of their most complex capital improvement projects and delivered jointly by H&H and GF.
- **Port River Bascule Bridges,** Australia (**2008**) – two 200 ft. single leaf bascule bridges: railroad and highway. Pronounced a "brilliant structures" by the Chief Executive of the Australian Department of Transport and Infrastructure.
- **Sarah Mildred Long Bridge**, ME (**in construction**) – 300 ft. two- level vertical lift bridge carrying railroad and highway. Features many innovative solutions, including fenderless piers and the first application of post tensioned concrete for the lift towers.
- **Jacques Chaban-Delmas Bridge**, Bordeaux, France (**2013**) – 383 ft. vertical lift bridge, the longest in Europe, carries highway and two light rail tracks. Ultramodern look, state-of-the-art engineering, cutting-edge technology.
- **BNSF Des Allemandes Swing Bridge**, Louisiana (in construction) – replacement of plate girder swing bridge carrying freight rail.
- **Tomlinson Bridge,** CT (**2002**) – 270 ft. long highway/railway vertical lift and the Northeast's heaviest. Received many awards, including ABC Project of the Decade.
- **CSX New River Bridge**, FL (**in construction**) – 105 ft. rolling lift bascule carrying freight rail.

H&H's Recent Movable RR Bridges

Niantic River Bridge, CT (2013)
Northeast Corridor

Port River Bridges, Australia (2008)
Freight Rail

Tomlinson Bridge (2002)
Highway and Freight Rail

Jacques Chaban-Delmas, France (2013)
Highway and Light Rail

Most of H&H's rail/transit structures are vital links on busy commuter lines, carrying hundreds of trains per day. H&H's rail/transit expertise and ingenuity allows us to implement complex rehabilitation and replacement schemes while maintaining uninterrupted service. Recent examples include Metro-North *Harlem River Lift Bridge* rope replacement, currently in construction, which has been done without interruption to the 750 trains crossing the bridge every day.

We understand the unique needs/priorities of the NJ TRANSIT and other railroad clients and the specific challenges of railroad environment. We are the leaders in the industry and actively participate in the development of railroad design standards throughout the country. H&H has pioneered engineering and technological innovations **in prestigious industry organizations including AREMA** and Heavy Movable Structures (HMS). Our Principal-in-Charge, Paul Skelton, is the former **Chairman of AREMA Committee 15,** and our Lead Mechanical Engineer, Stephen Mikucki, is the current **Chairman of the Movable Bridge Subcommittee**.

H&H is well familiar with **NJ TRANSIT INFRASTRUCTURE**. In the last two decades we have inspected and evaluated over 100 NJT bridges. **H&H is also the original designer of four movable bridges on rail lines utilized by NJ TRANSIT:**

- **Lower Hack** Vertical Lift Bridge (1928)
- **Dock** Vertical Lift Bridge (1935); operated by Amtrak
- **Upper Hack** Vertical Lift Bridge (1959)
- **Delair** Vertical Lift Bridge (1960); operated by Conrail

H&H has been also involved in various **rehabilitation contracts** for NJ TRANSIT movable bridges, including the rehabilitation of **Newark Drawbridge** (2010), which involved structural repairs, strengthening, and mechanical/electrical systems upgrade. H&H's other rehabilitation contracts included the mechanical and electrical systems upgrades for the **Dock Lift Bridge**, most recent completed in 2012.

H&H also implemented various inspection and rehabilitation contracts for the **Raritan River Bridge** project, starting with a replacement feasibility study (with vertical lift bridge) in 1980, followed by the first major rehabilitation in 1982 and various component repairs/upgrades since then. H&H knows this bridge and has a long-standing direct knowledge of this asset. H&H's other NJ TRANSIT movable bridge projects include the replacement of the **Beach Thorofare Swing** (1989) and the on-going **feasibility study** for the replacement of 104-year old **Brielle Drawbridge**, which is a joint effort of H&H and GF**.**

Railroad movable bridges designed by H&H are **known for their longevity**, like the four bridges on NJ TRANSIT lines, as well as Conrail's *Calumet River Lift Bridge* in Chicago, built in 1912, which is still in service. The keys to our success with all our rail/transit clients has been utilizing:

- **Innovative engineering approaches**
- **Effective engineering**
- **Attention to detail,** and
- **Stellar project management**.

H&H has a deep understanding of the complex interactions between the different bridge systems (structural, mechanical and electrical) enabling the employment of a **holistic approach to the movable bridge design**. With creative use of materials, maintenance-centric design, and focus on operational reliability, **H&H designs bridges that endure**.

H&H's Movable Bridges on NJ TRANSIT Rail Lines

Lower Hack Lift – Built in 1928
NJT Morristown, Gladstone & NJ

Dock Vertical Lift Bridge – Built in 1935
NJT Northeast Corridor

Upper Hack Lift – Built in 1959
NJT Main Line

Delair Vertical Lift Bridge – Built in 1960
NJT Atlantic City Line

GANNETT FLEMING (GF)

For 100 years, Gannett Fleming has been a leader in global infrastructure solutions with a focus on planning, design, technology, and construction management services for a diverse array of markets. Across more than 65 offices, 2,000 highly qualified professionals are united in an unyielding commitment to deliver excellence to every client and every project, every day.

GF is a **leading infrastructure consultant in New Jersey**. The South Plainfield office is just minutes away from the project site and we have completed numerous major infrastructure projects in Middlesex County including *Route 18 Reconstruction* in New Brunswick (along the Raritan River) and the *Route 18 Extension* Projects in Piscataway. GF has three offices that provide a full array of engineering services, including rail and transit, highway and bridge design, transportation planning, environmental permitting and remediation, geotechnical engineering, dam and hydraulic structures, water and wastewater, electrical engineering, architecture and construction management.

Rail and Transit is one of GF's core specialty divisions. GF provides planning, design and management services, develop system plans and detailed designs. GF serves as a partner for program and construction management, testing/commissioning, as well as system expansion and upgrades for commuter railroads, freight railroads, and light and heavy rail transit systems.

Proud to be **ISO 9001 Certified**, GF is a leader in delivering **innovative solutions** for catenary, traction power, signaling and train control, communications, track, and rail operations. GF's professionals understand vendor systems and excel at integrating components into broad operational systems. GF is experienced in operations and maintenance procedures, construction materials and techniques, rehabilitation, testing, commissioning, and acceptance procedures. Drawing on experience working for railroads, transit authorities, and industry vendors, GF's staff of designers, engineers, and planners continuously adds new and vital technologies to solve practical problems in system design, installation, operations and maintenance.

With some of the best and brightest talent in the industry, GF also has extensive experience with the **design, rehabilitation and construction management of bridges** and highway structures. From small stream crossings to multi-level interchanges, GF staff's technical expertise allows us to develop the most efficient solutions. GF's bridge team has diverse experience, ranging from development of client-specific policies, guidelines, and procedures to final designs that incorporate innovative construction methods.

GF has a long-standing relationship with NJ TRANSIT, having delivered project such as the *Portal Bridge* and the on-going work on *Superstorm Sandy Substation Hardening/Resiliency Program* at six locations including the Bay Head Rail Yard. GF's other local railroad clients include Amtrak, LIRR, Metro-North, SEPTA, and the Delaware River Port Authority's PATCO Line. GF's culture of technical excellence, innovation, and responsiveness empowers us to fulfill our key mission: ***make our clients successful***.

NEC Capacity Improvements
Portal Bridge Replacement, NJ

Emerging Transit Technologies
SEPTA Positive Train Control, PA

Protecting Infrastructure
Amtrak's Security Improvements

Connecting People & Places
Purple Line Light Rail, Baltimore

Minimizing Public Impact
NSR Bridge Replacement, PA

SUBCONSULTANTS

HALEY & ALDRICH is a cutting edge **Geotechnical Consulting** firm, which combines a thorough understanding of the soil and rock geology with superb geotechnical engineering expertise to solve complex site development and construction problems. Transportation engineering for highways, railroads, bridges, ports and terminals has always been a key part of H&A practice. As a member of the design and construction team, the firm brings true understanding of the subsurface conditions leading to sound and practical engineering solutions to help reduce the risk and the cost of construction. Haley & Aldrich mastered new and existing technologies, including practical applications of deep, high capacity foundations, slurry walls, tie-downs, controlled blasting, geosynthetics, lightweight fills, and ground improvement to address complex site constraints, meet construction schedules, and minimize impacts on existing structures. **Haley & Aldrich has significant experience in the project area including the replacement of Route 35the Victory Bridge over the Raritan River which is immediately upstream of NJ TRANSIT'S movable bridge**, a redevelopment study for the *Perth Amboy Landfill*, and the *Neptune Regional Transmission Project* which begins in Sayreville on the river and traverses through the Raritan River Bridge area with undersea transmission cables. The firm's other NJ coastal projects include the *Goethals Bridge*, *Shrewsbury River Bridge*, *Beesley's Point Bridge*, *Great Egg Harbor Bridge*, *Deeepwater Meteorological Tower off Atlantic City Shore.*

GRIFFIN ENGINEERING – specializes in **Construction Engineering/Constructability** services. Founded by Joe Griffin who spent 30 years in heavy construction industry, the firm brings the contractor's inside and hands-on knowledge about construction staging, heavy equipment, work sequencing/scheduling and cost. The firm's core services include design of temporary structures, constructability analysis, value engineering, estimating, scheduling and assistance with dispute resolution. Griffin Engineering will provide invaluable assistance to the project team in developing the most efficient solutions, staging of work to achieve a realistic construction schedule and reducing the project risks.

NAIK GROUP – **certified DBE firm**, which provides a broad range of **Survey & Mapping** services, including 3-D laser scanning, LiDAR, topographic and utility survey, right-of-way mapping, GPS survey, digital terrain modeling and photogrammetry. Utilizing state-of-the-art electronic equipment, NAIK's staff of highly experienced licensed surveyors and survey technicians are able to expedite any survey assignment and respond quickly to emergency requests. NAIK's services also include **Civil, Utility & Structural** engineering for bridge rehabilitation/replacement in environmentally complex areas. The firm's notable projects include *Hudson-Bergen Light Rail*, *Eastside Access*, *Second Avenue Subway* and *WTC Transportation Hub*.

JCMS – **certified DBE firm** with expertise in **Cost Estimating & Scheduling** for transportation projects. The firm has expert understanding of the bidding environment, union rules, equipment availability, material/labor costs, productivity rates, and the local history of environmental constraints and permitting. JCMS provided services for many NJ Transit projects, including the *Lower Hack Bridge*, *Mainline 2nd Track in Patterson*, *MMC Expansion, and Morris & Essex Station Improvements.*

ENVISION – **certified DBE firm**, Envision provides comprehensive **Project Controls** services including Document Control, Project Cost and Change Control, Risk Assessment and **Value Engineering**. Envision's team of seasoned professionals maximize the use of sophisticated management tools to seamlessly track progress and manage project records. The firm's recent notable projects include *NJ Transit Portal Bridge,* and planning study for *DRPA Southern NJ Mass Transit Alternatives.*

RADIN CONSULTANTS – **certified DBE firm** with expertise in **NEPA Review,** assisting local rail/transit clients, including NJT and MTA in meeting federal and state regulatory requirements and strategizing and streamlining opportunities to expedite project funding and implementation. RADIN's recent NJ TRANSIT projects include the *Portal Bridge*, *Perth Amboy Station Accessibility Improvements* and the *ARC Tunnel*.

SJH – **certified DBE firm**, specializing in engineering services for bridges, transit structures and highways, including **Structural/Civil Design Support**. SJH has been involved in many large scale transportation projects such as the NJT's *Portal Bridge Capacity Enhancement* and *post-Sandy Substation Hardening*, replacement of *Goethals* and *Kosciuszko* bridges and *Pulaski Skyway Rehabilitation*.

Our team also includes **ARCH ²**, a **DBE certified firm** well known to NJ TRANSIT, who will assist in coordination of historic preservation issues with the NEPA Consultant.

KEY PROJECT STAFF AND AVAILABILITY

It is through the combined efforts and skills of the people that projects are delivered, therefore, the quality and experience of the assigned personnel is crucial to achieving a success. For this project we carefully assembled a team that provides the right mix of professional experience, local knowledge, and technical expertise. The key project staff has been identified on the **SECTION 7: Project Organization and Staffing Chart**. All of these personnel are full-time employees of their respective firms and are available to serve on the project in the manner prescribed. They will not be removed from the team without written approval from NJ Transit. A summary of our key staff availability and their present and future project commitments are outlined in the Table below.

Name	Role	Current Project Commitments	Avail.
Visha Szumanski, PE (H&H)	Project Manager	• Metro-North Mount Vernon Bridge Replacement	100%
Paul Skelton, PE (H&H)	Project Principal	• MassDOT Chelsea Street Vertical-Lift Bridge • MassDOT Fore River Vertical-Lift Bridge	25%
David Boaté, PE (GF)	Project Principal	• NJT A/E TOC • NJT Rail Operations & Infrastructure Planning TOC	25%
Richard Cross, PE (GF)	Deputy Project Manager – Track & Systems	• NJ Transit, HX Bridge Conceptual Report • Metrolinx, GO Transit Electrification	75%
David Tuckman, PE (H&H)	Deputy Project Manager – Structures	• Marine Parkway Bridge Maintenance Manuals • NYCDOT City Island Temporary Bridge	75%
Steven Harlacker, PE, SE (H&H)	Quality Assurance Manager	• ConnDOT Aetna Viaduct - Phase II • ConnDOT Task Order Contract	25%
Bruce Smith, PE (GF)	Quality Assurance Manager	• Southeastern Pennsylvania Transportation Authority, Staff Augmentation	25%
Joe Griffin, PE (GE)	Constructability & Construction Staging	• NJTA Newark Bay Bridge Deck Reconstruction • NJTA Seismic Retrofit of Routine Bridges	25%
Glen Schetelich, PE (H&H)	Task Manager – Environmental	• Garden State Parkway Great Egg Harbor Bridge • Pulaski Skyway Deck Replacement	25%
Robert Matthews, PE (GF)	Task Manager – Civil	• NJDOT Route 4 Teaneck Road Bridge • NJTA Various On-call Assignments	75%
David Howell, PE (GF)	Task Manager – Rail Systems	• Amtrak, GEC Task Order Assignments • AMT, Point St. Charles Maintenance Facility	60%
Peter Roody, PE (H&H)	Task Manager – Movable Bridge	• MaineDOT Sarah Mildred Long CMGC • MaineDOT Gut Bridge	75%
David Gerber, PE (H&H)	Task Manager – Approach Spans	• PANYNJ Pulaski Skyway Redecking • SRDC Grays Ferry Final Design	50%
Raymond Mankbadi, PE (H&H)	Task Manager – Foundations & Geotech	• NYCDOT Unionport Bridge Replacement • NYSDOT Harlem River Drive	50%

PARTICIPATION OF DBE FIRMS

The H&H/GF JV understands the importance of equal opportunity for businesses of all sizes to participate in important transportation programs and is fully committed to meeting the project's DBE goals. We have assembled a team of the highest quality small businesses, with proven track record on NJ TRANSIT projects. Some these firms will lead specialty disciplines, such as survey, value engineering, scheduling/estimating. Others will provide support to the key project disciplines such as structural, civil, project controls. We are also planning to use a DBE firm for geotechnical borings, which is a very significant component of the project scope. An atmosphere of mentoring, training and partnering with DBE firms will be maintained through all the stages of the project. Our team will conduct monthly DBE coordination meetings to review staffing of various project tasks with DBE team members and will monitor their participation to assure full involvement.

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SECTION 3

Full-Time Office Certification

SECTION 3: FULL TIME OFFICE CERTIFICATION

The H&H/GF Joint Venture hereby certifies that we will maintain a full-time office throughout the entire project period, with adequate professional and support staff to carry out the work on this project. Visha Szumanski, our Project Manager, is currently reachable during regular working hours through H&H Headquarters office at 1501 Broadway in New York, New York, and can be contacted by phone at 212-944-1150. Upon start of the project, Ms. Szumanski and other key project staff will be based at our forthcoming **Joint Venture Project Office** located at 1037 Raymond Boulevard in Newark, NJ, **one block away from NJ TRANSIT headquarters**. The project office will be interconnected with all other H&H & GF offices via a wide area network, enabling us to readily draw on the resources of our regional offices, in particular H&H's nearby offices in **Hoboken** and **NYC**, and GF's offices in **Newark** and **Plainfield**. Maintaining a project office in close proximity to NJ TRANSIT will greatly facilitate communication with the client, allowing us to organize working sessions at a minutes notice.

OFFICE LOCATIONS

Firm	Location	Work Being Performed at Site	Proximity to Site
Joint Venture Office	1037 Raymond Boulevard Newark, NJ 07102	▸ Project Management/Quality Management ▸ Structural Design ▸ Rail Systems Design	17 Miles
Hardesty & Hanover	1501 Broadway New York, NY 10036	▸ Movable Bridge Structural Design ▸ Movable Bridge Mechanical Design ▸ Movable Electrical Design ▸ Architectural Design	23 Miles
	5 Marine View Plaza Hoboken, NJ 07030	▸ Permitting Support ▸ Foundations & Structural Design	20 Miles
	850 Bear Tavern Road, Suite 206 West Trenton, NJ 08628	▸ Geotechnical Engineering ▸ Foundations & Structural Design	32 Miles
Gannett Fleming	1037 Raymond Blvd #1420 Newark, NJ 07102	▸ Permitting Support ▸ Rail Operations	17 Miles
	One Cragwood Road South Plainfield, NJ 07080	▸ Civil Engineering ▸ Hydraulics & Hydrology ▸ Structural Design	9 Miles
	Valley Forge Corporate Center 1010 Adams Avenue Audubon, PA 19403-2402	▸ Rail System Design ▸ Track Design ▸ Scheduling	66 Miles
Haley & Aldrich	299 Cherry Hill Road, Suite 303 Parsippany, New Jersey 07054	▸ Geotechnical Engineering ▸ Foundations Design	26 Miles
Griffin Engineering	509 New York Boulevard Sea Girt, NJ 08750	▸ Constructability/Peer Review	28 Miles
Arch2	495 Main Street 28 Metuchen, NJ 08840	▸ Permit Support – Historic Preservation	5 Miles
Envision	3 Wheatley Boulevard, Unit 6B Mullica Hill, NJ 08062	▸ Project Controls ▸ Value Engineering	73 Miles
JCMS, Inc	1741 Whitehorse-Mercerville Rd Mercerville, NJ 08619	▸ Cost Estimating ▸ Construction Scheduling	29 Miles
NAIK Consulting Group	200 Metroplex Dr # 403 Edison, NJ 08817	▸ Topo/Utility/ROW Survey ▸ Utilities Coordination	7 Miles
Radin Consulting	193 West Hobart Gap Road Livingston, NJ 07039	▸ NEPA Coordination	19 Miles
SJH Engineering	3700 NJ-27 #201 Princeton, NJ 08540	▸ Structural Engineering Support ▸ Civil Engineering Support	17 Miles

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SECTION 4

Qualifications of Individuals

SECTION 4: QUALIFICATIONS OF INDIVIDUALS

The key to effectively addressing challenges on a project is in having a competent and dedicated management and technical personnel. We recognize the responsibility and opportunities presented by this contract and have hand-picked technical experts and leaders with the right mixture of technical expertise, personal enthusiasm, and commitment to teamwork and partnership with NJ TRANSIT that is necessary for success. Our management philosophy is that **all project staff "work together as one,"** whether they are the members of the consultant's team or the owner's team. As seamlessly integrated members of the NJT Project Team, our staff will provide their expertise in design, problem solving, management and contract administration, augmenting the NJT staff and facilitating the actions necessary to execute the project. With years of experience working on rail and transit projects, we will provide efficient day to day management and the right technical expertise throughout the entire contract. Below is a brief introduction of some of our key staff members.

MANAGEMENT TEAM

Our **PROJECT MANAGER**, **Visha Szumanski**, PE (H&H), has 30 years of management and technical experience focused on rail and transit projects. She successfully delivered numerous bridge and station contracts to the key Northeast railroads, including NJ TRANSIT, NYC Transit, Amtrak, PANYNJ, Metro-North and WMATA. Ms. Szumanski's project portfolio includes recent **NJ TRANSIT Task Order Contract** involving the rehabilitation of the *Morgan Draw Bridge* in South Amboy and *Navesink River Bridge* in Red Bank, both of which are on North Jersey Coast Line. Her **hands-on management style** staying directly involved in resolving day-to-day issues and forecasting tomorrow's anticipated challenges, makes her a key differentiator to delivering a successful project. Ms. Szumanski being a seasoned, well respected expert managing large multi-disciplined projects brings her experience and lessons learned from these projects to implement well-organized work plan and efficiently manage/value engineer the design team. Her management credentials include $450 million reconstruction of the Triborough Bridge Toll Plaza, which involved a myriad of disciplines and was delivered on accelerated schedule with the final design completed in only nine months. Ms. Szumanski has a **strong technical acumen**, having served as the **Chief Structural Engineer** on high-profile projects, such as *Second Avenue Subway* and *NY Penn Station Redevelopment*, where she supervised the work of large design teams and was directly responsible for the overall technical content of deliverables. **Her extensive rail/transit experience, technical expertise, and familiarity with the project area will facilitate developing efficient and creative engineering solutions.**

Ms. Szumanski assisted in resolving complex field problems on the Navesink River Bridge project.

Our Project Manager will be reporting to the **PRINCIPALS-IN-CHARGE, Paul Skelton**, PE (H&H), and **David Boaté**, PE (GF), who will not only provide high-level project oversight, but also support the design team with their **top-notch technical expertise**. **Paul Skelton**, H&H's Principal-in-Charge, is a recognized **expert in movable bridges**, with more than 30 years of experience. He is actively involved in the industry research and development through his leadership of technical committees in many trade organizations, including **AREMA**. Similarly, **David Boaté**, GF's Principal-in-Charge, is a seasoned manager and hands-on engineer with extensive track/systems experience. He has **extensive familiarity with the project area**, having led the design of *High-Level Platform Improvements on NJ Coast Line*, which included extensive work on the approaches to the Perth Amboy and South Amboy Stations. **Both of our Principals-in-Charge will be actively involved in the project, providing personal leadership and guidance to the team.**

Mr. Skelton led the design of a signature Chaban-Delmas Lift Bridge in Bordeaux, France.

PROFILE OF A PROJECT MANAGER

VISHA SZUMANSKI, PE

Visha will be **100% dedicated** to this project

Highlights

- Over 30 Years of Transportation Engineering Experience
- Experience with Railroad Movable Bridges
- Expertise in Managing Large Multidisciplinary Projects
- Strong NJ Transit Experience

Problem Solver:

- ✓ Combine patience, determination, and persistence to troubleshoot project issues
- ✓ Dynamic, results-oriented problem solver
- ✓ Easily understands and solves technical problems, she is the "subject matter expert"
- ✓ Identifies & Prioritizes challenges from Client, other Stakeholders and Project Task Leaders to achieve positive outcomes advancing the projects goals
- ✓ Skilled at evaluating options and generating solutions to unforeseen design/field issues to "stay on budget & schedule"
- ✓ Strong problem-solving and analytical skills
- ✓ Troubleshooting situations

Diversity Skills:

- ✓ Experienced in successful management of diverse groups of talented professionals
- ✓ Proven adaptability to differing professional expertise and engineering disciplines to get the project successfully delivered
- ✓ Ability to Communicate: talk and listen to conduct daily business to advance the project forward

Teamwork/Team Player:

- ✓ Strong commitment to team environment with her ability to contribute expertise & support leadership of her Design Task Managers
- ✓ Thrive in a team environment and gets others to communicate & work well together.
- ✓ Her motto "Deliver Better, Working Together"

Accountable:

- ✓ Her clear notion of accountability and responsibility within the project management domain she owns
- ✓ She identifies risks, manages them & proactively leads the Design Team to overcoming the challenges throughout the project
- ✓ She underscores transparency & communication while holding accountability of herself & team in meeting deadlines and budgets
- ✓ She captures the appropriate relevant information, communicates it with the client and builds a strong project relationship built on trust and efficiency

Our team has two **DEPUTY PROJECT MANAGERS**, **David Tuckman**, PE (H&H) and **Richard Cross**, PE (GF), who will be responsible for managing engineering work and the technical content of the design. **Mr. Tuckman** who is one of the leading bridge design managers at H&H, will be focusing on the design of **structures and foundations. Mr. Cross**, who is the Track Director at GF, will be focusing on **track and systems work**, including civil works on the approaches. During his 23-year career at H&H, **David Tuckman** has been responsible for all phases of the project delivery, including inspections, feasibility studies, design, agency coordination and preparation of comprehensive contract documents. He is a great facilitator of engineering assignments and multidisciplinary coordination. Mr. Tuckman was the Project Engineer for the design of the world's largest bascule bridge, *Woodrow Wilson Memorial Bridge* and had a similar role on the *Port River Bridge* project in Australia. His other RR bridge projects include rehabilitation of *BNSF Panhandle Bridge* in Chicago done under CREATE program and emergency repairs of the *Saugus River Drawbridge* in Boston, which carries MBTA commuter railroad. **Richard Cross** is the **Track Director** at Gannett Fleming with 38 years of experience in management and design of rail and transit systems, including 20 years with Conrail. During his career, Mr. Cross had a variety of project roles, including Technical Lead on *Brielle Bridge* feasibility study; Deputy PM on Amtrak's *Niantic River Bridge* (which was a joint effort of H&H and GF); and Quality Manager on the *Eastside Access* project**.** He also managed the *Portal Bridge*, which is one of the most complex capacity improvement projects on Northeast Corridor. **His technical background and experience in track construction staging will guide our design team in developing design that minimizes impacts on rail operations.**

Mr. Cross was the Deputy Project Manager for the replacement of Amtrak's Niantic River Bridge

Our **QUALITY ASSURANCE MANAGERS** will be **Bruce Smith**, PE (GF) and **Steven Harlacker**, PE, SE (H&H), who will be monitoring and auditing the compliance of the design process with the Project Quality Management Plan (QMP) and reporting the status directly to the Project Principals. **Bruce Smith** is the overall Quality Manager at GF's rail/transit division, responsible for implementing **ISO 9001 certified** quality management system. He was directly responsible for quality management on complex rail/transit projects such as the *Purple Line Extension* and the *Portal Bridge Capacity Enhancements*. **Steven Harlacker** is the Quality Control Director at H&H, responsible for project's conformance with the internal quality management system modeled on ISO 9001. Some of his recent notable projects include $380M *Kew Garden Interchange Improvements*, *NYSDOT Accelerated Bridge Program*, and rehabilitation of *Murray Morgan Vertical Lift Bridge* in Tacoma, WA.

Our management team will be assisted by the **Project Controls Group,** which includes **RISK MANAGER, Charlie Geer,** PE (H&H), the former national **Chairman of the ACEC Risk Management Committee**, with 35 years of industry experience working in various roles related to managing risk in engineering and construction. Mr. Geer is an excellent facilitator of risk management workshops and author of many papers and industry guidelines. **DOCUMENTS CONTROL MANAGER, Kurt Buettler** (EC), has more than 30 years of experience in software-aided business process capture, document control, contract management, report generation, and web-based solutions. Mr. Buettler was the Document Control Manager on high profile projects such as Baltimore's *Red Line* and NJ TRANSIT *Positive Train Control*.

Recognizing the key role of constructability on this project, our team includes **CONSTRUCTABILITY REVIEWERS, Steven Hom**, PE (H&H), and **Joe Griffin**, PE (GE), who have extensive construction background. **Steven Hom** has over 30 years of both **design and construction management experience,** with hands-on knowledge of the construction methods and current industry practices. His notable projects include CSS for *Niantic River Bridge* and **construction engineering** for the erection of *WTC Transportation Hub*, which involved engineering support for all site logistics, access, temporary structures, underpinning and protection of the PATH service. **Joe Griffin,** who was the Director of Engineering at **George Harms Construction,** prior to starting his own consulting practice, supervised construction engineering on a wide range of heavy construction projects including railroads, highways, bridges, landfills, pipelines, and dams. **Mr. Griffin has extensive**

Mr. Hom provided Construction Engineering Services for WTC Transportation Hub.

familiarity with the project site, due to his direct involvement in the construction of the adjacent Victory Bridge. Lessons learned from that project, and, in particular, issues related to drilled shafts, noise/vibrations monitoring and sequencing of work around the seasonal restrictions will be of great assistance to our design team.

TASK MANAGERS

Delivering this complex project, which involves a myriad of technical disciplines, specialties and stakeholders, will require a particular focus on interdisciplinary coordination and collaboration. To organize this process we divided the anticipated project activities into six major focus areas or TASKS: Movable Span; Approach Spans; Rail Systems; Civil Engineering; Geotechnical/Foundations; and Approvals/Permitting. Each of these areas has been assigned a **Task Manager**, who will focus on facilitating technical work of his group and coordination with other teams.

Mr. Roody and Mr. Hawkins had key roles in the design of Sarah Long Lift Bridge.

MOVABLE SPAN DESIGN will be led by **Peter Roody**, PE (H&H), who is a movable bridge expert, known for his ingenuity in addressing complex technical problems. His projects feature many creative and time tested solutions which improve bridge performance, ensure dependable operations and minimize maintenance requirements. Notable examples include Amtrak's *Niantic River Bridge* and *Port River Bridges* in Adelaide, Australia, featuring 200-foot long single-leaf bascule spans. Mr. Roody also led rehabilitation design for a 100-year old Conrail's *Calumet River Vertical Lift Bridge* in Chicago (originally designed by H&H) and is currently the lead designer for the replacement of the *Sarah Long Vertical Lift Bridge*, which uses many creative solutions, including fenderless piers designed to withstand vessel impact. He has also participated in NJ TRANSIT's feasibility study for *Brielle Bridge*. **His technical acumen and "out of the box" thinking will aid the design team in developing efficient and practical solutions, with a focus on maintenance, reliability and longevity.** Mr. Roody will will be assisted by **STRUCTURAL LEAD, Michael Hawkins**, PE (H&H), who recently delivered the design for $160M *Sarah Long Vertical Lift Bridge*. Mr. Hawkins had leading roles on other significant RR movable bridge projects, including the replacement of the *Niantic River and PECK Bridges*, and feasibility studies for the *CONN River* and *WALK Bridges*. His is currently leading peer/constructability reviews for the WALK Bridge replacement design. The **MECHANICAL LEAD** will be provided by a movable bridge expert, **Steve Mikucki**, PE (H&H), who has been involved in the design of all significant bridges delivered by H&H in the past 25 years. His notable recent projects include the *Tomlinson Vertical Lift Bridge*, which has the heaviest lift span in the Northeast; the $600 million *Willis Avenue Swing Bridge* and the signature *Woodrow Wilson Memorial Bridge*. Mr. Mikucki is a recognized industry leader, currently serving as the **Chairman of Heavy Movable Structures and the AREMA Movable Bridge Subcommittee.**

APPROACH SPAN DESIGN will be led by **David Gerber**, PE (H&H), who had key roles in the design of the *Niantic River Bridge* and rehabilitation of NJ TRANSIT's *Newark Drawbridge*. Mr. Gerber worked on many major bridge reconstruction projects in New Jersey coastal areas and has extensive knowledge of the local, state and federal regulatory requirements, including permitting and coordination with the Coast Guard. Most recently, he has been responsible for developing approach span alternatives for NJ TRANSIT's *Brielle Bridge Feasibility Study.*

Mr. Gerber and Mr. Connolly had key roles in the Feasibility Study for NJT's Brielle Bridge

In order to facilitate the support/coordination with the NEPA consultant, our team includes **ALTERNATIVE ANALYSIS** Task Force, which will be led by **Paul Connolly**, PE (H&H), who delivered the *Brielle Bridge Feasibility Study*. Mr. Connolly has excellent understanding of the constructability issues, having managed projects such as the counterweight rope replacement for *MNR Harlem River Lift Bridge*, which carries 750 trains per day and *Amtrak's Task Order Contract*. **His recent Brielle experience will streamline the alternative development and evaluation process**.

TRACK & RAIL SYSTEMS design will be led by **David Howell**, PE (GF), who has more than 40 years of track/systems experience. Mr. Howell had a key role on the *Portal Bridge*, were he managed the design on 2.5 miles of new track, signals, catenary and interlockings. His other notable projects include EIS for the replacement of *CONN River Bridge* and *Amtrak's GEC Contract*, which involved various improvements on NEC, including bridge replacement and mainline track improvements. **His extensive hands-on experience will expedite track/systems staging to minimize impact on NJ TRANSIT operations.**

Mr. Howell will be working closely with **John Legath**, PE (GF), who will lead **TRACK DESIGN**. Mr. Legath is an industry expert, who was on the staff of **Conrail**, before joining GF 20 years ago. He led track design on the *Portal Bridge* and the *Niantic River Bridge*. His other notable work includes the replacement of Amtrak's *Sawtooth Bridges* on NEC, spanning over four NJ TRANSIT mainline tracks, Conrail and the Port Authority Trans-Hudson line. **Mr. Legath has unmatched expertise in track design and construction staging, assisted by his intimate familiarity with Conrail, NJT and Amtrak requirements.**

CIVIL ENGINEERING will be led by **Robert Matthews**, PE (GF), who manages the Civil Engineering Department at GF. Mr. Matthews has supervised design and obtained environmental approvals for numerous projects that involved transit facilities, site development, complex utility relocation, storm drainage design/modifications, grading, roadway reconstruction, soil erosion and sediment control, traffic analysis and MPT. He has excellent knowledge of the state and federal regulatory requirements, including stormwater management and environmental permitting. His notable projects include *Garden State Parkway Widening*, *NJ Turnpike Interchange 6 to 9* and *Garden State Parkway and I-78 Interchange Improvements*.

Recognizing that **GEOTECHNICAL/FOUNDATION ENGINEERING** will be **one of the most challenging tasks on this project**, we have assembled a team of top-notch industry experts with hands-on knowledge of the local conditions. This task will be led by **Ray Mankbadi**, PE (H&H) who was responsible for geotechnical/foundations work on projects such as the $600 million *Willis Avenue Bridge* and $350 million NJDOT *Route 52 Causeway*. Mr. Mankbadi led foundations design on many other bridge projects in NJ coastal areas, including the *Great Egg Harbor Bridge*, currently in construction, and most recently, was involved in *Brielle Bridge Feasibility Study.* Mr. Mankbadi will be assisted by **Ed Zamiskie**, PE, of **Haley & Aldrich**, who provided geotechnical services for the construction of the adjacent Route 35 Victory Bridge. Mr. Zamiskie had key roles on many local high profile projects, including *Goethals* and *Kosciuszko Bridge*, *Secaucus Junction Improvements* and *Marine Parkway Bridge Resiliency Study*. His experience in coastal construction, and, in particular, **lessons learned from the Victory Bridge will be of great value to the foundation design effort**.

Mr. Mankbadi led foundation design for Route 52 Causeway

Mr. Zamiskie has first-hand knowledge of the site geology due to his involvement in Victory Bridge.

Our geotechnical team also includes **seismic expert**, **Prof. Mishac Yegian,** PhD, and the **former FHWA Engineer of the Year**, **Jerry DiMaggio**, PE. Mr. Yegian collaborated with H&H on many bridge projects, including the *RFK Harlem River Drive Bridge* and *Route 52 Causeway*. Mr. DiMaggio, who is recognized internationally for his technical expertise, **has written or co-written FHWA geotechnical guidelines,** which have been adopted by several countries as their standards of practice. He serves on technical committees and task forces of many prestigious industry organizations including ACSE, AASHTO and Transportation Research Board.

It is our understanding that the NEPA Consultant will be responsible for obtaining environmental permits and approvals. The responsibility of the Design Consultant will be to provide engineering support for the NEPA review and participate in the permitting process by providing required input to the permit applications and coordinating the design with the requirements of the approving agencies. We recognize that seamless collaboration between the NEPA and Design Teams will be critical to keeping the project on schedule. In order to facilitate this process we have created a special **APPROVALS/PERMITTING** task force, which will be led by **Glen Schetelich**, PE (H&H), who has supervised design and **obtained approvals for dozens of bridge and highway projects**

located in New Jersey coastal areas, during his 30-year career. Most of those projects involved complex utility relocations, MPT, contaminated soils, navigational issues, historic preservation, wetlands permitting and stormwater BMPs. Notable examples include *Route 52 Causeway*, *Route 36 Highlands Bridge*, *Route 9 Bridge over Bass River*, *Route 35 Bridge over Navesink River* and many others. Mr. Schetelich has excellent knowledge of the local and state regulatory processes and federal requirements, including environmental permitting and Coast Guard coordination. He has been working extensively with the local agencies and **developed strong relationship with many of the key stakeholders, including NJDOT, NJDEP, USCG, USACE, SHPO** and others. He is currently managing the replacement of the *Great Egg Harbor Bridge* (in construction) and is overseeing interagency coordination on *Brielle Bridge Feasibility Study*. He also managed NJ TRANSIT's *Task Order Contract* which involved preparation of Categorical Exclusion Documents and historic preservation issues.

Mr. Schetelich is managing the replacement of Great Egg Harbor Bridge, currently in construction

Mr. Schetelich will be working hand-in-hand with **Ramesh Rajagopal**, PE (GF) who also has extensive permitting experience. His notable rail projects include the *Portal Bridge* and the conceptual design for Baltimore's *Purple Line*, where he was responsible for developing environmental site design standards and stormwater management design alternatives, as well as evaluating right-of-way and environmental impacts to support the environmental assessment document. Mr. Rajagopal is an expert in **HYDROLOGY & HYDRAULICS**, drainage design, floodplain delineation, stormwater management, flood control, bridge scour evaluations, and soil erosion and sediment control. He led the hydrology and drainage design on many NJ highway improvement/bridge reconstruction projects, including *Route 1 & 9 Reconstruction*, *Garden State Parkway Interchange 142 Improvements*, *Route 18 Extension* and *NJ Turnpike Interchange 6 to 9 Widening*. **He also performed the hydraulic analysis for the replacement of the adjacent Route 35 Victory Bridge.**

More details on relevant experience of our Key Personnel and support staff has been provided on the resumes provide with this proposal.

VISHA SZUMANSKI, PE
PROJECT MANAGER

Hardesty & Hanover

REGISTRATION

Professional Engineer: NJ, NY, CT

EDUCATION

B.S.C.E., 1981, Polytechnic University of Koszalin, Poland
M.S.C.E., 1985, Columbia University

YEARS EXPERIENCE

Total Years: 30 With H&H: 1

SUMMARY BIOGRAPHY

Visha Szumanski has over 30 years of experience in the design and management of transportation projects, including rail/transit, bridges and tunnels. Her responsibilities include the overall administrative, contractual, financial and technical performance of the projects, interaction with the clients, supervision of subconsultants and coordination with agencies. Throughout her career, she has provided engineering services to many Northeast rail agencies, including **NJ Transit, NYCT, LIRR, PANYNJ, Metro-North, Amtrak and WMATA.**

Ms. Szumanski served as the ***Chief Structural Engineer*** on **high-profile rail and transit projects, such as the Second Avenue Subway and NY Penn Station Redevelopment**. In this capacity she supervised the work of the design teams and was directly responsible for the development of the engineering approach and the overall technical content and quality of the design.

Her experience as the ***Project Manager*** and ***Project Director*** includes **complex multidisciplinary projects** with a focus on coordination with various stakeholders, including railroads, state and local agencies, community groups and private utilities. She managed numerous **bridge and station rehabilitation** contracts with NJ Transit, NYCT, Amtrak and WMATA. She was also involved in **rail systems and equipment modernization** projects, such as the NJ Transit MMC Facility; Metro-North Mott Haven Control Center and Mechanical/ Electrical Upgrades at the NY Penn Station for Amtrak.

RELEVANT PROJECT EXPERIENCE

NJ TRANSIT TASK ORDER CONTRACT FOR BRIDGE & RAILWAY ENGINEERING SERVICES, NJ

Project Manager for NJT Task Order Contract for Bridge & Railway Engineering. (2006 – 2009). Notable assignments included:

- **Rehabilitation of Morgan Draw Bridge** on NJ Coast Line over Cheesequake Creek, which is a 60 foot long two-track rolling bascule bridge built in 1912. The rehabilitation involved removal of the existing tread plates, retrofitting of the segmental girders, installation of new, thicker tread plates which conform to the current moveable bridge design standards, and replacement of select mechanical components including pinions, pinion shafts, racks and bearings. Other work included replacement of the adjoining track beams and track plates, and miscellaneous repairs of the bridge superstructure. Key challenges included developing erection scheme to minimize impacts on the service and assure safety. All work was accomplished with minimal train outages.
- **Rehabilitation of Navesink River Bridge** in Red Bank on NJ Coast Line, which is a 100-year old, 40-span steel viaduct. The rehabilitation was focused on the bridge substructure and involved construction of concrete jackets around severely deteriorated column pedestals and extensive repairs of the concrete piers. The project required substantial involvement during construction to address unforeseen field conditions and additional deficiencies uncovered during demolition. Ms. Szumanski successfully assisted NJT in addressing all field issues and keeping the construction on schedule and budget.

MTA BRIDGES & TUNNELS RFK BRIDGE TOLL PLAZA RECONSTRUCTION, NEW YORK, NY

Project Manager for a **$450 million toll plaza reconstruction** at the RFK (Triborough) Bridge Facility. This

RELEVANT PROJECT EXPERIENCE (CONT.)

included widening of the plaza, adding new piers and footings, re-decking (more than 600,000 sq. ft.), seismic retrofit and extensive utility relocations. The project also included development of the electrical master plan for the Triborough Bridge Facility, as well as construction of a new $12 million substation and upgrades to the electrical distribution system. Other project components, which required full range of engineering, environmental and architectural services, included design of new utility concourse for the toll plaza and service/maintenance building. The work involved development of complex staging schemes to maintain personnel access during construction and minimize traffic impacts. (2007 – 2013)

NYCDOT ROOSEVELT AVENUE BRIDGE REHABILITATION, QUEENS, NY

Deputy Project Manager in a Joint Venture responsible for a **$100 million rehabilitation** of 1,400 ft. long Roosevelt Avenue Bridge and viaduct structure over Van Wyck Expressway and the Flushing River. The double-deck structure with 300 ft. long bascule span, built in 1927, carries Roosevelt Avenue on its lower deck and **three tracks of the NYCT Flushing / 7 Line** on its top. The project involved stringer replacement, re-decking and widening of the bridge. Other work included lighting and drainage upgrades, seismic retrofit, reconstruction of the abutments, steel repairs and painting. Some of the key challenges included coordination with NYCT to minimize impact on operations and accessibility issues along the ROW. The work involved extensive permitting/approvals, including NYCDEP, NYSDEC, NYCDPR, Public Design Commission and others. (2007 – 2013)

NYCDOT REPLACEMENT OF BROOKLYN BRIDGE TRAVELERS, NEW YORK, NY

Project Manager for the replacement of four underdeck **maintenance travelers on the landmark Brooklyn Bridge** over the East River. The work involved investigation of the existing travelers, which experienced frequent operational issues, study of different traveler systems, developing recommendations for replacement, and design of new travelers equipped with state of the art electrical and mechanical technology that require minimum maintenance. The project focus was on simplifying maintenance requirements and enhancing safety of the maintenance personnel. (2007 – 2010)

NYCT 2ND AVENUE SUBWAY, NEW YORK, NY

Chief Structural Engineer for the preliminary design of the **$17 billion NYCT subway expansion project**. Supervised the design of sixteen deep underground stations, ventilation buildings, ancillary facilities and cut-and-cover tunnels (approximately $12 billion construction cost). The work involved design of mined caverns and deep cut-and cover tunnels utilizing soldier pile and slurry wall construction. The project included extensive underpinning of the existing structures, such as building foundations and tunnel crossings. Other work involved design of vertical shafts to launch the TBM machine. Ms. Szumanski supervised a large team of structural engineers in the production of contract documents. In this capacity she was responsible for the overall technical content and quality of the design including feasibility studies and development of structural alternatives, as well as preparation of contract drawings, specifications and estimates. (2003 – 2005)

NYCT INDEFINITE QUANTITY ENGINEERING SERVICES CONTRACT CM-1135, NEW YORK, NY

Project Manager for a $7 million on-call contract with **New York City Transit**. Notable assignments included: Threat, risk, and vulnerability assessments at several major NYCT facilities and design of security systems; Bridge inspection and development of **Railroad Bridge Management System** for Staten Island Rapid Transit; Development of Communication-Based Train Control for the Canarsie Line; and communication and public address systems upgrades at various NYCT stations. The security related studies and assessments done under this contract led to the establishment of the MTA System-Wide Security Program. (2000–2003)

AMTRAK - NY PENN STATION REDEVELOPMENT/PATRICK MOYNIHAN STATION, NEW YORK, NY

Structural Discipline Lead for the preliminary design of the **Pennsylvania Station Redevelopment**. The project involved design of a new, 300,000 sq. ft. transportation hub for Amtrak and LIRR at the site of the landmark James A. Farley Building on 8th Avenue and 32nd Street. Supervised team of structural engineers in the design of new railroad concourses and connecting passageways between the existing Penn Station and the new facility, to be located west of 8th Avenue. The key challenges included underpinning of the 8th Avenue subway line and transferring many of the track level columns supporting the building above, to make room for new station platforms. (1997 – 1999)

PAUL M. SKELTON, PE
PROJECT PRINCIPAL-IN-CHARGE

Hardesty & Hanover

REGISTRATION

Professional Engineer: NY, NJ, CT, TX, CA, and 25 others

EDUCATION

B.E., 1985, State University of New York at Stony Brook

YEARS EXPERIENCE

Total Years: 30 With H&H: 30

SUMMARY BIOGRAPHY

Paul M. Skelton is a ***Principal*** at Hardesty & Hanover with 30 years of experience in the **design of heavy movable structures**, with a focus on swing, bascule, and vertical lift bridges. His experience also includes retractable stadium roofs, expandable exhibition halls and other special structures. Throughout his career, He delivered more than 150 movable bridge projects in the US, Europe, Asia, Australia and New Zealand.

Mr. Skelton is a recognized expert in the field of movable bridge engineering, **actively involved in the research and development** through his work on the technical committees of many trade organizations. He is the past ***Chairman of the AREMA's Steel Structures Committee*** (Committee #15) and the ***Movable Bridge Sub-Committee***. He also served as the Chairman of Machinery/Mechanisms Committee of Heavy Movable Structures (HMS). Currently, Mr. Skelton serves on the US Board of the ***International Association for Bridge and Structural Engineering*** (IABSE) and is a member of Working Council 2. He is also an active member of the Canadian Highway Bridge Design Code. He has authored movable bridge maintenance manuals, as well as technical articles in many prestigious trade publications.

RELEVANT PROJECT EXPERIENCE

PORT ADELAIDE RIVER, PORT ADELAIDE, SOUTH AUSTRALIA

Principal-in-Charge for the design of two new bascule bridges at Port Adelaide in Australia: **200 ft. long single-leaf, single track railroad** bridge and 190 ft. long, four-lane, single-leaf highway bridge. The design of the movable bridges was done in accordance with the AREMA provisions. Both bridges have a **simple-trunnion bascule** arrangement with steel trunnion towers. Special attention was given to the aesthetics of the bridges by employing creative architectural forms. The bascule piers, which normally dominate the appearance of single-leaf bascule bridges, are "V" shaped post-tensioned concrete members. The piers geometry features angles complementary to the open-span angle of the bridge. The bascule girders are welded steel boxes, carefully detailed to achieve a sleek, continuous look. The electrical/mechanical systems were designed to assure **highly reliable and safe operations of the movable span**. The bridge utilizes a PLC control system and is operated remotely from the Traffic Control Center located 5 km from the project site. (2004 – 2008)

CHABAN-DELMAS VERTICAL LIFT BRIDGE, BORDEAUX, FRANCE

Principal-in-Charge for the design of $146 million Chaban-Delmas Vertical Lift Bridge in Bordeaux, France, which features the **longest lift span in Europe** (383 ft.). The bridge has a lift height of 164 ft. and accommodates 320 ft. wide navigational channel. It was designed to carry four lanes of traffic, two bicycle/pedestrian paths and **two light rail tracks**. H&H designed the bridge operating systems to move the lift span using the minimum energy possible. In order to achieve this, the counterweights and the lift span had to be finely balanced. Operation of the lift span is achieved via high-strength wire ropes passing over sheaves, which connect the lift span to the counterweights. Speed regulators in each tower control the motors, and sensors on the deck continuously track its position to ensure that it remains level at all times. (2004 – 2013)

AMTRAK CONN RIVER BRIDGE MECHANICAL/ELECTRICAL REHABILITATION, OLD SAYBROOK, CT

Principal-in- Charge for mechanical and electrical rehabilitation of Amtrak's Connecticut River Bridge, which is

RELEVANT PROJECT EXPERIENCE (CONT.)

a **single-leaf Scherzer rolling-lift** on the Northeast Corridor. The work involved detailed inspection and full electrical rehabilitation of bridge control systems and addition of auxiliary drive system. (2001 – 2003)

AMTRAK SPUYTEN DUYVIL BRIDGE EMERGENCY REPAIRS, NEW YORK, NY

Principal-in-Charge/ Lead Mechanical Engineer responsible for emergency repairs of the Spuyten Duyvil bridge on Amtrak's Empire Corridor, after the swing span suffered large displacement from a collision due to errant waterway navigation. The emergency repairs included jacking of the 750-ton swing span of the bridge, in both vertical and horizontal direction, to reseat the bridge properly on its structural-mechanical turntable. All work was completed during nighttime without impact on rail operations. (2003)

CONNDOT TOMLINSON BRIDGE OVER QUINNIPIAC RIVER, NEW HAVEN, CT

Lead Mechanical Engineer for the $120 million replacement of the Tomlinson Bridge, which provides **vehicular and rail crossing** over the Quinnipiac River in New Haven, CT. The replacement structure is a 270-foot tower drive lift bridge over a 240-foot-wide navigation channel with 75 ft. vertical clearance and 22-foot railroad right-of-way. The lift span, which is 90 ft. wide, is the heaviest movable span in the Northeast, moving 6.4 million pounds at each opening. The operating system consists of a mechanical/electrical drive turning the counterweight sheaves at the top of the towers. The span control is provided by an AC primary thyristor control system. Also included is a complete dual system of motors (100 hp) and motor controls for system redundancy. (1992 – 2002)

CN RAILWAY SECOND NARROWS BRIDGE REHABILITATION, BURRARD INLET, VANCOUVER, BC

Principal-in-Charge responsible for a mechanical rehabilitation of the Burrard Inlet **vertical lift railroad bridge** in Vancouver. The CN Second Narrows Bridge, **originally designed by Hardesty & Hanover** has 495 ft. vertical lift span and 150 ft. height, providing **450 ft. navigational channel**. The project involved rehabilitation of auxiliary counterweight machinery, including sheave, hitches, wire rope, and socket replacement. H&H also prepared a maintenance manual for the entire bridge machinery systems. (2000)

BORDEN AVENUE SLIDING RAIL BRIDGE, NEW YORK, NY.

Lead Mechanical Engineer for a mechanical/electrical upgrade of Borden Avenue Sliding Rail Bridge. One of only two of its kind in the entire country, this historic movable bridge is designed to slide onto stationary rails located on the shoreline. The project involved machinery replacement on the "rail side" of the bridge. (1997 – 1999)

AMTRAK BUSH RIVER BRIDGE, PERRYMAN, MD

Project Manager for inspection, rehabilitation design, and load rating for this 2,100-foot viaduct. Provided machinery analysis; repair recommendations; design of structural, mechanical, electrical systems; cost estimates; and condition report for a 40-foot, single-leaf, heel trunnion bascule. Also included was movable catenary system rehabilitation/motorization. (1998 – 1999)

PECK DRAWBRIDGE AND BRIDGEPORT VIADUCT, BRIDGEPORT, CT – METRO-NORTH RAILROAD

Lead Mechanical Engineer for $90 million replacement of a four-track Pequonnock River Drawbridge (PECK) in Bridgeport, CT, which is a **vital link on the Metro-North New Haven Line and Amtrak's Northeast Corridor.** The new bridge is a 138-foot twin single-leaf trunnion bascule span, which provides 105 feet horizontal clearance and 20 feet vertical clearance in the closed position. Mr. Skelton was responsible for design of the movable span operating and lock machinery and all mechanical systems. (1990 – 1998)

CANADIAN NATIONAL MOVABLE BRIDGE DESIGN CODE, QUEBEC, CANADA

Mechanical Engineer on the **technical team developing a new, Canadian Movable Bridge Design Code for nationwide use**, to replace an existing Canadian Standards Association (CSA) Code. Mr. Skelton was the only non-Canadian member of the team. The new code uses LRFD provisions with working stresses for the machinery, and includes mechanical, electrical, and hydraulic sections. (1997)

DAVID A. BOATÉ, PE
PROJECT PRINCIPAL-IN-CHARGE

Gannett Fleming

REGISTRATION

Professional Engineer: PA, MD, PA

EDUCATION

B.S.C.E., 1985, University of North Carolina at Charlotte

YEARS EXPERIENCE

Total Years: 31 With Gannett Fleming: 4

SUMMARY BIOGRAPHY

David Boaté is currently ***Vice President - Director of Transit and Rail Services*** responsible for transit projects in the Northeastern Region of Gannett Fleming, which includes New York, New Jersey, Massachusetts, Connecticut, Rhode Island, Vermont, New Hampshire, and Maine. Serves as Principal-In-Charge, Project Manager, Quality Representative, or Task Manager on transit projects or other business line projects that involve transit planning or engineering. Manages or serves as Client Manager for Transit and Railroad Clients, and represents Gannett Fleming for transit issues in the Northeast Region.

As ***Member, Transit and Rail Practice Leadership Team***, he is responsible for the firm's overall strategic investment of resources in the pursuit of significant regional, national, and international programs in the national/international transit and rail marketplace in collaboration with the other team members.

RELEVANT PROJECT EXPERIENCE

NJ TRANSIT NORTHEAST CORRIDOR MID-LINE LOOP DESIGN, NORTH BRUNSWICK, NJ

Project Principal for the preliminary design and other activities, including New Jersey EO215 environmental impact statement support, for the preparation of design-build-operate-maintain documents for a new flyover and two high-level passenger stations on the Northeast Corridor. Gannett Fleming is a principal subconsultant to another major consulting engineering firm and is responsible for site and rail roadway engineering, including hydraulics and hydrology, traction power, signals, railway operations, traffic engineering, station management and engineering, right-of-way, and public outreach.

NJ TRANSIT SUBSTATION REPLACEMENTS, KEARNY, HOBOKEN, AND BAY HEAD, NJ,

Project Principal for the design of general power substations, traction power substations, switching substations, and related facilities at the operating locations at Hoboken Terminal/Yard, including the "Depot," Observer Highway, and Henderson substations; Meadows Maintenance Complex, including Building 9, Mason, and ROC substations; and Bay Head Yard, including Bay Head Substation, that were damaged as a result of Super Storm Sandy. This project will replace substation infrastructure that was damaged and incorporate resiliency features in the design to guard against future storm-related events.

NJ TRANSIT HUDSON-BERGEN LIGHT RAIL ALONG NJ ROUTE 440 EXTENSION, JERSEY CITY, NJ

Quality Assurance Reviewer of conceptual engineering for an extension of the West Side-Tonnelle Avenue Line from West Side Avenue Station westward, including alternatives that cross over NJ Route 440. Conceptual engineering included track alignment, undergrade bridges, and new stations.

RELEVANT PROJECT EXPERIENCE (CONT.)
EXPERIENCE WITH PRIOR FIRMS

NJ TRANSIT OLD BRIDGE MULTIMODAL STUDY, GREATER OLD BRIDGE TOWNSHIP, NJ

Manager of Engineering and Rail Operations for a planning general engineering consultant assignment that included a study of alternatives for improved transit access from Old Bridge Township to Newark, northern New Jersey, and New York City. Work included reviewing concepts for a new multimodal station on the North Jersey Coast Line between the South Amboy and Matawan/Aberdeen Stations, a conceptual layout of a parking garage at Matawan/Aberdeen Station, and conceptual engineering, traffic, and site design of several short-term and long-term alternatives at an auto-bus park-and-ride at the junction of NJ Route 18 and U.S. Route 9.

NJ TRANSIT RAIL MAPPING, VIDEO, AND GEOGRAPHIC INFORMATION SYSTEMS, NJ / DOWNSTATE NY

Phase I Project Manager and ***Phase II Officer-in-Charge*** for the development of a GIS system for NJ Transit commuter rail and light rail transit (LRT) systems based on LiDAR Survey and Oracle Database Management. The rail map system provides electronic GIS maps and both locomotive engineers-view and aerial video for the entire 465-mile NJ Transit commuter railroad network, including portions of the rail system that are in New York City and lower New York State, and three LRT systems. Initial applications included incident area mapping and railroad physical characteristics (of territory) training. A prototype system was delivered at the end of Phase I so that more applications, including a track miler and GIS viewer, could be developed in close coordination with NJ Transit staff. The Phase II GIS system is implemented in an enterprise network available to users across NJ Transit's corporate information systems network.

MCCLELLAN STREET BRIDGES REPLACEMENT, NEWARK, NJ

Senior Technical Advisor for the replacement of the three undergrade bridges supporting six tracks (four mainline passenger tracks used by New Jersey Transit and Amtrak and two freight tracks, one used by Conrail Shared Assets and the other abandoned) on the Northeast Corridor near Lane Interlocking to allow for the widening of McClellan Street. Specific responsibilities included assisting in the conceptual design of new undergrade bridges, developing staging scenarios to provide minimum impact on railroad operations, and coordinating with Amtrak, the owner of the bridges.

NJ TRANSIT HUDSON-BERGEN LIGHT RAIL TRANSIT, DESIGN SECTION S-20, BAYONNE AND JERSEY CITY, NJ

Deputy Project Manager for preliminary design for a design-build contract for the construction of a new-start light rail transit system 3-mile segment. The new transit system is located on the former Jersey Central Mainline right-of-way that was used by Conrail. New stations, park-and-ride facilities, retaining walls, track, drainage, and railway right-of-way were in the project scope. More than 1 mile of Conrail freight track relocation was required to connect the Bayonne Branch to the National Docks Line.

NJ TRANSIT HIGH-LEVEL PLATFORM STATION IMPROVEMENTS, NO. JERSEY COAST/RARITAN VALLEY LINES, NJ

Senior Project Engineer - Railway Systems responsible for performing feasibility studies and designing track realignments and signal and catenary modifications for side and center high-level platform alternatives at Matawan, South Amboy, Perth Amboy, Netherwood, Fanwood, and Westfield Stations. Responsibilities included leading the track design and managing signal and catenary work.

NJ TRANSIT HUNTER CONNECTION, NEWARK, NJ

Project Engineer for the preliminary design of $25 million in improvements to the Raritan Valley Line connection between Conrail's NK interlocking and Amtrak's Hunter Interlocking. Responsibilities included performing the preliminary design of track improvements in NK Interlocking, authoring and coordinating the draft and final preliminary engineering design report, and preparing the preliminary staging and critical path method project schedule.

DAVID S. TUCKMAN, PE
DEPUTY PROJECT MANAGER – STRUCTURE & FOUNDATIONS

Hardesty & Hanover

REGISTRATION

Professional Engineer: NY, FL, MI, MA

EDUCATION

B.S.C.E., 1992, State University of New York at Buffalo

YEARS EXPERIENCE

Total Years: 23 With H&H: 23

SUMMARY BIOGRAPHY

David Tuckman has extensive management background and strong technical expertise in the **design and rehabilitation of fixed and movable bridges** and other transportation structures. During his 23 years of career, he has participated in a variety of bridge, tunnel, rail and highway projects. His work involved both new construction, and repair/rehabilitation of existing structures. He has been **responsible for all phases of project delivery**, including inspections, engineering analyses, feasibility studies, structural rehabilitation designs, agency coordination and preparation of comprehensive contract documents. His particular strength is in **multidisciplinary coordination in the design of movable bridge structural, mechanical and electrical systems**.

Mr. Tuckman's notable work includes his role as the ***Project Engineer*** for the design of **Woodrow Wilson Bridge**, the world's largest movable bridge. He had similar role in the design of **Port River Bridges** in Adelaide, Australia, which included a **new 200 ft. long bascule railroad bridge**. His other railroad bridge projects include the replacement of **Amtrak's Peck Bridge** on Northeast Corridor and emergency repairs of the **Saugus River Drawbridge** in Boston, which carries MBTA commuter railroad. Mr. Tuckman also served as a ***Deputy Project Manager*** on a **$350M Kew Gardens Interchange Improvements** project.

RELEVANT PROJECT EXPERIENCE

BNSF CREATE PROJECT WA-4: BNSF PANHANDLE TRACK, CHICAGO, IL

Project Engineer for the structural rehabilitation of a 100-year-old railroad bridge for BNSF railway, which consists of 150 ft. long main span and two 105 ft. long approaches. The bridge is not currently in use but **will be restored to a two-track bridge compliant with current AREMA standards**. Rehabilitation of the approaches includes reconstruction and repair of the concrete and masonry substructure, replacement of existing approach spans with steel plate girders, replacement of existing bearings, and installation of new ballasted deck. The main movable span truss has been retrofitted to be fixed in the closed position. The rehabilitation design includes repairs to existing counterweight, repair of existing floorbeams, replacement of stringers, replacement of traction bracing, replacement of live load bearings and a new span lock. (2011 – present)

CHABAN-DELMAS VERTICAL LIFT BRIDGE, BORDEAUX, FRANCE

Senior Structural Engineer for the design of $146 million Chaban-Delmas **Vertical Lift Bridge** in Bordeaux, France, which features the **longest lift span in Europe** (383 ft.). The bridge has a lift height of 164 ft. and accommodates 320 ft. wide navigational channel. It was designed to carry four lanes of traffic, two bicycle/pedestrian paths and **two light rail tracks**. H&H designed the bridge operating systems to raise and lower the lift span using the minimum energy possible. In order to achieve this, the counterweights and the lift span had to be finely balanced. Responsible for structural design and the coordination of design efforts between structural, mechanical, and electrical engineers. (2005 – 2013)

PORT ADELAIDE RIVER, PORT ADELAIDE, SOUTH AUSTRALIA

Project Engineer for the design of two new bascule bridges at Port Adelaide in Australia: **200 ft. long single-leaf, single track railroad bridge** and 190 ft. long, four-lane, single-leaf highway bridge. The design of the

RELEVANT PROJECT EXPERIENCE (CONT.)

movable bridges was done in accordance with the AREMA provisions. Both bridges have a **simple-trunnion bascule** arrangement with steel trunnion towers. Special attention was given to the aesthetics of the bridges by employing creative architectural forms. The bascule piers are "V" shaped post-tensioned concrete members. The piers geometry features angles complementary to the open-span angle of the bridge. The bascule girders are welded steel boxes, carefully detailed to achieve a sleek, continuous look. (2004 – 2008)

WOODROW WILSON BASCULE BRIDGE, WASHINGTON DC

Project Engineer for the design of Woodrow Wilson Bridge, a signature crossing over the Potomac River just south of Washington, which links Maryland to Virginia. The bridge is 6,000 ft. long and has **four, side-by-side, 222 ft double-leaf bascule spans** that provide navigational clearances of 175 ft. horizontally, 70 ft. minimum vertical clearance in the span-down position, and completely unrestricted vertical clearance with the span raised. The parallel double-leaf spans have 270 ft. center-to-center trunnion spacing. The bridge carries twelve lanes of Interstate I-95/495 traffic and was design to accommodate a **future commuter rail system**. The new bascule spans weighting approximately 2000 tons each comprise the **world's largest bascule bridge**. Responsible for superstructure design of the movable span and for overall interdisciplinary coordination, including structural, mechanical and electrical systems. (2000 – 2009)

MBTA SAUGUS RIVER DRAWBRIDGE REHABILITATION, BOSTON, MA

Project Engineer for emergency repairs of a vintage Saugus River Drawbridge carrying two tracks of **MBTA commuter rail**. Inspection conducted by H&H revealed severe deterioration of the rest pier. H&H conducted 3D computer analysis, which indicated insufficient pier capacity to resist longitudinal loads due to acceleration and braking forces, and transverse wind loads. Interim repair involved installation of six 48-inch diameter reinforced concrete drilled shafts socketed to bedrock 120 feet below seawater, with connecting structural frames to brace the existing pier. The final repair will include installation of a 70-ton permanent steel box girder spanning between the drilled shafts to resist all vertical and horizontal loads. (2012)

AMTRAK/METRO-NORTH PECK RAILROAD DRAWBRIDGE REPLACEMENT, BRIDGEPORT CT

Project Engineer for the $90 million replacement of inoperable rolling-lift span drawbridge over the Pequannock River, and the adjoining Bridgeport Viaduct railroad structure with a new, **four-track, single-leaf bascule railroad bridge**. The new bridge is a 138-foot twin single-leaf trunnion bascule span, which provides 105 feet horizontal clearance and 20 feet vertical clearance in the closed position. Designed temporary 800-foot-long, two-track railroad to bypass main river construction. Responsible for reviewing contractor's shop drawings and providing construction support, including revision of details in response to field conditions. (1994 – 1998)

NYSDOT KEW GARDENS INTERCHANGE, QUEENS COUNTY, NY

Deputy Project Manager for this **$350 million infrastructure improvement project**. The Kew Gardens interchange is the confluence of the Van Wyck Expressway, Grand Central Parkway, Jackie Robinson Parkway, Queens Boulevard and Union Turnpike in Queens, NY. The project scope included preliminary and final design (Phases I-VI) for the reconstruction, realignment or relocation of the mainline of three freeways and their connector ramps and reconstruction/rehabilitation of 15 structures associated with these roadways. The work involved complex traffic analysis and required extensive environmental coordination and permitting due to proximity to parkland and wetland areas. Other scope elements included design of new drainage system; relocation of numerous public and private utilities; and providing pedestrian access to the nearby subway station. Mr. Tuckman was responsible for coordination of work between various disciplines and preparing design submittals. His responsibilities also included obtaining permits and approval and coordination with third parties and outside agencies, such as NYCT, NYCDEP, community boards and private utilities. (2007 – 2010).

ALFORD STREET BRIDGE OVER THE MYSTIC RIVER, BOSTON, MA

Deputy Project Manager responsible for coordination of interdisciplinary design efforts on the $50 million structural, mechanical, and electrical rehabilitation of this 1,400-foot-long bridge crossing the Mystic River. The bridge comprises eight spans: seven approach spans and **twin double-leaf steel bascule** (160 feet long). The project involved a complete replacement of the existing four bascule leaves and approach superstructure, including girders, floorbeams and stringers. Other work included deck replacement, new lighting and traffic control system. The new deck is steel grid deck, half-filled with concrete along the stringer lines to reduce fatigue stresses. (2000 – 2011)

RICHARD CROSS IV, PE
DEPUTY PROJECT MANAGER – TRACK & SYSTEMS

Gannett Fleming

REGISTRATION

Professional Engineer: PA, MN, MI
NJT Roadway Worker Protection/Contractor Safety

EDUCATION

B.S.C.E., 1977, Lafayette College

YEARS EXPERIENCE

Total Years: 38 With Gannett Fleming: 20

SUMMARY BIOGRAPHY

Richard Cross IV is a ***Vice President/Track Director*** with Gannett Fleming's Transit & Rail Systems group responsible for **railroad, transit, and roadway design; facility and rail yard design; land surveying; right-of-way plans; stormwater management; and utilities.** Supervises diverse design teams including civil, rail systems, structural, mechanical, electrical, and geotechnical engineers.

In his role, Mr. Cross is also responsible for the complete development of plans, specifications, and cost estimates for conceptual, preliminary, and final designs, as well as interaction with clients and review/permitting agencies. He has performed similar roles on such projects as the **Niantic River Bascule Bridge Replacement** project for Amtrak; the concept study for NJ Transit's **Brielle Drawbridge**; and the **Portal Bridge Capacity Enhancements** project for NJ Transit.

RELEVANT PROJECT EXPERIENCE

BRIELLE DRAWBRIDGE CONCEPTUAL STUDY, BRIELLE, NJ

Lead Engineer – Railway Operations and Systems responsible for systems design, civil engineering and environmental investigations for this movable bridge replacement study. Gannett Fleming's work included survey oversight, conceptual design of alternative profiles to accomplish the track raise based on different movable bridge types, relocation designs of existing Brielle Interlocking, operations analysis of construction staging, defining environmental impacts of alternative designs, listing of permitting agencies involved, signal designs of alternative interlocking placements including modifications to protect train movements and cost estimating of Capital and Force Account expenses.

PORTAL BRIDGE CAPACITY ENHANCEMENTS, NEWARK, NJ

Project Manager for the preliminary and final engineering for a critical 2.5 mile section of the Amtrak Northeast Corridor between Newark, New Jersey, and New York City. Led the tri-venture and 27 subconsultants in redesigning the most heavily travelled corridor in the country, carrying both Amtrak's high-speed intercity service and NJ Transit's commuter service. The $1.6 billion project involves expanding the two-track railroad to five tracks and reprofiling it to replace the existing swing bridge with two fixed bridges over the Hackensack River to eliminate a long-standing operational bottleneck. The enhancements include the design of 29 bridges (with 124 spans) and related civil, track, signal (5 new interlockings), catenary, electric traction switching substation, seven control centers, land acquisition, wetland mitigation, and contaminated sites in the environmentally sensitive Hackensack Meadowlands. Due to the 472 trains per day of traffic, detailed construction staging was developed to minimize impacts to operations.

NIANTIC RIVER DRAWBRIDGE ON NORTHEAST CORRIDOR, NIANTIC, CT

Deputy Project Manager – Track & Systems responsible for the overall design of track alignment and profile, electric traction, geotechnical analysis, retaining walls, earthwork, drainage, utilities, and soil erosion and sediment pollution control. The project involved realigning Amtrak's Northeast Corridor 58 feet south of the existing track bed in order to construct a new bascule bridge to carry high-speed passenger rail lines over the Niantic River.

RELEVANT PROJECT EXPERIENCE (CONT.)

PRELIMINARY ENGINEERING FOR NORTHERN BRANCH COMMUTER LINE, NORTHERN NJ

Project Manager responsible for the preliminary design of an 11-mile extension of the Hudson-Bergen light rail system from North Bergen to Tenafly. Alternatives evaluated included both light rail transit and diesel multiple unit trains. Preliminary design allowed for nine stations along the corridor with either at-grade parking or parking structures. The corridor would share right-of-way with the CSX Northern Branch as well as the New York Susquehanna and Western Railroad. Five undergrade bridges, as well as a new overhead bridge carrying the CSX River Line, would need to be reconstructed or extended. The project included several viaducts to carry the transit line over CSX tracks and mitigating impacts to wetlands, floodways, and adjacent properties. Our firm was responsible for design including operations, track, structural, communication and signals, electric traction alternatives, and construction staging.

PORTAL BRIDGE CAPACITY ENHANCEMENT, SECAUCUS AND KEARNY, NJ

Task Manager **responsible for coordinating design engineering efforts during the EIS phase for the alternatives analysis and environmental impact statement for a complex, multi-disciplined bridge replacement. The Portal Bridge is critical to Northeast Corridor's access to New York City, and its replacement is essential to Amtrak and New Jersey Transit's future plans to increase transit service between New Jersey and New York. Responsible for evaluating more than 40 alternatives and analyzing impacts to wetlands, floodways, and adjacent properties from the rail operations, track, structural, communication and signal, electric traction, and geotechnical perspectives of this time-sensitive project. Construction staging and duration, as well as the estimated cost for numerous design options, were instrumental in defining the preferred alternatives. The environmental review was overseen by the Federal Railroad Administration.**

CALTRAIN RAIL CORRIDOR ELECTRIFICATION PROGRAM MANAGEMENT SERVICES, MENLO PARK, CA

Task Leader for the clearance improvements necessary to allow for a proposed Overhead Contact System (OCS) and higher freight car movements. The project included LiDAR survey, analysis of various AAR Plates and vehicle clearance envelopes, and design services for excavation and reinforcement of four 110-year old brick lined tunnels along the Caltrain right-of-way from San Francisco to San Jose, California. Caltrain presently operates diesel service on this route and will convert to a 25 kV 60 hertz electrification system to operate a new EMU service. Design made allowances for the future CAHSR operation.

CORRIDORONE MINIMUM OPERATING SEGMENT, MECHANICSBURG TO LANCASTER, PA

Task Manager for trackwork responsible for the preliminary design of the start-up transit system linking the Harrisburg Transportation Center with Mechanicsburg to the west and Lancaster to the east. The western leg of the proposed transit line, initially 6 miles, would use Norfolk Southern's existing Shippensburg Secondary right-of-way and shared trackage. The east leg would share use of the existing track of Amtrak's Harrisburg Line. Responsible for new track alignment and tie-ins with Norfolk Southern and for track modifications and improvements to Amtrak's Harrisburg Station and Lancaster Station. Responsibilities also included conducting negotiations with Amtrak and Norfolk Southern.

TRACK IMPROVEMENTS AT ELM INTERLOCKING, GREENSBORO, NC

Task Manager responsible for the final design of track reconfigurations on the Norfolk Southern main line. The project involved relocating 6,000 feet of existing mainline track, double-tracking 3,000 feet with new mainline track, and installing three No. 20 crossovers in Elm Interlocking. Tasks involved the design of the overall site layout, horizontal and vertical track alignments, grading, track drainage, construction staging plans, and specifications. The work was performed in conjunction with NCDOT's work on the Greensboro Multimodal Transportation Center, which involved renovating Greensboro's historic train station as a multimodal facility to serve Amtrak and the Regional Transportation Authority's bus network. Participated in planning and coordination meetings with NCDOT, Norfolk Southern, and the Regional Transportation Authority.

STEVEN D. HARLACKER, PE, SE
QUALITY ASSURANCE MANAGER

Hardesty & Hanover

REGISTRATION

Professional Engineer: CT, NY, LA, ME, MA, NH, WA
Structural Engineer: LA, WA

EDUCATION

B.S.C.E., 1996, Lehigh University

YEARS EXPERIENCE

Total Years: 19 With H&H: 19

SUMMARY BIOGRAPHY

Steven D. Harlacker has 19 years of experience in all aspects of technical work from inspection, condition assessment and scoping, through feasibility studies and engineering analysis, including load rating, fatigue evaluation and seismic vulnerability assessment, to design and detailing of steel and concrete structures. His extensive technical expertise allows him to assist the design teams in the Quality Assurance and Quality Control of the work products on a large variety of bridge rehabilitation and design projects.

As the ***Quality Assurance Manager***, Mr. Harlacker gets involved in detailed design reviews of the plans and specifications produced by the design teams, to verify the adequacy and efficiency of the design, as well as the compliance with the applicable standards. As the firm's ***Quality Control Director***, he is responsible for internal quality reviews and confirmation of the compliance with the project quality management plans. He conducts design verification through internal quality audits at the milestone submissions and communicates his findings directly to the firm's upper management. His responsibilities also include approval of the quality management plans and maintaining and upgrading of the existing Quality System to meet the client's requirements and be compatible with the **ISO 9001 Standards**.

Some notable projects where Mr. Harlacker served as the ***Quality Control Engineer*** include **NYSDOT Accelerated Bridge Program**, Region 8 and the **Rehabilitation of Murray Morgan Bridge** in Tacoma, WA. Both of these projects were design/built, which meant that the designer had to adhere to the contractor's quality assurance/control processes in addition to meeting the internal and the owner's requirements. Mr. Harlacker was responsible for integrating the QA/QC requirements of the individual parties (owner, contractor and internal) into the design work of the Hardesty's team.

Mr. Harlacker was responsible for quality management on many high profile transportation projects delivered to **NYSDOT, PANYNJ, Amtrak, NJDOT, NJ Transit, TBTA, ConnDOT and MassDOT**. For example, he performed internal project quality audits for the NYSDOT Kew Gardens Interchange project (Region 11), which involved three contracts with a total construction value of $380 million. On the firm's recent, fast-paced project, the **I-84 (Aetna Viaduct) Emergency Repairs** in Hartford, CT, Mr. Harlacker reviewed compliance with Hardesty's Quality Management standards to assure adequacy of the information collected in the field and to verify that all areas requiring rehabilitation were addressed. He also evaluated the suitability of the proposed repair methods and materials.

Under the firm's continual effort to update and implement the QA/QC controls, Mr. Harlacker served on a QA/QC Team that reviewed and revised or supplemented Hardesty's guideline documents for Quality Management to bring them to the current industry standards. Mr. Harlacker has been implementing the Quality Assurance processes firm-wide and performing QA/QC audits on all Hardesty's projects.

RELEVANT PROJECT EXPERIENCE

MURRAY MORGAN BRIDGE REHABILITATION, TACOMA, WA

Quality Control Engineer responsible for supervising the structural design aspects and Quality Assurance of the complete rehabilitation on this 100 year old lift bridge. Completed using the Design/Build delivery method, this rehabilitation project included structural, mechanical and electrical rehabilitation of the bridge components. As

RELEVANT PROJECT EXPERIENCE (CONT.)

the Quality Assurance and Quality Control Engineer, Mr. Harlacker was responsible for review and verification of preliminary and final design documents prepared by multiple collaborators for contract compliance. (2011 – 2013)

NYSDOT ACCELERATED BRIDGE PROGRAM, REGION 8, NY

Quality Control Engineer responsible for the **Quality Control** of all work conducted as part of this multi-bridge Design/Build project. The Zone 2 ABP project involves rapid design and construction of deck replacements for 13 bridges throughout Region 8. Responsible for developing the design Quality Management Plan in compliance with NYSDOT requirements. Responsible for assessment and evaluation of the Design-Builder's design QC activities for the purpose of certifying that the Design-Builder is in compliance with the Project Quality Plan and contract requirements. (2012 – Present)

CONNDOT I-84 HARTFORD (AETNA VIADUCT) PHASE 1 (EMERGENCY REPAIRS), HARTFORD, CT

Quality Control Engineer responsible for quality control of the structural work on a project that involved inspection and development of repair concepts, economic and feasibility evaluations, and structural evaluation. Responsible for design and design team coordination for development of repairs to the concrete deck, rolled steel deck girders, structural steel pier caps. Responsible for construction support services and supplemental design during construction to address necessary repairs to bridge elastomeric bearings and concrete pier caps. (2006 – 2011)

KEW GARDENS INTERCHANGE IMPROVEMENTS, QUEENS, NY

Quality Control Engineer on a $380 million highway improvement project focused on the confluence of the Van Wyck Expressway, Grand Central Parkway, Jackie Robinson Parkway, Queens Boulevard and Union Turnpike in Queens, NY. With a volume of 300,000 vehicles per day, the multilevel interchange is notorious for traffic congestion and high accident rates. The project scope includes design for the reconstruction, realignment or relocation of the mainline of three freeways and their connector ramps and reconstruction/rehabilitation of 15 structures associated with these roadways. Also included are 1,300 LF of MSE retaining walls and 1,400 LF of precast modular walls. (2010 – 2012)

WTC TRANSPORTATION HUB (PATH), NEW YORK, NY

Construction Support Engineer providing engineering support to the contactor for all site logistics, access, and construction issues including the design of temporary bridges, platforms, underpinning, roads, and falsework for this $2 billion project. Developed innovative solutions to facilitate construction operations on this complex, congested site. Specific assignments included design of a temporary roof structure and a complex temporary support system to allow continued use of the existing PATH station by an average of 50,000 commuters daily during construction of the new transportation hub and adjacent NYC Transit 1/9 subway line. (2012- 2013)

CONNDOT ROUTE 34 OVER METRO NORTH NEW HAVEN YARD, NEW HAVEN, CT

Project Engineer for a $10 million rehabilitation of a 680-ft, 3-span, continuous highway bridge spanning over the Metro-North New Haven Yard. Responsible for inspection and evaluation of the existing structure, development of repair alternatives to satisfy the client needs, design to implement the selected rehabilitation options, and construction support services. Inspection access over MNRR tracks required using fixed and/or movable platforms to maintain the train service at all times. (2000 – 2005)

BRUCE R. SMITH, PE
QUALITY ASSURANCE MANAGER

Gannett Fleming

REGISTRATION

Professional Engineer: PA, OH, KY, MA

e-RAILSAFE Badge: e-VERIFILE.COM, Inc.

EDUCATION

B.S.C.E., 1996, Pennsylvania State University

YEARS EXPERIENCE

Total Years: 38 With Gannett Fleming: 15

SUMMARY BIOGRAPHY

Bruce R. Smith is a ***Quality Manager*** with Gannett Fleming's Transit & Rail Systems group responsible for implementing the requirements of the corporate Gannett Fleming, Inc., Quality Management System within the Gannett Fleming Transit & Rail Systems (GFT&RS) Division. The Quality Management System is certified by a third-party registrar as compliant with the requirements of ISO 9001:2008. He is serving as Auditor for internal Gannett Fleming, Inc., quality audits.

Mr. Smith establishs, implements, maintains, and controls the documents and records that comprise the quality procedures specific to GFT&RS as well as to project-specific quality management systems. He performs training employees and subconsultants in the requirements of project-specific quality management systems; maintaining training records; and coordinating quality requirements with subconsultants.

Additionally, Mr. Smith is a ***Program Management Oversight Consultant (PMOC)*** responsible for reviewing design phase quality management plans for compliance with Federal Transit Administration quality assurance / quality control requirements. Assignments include: Columbia River Crossing, Portland, Oregon/Vancouver, Washington, Washington State Dept. of Transportation / Oregon Dept. of Transportation; Silicon Valley – Berrsea Extension Project, metropolitan San Jose, California, Santa Clara Valley Transportation Authority; BART Oakland Airport Connector Project, Oakland, California; and the South Sacramento Corridor Phase 2, Sacramento, California, Sacramento Regional Transit.

RELEVANT PROJECT EXPERIENCE

CALTRAIN MODERNIZATION PROGRAM, SAN FRANCISCO – SAN JOSE, CA

Quality Manager as part of the Owner's Representative for Electrification Support Services responsible for assuring that quality assurance requirements are established and quality control requirements are followed in accordance with the project-specific Quality Management Plan. Quality responsibilities typically include training, checking of deliverables, subconsultant reviews, project audits and coordination between disciplines and subconsultants.

AMTRAK NIANTIC DRAWBRIDGE, EAST LYME, CT

Quality Manager responsible for assuring that quality assurance requirements are established and quality control requirements are followed in accordance with the project-specific Quality Management Plan. Quality responsibilities typically include training, checking of deliverables, subconsultant reviews, project audits and coordination between disciplines and subconsultants.

NICTD POSITIVE TRAIN CONTROL PROGRAM MANAGEMENT, KENSINGTON, IL – SOUTH BEND, IN

Quality Manager responsible for assuring that quality assurance requirements are established and quality control requirements are followed in accordance with the project-specific Quality Management Plan. Quality responsibilities typically include training, checking of deliverables, subconsultant reviews, project audits and coordination between disciplines and subconsultants.

RELEVANT PROJECT EXPERIENCE (CONT.)

EAST, SOUTHWEST LIGHT RAIL TRANSIT, MINNEAPOLIS, MINNESOTA - HOPKINS, MN

Quality Manager responsible for assuring that quality assurance requirements are established and quality control requirements are followed in accordance with the project-specific Quality Management Plan. Quality responsibilities typically include training, checking of deliverables, subconsultant reviews, project audits and coordination between disciplines and subconsultants.

NATIONAL CAPITAL PURPLE LINE LIGHT RAIL TRANSIT, BETHESDA-NEW CARROLLTON, MD

Quality Manager as part of the General Engineering Consultant team responsible for assuring that quality assurance requirements are established and quality control requirements are followed in accordance with the project-specific Quality Management Plan. Quality responsibilities typically include training, checking of deliverables, subconsultant reviews, project audits and coordination between disciplines and subconsultants.

DENVER RTD EAGLE P3 SIGNAL DESIGN AND OPERATIONS SIMULATION, METROPOLITAN DENVER CO

Quality Manager responsible for assuring that quality assurance requirements are established and quality control requirements are followed in accordance with the project-specific Quality Management Plan. Quality responsibilities typically include training, checking of deliverables, subconsultant reviews, project audits and coordination between disciplines and subconsultants.

PORTAL BRIDGE CAPACITY ENHANCEMENT, NEWARK, NJ

Quality Manager responsible for assuring that quality assurance requirements are established and quality control requirements are followed in accordance with the project-specific Quality Management Plan. Quality responsibilities typically include training, checking of deliverables, subconsultant reviews, project audits and coordination between disciplines and subconsultants.

POSITIVE TRAIN CONTROL, PHILADELPHIA, PA

Quality Manager responsible for assuring that quality assurance requirements are established and quality control requirements are followed in accordance with the project-specific Quality Management Plan. Quality responsibilities typically include training, checking of deliverables, subconsultant reviews, project audits and coordination between disciplines and subconsultants.

CORRIDORONE PRELIMINARY ENGINEERING, HARRISBURG, PA

Quality Manager responsible for assuring that quality assurance requirements are established and quality control requirements are followed in accordance with the project-specific Quality Management Plan. Quality responsibilities typically include training, checking of deliverables, subconsultant reviews, project audits and coordination between disciplines and subconsultants.

NORTH SHORE CONNECTOR - SYSTEMS ENGINEERING, PITTSBURGH, PA

Quality Manager responsible for assuring that quality assurance requirements are established and quality control requirements are followed in accordance with the project-specific Quality Management Plan. Quality responsibilities typically include training, checking of deliverables, subconsultant reviews, project audits and coordination between disciplines and subconsultants.

RESTORATION OF SUBWAY 1 AND 9 LINES, NEW YORK, NY

Task Manager responsible for providing track and civil engineering support to the general contractor reconstructing NYCT's 1 and 9 Lines in Lower Manhattan. Approximately 1,200 LF of the existing subway structure was destroyed or extensively damaged during the 9/11 terrorist attack on the World Trade Center.

EAST SIDE ACCESS, QUEENS, NY

Senior Engineer responsible for preparing the preliminary design construction cost estimate and the preliminary design report for the East Side Mid-Day Storage Yard, which will consist of a new 26-track storage yard, yard office, and other support facilities. Also prepared the preliminary design construction cost estimate for the Arch Street Yard and Shop.

CHARLIE GEER, PE
RISK MANAGER

Hardesty & Hanover

REGISTRATION

Professional Engineer: FL, GA, TX

EDUCATION

B.S.C.E, 1976, University of Florida
M.B.A., 1980, University of Houston

YEARS EXPERIENCE

Total Years: 35 With H&H: 1

SUMMARY BIOGRAPHY

Charlie Geer has more than 35 years of experience working for major consulting firms in various roles related to managing risk in engineering and construction. He is a **licensed professional engineer** with hands-on design management experience, assisted by his **graduate degree in business administration**.

As a ***Risk Manager***, Mr. Geer has been responsible for **identifying, assessing and evaluating potential risks** to the projects, which could have an adverse impact on the schedule, budget and the overall project outcome. He has been very successful in **developing and implementing processes/procedures to mitigate project risks** and monitor the effectiveness and the end results of the risk mitigation strategies. His risk management approach is based on the mantra, "**prevention is better than cure.**" He focusses on avoiding threats and mitigating the effects of those which are essentially unavoidable. His success in risk management is based on good understanding of the project objectives; the delivery process and responsibilities of each party involved; the environmental impact issues; constraints; public involvement and regulatory requirements for major transportation projects. His major responsibilities and areas of expertise include:

- **Risk Management Planning** - developing the overall risk management approach and strategies to identify and address project risks, which could have an adverse effect on the project outcome
- **Risk Assessment** – identifying, estimating and describing the anticipated project risks, defining the potential impacts and risk levels, and identifying the risk owners
- **Risk Evaluation** - comparing estimated risks with the criteria established for the project, including schedule, budget and environmental factors; establishing and quantifying acceptable risk level
- **Risk Workshops** – leading working sessions with the design team and the owners to identify project risks and develop the most efficient mitigation strategies
- **Risk Register** - reporting the risks in an appropriate way for the owner and other project participants to understand the most significant risks, the potential consequences and the accountability of all parties involved in the project delivery process
- **Risk Mitigation** - providing support to the project staff and the owner to build risk awareness and develop efficient risk mitigation strategies; assisting in developing and evaluating best options for handling or transferring the of risks

Mr. Geer served as quality, liability, and risk manager in major consulting firms in the transportation industry. His responsibilities included performing contract reviews, establishing quality-control systems, developing risk registers and risk management plans, as well as facilitating claims and dispute resolution. He is the former national **Chairman of the ACEC Risk Management Committee**, accomplished facilitator of risk management workshops and author of many papers and industry guidelines. Throughout his career, Mr. Geer successfully managed risk on major transportation and infrastructure improvement projects, including land development, roadway reconstruction, highway improvements, airport expansion and water treatment facilities. His risk management expertise includes alternative delivery methods, such as Public-Private Partnership (P3). All of his projects were delivered on schedule and within the budget, to a full satisfaction of the owner.

RELEVANT PROJECT EXPERIENCE

I-595 DESIGN-BUILD PROJECT (P3 DELIVERY PROJECT), FORT LAUDERDALE, FL

Risk Manager for the first segment of $1.8 billion I-595 Corridor Roadway Improvements project in Ft Lauderdale, which involved reconstruction and widening of the I-595 mainline and all associated improvements to the frontage roads and ramps from the I-75/Sawgrass Expressway interchange to the I-595/I-95 interchange, for a total project length of approximately 10.5 miles. A major component of the project was the construction of three at-grade reversible express toll lanes serving express traffic to/from the I-75/Sawgrass Expressway from/to east of SR 7, with a direct connection to the median of Florida's Turnpike. The project was implemented as a public-private partnership (P3) between FDOT and a private concessionaire to design, build, finance, operate, and maintain the roadway for a 35-year term. Reconstruction of I-595 significantly improved traffic conditions and enhanced transportation corridor, which is vital to the shipment of goods in South Florida and the regional economy. Construction of the first segment was successfully completed on schedule and within the budget. Mr. Geer was responsible identifying project risks and developing risk register. He facilitated risk management workshops for the P3 delivery team and assisted in developing efficient mitigation strategies.

FLORIDA EVERGLADES RESTORATION - STORMWATER TREATMENT AREA 1A

Risk Managerfor a $75 million infrastructure project focused on improving water quality in Everglades, Florida, by creating more than 6,500 acres of new stormwater treatment areas (STAs) and additional water storage. Located immediately northwest of the Arthur R. Marshall Loxahatchee National Wildlife Refuge, STA-1 West removes excess phosphorus and other nutrients from water flowing into the refuge and other parts of the greater Everglades. The expansion of the STA has doubled its capacity, further reducing phosphorus concentrations. Mr. Geer was responsible for risk assessment and management. The project was completed on schedule and within the budget.

PALM BEACH INTERNATIONAL AIRPORT, PALM BEACH, FL

Risk Manager on a program management contract for a $100 million capital improvement project at Palm Beach International Airport, which included construction of a new terminal building, access roads, parking and airside aprons. The 600,000 square foot terminal has 28 aircraft gates with the potential for 24 additional gates in the future; concession mall which runs the length of the building; three passenger concourses and holding areas. The project also involved improvements to the existing access roadways and construction of new parking areas. Mr. Geer was responsible for risk assessment and management, including development of mitigation strategies.

STEVEN HOM, PE
CONSTRUCTABILITY REVIEW

Hardesty & Hanover

REGISTRATION
Professional Engineer: CT, NY

EDUCATION
B.S.E., 1982, University of Connecticut

YEARS EXPERIENCE
Total Years: 33 With H&H: 33

SUMMARY BIOGRAPHY

Steven Hom has over 30 years of **diversified design, management and construction experience** in the rehabilitation and replacement of the infrastructure, including bridges, railroads, highways and related facilities. His experience encompasses both design and construction management/construction inspection services. As a ***Project Manager***, he has been responsible for all phases of project delivery, including inspections, engineering analyses, feasibility studies, structural rehabilitation designs, constructability reviews, agency coordination and preparation of comprehensive contract documents. As the ***Resident Engineer*** he has been responsible for the supervision and inspection of the construction activities to assure that the contract requirements and the construction industry standards have been met.

Mr. Hom also participated in projects that involved ***Construction Engineering*** services, such as the erection of the **World Trade Center Transportation Hub**. These services included engineering support for all site logistics, access, and construction issues including the design of temporary bridges, platforms, underpinning, roads, and falsework for this $2 billion project

Through his diverse experience, Mr. Hom has **hands-on knowledge and understanding of the constructability issues**; current industry practices; means and methods of construction, as well as the permitting requirements and the responsibilities of the designer and contractor in each stage of the project delivery.

RELEVANT PROJECT EXPERIENCE

WTC TRANSPORTATION HUB CONSTRUCTION ENGINEERING SUPPORT, MANHATTAN, NY

Project Supervisor responsible for construction engineering services in the erection of the $2 billion World Trade Center Transportation Hub. Work included structural engineering support for all site logistics, access, and construction issues. Notable assignments included design of a temporary erection platform used for the erection of the main elements of the new PATH Hall roof structure. H&H **developed many creative solutions to facilitate construction operations on this complex, congested site**, including temporary re-support system for the existing columns (underpinning), to allow construction of the new footings while maintaining a continued use of the existing PATH station. H&H was also responsible for coordination of the construction staging with the various stakeholders at the site. (2009 – 2012)

AMTRAK'S NIANTIC RIVER BRIDGE, EAST LYME AND WATERFORD, CT

Deputy Project Manager for responsible for **constructability reviews** and **Construction Support Services** for the Niantic River Movable Bridge replacement project on Amtrak's Northeast Corridor. The constructability reviews conducted by Mr. Hom focused on the **construction phasing, maintenance and protection of railroad operations, construction access, and operational and safety issues**. He was also responsible for the coordination of the architectural, mechanical, electrical and structural submittals and assisted in resolving field problems. (2009 – 2014)

AMTRAK'S CONNECTICUT RIVER BRIDGE, OLD SAYBROOK, CT

Project Engineer for in-depth inspection and feasibility study of bridge replacement alternatives for the Con-

RELEVANT PROJECT EXPERIENCE (CONT.)

necticut River Bridge, between Old Saybrook and Old Lyme, CT, which carries 35 passenger trains (Amtrak and Shore Line East) and 6 freight trains per day. H&H developed and analyzed feasible replacement alternatives with a **focus on operational, environmental and ROW impacts; cost; and the extent to which they meet the project objectives**. A set of highly ranked alternatives, called "Best Solution Study Alternatives", was selected to provide Amtrak with several solutions, which were compared with regards to their cost and technical benefits. (2006 – 2007)

CONNDOT TOMLINSON BRIDGE OVER QUINNIPIAC RIVER, NEW HAVEN, CT

Project Engineer during construction phase of a $120 million replacement of Tomlinson Bridge, which provides **vehicular and rail crossing** over the Quinnipiac River in New Haven. The existing double-leaf bascule bridge was replaced with a new 270-foot-long, vertical-lift bridge. As the Movable Bridge Liaison, Mr. Hom coordinated activities between the design team, resident engineer and the owner, providing technical expertise required at the site to resolve structural, mechanical, and electrical issues. (1996 – 2002)

PECK DRAWBRIDGE AND BRIDGEPORT VIADUCT REPLACEMENT, BRIDGEPORT, CT

Field Engineer responsible for providing technical expertise at the site for this $90 million replacement of the PECK Bridge, which is a vital link on the Metro-North New Haven Line and Amtrak's Northeast Corridor. The new bridge designed by H&H, which replaced the existing inoperable rolling lift, is a 138-foot twin single-leaf trunnion bascule span. Key challenges included **coordination with the underground utilities, overhead power lines, catenaries and signals**. Also, special study of the existing foundations was required since the substructure of the bridge experienced significant horizontal movement during its long lifespan. Hardesty & Hanover also designed a temporary, 800-foot-long structure to bypass the bridge and maintain uninterrupted rail operations during the construction period. (1996 – 1998)

CONNDOT 2011–2015 INSPECTION OF METRO-NORTH BRIDGES, CT

Project Manager responsible for the mechanical and electrical **inspection of 5 movable bridges on the Metro-North New Haven line**. Performed routine and verification inspections for the Cos Cob, Norwalk, Saugatuck, Bridgeport and Devon movable bridges. Work included preparation of inspection reports, which identify and prioritize the repairs. (2011-present)

TBTA RFK BRIDGE MANHATTAN-QUEENS RAMP REPLACEMENT, RANDALL'S ISLAND, NY

Deputy Project Manager for a **Design/Build** contract for the reconstruction of a 1,850-foot-long ramp located south of the Bronx Toll Plaza and merging with the Queensbound Main Line. The scope of work included replacement of the steel superstructure and concrete deck, as well as retrofitting of the existing piers and replacement/strengthening of the pier caps. In addition, the ramp was reconfigured to improve the geometry and strengthened to support HS-25 live load and meet the requirements of the current seismic codes. Mr. Hom was responsible for coordination of work between various disciplines, management of subconsultants and leading the design team to meet the demanding project schedule. Other responsibilities included progress reporting to TBTA and assisting the contractor is **resolving field problems and constructability issues**. (2013 – 2014)

TBTA HENRY HUDSON BRIDGE REHABILITATION CONSTRUCTION MANAGEMENT SERVICES, NEW YORK, NY

Construction Manager responsible for the construction management and construction inspections services for a $36 million rehabilitation involving removal of the upper level curb stringers and replacement of the roadway lighting at the Henry Hudson Bridge. The scope of work included steel and concrete demolition; structural steel repairs/replacement; installation of concrete-filled steel grid deck; concrete parapet construction; lead paint removal and repainting; and upgrade of the electrical distribution system and lighting. The project involved staged construction, 24-hour multi-shift operations and **work over active railroad tracks.** (2010-2014)

PANYNJ BAYONNE BRIDGE STEEL REHABILITATION & PAINTING, NEW YORK, NY

Project Manager responsible for the rehabilitation of the Bayonne Bridge. Work included hands-on inspection and field verification of the necessary steel repairs in order to develop rehabilitation plans for all structures comprising the bridge. The H&H team worked closely with PANYNJ to perform inspections within the strict MPT windows. Work included preparation of an inspection report and developing plans, details and specifications for the repairs and painting. (2010-2013)

JOSEPH GRIFFIN, PE
CONSTRUCTABILITY REVIEW

Hardesty & Hanover

REGISTRATION

Professional Engineer: NJ, NY, PE
Professional Planner: NJ

EDUCATION

B.S.C.E., 1976, New Jersey University of Technology

YEARS EXPERIENCE

Total Years: 39 With Griffen: 6

SUMMARY BIOGRAPHY

Joseph Griffin recently retired as ***President of Engineering*** and a Director of George Harms Construction Co., Inc. with 37 years of heavy construction experience, 30 of which has been with George Harms Construction Co Inc, Farmingdale, NJ. Mr. Griffin has **supervised and performed design and construction engineering** for a wide-range of heavy construction projects including railroad, highway, bridge, landfill, electrification, cofferdams, sheeting, piles, pipelines, and dams. He has been responsible for overseeing project engineers, schedulers, estimators, designers, cost accountants, and construction supervision.

Upon retiring from George Harms Construction in December 2009, Mr. Griffin established Griffin Engineering, LLC providing engineering services to both Contractor and Consulting Engineering clients. Since December 2009, Mr. Griffin has performed temporary structure designs, estimating, constructability reviews, claims management and construction management functions for numerous clients on numerous heavy construction projects throughout New Jersey and New York.

RELEVANT PROJECT EXPERIENCE

NJDOT, ROUTE 35 VICTORY BRIDGE, PERTH AMBOY, NJ

Constructability Reviewer for the construction of first precast segmental bridge in NJ involving cofferdams, piles, large diameter drilled shafts, post tensioning, and water operations. Two new bridges were constructed and the demolition of the existing bridge was also included. Much of this construction was completed at heights over 80', and across the Raritan River.

NJ TRANSIT EWR MONORAIL NEC CONNECTION, CONTRACT GC-1, NEWARK, NJ

Constructability Reviewer. A project involving foundations, structures, pedestrian platforms, bridges, track bed construction, signal bridges and general site work. The project required the implementation of a Health & Safety Plan, a Quality Control Plan, and requires close coordination with railroad forces. Value engineering design changes were implemented. This project also requires management of an owner supplied insurance program.

NJ TRANSIT SECAUCUS TRANSFER PROJECT, 138KV RELOCATION, SECAUCUS, NJ

Constructability Reviewer. Construction of access roads, foundations, piles, steel poles, and electrical line work. Responsible for implementing a value engineering change. Project also required implementation of a Health & Safety Plan, and Quality Control Plan as well as management of an owner supplied insurance program.

NJDOT ROUTES 295 & 42 / I-76 DIRECT CONNECTION, CAMDEN COUNTY, NJ

Constructability Reviewer for the I-295 NB / SB and Ramp A Bridge Structures. Prepared a constructability report and erection plan for deep curved steel I girder structures and pier cap box beams over extensive traffic. Also prepared a construction cost estimate and staging scheme of erection activities. July 2010 - May 2012

RELEVANT PROJECT EXPERIENCE (CONT.)

PSE&G NUCLEAR DEVELOPMENT PROJECT, CAUSEWAY DESIGN STUDY, SALEM, NJ

Constructability Reviewer for the new mile long access bridge to the Salem Nuclear Power Plant. Performed concept analysis for constructability of various types and prepared construction cost estimates for various alternatives. August & September 2010

WEST BROOK ROAD BRIDGE OVER THE WANAQUE RESERVOIR, PASSAIC COUNTY, NJ

Constructability Reviewer. Prepared a constructability report and construction cost estimate for all major facets of construction and demolition of a deep water, drilled shaft supported, reservoir crossing. July 2011 – April 2012.

NJTP SHOULDER RESTORATION & IMPROVEMENT PROGRAM MP 83 – 100, OCEAN COUNTY, NJ

Constructability Reviewer. Prepared a constructability review of the Phase C Plans, Specifications, for Contracts P200.198, P200.199, P200.200, and P200.201 addressing the difficulties of construction, access, and phasing, for the major components of bridge construction. December 2011 – May 2012

NJTP MAINLINE WIDENING FOR SHOULDER GSP MP 83.5 – 88.5, OCEAN COUNTY, NJ

Constructability Reviewer. Performed a Claims Avoidance Audit of the Phase C Plans, Specifications, Construction Schedule, and Construction Cost Estimate for Contract P200.199 to identify potential areas of concern that could become issues during the construction.

NJDOT ROUTE 1&9(T), ST PAUL'S AVENUE BRIDGE, JERSEY CITY, NJ

Constructability Reviewer. Construction of 11 new bridge and 45 new retaining walls of varying design at Tonelle Circle in Jersey City, NJ. This project includes three bridges built over **active rail lines** and all work performed in an active traffic environment. Construction on the project involved all facets of heavy construction including, pile driving, deep shoring, dewatering, concrete structures, steel erection, drilled shafts, MSE walls, excavation and handling of contaminated materials, road construction, utilities, tunnel shafts, jacked casings, major demolition, and signalization.

ROUTE 52 CAUSEWAY – CONTRACT A1, CITY OF SOMERS POINT AND OCEAN CITY, NJ

Constructability Reviewer. Reconstruction of two low level bridges over the Great Egg Harbor Bay. The new bridge work included twin bridges over two separate waterways, totaling 7,500 LF of bridge. The bridges consist of cast in place concrete pier caps and columns, supported by concrete footings. Footings are founded on 30" square concrete piles, up to 120' long. The superstructure is 93 " tall concrete girders, 135' long, supporting precast concrete deck panels and a high performance concrete deck. Road work included vibro concrete shafts, MSE walls, high strength Geosynthetic reinforcement, Geotechnical monitoring, consolidation waiting periods, steel bulkheads, drainage, utilities and paving. All work took place in an environmentally sensitive area with extensive environmental restrictions.

NJDOT ROUTE 9, SECTION 25K & 1F, WOODBRIDGE/SAYREVILLE, NJ

Constructability Reviewer. Design Build Bridge project over the Raritan River in Woodbridge, NJ. The project involved a great deal of water work, bridge, piles, cofferdams, concrete and steel superstructures as well as road construction.

NJDOT ROUTE 295/195 INTERCHANGE, TRENTON, NJ

Constructability Reviewer. Construction of this complex highway interchange including 2 mil cubic yards of embankment construction, 1 mile of bridges, piles, sheeting, and cofferdams. All work was performed in tidal wetlands and was compliant with Army Corps and NJDEP permits. Public relations and environmental preservation was critical on this project as was staging and scheduling.

NJDOT ROUTE 129, SECTION 10A & 11A, TRENTON, NJ

Constructability Reviewer. Highway and bridge construction including deep-sheeted excavations adjacent to Conrail, concrete walls, and proprietary walls. Implemented and administered a Health & Safety Plan, Soil Re-Use Plan, and the excavation and disposal of hazardous materials. Also implemented value engineering changes.

PETER ROODY, PE
TASK MANAGER – MOVABLE BRIDGE

Hardesty & Hanover

REGISTRATION

Professional Engineer: NY, MD, WA, ME

EDUCATION

B.E.E.S., 1982, Hofstra University

YEARS EXPERIENCE

Total Years: 33 With H&H: 33

SUMMARY BIOGRAPHY

Peter Roody has over 30 years of experience in the design of heavy movable structures. He serves as Hardesty & Hanover's ***Chief Structural Engineer for movable bridges***, responsible for developing engineering concepts and the overall technical content and quality of the design.

Mr. Roody is a recognized expect in the field, known for his innovative approach to addressing complex technical problems. **His designs feature many creative solutions to improve the bridge performance, ensure dependable operations and minimize maintenance requirements**. Notable examples include Amtrak's Niantic River Drawbridge which utilizes separate counterweights integral with each of the main bascule girders to eliminate complexities associated with the overhead catenary system. His other significant railroad projects include the Port River Bridges in Adelaide, Australia, featuring 200-foot long single-leaf bascule spans. Mr. Roody is currently working on a replacement of the Sarah Long Vertical Lift Bridge, which uses many creative solutions, including the first application of post tensioned precast concrete for the lift towers and fenderless piers designed to withstand vessel impact.

Mr. Roody's experience includes other heavy movable structures, such as cranes, retractable stadium roofs and other complex systems. He has been involved in all phases of the project delivery, including inspections, emergency repairs, rehabilitation, feasibility studies and design of new bridges. His technical acumen and extensive hands-on experience allow him to develop the most efficient solutions, with a **focus on longevity, low maintenance and reliability of movable spans**.

RELEVANT PROJECT EXPERIENCE

SARAH LONG BRIDGE REPLACEMENT, PORTSMOUTH, NH/ KITTERY ME

Deputy Project Manager and Lead Structural Engineer responsible for the design of movable span on a $159 million replacement of the Sarah Long bridge, which is a vertical-lift bridge carrying vehicular traffic and serving as a **railway link to the Portsmouth Naval Shipyard**. The movable bridge design, developed by Mr. Roody, features **many creative solutions** including the first application of precast post-tensioned concrete for the lift span towers. A single level **300-foot-long lift span**, framed with box girders, has separate seating locations for a double level highway/rail approaches. The operating machinery, which was designed to reduce long term maintenance needs, is located in the tower bases. H&H also designed a state of the art vessel collision system. (2013 - present)

NJ TRANSIT BRIELLE BRIDGE FEASIBILITY STUDY, BRIELLE/POINT PLEASANT, NEW JERSEY

Quality Assurance responsible for the quality oversight of the design of movable span on a feasibility study for the replacement of a 100-year old Scherzer rolling-lift bascule bridge on the NJ Transit Coast Line. H&H is conducting a comprehensive analysis of different track profiles and movable span alternatives, including **vertical lift; rolling lift bascule;** and **trunnion style bascule**. Each alternative has been analyzed with regards to the environmental impacts, flood resiliency, navigational clearances, constructability, maintenance issues, construction cost (including force account), visual impact and other pros and cons. (2014 – present)

RELEVANT PROJECT EXPERIENCE (CONT.)

AMTRAK NIANTIC RIVER BRIDGE REPLACEMENT, EAST LYME/WATERFORD, CT

Lead Structural Engineer responsible for the design of movable span on a $140 million replacement of the Niantic River Drawbridge on **Amtrak's Northeast Corridor**, which carries **54 trains daily**, including Amtrak, ConnDOT's Shore Line East and freight railroad. The project involved **off-line replacement** of the existing structure. The **new 140 ft. long single-leaf bascule span carrying two railroad tracks** was constructed 58 feet south of the existing railroad alignment. Mr. Roody developed a **unique structural system** comprised of separate counterweights integral with each of the main bascule girders in order to eliminate complexities associated with the overhead catenary system during bridge openings. (2008 - 2013)

PORT RIVER BASCULE BRIDGES, ADELAIDE, SOUTH AUSTRALIA

Project Manager for the design of two **new single-leaf bascule bridges** providing **vehicular and rail connection** to port facilities in a busy commercial port in Adelaide, Australia. The design developed by Mr. Roody features creative architectural forms with **200-foot bascule span** framed with steel box girders, shaped to achieve a slender, futuristic look. The span is remotely operated from a control center located 5 km away from the site. The bridge is supported on **"V-Shaped" post tensioned concrete piers**, with geometry complementing the angle of the open bridge. The project was delivered as design/build with Mr. Roody having a full responsibility for the design and management of the movable spans. (2005 - 2008)

JACQUES CHABAN-DELMAS VERTICAL LIFT BRIDGE, BORDEAUX, FRANCE

Quality Control Engineer for the design of a new vertical lift bridge over Garonne River in Bordeaux, France. With its elegant architectural form and the **longest lift span in Europe** (383 ft.), the Chaban-Delmas Bridge is an example of **state-of-the-art engineering**. It has a lift height of 164 ft. and accommodates 320 ft. wide navigational channel. The bridge was designed to carry four lanes of vehicular traffic, two bicycle/pedestrian paths and **two light rail tracks** for a total width of approximately 140 ft. The counterweights and the lift span weight have been finely balanced to achieve maximum efficiency and allow lifting the bridge with very little energy (only two 132 kW motors). (2010-2013)

AMTRAK SPUYTEN DUYVIL SWING BRIDGE EMERGENCY REPAIRS, NEW YORK, NY

Lead Structural Engineer for various emergency repairs of the turn-of-the-century Spuyten Duyvil Swing Bridge, which is a major link in **Amtrak's Empire Corridor**. During its more than 100-year history the Spuyten Duyvil Bridge was repeatedly hit by barges suffering various degrees of damage, including 1982 collision with an oil tanker which rendered the bridge nonoperational for almost a decade. In 1992, H&H was retained to design a major structural/mechanical/electrical rehabilitation to restore the bridge to service. Following that, H&H was involved in emergency repairs of damage caused by a vehicle collision in 2002 and 2003. **The emergency repairs included jacking of the 750-ton swing span of the bridge, in both vertical and horizontal direction, to reseat the bridge properly on its structural-mechanical turntable.** All work was completed during nighttime without impact on rail operations. In 2008 H&H also designed a new fender system. (1992 – 2003).

BNSF BALLARD BASCULE BRIDGE, SEATTLE, WASHINGTON

Lead Structural Engineer for the **replacement of the two counterweight trunnion bearings** of the Ballard Strauss Bascule Bridge in Seattle, which carries BNSF railroad. The project involved jacking 5.5 million pounds of the combined weight of the bridge and counterweight to perform the replacement. **The work was time-critical, as field construction coincided with a scheduled channel closure, and it was completed in 14 days**. (2009 – 2010)

MAINE DOT CARLTON VERTICAL-LIFT BRIDGE OVER THE KENNEBEC RIVER, BATH, ME

Lead Structural Engineer responsible for this $100M project, which included inspection and preliminary design for repair and study for replacement of a combined highway/railroad bridge. Involved mechanical, electrical, and structural systems of this 2,700-feet river crossing. Bridge included a 234-feet rail and highway vertical-lift span that provided a 130-foot vertical navigation clearance. A capacity study led to Hardesty & Hanover performing alternate designs for bridge replacement - a vertical lift with the rail portion nested and a high-level fixed. Repair of the trunnions involved in-place machining and shot peening of the fatigue prone transition fillets. (1995-2001)

DAVID A. GERBER, PE
TASK MANAGER – APPROACH SPANS

Hardesty & Hanover

REGISTRATION
Professional Engineer: NY, NJ

EDUCATION
B.S.C.E., 1989, New Jersey Institute of Technology

YEARS EXPERIENCE
Total Years: 26 With H&H: 25

SUMMARY BIOGRAPHY

David Gerber is a ***Structural Discipline Leader*** with 26 years of design experience focused on transportation and infrastructure projects, including bridges, highways and railroad facilities. He has been **responsible for all phases of the project delivery**, including inspections, scoping, feasibility studies, engineering analyses and design for the rehabilitation or replacement of bridges and other structures.

As the Project Engineer, Mr. Gerber has been **leading design teams in the development of contract documents.** In this capacity he has been responsible for developing engineering approach, evaluating design alternatives and selecting the most appropriate solutions. His responsibilities also include coordination of work between different disciplines and supervision of all engineering and drafting work on the project. Having worked on many bridge projects in the coastal areas, he has **extensive knowledge of the local, state and federal regulatory standards**, including stormwater management, environmental permitting and coordination with the US Coast Guard.

Mr Gerber has successfully **delivered numerous projects to the railroad clients, including Amtrak, NJ Transit, PANY&NJ and Canadian Pacific**. He was also responsible for a **replacement of overgrade bridges** located in congested urban settings, which required extensive coordination with **LIRR**. Through his continuing involvement in railroad projects, Mr. Gerber developed **excellent understanding of the constraints and issues specific to the railroad environment**.

RELEVANT PROJECT EXPERIENCE

NJ TRANSIT BRIELLE BRIDGE FEASIBILITY STUDY, BRIELLE/POINT PLEASANT, NEW JERSEY

Lead Structural Engineer responsible for the design of the approach spans for a feasibility study for the replacement of a 100-year old **bascule bridge on the NJ Transit Coast Line**. H&H is conducting a comprehensive analysis of different track profiles and structural alternatives for the movable span and approaches. Each alternative has been analyzed with regards to the environmental impacts, flood resiliency, navigational clearances, constructability, maintenance issues, construction cost (including force account), visual impact and other pros and cons. The recommended approach span alternative is a multi-girder system with ballast pan. Estimated construction cost $102 million. (2014 – present)

AMTRAK NIANTIC RIVER BRIDGE REPLACEMENT, EAST LYME/WATERFORD, CT

Lead Structural Engineer for a $140 million replacement of the Niantic River Drawbridge on **Amtrak's Northeast Corridor, which carries 54 trains daily**, including Amtrak, ConnDOT's Shore Line East commuter rail and freight railroad. The project involved **off-line replacement** of the existing structure. The new **140 ft. long single-leaf bascule span** carrying two railroad tracks was constructed 58 feet south of the existing railroad alignment. Mr. Gerber was responsible for design of the bridge abutments and bearings. (2010 - 2013)

NJT NEWARK DRAWBRIDGE REHABILITATION, NEWARK, NJ

Project Engineer/Structural Lead for the rehabilitation of the Newark Drawbridge on **NJ Transit Morristown Line, which carries 60 trains each way daily**. The work involved structural repairs/strengthening, mechanical/

RELEVANT PROJECT EXPERIENCE (CONT.)

electrical systems upgrades and timber ties replacement on the bridge and the adjacent viaducts. Mr. Gerber was responsible for inspection, load ratings, design of structural steel repairs, preparation of contract drawings and cost estimate as well as overall project coordination during design and construction support phases. (2006 – 2010)

TUNKHANNOCK VIADUCT (NICHOLSON BRIDGE), NICHOLSON, PA

Lead Structural Engineer for the inspection and load rating of 2,375 feet long Nicholson Viaduct operated by the **Canadian Pacific Railway**. Built in 1915, the 240 feet high viaduct was the **largest concrete structure in the world** and merited the title of largest concrete bridge in the US for 50 years. In 2006 H&H conducted a detailed inspection and load rating of the structure, and developed rehabilitation options. Mr. Gerber was responsible for generating computer models and performing load rating analysis of main arch ribs and spandrel walls. (2006)

AMTRAK SPUYTEN DUYVIL SWING BRIDGE EMERGENCY REPAIRS, NEW YORK, NY

Structural Engineer responsible for structural design and preparation of contract drawings for the restoration of a **swing span railroad bridge** on Amtrak's Empire Corridor, after bridge suffered displacement from a collision due to errant waterway navigation. **The emergency repairs included jacking of the 750-ton swing span** of the bridge, in both vertical and horizontal direction, to reseat the bridge properly on its structural-mechanical turntable. All work was completed during nighttime without impact on rail operations. (2003).

NYCDOT RECONSTRUCTION OF 2ND AVENUE BRIDGE OVER LIRR, BROOKLYN, NY

Project Engineer for the replacement of 2nd Avenue Bridge in Brooklyn, **spanning over LIRR tracks**. The project involved a complete removal of the existing 264-ft, six-span structure and replacing it with two-span bridge with continuous steel multi-girder superstructure and reinforced concrete substructure. The structural work included design of temporary support system and developing a complex staging plan for construction. Mr. Gerber's responsibilities included overall coordination and supervision of the project personnel including subconsultants. He also developed construction staging approach and coordinated the design with private and public utilities. (2003 – 2006)

NYCDOT RECONSTRUCTION OF 14TH AVENUE BRIDGE OVER LIRR, BROOKLYN, NY

Project Engineer for the replacement of 14th Avenue Bridge in Brooklyn, **spanning over LIRR tracks**. The project involved a complete removal of the existing 120-foot, four-span bridge and design of a new 60-foot single-span bridge with prefabricated superstructure and reinforced concrete substructure. Responsibilities included overall supervision of the design work, utility coordination, obtaining permits and approvals and developing staging approach. (2002 – 2003)

NJ TRANSIT UNDERGRADE BRIDGE INSPECTION – GROUP F, RARITAN AND ATLANTIC CITY RAIL LINES

Team Leader for the **inspection of 13 railroad structures** including the 4,300-foot **Delair Bridge over the Delaware River** in Philadelphia, PA, which carries the **NJ Transit's Atlantic City Line, CSX and NSR**. Built in 1896, the Delair Bridge was converted to a vertical lift in 1958 by H&H and became the longest and heaviest double-track lift bridge in the world at the time. As the team leader, Mr. Gerber was responsible for directing the team in performing in-depth inspection, preparation of reports, and updating the load ratings. (2003 – 2004)

AMTRAK BUSH RIVER BRIDGE, PERRYMAN, MD

Lead Structural Engineer on a project that involved mechanical upgrades to the 40-foot-long, **single-leaf, heel trunnion bascule span** of the Bush Rive Bridge. Built in 1913, the ½-mile long structure is located on the busiest segment for freight trains on the entire Northeast Corridor. The two-track movable span requires extensive ongoing maintenance to maintain service reliability. Mr. Gerber was responsible for the design of new machinery supports, and developing contract drawings, specifications and cost estimate. (2003 - 2004)

AMTRAK/NJT PORTAL BRIDGE, KEARNY/SECAUCUS, NJ

Lead Structural Engineer on a project that involved mechanical upgrades to the **swing span of the Portal Bridge** over Hackensack River on the **Northeast Corridor**, which carries Amtrak and NJ Transit service. The project scope involved installing a new center wedge machinery. Responsible for the design of new machinery supports, and developing contract drawings, specifications and cost estimate. (2003)

RAYMOND MANKBADI, PE
TASK MANAGER – FOUNDATIONS & GEOTECH

Hardesty & Hanover

REGISTRATION

Professional Engineer: NJ, CT, NY, PA

EDUCATION

B.S.C.E., 1978, Cairo University
M.S.C.E., 1985, Stevens Institute of Technology

YEARS EXPERIENCE

Total Years: 35 With H&H: 8

SUMMARY BIOGRAPHY

Raymond Mankbadi is the ***Director of Geotechnical Engineering*** at Hardesty & Hanover. In this capacity, he has been involved in major infrastructure reconstruction projects encompassing all aspects of geotechnical engineering, including: **deep foundations; earth retaining structures; slope stabilization; ground improvement; support of excavation; geotechnical instrumentation; underground structures; dam construction; and sanitary landfills.**

His experience includes subsurface investigation, geotechnical analysis, groundwater modeling, soil liquefaction, soil dynamics, design of rock anchors, drilled shafts and construction-related services for bridge and highway projects. Mr. Mankbadi was responsible for the geotechnical services on **large scale infrastructure projects** which involved extensive soils, foundation and substructure work such as the $640 million **Willis Avenue Bridge**, NYC; $350 million **Route 52 Causeway, NJ**; and $200 million **Route 1 & 9T over St. Paul's Viaduct, NJ**. He was also involved in many projects along the New Jersey Coastline, including the **Great Egg Harbor Bridge Replacement**, and has a good familiarity with the coastal features and the prevailing geotechnical conditions.

RELEVANT PROJECT EXPERIENCE

NJ TRANSIT BRIELLE BRIDGE REPLACEMENT FEASIBILITY STUDY, BRIELLE/ POINT PLEASANT, NJ

Lead Geotechnical Engineer responsible for geotechnical engineering for the feasibility study for the replacement of a 100-year old Brielle **Movable Bridge on the NJ Transit Coast Line**. H&H is conducting a comprehensive analysis of different track profiles and structural systems. Each alternative has been analyzed for environmental impacts, flood resiliency, navigational clearances, constructability, maintenance issues, construction cost, visual impact and other pros and cons. The recommended alternative includes simple trunnion bascule bridge. Other recommendations include **ground improvement on the approaches** using Controlled Modulus Columns (CMC) or Vibro Concrete Columns (VCC).Estimated construction cost $102 million. (2014 – present)

NJ TURNPIKE AUTHORITY, GARDEN STATE PARKWAY OVER GREAT EGG HARBOR, NJ

Lead Geotechnical Engineer for new bridges crossing Great Egg Harbor and Drag Channel. Responsible for all geotechnical aspects of the design including subsurface investigations, preparation of geotechnical and foundation reports, pile foundation design, soil improvement, reinforcement of embankment on soft soils and geotechnical instrumentation. **Performed Wave Equation, Drivability, and Pile Dynamic Analyses**. (2012 – present)

NYCDOT WILLIS AVENUE BRIDGE REPLACEMENT, NEW YORK, NY

Lead Geotechnical Engineer for the $640 million off-line replacement of a major 345-foot-long, swing bridge and 3,000 feet of approaches. The scope of geotechnical work included extensive subsurface/subsoil exploration program, development of geotechnical recommendations/report and design of the new bridge foundations, which included drilled shafts, steel H-piles, and mini piles. **Responsible for all geotechnical aspects of the project including piles driving, soil improvement, reinforcement of embankments on soft soils and geotechnical instrumentation.** (2007 – 2010)

RELEVANT PROJECT EXPERIENCE (CONT.)

NJDOT ROUTE 1&9T OVER ST. PAUL'S VIADUCT, JERSEY CITY, NJ

Lead Geotechnical Engineer for a $225 million reconstruction of the St. Paul's Avenue Viaduct and ramp connections with Route 1&9, Route 7, Route 139, and local Jersey City streets. The project replaces the Route 1 & 9T Mainline Viaduct over St. Paul's Avenue with a new structure on a new alignment north of the present structure. The new alignment requires the construction of a new interchange with new approach roadways, which will provide connections to Route 1 & 9T, Route 7, Pulaski Skyway, Rte 139, and local streets in Jersey City. The project scope includes **11 new bridge structures, 35 retaining walls, 11 sign structures, and 2 catenary structures**. Mr. Mankbadi has been responsible for subsurface exploration program, developing foundation recommendations, geotechnical support to the design of new bridge foundations and retaining walls, and pavement evaluation and design. (2008 - Ongoing)

NJDOT ROUTE 52 CAUSEWAY - SOMERS POINT BRIDGE, SOMERS POINT & OCEAN CITY, NJ

Lead Geotechnical Engineer on a $350 million bridge replacement project, which involved a design of 2.2-mile-long segmental concrete causeway, to replace four bridges on Route 52 in New Jersey. Responsible for all geotechnical aspects of the construction including pile driving, soil improvement, reinforcement of embankments on soft soils and geotechnical instrumentation. **The design featured prestressed concrete piles and installation of Vibro Concrete Columns to improve the compressible soils**. (2007 – 2012)

NJDOT ROUTE 36 BRIDGE OVER SHREWSBURY RIVER, SEA BRIGHT & HIGHLANDS, NJ

Lead Geotechnical Engineer for a $91 million highway improvement and off-line replacement of the existing bascule bridge with a new high-level fixed bridge. H&H's scope of work included design of two pedestrian bridges, geotechnical engineering, design of segmental concrete pier, scour and seismic analyses, and utility relocation. Mr. Mankbadi was **responsible for all foundation design aspects of the project**, including design of 54-inch cylindrical concrete piles, prestressed concrete piles, retaining walls design, as well as settlement analysis and vibration monitoring. (2005-2008)

NJ TRANSIT ROEBLING EMBANKMENT FAILURE, NJT RIVER LINE, NJ

Lead Geotechnical Engineer for emergency repairs to 300 ft. long section of 55 ft. high embankment between the Roebling and Bordertown NJ Transit stations, which collapsed as a result of **Hurricane Irene** causing disruptions to rail operations. The work involved fast track investigation, testing, design and construction - all of these activities to be completed within a six month period. Due to severe site constraints, the new retaining walls were supported on piles and drilled shafts. The key design and construction issues included **minimizing vibrations during pile installation to prevent further slope failure**. In order to address that, steel HP piles were placed in pre-drilled concrete grouted shafts. The design featured a new drainage system, including bio-swales. Other work included design of construction access and temporary work platforms consisting of mechanically stabilized earth walls. (2011 – 2012)

NJDOT ROUTE 1 OVER CONRAIL, NJ

Lead Geotechnical Engineer responsible for the final design of the bridge foundations, retaining walls, and pavement design for a three-mile section of Route 1. Work involved subsurface exploration program, preparation of geotechnical report, and foundation design. The project utilized T-Wall retaining wall system for the construction of bridge approaches.

NJ TRANSIT SOUTHERN NEW JERSEY LIGHT RAIL SYSTEM

Lead Geotechnical Engineer for the design of the Southern New Jersey Light Rail Transit System which operates with 20 station stops between the Waterfront Entertainment Center in Camden and the Trenton Train Station. The project scope involved a design 34-mile alignment which included 24 railroad bridges – 11 new, 10 rehabilitated and 3 with superstructure replacement. Responsible for supervising the geotechnical evaluation and foundation design for all bridges and 15 stations. **Surcharge and wick drains were utilized to accelerate settlement**.

DAVID A. HOWELL, PE
TASK MANAGER – RAIL SYSTEMS

Gannett Fleming

REGISTRATION

Professional Engineer: NY, FL
e-RAILSAFE Badge: e-VERIFILE.COM, Inc.

EDUCATION

B.S.C.E., 1969, Rutgers, The State University of New Jersey

YEARS EXPERIENCE

Total Years: 45 With Gannett Fleming: 22

SUMMARY BIOGRAPHY

David A. Howell is a ***Senior Project Manager*** with Gannett Fleming's Rail and Transit Systems group responsible for railroad and highway design projects including studies, construction documents, drainage, utilities, right-of-way, and permits as well as design services during construction. Mr. Howell has significant experience with the design and management of new rail systems projects. His experience comprises major rail projects including: the **Portal Bridge Capacity Enhancement** for NJ Transit; **Northern Branch Corridor** for NJ Transit; and the **Connecticut River Bridge** project for Amtrak.

RELEVANT PROJECT EXPERIENCE

PORTAL BRIDGE CAPACITY ENHANCEMENTS, HUDSON COUNTY, NJ

Deputy Project Manager for the final engineering for 2.5 miles of the **Amtrak Northeast Corridor** between Newark, New Jersey, and New York City. Coordinated the efforts of the tri-venture firms and 27 subconsultants in redesigning the most heavily travelled corridor in the country, carrying both **Amtrak's high-speed intercity service and NJ Transit's commuter service**. The project involves replacing the two-track movable railroad bridge with a fixed bridge over the Hackensack River. The enhancements include the design of bridges and related civil, track, signal, catenary, electric traction switching substation, wetland mitigation, and contaminated sites in the environmentally sensitive Hackensack Meadowlands.

AMTRAK SAWTOOTH BRIDGES REPLACEMENT AND EXPANSION PROJECT, HARRISON, NJ

Deputy Project Manager responsible for the preparation of a conceptual design report for two aging, heavily used bridges along the Northeast Corridor (NEC) traversing over four New Jersey Transit mainline tracks, a Conrail freight track, and the Port Authority Trans-Hudson main line. Referred to as the Sawtooth Bridges, the structures are integral to the capacity of the NEC for rail traffic. Replacement of the two-track bridges and expansion of the structures to carry four tracks will improve the long-term serviceability of the NEC and support strategic growth of intercity and local/commuter rail traffic. In addition, a site inspection and conditions survey report were also performed. The alternatives analysis concept designs identified the type, size, and location of new railroad bridge structures providing four-track capacity; identified construction strategies and constructability issues to enable completion of the project while maintaining railroad operations; and provided Amtrak with conceptual design information, costs, and a schedule to progress the design in subsequent project phases.

CONNECTICUT RIVER BRIDGE REPLACEMENT PROJECT, OLD SAYBROOK, CT

Project Manager for support services provided to another firm in the preparation of the environmental assessment to meet the National Environmental Policy Act requirements. The project was for replacement of the more than 100-year-old existing Connecticut River Bridge. The bridge has 10 spans, including a 160-foot-long rolling lift bascule span. Alternatives considered included both **vertical lift and bascule spans.** Services included revisions to the alternatives being considered to avoid or mitigate identified adverse impacts and in response to comments by various agencies. This included the areas of **track alignment design, catenary, signals, communications, structures, and geotechnical engineering**. Modifications to the alternatives considered cost, constructability, operations, and impacts on the environment. Issues considered included minimizing disruption to the Northeast Corridor, meeting the long-term needs of Amtrak, improving safety, and balancing benefits and cost.

RELEVANT PROJECT EXPERIENCE (CONT.)

NORTHERN BRANCH CORRIDOR, BERGEN COUNTY, NJ

Project Manager responsibilities in 2008 for the design of an 11-mile extension of the Hudson-Bergen light rail system from North Bergen to Tenafly. Alternatives are for light rail transit or diesel multiple unit trains. There will be nine stations along the corridor, most with either at-grade parking or parking structures. The corridor shares right-of-way with the CXST Northern Branch as well as the New York Susquehanna and Western Railroad. Four undergrade bridges will be reconstructed and 85th Street will be extended, which requires a new bridge under the CSXT River Line. The project includes several viaducts carrying the transit line over CSXT tracks. Responsible for mitigating impacts to wetlands, floodways, and adjacent properties. Design includes operations, track, structural, communication and signal, and electric traction. Construction staging and duration for various design options are critical for this time-sensitive project.

GENERAL ENGINEERING CONSULTANT (GEC) CONTRACTS, VARIOUS LOCATIONS

Project Manager for numerous Amtrak GEC contracts. Services have included 200 tasks encompassing a variety of services, including electric traction, signals, yards, and drainage improvements. For the Northeast Corridor (NEC) Improvements contract (1995 to 2000), served as Project Engineer for various tasks in connection with improvements to the NEC for the electrification between New Haven and Boston. Tasks included main line horizontal and vertical track realignment, overhead and undergrade bridge reconstruction, and new siding designs. Services required coordination with the various Amtrak departments.

NEW ALL ABOARD FLORIDA RAILWAY, SECTION PE03, COCOA BEACH, FL

Lead Track Engineer responsible for the track design of 14.4 miles of new, high-speed double track between Cocoa Beach and Orlando, Florida, as part of the All Aboard Florida project. All Aboard Florida is a new, privately owned, operated, and maintained intercity passenger rail service owned by Florida East Coast Industries. The passenger line will run from Miami to Orlando, with future expansion to Tampa. Section PE03 runs from Cocoa Beach westward for 14.4 miles from U.S. Route 1 to S.R. 520 and parallels S.R. 528. The design includes horizontal and vertical alignment for a maximum speed of 125 mph, a 32.75-mph high-speed turnout, typical track sections, typical track details, cross sections, and creation of a proposed digital terrain model to be included in a design-build package. Since the new track would be constructed within Florida Department of Transportation right-of-way along S.R. 528, the work has included extensive coordination with highway, drainage, geotechnical, structures, and utility relocation disciplines. The proposed route includes 13 railroad bridges and an underpass below the highway.

TRACK 7 DESIGN, PROVIDENCE, RI

Project Manager for the preliminary and final design of track improvements for doublestack freight operations on a third track adjacent to the main line. The project involved reconstructing undergrade bridges and modifying the alignment and profile for 6 miles of track, including changes to three interlockings on the main line. The track profile was lowered to provide vertical clearance for doublestack freight operations and there were utility relocations and asbestos removal.

FREIGHT RAIL IMPROVEMENT PROJECT, DAVISVILLE TO PROVIDENCE, RI

Project Manager for design review services for 16 miles of doublestack freight operations along Amtrak's Northeast Corridor, including operations on 11 miles of new track adjacent to the main line and 5 miles of operation on the main line. Designs included new track construction, interlocking reconfigurations, undergrade and overhead bridges, and drainage improvements. Responsible for design reviews, alternative analyses, Primavera scheduling, and cost estimating.

NORTHEAST CORRIDOR IMPROVEMENTS, RI

Project Engineer for various tasks under a general engineering consultant contract with Amtrak for services in connection with improvements to the Northeast Corridor for the electrification project between New Haven and Boston. Tasks included mainline horizontal and vertical track realignment, overhead and undergrade bridge reconstruction, and new siding designs. Services required coordination with the various Amtrak departments including Track, Structures, Communication and Signals, and Electric Traction.

THIRD TRACK PRELIMINARY DESIGN, DAVISVILLE TO ATWELLS, RI

Project Engineer for a feasibility study to determine the preferred location for a freight track adjacent to 16 miles of Amtrak main line. The study took into account impacts on the environment, wetlands, and right-of-way. Constructability issues and project costs were also evaluated.

ROBERT B. MATTHEWS, PE
TASK MANAGER – CIVIL ENGINEERING

Gannett Fleming

REGISTRATION

Professional Engineer: NJ

EDUCATION

B.S.C.E., 1997, Rutgers, The State University of New Jersey

YEARS EXPERIENCE

Total Years: 19 With Gannett Fleming: 19

SUMMARY BIOGRAPHY

Robert B. Matthews is a ***Department Manager/Civil Engineer*** with Gannett Fleming responsible for the management, design, planning, and coordination of transportation projects. Specializes in geometrics, grading, roadside safety, roadway drainage, utilities, construction cost estimates, permitting, earthwork calculations, stormwater drainage basins, and soil erosion and sediment control calculations.

RELEVANT PROJECT EXPERIENCE

GARDEN STATE PARKWAY WIDENING INTERCHANGE 30 TO 63, ATLANTIC/BURLINGTON COUNTIES, NJ

Project Manager **responsible for the design of approximately 2.5 miles of roadway widening on the Garden State Parkway**. The project also includes the reconstruction of shoulders, a drainage system, two interchanges, and two overpass structures with associated retaining walls. Geotechnical ground improvement measures are required to eliminate future settlements of the widened embankment and existing roadway. This project also requires close coordination with the designer of the Mullica River Bridge project (within this project's milepost limits), two adjacent section designers, the program environmental consultant, and the program management team for environmental compliance, design, and construction consistency.

NJ TURNPIKE INTERCHANGE 6 TO 9 WIDENING PROGRAM, BURLINGTON/MERCER COUNTIES, NJ

Project Manager responsible for overseeing the development and implementation of the project scope, schedule, and budget; providing overall design coordination services; designing horizontal and vertical geometry; developing traffic control and staging plans, drainage plans, and related documents; and preparing construction documents for this section of the program, which extends from approximately Milepost (MP) 56.5 to MP 59.7, a total of 3.2 miles. This section includes normal turnpike widening with 26-foot medians in the vicinity of the Maintenance District 3 facility, in addition to the ramp connections and mainline widening necessary for connections to Service Areas 6N and 6S. The northern terminus of this section maintains a widened 75 foot median between the inner and outer roadways to meet the widened section for Interchange 7A. The preliminary construction cost estimate is $200 million.

NJTA I-78 & GSP INTERCHANGE 142 IMPROVEMENTS, ESSEX & UNION COUNTIES, NJ

Deputy Project Manager and Roadway Design Team Leader for the preliminary and final design of this $125 million interchange improvement project, which involves the implementation of new ramp connections from the Garden State Parkway southbound to I-78 eastbound and from Garden State Parkway northbound to I-78 westbound. **Responsible for the development of Construction Plans, Engineering Estimate, and specifications using Trans-Port and developing a Primavera schedule**, as well as overall design coordination services. **Directed geometric design of highways and streets**, horizontal and vertical design, highway sections design, and design exceptions. Managed the utility engineering effort consisting of utility relocation and coordination with 12 utility companies (including Conrail) resulting in $2 million of relocation work; performed utility engineering coordination; **prepared Traffic Control and Staging Plans (MPT)**, drainage plans and reports, **Traffic Signage and Striping Plans**, and ROW plans and related documents. **Prepared a Design Exception Report** consisting of three controlling design elements. All design activities utilized InRoads and Microstation CADD techniques and were in accordance with the NJDOT Capital Project Delivery Process, as well as NJDOT/AASHTO.

RELEVANT PROJECT EXPERIENCE (CONT.)

NJDOT ROUTE 18 EXTENSION – SECTION 3A, PISCATAWAY TOWNSHIP, NJ

Deputy Project Manager and ***Roadway Design Team Leader*** for the preliminary engineering, final design, and final scope-development for the extension of Route 18 from Section 2A terminus at Hoes Lane to I-287 in Piscataway Township. This $29 million project includes the widening and rehabilitation of 2.5 miles of land service highway, along with improvements for 20 at-grade intersections with one bridge superstructure replacement, two new bridges, one bridge widening/deck replacement over the Ambrose Brook, and four retaining walls. It also includes over four miles of bikeway and multi-use path (MUP) design; extensive local roadway, driveway, and parking lot improvements; hydraulic analyses; drainage improvements; 8 traffic signals; 110 lighting standards; and ROW documents for 45 parcels. Responsibilities included management and oversight of the horizontal and vertical **geometric design of highways and streets, highway section design**, **Design Exceptions Report preparation** using NJDOT Design Exception Manual, **preparation of Traffic Control and Staging Plans (MPT), Traffic Signage and Striping Plans**, and SYNCHRO corridor simulation. Performed a physical deficiency assessment of existing transportation infrastructure. Managed the utility engineering effort consisting of utility relocation and coordination with 12 utility companies resulting in $5.5 million of relocation work. Analyzed impacts and coordinated preparation of Access Cut Outs and Plans for 32 driveways in accordance with the NJ State Highway Access Management Code. **Also responsible for the development of Construction Plans, Engineering Estimate, and Specifications using Trans-Port and developed a Primavera schedule.** All design activities utilized InRoads and Microstation CADD techniques and were in accordance with the NJDOT Capital Project Delivery Process, as well as the NJDOT/AASHTO Roadway Design Manuals, NJDOT Standards Specifications for Road & Bridge Construction, and the NJDOT Procedures Manual.

NJDOT ROUTE 18 – SECTIONS 2F, 7E & 11H, NEW BRUNSWICK TOWNSHIP, NJ

Roadway Design Team Leader for the accelerated preliminary and final design and construction support services for this $145 million multi-interchange project involving the total reconstruction and widening of 2.1 miles of Route 18. This project included four new interchanges with expressway lanes incorporated to complement northbound and southbound collector-distributor roadways, **four new highway bridges, four new pedestrian bridges, one pedestrian tunnel replacement, one new culvert, 27 retaining walls, seven noise walls, 16 new sign structures, one bulkhead rehabilitation, eight new or upgraded traffic signals, an extensive intelligent transportation system, and substantial utility relocations**. Responsible for overall design coordination, identification of physical deficiencies in the existing roadway network, geometric design of highways and streets, horizontal and vertical design, preparation of highway sections and a Design Exception Report, Traffic Control and Staging Plans (MPT), utility coordination and design, Traffic Signage and Striping Plan, drainage, ROW engineering, and the preparation of construction documents for preliminary and final design. Managed the utility engineering effort consisting of utility relocation and coordination with 13 utility companies resulting in $10 million of relocation work. Analyzed impacts and coordinated preparation of Access Cut Outs and Plans for driveways in accordance with the NJ State Highway Access Management Code. Performed conceptual alternatives to address the project need during final scope development (concept development). Developed photo simulation overlays of proposed alternatives over existing photos to visually present interchange alternatives to community groups. The project was developed through an intensive context-sensitive design approach that included regular community partnering meetings and public outreach efforts. Developed an innovative solution to temporary traffic control in lieu of a temporary traffic signal by introducing improved operational characteristics and a roundabout that may be implemented as a permanent solution. Also responsible for the development of Construction Plans, Engineering Estimates, and specifications. Prepared a Primavera schedule. All design activities utilized InRoads and Microstation CADD techniques and were in accordance with the NJDOT Capital Project Delivery Process, as well as NJDOT/AASHTO Roadway Design Manual & NJ Access Code, NJDOT Standards Specifications for Road & Bridge Construction, and the NJDOT Procedures Manual. The project final design was completed on an accelerated schedule of only five months.

NEW JERSEY TURNPIKE INTERCHANGE 14A IMPROVEMENTS, BAYONNE AND JERSEY CITY, NJ

Design Manager for final design for improvements to the Turnpike at Interchange 14A. This interchange connects NJ 440, Port Jersey Boulevard, and the local Bayonne street network with the Turnpike Hudson County Extension. **Responsible for development of construction plans, engineering estimate, and NJDOT supplemental specifications and developing a Primavera Construction Schedule. Prepared Traffic Control and Staging Plans (MPT), Traffic Signage and Striping Plans, a Design Exception Report and Performed Geometric Design of Highway and Streets.**

GLEN E. SCHETELICH, PE
TASK MANAGER – PERMIT SUPPORT

Hardesty & Hanover

REGISTRATION

Professional Engineer: NJ, NY, CT, FL

EDUCATION

B.S.C.E., 1983, Old Dominion University
M.S.C.E., 1993, New Jersey Institute of Technology

YEARS EXPERIENCE

Total Years: 32 With H&H: 25

SUMMARY BIOGRAPHY

Glen Schetelich is a ***Principal*** at Hardesty & Hanover with over 30 years of **design and management experience** in bridge rehabilitation and replacement on high profile rail and highway infrastructure improvement projects. He has been responsible for all phases of project delivery, including inspections, load rating, analysis, alternative development, feasibility studies, preliminary and final design, agency coordination/permitting and preparation of comprehensive contract documents. He has supervised design and **obtained approvals for numerous bridge and highway improvement projects located in New Jersey coastal areas**, which involved complex utility relocations, MPT, contaminated soils, navigational issues, historic preservation and wetlands permitting.

Mr. Schetelich **has excellent knowledge of the local, state regulatory processes and federal requirements, including environmental permitting and coast guard coordination**. He has been working extensively with the local agencies and developed strong relationships with various stakeholders on transportation projects in Southern New Jersey, including **NJDOT, NJDEP, USCG, EPA, SHPO** and others. He is currently managing the interagency coordination process on **NJ Transit's feasibility study for Brielle Bridge replacement**. He also managed **NJ Transit Task Order Contract** which involved preparation of Categorical Exclusion Documents and historic preservation issues.

RELEVANT PROJECT EXPERIENCE

NJ TRANSIT BRIELLE BRIDGE REPLACEMENT FEASIBILITY STUDY, BRIELLE/POINT PLEASANT, NJ

Principal-in-Charge for a feasibility study to replace a 100-year old Brielle **Movable Bridge on the NJ Transit Coast Line**. H&H is conducting a comprehensive analysis of different track profiles and structural systems for the movable span and approaches. Each alternative has been analyzed with regards to the **environmental impacts, flood resiliency, navigational clearances, constructability, maintenance issues**, construction cost (including force account), visual impact and other pros and cons. The key issues include coordination with SHPO; agency approvals/permitting; low vertical clearance and substandard channel width (48 feet). Mr. Schetelich is responsible for interagency coordination. (2014 – present)

NJTA GARDEN STATE PARKWAY OVER GREAT EGG HARBOR, NJ

Project Manager for a **$200M replacement of 47-span, 3,671-foot-long bridge** over Great Egg Harbor Bay and a new 800-foot bridge over Drag Channel. The project also involves roadway improvements across Drag Island and deforestation/ reforestation of approximately 2 acres of land. The new structures feature multi-use pathways with fishing bumpouts. Key issues involved staging of construction within the constraints of **ecologically complex and environmentally-sensitive area**. In-water work is restricted to protect essential fish habitats and anadromous fish runs. Sound, vibrations, and pressures from pile driving and blasting operations have to be mitigated to prevent damage to the marine wildlife and tree clearing is limited to the springtime to protect the habitat of the migratory bird species. The project involved **extensive permitting and agency coordination, including USACE and USCG permits and NJDEP Coastal and Freshwater Permits and Reforestation Act**. (2012 – present)

RELEVANT PROJECT EXPERIENCE (CONT.)

NJTA RUMSON ROAD BRIDGE OVER THE SHREWSBURY RIVER, RUMSON/SEA BRIGHT, NJ

Principal-In-Charge for a feasibility study and design for the replacement of **double-leaf bascule bridge**. Studied various replacement and rehabilitation options with a focus on maintaining the bridge open to vehicular, pedestrian, and navigational traffic. Off-line, partial off-line, and on-line replacement options were considered. Following the study, developed a preliminary design for the preferred option: off-line, double leaf bascule bridge, 110ft trunnion-to-trunnion. The work involved developing **environmental documentation for the bridge replacement**. (2011 – present)

NJ TRANSIT ROEBLING EMBANKMENT FAILURE, NJT RIVER LINE, NJ

Principal-in-Charge for emergency repairs to 300 long section of 55 ft. high embankment between the Roebling and Bordertown NJ Transit stations, which collapsed as a result of **hurricane Irene** causing disruptions to rail operations. The work involved fast track investigation, testing, design and construction - all of these activities to be completed within a six month period. The key issues included minimizing vibrations during pile installation to prevent further slope failure. In order to address that, steel HP piles were placed in pre-drilled concrete grouted shafts. The design featured a new drainage system, including bio-swales. (2011 – 2012)

OCEANIC BRIDGE OVER NAVESINK RIVER, RUMSON, NJ

Principal-In-Charge responsible for overseeing in-depth inspection, structural ratings, prioritizing the repairs and development of rehabilitation plans for a **double-leaf bascule bridge** located between Rumson and Middletown in New Jersey. The work involved structural, mechanical and electrical repairs. Responsible for the overall supervision of the design team, obtaining permits and approvals, coordination with the client and overseeing the subconsultants. (2009 – 2013)

NJDOT ROUTE 36 BRIDGE OVER THE SHREWSBURY RIVER, MONMOUTH COUNTY, NJ

Principal-in-Charge for $125M replacement of an existing Route 36 bascule bridge over the Shrewsbury River with a high-level, fixed bridge. Project included highway approach reconstruction and design of two pedestrian bridges to allow safe passage to the beaches without having to cross an active roadway. In addition, a new toll plaza was constructed for the Sandy Hook Gateway National Recreational area, which is located at the northeast limit of the project. **The project involved extensive community outreach and environmental permitting** to secure necessary approvals. Substructure design involved precast cofferdams and precast and post tensioned segmental pier construction. (2005 – 2010)

NJDOT ROUTE 9 OVER BASS RIVER, NEW GRETNA, NJ

Project Engineer for the replacement of this historic bridge. The project involved study for on- and off-line alternatives and preliminary and final design of a new, low-level, fixed bridge that replaced a bascule bridge. Work included **Historic Bridge Alternative Analysis and NJDEP CAFRA, Waterfront Development, and Freshwater Wetland permits**. The environmental impacts and right-of-way takings were kept to a minimum. Wetland impacts were mitigated through adding 0.63 acres of new wetlands in the old roadway bed. Future **maintenance was significantly reduced** through the use of new materials and techniques. A video documentary was prepared as **historic mitigation**. (1995 – 2004)

NJ TRANSIT TASK ORDER CONTRACT FOR BRIDGE & RAILWAY ENGINEERING, NJ

Project Manager for NJ Transit task order bridge and railway engineering contract. The firm's work included structural rehabilitation and movable bridge electrical and mechanical systems upgrades; evaluation and load ratings and permit preparation. Notable assignments included design of an auxiliary drive system for the **Raritan River Swing Bridge**, and repairs of the center wedges. Also, performed replacement design of two bridges along the Atlantic City Rail Line. Work included preparation of **Categorical Exclusion Document and historic preservation issues**. (1999 – 2002)

NJ TRANSIT MOVABLE BRIDGES INSPECTION, NJ

Project Manager for the in-depth inspection of three New Jersey Transit movable bridges. Structures included the **Newark Drawbridge**, a 220-foot-long swing span; the **Lower Hackensack Bridge**, a 200-foot-long vertical lift; and the **Raritan River Drawbridge**, a 330-foot-long swing span. (2002)

MICHAEL D. HAWKINS, PE
DISCIPLINE LEAD – MOVABLE BRIDGE STRUCTURAL

Hardesty & Hanover

REGISTRATION

Professional Engineer: CT, NY, ME, NH, DE, MA, TX

EDUCATION

B.S.C.E., 1988, Bucknell University

YEARS EXPERIENCE

Total Years: 27 With H&H: 25

SUMMARY BIOGRAPHY

Michael Hawkins has over 27 years of **technical and management** experience in bridge rehabilitation and replacement on high profile rail and highway infrastructure improvement projects. He has been responsible for all phases of the design work, including inspections, load rating, analysis, alternative development, feasibility studies, preliminary and final design, and peer reviews.

Throughout his career, Mr. Hawkins delivered many complex railroad bridge rehabilitation and replacement projects to **Amtrak, Metro-North, ConnDOT and other railroad clients**. His notable work includes the **replacement of the Niantic River and PECK Bridges** on Amtrak's Northeast Corridor (NEC) and **feasibility study for the replacement of the Connecticut River and WALK Bridges**. Mr. Hawkins is currently managing the design of $159 million replacement of the **Sarah Long Vertical Lift Bridge**, which carries vehicular traffic and freight rail between New Hampshire and Maine. He is also responsible for peer and constructability reviews on **$465 million replacement of the WALK Bridge**, focused on serviceability of the movable span and staging of construction to minimize the impacts on rail operations.

RELEVANT PROJECT EXPERIENCE

SARAH LONG BRIDGE REPLACEMENT, PORTSMOUTH, NH/ KITTERY ME

Project Manager for a $159 million replacement of the Sarah Long Bridge, which carries vehicular traffic between New Hampshire and Maine and serves as a **railway link** to the Portsmouth Naval Shipyard. The movable bridge design features many creative solutions including the first application of precast post-tensioned concrete for the lift span towers. A single level 300-foot-long lift span, framed with box girders, has separate seating locations for the double level highway/rail approaches. The operating machinery was designed to reduce long term maintenance needs. Also, designed a state of the art vessel collision system. (2010 - present)

CONNDOT/METRO-NORTH NORWALK RIVER (WALK) BRIDGE REPLACEMENT, NORWALK, CT

Project Manager for **peer and constructability reviews** for the $465 million replacement of the WALK Bridge on Northeast Corridor/Metro-North New Haven Line, which will be procured using Construction Manager/General Contractor (CMGC) delivery method. H&H's role during this stage is to assist ConnDOT project team by providing reviews to examine the serviceability of the new movable bridge, construction staging and phasing, fabrication and erection methods, maintenance and protection of railroad operations, construction access, and the need for temporary construction necessary to address the operational and safety concerns. (2014 - ongoing)

AMTRAK NIANTIC RIVER BRIDGE REPLACEMENT, EAST LYME/WATERFORD, CT

Deputy Project Manager for construction support services for the $140 million replacement of the Niantic River Railroad Bridge on Amtrak's Northeast Corridor, carrying **54 trains daily, including Amtrak, Shore Line East and freight rail**. The project involved off-line bridge replacement with a two-track electrified bascule span, realignment of the track along the west and east approaches, embankment and retaining wall construction, scour protection, and electrification/signaling for the new alignment. The entire project length was approximately one mile. The design and construction staging was focused on minimizing impacts on railroad operations and the

RELEVANT PROJECT EXPERIENCE (CONT.)

adjacent wetlands. Responsible for the review of contractor's submittals, responses to RFI and assistance with resolving field issues. (2004 - 2008)

AMTRAK CONNECTICUT RIVER BRIDGE FEASIBILITY STUDY, OLD SAYBROOK, CT

Deputy Project Manager for a **feasibility study** and conceptual design for the **replacement/rehabilitation of more than 100-year old railroad bridge** spanning the Connecticut River in Saybrook, CT. The Connecticut River Bridge is a ten-span structure consisting of seven thru-truss spans, two deck girder spans and one thru-truss bascule lift span. The first phase of this project included a detailed field inspection and preparation of Condition Inspection Report. The second phase involved **Alternatives Study which evaluated various replacement /rehabilitation options**. The alternatives were compared with regards to the impact on operations, cost and duration of construction, service life, maintenance requirements, environmental impacts, ROW impacts, constructability and safety. (2006 – 2007)

CONNDOT REPLACEMENT OF TOMLINSON BRIDGE OVER QUINNIPIAC RIVER, NEW HAVEN, CT

Project Engineer/Manager for $120 million replacement of a double-leaf bascule with a new 270-foot-long, vertical-lift span which carries highway and railroad traffic over the Quinnipiac River. H&H performed a comprehensive feasibility study of bridge replacement alternatives focused on maintaining vehicular and railroad traffic during construction. In order to prevent service disruptions, a temporary bridge was built on adjacent alignment. The 930-ft long replacement structure consists of the approaches and a 270-foot tower drive lift span over a 240-foot-wide navigation channel. The lift span is the heaviest designed by H&H to date, weighing over 6.4 million pounds. (1997 – 2002)

AMTRAK WINSOR LOCKS BRIDGE – INSPECTION & RATING, WINDSOR LOCKS, CT

Senior Structural Engineer responsible for oversight of the inspection and preparation of report for this Amtrak project, which involved inspection and load rating of the Windsor Locks Bridge over the Connecticut River. The bridge is a 1,516-foot long, two-track, 17-span deck girder and thru-truss steel bridge supported on stone masonry piers. (2010)

AMTRAK BRIDGE NO. 90.60 OVER THE EAST RIVER - SUBSTRUCTURE REHABILITATION, GUILFORD, CT

Project Manager for the substructure rehabilitation design. The project involved site investigation, design services and environmental permitting for the rehabilitation of the substructure and piles of the existing two-track, ballasted deck concrete railroad bridge. (2007 – 2008)

AMTRAK PEQUONNOCK RIVER (PECK) BRIDGE REPLACEMENT, BRIDGEPORT, CT

Project Engineer for the replacement of PECK Drawbridge and Bridgeport Viaduct in Bridgeport, CT, which is a **vital link on the Metro-North New Haven Line and Amtrak's Northeast Corridor**. The new bridge is a 138-foot twin single-leaf trunnion bascule span. Fixed bridge portions consist of closed-deck, ballast-filled spans that replace the open timber decks of the existing structure. Key challenges included **coordination with the underground utilities, overhead power lines, catenaries and signals**. Also, a special study of the existing foundations was required since the substructure of the bridge experienced significant horizontal movement during its long lifespan. (1994 – 1998)

CONNDOT/METRO-NORTH NORWALK RIVER (WALK) BRIDGE, NORWALK, CT

Project Engineer for the inspection and **Engineering Feasibility and Economic Analysis Study** for the future **maintenance and serviceability** of a 100-year old, 564-foot-long bridge with 200-foot-long rim bearing swing span and three approach spans. Built in1896, the bridge carries **four railroad lines** over tidal waterway. The study included analysis and preliminary engineering for the rehabilitation and replacement alternatives, a constructability review of the presented options, as well as the construction cost and life cycle cost comparisons. (1999 – 2000)

CONNDOT MIDDLETOWN RAILROAD BRIDGE REHABILITATION, MIDDLETOWN, CT

Project Engineer for the rehabilitation of the Middletown **Swing Railroad Bridge**, which involved a replacement of center bearing and balance wheels. Project included in-depth inspection, load ratings, feasibility studies, and structural and fender repairs of a 300-foot, **single-track swing span**; four, 200-foot through truss approach spans; and a 60-foot through girder span. (1994 - 1995)

STEPHEN A. MIKUCKI, PE
DISCIPLINE LEAD – MOVABLE BRIDGE MECHANICAL

REGISTRATION

Professional Engineer: CT, MD

EDUCATION

B.E.M.S., 1990, Manhattan College

YEARS EXPERIENCE

Total Years: 25 With H&H: 25

SUMMARY BIOGRAPHY

Steven Mikucki has 25 years of design and management experience in mechanical engineering with a focus on movable bridge design and rehabilitation. He leads Hardesty & Hanover's Mechanical Department and serves as the ***Technical Director of Movable Structures***. In this capacity is responsible for the overall technical content and quality of the design, from concept development through construction.

Mr. Mikucki has been responsible for all phases of the project delivery, including field investigation and evaluation of the existing mechanical systems, feasibility studies for replacement, development of detailed drawings and specifications and inspections of the work installed by the contractor. **His notable projects include the new Tomlinson Vertical Lift Bridge, which has the heaviest lift span in the Northeast; the $600 million Willis Avenue Swing Bridge and the signature Woodrow Wilson Bridge**, which features twin 220-foot long double lead bascule spans. Most recently, Mr. Mikucki has been managing counterweight rope replacement contract on the Metro-North Harlem River Lift Bridge, which has been done while maintaining full train service on the bridge (750 trains per day).

Mr Mikucky is a recognized industry leader actively involved in the work of trade organizations dedicated to the design and maintenance of movable structures. He is the current ***Chairman of the AREMA Movable Bridge Subcommittee (Committee 15)*** and also the ***Chairman of Heavy Movable Structures***. Throughout his career, Mr. Mikucki delivered many successful movable bridge rehabilitation and replacement projects to the local and national railroads, including **Amrtak, Metro-North, NJ Transit, Conrail, BNSF, CP, CN** and others. His experience also includes design of other movable structures, such as bridge travelers and retractable roof systems.

RELEVANT PROJECT EXPERIENCE

NJ TRANSIT BRIELLE BRIDGE FEASIBILITY STUDY, BRIELLE/POINT PLEASANT, NEW JERSEY

Lead Mechanical Engineer for the movable span on a feasibility study for the replacement of a 100-year old Scherzer rolling-lift bascule bridge on the NJ Transit Coast Line. H&H analyzed different movable span alternatives, including **vertical-lift; rolling lift bascule**; and **trunnion style bascule**. Each alternative has been analyzed with regards to the navigational clearances, constructability, maintenance issues, construction cost (including force account), visual impact and other pros and cons. The recommended movable span alternative is a **simple trunnion bascule** with alternative machinery layout. Estimated construction cost $102 million. (2014 – present)

METRO-NORTH HARLEM RIVER LIFT BRIDGE WIRE ROPE REPLACEMENT, NEW YORK, NY

Project Manager for the replacement of the counterweight ropes on the Metro-North Harlem River Lift Bridge, which is the railroad's key link to Manhattan, **carrying 750 trains per day**. The project replaces **128 stranded cables, 2 3/8 inches diameter x 185 feet long each**, which lift the two, 330-foot-long main spans of the bridge. Construction staging includes building temporary work platforms above the tracks to allow trains to pass underneath while the individual cables are replaced one at a time. In addition, high-strength netting has been provided between towers to deflect a fallen rope away from the adjacent span. Spools of replacement cables are brought to the bridge on flat cars or high-rail equipment sited on the tracks directly underneath the platform. The project scope also includes a new cable lubrication system to forestall future deterioration. To date, most of the rope replacement have been done without track outages. (2012 – present)

RELEVANT PROJECT EXPERIENCE (CONT.)

CONNDOT REPLACEMENT OF TOMLINSON BRIDGE OVER QUINNIPIAC RIVER, NEW HAVEN, CT

Lead Mechanical Engineer for a $120 million replacement of a double-leaf bascule with a new 270-foot-long, vertical-lift span which carries highway and **railroad traffic over the Quinnipiac River**. H&H performed a comprehensive **feasibility study of bridge replacement alternatives** focused on maintaining vehicular and railroad traffic during construction. In order to prevent service disruptions, a temporary bridge was built on adjacent alignment. The 930-ft long replacement structure consists of the approaches and a 270-foot tower drive lift span over a 240-foot-wide navigation channel. The lift span is the heaviest designed by H&H to date, weighing over 6.4 million pounds. (1997 – 2002)

AMTRAK MOVABLE BRIDGE TASK ORDER CONTRACT

Lead Mechanical Engineer for a task order contract which involved inspection, emergency repairs and rehabilitation of **Amtraks's movable bridges**, including Conn River and Shaws Cove Bridges in CT, Pelham Bay and Spuyten Duyvil Bridges in NY, Portal and Dock Bridges in NJ, Bush River Bridge in MD, Trail Creek Bridge in IN and South Branch Bridge in IL. (2003 – 2004). Notable assignments included:

- **Shaws Cove Bridge**, CT (swing) – partial replacement of machinery
- **Trail Creek Bridge**, IN (swing) - partial open gear replacement
- **Bush River Bridge**, MD (bascule) – mechanical/electrical systems upgrade, including catenary system motorization.
- **Connn River Bridge**, CT (bascule) - tread plate replacement; partial replacement of span operating machinery

CN RAILWAY GILL'S LANDING BRIDGE CONVERSION, WEYAUWEGA, WI

Lead Mechanical Engineer responsible for the reconstruction of Gill's Landing railroad bridge, which was built in 1871. The project involved an investigation of various alternatives that would enable the existing swing span to be returned to an operational condition. H&H recommended an innovative, cost saving solution to **convert the existing through-girder swing span into a short lift vertical lift bridge, using hydraulic cylinders** and steel tower framework mounted on the existing center pier. (2010)

CN RAILWAY SECOND NARROWS BRIDGE REHABILITATION, BURRARD INLET, VANCOUVER, BC

Lead Mechanical Engineer responsible for a mechanical rehabilitation of the Burrard Inlet **vertical lift railroad bridge** in Vancouver. The CN Second Narrows Bridge, **originally designed by Hardesty & Hanover** has 495 ft. vertical lift span and 150 ft. height, providing **450 ft. navigational channel**. The project involved rehabilitation of auxiliary counterweight machinery, including sheave, hitches, wire rope, and socket replacement. H&H also prepared a maintenance manual for the entire bridge machinery systems. (2000)

CONRAIL CALUMET RIVER RAILWAY BRIDGE, CHICAGO, IL

Lead Mechanical Engineer responsible for the mechanical rehabilitation of Calumet River **vertical lift railroad bridge** in Chicago. The Calumet River Bridge, **originally designed by H&H in 1912 (and still in service)** consists of twin vertical lift spans, 214 ft. long. H&H was responsible for mechanical/electrical rehabilitation, which included a replacement of the operating rope system, new flux vector drives, PLC system, and operating machinery completed. All work was completed in 3 months. (1998)

CONNDOT/METRO-NORTH WALK BRIDGE REPLACEMENT, NORWALK, CT

Lead Mechanical Engineer for a Feasibility and Economic Analysis Study to evaluate rehabilitation or replacement options for the four-track WALK Bridge on the **Northeast Corridor**. The project scope involved **analysis and conceptual engineering for the replacement alternatives**, including construction cost and life cycle cost comparisons. The project is currently in the preliminary design phase with H&H responsible for **peer and constructability reviews**. The existing swing bridge will be replaced with twin split-leaf bascule bridges (two tracks on each bridge) to provide redundancy to extreme weather events. (1999 – 2000)

ALEXANDER H. NOBLE, PE
DISCIPLINE LEAD – MOVABLE BRIDGE ELECTRICAL

REGISTRATION

Professional Engineer: FL, MD, MI, NY, VA, WA

EDUCATION

B.E.E.E., 1989, Manhattan College

YEARS EXPERIENCE

Total Years: 25 With H&H: 15

SUMMARY BIOGRAPHY

Alexander Noble has 25 years of design and management experience in electrical engineering with a focus on **movable bridge design and rehabilitation**. His expertise includes power, control systems, instrumentation and data acquisition. Mr. Noble has been responsible for all phases of the project delivery, including field investigation and evaluation of the existing electrical systems, feasibility studies for bridge replacement, development of detailed drawings and specifications and inspections of the work installed by the contractor. His notable assignments include rehabilitation of the Marine Parkway Bridge and Amtrak's Conn River and Pelham Bay Bridges.

Throughout his career, Mr. Noble delivered many successful movable bridge rehabilitation and replacement projects to the local and national railroads, including **Amrtak, Metro-North, NJ Transit, Norfolk Southern, CN Railway and others**. His experience also includes design of other heavy movable structures, such as retractable stadium roofs.

RELEVANT PROJECT EXPERIENCE

NORFOLK SOUTHERN MOVABLE BRIDGE CONTROLS UPGRADES

Lead Electrical Engineer responsible for the design to convert **four railroad movable bridges** on the Norfolk Southern Alabama Division from on-site manned to off-site remote control operations. The project scope included a design of new electrical controls, as well as miscellaneous mechanical and structural modifications necessary for the conversion. Mr. Noble was responsible for in-depth inspection of the four bridges and design of PLC based control system, as well as coordinated Railroad Signals and Communications with the new control system. During the design, **Hurricane Katrina** caused damage to the bascule span of one of the bridges, the Lake Pontchartrain Bridge, LA, which is heavily used by **Norfolk Southern** freight, as well as **Southern Railway** and **Amtrak**. H&H provided emergency response to assist in restoring movable span bridge operation. The emergency work was completed in 16 days. (2005 – 2009)

TBTA MARINE PARKWAY VERTICAL-LIFT BRIDGE REHABILITATION, BROOKLYN, NY

Lead Electrical Engineer for a major rehabilitation of the Marine Parkway Bridge, which is **one of Hardesty & Hanover's signature bridges**. Designed by H&H in 1937, the ¾-mile long bridge features **540 ft. long lift span**, one of the longest in the world. The bridge remained virtually unchanged until the late 1990's when H&H was retained to lead a **$100 million reconstruction/rehabilitation** effort, which included redecking and widening of the bridge. The project scope also involved major electrical upgrades, including **feeder replacement and modification of the control system**; roadway lighting, traffic signals, drainage and painting. Since then, H&H continues to provide assistance to TBTA on as-needed basis to address maintenance and operations issues. Our most recent assignment involved testing of the tension in the counterweight ropes, and making necessary adjustments. H&H is also providing a constructability review of the design developed for the upcoming major capital improvement project to extend the service life of the bridge by another 20 years. In addition, we are also be preparing a **maintenance manual for the major electrical and mechanical components**. (1996 – present)

RELEVANT PROJECT EXPERIENCE (CONT.)

CN RAILWAY GILL'S LANDING BRIDGE CONVERSION, WEYAUWEGA, WI

Lead Electrical Engineer for the reconstruction of Gill's Landing railroad bridge, which was built in 1871. The project involved an investigation of various alternatives that would enable the existing swing span to be returned to an operational condition. H&H recommended an innovative, cost saving solution to **convert the existing through-girder swing span into a short lift vertical lift bridge, using hydraulic cylinders** and steel tower framework mounted on the existing center pier. Responsible for the design of bridge control system. (2010)

AMTRAK CONNECTICUT RIVER BRIDGE FEASIBILITY STUDY, OLD SAYBROOK, CT

Lead Electrical Engineer for a feasibility study and conceptual design for the **replacement/rehabilitation of more than 100-year old railroad bridge** spanning the Connecticut River in Saybrook, CT. The provect involved a detailed inspection and Alternatives Study which evaluated various replacement /rehabilitation options. The alternatives were compared with regards to the impact on operations, cost and duration of construction, service life, maintenance requirements, environmental impacts, ROW impacts, constructability and safety. (2006 – 2007)

AMTRAK MOVABLE BRIDGE TASK ORDER CONTRACT

Lead Electrical Engineer for a task order contract which involved inspection, emergency repairs and rehabilitation of **Amtraks's movable bridges**, including Conn River and Shaws Cove Bridges in CT, Pelham Bay and Spuyten Duyvil Bridges in NY, Portal and Dock Bridges in NJ, Bush River Bridge in MD, Trail Creek Bridge in IN and South Branch Bridge in IL. Notable assignments included replacement of electrical controls for the Pelham Bay Bridge, which is a single-leaf Scherzer bascule. Mr. Noble was responsible, for the inspection, design and field testing. (2003 – 2004).

NJ TRANSIT MOVABLE BRIDGE INSPECTION – GROUP B

Lead Electrical Engineer responsible for in-depth inspections of three NJ Transit movable bridges: **Newark Drawbridge**, a 220-foot-long swing span; the **Lower Hackensack Bridge**, a 200-foot-long vertical lift; and the **River Drawbridge**, a 330-foot-long swing span. (2009)

CONNDOT/METRO-NORTH WALK BRIDGE REPLACEMENT, NORWALK, CT

Lead Electrical Engineer for a Feasibility and Economic Analysis Study to evaluate rehabilitation or replacement options for the four-track WALK Bridge on the **Northeast Corridor**. The project scope involved **analysis and conceptual engineering for the replacement alternatives**, including construction cost and life cycle cost comparisons. The project is currently in the preliminary design phase with H&H responsible for **peer and constructability reviews**. The existing swing bridge will be replaced with twin split-leaf bascule bridges (two tracks on each bridge) to provide redundancy to extreme weather events. (1999 – 2000)

AMTRAK CONN RIVER BRIDGE MECHANICAL/ELECTRICAL REHABILITATION, OLD SAYBROOK, CT

Lead Electrical Engineer for mechanical and electrical rehabilitation of Amtrak's Connecticut River Bridge, which is a **single-leaf Scherzer rolling-lift**. The work involved detailed inspection and design of replacement tread plates mounted for the segmental girders and track girders; partial replacement of the span operating machinery and full replacement of the electrical control system. The new design featured motion based primary control system and PC based data acquisition system. Some of the key issues included developing logistics and methodology for a fast-track inspection and operational evaluation to **minimize impact on rail operations on this important Northeast corridor bridge**. (1998 – 1999)

LADOTD REHABILITATION OF JUDGE SEEBER VERTICAL LIFT BRIDGE, NEW ORLEANS, LA.

Lead Electrical Engineer for the rehabilitation of **325 foot vertical lift bridge** over the Industrial Canal in New Orleans. This project involved a replacement of the counterweight ropes and the entire electrical system for the operation of the movable span. The electrical system was replaced in-kind using secondary resistance control operated with a drum switch as preferred by the owner. The counterweight ropes were replaced using an innovative design of the rope socket connection to the lifting girder. The new socket allows the ropes to be shimmed using a vertically elongated hole for the pin to ensure equal distribution of the load to each lifting rope. (2008)

RICHARD C. KEMPER, PE
DISCIPLINE LEAD – APPROACH SPAN STRUCTURAL

REGISTRATION

Professional Engineer: PA, RI

EDUCATION

B.S.C.E., 1983, Villanova University

YEARS EXPERIENCE

Total Years: 32 With GF: 7

SUMMARY BIOGRAPHY

Richard Kemper is currently Gannett Fleming's ***Manager - Structures*** responsible for preliminary and final structural designs, including contract drawings, specifications, and cost estimates. He islso responsible for structural inspection, rating analysis, and reports for roadway and railroad bridges and catenary structures. Mr. Kemper has diverse experience in a variety of bridge types, both railway and highway.

RELEVANT PROJECT EXPERIENCE

AMTRAK NORTHEAST CORRIDOR IMPROVEMENT PROJECT, PROVIDENCE, RI

Task Manager of an individual task under a General Engineering Contract, responsible for the preliminary and final design of a superstructure replacement of a mainline bridge, U.G. Bridge No. 185.76, Smith Street Culvert, Tracks 2 and 7. Work included lowering the tracks to enhance vertical underclearance to nearby overhead roadway bridges; replacing an existing two-span open-deck concrete beam system with a two-span closed, ballasted deck system and reusing the existing abutments and center pier; and coordinating with the Rhode Island Department of Environmental Management, Amtrak, and the Rhode Island Department of Transportation.

NORTHEAST CORRIDOR IMPROVEMENT PROJECT, NOANK, CT, AMTRAK.

Task Manager of an individual task under a General Engineering Contract, responsible for the geotechnical exploration and subaqueous inspection of timber pile foundations at U.G. Bridge No. 130.63, Noank Cove Bridge. Subaqueous inspection involved environmental permitting with the Connecticut Department of Environmental Protection and the U.S. Army Corps of Engineers. Provided supervision of the diving team and subcontractor for the temporary removal of riprap and channel sediment for exposing, inspecting, and material sampling of the timber piles.

AMTRAK NORTHEAST CORRIDOR IMPROVEMENT PROJECT, CT, RI, AND MA

Task Manager - Structures responsible for performing field view and feasibility study on 22 miles of railroad tracks involving a total of approximately 80 overhead and undergrade bridges to permit tri-level, doublestack freight movement along Amtrak's Northeast Corridor between Davisville and Center Falls, Rhode Island. The feasibility study investigated bridge raise or replacement for additional dedicated freight track or enhanced vertical underclearance on Amtrak's mainline tracks. Also responsible for the subsequent preliminary designs within the 22 miles, as well as final design of 6 miles, of numerous bridge substructure stability investigations due to track lowering, bridge raises, and widening and replacement of undergrade bridges for the additional dedicated freight track. Responsible for in-depth inspection of one mainline railroad bridge and the final design of the superstructure replacement of two adjacent mainline bridges. Also responsible for the coordination and technical review of numerous bridge substructure stability analyses and field explorations due to track lowering in Connecticut, Rhode Island, and Massachusetts.

RELEVANT PROJECT EXPERIENCE (CONT.)

SEPTA WAYNE JUNCTION TO GLENSIDE SYSTEM IMPROVEMENTS, PHILADELPHIA, PA

Project Manager - Structures responsible for the in-depth inspection, structural analysis, and preliminary and final design of the rehabilitation of approximately 200 catenary structures, including signal bridges. The work was part of an overall rehabilitation of 7.5 miles of two mainline tracks of commuter rail with new communication and signals, running bidirectional traffic, and an increase in commuter train headways.

NORTHEAST CORRIDOR IMPROVEMENT PROJECT, CT, RI, AND MA, AMTRAK.

Task Manager of individual tasks performed under an 8-year-long General Engineering Contract. Responsible for numerous individual project proposals, client contact and coordination, and state and local agency coordination for feasibility studies and preliminary and final designs for bridge raises, replacements, or removals to enhance vertical underclearances along Amtrak's electrification project between New Haven, Connecticut, and Boston, Massachusetts. Responsible for feasibility studies of 21 bridges for the electrification project, which developed into seven preliminary and final designs including the preparation of contract drawings, cost estimates, and specifications. Also responsible for construction services that involved shop drawing review and on-site consultation.

PENNDOT BRIDGE INSPECTIONS, DISTRICT 4, PA

Structural Engineer responsible for inspection, ratings, and reports for bridges containing fracture-critical members and fatigue-sensitive details, particularly single- and multi-span through-truss and through-girder structures over waterways and roadways involving nondestructive testing for the

PENNDOT RAIL BRIDGE INSPECTIONS, STATEWIDE, PA

Structural Engineer responsible for 121 railroad bridge inspections, ratings, and reports. Structure types included masonry and concrete arches and multi-span deck girders.

SEPTA BRIDGE INSPECTIONS, PHILADELPHIA, PA

Structural Engineer responsible for in-depth inspection, ratings, and reports for railroad bridges. Structure types ranged from single-span through-girders to multi-span deck girders on steel column bents.

PTC BRIDGE INSPECTIONS, STATEWIDE, PA

Structural Engineer responsible for ratings for bridges on the Northeast Extension of the Pennsylvania Turnpike. Analysis included main truss elements and gusset plate connection at panel points.

MDSHA HANOVER STREET BRIDGE, BALTIMORE, MD

Senior Structural Engineer responsible for rating analyses and a report, final design, contract drawings, specifications, and a shop drawing review and on-site construction for the rehabilitation of the Hanover Street Bridge, a double-leaf Rall bascule span. The rehabilitation included deck and stringer replacement through staged, panelized construction and repairs to the existing deck truss and girder structure for strength and fatigue-sensitive, fracture-critical members and details.

NYSDOT GOWANUS EXPRESSWAY, BROOKLYN, NY

Design Engineer responsible for the inspection and final design of a 2,800-foot section of slab and stringer replacement, which framed into the web of existing steel floor beams. Staged construction was used, and the limits of the deck replacement were confined between the existing stringers of the wide median.

PAUL J. CONNOLLY, PE
DISCIPLINE LEAD – ALTERNATIVES ANALYSIS

Hardesty & Hanover

REGISTRATION

Professional Engineer: NY, NJ, MD, CT

EDUCATION

B.S.C.E., 1986, New Jersey Institute of Technology
M.E.P.P., 2012, University of Wisconsin at Madison

YEARS EXPERIENCE

Total Years: 29 With H&H: 29

SUMMARY BIOGRAPHY

Paul Connolly is a ***Project Manager*** and ***Discipline Leader*** in structural engineering with extensive experience in the rehabilitation and replacement of the infrastructure, including bridges, highways, railroads and related facilities. He has been **responsible for all phases of the project delivery**, including inspections, engineering analyses, feasibility studies, structural rehabilitation designs, agency coordination and preparation of comprehensive contract documents. He has also supervised preparation of environmental reports for bridge projects during the initial planning stages.

Mr. Connolly's design management experience includes projects such as the ongoing Rehabilitation of the **Metro-North Harlem River Lift Bridge**, which is the single most important link for the Metro-North Service to Manhattan, carrying carries 750 trains per day. He is also managing Amtrak's Task Order Contract and a feasibility study for the **replacement of a 100-year old Brielle Bridge on the New Jersey Transit Coast Line**.

Mr. Connolly has a strong technical background in rail engineering and has been actively involved in the work of the **AREMA Committee 10**. His combination of **engineering skills and management experience** allows him to effectively guide the design team in the development of creative, yet practical and easy to implement design solutions.

RELEVANT PROJECT EXPERIENCE

NJ TRANSIT BRIELLE BRIDGE REPLACEMENT FEASIBILITY STUDY, BRIELLE/POINT PLEASANT, NJ

Project Manager responsible for a feasibility study for the replacement of a 100-year old Brielle **Movable Bridge on the NJ Transit Coast Line**. H&H is conducting a comprehensive analysis of different track profiles and structural systems for the movable span and approaches. Each alternative has been analyzed with regards to the environmental impacts, flood resiliency, navigational clearances, constructability, maintenance issues, construction cost (including force account), visual impact and other pros and cons. The key issues include coordination with SHPO; agency approvals/permitting; low vertical clearance and substandard channel width (48 feet). Estimated construction cost $102 million. (2014 – present)

METRO-NORTH HARLEM RIVER LIFT BRIDGE WIRE ROPE REPLACEMENT, NEW YORK, NY

Project Manager during construction stage of the project which involves a replacement of the counterweight ropes on the Harlem River Lift Bridge. The Harlem River Lift is a critical component of the Metro-North infrastructure, providing a connection for all MNR service (750 trains per day) to Manhattan. The project replaces 128 stranded cables, 2 3/8 inches diameter x 185 feet long each, which lift the two, 330-foot-long main spans of the bridge. Construction staging includes building temporary work platforms above the tracks to allow trains to pass underneath while the individual cables are replaced one at a time. The key issues included **constructability, work staging to minimize impact and assure safety of the railroad operations**. (2012 – present)

AMTRAK TASK ORDER CONTRACT 2010 – 2014, NORTHEAST CORRIDOR

Project Manager for a Task Order Contract with Amtrak. Scope of work includes structural, civil, geotechnical, mechanical and electrical engineering services required for various stages of the project delivery, from inspection

RELEVANT PROJECT EXPERIENCE (CONT.)

and scoping, through feasibility/alternative development to final design and production of plans, specifications and cost estimates. Some of the notable assignments included: **rehabilitation of two bridges on Amtrak's Harrisburg line** in Philadelphia; **superstructure replacement of Orange Street Bridge in Wilmington**, Delaware; structural rehabilitation of a signals bridge; mechanical/electrical rehabilitation of the Suyten Duyvil Movable Bridge; and others.

CANADIAN NATIONAL RAILWAY BRIDGE NO. 728, LAKEFRONT DIVISION, EAST CHICAGO, IL

Project Manager responsible for an **emergency evaluation of the damaged truss and floor system** along with checking of the operating machinery after a major vessel collision. Reviewed emergency field repairs made by CN, and developed additional repair recommendations to get the damaged draw span back in operation for marine traffic. (2013)

SCOTLAND HILL ROAD BRIDGE & NYSTA BRIDGE AT MP 45.18 OVER CONRAIL, HARRIMAN INTERCHANGE, NY

Project Engineer responsible for preparing contract plans, specifications and cost estimate for the **rehabilitation/replacement of two bridges, one of which spans over Conrail tracks**. For the Scotland Hill Road Bridge, the design included: concrete deck stripping, repairing, sealing, and resurfacing; bearing replacement and joint and diaphragm repairs. For the NYSTA Bridge at MP 45.18 over Conrail, work included complete design for a three-span continuous steel stringer and reinforced concrete deck superstructure supported by reinforced concrete piers and abutment founded on cast-in-place concrete piles. **Staging of construction to maintain uninterrupted rail service** was the key to keeping the project on schedule. (2001 – 2002)

AMTRAK CONNECTICUT RIVER BRIDGE MECHANICAL REHABILITATION, OLD SAYBROOK, CT

Lead Structural Engineer provided office and field support for the mechanical rehabilitation of the bridge operating machinery. The work involved detailed inspection and design of replacement tread plates mounted for the segmental girders and track girders, as well as partial replacement of the span operating machinery. **Developed logistics and methodology for a fast-track inspection and operational evaluation to minimize impact on rail operations on this important Northeast corridor bridge**. (1998 – 1999)

AMTRAK INSPECTION OF 30 UNDERGRADE BRIDGES, CT, NJ, PA, & MD

Project Engineer responsibilities included coordinating the fieldwork for the inspection, evaluation, load rating of the bridges and performing the Quality Assurance/Quality Control of the field inspection reports. **Inspection logistics were developed to minimize impact on rail operations.** (1999 – 2000)

AMTRAK BUSH RIVER BRIDGE, PERRYMAN, MD

Team Leader for the inspection, evaluation, load rating, machinery analysis and condition report for this single-leaf heel trunnion bascule bridge with a 40-foot main span. H&H prepared a complete condition report of the structural, mechanical, electrical systems including machinery analysis, repair recommendations and cost estimates that included the movable catenary system rehabilitation/motorization. (1998 – 1999)

NYCDOT WILLIS AVENUE SWING BRIDGE OVER THE HARLEM RIVER, NEW YORK, NY

Project Engineer responsible for the preparation of contract plans, specifications and cost estimate during the completion of final design on a $600 million bridge project, which involved off-line replacement of a major 345-foot-long, swing bridge and 3,000 feet of highway approaches. Mr. Connolly was for the supervision and coordination of the in-house team, including structural, mechanical and electrical design for the swing span, and seismic and geotechnical design of the substructure. (2005 – 2007)

NYCDOT THIRD AVENUE SWING BRIDGE OVER THE HARLEM RIVER, NEW YORK, NY

Project Engineer responsible for the preliminary and final design on a project which involved replacement for a 302-foot, swing bridge and 1,351 feet of approach spans. Responsible for preparation of the BRPR and development of the structural alternatives. His work involved a development of the demolition and construction staging schemes plus the overall coordination of the development of the contract plans, specifications and estimate. Mr. Connolly was also responsible for coordinating the structural details with the operating machinery and electrical equipment on the swing span. (1995 – 2000)

DAVID M. MARCIC, PE, SE
DISCIPLINE LEAD – SEISMIC DESIGN

Hardesty & Hanover

REGISTRATION

Professional Engineer: NY, DE, MD, DC
Structural Engineer: DC, WA

EDUCATION

B.S.C.E., 1995, Rensselaer Polytechnic Institute
M.S.C.E., 1999, Rensselaer Polytechnic Institute

YEARS EXPERIENCE

Total Years: 19 With H&H: 19

SUMMARY BIOGRAPHY

David M. Marcic is a ***Senior Structural Engineer*** with 19 years of experience in the design and rehabilitation of fixed and movable bridges, tunnels and other transportation structures. His particular area of focus is **seismic analysis and design, seismic vulnerability assessment and retrofit**. Mr. Marcic's main responsibilities include computer modeling and seismic analysis of bridges, as well as seismic design and detailing. His experience also includes inspection, load rating, fatigue evaluation and structural design for rehabilitation and replacement of fixed and movable bridges (medium and long spans).

Mr. Marcic was the ***Project Engineer*** for a $140M replacement of Amtrak's **Niantic River Drawbridge** on North-east Corridor. His other notable projects include seismic retrofit of **Murray Morgan Vertical Lift Bridge**, WA, and **Harlem River Lift Bridge**, NY; seismic design for a D/B replacement of **Ben Sawyer Swing Bridge**; load rating and fatigue evaluation of a **landmark Whirlpool Rapids Bridge** in Niagara Falls (550 ft. steel arch); and design of two **new 200ft. bascule bridges** in Port Adelaide, Australia, carrying railroad and highway traffic.

RELEVANT PROJECT EXPERIENCE

AMTRAK NIANTIC DRAWBRIDGE, EAST LYME, CT

Project Engineer for a $140 million replacement of the Niantic River Drawbridge on **Amtrak's Northeast Corridor**, which carries 54 trains daily, including Amtrak, ConnDOT's Shore Line East and freight. The project involved off-line replacement of the existing structure. The **new 140 ft. long single-leaf bascule span** carrying two railroad tracks was constructed 58 feet south of the existing railroad alignment. Responsible for the design of the bascule span and approach spans. Coordinated multidiscipline team in the development of design calculations, contract plans and specifications. Also led the design of the bascule span, trunnion towers and control house. (2010 – 2013)

MURRAY MORGAN BRIDGE REHABILITATION DESIGN/BUILD, TACOMA, WA

Structural Engineer responsible for the **seismic analysis and rehabilitation design of this vertical lift bridge**. The bridge is comprised of three steel through truss spans (190ft, 220ft, 190t) and nine steel girder/floorbeam approach spans. Analysis included the creation of 3-D computer model using SAP2000 software and performing a linear response spectrum and non-linear time history analysis for a 108 year operation level and 1,000 year life safety event. Capacity to demand ratios were established for all primary bridge members including truss chords and diagonals. Isolation bearings were designed on the approach spans. (2011 – 2013)

NJTA SEISMIC VULNERABILITY ASSESSMENT OF SEVEN BRIDGES, NJ

Structural Engineer responsible for the **seismic analysis and vulnerability assessment** of seven NJ Turnpike bridges. Analysis included the creation of 3-D computer models using SAP CSi Bridge software and performing linear response spectrum analyses for 1,000 and 2,500 year events on essential/critical bridges. Capacity to demand ratios were determined for all bridge members, including bearings, substructure piers and foundations. Prepared seismic report including conceptual retrofit designs and cost estimates. (2012 – 2013)

RELEVANT PROJECT EXPERIENCE (CONT.)

TBTA REHABILITATION OF HARLEM RIVER LIFT BRIDGE, RANDALL'S ISLAND, NY

Project Engineer responsible for **seismic analysis of vertical lift bridge**. The bridge is comprised of three steel through truss spans (153ft, 310ft, 242ft) and four steel girder/floorbeam approach spans. Analysis included the creation of a 3-D model of the bridge in ADINA software, and performing a linear response spectrum and non-linear analysis for 500 and 2,500 year seismic events. Capacity to demand ratios were established for all primary bridge members including the steel truss, towers and foundations. Isolation bearings were designed for the flanking approach truss spans. Retrofits were also designed for the lift span and counterweight guides. Prepared report, recommendations, retrofit designs and cost estimates. (1998 – 2004)

DESIGN-BUILD REPLACEMENT OF BEN SAWYER SWING BRIDGE, SULLIVANS ISLAND, SC

Structural Engineer responsible for the s**eismic evaluation and design** of the new bridge on existing substructure. The bridge is comprised of a new 245-foot long steel through truss swing span and 12 girder/floorbeam approach spans. 3-D computer model was developed using SAP2000 software and a site-specific linear and non-linear time history analyses was performed. In-depth evaluation of the existing concrete piers and timber pile foundations were performed to establish capacity-to-demand ratios. Isolation bearings were designed for all approach spans to mitigate seismic forces and avoid pier retrofits. Complete seismic evaluation report and design calculations were prepared and submitted in accordance with SCDOT guidelines and FHWA requirements. (2009 – 2010)

NJDOT ROUTE 1&9T OVER ST. PAUL'S VIADUCT, JERSEY CITY, NJ

Structural Engineer responsible for **load ratings and seismic analysis** of the new ramp structures. This project is a new interchange with elevated structures, including an extended viaduct and ramps totaling 7,300 feet to connect Tonnele Avenue to Routes 7 and 1 & 9T. Analysis included the creation of three dimensional computer analysis using SAP software. Prepared load rating calculations and seismic evaluation report. (2006 – 2007)

PORT RIVER BASCULE BRIDGES, PORT ADELAIDE, SOUTH AUSTRALIA

Structural Engineer on a project involving the design of **two new 200 ft. bascule bridges (railroad and highway)** in Port Adelaide, Australia. The design was in accordance with the Australian (AS5100) Bridge Code and the AREMA manual, which was used for movable bridge requirements. The design employed creative architectural forms, with V-shaped post-tensioned concrete bascule piers and steel box-shaped bascule girders. The piers geometry features angles complementary to the open-span angle. Responsible for the design the bascule span floor system and deck over counterweight span. Prepared design calculations and produced contract drawings and specifications for the superstructure. (2006 – 2008)

WHIRLPOOL RAPIDS BRIDGE, NIAGARA FALLS, NY

Project Engineer responsible for detailed inspection and load rating of 100-year old, **double level railroad and highway bridge** spanning the border between the US and Canada and comprised of steel arch span of 550 feet and two flanking span trusses 115 feet each. Responsible for overseeing project work and coordinating multidiscipline team. Key challenges included development of load rating guidelines for this combination use bridge, as well as calibrating US and Canadian highway and railway design codes. Performed load rating analysis of the main arch span and two approach truss spans. Also performed a fatigue evaluation of the structure and prepared findings report for the field inspection and load rating analysis, including recommendations and cost estimate. (2006)

ALFORD STREET BRIDGE OVER THE MYSTIC RIVER, BOSTON, MA

Structural Engineer responsible for the **seismic evaluation** of the 1,400-foot-long bridge crossing the Mystic River, as part of a $25 million rehabilitation. The bridge comprises eight spans; seven approach spans and twin, double-leaf steel bascules (160 feet long). The evaluation included linear Response Spectrum Analysis utilizing site-specific seismic data. Work involved in-depth evaluation of the existing substructure and establishing capacity-to-demand ratios for all critical components. Three-Dimensional computer model was developed using SAP 2000 software. (2013 – 2014)

EDWARD M. ZAMISKIE, JR, PE
DISCIPLINE LEAD – GEOTECHNICAL

HALEY ALDRICH

REGISTRATION

Professional Engineer: NJ, NY, CT, PA

EDUCATION

M.E.C.E., 1988, Stevens Institute of Technology

B.S.C.E., 1981, Lafayette College

YEARS EXPERIENCE

Total Years: 34 With H&A: 16

SUMMARY BIOGRAPHY

Mr. Zamiskie has more than 30 years of geotechnical engineering experience. He is responsible for planning, field investigations, laboratory testing programs, permitting, evaluation and analysis, design, specifications, drawing, report preparation, construction support and project administration. Mr. Zamiskie, as a member of the firm's Energy & Infrastructure Business Unit, is primarily involved with transportation, water/wastewater treatment and conveyance, dam, and other infrastructure projects. He leads Haley & Aldrich's geotechnical engineering practice in the Parsippany, NJ office, which focuses on New Jersey and the New York metropolitan area, where he has spent his entire career and has been fortunate to be involved with major bridge replacement and retrofit projects. His responsibilities include mentoring the staff, guiding and executing technical work and ensuring that the right company-wide resources are engaged to provide the best value to clients. He takes an active "hands-on" role in large complex projects where he brings to bear expertise in optimizing high-capacity foundations and ground improvement solutions for difficult geologic conditions.

RELEVANT PROJECT EXPERIENCE

NJDOT VICTORY BRIDGE, ROUTE 35, PERTH AMBOY–SAYREVILLE, NJ

Geotechnical Engineer of Record for new bridge and approach roadways crossing Raritan River. Bridge consists of a 4,000 lf precast segmental concrete structure. Major foundation types included 20 in. dia. high-capacity concrete-filled pipe piles and 6 and 8-ft diameter drilled shafts (90 to 150 ft deep) socketed into diabase rock. Ground improvement on south approach solved settlement and liquefaction issues and included load transfer platform supported by vibro concrete columns and wick drains with preload/surcharge. Load testing of foundation elements included Osterberg Load Cell and Statnamic testing. Subsurface conditions included thick deposits of soft compressible organic soils/river silts. Seismic loads controlled the foundation design, and liquefaction and lateral spreading potential were addressed by design capacity and ground improvement techniques. Performed engineering services during construction and managed inspection of drilled shafts. (2001-2005)

NEW JERSEY TRANSIT LAUTENBERG RAILROAD STATION/ NEC IMPROVEMENTS, SECAUCUS, NJ

Geotechnical Project Manager for geotechnical investigation, laboratory testing, foundation analysis, design and construction specifications for railroad widening and multiple viaduct replacement project to support new station. Field investigation included about 300 borings, including pressuremeter testing in soil and rock. Foundations included spread footings, H-piles with rock anchor tie-downs for seismic loads and drilled shafts. Multi-stage preload/surcharge ground improvement program using wick drains was designed to support up to 30 ft of new widened embankment over deep soft organic soils. Designed and implemented geotechnical instrumentation program including settlement plates, vertical and horizontal slope inclinometers, and piezometers to protect active NEC and NJ Transit tracks and guide construction schedule and sequencing. Established site-specific seismic site response using cross-hole seismic geophysical test program and utilized Osterberg Cell Load test to optimize skin friction and end bearing capacity of drilled shafts for station. Construction – period engineering and monitoring services. (1989-1999)

RELEVANT PROJECT EXPERIENCE (CONT.)

PANY/NJ GOETHALS BRIDGE REPLACEMENT, ELIZABETH, NJ/STATEN ISLAND, NY

Geotechnical Lead during pursuit and ***Officer-in-Charge*** during execution of the 7,000-linear-foot P3 replacement bridge. Responsibilities include subsurface investigation program consisting of about 140 borings and SCPTs, laboratory testing, preparation of data reports, design of drilled shafts for Travis Railroad Bridge, and design of both ground supported and driven pile-supported retaining walls using LRFD procedures. Also participated in peer review of rock-socketed drilled shaft designs for approach and main spans. (2012-current)

NYSDOT KOSCIUSZKO BRIDGE REPLACEMENT, BROOKLYN – QUEENS, NY

Project Manager and Technical Lead for Haley & Aldrich's role for $555 MM Design/Build of 6,000 lf structure supported by drilled shafts, driven pipe piles, mini-plies and spread footings. Haley & Aldrich provided subsurface investigation and laboratory testing lead supervision, data geotechnical report preparation for 5 project segments, subsurface profiles and cross sections, determination of project-wide soil properties, analysis and design of abutments, retaining walls and embankments for approaches and single-span overpasses, instrumentation and monitoring plans. Work complied with LRFD and NYSDOT requirements. Also provided analysis and consultation regarding significant soil and groundwater contamination at the site. (2013-current)

NJDOT SHREWSBURY RIVER, ROUTE 36 BRIDGE, HIGHLANDS, NJ

Engineering Consultant to contractor, pile analyses, borings and load test program for high-capacity 54 in. dia. Precast pre-stressed cylinder piles and 16 in. and 24 in. square precast concrete piles. Land and water-based borings to evaluate extremely dense soil conditions and provide recommendations for installation of piles. (2008)

NYC MTA B&T MARINE PARKWAY BRIDGE AND CROSS BAY BRIDGE RESILIENCY STUDY, BROOKLYN, NY

Geotechnical Project Manager for resiliency and master planning study for two crossings of Rockaway Inlet. Work involves review of historic information, investigations using drill and CPT rigs from barge, seismic site response and evaluation of repair and replace alternatives for 1971 concrete bridge on cylindrical concrete piles and 1938 steel bridge with center lift bridge section on timber piles. (2014-current)

CAPE MAY COUNTY BEESLEY'S POINT BRIDGES, UPPER TOWNSHIP, NJ

Project Manager for geotechnical investigation and bridge replacement/rehabilitation and retrofit analysis for feasibility study to reopen closed crossing. Structure includes Egg Harbor Channel and Drag Channel crossing for combined length of about 4,800 ft. Original concrete piers are supported on timber piles and retrofit with battered steel pipe piles. Because of the lack of subsurface data and the inability to access the bridge with heavy drilling equipment the work included advancing tripod probes from the existing bridge structure and correlating those results with GSP parkway borings. In addition, because of the lack of as-built steel pile records the pulse echo non-destructive geophysical method was used to estimate total length, mudline and embedment into bearing stratum at reprehensive locations. With these data existing pile capacities we computed. Pile design and bulkhead alternatives were developed to support the reconstruction cost estimate. (2010)

HUDSON COUNTY 14 STREET VIADUCT REPLACEMENT, HOBOKEN, NJ

Geotechnical and hazardous materials investigation and pile foundation design for new 1700 lf bridge replacement project. Subsurface conditions include uncontrolled fill, deep peat and organic silt deposit, outwash, till and bedrock. Performed site-specific seismic analysis and environmental investigation to address contaminated soil and groundwater. Designed H-pile foundations and estimated performance of temporary bridge supports during staged construction. (2009-2015)

JOHN F. LEGATH, JR, PE
DISCIPLINE LEAD – TRACK DESIGN

Gannett Fleming

REGISTRATION

Professional Engineer: PA
e-RAILSAFE Badge: e-VERIFILE.COM, Inc.

EDUCATION

B.S.C.E., 1978, Lehigh University

YEARS EXPERIENCE

Total Years: 37 With Gannett Fleming: 19

SUMMARY BIOGRAPHY

John F. Legath is a ***Senior Track Engineer*** responsible for track and civil design work involving the preparation of plans, specifications, and estimates (PS&E) for track reconfiguration; horizontal and vertical track alignment; earthwork, drainage, soil erosion and sediment (E&S) pollution control; and site layout for rail and transit facilities.

Mr. Legath was ***Senior Track Engineer*** for the **design of track alignment and profile, earthwork, and drainage** for numerous projects on Amtrak's Northeast Corridor. He was solely responsible for **track alignment and track staging** plans for **Amtrak/New Jersey Transit's Portal Bridge** Project. Additionally, he was **track and civil engineer for track alignment** on Amtrak's **Niantic River Bridge.**

RELEVANT PROJECT EXPERIENCE

AMTRAK NIANTIC DRAWBRIDGE, EAST LYME, CT

Project Track and Civil Engineer responsible for the **design of track alignment and profile, earthwork, drainage, and soil E&S pollution control**. The project involved track realignment of Amtrak's Northeast Corridor 58 feet south of the existing track bed to construct a new bridge to carry high-speed passenger rail lines over the Niantic River. Our firm was responsible for civil, track, communication and signals, electric traction, and geotechnical work.

PORTAL BRIDGE CAPACITY ENHANCEMENTS, NEWARK, NJ

Project Track Engineer responsible for the preliminary and final engineering for a critical 2.5 miles of Amtrak's Northeast Corridor between Newark, New Jersey, and New York City. Responsible for developing **track alignments and track staging plans** for the most heavily travelled corridor in the country, carrying both Amtrak's high-speed intercity service and NJ Transit's commuter service. The project involves expanding the two-track railroad to five tracks and reprofiling it to replace the existing swing bridge with two fixed bridges over the Hackensack River to eliminate a long-standing operational bottleneck. Due to the 472 trains per day of traffic, detailed construction staging was developed to minimize impacts to operations.

KEYSTONE CORRIDOR WEST HIGH-SPEED RAIL, HARRISBURG-PITTSBURGH CORRIDOR, PA

Conceptual Engineering Task Leader responsible for developing alternatives for high-speed rail infrastructure improvements between Harrisburg and Pittsburgh along the existing Norfolk Southern Pittsburgh Line. The speed and capacity of the existing main line is constrained due to heavy freight traffic volumes and curving mountainous terrain. The goal of the study is to increase the speed and capacity of passenger train service between the two cities within the framework of the national high-speed rail program. Duties include developing conceptual alignment alternatives; developing infrastructure requirements among 11 disciplines; and preparing conceptual infrastructure cost estimates. The results of the feasibility study and estimates will enable PennDOT to recommend capital improvements to the legislature for consideration of funding.

RELEVANT PROJECT EXPERIENCE (CONT.)

CURVE MODIFICATIONS FOR HIGH-SPEED RAIL PROGRAM, NY & CT

Project Track Engineer responsible for **designing railroad curve modifications** along the Metro-North Railroad portion of the railway between New Rochelle, New York, and New Haven, Connecticut, to facilitate an Amtrak speed increase on the Northeast Corridor. Design included changes in curvature, superelevation, and spiral length to allow track speed increases for conventional track equipment and Acela tilt-train technology.

GAUNTLET TURNOUT FOR AMTRAK LEAD AT CIRA CENTRE, PHILADELPHIA, PA

Senior Track Engineer responsible for the detailed **design of a new No. 10 Gauntlet turnout** on an existing Amtrak lead track. The existing turnout needed to be lengthened by 70 feet to accommodate paving in front of a loading dock for the new Cira Centre development located next to Amtrak's 30th Street Station.

QA/QC PROGRAM, QUALITY PERFORMANCE MEASUREMENT OF FIELD OPERATIONS, NATIONWIDE

Quality Control Engineer responsible for conducting field studies and research, as well as reporting baseline measurement of subdivision operations and recommended improvements.

DRAINAGE IMPROVEMENTS FOR SUBTRACKS 1, 2, AND 4 IN SUNNYSIDE YARD, QUEENS, NY

Civil Engineer responsible for the **design of improvements to eliminate drainage problems** at Amtrak's Sunnyside Yard. Providing storage and holding facilities for the Acela train sets and the high-speed shop in Queens, Sunnyside Yard is adjacent to Amtrak's Harold Interlocking, which controls movement in and out of the east side of Manhattan from Penn Station through the East River Tunnels. The existing drainage system, constructed early in the 20th century, was obsolete and in disrepair. The project involved a study of the drainage system, a runoff and pipe capacity analysis for a 25-year storm, and options for new drainage facilities.

CORRIDORONE MINIMUM OPERATING SEGMENT, MECHANICSBURG TO LANCASTER, PA

Project Track Engineer responsible for the **preliminary design for the start-up transit project** to link Harrisburg with Mechanicsburg on the west and with Lancaster on the east. The western leg of the proposed transit line, initially 6 miles to Mechanicsburg, was intended to use the existing Norfolk Southern Shippensburg Secondary right-of-way and some trackage. The east leg was intended to use the existing track of Amtrak's Harrisburg Line. Responsible for new track alignment and tie-ins with Norfolk Southern and for design of track modifications and improvements to Amtrak's Harrisburg Station and Lancaster Station. Also involved with in-depth engineering and operating negotiations with Amtrak and Norfolk Southern.

PASSING SIDINGS, NORTHEAST CORRIDOR IMPROVEMENTS, CLINTON AND GUILFORD, CT

Project Engineer working on the **final design of passing sidings**. Responsibilities included the development of construction and right-of-way plans showing geometric design of horizontal and vertical alignment, drainage, E&S pollution control, grade crossings, and utility relocations. Provided specifications and cost estimates.

EXPERIENCE WITH PRIOR FIRMS

CONSOLIDATED RAIL CORPORATION

Assistant Track Supervisor in Conrail's New Jersey and Harrisburg Divisions. Duties included supervision of maintenance staff in the various phases of **track maintenance; construction management; track inspection to federal specifications; inventory management; and repair of emergency derailments**. Directed manpower allocations and scheduled work with outside contractors.

TERRY A. SHANTZ, PE
DISCIPLINE LEAD – CATENARY/TRANSMISSION

Gannett Fleming

REGISTRATION

Professional Engineer: NJ, CT, MD, PA, NY, FL, CA, OH, IN, TX, VA, CO

EDUCATION

B.S.C.E., 1977, University of Maryland

YEARS EXPERIENCE

Total Years: 38 With Gannett Fleming: 16

SUMMARY BIOGRAPHY

Terry Shantz is currently ***Vice President and Director of Electric Traction*** overseeing the **Catenary Design and Substation Design Sections** in the Valley Forge, Philadelphia, and Pittsburgh offices. Responsible for project management, technical reviews, quality assurance/quality control (QA/QC) reviews, studies, detail design, cost estimates, and specifications. Responsible for overseeing business development activities. Additional railroad electrification experience includes expert construction claims analysis and value engineering.

RELEVANT PROJECT EXPERIENCE

AMTRAK NIANTIC RIVER BRIDGE REPLACEMENT

Electric Traction Discipline Lead responsible for conceptual, preliminary, and final design for modifications to the existing electric traction facilities to permit the construction of a replacement two-track bascule moveable bridge and 0.75 miles of railroad approaches on Amtrak's Northeast Corridor. Also led the production of construction plans and cost estimates. The Niantic River Bascule Lift Bridge Replacement Final Design Engineering Services project was presented 2013 Excellence in Construction "Best in Show" Award by the Associated Builders and Contractors of Connecticut.

NJ TRANSIT HUDSON-BERGEN LIGHT RAIL TRANSIT, BAYONNE, NJ

Lead Catenary Engineer responsible for designing modifications to the existing catenary system, provisions for new catenary poles, as well as down guys and a grounding system on the viaduct structure.

NJ TRANSIT GLADSTONE LINE OVERHEAD CONTACT SYSTEMS, GLADSTONE TO SUMMIT, NJ

Project Manager responsible for the replacement of wood-pole catenary structures with concrete foundation, steel-pole catenary support structures.

CALTRAIN RAIL CORRIDOR ELECTRIFICATION PROGRAM MANAGEMENT SERVICES, MENLO PARK, CA

Overhead Contact System (OCS) Discipline Leader responsible for the design of the baseline OCS documents that were used to solicit design-build bids. The project is comprised of electrification program management and design services for a new electrification system on roughly 51 miles of Caltrain right-of-way from San Francisco to San Jose, California. Caltrain presently operates diesel push/pull service on this route and will convert to a 25 kV 60 hertz electrification system to operate its service.

AMTRAK DESIGN OF NEW MONOPOLES FOR PECO TUNNEL, PHILADELPHIA, PA

Project Manager responsible for supervising the design of five transmission monopoles, providing the standard design specifications for the pole fabrication, and working with the fabricator and pole designer to verify that design criteria were met. Work also included designing the monopole foundations according to the base reactions provided by the pole fabricator and providing construction support.

RELEVANT PROJECT EXPERIENCE (CONT.)

MTA REVISED WEDGE YARD CATENARY DESIGN FOR MARC COMMUTER RAIL, WASHINGTON, DC

Design Principal responsible for catenary modifications required for the electrification of the MTA yard tracks at the Ivy City site. Responsibilities included the design of catenary profiles, catenary structures, feeders, and bonding and grounding. This project won Gannett Fleming's 2015 Project Team Award. This award is based on the project's significance to the firm, its financial success, client satisfaction, and the teamwork demonstrated throughout the project.

SOUTH STREET BRIDGE RECONSTRUCTION OVER AMTRAK AND SEPTA TRACKS, PHILADELPHIA, PA

QA/QC Manager on this project involving the design of new catenary structures; modifications to existing catenary and transmission wire profiles; and the development of hardware assemblies, erection diagrams, wiring plans, steel details, and a master bill of material.

LIRR EAST SIDE ACCESS, NEW YORK, NY

Electric Traction Manager responsible for reviewing the catenary design for the three loop tracks leading into Sunnyside Yard and for evaluating the sectionalization of the new Harold Interlocking catenary modifications, as part of a project to provide LIRR passengers with direct service into the existing Grand Central Terminal in Manhattan. Also served as Discipline Leader for traction power design for portions of three substations and the 138 kV transmission line that will be relocated to supply power to the Sunnyside Yard static frequency converter.

NJ TRANSIT MORRISVILLE YARD CONSTRUCTION-RELATED SERVICES, MORRISVILLE, PA

Task Manager responsible for the Phase 2 design of catenary and support structures involving power feeds, static wires, rail return, and bonding and grounding for two new yards consisting of 14 and 15 tracks, respectively.

NICTD REPLACEMENT OF MAINLINE CATENARY SYSTEM, SOUTH BEND, IN

Project Manager responsible for the engineering and design of new catenary on the main rail line from the Illinois/Indiana state line to South Bend. The project involved a site survey, design alternative evaluation, layout of catenary, new sectionalization, new assemblies, and construction cost estimates.

NJ TRANSIT PENN STATION TRACKS #11 AND #12, NEW YORK, NY

Project Manager responsible for modifications to an Amtrak catenary. Tasks included site verification of assemblies, measurement of catenary wire heights, reprofiling of the catenary, and modification of feeders and disconnect switches.

NJ TRANSIT SECAUCUS TRANSFER, SECAUCUS, NJ

Project Manager responsible for providing technical assistance and scheduling input for Amtrak crews installing a modified catenary. The project included temporary and final relocation of electrified mainline tracks on the Northeast Corridor.

RAMESH RAJAGOPAL, PE
DISCIPLINE LEAD – HYDRAULICS/HYDROLOGY

Gannett Fleming

REGISTRATION

Professional Engineer: DE

EDUCATION

B.S.C.E., 1983, Bangalore University INDIA
HEC-2, 1995, Rutgers, The State University of New Jersey
HEC-1, 1996, Rutgers, The State University of New Jersey

YEARS EXPERIENCE

Total Years: 28 With Gannett Fleming: 18

SUMMARY BIOGRAPHY

Ramesh Rajagopal is a ***Project Engineer*** responsible for highway drainage designs, reports, construction drawings and specifications, floodplain delineations, stormwater management, flood control, dam rehabilitations, bridge scour evaluations, soil erosion and sediment control designs, and the procurement of New Jersey Department of Environmental Protection (NJDEP) stream encroachment and Federal Emergency Management Agency (FEMA) permits. Mr. Rajagopal possesses a technical background that includes the hydrologic modeling of watersheds, dam failure analyses, bridge scour evaluations, stormwater management, and the hydraulic modeling of natural and man-made waterways. Has extensive experience in the procurement of NJDEP stream encroachment, individual freshwater wetlands, U.S. Army Corps of Engineers, and FEMA permits for transportation projects. Proficient in numerous computer applications, including HEC-1, HEC-2, HEC-RAS, HY8, TR-55, TR-20, and NWS DAMBRK.

RELEVANT PROJECT EXPERIENCE

NJDOT NJ ROUTE 35/VICTORY BRIDGE REPLACEMENT, MIDDLESEX COUNTY, NJ

Hydraulic Engineer responsible for designing the roadway storm drainage system and soil erosion and sediment controls and preparing stormwater management plans for roadway improvements associated with the replacement of the existing **bridge over the Raritan River** with a new 1,225-meter-long segmental bridge. The storm sewer was designed along an urbanized roadway corridor for approximately 2,000 linear meters, which included extensive underground utilities requiring significant efforts to eliminate conflicts. Designed detention/water quality basins to comply with applicable regulatory requirements. Work required extensive scour analyses for the bridge piers using HEC-RAS.

NJDOT NJ ROUTE 18 EXTENSION, MIDDLESEX COUNTY, NJ

Hydraulic Engineer responsible for designing the roadway storm drainage system and soil erosion and sediment controls and preparing stormwater management plans. Developed complex hydraulic and hydrologic models along the Metlars Brook and the Raritan River watersheds. Developed a HEC-1 model that consisted of several subwatersheds for the Metlars Brook stream corridor to compute the discharges for up to a 100-year storm event. Developed a HEC-RAS hydraulic model about 1 mile in length for 9 river reaches and 11 stream crossings to determine inundation limits, hydraulic properties for a new bridge, and flood routing at bridges and compute scour depths at bridge piers and abutments. Applied for and received modifications to the existing state-adopted floodway limits along the Raritan River, which resulted in construction savings of more than $1 million. Responsible for **obtaining regulatory approvals from NJDEP for a major stream encroachment permit, a waterfront development permit, and an individual freshwater wetland permit**. The stream encroachment permit included demonstrating compliance with regulations governing the proposed 11 stream crossings, retaining walls within a floodplain, net fill, floodway modifications along the Raritan River, the delineation of the floodway and floodplain limits along Metlars Brook, and stormwater management.

NJDOT PHASE II BRIDGE SCOUR EVALUATIONS, VARIOUS LOCATIONS, NJ

Discipline Manager responsible for the **hydrologic and hydraulic analyses** needed to perform Phase II scour evaluations on nine riverine and tidal bridges throughout New Jersey. Responsibilities included determining

RELEVANT PROJECT EXPERIENCE (CONT.)

flows and developing hydraulic models at the bridge locations. Developed geographic information system (GIS)-based hydrologic modeling, tidal prism calculations to determine tidal flows, and HEC-RAS hydraulic models for computing scour variables.

NJDOT NJ ROUTE 173 OVER THE MUSCONETCONG RIVER, HUNTERDON AND WARREN COUNTIES, NJ

Hydrology and Hydraulics Team Leader for the final design of this Pipeline 3 bridge redecking project. This $2 million project included replacing the deck and parapet of a three-span bridge, supported on concrete-encased steel girders, over the Musconetcong River with associated guide rail replacement. Design elements were simplified to expedite the project schedule by obtaining an exemption from the NJDEP permits, consisting of the flood hazard area permit and a freshwater wetlands permit. Responsible for conducting hydraulic and hydrologic analyses and procuring permit approvals for the project. Roadway drainage design included performing water spread analyses, flood routing calculations, and storm sewer hydraulic computations. Best management practices were addressed by maintaining the roadway umbrella sections. Surface treatment under the proposed guide rails was modified to eliminate the overall impervious areas within the project limits and be within the maximum allowable threshold, which would have required NJDEP permit approvals.

NJ TRANSIT NJ ROUTE 139 TRAFFIC MITIGATION, LIBERTY STATE PARK PARK-AND-RIDE, JERSEY CITY, NJ

Environmental Engineer for the conceptual lighting layout for the Liberty State Park Hudson-Bergen Light Rail Station. NJ Transit proposed the construction of additional parking at this facility to mitigate traffic congestion during the rehabilitation of NJ Route 139. A site for this additional parking was identified north of Johnston Avenue and adjacent to the New Jersey Turnpike. This site was between an elevated portion of the New Jersey Turnpike, just northeast of Exit 14C, and several rail lines. Responsibilities included developing stormwater management design alternatives and identifying and coordinating applicable permits. Permits coordination included a waterfront development permit, a freshwater wetlands general permit, and a soil erosion and sediment control permit.

PITMAN SUBSTATION BULKHEAD REPLACEMENT, GLOUCESTER COUNTY, NJ

Hydraulics and Hydrology Permitting Task Manager responsible for performing an initial site investigation, preparing an alternatives analysis, and developing an environmental permitting scope as part of a team for a bulkhead replacement at an existing electrical substation. Also responsible for performing wetland delineation and for coordinating NJDEP Freshwater Wetlands and Flood Hazard Area permit applications.

NJDOT PULASKI SKYWAY CONTRACT 2, JERSEY CITY, NJ

Hydraulics and Hydrology Team Leader for final design services for the rehabilitation of the NJ Route 139, 3,200-foot-long, Hoboken Viaduct that forms a link between the Pulaski Skyway and the Holland Tunnel in Jersey City, New Jersey. Rehabilitation to the structure consists of full superstructure replacement, as well as replacement or repair of existing substructure units including seismic retrofit. Proposed work will include geometric, safety, and drainage improvements. The estimated construction cost is more than $145 million. Responsible for the drainage design, which included performing stormwater drainage spread calculations and developing a stormwater management plan, as well as storm sewer systems (scuppers) for conveyances. Performed drainage design using TR-55, HEC-12, and Hydroflow. Coordinated the drainage system construction details with structures. Stormwater measures were investigated for water quality adherence. Work was performed in compliance with the NJDOT Procedures Manual, the NJDEP Stormwater Management Regulations, the NJDOT Drainage Standard Specifications, and the NJDOT Soil Erosion and Sediment Control Standards.

OCEAN DRIVE (C.R. 619) SCOUR DAMAGE REPAIRS, UPPER TOWNSHIP, CAPE MAY COUNTY, NJ

Hydraulic Engineer for an environmental assessment study and final design services to address beach scour along Ocean Drive near Corson's Inlet. The improvements were proposed to repair past scour damage, restore beach and wetland areas, and provide protective measures to prevent future scour damage and roadway flooding. Tasks involved a field survey and mapping; environmental, geotechnical, hydraulic, and structural assessments and designs; meetings with federal and state permitting agencies; and permit application and construction contract bid document preparation.

LIRR LONG ISLAND CITY DIESEL YARD, LONG ISLAND, NY

Hydraulic Engineer responsible for the drainage design for the reconstruction of the existing Long Island City Diesel Yard. The design of the new yard includes 12 tracks, as well as an inspection track with a pit, for the storage, servicing, and light maintenance of dual-mode, locomotive-hauled and electric trains. Permit procurement included a New York City Department of Environmental Protection drainage approval for the overall site improvements.

STEPHEN A. ZAPOTICZNY, PE
DISCIPLINE LEAD – SITE/CIVIL

Gannett Fleming

REGISTRATION

Professional Engineer: NJ

EDUCATION

B.S.C.E., 1983, Rutgers, The State University of New Jersey

YEARS EXPERIENCE

Total Years: 10 With Gannett Fleming: 10

SUMMARY BIOGRAPHY

Stephen Zapoticzny is a ***Civil Engineer*** responsible for the design and checking of highway and transit tasks, including geometrics, grading, roadside safety, drainage, utilities, construction cost estimates, and earthwork calculations.

RELEVANT PROJECT EXPERIENCE

NJ TRANSIT NEWARK PENN STATION EXTERIOR CIRCULATION IMPROVEMENTS, NEWARK, NJ

Project Engineer for the final design of an estimated $10 million in improvements to the roadways surrounding historic Newark Penn Station. Tasks include roadway design, detailed grading, drainage, and details. Led the quantity calculation and cost estimation task for the final submission and is leading the effort for construction-related services. The improvements include a midblock roundabout, curbside pick-up/drop-off pullouts, upgrades to five signalized intersections, a reversible bus lane with lane-use signals on Raymond Boulevard, a security bollard system, extensive traffic-calming measures, and extensive architectural and aesthetic treatments consistent with the characteristics of the historic station.

NJ TRANSIT PORTAL BRIDGE CAPACITY ENHANCEMENT, NEWARK, NJ

Site/Civil Engineer responsible for the right-of-way design for the enhancement of a railroad bridge over the Hackensack River that included design, engineering, and construction assistance. Work involved reconfiguration of the corridor and associated interlockings over approximately 2.5 miles through the environmentally sensitive Hackensack Meadowlands. The project was successfully advanced by the team through an accelerated environmental impact statement effort, requiring detailed coordination with multiple project stakeholders. The enhancement involved the resolution of significant environmental issues, including land acquisition, wetlands, contaminated sites, and landfills. It also included the design of 29 bridges with 124 spans and related civil, track, signal, catenary, and electric-traction substation design work. The new river crossings will consist of two three-span tied-arch bridges to provide a 50-foot clearance over the water. There will also be a duck-under structure, where westbound New Jersey Transit trains leaving New York through the new tunnel will pass under the Amtrak Northeast Corridor. Given the critical importance of this heavily travelled corridor, detailed constructability reviews are underway, and detailed construction staging will be developed to minimize impacts to operations during construction.

NJTA INTERCHANGE 6 TO 9 WIDENING PROGRAM, SECTION 3, BURLINGTON/MERCER COUNTY, NJ

Civil Engineer for the initial highway design from approximately Milepost 56.5 to 59.7, a total of 3.2 miles. The section includes normal turnpike widening with 26-foot medians in the vicinity of the Maintenance District 3 facility, in addition to the ramp connections and mainline widening necessary for connections to Service Areas 6N and 6S. The northern terminus of the section maintains a widened 75-foot median between the inner and outer roadways to meet the widened section for Interchange 7A. The preliminary construction cost estimate is $200 million. Performed roadside and horizontal and vertical geometric design for the southbound roadways and ramps.

RELEVANT PROJECT EXPERIENCE (CONT.)

NJDOT ROUTE 18, SECTIONS 2F, 7E, AND 11H, MIDDLESEX COUNTY, NJ

Highway Designer responsible for providing design services for a $140 million multi-interchange project, involving the total reconstruction and widening of 2.1 miles of NJ Route 18 to grade-separate one interchange and construct collector-distributor roadways. The project included 4 new roadway bridges, 2 new pedestrian bridges, a pedestrian tunnel replacement, a new culvert, 27 new retaining walls, 7 new noise walls, 16 new sign structures, a bulkhead replacement, a historical wall rehabilitation, 6 new or upgraded traffic signals, an extensive new intelligent transportation system, and substantial utility relocations. In addition, the project required relocating a historic house; constructing additional parkland for the City of New Brunswick, including a public boat launching facility; reconfiguring an existing public park to include an amphitheater and picnic pavilion; and involved the extensive use of streetscape elements. The project was developed through an intensive context-sensitive design approach that included regular community partnering meetings and public outreach efforts.

AMTRAK CONDUIT SYSTEM AND CABLE INSTALLATION, METUCHEN TO EDISON, NJ

Project Highway Designer responsible for installing two additional 138 kV transmission circuits in an underground conduit system to expand generating capacity at Metuchen and to allow the two existing aerial and two new underground mainline circuits to be fed simultaneously. Provided conceptual and preliminary design for the conduit system and cable installation from the Metuchen step-up yard to Amtrak's mainline transmission network at Milepost 25.1 in Edison. Tasks included developing the horizontal and vertical design of the conduit system, developing design plans, and providing construction-related services.

NJDOT NJ ROUTE 18 EXTENSION, SECTION 3A, MIDDLESEX COUNTY, NJ

Project Highway Designer for the preliminary engineering and design development for the extension of NJ Route 18 from the Section 2A terminus at Hoes Lane to I-287. The $40 million project included the widening and rehabilitation of 2.5 miles of land service highway, along with improvements for 20 at-grade intersections. The project contained three new bridge structures, two culverts, and five retaining walls. It also included more than 4 miles of bikeway design; extensive local roadway, driveway, and parking lot improvements; hydraulic analyses; seven traffic signals; and right-of-way document preparation for 70 parcels. Activities included horizontal design, vertical design, utility work, and traffic control and staging design.

NJDOT U.S. ROUTES 1 AND 9, SECTIONS 1K AND 3M, MIDDLESEX AND UNION COUNTIES, NJ

Highway Engineer responsible for designing horizontal and vertical geometry for a 1.8-mile highway realignment. The project consisted of realigning the highway to meet a new bridge over the Rahway River, which was built under a separate contract. The work included the total reconstruction and widening of the roadway, one roadway bridge replacement, three new retaining walls, two new culverts, and new and modified signalized intersections.

Request For Proposal (RFP) No. 15-044
Design, Engineering and Construction Assistance Services
for the Replacement of the

RARITAN RIVER DRAWBRIDGE

SECTION 5

Key Personnel Certifications & References

SECTION 5: KEY PERSONNEL CERTIFICATION & REFERENCES

5.1 Key Personnel Certification

We hereby certify that all key personnel proposed in this proposal is presently employed by the firms represented on this team. A full list of our proposed key personnel can be found in ***Section 4: Qualifications of Individuals***. However, a list is provide below for your convenience.

Key Personnel	Role	Firm Employed By
Visha Szumanski, PE	Project Manager	Hardesty & Hanover
Paul Skelton, PE	Project Principal-in-Charge	Hardesty & Hanover
David Boaté, PE	Project Principal-in-Charge	Gannett Fleming
Steven Harlacker, PE, SE	Quality Assurance Manager	Hardesty & Hanover
Bruce Smith, PE	Quality Assurance Manager	Gannett Fleming
Richard Cross, PE	Deputy Project Manager – Track & Systems	Gannett Fleming
David Tuckman, PE	Deputy Project Manager – Bridge & Foundations	Hardesty & Hanover
Steven Hom, PE	Peer Review/Constructability	Hardesty & Hanover
Joseph Griffin, PE	Peer Review/Constructability	Griffin Engineering
Glen Schetelich, PE	Task Manager – Environmental	Hardesty & Hanover
Robert Matthews, PE	Task Manager – Civil	Gannett Fleming
David Howell, PE	Task Manager – Rail Systems	Gannett Fleming
Peter Roody, PE	Task Manager – Movable Bridge	Hardesty & Hanover
David Gerber, PE	Task Manager – Approach Spans	Hardesty & Hanover
Raymond Mankbadi, PE	Task Manager – Foundations & Geotech	Hardesty & Hanover

5.2 Firm References

Hardesty & Hanover

Niantic River Bridge Replacement Project (2006-2013)

Reference: Amtrak
30th Street Station
Philadelphia, PA 19104

Project Role: Final design and construction phase services for the replacement of this railroad movable bridge on the busy Amtrak Northeast Corridor. H&H was responsible for the project management, design of the movable bridge, approach spans, and geotechnical engineering.

Key Personnel: Paul Skelton; Steven Hom; Steven Harlacker; Peter Roody; Michael Hawkins; Stephen Mikucki; Alexander Noble; Drew Delledonne; Ray Mankbadi; David Marcic

Port River Bascule Bridges (2003-2008)

Reference: Transport South Australia
260 Elizabeth Street
Slurry Hills, NSW 2010

Project Role: Engineer of Record for the preliminary and final design for two new movable bridges providing a new connection to the Port of South Adelaide. Included a new railroad movable bridge as well as a parallel highway movable bridge.

Key Personnel: Paul Skelton; David Tuckman; Peter Roody; Stephen Mikucki; Drew Delledonne; David Marcic

Sarah Mildred Long Bridge Replacement Project (2010-2017)

Reference: Maine DOT
16 State House Station
Augusta, ME 04333

Project Role: Final design and construction services for the replacement of this combined highway and **railroad movable bridge** connecting New Hampshire and Maine. H&H is responsible for the project management, design of the movable bridge, and geotechnical engineering.

Key Personnel: Paul Skelton; Steven Harlacker; Peter Roody; Michael Hawkins; Stephen Mikucki; Alexander Noble; Drew Delle Donne; Ray Mankbadi

Gannett Fleming

Portal Bridge Capacity Enhancement (2008-2014)

Reference: NJ TRANSIT
One Penn Plaza East
Newark, NJ 07105-2246

Project Role: Provided engineering services including three miles of track realignment, signals, catenary, geotechnical evaluation as well as the Operations Analysis for this railroad movable bridge replacement project.

Key Personnel: Richard Cross; David Howell; Bruce Smith; Ramesh Rajagopal; John Legath; John Lech; Greg Nazarow; Bryan Shober

Niantic River Bridge Replacement Project (2006-2013)

Reference: Amtrak
30th Street Station
Philadelphia, PA 19104

Project Role: Final design for the east and west approaches, including two miles of track realignment, signals, catenary, retaining walls and geotechnical analysis for this railroad movable bridge replacement project.

Key Personnel: Richard Cross; John Legath; Terry Shantz; Bryan Shober

Sawtooth Bridge Conceptual Study (2013-2014)

Reference: Amtrak
30th Street Station
Philadelphia, PA 19104

Project Role: Conceptual design for two aging, heavily used railroad bridges on the Northeast Corridor traversing over four New Jersey Transit mainline tracks.

Key Personnel: Richard Cross; John Legath; David Howell

HALEY ALDRICH

Route 35 Victory Bridge Replacement (2001 – 2005)

Reference	New Jersey DOT 1035 Parkway Trenton, NJ 08625	Project Role	Geotechnical Engineer of Record for the new $110M bridge and approach roadways crossing Raritan River. Performed engineering services during construction and managed inspection of drilled shafts.	Key Personnel	Ed Zamiskie

Chelsea Street Vertical Lift Bridge (1995 – 2012)

Reference	MassDOT 10 Park Plaza Room 6260 Boston, Ma 02116	Project Role	Provided subsurface explorations, preliminary and final geotechnical design, and construction services Services included assessment of oil and hazardous materials, plans for handling and disposal of the excavated materials during construction, and load testing.	Key Personnel	A. Smith, H. Scranton, M. Capraro

Fore River Vertical Lift Bridge (2014 – 2017)

Reference	MassDOT 10 Park Plaza Room 6260 Boston, Ma 02116	Project Role	Provided geotechnical engineering services for a new vertical lift span. Services included foundation design for drilled-shaft foundations, subsurface investigations, 3-D analyses for future loading conditions and permit compliance, and soil-structure interaction evaluation.	Key Personnel	Ed Zamiskie Also: A. Smith, E. Force, H. Scranton, J. L. Locsi

GRIFFINENGINEERING

NJDOT Route 9 over Raritan River (2000 – 2002)

Reference	New Jersey DOT 1035 Parkway Avenue Trenton, NJ 08625	Project Role	Construction Project Manager	Key Personnel	Joe Griffin

NJ TRANSIT Main Line 2nd Track (2000 – 2002)

Reference	Amtrak 60 Massachusetts Ave Washington, DC 20002	Project Role	Construction Project Manager	Key Personnel	Joe Griffin

PSE&G Nuclear Development Project – Causeway Design Study (2010)

Reference	PSE&G / Gannett Fleming 1000 Atrium Way Mount Laurel, NJ 08054	Project Role	Constructability Consultant	Key Personnel	Joe Griffin

Naik GROUP

NJ TRANSIT ASES II Positive Train Control Design (2012-Ongoing)

Reference: NJ TRANSIT
One Penn Plaza East
Newark, NJ 07105-2246

Project Role: Providing survey and mapping services to support the design and implementation of the ASES II Positive Train Control System (PTC) for NJ TRANSIT. Raw data is being captured using low-altitude aerial LiDAR, orthophotography, and oblique aerial video.

Key Personnel: Richard Baron, PLS

NJTA Interchange 6-9 Widening, Section 5 and 2 (2009-2013)

Reference: NJTA
581 Main Street
Woodbridge, NJ

Project Role: Provided survey, structural and utility engineering for the widening of the NJ Turnpike. Performed structural analysis design and preparation of contract documents. Utility coordination, design and establishment of relocation schemes for all utilities.

Key Personnel: Richard Baron, PLS, Ronald R. Rotunno, PE

NJTA Garden State Parkway Interchange 163 Improvements (2010- Ongoing)

Reference: NJTA
581 Main Street
Woodbridge, NJ

Project Role: Provided engineering design services for this $72M project which involves interchange operation and safety improvements at MP 162.7 to MP 163.7.

Key Personnel: Richard Baron, PLS, Ronald R. Rotunno, PE

RCI

Portal Bridge Capacity Enhancement Project (2003-2010)

Reference: NJ TRANSIT
One Penn Plaza East
Newark, NJ 07105

Project Role: Preparation of various analytical sections of the EIS document: Land Use, Zoning, Property Acquisition/ Displacement, and Environmental Justice. Assistance in the areas of GIS mapping and developing geotechnical data base for past work was also part of this effort.

Key Personnel: Chitra Radin; Trupti Kalbag; Jane Darcy

Amtrak High-Speed Rail Improvement Program (2012-2013)

Reference: AMTRAK
2955 Market Street
Philadelphia, PA 19104
Tel:

Project Role: Oversaw the preparation of a CE document, in compliance with the National Environmental Policy Act (NEPA), for this project. As part of the document preparation, Radin was involved in the assessment of potential primary, secondary, short, and long term impacts of the proposed project.

Key Personnel: Chitra Radin

Lehigh Line Third Track Improvement Project (2012-2015)

Reference: NJ TRANSIT
One Penn Plaza East
Newark NJ 07105

Project Role: Oversaw the preparation of a CE document, in compliance with the National Environmental Policy Act (NEPA), for this project. As part of the document preparation she was involved in the assessment of potential primary, secondary, short, and long term impacts of the proposed project.

Key Personnel: Chitra Radin

SJH Engineering P.C.

Goethals Bridge Replacement - Travis Spur Rail Bridge (2013-Ongoing)

Reference	Port Authority of NY & NJ 2 Montgomery St. Jersey City, NJ 07302	Project Role	Providing structural and bridge engineering design, quantity take-offs, and construction support for a two-span thru-girder railroad bridge and associated structures with consideration for ABC design concepts.	Key Personnel	S. Jayakumaran, PhD, PE

Portal Bridge Capacity Enhancement (2008-2014)

Reference	NJ TRANSIT One Penn Plaza E, Newark, NJ 07105	Project Role	Provided structural and bridge engineering design services. Prepared construction documents for the installation of construction access platforms, as well as designs for the permanent viaduct structures and retaining walls.	Key Personnel	S. Jayakumaran, PhD, PE

Hudson Bergen Light Rail Transit System Design/Build (2008-2009)

Reference	) NJ TRANSIT /Gannett Fleming 1000 Atrium Way, Mt. Laurel, NJ 08054	Project Role	Provided structural, transportation, and bridge engineering design services for drilled shafts of the viaduct, retaining walls, emergency stairs, railing, and catenary pier structure supports as subconsultant to Gannett Fleming.	Key Personnel	S. Jayakumaran, PhD, PE

JCMS, Inc.

Portal Bridge Capacity Enhancement (2008-2014)

Reference	NJ TRANSIT One Penn Plaza E, Newark, NJ 07105 Tel: (973) 491-8828	Project Role	Civil and structural engineering support for the final design phase.	Key Personnel	M. Nambiar

NJ TRANSIT Bay Head Rail Yard Improvements (2012)

Reference	NJ TRANSIT 1 Penn Plaza East Newark, NJ 07105-2246 0	Project Role	Civil and structural engineering support.	Key Personnel	H. Murray

NJ TRANSIT Lower Hack Undergrade Bridge (2009-2010)

Reference	NJ TRANSIT One Penn Plaza East Newark, NJ 07105-2246	Project Role	Civil and structural engineering support for the steel repair and machinery/operator house rehabilitation.	Key Personnel	Ravi Arumugam

envision

SEPTA Silverliner Rail Car Procurement (2006-2014)

Reference: SEPTA
4799 Rhawn St,
Philadelphia, PA 19136

Project Role: Provided full-time document control management. Assessed, customized, trained, and implemented Primavera Contract Manager. Maintained the project database. Created custom reports in Oracle® Primavera Contract Management 14.

Key Personnel: Kurt Buettler

Maryland Transit Administration Baltimore Red Line Expansion (2011-2015)

Reference: MD Transit
Administration
6 St. Paul St.
Baltimore, MD 21202-
1614

Project Role: Implemented Management Information System using Oracle® Primavera Contract Management. Defined and documented: project procedures using Contract Management 13 and schedule review procedures using Primavera 6 Web.

Key Personnel: Kurt Buettler

NJ Transit Positive Train Control (2012-2015)

Reference: NJ Transit
One Penn Plaza East
Newark, NJ 07105-2246

Project Role: Provided document control services within SharePoint, Oracle® Primavera Contract Manager, and ECMS for the installation of a positive train control system for all trains and tracks in New Jersey.

Key Personnel: Kurt Buettler

ARCH²

Brielle Bridge Feasibility Study (2014-2015)

Reference: NJ Transit / H&H
1501 Broadway
New York, NY 10036

Project Role: Identified cultural resources issues and advised the conceptual design team on development of a design that would be considered by the NJ SHPO to be compatible with the existing historic bridge and the National Register-eligible rail corridor.

Key Personnel: Nancy Zerbe

New Jersey Coast Line – Overhead Contact System (2001-2002)

Reference: NJ Transit
One Penn Plaza East
Newark, NJ 07105

Project Role: Handled all aspects of the project's cultural resources review in accordance with Section 106 of the National Historic Preservation Act, resulting in the NJ SHPO's acceptance of the necessary changes to the historic NJ Coast Line's catenary system.

Key Personnel: Nancy Zerbe

New Jersey High Speed Rail Improvement Program (2013-Ongoing)

Reference: AMTRAK
2955 Market Street
Philadelphia, PA 19104

Project Role: Handled all aspects of the project's cultural resources review in accordance with Section 106 of the National Historic Preservation Act, resulting in the development of a Programmatic Agreement and acceptance of alterations constituting an adverse effect.

Key Personnel: Nancy Zerbe

5.3 Project Manager References

PROJECT MANAGER: VISHA SZUMANSKI, PE

NJ TRANSIT Task Order Contract for Bridge & Railway Engineering (2006-2009)

Reference	Project Role
, Chief Engineer - Structures NJ TRANSIT One Penn Plaza East Newark, NJ 07105	Project Manager responsible for overseeing this Task Order contract for bridge and railway engineering services systemwide. Tasks included rehabilitation of Morgan Draw Bridge on NJ Coast Line over Cheesequake Creek and rehabilitation of Navesink River Bridge in Red Bank on NJ Coast Line.

NJ TRANSIT Task Order Contract for Bridge & Railway Engineering (2006-2009)

Reference	Project Role
New Jersey Transit One Penn Plaza East, Newark, NJ 07105-2246	Project Manager for Secaucus Junction Platform Extension. Took over management of this task to address performance issues which were delaying completion of the project. Produced bid package and obtained all necessary approvals in time to complete the construction before the Super Bowl season.

NJ TRANSIT Task Order Contract for Bridge & Railway Engineering (2006-2009)

Reference	Project Role
MTA Bridges and Tunnels 2 Broadway New York, NY 10004	Project Manager for one of the largest TBTA capital improvement projects, which involved $450 reconstruction of the RFK bridge toll plaza. Took over project management of this contract when it was put on hold for several months due to multimillion dollars budget overruns. Developed project mitigation plan and completed final design in only 9 months, within the budget.

NJ TRANSIT Task Order Contract for Bridge & Railway Engineering (2006-2009)

Reference	Project Role
New York City DOT 59 Maiden Lane New York, NY	Deputy Project Manager in a JV for a $100M rehabilitation of 1400 ft. long Roosevelt Avenue Bridge and viaduct over Van Wyck Expressway and the Flushing River. The double-deck structure with 300 ft. long bascule span, carries Roosevelt Avenue on its lower deck and three tracks of the NYCT #7 Line on the top. Work included extensive coordination with NYCT and permitting/ approvals, including NYCDEP, NYSDEC, NYCDPR and Public Design Commission.

5.4 Key Personnel References

PRINCIPAL-IN-CHARGE: Paul Skelton, PE

Niantic Bridge Replacement Project (2006-2013)

Reference

, Project Manager
Amtrak
30th Street Station
Philadelphia, PA 19104

Project Role

Principal-in-Charge of the final design services the replacement of the railroad movable bridge carrying Amtrak's Northeast Corridor lines over the Niantic River.

Port River Bascule Bridges (2003-2008)

Reference

, Project Manager
Transport South Australia
260 Elizabeth Street
Slurry Hills, NSW 2010

Project Role

Principal-in-Charge of the preliminary and final design of two new movable bridge. Oversaw the design of a new railroad movable bridge and a new highway bascule bridge providing a new connection into the Port.

Jacques Chaban-Delmas Vertical Lift Bridge (2005-2013)

Reference

, Design Manager
EGIS/JMI
11 Avenue du Centre Saint Quentin en
Yvelines, 78286 Guyancourt Cedex, France

Project Role

Principal-in-Charge for the design of $146 million Chaban-Delmas Vertical Lift Bridge in Bordeaux, France, which features the longest lift span in Europe (383 ft.). The bridge has a lift height of 164 ft. and accommodates 320 ft. wide navigational channel. It was designed to carry four lanes of traffic, two bicycle/pedestrian paths and two light rail tracks.

PRINCIPAL-IN-CHARGE: David Boaté, PE

Sunnyside Yard Master Plan (2011-2015)

Reference

Director
AMTRAK
30th & Market Streets
Philadelphia, PA 19104

Project Role

Project Manager for a joint venture for the redevelopment of an approximately 200 acre yard full-service storage and service & inspection and maintenance facility. The Master Plan focused on documenting existing conditions of infrastructure; transportation planning; programing to assess commuter needs, intercity, high speed rail, and maintenance of way service; and overbuild potential assessment.

NJ Transit Architectural/Engineering Task Order Contract (2012-ONGOING)

Reference

, Chief Engineer
NJ Transit
One Penn Plaza East
Newark, NJ 07105

Project Role

Principal in Charge for a task Order Contract for architectural and engineering assignments. Assignments have included the assessment and resiliency and hardening design for six major substations sites; final design and construction support of the upgrade of the OCS systems on the Gladstone Line. Design for improvements at Newark City Subway Norfolk Station.

NJ Transit Rail Mapping, Video and GIS (2003–2009)

Reference

, Director, Capital Planning
NJ Transit
One Penn Plaza East
Newark, NJ 07105

Project Role

Phase I Project Manager and Phase II Officer-in-Charge for the development of a GIS system for NJ Transit commuter rail and light rail transit (LRT) systems based on LiDAR Survey and Oracle Database Management. The rail map system provides electronic GIS maps and both locomotive engineers-view and aerial video for the entire 465-mile NJ Transit commuter railroad network.

QUALITY ASSURANCE MANAGER: STEPHEN HARLACKER, PE, SE

I-84 Hartford-Aetna Viaduct – Phases I and II (2006 – Ongoing)

Reference

, Supervising Engineer
Connecticut DOT
2800 Berlin Turnpike
Newington, CT 06111

Project Role

During the tenure of this project, I have functioned in all roles from Lead Structural Engineer to Project Manager, including roles as Project Engineer and Internal Quality Manager. Phase I of this project included a Rehabilitation Study Report, Preliminary Design, Final Design, and Construction Support. Phase II is currently between Preliminary and Final Design at this time.

Grand Avenue Bridge Rehabilitation (2009 – Ongoing)

Reference

, Chief Structural Eng.
City of New Haven
200 Orange Street, Fifth Floor
New Haven, CT 06510

Project Role

Project Engineer, responsible for movable bridge and fixed approach span design for his Swing Bridge Rehabilitation Project. This project is currently between Preliminary and Final Design. On prior engagements with Mr. Moslehi, I served as the Project Engineer on the New Haven On-Call Movable Bridge Contract and the Ferry Street Bridge Major Rehabilitation.

Norwalk River (WALK) Bridge Replacement (2015 – Ongoing)

Reference

, Project Manager, Fac./Transit
Connecticut DOT
2800 Berlin Turnpike
Newington, CT 06111

Project Role

Lead Structural Reviewer for the movable span as part of the Owner's Independent Peer Review team for the Norwalk River (WALK) Railroad Bridge Replacement Project. This high-priority project is being delivered by the CMGC process.

QUALITY ASSURANCE MANAGER: Bruce Smith, PE

Southwest Corridor Light Rail Transit (2013-2014)

Reference

Project Manager (KHA)
Metropolitan Council / Kimley-Horn & Assoc.
2550 University Ave West,
St. Paul, MN 55114

Project Role

QA Manager for the development and preparation of 30% design documents of a proposed Light Rail Transit system, east segment, Minneapolis to Hopkins, Minneapolis

National Capital Purple Line Light Rail General Engineering Consultant (2011 -2012)

Reference

, Quality Manager
Maryland Transit Administration
6 Saint Paul Street
Baltimore, MD 21201

Project Role

Served as project Quality Manager. Prepared Quality Management Plan and supporting procedures and QA forms. The PLGEC quality management system was based on the requirements of the Federal Transit Administration's (FTA) Quality Assurance and Quality Control Guidelines, dated February 2002, FTA-IT-90-5001-02.1.

Portal Bridge Capacity Enhancement Project (2008 – 2013)

Reference

, Sr. Program Manager
NJ Transit
One Penn Plaza East, Newark, NJ 07105

Project Role

QA Manager for developing the design and preparing the technical contract documents for a major bridge replacement project and the related rail systems on Amtrak's Northeast Corridor.

PEER REVIEW/CONSTRUCTABILITY: Steven Hom, PE

Niantic Bridge Replacement Project (2006-2013)

Reference

, Project Manager
Amtrak
30th Street Station
Philadelphia, PA 19104

Project Role

Deputy Project Manager for responsible for constructability reviews and Construction Support Services. Constructability reviews focused on the construction phasing, maintenance and protection of railroad operations, construction access, and operational and safety issues. He was also responsible for the coordination of the architectural, mechanical, electrical and structural submittals and assisted in resolving field problems.

Amtrak's Connecticut River Bridge (2006-2007)

Reference

, Project Director
Amtrak
30th Street Station
Philadelphia, PA 19104

Project Role

Project Engineer for in-depth inspection and feasibility study of bridge replacement alternatives for the Connecticut River Bridge, between Old Saybrook and Old Lyme, CT, which carries 35 passenger trains (Amtrak and Shore Line East) and 6 freight trains per day.

Tomlinson Bridge over Quinnipiac River (1996-2002)

Reference

, Project Manager
Connecticut DOT
2800 Berlin Turnpike
Newington, CT 06131

Project Role

Project Engineer during construction phase of a $120 million replacement of Tomlinson Bridge, which provides vehicular and rail crossing. As the Movable Bridge Liaison, Mr. Hom coordinated activities between the design team, resident engineer and the owner, providing technical expertise required at the site to resolve structural, mechanical, and electrical issues.

PEER REVIEW/CONSTRUCTABILITY: Joe Griffin, PE

NJDOT Route 9 over Raritan River (2000 – 2002)

Reference

New Jersey DOT
1035 Parkway Avenue
Trenton, NJ 08625

Project Role

Construction Project Manager

NJ Transit Main Line 2nd Track (2000 – 2002)

Reference

Amtrak
60 Massachusetts Ave
Washington, DC 20002

Project Role

Construction Project Manager

PSE&G Nuclear Development Project – Causeway Design Study (2010)

Reference

)
PSE&G / Gannett Fleming
1000 Atrium Way
Mount Laurel, NJ 08054

Project Role

Constructability Consultant

DEPUTY PROJECT MANAGER – TRACK & SYSTEMS: Richard Cross, PE

Portal Bridge Capacity Enhancement (2008-2014)

Reference

Sr. Program Manager
NJ Transit
One Penn Plaza East, Newark, NJ 07105

Project Role

Provided engineering services including three miles of track realignment, signals, catenary, geotechnical evaluation as well as the Operations Analysis for the project.

Niantic Bridge Replacement Project (2006-2013)

Reference

Amtrak
30th Street Station
Philadelphia, PA 19104

Project Role

Final Engineering services for the east and west approaches including two miles of track realignment, signals, catenary, pre-cast concrete retaining walls as well as all geotechnical analysis for the project.

Sawtooth Bridge Conceptual Study (2013-2014)

Reference

Amtrak
30th Street Station
Philadelphia, PA 19104

Project Role

Conceptual design for two aging, heavily used bridges on the Northeast Corridor traversing over four New Jersey Transit mainline tracks.

DEPUTY PROJECT MANAGER – BRIDGE & FOUNDATIONS: David Tuckman, PE

NYCDOT Unionport Bridge Replacement (2013-Ongoing)

Reference

, Project Manager
New York City DOT
59 Maiden Lane, 35th Floor
New York, NY 10038-4502

Project Role

Deputy Project Manager / Senior Structural Engineer for the replacement design of a new movable bridge. Coordinating the multi-disciplanary design team for the development of concepts through final design.

Port River Bascule Bridges (2003-2008)

Reference

Transport South Australia
260 Elizabeth Street
Slurry Hills, NSW 2010

Project Role

Structural Engineer for the preliminary and final design of two new movable bridge. Provided structural design support for the design of a new railroad movable bridge and a new highway bascule bridge providing a new connection into the Port.

MBTA Saugus River Drawbridge Rehabilitation (2012)

Reference

Project Director
Mass Bay Transportation Authority
500 Arborway
Jamaica Plain, MA 02130

Project Role

Project Engineer for emergency repairs of a vintage Saugus River Drawbridge carrying two tracks of MBTA commuter rail. Inspection conducted by H&H revealed severe deterioration of the rest pier.

TASK MANAGER – PERMIT SUPPORT: Glen Schetelich, PE

NJTA Garden State Parkway over Great Egg Harbor (2014-Ongoing)

Reference

, Supervising Engineer
New Jersey Turnpike Authority
N.J. Turnpike at Woodbridge
Woodbridge, NJ 07095

Project Role

Project Manager in charge of delivery of Final Plans, Environmental Permits and Construction Support for a $200M replacement of 47-span, 3,671-foot-long bridge over Great Egg Harbor Bay and a new 800-foot bridge over Drag Channel. Key issues involved staging of construction within the constraints of ecologically complex and environmentally-sensitive area.

S-31 Oceanic Bridge Bascule Span Rehabilitation (2009-2013)

Reference

, PE, County Engineer
Monmouth County Engineer's Office
1 East Main Street, Third Floor
Freehold, NJ 07728

Project Role

Principal-In-Charge responsible for overseeing in-depth inspection, structural ratings, prioritizing the repairs and development of rehabilitation plans for a double-leaf bascule bridge. Responsible for the overall supervision of the design team, obtaining permits and approvals, coordination with the client and overseeing the subconsultants.

Route 1&9T (25) over St. Pauls Avenue (2005-2013)

Reference

, Dir. Project Management
New Jersey DOT
1035 Parkway Avenue
Trenton, NJ 08625

Project Role

Project Manager in charge of Preliminary Plans, Final Plans, Environmental Assessment Document, Environmental Permits and Construction Support.

TASK MANAGER – CIVIL: Robert Matthews, PE

NJTA GSP Widening Interchange 30 to 63 Program, MP 47.7 to 51.3 (2009-Ongoing)

Reference

, Supervising Engineer
NJ Turnpike Authority
581 Main Street
Woodbridge, NJ 07095

Project Role

Project Manager for the final design of approximately 3.6 miles of roadway widening on the GSP. Project includes the construction of an additional travel lane in the northbound and southbound directions, reconstruction of shoulders, a new drainage system, highway lighting, utility relocations, and reconstruction of Interchanges 48 and 50 with new overpass structures and retaining walls.

NJTA GSP Interchange 142 Improvements (2004-2012)

Reference

, PE, Project Manager
New Jersey DOT
1035 Parkway Avenue
Trenton, NJ 08625

Project Role

Deputy Project Manager and Civil Task Leader for the preliminary and final design of this interchange improvement project, which involved the implementation of new ramp connections from GSP southbound to I-78 eastbound and from GSP northbound to I-78 westbound.

NJ Turnpike Interchange 14A Improvements (2010-Ongoing)

Reference

, Project Engineer
NJ Turnpike Authority
581 Main Street
Woodbridge, NJ 07095

Project Role

Design Manager and Civil Task Leader for preliminary engineering, environmental studies, and final design for improvements to the Turnpike at Interchange 14A, located at the border of Bayonne and Jersey City in Hudson County.

TASK MANAGER – RAIL SYSTEMS: David Howell, PE

Northern Branch Preliminary Engineering (2007-2014)

Reference

NJ Transit
One Penn Plaza East,
Newark, NJ 07105-2246

Project Role

Provided engineering services including three miles of track realignment, signals, catenary, geotechnical evaluation as well as the Operations Analysis for the project.

Amtrak General Engineering Consultant (1992-2015)

Reference

Amtrak
21 Hope Street
Niantic, CT 06357

Project Role

Services have included over 100 tasks encompassing a variety of services, including electric traction, signals, yards, and drainage improvements along the Northeast Corridor (NEC).

Portal Bridge Capacity Enhancement (2008-2014)

Reference

, Sr. Program Manager
NJ Transit
One Penn Plaza East, Newark, NJ 07105

Project Role

Provided engineering services including three miles of track realignment, signals, catenary, geotechnical evaluation as well as the Operations Analysis for the project.

TASK MANAGER – MOVABLE BRIDGE: Peter Roody, PE

Sarah Mildred Long Bridge Replacement Project (2010-2017)

Reference

, Chief Engineer
Maine DOT
16 State House Station
Augusta, ME 04333

Project Role

Lead Structural Engineer responsible for the design of movable span on a $159 million replacement of the Sarah Long bridge, which is a two level structure carrying vehicular traffic between New Hampshire and Maine and serving as a railway link to the Portsmouth Naval Shipyard.

Port River Bascule Bridges (2003-2008)

Reference

Transport South Australia
260 Elizabeth Street
Slurry Hills, NSW 2010

Project Role

Project Manager for the preliminary and final design of two new movable bridge. Led the design of a new railroad movable bridge and a new highway bascule bridge providing a new connection into the Port.

Murray Morgan Bridge Design-Build (2010-2013)

Reference

City of Tacoma
747 Market Street
Tacoma, WA 98402

Project Role

Deputy Project Manager and Lead Structural Engineer responsible for structural design for the major rehabilitation of this 100 year old vertical lift bridge originally designed by Hardesty & Hanover.

TASK MANAGER – APPROACH SPAN: David Gerber, PE

Brielle Bridge Feasibility Study (2014-2015)

Reference

, Asst. Chief Eng. - Structures
NJ Transit
One Penn Plaza
Newark, NJ 07105

Project Role

Project Engineer responsible for conceptual design for the replacement of a Scherzer Rolling Lift bridge and approach structures on the North Jersey Coast Line for NJ Transit. Concept design includes alternatives analysis of movable and fixed spans, preliminary cost estimates, life-cycle cost analysis, rail staging and constructability.

Newark Drawbridge Rehabilitation (2006-2010)

Reference

, Project Manager
NJ Transit
One Penn Plaza
Newark, NJ 07105
Tel:

Project Role

Project Engineer/Lead Structural Designer responsible for inspection, load ratings, design of structural steel repairs, preparation of contract drawings and cost estimate as well as overall project coordination during design and construction support phases. Project scope included inspection and rehabilitation of railroad swing span and adjacent steel viaducts.

S-31 Oceanic Bridge Bascule Span Rehabilitation (2009-2012)

Reference

, PE, County Engineer
Monmouth County Engineer's Office
1 East Main Street, Third Floor
Freehold, NJ 07728

Project Role

Project Engineer responsible for overseeing the in-depth inspection, structural ratings, development of priority repair and rehabilitation plans, and construction inspection for the rehabilitation of this double-leaf bascule bridge. Led all technical /engineering issues, coordination with client, contractor, and oversaw the work of all subconsultants.

TASK MANAGER – FOUNDATIONS/GEOTECH: Raymond Mankbadi, PE

Brielle Bridge Feasibility Study (2014-2015)

Reference

, Asst. Chief Eng. - Structures
NJ Transit
One Penn Plaza
Newark, NJ 07105

Project Role

Lead Geotechnical Engineer responsible for a feasibility study for the replacement of a 100-year old Brielle Movable Bridge on the NJ Transit Coast Line. Recommendations include ground improvement on the approaches using Controlled Modulus Columns (CMC) or Vibro Concrete Columns (VCC).

NJ Transit Roebling Embankment Failure (2011-2012)

Reference

Asst. Chief Eng. - Structures
NJ Transit
One Penn Plaza
Newark, NJ 07105

Project Role

Lead Geotechnical Engineer for emergency repairs to 300 long section of 55 ft. high embankment between the Roebling and Bordertown NJ Transit stations, which collapsed as a result of hurricane Irene causing disruptions to rail operations. The work involved fast track investigation, testing, design and construction - all of these activities to be completed within a six month period.

NYCDOT Willis Avenue Bridge Replacement (2007-2010)

Reference

, Project Engineer
New York City DOT
59 Maiden Lane, 35th Floor
New York, NY 10038

Project Role

Lead Geotechnical Engineer for the $612 million off-line replacement of a major 345-foot-long, swing bridge and 3,000 feet of approaches. Oversaw all geotechnical work including extensive subsurface/subsoil exploration program, development of geotechnical recommendations/report and design of the new bridge foundations, which included drilled shafts, steel H-piles, and mini piles.

5.5 Work History with New Jersey Transit

Hardesty & Hanover

PROJECT INFORMATION (H&H)	REFERENCE INFORMATION
NJ Transit Task Order Contract (2003-2006) Hardesty & Hanover provided engineering services for this New Jersey Transit task order contract. Tasks included superstructure replacement of the Jonathan's Creek Thorofare Bridge and bridge inspection services. ***Key Personnel:*** *Glen Schetelich*	**NJ Transit**
NJ Transit Group F Undergrade Bridges (2003-2005) Hardesty & Hanover provided structural condition inspection and review/update of the load ratings for 36 New Jersey Transit Group F undergrade, commuter railroad bridges at various locations. ***Key Personnel:*** *David Gerber*	**NJ Transit**
Newark Drawbridge Replacement (2004-2009) Hardesty & Hanover, as a subconsultant, performed design and construction support services for major structural and mechanical rehabilitation of a railroad swing span and approach span. ***Key Personnel:*** *Peter Roody, David Gerber, Steve Hom, Steve Mikucki, Alec Noble*	**NJ Transit**
Undergrade Movable Bridge Inspections - 06-084 (2006-2008) Hardesty & Hanover performed structural, mechanical and electrical, in-depth inspection and subsequent report of six active movable bridges, two inactive movable bridges and eight fixed bridges, all carrying active railroad lines. ***Key Personnel:*** *Peter Roody, David Gerber, Steve Hom, Steve Mikucki, Alec Noble*	**NJ Transit**
TOC for Bridge and Railway Engineering (2008-2010) Hardesty & Hanover, as a subconsultant, provided professional services for on-call bridge and railroad assignments as requested by NJ Transit, of up to $500,000 professional fee per assignment. ***Key Personnel:*** *Glen Schetelich*	**NJ Transit**
Undergrade Bridge Inspection – Contract 09-108 (2009-2012) Hardesty & Hanover performed field inspection of 50 New Jersey Transit Bridges. In addition to the structural inspections, diving inspections on 6 bridges we also performed. ***Key Personnel:*** *Glen Schetelich*	**NJ Transit**
Emergency Repair of the Roebling Embankment Failure – River Line Light Rail (2010-2011) Hardesty & Hanover performed the emergency investigation and repair design for this embankment failure on NJ Transit's River Line. ***Key Personnel:*** *Glen Schetelich, Ray Mankbadi*	**NJ Transit**
Undergrade Movable Bridges - Group C (2012-2014) Hardesty & Hanover obtained this contract to perform bridge inspection services. ***Key Personnel:*** *Glen Schetelich, Paul Connolly, Stephen Mikucki, Alec Noble, David Marcic*	**NJ Transit**
Brielle Drawbridge Replacement Study (2014-present) Hardesty & Hanover provided conceptual design for the replacement of the existing single track with a bascule span and approach spans with a new two track on the existing alignment within the ROW due to property constraints ***Key Personnel:*** *David Gerber, Peter Roody, Glen Schetelich, Paul Connolly, Stephen Mikucki*	**NJ Transit**

Gannett Fleming

PROJECT INFORMATION (GF)	REFERENCE INFORMATION
Supply Conceptual Engineering Services (2015-2016) Gannett Fleming, as a subconsultant, is providing supply conceptual engineering design services for the replacement and construction of undergrade bridge 5.48 HX draw on the Bergen County Line and over the Hackensack River in Secaucus, Hudson County, New Jersey. ***Key Personnel:*** *R.Cross, D. Howell, S. Sibley*	**NJ Transit**
Brielle Drawbridge Engineering Services (2014-2015) GFT&RS, performing as a subconsultant, is providing consulting engineering services for the Brielle Drawbridge replacement and to support railway design, railway cost estimating, environmental, permitting, and geographic information systems (GIS) for New Jersey Transit Corporation. ***Key Personnel:*** *J. Legath, R. Cross, S. Wittig, R. Rajagopal, R. Lentz, G. Nazarow*	**NJ Transit**
GIS Loader (2014-2014) Enhancements to the NJT GIS Loader Tool. ***Key Personnel:*** *R. Metzger, N. Reck, B. Robertson*	**NJ Transit**
NEC Mid-Line Loop Design (2014-2015) Design, engineering, and construction services for the Northeast Corridor Mid-Line Loop project for the New Jersey Transit in North Brunswick, New Jersey. ***Key Personnel:*** *D. Johnson, Y. Shayer, P. Buxhoeveden*	**NJ Transit**
Elevator and Escalator Consulting Services (2013-2014) Elevator and escalator consulting services, on an as-needed basis, through an open-end contract with the New Jersey Transit Corporation. ***Key Personnel:*** *R. Keller, P. McVicker, P. Welch*	**NJ Transit**
General Architectural and Engineering TOC Number 13-006A (2013-2016) Gannett Fleming is providing New Jersey Transit, on a task order basis, general architectural and engineering services. ***Key Personnel:*** *D. Boate, M. Morgan*	**NJ Transit**
Mount Arlington Station Elevator Field Audit and Survey (2013-2014) VTX, a division of Gannett Fleming, is conducting an emergency field audit and survey on the hydraulic elevator at the Mount Arlington Station for the New Jersey Transit, as part of an open-end contract. For this task order, our firm is verifying the jack condition reported by the elevator service provider and reporting our findings. ***Key Personnel:*** *R. Keller, S. Fitzgerald, P. Welch*	**NJ Transit**
Gladstone Line Overhead Contact Systems - Catenary Pole Replacement (2013-2016) Transit & Rail Systems, a division of Gannett Fleming, is providing final design, engineering, and construction support services to the New Jersey Transit for the catenary pole replacement project in Gladstone, New Jersey. ***Key Personnel:*** *D. Marker, M. Patcha, T. Shantz*	**NJ Transit**
- Planning, Design, Engineering, and Construction Assistance Services (2013-2016) Gannett Fleming is providing planning, design, engineering, and construction assistance services to the New Jersey Transit for the repair, reconstruction or replacement of various general power substations, traction power substations, switching substations, and related facilities at Hoboken Terminal/Yard, Meadows Maintenance Complex and Bay Head Yard operating locations that were damaged as a result of Hurricane Sandy in October 2012. ***Key Personnel:*** *T. Bandy, S. Zapoticzny, D. Lind*	**NJ Transit**

PROJECT INFORMATION (GF)	REFERENCE INFORMATION
Howell Bus Facility Upgrade (2013-2015) Gannett Fleming is providing services for the replacement and upgrade of the compressed natural gas compressor and fueling station at the New Jersey Transit Howell Township bus facility. ***Key Personnel:*** *E. Briner, B. Margerum, B. Mummert*	**NJ Transit**
Bloomfield Tunnel - Elevator and Escalator Consulting Services (2013-2013) VTX, a division of Gannett Fleming, is providing New Jersey Transit with elevator and escalator consulting services. This task order is to perform design and construction support services for one new elevator at the Bloomfield Station. ***Key Personnel:*** *R. Keller, P. McVicker, P. Welch*	**NJ Transit**
Elevator and Escalator Maintenance Audit and Report (2013-2013) VTX, a division of Gannett Fleming, is performing a maintenance audit and preparing a report for 19 escalators and 20 elevators at Newark Penn Station for New Jersey Transit. ***Key Personnel:*** *R. Keller, S. Fitzgerald, P. McVicker*	**NJ Transit**
New Jersey Transit River Line Drafting Services (2012-2013) Transit & Rail Systems, a division of Gannett Fleming, is providing engineering services to update track maintenance charts. ***Key Personnel:*** *E. Breslin, J. Lech, R. Hallahan*	**NJ Transit**
Newark Penn Station Escalator Field Survey (2012-2013) VTX, a division of Gannett Fleming, is providing New Jersey Transit with escalator consulting services. Our firm is conducting a field survey of the storm aftermath condition of escalators 34 and 35 at Newark Penn Station. ***Key Personnel:*** *R. Keller, S. Fitzgerald, P. Welch*	**NJ Transit**
Elevator and Escalator Consulting Services (2012-2014) VTX, a division of Gannett Fleming, is Performing a site inspection and field survey on the vertical transportation units at the Secaucus Junction Station sustaining flood damage due to Hurricane Sandy and provide a written assessment of the findings. Flooding impacted machinery pits for nine of the 31 escalators and six of the 12 elevators. ***Key Personnel:*** *R. Keller, S. Fitzgerald, P. Welch*	**NJ Transit**
Open-End Elevator and Escalator Consulting Services (2012-2014) VTX, a division of Gannett Fleming, is providing open-end elevator and escalator consulting services to New Jersey Transit. Tasks include providing construction inspection services, including preparing written reports of each inspection assessment, for two elevators at the Hudson-Bergen Light Rail Transit Port Imperial Station in Weehawken, New Jersey. ***Key Personnel:*** *R. Keller, P. McVicker, P. Welch*	**NJ Transit**
Consulting Services for Enhancements to Farebox Recovery Tool (2012-2013) GeoDecisions, a division of Gannett Fleming, is providing New Jersey Transit with consulting services to enhance the farebox recovery tool. ***Key Personnel:*** *R. Marsters, N. Reck, R. Metzger*	**NJ Transit**
Secaucus Junction Station- Consulting Services for Escalators (2012-2012) VTX, a division of Gannett Fleming, is providing open-end consulting services to New Jersey Transit on a task order basis. Our firm is performing a field survey on three escalators at the Secaucus Junction station; determining the necessity of proposed repairs; and providing a written assessment. ***Key Personnel:*** *R. Keller, P. McVicker, P. Welch*	**NJ Transit**

PROJECT INFORMATION (GF)	REFERENCE INFORMATION
Portal Bridge Capacity Enhancement Project (2008-2014) Gannett Fleming Transit & Rail Systems is leading a tri- venture, with 27 subconsultants to design the replacement of 2.5 miles of the Amtrak Northeast Corridor between Newark, NJ and New York City. This corridor is the most heavily travelled railroad in the country carrying both Amtrak's high-speed intercity service and NJ TRANSIT's commuter service. ***Key Personnel:*** *M. McNamara, T. Shantz, R. Cross, D. Howell, J. Legath, J. Lech, G. Nazarow*	**NJ Transit**
Market Street Bus Garage Open-End Elevator and Escalator Consulting Services (2011-2012) VTX, a division of Gannett Fleming, is providing open-end elevator and escalator consulting services to New Jersey Transit. Our firm is providing plans, specifications, and procurement support for the new elevator systems to be installed at the Market Street (Paterson) bus garage. Scope includes installation, construction-inspection services, acceptance testing, warranty services, and repair/maintenance verification. ***Key Personnel:*** *R. Keller, P. McVicker, P. Welch*	**NJ Transit**
Elevator and Escalator Consulting Services (2010-2011) VTX, a division of Gannett Fleming, is providing open-end elevator and escalator consulting services for New Jersey Transit. As part of this project, our firm is conducting a condition assessment on one escalator No.17 at Secaucus Junction Station to identify any operating deficiencies. ***Key Personnel:*** *R. Keller, P. McVicker, P. Welch*	**NJ Transit**
Condition Assessments for Rail Line Station Elevators and Escalators (2010-2012) VTX, a division of Gannett Fleming, is conducting a follow-up condition assessment of rail line station elevators and escalators for New Jersey Transit. Our firm is verifying repairs made in response to previous findings, identifying any new safety or reliability deficiencies, and preparing a revised contract specification for the repair and maintenance of 45 elevators and three escalators. ***Key Personnel:*** *R. Keller, P. McVicker, P. Welch*	
Task Order 18 - South Amboy Station Elevator Installation (2010-2010) Task Order 18 - South Amboy Station Elevator Installation. ***Key Personnel:*** *R. Keller, P. McVicker, P. Welch*	**NJ Transit**
Task Order 16 - New Brunswick Rail Station Catenary Structure Clearances (2010-2010) Gannett Fleming is providing open-ended elevator and escalator consulting services to New Jersey Transit. Task Order 16 involves verifying catenary structure clearances for the New Brunswick Rail Station. ***Key Personnel:*** *T. Shantz, M. McNamara, C. Thompson*	**NJ Transit**
Positive Train Control Implementation (2010-2013) Gannett Fleming is providing technical support services to New Jersey Transit for the implementation of a positive train control system (PTC) on all of its commuter rail lines. A PTC will extend that protection, which prevents train-to-train collisions to operations at speeds lower than 20 mph and will automate functions that are currently completed manually. The Rail Safety Improvement Act of 2008 mandates the implementation of a PTC system on all rail lines by the end of December 2015. ***Key Personnel:*** *S. Eck, R. Hallahan, M. McNamara, D. Prichard, J. Samean*	**NJ Transit**
New Brunswick Rail Station Escalator Replacement (2009-2012) VTX, a division of Gannett Fleming, is providing elevator and escalator consulting services to New Jersey Transit. The project includes the design, construction, and warranty services for the replacement of an escalator at the New Brunswick rail station. ***Key Personnel:*** *R. Keller, G. Tulumello, R. Kaowalski*	**NJ Transit**

PROJECT INFORMATION (GF)	REFERENCE INFORMATION
New Brunswick Rail Station Elevator Upgrades (2009-2012) VTX, a division of Gannett Fleming, is providing elevator and escalator consulting services to New Jersey Transit. The project includes the design, construction, and warranty services for the upgrade of two elevators at the New Brunswick rail station. ***Key Personnel:*** *R. Keller, R. Kowalski, P. McVicker, T. Tulumello*	**NJ Transit**
Architectural and Engineering Services (2009-2013) Gannett Fleming is providing various architectural and engineering services to New Jersey Transit, including civil engineering, mechanical engineering, architecture, electrical engineering, electronics, transportation engineering, cost estimating, value engineering, energy conservation and management, environmental engineering, industrial engineering, and project administration. ***Key Personnel:*** *D. Boate, M. Morgan, S. Sibley*	**NJ Transit**
Washington Street Station Elevator and Escalator Consulting Services (2008-2011) VTX, a division of Gannett Fleming, will provide engineering, testing, and inspection services to ensure the proper design, construction, installation, and warranty repair/maintenance for the upgrade of two elevators at the Washington Street Station on Newark City Subway. Our firm will inspect and approve the work, includes periodic construction inspections, acceptance testing, and warranty/maintenance verification. ***Key Personnel:*** *R. Keller, P. McVicker*	**NJ Transit**

Request For Proposal (RFP) No. 15-044
Design, Engineering and Construction Assistance Services
for the Replacement of the

RARITAN RIVER DRAWBRIDGE

SECTION 6

Technical Section

SECTION 6: TECHNICAL SECTION

6.1 Project Understanding & Key Issues

The objective of this project is to **replace the Raritan River Drawbridge** which carries NJ TRANSIT's North Jersey Coast Line, with a new resilient movable bridge that will be more reliable, require less maintenance and stand the test of time. While this bridge provides a direct link between the developing communities of Perth Amboy and South Perth Amboy, it is also a major connection for coastal New Jersey residents to metropolitan New York. The upstream bridges were replaced over the recent years in order to provide unfettered channel access for major cruise and freight ships. The replacement of this bridge is the last piece to enhancing the safe and efficient passage of these vessels and provide an economic stimulus to the region and all New Jersey.

The key design challenges will be to minimize impacts to railroad operations, adjacent infrastructure, ROW and the environmental resources, as well as keeping the project on schedule and within the budget. The project is funded by FTA grant under the post-Sandy Emergency Relief Program, and is intended to protect major infrastructure components that are in danger of being damaged during extreme climate events. As such, the replacement bridge is required to have a sufficient **flood resilience** to remain in operation after a major hurricane and the project has to be implemented within a **specified timeframe**. Since the bridge suffered from frequent vessel collisions due to poor channel geometry, it is the intent of NJ TRANSIT to implement feasible **navigational improvements** to the extent possible without delaying the project delivery. The bridge will be replaced off line to **maintain service during construction**. The initial phase of the project includes a feasibility study of the **replacement alternatives** in support of NEPA review, which will be done concurrently under a separate contract. The design team will support the NEPA process by providing necessary engineering studies. Once the NEPA review is completed, the design will proceed to the preliminary and final phases, followed by the construction support. We understand the final design will begin after the NEPA document is approved. To meet the project objectives, our design process will focus on delivering the following key elements:

- **Improved flood resilience** by raising the profile above 100-year flood level without significant impacts to the approaches
- **Movable span options and geometry** to ensure reliable operations, longevity and navigational improvements
- **Creative engineering and efficient staging** to meet the schedule while working within environmental constraints
- **Minimal impact on rail operations** at the approach interface within the existing alignment
- **Safe rail operations** by considering equipment clearances, vibration/movement monitoring, and remedial response plan
- **Minimal environmental impacts** including wetlands, parks and ROW
- **Maintained marine traffic** during construction
- **Expedited permitting/approval process** to maintain the project schedule
- **Mitigation of adverse effect** on historic resources by developing context-sensitive design for coordination with SHPO
- **Risk management** to prevent schedule delays and budget overruns
- **Reduced life cycle costs** with corrosion resistant materials with enhanced strength, performance and reduced maintenance

H&H is very familiar with the Raritan River Bridge through direct experience. In the past 35 years, H&H successfully completed a replacement study (with a vertical lift span option) in 1980. We also designed a major rehabilitation and were responsible for various component repairs. Our Team has **thorough knowledge and understanding of the project site**, including the topography, geology and marine conditions, which will be of great assistance during the design process.

6.2 Team's Relevant Experience

The **Hardesty & Hanover/Gannett Fleming** Joint Venture Team has been formed to meet the challenges of this new bridge design by offering proven project management and expert design services for the replacement of the Raritan River Bridge, a primary component of NJ TRANSIT's infrastructure. The Joint Venture combines the resources and technical expertise of two firms, who are recognized experts in their respective fields: **bridge engineering (Hardesty & Hanover)** and **railroad systems (Gannett Fleming).** Both firms have outstanding portfolios of relevant projects and strong relationship with NJ TRANSIT.

HARDESTY & HANOVER (H&H) brings to this Team a 128-year legacy of bridge engineering excellence. As the leading movable bridge expert in the country, **H&H has designed more than 100 movable bridges, including the first modern vertical lift bridge and four of the NJ TRANSIT's movable bridges**. H&H has unparalleled credentials for this project with an impressive track record

of vertical lift bridge design. H&H's recent railroad movable bridge projects include the *Niantic River Bridge*, *Port River Bridges, CSX New River Bridge,* and the signature *Sarah Long Bridge*. **H&H movable bridge designs are known for their longevity, reliability and low maintenance.** Our success lies in forward thinking approach, creativity, attention to detail, and application of the world's latest technologies and management techniques. H&H practice is not limited to bridges. In the last two decades, the firm has been increasingly involved in **complex transportation projects**, focused on infrastructure improvements, including roads and highways. Most recently, H&H was the prime consultant on such projects as the $640M *Willis Avenue Bridge*, $350M *Kew Gardens Interchange*, $380M *Whitestone Expressway*, and the $225M *Route 1 & 9T over St. Paul's*. These projects are a testimony to the firm's ability to successfully manage and deliver large-scale transportation improvement programs.

GANNETT FLEMING (GF) is the leading firm in rail and transit systems with expertise in **Track, Rail Operations, Signals, Communications, Catenary and Traction Power design**. With tremendous depth of resources in all phases of rail systems as well as civil, structural and environmental engineering, GF is ideally suited to provide the services needed for the Raritan River bridge project. GF has been supplying engineering to NJ TRANSIT in recent years on such projects as the *Gladstone Line's OCS Pole Line Replacement*, support of NJ TRANSIT's *Positive Train Control* and the *Midline Loop* projects, *Portal Bridge Capacity Enhancement* and the *post-Sandy Recovery Programs for Substations.* GF's signal experts were heavily involved in the existing signal systems on the Raritan Bridge and the adjoining interlocking. GF also has extensive experience in the design of transmission line monopoles including NJ TRANSIT's Secaucus Station 138kV run-around monopole line, Amtrak's new monopoles above the Passaic River's Point-No-Point Bridge, and Portal Bridge's six new monopoles. Many of GF professionals were previously employed by railroads and transit authorities, and are unmatched in systems interface, maintenance, and commissioning procedures.

Hardesty & Hanover and Gannett Fleming have **successfully worked together on other movable railroad bridge projects** including the replacement of Amtrak's *Niantic River Bridge,* Metro-North's *Peck Bridge,* and the *Port of Miami FEC Railroad Bridge*. The success of those projects is a testimony to our ability to form a **seamless, integrated team** combining the best technical and management resources to meet the project challenges and provide the best value to the client. The most recent example of our collaboration is the feasibility study for the replacement of NJ TRANSIT's *Brielle Bridge*.

6.3 Qualifications of Key Project Staff

We carefully selected our Key Project Staff to offer a team that integrates recognized technical experts and experienced managers with proven track record of succesfully delivered complex multidiscipline projects and strong relationship with NJ TRANSIT. Our **Project Manager Visha Szumanski**, PE (H&H), managed large scale transportation projects such as $450M *RFK Bridge Rehabilitation* and led the design of the *Second Avenue Subway* and *Penn Station Redevelopment*. She is well familiar with NJ TRANSIT requirements, having managed a Task Order Contract, which included rehabilitation of the *Morgan Draw Bridge* in South Amboy. Ms. Szumanski will be assisted by two **Project Engineers: Richard Cross**, PE (GF), who delivered the design for the *Portal Bridge* and **David Tuckman**, PE (H&H) who had management roles on many of H&H's significant movable bridge projects, including the signature *Woodraw Wilson Bridge.* The Joint Venture **Principals-in-Charge, Paul Skelton**, PE (H&H) and **David Boaté**, PE (GF), who will provide a high-level oversight to make sure that the projects meets all NJ TRANSIT objectives, are not only senior executives in the JV firms, but also accomplished industry experts. Mr. Skelton, the former Chairman of AREMA Committee 15, personally managed the design of many H&H's recent movable bridges. Mr. Boaté is a rail systems expert, who is well known to NJ TRANSIT for his role on projects such as the *Midline Loop* and the post-Sandy *Substations Repairs/Hardening.*

Our **TECHNICAL TEAM** includes **Peter Roody**, PE (H&H), **Discipline Lead – Movable Bridge Design,** who is a movable bridge expert known for his innovative engineering solutions. **Structural Design** will be led by **Michael Hawkins**, PE (H&H), who delivered the design for *Sarah Long Vertical Lift Bridge,* **Paul Connolly**, PE (H&H), who managed the feasibility study for *Brielle Bridge* and **David Gerber**, PE (H&H) who had a leading role in the rehabilitation of *Newark Draw Bridge*. **Mechanical Engineering** will be led by **Steve Mikucki**, PE (H&H), who is the Chairman of Heavy Movable Structures and AREMA Movable Bridge Subcommittee. **Track/Rail Systems** design will be led by **David Howell**, PE (GF), who was the Deputy PM for the *Portal Bridge* and **Permitting** will be coordinated by **Glen Schetelich**, PE (H&H) who managed dozens of major bridge projects in the New Jersey Coastal areas.

*We recognize that collaborative decision-making and teamwork are critical to this project's success. To fulfill this obligation, we offer our **A-TEAM** of engineers, managers and industry professionals with superb credentials and proven track records. Our Key Project Staff have extensive rail/transit experience, constructability expertise and hands-on knowledge of the regulatory requirements. Our Team has worked together as a **seamless team** on other RR bridge replacement projects.*

6.4 Management Approach

A successful project management approach is based on three critical principles: 1) develop an efficient **work plan** for the project, which outlines all activities that must take place to meet the specified milestones; 2) **be proactive**, i.e. identify key issues, anticipate potential problems and develop strategies to make sure they do not impact the project schedule and budget; 3) maintain **good communication** internally, with the client, third parties and approving agencies, to keep everyone well informed and facilitate decision making processes. Our management philosophy stresses the need for a well-developed organizational structure capable of adapting to specific needs, and efficient planning of all design activities necessary to achieve the project goals on schedule and within the budget. The key components of our management strategy are summarized below.

Project Management Plan

PMP is the foundation of our management approach. The PMP will translate the overall project objectives into a **detailed road map** of concrete deliverables. It will describe the project organization, the relationships and responsibilities of the team members, the communication protocol and the procedures that need to be followed during all project phases, including quality assurance, safety requirements, schedule, budget, document control procedures, and the project milestones/deliverables. The objective of PMP will be to clearly **define project requirements** and provide sufficient guidance to the team members to ensure that the work can proceed as planned. In addition, we will develop a detailed **WORK PLAN** which is outlined in SECTON 8 and reflected in the resource allocation table.

Risk Management

Infrastructure projects face a variety of risks with the potential to impact the project schedule or even the overall outcome. Therefore, **identifying risks** and developing **mitigation plans** is an essential component of the project management strategy. The major risks on this project are related to the **permitting/approvals** process and **construction staging** to meet the project schedule. In particular, construction of the bridge foundations will be on a critical path, considering the complex site conditions. **Proximity of active rail operations** will be another area of major concern during construction. Our approach to mitigating these risks is to form task forces that will focus on a particular problem areas. For instance, our foundation team consists of geotechnical and constructability experts with first-hand knowledge of the construction issues at the project site. The risk management process will involve developing a **risk register** and mitigation strategies. Major risks will be monitored and re-evaluated after mitigation. Maintaining a **close dialog with NJ TRANSIT** will be essential during this process. **See our initial risk register on the following page.**

Quality Management

Quality of the design will be ensured through a combination of management controls and a comprehensive set of reviews/checks at various stages of the project. Central to this process will be the participation of the **Project Manager**, who is responsible for developing/implementing a **Quality Management Plan.** Control of the design activities will be defined in the **Design Control Plan**, which will include procedures for internal verification of design documents, prior to submission to NJ TRANSIT. The requirements for issuing revisions or making other changes to the contract documents will be defined in the **Configuration Management Plan**. We approach quality management as a **continuing process** that begins with NTP and proceeds through design and construction. This process is applied to all project activities, including non-engineering tasks, and the work of subconsultants.

Schedule Control

The schedule will be achieved by continual monitoring, updating, and enforcing deadlines. Schedules will be updated on a monthly basis or as required. The status of individual tasks will be determined, along with forecasts of work to be completed in the next period. Drawings and specifications will be evaluated as they advance to ensure they are in sync with the schedule assumptions. Our approach is to **avoid surprises by anticipating problems** and devise ways to address them. We understand most "schedule busters" result from unanticipated events, such as delayed permitting or lack of third party concurrence. Many of these issues can be avoided with proper planning and good understanding of the regulatory requirements. **Timely completion of the Preliminary Phase is crucial to maintaining the project schedule**, because it involves many third party participants. Understanding of their requirements and providing timely and adequate information will facilitate expedient resolution of issues.

Document Control

Our Team will employ **web-based document management system** to provide a **central clearinghouse** for project documents and to store and manage correspondence, reference materials, guidelines, and project deliverables. There are several non-propriety systems available, which have user friendly interface, require minimal training and guarantee full security, such as Project Solve collaboration software, which was designed specifically for the engineering and construction industries, and is an efficient documents control tool allowing the project team to manage, share and distribute engineering project content and review in a single platform. Selection of the most suitable document management system will be done in consultation with NJ TRANSIT to assure **efficient collaboration** and true **information mobility** for all project participants.

Subconsultant Management

Each of our subconsultants will have a **well-defined role** on the project, consistent with their fields of expertise, to **execute distinct elements** of work and be responsible for **discrete portions of deliverables**. Management of subconsultants will be accomplished using the same principles that guide effective management of the in-house staff: 1) quantified definition of the scope, schedule, budget; 2) clear, timely and focused direction; 3) defined interface requirements; 4) explicit instructions concerning format, content and level of detail required in the deliverables; 5) timely measurement & reporting of work progress; 6) good communication. We recognize managing the subconsultants' performance needs to be as structured as other aspects of the project management to ensure their performance enhances the overall project outcome and meets the client's expectations. Monitoring the subconsultant's progress and quality of performance are the most important components of this process.

Budget Control

Budget Control will be based on a detailed **work breakdown structure** capturing all project tasks and activities that will produce the required deliverables. These tasks will be reflected on the project schedule with anticipated completion dates and assigned budgets. Expenditures will be planned to create a **budget plan**. **Actual expenditures** will be tracked monthly and compared with the plan. In addition, **earned value** will be calculated based on the actual work completed in each period. Budget plan, earned value and the actual expenditures will be compared periodically to monitor the work progress and budget status. Any deviation from the budget plan and schedule will be addressed immediately, and corrective actions will be implemented to assure that original contract requirements are maintained. Our approach to scope changes is to **inform NJ TRANSIT of any unanticipated work before it occurs**, and then follow-up and work together for a resolution.

Progress Monitoring

Monitoring of the work progress is essential to keep the project on schedule and within the budget. Without proper monitoring, problems can go undetected like leaking of underground pipe. The monitoring will be done by regular updating of the **project schedule** and using metrics to evaluate the work progress such as **planned vs. actual % complete** and **labor utilization** reports. Progress will be reported to NJ TRANSIT in monthly Progress Reports, which will include progress schedule and curves/histograms. The reports will also outline problems/issues that need resolution and include a list of "**action items**", identifying the responsible party and the timeframe for response. Project Progress Meetings, scheduled on monthly or as needed basis, will provide additional means of monitoring the work progress. In addition to reviewing the project status, the meetings will focus on **outstanding issues/decisions**.

Communications

Maintaining good communication with the client, third parties and internally, is one of the most important aspects of project management strategy. Frequent communication with the key project participants and stakeholders will allow us to identify potential issues, make everyone aware of them and facilitate necessary decisions to keep the project on schedule. For instance, if during the course of the project we discover an unanticipated change in the design is required, it is imperative to bring this issue to everyone's attention immediately, before the impacted activities advance too far. **Our approach is to be proactive**. Our key management and technical staff have the knowledge and experience to recognize the challenges posed by the design decisions and communicate them to NJ TRANSIT for consideration.

Risk Register

PROJECT: Raritan River Bridge
DATE: July 16, 2015
REVISION: Draft

Risk Statement	Initial Risk Owner	Risk Level	Risk Impact: Sched	Risk Impact: Cost	Risk Response Planning: Response Strategy	Risk Response Planning: Risk Response Action Plan	Final Risk Owner
PROJECT MANAGEMENT RISKS							
Design Changes	Design Team/ NJT	3 Moderate		x	Mitigate	Accurate surveys; clarifying requirements; agency coordination; peer and constructability reviews; design meetings; NJ TRANSIT reviews	Design Team
Missing Scope	Design Team	1 Very Low		x	Avoid	Clarify requirements; interdisciplinary coordination; peer and constructability reviews	Design Team
Construction Cost Higher Than Available Budget	Design Team/ NJT	4 High	x	x	Mitigate	Design to budget; technical & constructability expertise; innovation/creativity; value engineering; "tried & true" construction	Design Team
Unreasonable Schedule Expectations	Design Team/ NJT	3 Moderate	x		Mitigate	Construction staging expertise	Design Team
Availability of Materials & Equipment	Design Team / NJT	2 Low	x	x	Mitigate	Specifications that are not too restrictive; design that allows variety of means and methods	Design Team
PERMITS & APPROVALS							
Environmental/Ecological Restrictions	Design Team / NJT	2 Low	x		Accept	Good understanding of regulatory requirements; experience in permitting; experience in constr. staging	Design Team
Coast Guard Restrictions	Design Team/ NJT	2 Low	x	x	Mitigate	Construction staging to minimize impact on navigation; experience in USCG coordination; communicate often with the USCG	Design Team
EXISTING UTILITIES							
Unanticipated Utility Conflicts	Design Team / NJT	2 Low	x	x	Avoid	Good survey; utility coordination; peer & constructability reviews	Design Team
COMMUNITY RELATIONS							
External Stakeholder Demands Changes Late in Project	NEPA Team / NJT	1 Very Low	x	x	Accept	Comprehensive public outreach and agency coordination	NEPA Team
MOVABLE SPAN							
Unsatisfactory Operational Tests	Contractor / NJT	2 Low	x		Avoid	Comprehensive specifications; factory testing; contractor's quality assurance; redundancy	Contractor
FOUNDATIONS							
Difficulty with Pier/Pile Installation	Contractor / NJT	4 High	x		Mitigate	Geotech design expertise; first-hand knowledge of site geology and constructability issues	Contractor
Impact on Existing Structure	Contractor / NJT	3 Moderate	x		Mitigate	Structure monitoring and efficient emergency response plan; proactive repair design	Contractor
RAIL OPERATIONS							
Unplanned Service Shutdown Due to Staging Issues	NJT	2 Low	x	x	Mitigate	Constructability expertise; proven staging plans; comprehensive bid documents	NJT
CONSTRUCTION							
Seasonal Restrictions on Construction	Contractor / NJT	3 Moderate	x		Mitigate	Foundation solutions to overcome restrictions; construction staging expertise	Contractor
Difficult Access or Limited Work Area	Contractor	2 Low	x		Avoid	Developing construction staging methods best suited for the site conditions; ROW access	Contractor
Environmental Impacts (Vibrations, Noise)	Contractor	2 Low	x		Mitigate	Good understanding of regulatory requirements; vibrations/noise monitoring programs	Contractor

6.5 Technical Approach

In preparation of this proposal our Team has done extensive studies of various design components and developed many solutions based on our extensive movable bridge and construction staging expertise. Key issues that will be driving the design process in order to meet the demanding project schedule, including **creativity/innovations in foundation and movable span design, approach span options** and **construction staging** are presented below.

6.5.1 FOUNDATION DESIGN & INNOVATIONS

The subsurface profile consists of fill, underlain by layers of compressible cohesive deposits and glacial till on top of very hard diabase bedrock with a steep sloping profile. These challenging conditions can be best addressed by using large and medium-sized drilled shafts or steel pipe piles to support the new piers. Considering the environmental restrictions and the proximity of the existing bridge, which will be maintained in operation during construction, **drilled shafts** have clear advantages, particularly for the lift span piers, including: **1) less noise and vibrations during installation,** which reduces environment impacts and risk to RR operations; **2) work within the drilled shaft casing can be done during fish moratoriums**, which allows more flexibility in construction staging. In addition, the use of drilled shafts offers the opportunity for an **INNOVATIVE FOUNDATION APPROACH**, including:

- **DRILLED SHAFTS WITH POST-GROUTED TIPS** – Typically, the length of the rock socket is determined by relying on side resistance only, without considering end bearing, to account for loose sediment at the tip. This often results in very long rock sockets, increasing the construction cost and duration. H&H has addressed this issue by using drilled shafts with post-grouted tips that engage both side and tip resistance of bedrock.
- **USING DILLED SHAFTS WITH HIGH PERFORMANCE CONCRETE** – allows to achieve greater capacity with high density reinforcement, thus reducing the required shaft diameter. This approach was successfully used on *NJTA Mullica River Bridge*.
- **OPEN END STEEL PIPE PILES** (7' to 4' diameter) – driven to glacial till or bedrock with controlled energy to minimize vibrations while continuously monitoring the existing structure. H&H successfully used this technique on NJDOT *Route 52 Causeway* and NJTA *Great Egg Harbor Bridge* where the new piles were installed 11 ft. from the existing bridge.
- **SINGLE SHAFT PIERS** – Our initial analysis indicate that it may be feasible to support approach spans on single, large diameter drilled shafts, which would expedite the construction. However, single shafts are non-redundant, which poses separate challenges that would have to be addressed.

6.5.2 MOVABLE SPAN ALTERNATIVES & INNOVATIONS

The movable span replacement alternatives include **vertical lift**, **bascule** and **swing** spans. A bascule option would require two, opposing double-leaf spans with a center pier, since a single 300 ft. span is not practical for achieving the project goals. Therefore, neither of the swing nor bascule options provide significant navigational improvements. Additional disadvantages include construction impact on navigation, since the new center pier would have to be built in one of the existing channels. Although all feasible replacement alternatives will be evaluated during the NEPA process, it is clear that the vertical lift span will likely be the preferred alternative. The design will focus on creative/innovative approach to expedite the construction, reduce maintenance, and increase flood resilience and durability. Some **INNOVATIVE SOLUTIONS** that may be considered are outlined below.

- **FENDER SYSTEM** – One option is to design the lift span piers to resist impact from recreational vessels and **eliminate fenders along the sides**, to maximize the width of navigational channel. Protection from larger impacts would be provided by cellular structures at each end of the pier. Another option is to **eliminate all fenders** and design the piers for full vessel impacts. This would not only generate savings, but also eliminate the need to remobilize foundation equipment for the south fenders after the existing structure is demolished. H&H used this approach on *Sarah Long Vertical Lift Bridge* in Maine, currently in construction.
- **MACHINERY** – **Pre-testing** the machinery and electrical system for the span drive in the fabrication shop under full load, to confirm capacity, alignment and proper control wiring, will save time in the field and remove this task from the critical path. Other potential machinery innovations include installing **span lock machinery at the lift span top chord**, which is well above the 100-year flood elevation. In addition, H&H designs movable rail bridges to have an imposed load at the seats as is now outlined in AREMA Article 6.5.35.3 for bascule spans. Given our leadership in Committee 15, we expect this requirement will soon be applied to vertical lift bridges under Article 6.5.36.2 providing stable secure rail joints under live load, regardless of balance condition or vibratory effects.

- **POWER/COMMUNICATIONS** – On the movable span, the communications and power are typically maintained with the use of a submarine cable. We will investigate utilizing the auxiliary counterweight system to facilitate power and communication conduit between towers, thus **eliminating the submarine cables**. This would generate cost savings, facilitate maintenance (buried subcables can get damaged during dredging and cannot be visually inspected) and reduce environmental impacts.
- **MATERIALS/FINISHES** – We will evaluate the feasibility of using **High Performance Steel** (70 and 100 ksi) to achieve longer span without increasing self-weight, thus allowing more efficient lift span design. We will weigh the benefits of HPS against the drawbacks of using less available and more costly material, which could limit the number of fabricators and possibly impact the schedule. We will also consider galvanizing or **metalizing** to improve durability and reduce maintenance. We used metalized steel in the design the *Portal*, *CSX New River*, *Flagler Memorial* and *Route 7 Passaic River Vertical Lift* Bridges.

6.5.3 APPROACH SPAN ALTERNATIVES

This bridge has 2,800 LF of approach structure. Therefore, construction of the approach spans will be on a critical path. Tight schedule and environmental restrictions add another level of difficulty to construction staging. The main design focus will be on developing engineering solutions to expedite construction, such as reducing the number of piers or using a modular structure. We have done initial study of different superstructure types versus span length and determined the most feasible options, which include:

- **Steel Multi-Girders** (90'–100')
- **Steel Through Girders** (100'–135')
- **Through Truss** (200' or longer span)

CRITERIA	APPROACH SPAN ALTERNATIVES		
	STEEL MULTI-GIRDER 90' – 100'	THROUGH GIRDER 135'	THROUGH TRUSS 200'
NO. OF PIERS	Same as existing	25% less piers	50% less piers
COST (INCLUDING FDNS)	Lowest cost	Less than truss but more than multi-girder	Highest cost
MAINTENANCE	Redundant, easy to repair/replace	Non-redundant; major repairs difficult	Non-redundant; difficult repairs; surface protection
CONSTRUCTABILITY	Light, easily installed	Too heavy to pre-assemble	Can be pre-assembled
FLOOD RESILIENCY (100-YEAR FLOOD)	Bottom of steel 1 - 2 feet below flood elevation	Bottom of steel above flood elevation	Bottom of steel above flood elevation
SHPO	Same as existing	Similar to existing	Different visual effect

All of these options have pros and cons. For instance, the multi-girder solution has the lowest cost, but may not offer the optimum pier spacing to minimize potential foundation risks. The truss option has 50% less piers, which expedites foundation work (a critical path item), but it requires longer fabrication time and increases future maintenance. Balancing span lengths, pier placement, permitting requirements, maintenance issues and other considerations will allow us to develop the best solutions for a resilient structure, while expediting the construction and assuring the performance desired for the future. Some of the criteria for comparison have been summarized in the table above. For bridge deck type, ballasted and unballasted deck options will be investigated. The steel pan ballasted deck appears to be the likely option that will meet the project needs. Each bridge type alternative will be qualified and quantified to provide adequate basis for selecting the solution that best meets all project objectives.

6.5.4 CONSTRUCTABILITY & CONSTRUCTION STAGING

As stated earlier, one of the project goals is to **minimize the impact** of bridge replacement on the adjacent properties and environment. This is of paramount importance in order to avoid a lengthy environmental approval process, which could end with EIS and delay the project delivery. We recognize the project site imposes significant **constraints on construction staging**. The alignment on the east approach (Perth Amboy) is surrounded on the south by Green Acres **parkland**, including the existing Sadowski Waterfront Park and the future Second Street Park, which will have a boat ramp next to the bridge. The **steel plant** on the north is located on an **archeological** site, with RR sidings for deliveries connecting to the main alignment. The proximity of these properties to the existing alignment makes it virtually impossible to locate a staging/laydown on the east approach. On the west approach (South Amboy), the north side has **wetlands** and therefore only the south side offers potential staging opportunities.

These constraints impose serious **limitations on the feasible alignment options and construction methodology**. Considering the aggressive construction schedule (36 months) and environmental restrictions on construction in the water (**fish windows**), the staging of construction will a major focus area during the design process to ensure that the engineering solutions for the bridge foundations, superstructure and movable span can be implemented within the specified timeframe, without causing additional environmental impacts.

ALIGNMENT ALTERNATIVES	
RR SOUTH ALIGNMENT	RR NORTH ALIGNMENT
PROS: • Better construction access • Staging area on west approach	PROS: • 60 mph speed • No impact on parkland • No conflict with old foundations • Better staging of track tie-ins
CONS: • 50 mph max speed • Parkland property taking • Conflict with old foundations • Difficult staging of track tie-ins	CONS: • Impact on wetlands • No access from land • No adjacent staging areas

ACCELERATED BRIDGE CONSTRUCTION

The three main components of the project, the approach spans, movable span, and the alignment on the approach embankments will be constructed simultaneously to meet the 36 months schedule. The schedule will be driven primarily by the erection of the approach structures, which are more than half a mile long and subject to environmental restrictions (fish windows). Therefore, our Team will study various options for accelerating bridge construction, including the following:

- **PRECAST CONCRETE PIER CAPS** – Use of precast concrete components, which are fabricated off-site, allows bridges to be constructed more rapidly and reduces environmental impacts. Recently used by H&H on *Saugus River Railroad Bridge* near Boston. **Challenges:** The caps are very heavy, require large cranes for installation.
- **PRECAST CONCRETE BOX FORMS FOR PIER CONSTRUCTION** – H&H is using this approach on *Sarah Long Lift Bridge*. The forms can be placed with standard size cranes to facilitate concrete placements, without cofferdams, thus significantly expediting the foundation work and generating savings. **Challenges:** Pour closures of the box/shaft interface can be problematic if the contractor does not utilize proven details. H&H used vetted details on several past projects.
- **PREASSEMBLED STEEL SUPERSTRUCTURE COMPONENTS** – Used by H&H on many movable bridge replacement projects. The movable span is assembled off site and floated in. The erection takes only a couple of days. This technique can also be used for the approach spans, which would be preassembled off site and floated in on barges. **Challenges:** Shallow water on approaches poses limitations on this method. Use of barges is not feasible where the water depth is less than five ft.
- **LAUNCHING OF MODULAR OR PREASSEMBLED STRUCTURE** – H&H is currently using this approach on *MNR Fulton Ave Bridge* in Mt. Vernon, NY, which involves launching a 160-ft.-long truss over four-track New Haven line, the busiest commuter rail route in the country. **Challenges:** Tight ROW and environmental constraints on the approaches make it difficult to find an adequate launching area, especially for the north alignment.

CONSTRUCTION METHODS		
CONVENTIONAL (CRANES)	**PRE-ASSEMBLED (FLOAT IN)**	**LAUNCHING**
PROS & CONS • Doesn't need staging areas on approaches • Very efficient for light, modular structures • Can be used in shallow water (with trestles) • Time consuming for complex structures	PROS & CONS • Pre-assembled off site, no need for staging area • No heavy equipment • Rapid erection (slide-in/roll-in) • Cannot be used in shallow water	PROS & CONS • Pre-assembled segments off-site • No heavy equipment • Rapid erection • Requires launching area on approach
APPLICATION • Approach spans • Most suitable for **deck girder** alternative	APPPLICATION • Movable span; approach spans in deep water • Most suitable for **through girder** alternative	APPLICATION • Approach spans • Most suitable for **truss** alternative

EXISTING STRUCTURE MONITORING & MITIGATION

We recognize that heavy construction activities in close proximity to the existing railroad structure pose a significant **risk to operations**. Installing new foundations can cause soil disturbance leading to undesirable movements of the existing structure. Therefore, it is imperative to implement a **monitoring system** and develop a **response plan** that can be **rapidly implemented** if the registered movements are outside of the safe range. H&H has extensive experience in bridge structure monitoring and mitigation. Recent railroad bridge examples include reconstruction of the *Saugus River Drawbridge* in Boston for MBTA and replacement of the *9th Street Lift Bridge* in New York, which was constructed directly under a NYCT bridge over the Gowanus Canal. H&H also monitored NJ TRANSIT's *Shark River Drawbridge* during construction of the Route 35 Bridge.

The monitoring involves placing accelerometers, inclinometers and position indicators at the top of each pier to measure vibrations, tilt and rotation. The system deploys a notification to the contractor and designated design team members, if the acceptable movement envelope is exceeded. Upon receiving such notification, an inspection crew is dispatched expeditiously to evaluate the condition and take additional field measurements. If the problem cannot be mitigated by rail adjustment, the contractor will install a simple **jacking system**, consisting of a jacking beam and hydraulic jacks to make the necessary adjustments. The jacking beam can be installed using small construction equipment, by either bolting or welding to the girder bearing stiffeners. The whole operation can be done quickly without significant impact on service. The monitoring requirements and **mitigation measures** will be specified in the contract documents to ensure that the contractor is prepared to react quickly.

MOVABLE SPAN CONSTRUCTION

To minimize the impact on navigation and operations of the existing bridge, which will be in service during construction, the most likely method of installing the new lift span will be to **assemble the truss off site and float it in**. The surrounding area has numerous potential staging sites upstream, which gives another advantage to the north alignment option. Using this approach, the contractor has several options to assemble the truss:

- Assemble directly **on the barges** with a floating crane.
- Assemble **near the shoreline** on temporary piles and slide the barges under the truss.
- Assemble **on the shore** and launch the truss onto the barges on temporary pile supported "runways or finger piers".

This last method seems most efficient, especially, if the staging area could be located on the property of Raritan Steel, immediately north of the bridge, which has over 400 feet of shoreline. After the lift span is assembled, the counterweight ropes will be installed and aligned so there are no twists in the wire, then attached to a temporary spacer at the side to hold them in place, and out of harm's way during the float–in. Below is a **step-by-step construction staging** and the anticipated durations of major operations.

- **Float in lift span truss** on two barges (to accommodate the existing center pier) at high tide ..... 6 hours
- **Lower the lift span onto the bridge seats** using a jacking system (without waiting for the tide change) ..... 6 hours
- **Connect sockets to the take-ups** via the socket pin connections – two crews ..... 8 hours
- **Remove the counterweight hanger pins**, utilizing the jacking frame. This will transfer the load of span ..... 8 hours and counterweight to the ropes, and load the counterweight sheaves and trunnion bearings
- **Reave the operating ropes from the operating drums** through series of support and deflector ..... 8 hours sheaves and attach at the base and the top of the towers
- **Raise span** via generator or temporary electric, air or hydraulic power drive system ..... 10 minutes

The major staging operations, which will require a full closure of the navigational traffic, can be completed in **less than 36 hours,** since some of the tasks can be done concurrently. There will be **no impact to rail operations**. With the anticipated span drive system, the structure can be rapidly lifted and locked in a raised position on the lift towers to allow final testing of the machinery without impeding the existing bridge operations.

APPROACH SPAN CONSTRUCTION

Our initial assessment of launching or floating in preassembled approach spans, indicates that these methods would be difficult to implement, considering the site constraints. A **conventional approach**, using cranes, seems to be better suited for this project. This method does not require any staging/laydown area on the approaches and can be very efficient for light superstructures, such as the multi-girder system.

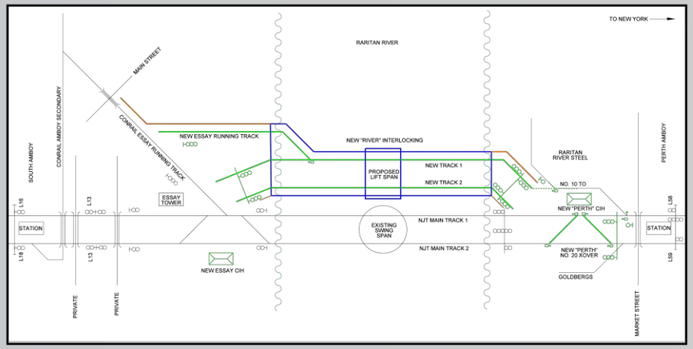
The riverbed profile has very **shallow waterways** on the approaches, with depths as shallow as 5 ft. towards the east and west shorelines. To accommodate the necessary construction equipment, a **temporary trestle** would be required at both approaches where water levels are too shallow for barge construction. **Floating barges** would be utilized elsewhere, as permitted by the water depth. Temporary trestles are typically limited to cranes in the **200TN to 250TN** range to remain economical. Crane of this size would be able to **set pairs of girders during each pick**. Crane reach would not be critical, as the trestle would have "fingers" required for the construction of foundations. Trestle construction would commence from the water due to ROW constraints. Materials would have to be delivered in large quantities, to **minimize existing bridge openings**, and stored on barges or nearby land areas, as feasible. To expedite construction in the deep water, the contractor could **preassemble the entire span on barges**, float in and erect using **350TN** rig (approximately 118k pick).

Components	Resources	Design Tasks / Work Components	Construction Staging / Major Operations	Construction Duration
Approach Work 	• GF Design Lead • Geotechnical Team B • Civil Team • Track Team • Rail Systems Team • Construction Staging Team	• Ground improvement • Relocation of utilities/facilities • Site grading, drainage • Embankments, retaining walls • Track/alignment • Rail systems • Staging of track tie-in	• Mobilization • Ground improvement, grading • Construct retaining wall/embankments • Phase track tie-in • Tie in signalization and power	• **24 Months** Approach work (concurrent with bridge construction) • **5 Months** Staged construction of track, signalization and power
Bridge Approach 	• H&H Design Lead • Geotechnical Team A • Bridge Structure Team A • Track Team • Rail Systems Team • Construction Staging Team	• Geotech report/ recommendations • Approach span foundations • Abutments and piers • Approach span structure • Track and drainage system • Power, rail systems • Construction staging	• Install east and west trestle • Shaft testing on east/west approaches • Install east and west shafts • Install east and west piers & abuts • Erect east/west steel superstructure • Erect east/west bridge deck or ballast pan • Install east/west high tension/catenary poles • Remove east and west trestles	• **24 Months** • No vibratory equipment during fish windows; working within drilled shafts is acceptable
Lift Span 	• H&H Design Lead • Bridge Structure Team B • Mechanical/Electrical Team • Track Team • Rail Systems Team • Construction Staging Team	• Movable span structure • Mechanical/elect systems • Architectural support • Control house/signals shed • Track and drainage system • Rail systems • Construction staging	• Procure lift span truss steel • Set up truss assembly area • Assemble truss • Install span operating machinery • Launch truss to barge and float in • Set truss on bridge piers • Lift span testing	• **24 Months** (concurrent with approach span work) • No environmental restrictions
Lift Tower 	• H&H Design Lead • Bridge Structure Team B • Geotechnical Team A • Mechanical/Electrical Team	• Lift tower foundations • Lift tower piers • Fender system • Lift tower structure • Mechanical/elect systems • Architectural support	• Shaft testing for lift tower piers • Install lift tower shafts and piers • Erect lift bridge towers • Install counterweight and sheave machinery	• **15 Months** (concurrent with approach span work) • Shaft installation within fish windows

NOTE: *Demolition = 7 Months*
Total duration of Construction = 36 Months

TRACK CONSTRUCTION STAGING ON APPROACHES

Our design team has carefully evaluated the construction staging issues from a rail operations perspective and developed a conceptual staging plan for the north bridge alternative. The stages afford minimal impact to both NJ TRANSIT and Conrail operations through weekend cutovers of freight and mainline tracks including needed OCS and signal work. During the one-week duration of Stage 4, NJ TRANSIT would have single-track operations on Track 2 between ESSAY and RARE interlockings. An operational analysis will be completed to determine if a temporary crossover would be required to mitigate adverse operational impacts.



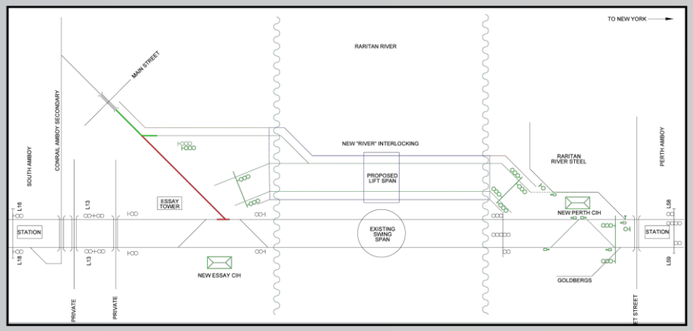
STAGE 1 *Duration: 24 Months*

SEQUENCE OF WORK:

1. Construct new bridge complete offline
2. Construct new embankment and retaining walls to clearance points
3. Construct new tracks to clearance points
4. Construct new Perth interlocking on east shore
5. Connect new main track 1 to existing Raritan steel sidetrack with a temporary turnout on east end

NOTES:

1. At end of stage 1, all existing tracks are in service
2. New lift span in-service and interlocked with existing swing span.
3. Both existing Essay and New Perth Interlockings are in service.



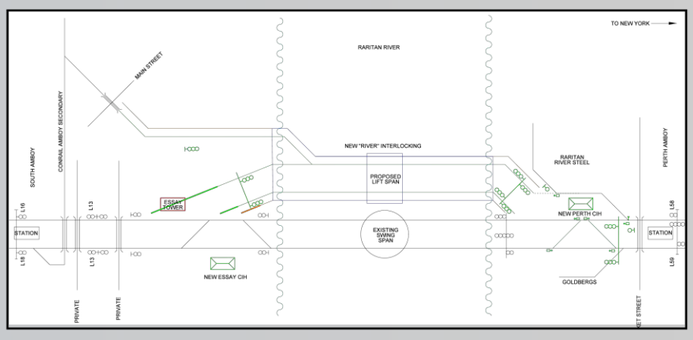
STAGE 2 *Duration: 2 Weeks*

SEQUENCE OF WORK:

1. Cut and throw Conrail to new alignment
2. Remove Conrail turnout in existing Essay
3. Remove old Essay running track

NOTES:

1. At end of stage 2, all existing NJT tracks are in service
2. Conrail in service over Raritan steel siding and new bridge



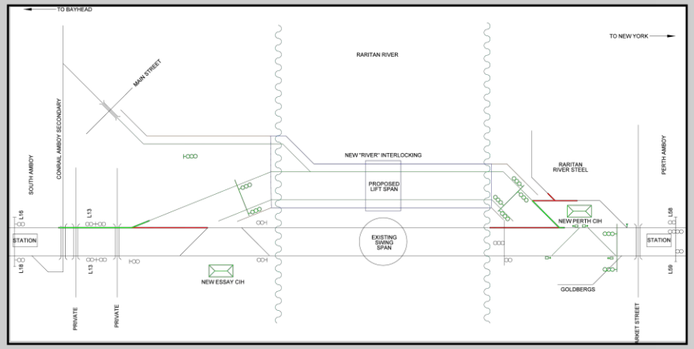
STAGE 3 *Duration: 8 Weeks*

SEQUENCE OF WORK:

1. Demolish Essay tower
2. Extend new main tracks to clearance points on west end
3. Extend retaining wall on west end

NOTES:

1. At end of stage 3, all existing NJT tracks are in service
2. Conrail in service over Raritan steel siding and new bridge.



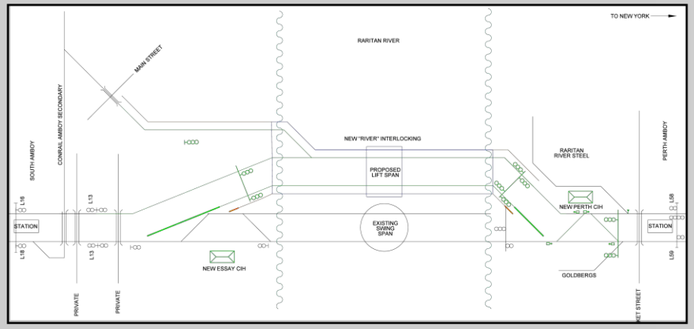
STAGE 4 *Duration: 1 Week*

SEQUENCE OF WORK:

1. Cut and throw main track 1 to new alignment on west end
2. Cut and throw main track 1 to new alignment on east end
3. Remove temporary track connection to Raritan River Steel and restore sidetrack
4. Remove old track 1 on both sides of bridge

NOTES:

1. At end of stage 4, no. 2 Track is in service over existing bridge.
2. No. 1 Track in service over new bridge.
3. During construction, single main track 2 in service between new Essay and Rare
4. Conrail in service over new bridge.



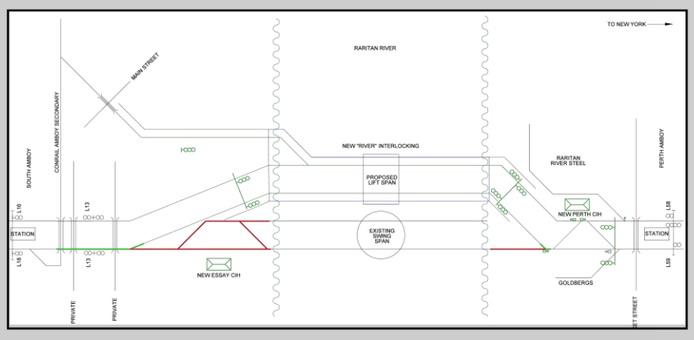
STAGE 5 *Duration: 8 Weeks*

SEQUENCE OF WORK:

1. Extend new main track 2 to clearance point on west end
2. Extend new main track 2 to clearance point on east end
3. Extend retaining wall on both ends as required

NOTES:

1. At end of stage 5, No. 2 Track is in service over existing bridge.
2. No. 1 Track in service over new bridge.
3. Conrail in service over new bridge.



STAGE 6 *Duration: 1 Week*

SEQUENCE OF WORK:

1. Cut and throw main track 2 to new alignment on west end
2. Cut and throw main track 2 to new alignment on east end
3. Remove existing essay crossovers
4. Remove old track 2 on both sides of bridge

NOTES:

1. At end of stage 6, all tracks are in service over new bridge.
2. During construction, single main track 1 is in service between new Perth and Rare

STAGE 7 *Duration: 7 Months*

SEQUENCE OF WORK:

1. Demolish old swing span and center pier
2. Demolish old approach spans

LEGEND

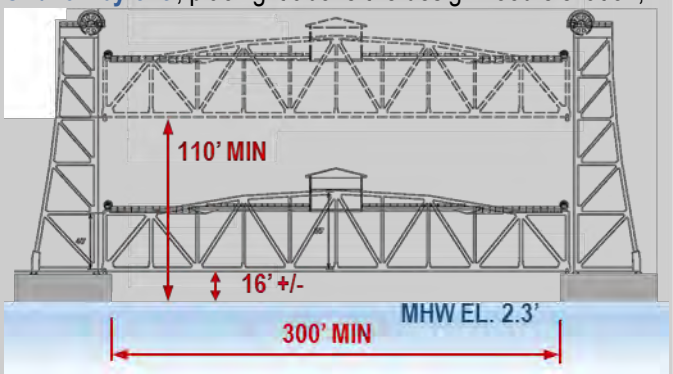
- EXISTING
- NEW TRACK THIS STAGE
- TEMP TRACK THIS STAGE
- NEW STRUCTURE THIS STAGE
- NEW RET. WALL THIS STAGE
- REMOVE THIS STAGE
- NEW TRACK PREVIOUS STAGE
- TEMP TRACK PREVIOUS STAGE
- NEW STRUCTURE PREVIOUS STAGE
- NEW RET. WALL PREVIOUS STAGE

CONSTRUCTABILITY/STAGING HIGHLIGHTS

- The **schedule is driven by the approach span construction**. Our Team will use accelerated construction methods, such as float-in of preassembled components and precast box forms for pier construction to eliminate cofferdams and facilitate concrete pours. H&H has successfully used this approach on projects, such as the *Willis Avenue Bridge* in New York and *Tomlinson Vertical Lift Bridge* in Connecticut. *Anticipated duration (including foundations).....24 months*
- To minimize ROW impacts, **staging/laydown areas will be off-site** or the materials will be stored on barges. We have identified several potential staging areas upstream in close proximity to the project site. Materials will be delivered in large quantities to minimize bridge openings.
- **Difficult subsurface conditions** (very hard rock with a steep sloping profile) can be best addressed by utilizing large diameter drilled shafts with grouted tips to reduce the rock socket lengths. Using HP concrete will minimize the shaft diameter. Other options include open-end steel pipe piles driven with controlled energy to minimize vibrations. H&H recently used this technique on NJTA's *Great Egg Harbor Bridge*, where the piles were driven 11 ft. from the existing structure.
- **Construction of foundations are on the critical path** due to environmental restrictions. Using drilled shafts would alleviate this challenge, since work can be done within the drilled shaft casing during fish windows (the casings serve as cofferdams).
- **Monitoring of the existing bridge** during foundation construction is of critical importance to assure safety of railroad operations. H&H has extensive experience in railroad structure monitoring and **rapid response planning**. Recent examples include NJ TRANSIT's *Shark River Drawbridge*, NYCT's *"F" Line over Gowanus Canal* and the MBTA's *Saugus River Bridge*.
- **Float-in delivery of the movable span assembled off site** minimizes impact on navigation traffic and eliminates impacts on rail operations. H&H successfully used this approach on many railroad movable bridge replacement projects, including the *Tomlinson Bridge*. *Anticipated duration.....36 hours*
- H&H's unmatched movable bridge expertise allows us to implement **design innovations and improved detailing** that deliver operational reliability of and longevity to the movable span. Many of H&H's vertical lift bridges designed 100 years ago are still in operation. We can also **eliminate submarine cables** providing ease of maintenance and reducing environmental impacts.
- **Staging of the track construction** is critical to maintaining the construction schedule and minimizing impact on NJ TRANSIT's operations. GF's extensive track and systems expertise allows us to facilitate this work with a focus on railroad safety. *Anticipated duration of staged track construction.....5 months*
- **Track and rail systems tie-ins** can be staged with a weekend cutover of the freight track and two periods of single-track operations for a week between the new "PERTH" and existing RARE interlockings for mainline track cutovers including needed OCS and signal work. *Anticipated track closures.....1 weekend & 2 separate weeks of single tracking*
- **Efficient coordination with Conrail** is very important to facilitate the track construction staging. Some of our Key Project Staff, including Deputy Project Manager, **Rich Cross** and Track Discipline Lead, **John Legath**, are former Conrail employees with extensive understanding of the railroad's requirements and procedures, as well as close relationship with the Conrail's staff.

NAVIGATIONAL IMPROVEMENTS & FLOOD RESILIENCE

Our Team has developed a new alignment that enables us to **raise the T/Rail by 6 ft.**, placing it above the design flood elevation, **without impact on the existing bridges** on the south approach. This protects the railroad tracks and structures from flood damage and **doubles the vertical clearance in a closed position** (currently 8 ft.), thus reducing the number of bridge openings. We have also developed a construction staging approach that allows erection of the lift span piers with **minimal impact on navigation** and widens the existing channel to more than 300 ft. The vertical clearance is governed by the conditions upstream, but it is likely to be at least 110 ft. (matching the upstream Route 35 Victory Bridge).



Request For Proposal (RFP) No. 15-044
Design, Engineering and Construction Assistance Services
for the Replacement of the

RARITAN RIVER DRAWBRIDGE

SECTION 7

Team Organization/ Resource Allocation

SECTION 7: TEAM ORGANIZATION & RESOURCE ALLOCATION

Developing a proper organization chart is a critical step in the process of setting up the project. The organization chart communicates the Team's understanding of the contract requirements and the processes that have to take place to achieve the project goals. It defines the organizational structure and lays the foundations for efficient work plan necessary to successfully deliver the project. Our **Team Organization Chart** below defines the responsibilities of each firm on the team. The **Project Organization & Staffing Chart** illustrates our Team's clear lines of authority and communication between the Project Management Team, Task Managers and all Key Disciplines required to deliver this project, including identifying each Discipline Leader.

PROJECT PRINCIPALS, **Paul Skelton**, PE (H&H) and **David Boaté**, PE (GF), will provide a high level oversight and make sure that **adequate resources** have been allocated to the project, the **work proceeds as planned**, and there are **no quality issues** or **problems with approvals**, so the project can be delivered on time to a full client satisfaction.

PROJECT MANAGER, **Visha Szumanski**, PE (H&H), will be responsible for the overall contract performance and will be the primary point of contact with the client. Ms. Szumanski, a veteran manager of large multi-disciplinary contracts, will be responsible for **managing all contract activities**, tracking and reporting the **work progress** and ensuring that the project team meets the professional **quality standards**. She will provide personal **leadership to the project team** and will assure **schedule and budget compliance** and successful delivery of the project. She will **report on the project status to the Project Principals** on a monthly, or as needed basis, including progress of work, schedule, budget, quality assurance and any major technical or approval issues.

Ms. Szumanski will be assisted by two **DEPUTY PROJECT MANAGERS**, **Richard Cross**, PE, (**GF**) and **David Tuckman**, PE, (**H&H**), who will serve as the **Project Engineers**, responsible for **overseeing the technical work** to ensure it satisfies the design requirements and **coordination of their respective technical disciplines**. Each will have a specific area of focus. **Mr. Cross**, who is the Track Director at GF, will be focusing on **track and systems work**, civil works on the approaches, and coordinating permitting/approvals discipline. **Mr. Tuckman,** who is one of the leading bridge design managers at H&H, will be focusing on the design of **structures and foundations, including alternative analysis** in support of the NEPA process.

> *While the Project Manager will be responsible for all aspects of a project, not just the engineering, to make sure that the work progresses as planned and the design meets the project goals, the Project Engineers will focus on getting the design activities done by managing the technical content. The PM and DPM's will act as checks and balances in their respective areas of responsibilities to facilitate the overall project delivery effort.*

Our management team also includes a **PROJECT CONTROLS GROUP** focused on **managing the project records, schedule, and risk management**. **RISK MANAGER**, **Charlie Geer**, PE (H&H) will be responsible for **identifying, analyzing and monitoring project risks**. **Kurt Buettler** (EC) will supervise documents control and **Jim Douglass** (GF) will oversee the project scheduling.

QUALITY ASSURANCE MANAGERS, Steven Harlacker, PE, SE (H&H) and **Bruce Smith**, PE (GF), will be monitoring the quality processes of all disciplines, including the subconsultants, in accordance with the Project Quality Management Plan and **reporting any quality issues directly to the Project Principals.**

TASK MANAGERS – Since this project will involve a variety of design disciplines and require large number of staff working in concert to produce the design deliverables, we divided the design work into several major components, or Tasks, and assigned a Task Managers to guide the work of the individual teams and coordinate with other groups, as follows: **Movable Span; Approach Spans; Foundation/Geotechnical; Rail Systems; and Civil Engineering.**

Our **DISCIPLINE STAFF** covers full spectrum of professional disciplines required to deliver this project, including structural, civil, geotechnical, mechanical, electrical, systems engineers and architects, organized by the major tasks. Each of these key disciplines will be led by staff who have particular expertise in their respective areas. Some of them, will interface with more than one major task. For instance, **Alternative Analysis** and **Construction Staging** will be involved in the design of the Movable Span, Approach Spans and Geotechnical/Foundation. In order to streamline this work and ensure that it is done in a consistent and coordinated manner, we designated separate **SUBTASK MANAGERS** for these assignments.

TEAM ORGANIZATION CHART BY FIRM

- ✓ Project Management
- ✓ Movable Span
- ✓ Structural Lead
- ✓ Geotechnical Lead
- ✓ Mechanical/Electrical
- ✓ Architecture

Hardesty & Hanover — *Joint Venture* — Gannett Fleming

- ✓ Project Management
- ✓ Rail Systems
- ✓ Track Design
- ✓ Civil/Utilities
- ✓ Hydraulics & Hydrology
- ✓ Structural Support

HALEY ALDRICH	Geotechnical Engineering
GRIFFIN ENGINEERING	Constructability & Construction Staging
Naik GROUP (DBE)	Topo/Utility Survey Structural Support
JCMS, Inc. (DBE)	Cost Estimating Scheduling
envision (DBE)	Project Controls Value Engineering
RCI (DBE)	NEPA Coordination
SJH Engineering, P.C. (DBE)	Civil & Structural Engineering Support
Jersey Boring and Drilling (DBE)	Subsurface Exploration
ARCH² (DBE)	Permit Support - Historic Preservation

PROJECT PHASES & DISCIPLINE PARTICIPATION

Having a good understanding of the priorities and major activities involved in each project delivery phase, including the specific requirements of the RFP, is the key to developing an efficient WORK PLAN and allocating adequate resources to the individual project tasks. Equally important is identifying the support the lead disciplines need to complete the work in each phase, to produce the required deliverables, and to achieve the milestones.

CONCEPTUAL DESIGN

- **Surveys** – topographic/utility/ROW; navigation survey; site reconnaissance (all disciplines)
- **Alternative Analysis** – all design disciplines; cost estimators; construction staging team
- **Permit Support & NEPA Coordination** – all design disciplines under Task Manager lead
- **Value Engineering** – value engineering team; all disciplines; cost estimating

PRELIMINARY DESIGN

- **Geotechnical Investigation** – geotechnical/foundation team
- **30% Design Package** – all design disciplines; cost estimators; schedulers; construction staging team
- **Permit Support** – all design disciplines under Task Manager lead

FINAL DESIGN

- **Peer Review** – peer review/constructability team; all design disciplines; cost estimators; schedulers
- **Design Packages** – all design disciplines; cost estimators; schedulers; construction staging team
- **Constructability Reviews** – constructability team; all design disciplines; cost estimators; schedulers
- **Bid Services** – key disciplines (structural, geotechnical, mech/elec, systems, civil); cost estimators; schedulers

CONSTRUCTION PHASE

- **Submittals, RFIs** – key disciplines; cost estimators; schedulers
- **Change Orders** – key disciplines; cost estimators; schedulers

PROJECT STAFFING & ORGANIZATION CHART

NJTRANSIT The Way To Go.

PRINCIPAL-IN-CHARGE
- Paul Skelton, PE (H&H)
- David Boate, PE (GF)

PROJECT MANAGER
- Visha Szumanski, PE (H&H)

QUALITY MANAGEMENT
- Steven Harlacker, PE, SE (H&H)
- Bruce Smith, PE (GF)

PROJECT CONTROLS
Risk Management: Charlie Geer, PE (H&H)
Schedule: James Douglass (GF)
Document Controls: Kurt Buettler (EC)

PEER REVIEW/CONSTRUCTABILITY
- Steven Hom, PE (H&H)
- Joe Griffin, PE (GE)

DEPUTY PM - TRACK & SYSTEMS
- Richard Cross, PE (GF)

DEPUTY PM - BRIDGE & FOUNDATIONS
- David Tuckman, PE (H&H)

PERMIT SUPPORT — Glen Schetelich, PE (H&H)
- HYDRAULICS & HYDROLOGY — Ramesh, Rajagopal, PE (GF); Steven Wittig, CE (GF)
- HISTORIC/OUTREACH — Nancy Zerbe (AR)
- NEPA COORDINATION — Chita Radin (RCI)

CIVIL — Robert Matthews, PE (GF)
- SITE/CIVIL — Steven Zapoticzny, PE (GF)
- UTILITIES — Ron Rotunno, PE (NCG)
- RETAINING WALLS — Agnieszkka Lapinski, PE (GF); S. Jayakumaran, PhD, PE (SJH)
- SURVEY / ROW — Rich Baron, PLS (NCG)

RAIL SYSTEMS — David Howell, PE (GF)
- TRACKWORK — John Legath, PE (GF)
- CATENARY/TRANSMISSION — Terry Shantz, PE (GF); Bryan Shober, PE (GF)
- RAIL OPERATIONS — Greg Nazarow (GF); Ian Martin (GF)
- COMMUNICATIONS — Neil Walter (GF); James Sgro (GF)
- SYSTEMS INTEGRATION — Theodore Bandy, PE (GF); Stephen Barkovich (GF)
- SIGNALS — Richard Lentz (GF); Joseph Bonaduce (GF)

MOVABLE BRIDGE — Peter Roody, PE (H&H)
- STRUCTURAL — Michael Hawkins, PE (H&H)
- MECHANICAL — Stephen Mikucki, PE (H&H)
- ELECTRICAL — Alex Noble, PE (H&H)
- ARCHITECTURE — Drew Delle Donne, RA (H&H)

APPROACH SPANS — David Gerber, PE (H&H)
- STRUCTURAL — Richard Kemper, PE (GF)
- ALTERNATIVES ANALYSIS — Paul Connolly, PE (H&H)
- CONSTRUCTION STAGING — Joe Griffin, PE (GE)

FOUNDATIONS/GEOTECH — Raymond Mankbadi, PE (H&H)
- GEOTECHNICAL — Ed Zamiskie, PE (H&H)
- FOUNDATIONS — Jerry DiMaggio, PE
- SEISMIC — David Marcic, PE, SE (H&H); Mishac Yegian, PhD, PE (H&H)

LEGEND

H&H ..... Hardesty & Hanover	DBE FIRMS
GF ..... Gannett Fleming	NCG ..... Naik Consulting Group
H&A ..... Haley & Aldrich	EC ..... Envision Consultants, Ltd.
GE ..... Griffin Engineering	AR ..... Arch²
	JCMS ... Jois Construction Management
..... KEY STAFF	RCI ..... Radin Consulting
	JBD ..... Jersey Boring & Drilling

PROJECT WIDE SUPPORT SERVICES

COST ESTIMATING — Kevin Meehan (JCMS)	VALUE ENGINEERING — Tom Hartley, PE, CVS (EC)
CONSTRUCTION SCHEDULING — Sebastian DiBlasi (JCMS)	SAFETY & SECURITY — Alireza Edraki, PEng, PMP (GF); McEwan van der Madele, CPP (GF)
GEOTECH - SITE WORK & LAB — Jersey Boring & Drilling (JBD)	

PROJECT DELIVERY PROCESS

Mobilization/ Planning
- Clarify Program Requirements
- Formulate Budget & Schedule
- Project Management Plan:
  - Quality Management
  - Design Control
  - Document Control
  - Configuration Mgmt
  - Integration/Interface

Conceptual Design
- Data Collection/Survey
- Identify Key Issues & Constraints
- Identify Permits/Approvals
- Navigation Study
- Develop/Evaluate Alternatives
- Feasibility Report
- Value Engineering

Preliminary Design
- Additional Data Collection:
  - Geotech Exploration
  - Supplemental Survey
- Utility Coordination
- Risk Register & Management Plan
- Permit Applications
- 30% Design Submission
  - Plans/ Specs/ Estimate
  - Project Definition Report

Final Design
- Peer Review (50%)
- 60% Submission
- 90% Submission
- Constructability Review
- Permits & Approvals
- 100% Submission
- Bid Documents
- Bid Support Services

Construction Support
- Submittals Review
- Responses to RFIs
- Progress Meetings
- Field Issues
- Change Orders
- Punch List
- Final Inspection
- As-Built Drawings

MATRIX – PERSON-HOURS BY FIRM/TASK

TASK	DESCRIPTION	1 H&H		2 GF		3 H&A		4 GE		5 NAIK		6 ENV		7 ARCH2		8 JCMS		9 RADIN		10 SJH		11 DBE VENDORS*		TOTAL HOURS	% TOTAL
		Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%	Hours	%		
TASK 1	PROJECT MANAGEMENT	5,050	27.3%	5,637	30.5%	136	0.7%	0	0.0%	0	0.0%	6,860	37.1%	0	0.0%	784	4.2%	0	0.0%	0	0.0%	0	0.0%	18,467	10.9%
TASK 2	RISK MANAGEMENT	592	97.4%	16	2.6%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	608	0.4%
TASK 3	SYSTEM SECURITY & EMERGENCY MGMT	0	0.0%	610	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	610	0.4%
PHASE I - CONCEPTUAL & PRELIMINARY DESIGN																									
PHASE IA - CONCEPTUAL DESIGN																									
TASK 4.1	Data Collection & Design Criteria	180	12.7%	1,239	87.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,419	0.8%
TASK 4.2	Survey & Base Mapping	0	0.0%	168	19.2%	0	0.0%	0	0.0%	706	80.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	874	0.5%
TASK 4.3	Right-of-Way Search	0	0.0%	12	2.0%	0	0.0%	0	0.0%	594	98.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	606	0.4%
TASK 4.4	Utility Investigation	0	0.0%	179	17.9%	0	0.0%	0	0.0%	822	82.1%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,001	0.6%
TASK 4.5	Initial Geotechnical Investigation	450	75.0%	12	2.0%	138	23.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	600	0.4%
TASK 4.7	Navigation Study	448	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	448	0.3%
TASK 4.8	Conceptual Design	3,604	44.1%	3,503	42.8%	0	0.0%	20	0.2%	284	3.5%	0	0.0%	0	0.0%	568	6.9%	21	0.3%	176	2.2%	0	0.0%	8,176	4.8%
TASK 4.9	Feasibility Report	584	41.0%	739	51.9%	0	0.0%	0	0.0%	100	7.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,423	0.8%
TASK 4.10	Value Engineering	160	21.8%	241	32.9%	0	0.0%	0	0.0%	0	0.0%	316	43.1%	0	0.0%	16	2.2%	0	0.0%	0	0.0%	0	0.0%	733	0.4%
TASK 4.11	NEPA Consultant Coordination	200	29.9%	12	1.8%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	280	41.8%	0	0.0%	178	26.6%	0	0.0%	0	0.0%	670	0.4%
	TOTAL PHASE IA	5,626	35.3%	6,105	38.3%	138	0.9%	20	0.1%	2,506	15.7%	316	2.0%	280	1.8%	584	3.7%	199	1.25%	176	1.1%	0	0.0%	15,950	9.4%
PHASE IB - PRELIMINARY DESIGN																									
TASK 4.12	Preliminary Design	6,042	38.1%	8,504	53.7%	0	0.0%	0	0.0%	312	2.0%	0	0.0%	0	0.0%	528	3.3%	320	2.0%	136	0.9%	0	0.0%	15,842	8.1%
TASK 4.13	Supplemental Survey	0	0.0%	0	0.0%	0	0.0%	0	0.0%	484	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	484	0.3%
TASK 4.14	ROW & Property Acquisition (PAECE)	0	0.0%	0	0.0%	0	0.0%	0	0.0%	152	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	152	0.1%
TASK 4.15	Utility Relocation	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2,048	100.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	2,048	1.2%
TASK 4.16	Detailed Geotech Investigation	4,601	51.6%	0	0.0%	4,315	48.4%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	8,916	5.3%
TASK 4.18	As Directed - Preliminary Design	600	40.0%	600	40.0%	0	0.0%	0	0.0%	300	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,500	0.9%
	TOTAL PHASE IB	11,243	42.0%	7,099	26.5%	4,315	16.1%	0	0.0%	3,296	12.3%	0	0.0%	0	0.0%	528	2.0%	160	0.6%	136	0.5%	0	0.0%	26,777	15.9%
	TOTAL PHASE I	16,869	39.5%	13,204	30.9%	4,453	10.4%	20	0.0%	5,802	13.6%	316	0.7%	280	0.7%	1,112	2.6%	359	0.8%	312	0.7%	0	0.0%	42,727	25.3%
PHASE II - FINAL DESIGN																									
TASK 5.1	Design Development (60%)	10,390	38.4%	13,425	49.7%	0	0.0%	0	0.0%	1,564	5.8%	0	0.0%	0	0.0%	504	1.9%	304	1.1%	844	3.1%	0	0.0%	27,031	16.0%
TASK 5.2	Final design (90%)	10,336	39.0%	13,150	49.6%	0	0.0%	30	0.1%	1,584	6.0%	0	0.0%	0	0.0%	280	1.1%	304	1.1%	828	3.1%	0	0.0%	26,512	15.7%
TASK 5.3	Final design (100%)	2,335	28.9%	3,747	46.3%	0	0.0%	30	0.4%	1,292	16.0%	0	0.0%	0	0.0%	200	2.5%	104	1.3%	384	4.7%	0	0.0%	8,092	4.8%
TASK 5.4	Peer Review (at 50% Completion)	120	42.0%	46	16.1%	0	0.0%	120	42.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	286	0.2%
TASK 5.5	Interagency Coordination - As Directed	200	40.0%	200	40.0%	0	0.0%	0	0.0%	100	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	500	0.3%
TASK 5.6	As Directed	200	40.0%	200	40.0%	0	0.0%	0	0.0%	100	20.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	500	0.3%
TASK 5.7	Construction Bid Package	1,400	31.5%	2,335	52.5%	0	0.0%	0	0.0%	212	4.8%	0	0.0%	0	0.0%	250	5.6%	40	0.9%	214	4.8%	0	0.0%	4,451	2.6%
	TOTAL PHASE II	24,981	37.1%	33,103	49.1%	0	0.0%	180	0.3%	4,852	7.2%	0	0.0%	0	0.0%	1,234	1.8%	752	1.1%	2,270	3.4%	0	0.0%	67,372	39.9%
PHASE III -CONSTRUCTION SUPPORT SERVICES																									
TASK 6.1	Responses to RFIs	3,272	47.9%	2,080	30.5%	540	7.9%	0	0.0%	580	8.5%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	356	5.2%	0	0.0%	6,828	4.0%
TASK 6.2	Change Order Evaluation	456	34.8%	854	65.2%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,310	0.8%
TASK 6.3	Review of Contractor's Submittals	13,972	50.1%	8,792	31.5%	2,260	8.1%	0	0.0%	1,604	5.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,282	4.6%	0	0.0%	27,910	16.5%
TASK 6.4	Punch List Inspection	144	49.3%	148	50.7%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	292	0.2%
TASK 6.5	Final Inspection	144	50.7%	140	49.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	284	0.2%
TASK 6.6	As-Build Drawings	512	26.7%	1,406	73.3%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,918	1.1%
TASK 6.7	Design Support - As Directed	200	40.0%	200	40.0%		0.0%		0.0%	100	20.0%	0	0.0%		0.0%		0.0%		0.0%		0.0%	0	0.0%	500	0.3%
	TOTAL PHASE III	18,700	47.9%	13,620	34.9%	2,800	7.2%	0	0.0%	2,284	5.9%	0	0.0%	0	0.0%	0	0.0%	0	0.0%	1,638	4.2%	0	0.0%	39,042	23.1%
	PROJECT TOTAL	66,192	39.2%	66,190	39.2%	7,389	4.4%	200	0.1%	12,938	7.7%	7,176	4.3%	280	0.2%	3,130	1.9%	1,111	0.7%	4,220	2.5%	0	0.0%	168,826	100.0%

NON-DBE FIRMS
DBE FIRMS

Note - DBE Vendors include:

1. Jersey Boring - Geotechnical Investigation (7.6% of Fee)
2. Esteban - Reproduction (0.7% of Fee)

NON-DBE FIRMS
DBE FIRMS

MATRIX – PERSON HOURS BY INDIVIDUALS

FIRM	NO.	PERSON NAME	PROJECT TITLE OR DISCIPLINE	TASK 1	TASK 2	TASK 3	PHASE IA - CONCEPTUAL DESIGN										PHASE IB - PRELIMINARY DESIGN															PHASE II - FINAL DESIGN							PHASE III - CONSTRUCTION SUPPORT SERVICES							TOTAL HOURS
							TASK 4.1	TASK 4.2	TASK 4.3	TASK 4.4	TASK 4.5	TASK 4.7	TASK 4.8	TASK 4.9	TASK 4.1	TASK 4.11	TASK 12 - PRELIMINARY DESIGN										TASK 4.13	TASK 4.14	TASK 4.15	TASK 4.16	TASK 4.18	TASK 5.1	TASK 5.2	TASK 5.3	TASK 5.4	TASK 5.5	TASK 5.6	TASK 5.7	TASK 6.1	TASK 6.2	TASK 6.3	TASK 6.4	TASK 6.5	TASK 6.6	TASK 6.7	
																	4.12.A	4.12.B	4.12.C	4.12.D	4.12.E	4.12.F	4.12.G	4.12.H	4.12.I																			
				Project Management	Risk Management	System Security	Data Collection	Survey & Mapping	ROW Research	Utility Investigation	Geotech Investigation	Navigation Study	Conceptual Design	Feasibility Report	Value Engineering	NEPA Coordination	Design Criteria	Bridge Design	Track Design	Civil Design	Buillings & Facilities	TP / Electrical	Signal Systems	Communications	Cost & Schedule	Supplemental Survey	ROW / Property	Utility Relocation	Geotech Investigation	As Directed	Design Develop (60%)	Final Design (90%)	Final Design (100%)	Peer Review	Agency Coordination	As Directed	Bid Package	Responses to RFIs	Change Orders	Submittal Review	Punch List Inspection	Final Inspection	As-Built Drawings	Design Support	
Hardesty & Hanover		**TECHNICAL STAFF**																																									
	1	Visha Szumanski, PE	PM, STR Eng VIII	2910	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2910
	2	Charlie Geer, PE	Risk Manager	0	592	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	592
	3	David Tuckman, PE	DPM, STR Eng VII	1604	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1604
	4	Steve Harlacker, PE, SE	QAQC, STR Eng VI	536	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	536
	5	Steve Hom, PE	STR Eng VII	0	0	0	0	0	0	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	92	100	120	0	0	0	0	0	0	0	0	372
	6	Peter Roody, PE	STR Eng VIII	0	0	0	8	0	0	0	0	48	100	36	48	12	20	372	0	0	20	0	0	0	100	0	0	0	0	0	774	680	168	0	0	0	124	196	56	752	48	48	28	0	3638
	7	Michael Hawkins, PE	STR Eng VIII	0	0	0	8	0	0	0	0	0	120	48	16	0	16	280	0	0	0	0	0	0	50	0	0	0	0	0	364	350	140	0	0	0	74	100	40	360	24	24	16	0	2030
	8	Steve Mikucki, PE	MECH Eng VII	0	0	0	8	0	0	0	0	0	90	24	12	0	16	280	0	0	0	0	0	0	50	0	0	0	0	0	314	300	124	0	0	0	74	90	20	360	24	24	12	0	1822
	9	Alex Noble, PE	ELEC Eng VI	0	0	0	8	0	0	0	0	0	90	24	12	0	16	280	0	0	0	0	0	0	50	0	0	0	0	0	314	300	124	0	0	0	74	90	20	360	24	24	12	0	1822
	10	Paul Connolly, PE	STR Eng VII	0	0	0	24	0	0	0	0	0	280	36	0	0	0	200	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	560
	11	Glen Schetelich, PE	STR Eng VIII	0	0	0	0	0	0	0	0	100	0	0	0	104	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	204
	12	Raymond Mankbadi, PE	STR Eng VIII	0	0	0	0	0	0	0	80	0	224	0	0	0	12	80	0	0	0	0	0	0	0	0	0	0	280	0	144	144	30	0	0	0	40	200	0	400	0	0	0	0	1634
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	103	0	60	60	0	0	0	0	0	0	0	0	0	0	0	0	223
	14	David Marcic, PE, SE	STR Eng VI	0	0	0	0	0	0	0	0	0	210	0	0	0	20	100	0	0	0	0	0	0	0	0	0	0	0	0	60	60	0	0	0	0	0	0	0	0	0	0	0	0	450
	15	Jerry DiMaggio,PE	STR Eng VIII	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	20	20	0	0	0	0	0	0	0	0	0	0	0	0	100
	16	David Gerber, PE	STR Eng VI	0	0	0	0	0	0	0	0	0	282	0	0	0	0	80	0	0	0	0	0	0	0	0	0	0	0	0	268	268	20	0	0	0	0	0	0	0	0	0	0	0	918
	17	Drew DelleDonne, RA	STR Eng VI	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	60	0	0	0	20	0	0	0	0	0	204	214	90	0	0	0	52	72	100	200	24	24	10	0	1070
		SUPPORT STAFF																																										
	18	Support Staff	STR I-V	0	0	0	48	0	0	0	370	300	1580	144	24	60	32	884	0	0	72	0	0	0	136	0	0	0	4218	0	3444	3424	682	0	0	0	408	1724	140	7140	0	0	50	0	24880
	19	Support Staff	MECH I-V	0	0	0	36	0	0	0	0	0	264	72	16	0	0	480	0	0	0	0	0	0	136	0	0	0	0	0	1026	1036	260	0	0	0	128	400	40	2200	0	0	40	0	6134
	20	Support Staff	ELEC I-V	0	0	0	32	0	0	0	0	0	264	72	16	0	0	480	0	0	0	0	0	0	136	0	0	0	0	0	946	956	260	0	0	0	128	400	40	2200	0	0	40	0	5970
	21	Support Staff	CAD/ ADMIN	0	0	0	8	0	0	0	0	0	40	128	16	24	0	1440	0	0	44	0	0	0	0	0	0	0	0	0	2452	2432	337	0	0	0	298	0	0	0	0	0	304	0	7523
		TOTAL ESTIMATED HOURS		5,050	592	0	180	0	0	0	450	448	3,604	584	160	200	132	5,016	0	0	196	0	0	0	698	0	0	0	4,601	600	10,390	10,336	2,335	120	200	200	1,400	3,272	456	13,972	144	144	512	200	**66,192**
Gannett Fleming		**TECHNICAL STAFF**																																									
	1	Richard Cross, PE	DPM	3410	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3410
	2	David Howell, PE	Rail Sys. Lead	0	0	0	0	0	0	0	0	0	480	0	0	0	480	0	0	0	0	0	0	0	0	0	0	0	0	0	400	400	80	0	0	0	80	288	0	0	0	0	0	0	2208
	3	Bruce Smith	Quality Control	294	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	294
	4	Robert Matthews, PE	Civil Lead	284	8	0	8	0	0	0	0	0	64	24	0	0	0	0	0	136	0	0	0	0	0	0	0	0	0	0	200	216	80	0	0	0	64	24	24	24	8	8	8	0	1180
	5	Steven Zapoticzny, PE	Site/Civil	0	0	0	24	0	0	0	0	0	200	48	0	0	0	0	0	424	0	0	0	0	0	0	0	0	0	0	648	624	216	0	0	0	96	56	56	103	8	8	24	0	2535
	6	Agnieszkka Lapinski, PE	Ret. Walls	0	0	0	12	0	0	0	0	0	42	27	12	0	20	100	0	0	0	0	0	0	0	0	0	0	0	0	340	340	88	0	0	0	62	112	112	360	8	8	120	0	1763
	7	John Legath, PE	Track	24	0	0	8	0	0	0	0	0	436	36	36	8	14	0	375	0	0	0	0	0	20	0	0	0	0	0	666	520	156	36	0	0	134	32	32	32	32	32	32	0	2661
	8	Terry Shantz, PE	Cat/ Trans	0	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	24	0	0	0	0	0	0	0	0	24	24	24	0	0	0	0	0	0	0	0	0	0	0	120
	9	Bryan Shober, PE	Cat/ Trans	0	0	0	40	0	0	12	0	0	28	6	2	0	0	0	0	0	0	140	0	0	0	0	0	0	0	0	248	248	88	0	0	0	32	28	4	30	0	0	18	0	924
	10	Greg Nazarow	Rail Ops	12	0	0	8	0	0	0	0	0	20	6	0	2	0	0	10	0	0	16	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	74
	11	Ian Martin	Rail Ops	24	0	0	12	0	0	0	0	0	20	6	0	2	0	0	10	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	74
	12	Neil Walter	Comms	0	0	0	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	195	0	0	0	0	0	0	115	52	24	0	0	0	24	12	12	12	12	12	12	0	602
	13	James Sgro	Comms	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	20	16	8	0	0	0	8	4	4	4	4	4	4	0	156
	14	Theodore Bandy, PE	Sys. Integ.	94	8	0	4	0	0	0	0	0	28	0	4	0	6	0	0	0	0	32	0	0	0	0	0	0	0	0	40	36	6	0	0	0	6	10	10	50	0	0	0	0	334
	15	Stephen Barkovich	Sys. Integ.	128	0	0	30	48	12	20	12	0	280	0	0	0	0	0	0	0	0	196	0	0	0	0	0	0	0	0	280	224	120	0	0	0	24	0	0	0	0	0	120	0	1494
	16	Richard Lentz	Signals	15	0	4	2	0	0	0	0	0	4	0	0	0	2	0	0	0	0	0	2	0	2	0	0	0	0	0	0	0	0	2	0	0	6	2	2	0	0	0	2	0	45
	17	Joseph Bonaduce	Signals	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	40	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	0	360	0	0	0	0	0	0	0	0	0	0	0	180	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	540
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	0	240	0	0	0	0	0	0	0	0	0	0	0	120	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	360
	20	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	64
		SUPPORT STAFF																																										
	21	Technical Support Staff	Eng. Staff	1344	0	6	727	120	0	107	0	0	1451	378	117	0	57	480	0	608	0	942	26	211	4	0	0	0	0	0	7240	7344	1956	8	0	0	1319	1400	518	8177	60	52	602	0	35254
	22	Administrative Support Staff	CAD/ ADMIN	8	0	0	204	0	0	40	0	0	386	208	70	0	0	392	0	232	0	655	40	204	0	0	0	0	0	0	3204	3106	901	0	0	0	480	112	80	0	16	16	464	0	10818
		TOTAL ESTIMATED HOURS		5,637	16	610	1,239	168	12	179	12	0	3,503	739	241	12	579	1,336	395	1,400	0	2,005	108	650	26	0	0	0	0	600	13,425	13,150	3,747	46	200	200	2,335	2,080	854	8,792	148	140	1,406	200	**66,190**
Haley & Aldrich		**TECHNICAL STAFF**																																									
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	72	0	0	0	0	0	0	48	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	180	0	0	0	0	0	0	0	40	0	100	0	0	0	0	440
	2	Senior Engineering Staff	Sen. Eng Staff	8	0	0	0	0	0	0	14	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	46	0	0	0	0	0	0	0	0	0	0	0	0	0	0	68
	3	Engineering Staff	Eng Staff	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	220	0	760	0	0	0	0	980
	4	Junior Engineering Staff	Jr. Eng Staff	0	0	0	0	0	0	0	21	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3729	0	0	0	0	0	0	0	280	0	1400	0	0	0	0	5430
		SUPPORT STAFF																																										
	5	CADD/ Project Assistant	CAD/ ADMIN	56	0	0	0	0	0	0	55	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	360	0	0	0	0	0	0	0	0	0	0	0	0	0	0	471
		TOTAL ESTIMATED HOURS		136	0	0	0	0	0	0	138	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4,315	0	0	0	0	0	0	0	540	0	2,260	0	0	0	0	**7,389**
GE		**TECHNICAL STAFF**																																									
	1	Joe Griffin, PE	Const. Rev.	0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	30	120	0	0	0	0	0	0	0	0	0	0	200
		TOTAL ESTIMATED HOURS		0	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	30	30	120	0	0	0	0	0	0	0	0	0	0	**200**
DBE FIRMS		**TECHNICAL STAFF**																																									
	1	Naik Consulting Group	Surv./Utilities/Str./CAD	0	0	0	0	706	594	822	0	0	284	100	0	0	0	256	0	0	0	0	0	0	0	56	484	152	2,048	0	300	1,564	1,584	1,292	0	100	100	212	580	0	1,604	0	0	0	100	12,938
	2	Envision	Project Controls / VE	6,860	0	0	0	0	0	0	0	0	0	0	316	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	7,176
	3	Arch2	Historic Preservation	0	0	0	0	0	0	0	0	0	0	0	0	280	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	280
	4	JCMS	Estimating/ Schedule	784	0	0	0	0	0	0	0	0	568	0	16	0	0	0	0	0	0	0	0	0	0	528	0	0	0	0	0	504	280	200	0	0	0	250	0	0	0	0	0	0	3,130
	5	Radin	NEPA Coord./ CAD	0	0	0	0	0	0	0	0	0	21	0	0	178	0	0	0	0	0	160	0	0	0	0	0	0	0	0	0	304	304	104	0	0	0	40	0	0	0	0	0	0	1,111
	6	SJH	Structures	0	0	0	0	0	0	0	0	0	176	0	0	0	0	88	0	0	0	0	0	0	48	0	0	0	0	0	0	844	828	384	0	0	0	214	356	0	1,282	0	0	0	4,220
		TOTAL ESTIMATED HOURS		7,644	0	0	0	706	594	822	0	0	1,049	100	332	458	0	344	0	0	0	160	0	0	632	484	152	2,048	0	300	3,216	2,996	1,980	0	100	100	716	936	0	2,886	0	0	0	100	**28,855**

Request For Proposal (RFP) No. 15-044
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for the Replacement of the

RARITAN RIVER DRAWBRIDGE

SECTION 8

Quality Assurance Plan

SECTION 8: QUALITY ASSURANCE PLAN

The H&H/GF Joint Venture Team recognizes the importance of developing, implementing and enforcing quality assurance/quality control procedures on complex, multi-discipline engineering design projects such as the Raritan River Bridge Project. The H&H/GF JV have chosen the Gannett Fleming quality assurance program as the basis of this project's Quality Management Plan (QMP).

Our Team has developed, updated, and improved their in-house quality management procedures to address the specialized design requirements and life-safety aspects associated with rail infrastructure and systems design projects: strict adherence to design criteria, thorough coordination and integration of design disciplines, review of multi-discipline constructability, railroad force account activities and construction sequencing, and verification of all submittals before delivery to the client and other reviewing agencies. The intent of these quality activities is to assure a technically correct project and to identify issues before they result in unanticipated schedule delays and budget over runs.

The quality requirements are detailed in our Quality Management System (QMS). Our QMS is based on the requirements of the International Organization for Standardization, Quality Management Systems – Requirements (ISO 9001:2008). Their QMS addresses the six major quality management elements required of the international standard, including quality policy, control of documents and records, management responsibility, resource management, product realization and measurement, analysis and improvement. An independent registrar audits a sampling of Gannett Fleming personnel and projects on a yearly basis to verify and certify that the Team's QMS is compliant with the requirements of ISO 9001:2008.

To assure project quality, the QMP:

- Assigns personnel with the proper skills and experience to match client expectations.
- Conducts project kick-off meeting with the client and conducts internal project kick-off meeting with all team members, including subconsultants.
- Conducts design review meetings (internal and with the client): on multi-discipline projects GFT&RS conducts design coordination / integration meetings between disciplines, and systems interface meetings.
- Identifies and documents design criteria, CAD standards and legal requirements. Centralizes the location of this information so all team members refer to the same source.
- Verifies that deliverables meet design criteria, CAD standards and follows recommended practice before submittal to the client.
- Conducts quality audits of projects and processes and addresses audit findings requiring corrective action.

The QMP will emphasize the importance of developing quality deliverables for NJ TRANSIT. A major element of the QMP will be the procedure that details the requirements for checking, backchecking, correcting and verifying of all deliverables before submittal to NJ TRANSIT. The deliverable checking procedures are developed specifically to address the specialized project coordination, design requirements and life-safety aspects associated with rail transit and railroad design projects. H&H/GF JV will allow our subconsultants to utilize their own QA/QC procedures, subject to approval by the H&H/GF JV Team and NJ TRANSIT. However, all firms carrying out design work will follow the document checking and verification procedures.

Each deliverable document produced by H&H/GF JV Team will be checked prior to formal submission to NJ TRANSIT. Each firm is responsible for checking their documents in accordance with the QMP. All firms on the H&H/GF JV Team will maintain records of their reviews, including check sets of drawings, calculations, specifications, cost estimates and reports. The intent of document checking is to assure that deliverables are complete, technically correct, of high quality and meet the requirements and expectations of NJ TRANSIT. The Project Manager, coordinating with the Quality Manager, Deputy Project Managers, and Discipline Leaders, is responsible for:

1. Scheduling the document checking review period in advance of each submittal. Providing the schedule and subsequent updates to all persons assigned to the project.
2. Providing sufficient time and budget to carry out the document checking.

3. Identifying qualified individuals to serve as Checker, Backchecker, Corrector and Verifier; verifying that the selected individuals are available during the review period.
4. Completing all design discipline coordination and systems integration reviews in advance of the document checking phase. The document checking phase is not intended to serve as a detailed design coordination review between disciplines and subconsultants; this detailed coordination is an on-going activity that takes place in advance of the document checking review.
5. Suspending the design work on the deliverables during the checking and verification phases. New work is not to be carried out on the deliverables until the checking and verification is completed and approved; and, the deliverables have been properly archived.
6. Assuring that the checking and verification of deliverables is carried out in accordance with the procedures outlined in the QMP.

The submittal documents are developed to the level of detail that the Designer and Discipline Leaders consider as reasonable for the upcoming submittal. The Designer and Discipline Leaders should consider the document as ready for review by the time that the document checking phase is scheduled to start; major changes to the document are not anticipated.

The H&H/GF JV Team (including subconsultants) will schedule coordination meetings on a regular basis throughout the duration of the project. The intent of the meetings is to make sure that client input, design requirements and documents are properly coordinated with respect to design responsibility, standards and document format. The H&H/GF JV will review subconsultant submittals to assure that they properly interface with the H&H/GF JV designs and documents.

H&H/GF Joint Venture
QA/QC CHECK COPY COLOR MARKING SCHEME

CHECKER

CORRECT: Mark with BLUE Hi-lighter or pencil, each item that has been both checked and determined to be correct.

ADDITIONS: New or replacement objects and text will be written in pencil and circled or hi-lighted in YELLOW.

DELETIONS: All objects and text that are to be removed will be crossed out with RED pencil or ink.

BACKCHECKER

Mark with GREEN Hi-lighter or pencil each item on the Check Copy that has been back-checked and that should be implemented by the Corrector.

CORRECTOR

Mark over with ORANGE Hi-lighter or pencil each item that has been added, changed or deleted per Checker/Backchecker markings.

VERIFIER

Mark with BLUE Hi-lighter or pencil, each item on the Check Copy that has been properly implemented and each item on the new set of documents that has been correctly incorporated.

Request For Proposal (RFP) No. 15-044
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RARITAN RIVER DRAWBRIDGE

SECTION 9

Schedule

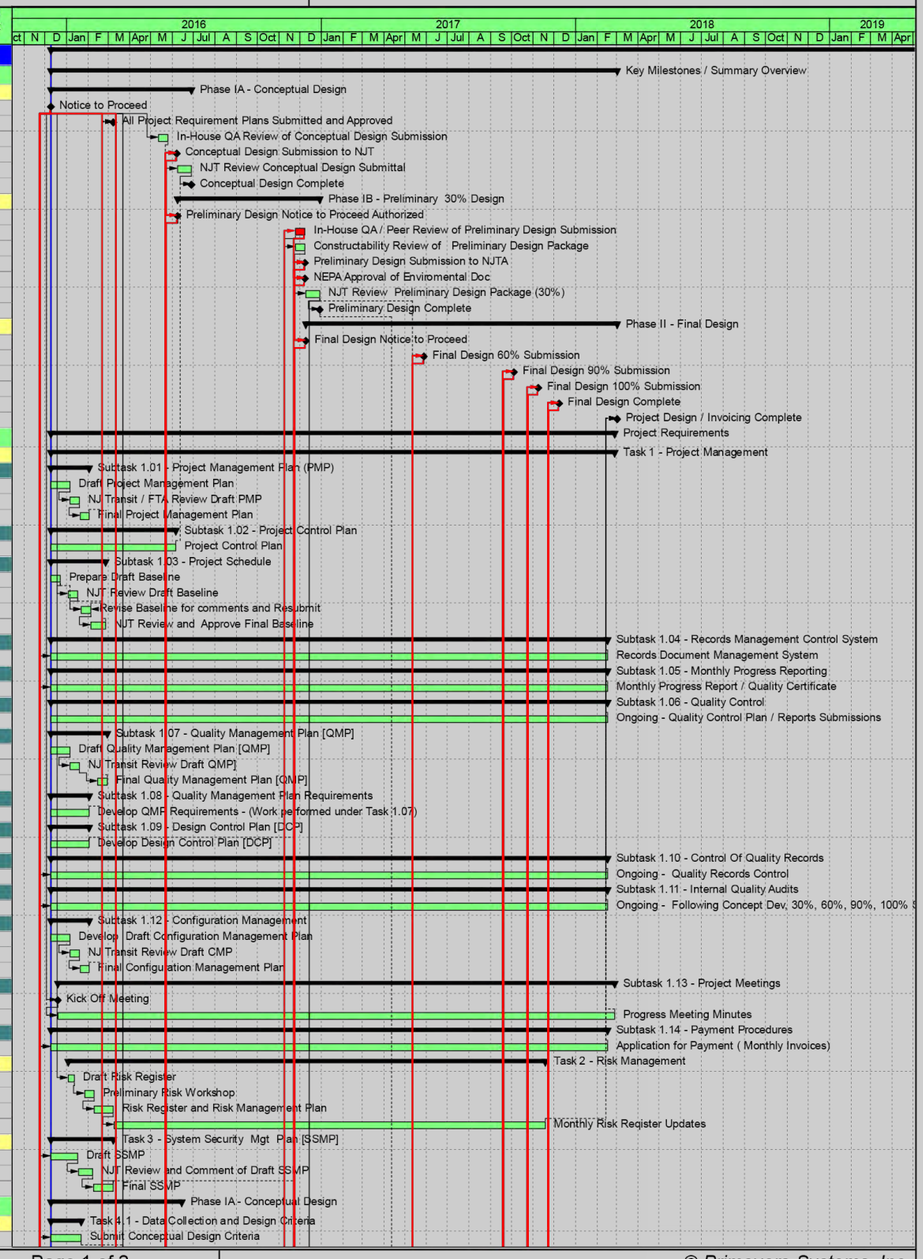
Raritan Bridge Proposal Schedule R22 dated 14Jul15 1215.xer
Data Date 09-Dec-15

RARITAN BRIDGE REPLACEMENT

Preliminary Design Proposal Schedule

14-Jul-15

Activity ID	Activity Name	Cal Days	Start	Finish	Total Float
Raritan Bridge Proposal Schedule R22 dated 14Jul15 1215		1387	09-Dec-15	01-Apr-21	0
Key Milestones / Summary Overview		814	09-Dec-15	02-Mar-18	0
Phase IA - Conceptual Design		203	09-Dec-15	28-Jun-16	17
S05	Notice to Proceed	0	09-Dec-15		0
S10	All Project Requirement Plans Submitted and Approved	0		08-Mar-16*	7
S15	In-House QA Review of Conceptual Design Submission	14	12-May-16	25-May-16	13
S20	Conceptual Design Submission to NJT	0		07-Jun-16	0
S25	NJT Review Conceptual Design Submittal	21	08-Jun-16	28-Jun-16	17
S27	Conceptual Design Complete	0		28-Jun-16*	17
Phase IB - Preliminary 30% Design		205	08-Jun-16	29-Dec-16	15
S29	Preliminary Design Notice to Proceed Authorized	0	08-Jun-16		0
S30	In-House QA / Peer Review of Preliminary Design Submission	14	25-Nov-16	08-Dec-16	0
S40	Constructability Review of Preliminary Design Package	14	25-Nov-16	08-Dec-16	4
S42	Preliminary Design Submission to NJTA	0		08-Dec-16	0
S43	NEPA Approval of Enviromental Doc	0		08-Dec-16	0
S45	NJT Review Preliminary Design Package (30%)	21	09-Dec-16	29-Dec-16	4
S47	Preliminary Design Complete	0		29-Dec-16*	15
Phase II - Final Design		448	09-Dec-16	02-Mar-18	0
S55	Final Design Notice to Proceed	0	09-Dec-16		0
S60	Final Design 60% Submission	0		27-May-17	0
S65	Final Design 90% Submission	0		04-Oct-17	0
S70	Final Design 100% Submission	0		08-Nov-17	0
S75	Final Design Complete	0		08-Dec-17	0
S85	Project Design / Invoicing Complete	0		02-Mar-18*	0
Project Requirements		578	09-Dec-15	25-Feb-18	4
Task 1 - Project Management		578	09-Dec-15	25-Feb-18	4
Subtask 1.01 - Project Management Plan (PMP)		56	09-Dec-15	02-Feb-16	42
1005	Draft Project Management Plan	28	09-Dec-15	05-Jan-16	42
1010	NJ Transit / FTA Review Draft PMP	14	06-Jan-16	19-Jan-16	42
1015	Final Project Management Plan	14	20-Jan-16	02-Feb-16	42
Subtask 1.02 - Project Control Plan		180	09-Dec-15	05-Jun-16	40
1020	Project Control Plan	180	09-Dec-15	05-Jun-16	40
Subtask 1.03 - Project Schedule		57	09-Dec-15	25-Feb-16	13
1030	Prepare Draft Baseline	15	09-Dec-15	23-Dec-15	19
1035	NJT Review Draft Baseline	14	03-Jan-16	16-Jan-16	19
1040	Revise Baseline for comments and Resubmit	14	22-Jan-16	04-Feb-16	19
1045	NJT Review and Approve Final Baseline	15	04-Feb-16	25-Feb-16	13
Subtask 1.04 - Records Management Control System		800	09-Dec-15	15-Feb-18	14
1050	Records Document Management System	800	09-Dec-15	15-Feb-18	14
Subtask 1.05 - Monthly Progress Reporting		800	09-Dec-15	15-Feb-18	14
1070	Monthly Progress Report / Quality Certificate	800	09-Dec-15	15-Feb-18	14
Subtask 1.06 - Quality Control		800	09-Dec-15	15-Feb-18	14
1080	Ongoing - Quality Control Plan / Reports Submissions	800	09-Dec-15	15-Feb-18	14
Subtask 1.07 - Quality Management Plan [QMP]		82	09-Dec-15	28-Feb-16	16
1100	Draft Quality Management Plan [QMP]	28	09-Dec-15	05-Jan-16	16
1105	NJ Transit Review Draft QMP]	14	06-Jan-16	19-Jan-16	16
1110	Final Quality Management Plan [QMP]	14	15-Feb-16	28-Feb-16	16
Subtask 1.08 - Quality Management Plan Requirements		56	09-Dec-15	02-Feb-16	42
1120	Develop QMP Requirements - (Work performed under Task 1.07)	56	09-Dec-15	02-Feb-16	42
Subtask 1.09 - Design Control Plan [DCP]		56	09-Dec-15	02-Feb-16	42
1130	Develop Design Control Plan [DCP]	56	09-Dec-15	02-Feb-16	42
Subtask 1.10 - Control Of Quality Records		800	09-Dec-15	15-Feb-18	14
1140	Ongoing - Quality Records Control	800	09-Dec-15	15-Feb-18	14
Subtask 1.11 - Internal Quality Audits		800	09-Dec-15	15-Feb-18	14
1150	Ongoing - Following Concept Dev, 30%, 60%, 90%, 100% Submission	800	09-Dec-15	15-Feb-18	14
Subtask 1.12 - Configuration Management		56	09-Dec-15	02-Feb-16	42
1160	Develop Draft Configuration Management Plan	28	09-Dec-15	05-Jan-16	42
1165	NJ Transit Review Draft CMP	14	06-Jan-16	19-Jan-16	42
1170	Final Configuration Management Plan	14	20-Jan-16	02-Feb-16	42
Subtask 1.13 - Project Meetings		800	19-Dec-15	25-Feb-18	4
1180	Kick Off Meeting	0	19-Dec-15		4
1185	Progress Meeting Minutes	800	19-Dec-15	25-Feb-18	4
Subtask 1.14 - Payment Procedures		800	09-Dec-15	15-Feb-18	14
1190	Application for Payment (Monthly Invoices)	800	09-Dec-15	15-Feb-18	14
Task 2 - Risk Management		686	03-Jan-16	18-Nov-17	103
1240	Draft Risk Register	10	03-Jan-16	12-Jan-16	103
1245	Preliminary Risk Workshop	14	27-Jan-16	09-Feb-16	103
1252	Risk Register and Risk Management Plan	28	10-Feb-16	08-Mar-16	103
1255	Monthly Risk Reqister Updates	620	09-Mar-16	18-Nov-17	103
Task 3 - System Security Mgt Plan [SSMP]		91	09-Dec-15	08-Mar-16	7
1270	Draft SSMP	40	09-Dec-15	17-Jan-16	7
1275	NJT Review and Comment of Draft SSMP	21	18-Jan-16*	07-Feb-16	7
1280	Final SSMP	30	08-Feb-16	08-Mar-16	7
Phase IA - Conceptual Design		135	09-Dec-15	14-Jun-16	127
Task 4.1 - Data Collection and Design Criteria		45	09-Dec-15	22-Jan-16	115
1400	Submit Conceptual Design Criteria	45	09-Dec-15	22-Jan-16	115



Remaining Level of Effort | Actual Work | Remaining Work | C

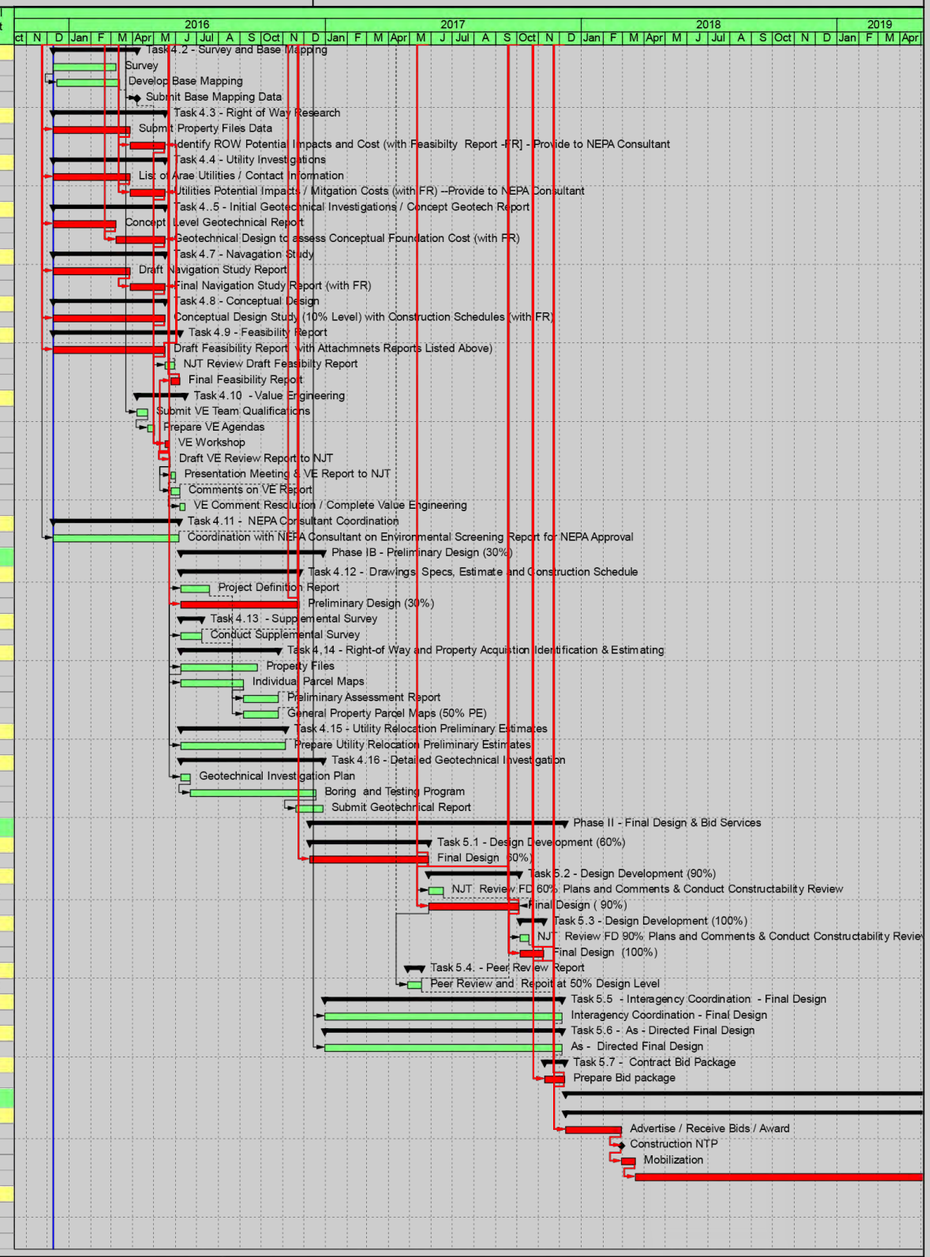
Raritan Bridge Proposal Schedule R22 dated 14Jul15 1215.xer
Data Date 09-Dec-15

RARITAN BRIDGE REPLACEMENT

Preliminary Design Proposal Schedule

14-Jul-15

Activity ID	Activity Name	Cal Days	Start	Finish	Total Float
	Task 4.2 - Survey and Base Mapping	120	09-Dec-15	06-Apr-16	40
1420	Survey	90	09-Dec-15	07-Mar-16	65
1425	Develop Base Mapping	90	14-Dec-15	12-Mar-16	65
1430	Submit Base Mapping Data	0		06-Apr-16	40
	Task 4.3 - Right of Way Research	160	09-Dec-15	16-May-16	0
1450	Submit Property Files Data	110	09-Dec-15	27-Mar-16	0
1455	Identify ROW Potential Impacts and Cost (with Feasibilty Report -FR] - Provide to NEPA Consultant	50	28-Mar-16	16-May-16	0
	Task 4.4 - Utility Investigations	160	09-Dec-15	16-May-16	0
1470	List of Arae Utilities / Contact Information	110	09-Dec-15	27-Mar-16	0
1475	Utilities Potential Impacts / Mitgation Costs (with FR) –Provide to NEPA Consultant	50	28-Mar-16	16-May-16	0
	Task 4..5 - Initial Geotechnical Investigations / Concept Geotech Report	160	09-Dec-15	16-May-16	0
1490	Concept Level Geotechnical Report	90	09-Dec-15	07-Mar-16	0
1495	Geotechnical Design to assess Conceptual Foundation Cost (with FR)	70	08-Mar-16	16-May-16	0
	Task 4.7 - Navagation Study	160	09-Dec-15	16-May-16	0
1520	Draft Navigation Study Report	110	09-Dec-15	27-Mar-16	0
1525	Final Navigation Study Report (with FR)	50	28-Mar-16	16-May-16	0
	Task 4.8 - Conceptual Design	160	09-Dec-15	16-May-16	0
1540	Conceptual Design Study (10% Level) with Construction Schedules (with FR)	160	09-Dec-15	16-May-16	0
	Task 4.9 - Feasibility Report	182	09-Dec-15	07-Jun-16	0
1550	Draft Feasibility Report with Attachmnets Reports Listed Above)	160	09-Dec-15	16-May-16	0
1552	NJT Review Draft Feasibilty Report	14	17-May-16	30-May-16	8
1555	Final Feasibility Report	14	25-May-16	07-Jun-16	0
	Task 4.10 - Value Engineering	49	07-Apr-16	14-Jun-16	12
1570	Submit VE Team Qualifications	15	07-Apr-16	21-Apr-16	15
1575	Prepare VE Agendas	10	22-Apr-16	01-May-16	15
1580	VE Workshop	7	17-May-16	23-May-16	0
1585	Draft VE Review Report to NJT	1	24-May-16	24-May-16	0
1590	Presentation Meeting & VE Report to NJT	7	25-May-16	31-May-16	23
1595	Comments on VE Report	14	25-May-16	07-Jun-16	16
1597	VE Comment Resolution / Complete Value Engineering	5	07-Jun-16	14-Jun-16*	12
	Task 4.11 - NEPA Consultant Coordination	180	09-Dec-15	05-Jun-16	186
1600	Coordination with NEPA Consultant on Environmental Screening Report for NEPA Approval	180	09-Dec-15	05-Jun-16	186
	Phase IB - Preliminary Design (30%)	146	08-Jun-16	28-Dec-16	7
	Task 4.12 - Drawings, Specs, Estimate and Construction Schedule	122	08-Jun-16	24-Nov-16	0
1702	Project Definition Report	30	08-Jun-16	19-Jul-16	66
1705	Preliminary Design (30%)	170	08-Jun-16	24-Nov-16	0
	Task 4.13 - Supplemental Survey	30	08-Jun-16	07-Jul-16	104
1710	Conduct Supplemental Survey	30	08-Jun-16	07-Jul-16	104
	Task 4,14 - Right-of Way and Property Acquistion Identification & Estimating	140	08-Jun-16	25-Oct-16	44
1720	Property Files	110	08-Jun-16*	25-Sep-16	44
1725	Individual Parcel Maps	90	08-Jun-16	05-Sep-16	44
1730	Preliminary Assessment Report	50	06-Sep-16*	25-Oct-16	44
1735	General Property Parcel Maps (50% PE)	50	06-Sep-16	25-Oct-16	44
	Task 4.15 - Utility Relocation Preliminary Estimates	150	08-Jun-16	04-Nov-16	34
1750	Prepare Utility Relocation Preliminary Estimates	150	08-Jun-16	04-Nov-16	34
	Task 4.16 - Detailed Geotechnical Investigation	204	08-Jun-16	28-Dec-16	9
1760	Geotechnical Investigation Plan	14	08-Jun-16	21-Jun-16	9
1765	Boring and Testing Program	180	22-Jun-16	18-Dec-16	9
1770	Submit Geotechnical Report	40	19-Nov-16	28-Dec-16*	9
	Phase II - Final Design & Bid Services	365	09-Dec-16	08-Dec-17	0
	Task 5.1 - Design Development (60%)	170	09-Dec-16	27-May-17	0
1800	Final Design 60%)	170	09-Dec-16	27-May-17	0
	Task 5.2 - Design Development (90%)	130	28-May-17	04-Oct-17	0
1815	NJT Review FD 60% Plans and Comments & Conduct Constructability Review	21	28-May-17	17-Jun-17	109
1820	Final Design (90%)	130	28-May-17	04-Oct-17	0
	Task 5.3 - Design Development (100%)	35	05-Oct-17	08-Nov-17	0
1835	NJT Review FD 90% Plans and Comments & Conduct Constructability Review	14	05-Oct-17	18-Oct-17	21
1840	Final Design (100%)	35	05-Oct-17	08-Nov-17	0
	Task 5.4. - Peer Review Report	20	28-Apr-17	17-May-17	140
1850	Peer Review and Repoit at 50% Design Level	20	28-Apr-17	17-May-17	140
	Task 5.5 - Interagency Coordination - Final Design	340	30-Dec-16	04-Dec-17	4
1855	Interagency Coordination - Final Design	340	30-Dec-16	04-Dec-17	4
	Task 5.6 - As - Directed Final Design	340	30-Dec-16	04-Dec-17	4
1860	As - Directed Final Design	340	30-Dec-16	04-Dec-17	4
	Task 5.7 - Contract Bid Package	30	09-Nov-17	08-Dec-17	0
1880	Prepare Bid package	30	09-Nov-17	08-Dec-17	0
	Phase III - Construction Support Services -Tasks 6.1 - 6.7	1210	09-Dec-17	01-Apr-21	0
	Bid / Award/ NTP	1180	09-Dec-17	02-Mar-21	0
1900	Advertise / Receive Bids / Award	80	09-Dec-17	26-Feb-18	0
1910	Construction NTP	0	27-Feb-18		0
1920	Mobilization	20	27-Feb-18	18-Mar-18	0
1930	Stage 1 thru 7	1080	19-Mar-18	02-Mar-21	0
	Project Close-out	30	02-Mar-21	01-Apr-21	0
1940	Substantial Completion	0		02-Mar-21	0
1950	Punch List / Project Closeout	30	03-Mar-21	01-Apr-21	0
1960	Project Complete	0		01-Apr-21	0



Remaining Level of Effort | Actual Work | Remaining Work | C

Request For Proposal (RFP) No. 15-044
Design, Engineering and Construction Assistance Services
for the Replacement of the

RARITAN RIVER DRAWBRIDGE

SECTION 10

Appendix – Additional Qualifications

NIANTIC RIVER BRIDGE REPLACEMENT

EAST LYME AND WATERFORD, CONNECTICUT

Client: Amtrak
Contact:
Completion Date: 2013
Construction Cost: $140 million

Hardesty & Hanover
Gannett Fleming

PROJECT HIGHLIGHTS

- Off-line replacement of Northeast Corridor bridge
- New 140 ft. single leaf bascule
- 100 ft. channel with 75 ft. min. vert. clearance
- 2 miles of track realignment
- Auto tensioned catenary
- Unique structural system with two separate counterweights

KEY STAFF INVOLVEMENT:

Paul Skelton – Principal-in-Charge	(H&H)
Steven Hom – Deputy Project Manager-Construction	(H&H)
Stephen Harlacker – Structural Engineer	(H&H)
Michael Hawkins – Deputy Project Manager-Design	(H&H)
Peter Roody – Lead Structural Engineer	(H&H)
Richard Cross – Deputy Project Manager-Rail Systems	(GF)
John Legath – Track & Civil Engineer	(GF)
Bruce Smith – Quality Manager	(GF)
Terry Shantz - ET Discipline Lead	(GF)

Hardesty & Hanover, with Gannett Fleming (GF) as a subconsultant, was responsible for the design of $140 million replacement of the Niantic River Drawbridge on Amtrak's Northeast Corridor mainline, which serves as a key link for the passenger and freight rail traffic between New York and Boston, carrying 54 trains daily, including Amtrak, ConnDOT's Shore Line East commuter rail and P&W Railroad.

In order to minimize impact on rail operations, the new 140 ft. long single-leaf bascule span carrying two railroad tracks was constructed 58 feet south of the existing railroad alignment. H&H developed a unique structural system comprised of separate counterweights integral with each of the main bascule girders in order to eliminate complexities associated with the overhead catenary system during bridge openings. In the closed position, the new bridge provides 16 feet of vertical clearance (four-foot increase). In the open position, the bridge provides a 100-foot-wide navigation channel with a 75-foot minimum vertical clearance and unlimited vertical clearance for an 80-foot width. The project included two miles of track realignment on the east and west approaches, handled by GF.

PORT ADELAIDE BASCULE BRIDGES

PORT ADELAIDE, AUSTRALIA

Client: Transport South Australia
Contact:
Completion Date: 2008
Construction Cost: $120 million

Hardesty & Hanover

PROJECT HIGHLIGHTS

- New railway/highway movable bridges over major waterway
- 200 ft. long single-leaf bascule bridges
- V-shaped, post tensioned concrete piers
- Creative architectural form using welded box girders
- Remotely operated using PLC control system
- AREMA used for movable span design

KEY STAFF INVOLVEMENT:

Paul Skelton – Principal-in-Charge
Peter Roody – Design Project Manager
David Tuckman – Project Engineer
Stephen Mikucki – Mechanical Engineer
David Marcic – Structural/Seismic Engineer

Hardesty & Hanover was the primary bridge engineer on a $178 million Port River Expressway Design/Build project which added a four-lane expressway and a rail link connecting major port in Adelaide, Australia, to the mainline rail network and interstate highway system. Construction of the Port River Expressway was an important component of the state infrastructure plan intended to provide better links to the port enterprises in support of trade and economic development.

Hardesty & Hanover designed a new, 61-meter long (200 ft.), single-leaf, single track railroad bridge and a 58-meter long (190 ft.), four-lane, single-leaf highway bascule bridge. The design was in accordance with the Australian (AS5100) Bridge Code and the AREMA manual, which was used for movable bridge requirements.

Special attention was given to the aesthetics of the bridges by employing creative architectural forms. The bascule piers, which normally dominate the appearance of single-leaf bascule bridges, are "V" shaped post-tensioned concrete members. The piers geometry features angles complementary to the open-span angle. The bascule girders are welded steel boxes, carefully detailed by H&H architects and engineers to achieve a sleek and continuous look. The electrical and machinery rooms are enclosed with a glass curtain wall.

CHAQUES CHABAN-DELMAS BRIDGE

BORDEAUX, FRANCE

Client: Jean Muller International
Contact:
Completion Date: 2013
Construction Cost: $146 million

Hardesty & Hanover

PROJECT HIGHLIGHTS

- Longest vertical lift bridge in Europe
- 320 ft. navigational channel
- Increased navigational clearances (164 ft. lift height)
- Carries four lanes of traffic and two light rail tracks
- State of the art operating systems (energy efficient design)
- Electrical machinery located at the base of concrete piers

KEY STAFF INVOLVEMENT:

Paul Skelton – Principal-in-Charge
Peter Roody – Quality Assurance
David Tuckman – Project Engineer
Stephen Mikucki – Mechanical Engineer

H&H was a member of the design team for the Jacques Chaban-Delmas Lift Bridge over the Garonne River in Bordeaux, France. With its beautiful architectural form and the **longest lift span in Europe** (383 ft.), the bridge is an example of the state-of-the-art in movable bridge engineering. It has a **lift height of 164 ft.** and accommodates 320 ft. wide navigational channel. The bridge was designed to carry four lanes of vehicular traffic, two bicycle/pedestrian paths and **two light rail tracks** for a total width of approximately 140 ft.

H&H designed the bridge operating systems to raise and lower the lift span using the minimum energy possible. With only 100T difference between the weight of the deck (2,500T) and the counterweights (600T each), moving the lift span requires only two 132kW motors, located on each side of the span. **The electrical machinery is housed in the base of the concrete piers** that support the bridge. A robust pumping system was provided in the event of flooding.

Operation of the lift span is achieved via high-strength wire ropes passing over giant pulleys, or sheaves, which connect the lift span to the counterweights. A wire rope winch-drive operating system with an electric motor and flex vector regenerative drives hauls in and pays out the counterweights, thereby raising and lowering the lift span. **Speed regulators in each tower control the motors, and sensors on the deck continuously track its position to ensure that it remains level at all times during its journey.**

SARAH MILDRED LONG BRIDGE

PORTSMOUTH, NEW HAMPSHIRE TO KITTERY, MAINE

Client: Maine Dept. of Transportation
Contact:
Completion Date: 2014 / 2017
Construction Cost: $159 million

Hardesty & Hanover

PROJECT HIGHLIGHTS

- Highway/ railroad bridge replacement
- 300 ft. single level lift span, two- level approaches
- Post-tensioned concrete lift towers
- Operating machinery in the tower bases
- Lift span framed with steel box girders
- State of the art vessel collision system

KEY STAFF INVOLVEMENT:

Paul Skelton – Principal-in-Charge
Michael Hawkins – Project Manager
Peter Roody – Movable Bridge Design Lead
Steven Harlacker – Structural Engineer
Raymond Mankbadi – Geotechnical Engineer
Steven Mikucki – Mechanical Engineer

Hardesty & Hanover in Joint Venture is responsible for the design of the Sarah Mildred Long Bridge between Portsmouth, NH, and Kittery, Maine, which carries vehicular and railroad traffic, serving as a **railway link to the Portsmouth Naval Shipyard.**

The project is using **Construction Manager/General Contractor** (CMGC) delivery method. Serving as the Construction Manager, the contractor has been working with the design team on the constructability and staging issues, as well as the construction schedule and cost. This collaborative process has brought significant value to the project and minimized the up front and overall cost to the owner.

The movable bridge design, developed by H&H, features many creative and innovative solutions including the first application of precast post-tensioned concrete for the lift span towers. A single level 300-foot-long lift span, framed with box girders, has separate seating locations for the double level highway/rail approaches. The operating machinery, which was designed to reduce long term maintenance needs, is located in the tower bases. H&H also designed a **state of the art vessel collision system.**

CSX NEW RIVER BRIDGE

FORT LAUDERDALE, FLORIDA

Client: Florida Dept. of Transportation / CSX Transportation
Contact:
Completion Date: 2014 / 2016
Construction Cost: $25 million

Hardesty & Hanover

PROJECT HIGHLIGHTS

- Replacement of movable bridge on South Florida Rail Corridor
- Emergency repairs of severe pier settlement
- New 105 ft. rolling lift bascule span
- Improved channel alignment
- Maintenance-friendly design
- Historic structure preserved for public display

KEY STAFF INVOLVEMENT:

Stephen Mikucki – Mechanical Engineer
David Tuckman – Structural Engineer
David Marcic – Structural/Seismic Engineer
Raymond Mankbadi – Geotechnical Engineer

Hardesty & Hanover was responsible for the design a **new movable railroad bridge** to replace an existing Scherzer Rolling Lift over South Fork New River in Fort Lauderdale, which has been in service since 1927 serving the South Florida Rail Corridor.

Prior to the replacement design, H&H perfomred the **rehabilitation and emergency repairs** of the bridge. In 2000, H&H conducted an in-depth inspection; developed recommendations and estimates for immediate repairs and identified rehabilitation/replacement alternatives. In 2006 H&H developed emergency repairs for deterioration and settlement of the piers. During the installation of the crane trestle for the construction of the adjacent high level fixed bridge, **the rest pier and control house structure experienced severe settlement**. H&H restored the integrity of the bridge and assure uninterrupted rail operations using a temporary crutch bent system for the rest and lift piers. **The design and construction of the emergency repairs was completed in 30 days.**

In 2013, H&H was contracted to investigate replacement alternatives and provide final design for the replacement structure – **a 105 ft. rolling lift bascule span with prestressed concrete approach spans**. Design challenges included historic preservation issues and coordination of different requirements between FDOT and CSX. **The project will improve the channel alignment to alleviate navigational problems**. The historic structure will be preserved and relocated to a nearby park. Anticipate completion of construction – 2016.

TOMLINSON LIFT BRIDGE

NEW HAVEN, CONNECTICUT

Client: Connecticut Dept. of Transportation
Contact:
Completion Date: 2002
Construction Cost: $120 million

Hardesty & Hanover

PROJECT HIGHLIGHTS

- On-line replacement of highway & railroad bridge
- Temporary bypass structure
- 270 ft. lift span x 90 ft. wide / 75 ft. vertical clearance
- Heaviest lift span designed by H&H – 3,200 tons
- 2000 ft. of track and signals work
- Recipient of many prestigious industry awards

KEY STAFF INVOLVEMENT:

Paul Skelton – Mechanical Engineer
Michael Hawkins – Project Manager
Steven Harlacker – Structural Engineer
Stephen Mikucki – Mechanical Engineer
Steven Hom – Constructability

Hardesty & Hanover led the replacement design of the Tomlinson Bridge, which provides vehicular and rail crossing over the Quinnipiac River. The existing structure, constructed in 1923, was a hazard to navigation due to a limited horizontal clearance and difficult geometry of the navigation channel. Also, the bridge was in a severe state of deterioration due to its age and **fatigue from the large locomotive loads** that traversed the bridge. H&H performed a comprehensive feasibility study of the bridge replacement alternatives focused on minimizing impacts on the vehicular and railroad traffic during construction. In order to prevent service disruptions, a temporary bridge was built on adjacent alignment.

The new structure is a **270-foot tower drive lift bridge** over a 240-foot-wide navigation channel with 75 ft. vertical clearance. The lift span, which is 90 ft. wide, is the **heaviest designed by H&H to date, weighing over 3,200 tons**. The span control is provided by an AC primary thyristor control system. Also included is a complete dual system of motors (100 hp) and motor controls for system redundancy.

In addition to the bridge, the project involved a replacement of 1,000 feet of roadway; **2,000 feet of track work; multiple rail crossings** and street intersections; roadway and rail signalization; drainage; utility relocation and street lighting.

BRIELLE BRIDGE FEASIBILITY STUDY

BRIELLE/POINT PLEASANT, NEW JERSEY

Client: New Jersey Transit
Contact:
Completion Date: On-Going
Construction Cost: $102 million (est.)

Hardesty & Hanover
Gannett Fleming

PROJECT HIGHLIGHTS

- Feasibility study to replace movable railroad bridge
- On-line replacement
- Navigational channel improvements
- Recommended option - simple trunnion bascule
- Increased channel width from 48 to 90 ft.
- Ground improvement on the approaches

KEY STAFF INVOLVEMENT:

Paul Connolly – Project Manager
Glen Schetelich – Principal-in-Charge
David Gerber – Structural Engineer
Raymond Mankbadi – Geotechnical Engineer
Stephen Mikucki – Mechanical Engineer
Peter Roody – Structural Engineer

Hardesty & Hanover is conducting a **feasibility study** and for the replacement of a 100-year old Brielle Bridge. The bridge has a total length of 1,160 ft. and it carries approximately 40 **trains per day**. The objective is to replace the bridge on the same alignment, raise the profile to achieve better resiliency to the extreme weather events, and improve the navigational channel and increase design speed, while remaining within the existing ROW. Key issues include environmental impacts, permitting and approval process, and historic preservation.

H&H is conducting a comprehensive analysis of different track profiles and movable alternatives, including **vertical lift; rolling-lift** (same as existing); and **trunnion bascule**. Each profile alternative and movable option has been analyzed for environmental impacts, flood resiliency, clearances, constructability, maintenance issues, construction cost (including force account), visual impact and other pros and cons. Alternatives were ranked to provide NJT with the most efficient solution.

GF's work included survey oversight, conceptual design of alternative profiles to accomplish the track raise, relocation designs of existing Brielle Interlocking, operations analysis of construction staging, defining environmental impacts of alternative designs, permitting agencies listing, signal designs of alternative interlocking placements including modifications to protect train movements, and cost estimating.

AMTRAK/MNR NORWALK BRIDGE

NORWALK, CONNECTICUT

Client: Connecticut Dept. of Transportation
Contact:
Completion Date: 2014
Construction Cost: $465 million

Hardesty & Hanover

PROJECT HIGHLIGHTS

- Oldest movable bridge along Northeast Corridor in CT
- Four tracks, 140 trains per day
- Feasibility study for bridge replacement
- CMGC delivery method
- Peer reviews & constructability reviews
- Replacement with two separate bascule bridges

KEY STAFF INVOLVEMENT:

Paul Skelton – Mechanical Engineer
Michael Hawkins – Project Manager (Peer Review)
Steven Harlacker – Project Engineer
Stephen Mikucki – Mechanical Engineer

Hardesty & Hanover performed a feasibility study and is responsible for peer/constructability reviews of the design for a **$465 million replacement** of the Norwalk River Bridge (WALK). Built in 1896, WALK is the oldest movable bridge on the Northeast Corridor (NEC) and Metro-North New Have Line. The bridge consists of a 200-foot-long, swing span and three approach truss spans for a total length of 564 feet, **carrying** 140 **Metro-North and Amtrak trains per day, as well as freight traffic**. The bridge far exceeded its service life and experiences often closure failures (10% of the time), delaying the NEC traffic.

In 2000, H&H conducted a **Feasibility and Economic Analysis Study** to evaluate the options for the rehabilitation or replacement of the bridge. The firm's report included analysis and conceptual engineering for the rehabilitation and replacement alternatives. The project is currently in the design phase using **Construction Manager/General Contractor** (CMGC) method. H&H is responsible for **peer reviews** at each design stage and **constructability reviews** at 30% and 60% design stage. The reviews are focused on the constructability and serviceability of the movable span, including fabrication and shop/field erection, **construction phasing, maintenance and protection of railroad operations, construction access, operational and safety concerns**, and the need for temporary construction.

CONNECTICUT RIVER BRIDGE

OLD SAYBROOK, CONNECTICUT

Client: Amtrak
Contact:
Completion Date: 2007
Construction Cost: $300 million (est.)

Hardesty & Hanover

PROJECT HIGHLIGHTS

- Feasibility study for the rail bridge replacement
- Heavily traveled 100-year old railroad bridge
- 35 passenger trains and 6 freight trains per day
- 3700 opening/closing operations annually
- Focus on operational, environmental and ROW impacts
- Historic structure preserved for public display

KEY STAFF INVOLVEMENT:

Paul Skelton – Principal-in-Charge
Michael Hawkins – Deputy Project Manager
Steven Hom – Project Engineer Inspection
Steven Harlacker – Project Engineer Design
Stephen Mikucki – Mechanical Engineer
David Marcic – Structural/Seismic Engineer

Hardesty & Hanover performed in-depth inspection and feasibility study of bridge replacement alternatives for the Connecticut River Bridge on the Northeast Corridor, between Old Saybrook and Old Lyme, CT. The bridge carries approximately 35 passenger trains and 6 freight trains per weekday. It's also operated up to 3,700 times annually to accommodate river navigation. The existing bridge, constructed circa 1907, is a two-track, open deck, electrified railroad bridge, 1,564-foot-long, consisting of seven thru-truss spans, two deck girder spans, and one 158-foot Scherzer-type rolling lift span. The marine environment has corroded the bridge's steel structure, limiting the train speeds to 45 mph.

H&H has decades of experience with the Conn River Bridge. In 1998 H&H inspected the bridge and designed replacements for the tread plates mounted to the segmental girders and track girders, as well as partial replacement of the span operating machinery and electrical controls. In the most recent assignment, H&H was responsible for a feasibility study for the bridge replacement. The study, which included an alternative to replace the movable span with high-level fixed bridge, was based on the navigational clearance requirements developed by H&H in an earlier Navigation Study for the Connecticut River. Also Included were alignment and profiles layout for various rail gradient options.

MNR HARLEM RIVER LIFT BRIDGE

NEW YORK, NEW YORK

Client: Metro-North Railroad
Contact:
Completion Date: 2015
Construction Cost: $30 million

Hardesty & Hanover

PROJECT HIGHLIGHTS

- Parallel vertical-lift bridges carrying two rail tracks each
- 750 commuter trains per day
- Replacement of counterweight ropes
- Work platforms to facilitate construction and protect trains
- Minimized impacts to rail operations
- Focus on constructability, staging and railroad safety

KEY STAFF INVOLVEMENT:

Paul Connolly – Project Manager
Peter Roody – Structural Engineer
Stephen Mikucki – Mechanical Engineer
Steven Hom – Constructability
David Marcic – Seismic/Structural Engineer
David Gerber – Structural Engineer

The Harlem River Lift Bridge is a crucial component of the Metro-North infrastructure. Build in 1955, the bridge carries 750 trains and 280,000 commuters each weekday. The bridge has parallel lift spans, each with two tracks. The spans operate independently. At either end of the bridge are steel towers that contain the machinery to hoist the spans. Hardesty & Hanover has been responsible for the design for the replacement of the main cables (counterweight ropes) that lift the two, 330-foot-long main spans of the Harlem River Lift Bridge. The project **replaced 128 stranded cables each 2⅜ inches in diameter** and 185 feet long.

Construction staging includes building temporary work platforms above the tracks to allow trains to pass underneath while the individual cables are replaced one at a time. In addition to the platform, high-strength netting has been provided between towers to deflect a fallen rope away from the adjacent span. A cable lubrication system will also be installed to forestall future deterioration. Most of the cable replacement work will be done without track outages. The key design issues included constructability, work staging to minimize impact to the railroad and assuring safety of the railroad operations during construction.

NJ TRANSIT NEWARK DRAWBRIDGE

NEWARK, NEW JERSEY

Client: New Jersey Transit
Contact:
Completion Date: 2010
Construction Cost: $25 million

Hardesty & Hanover

PROJECT HIGHLIGHTS

- Rehabilitation of heavily traveled 110-year old railroad bridge
- Two track swing span bridge
- 60 trains per day
- Special rehabilitation details to minimize impact on operations
- Rehabilitation to prevent further deterioration
- Goal of extending service life by 20 years

KEY STAFF INVOLVEMENT:

Peter Roody – Structural Engineer
Steven Hom – Structural Engineer
David Gerber - Lead Structural Engineer
Stephen Mikucki – Mechanical Engineer

Newark Drawbridge carries the NJ Transit's Morristown Line over the Passaic River between Newark and Harrison, NJ. The bridge, originally constructed in 1903, is a two-level, through truss swing span with deck truss flanking spans. It carries two tracks on its upper level. In the past there was a freight track on a lower level, but it was removed and replaced with a maintenance walkway and equipment facilities. The Morristown Line is one of the busiest commuter lines with 60 trains operating each way daily.

Hardesty & Hanover provided engineering services on a rehabilitation project which involved evaluation of the existing structure and movable span operating systems, and development of engineering alternatives to extend the service life of the bridge another by another 20 years. The final design of the selected solutions included structural repairs/strengthening, mechanical/electrical systems upgrades and timber ties replacement on the bridge and the adjacent viaducts.

The work was focused on construction staging to minimize impacts to NJT operations and to limit the amount of night-time and weekend work required. Special repair details were develop to facilitate the construction and big emphasis were placed on identifying the causes of deterioration and developing remedial approach, which would not only repair the damage, but also protect the structures from further decline and extend it service life.

SANDY SUBSTATIONS & RELATED FACILITIES

KEARNY, HOBOKEN & BAY HEAD, NEW JERSEY

Client: NJ Transit
Contact:
Completion Date: 2015 (est.)
Construction Cost: $180 million

Hardesty & Hanover

PROJECT HIGHLIGHTS

- Rail systems work for NJ Transit
- Post-Hurricane Sandy reconstruction
- Permitting and environmental coordination
- Coordination with NJ SHPO
- Multidisciplany engineering effort
- Preliminary and final design

KEY STAFF INVOLVEMENT:

David Boate – Project Principal
Theodory Bandy – Task Manager
Ramesh Rajagopal – Environmental Manager
Stephen Barkovich – Traction Power Integration
Stephen Zapoticzny – Civil Engineer

GF was selected by New Jersey Transit for the design of general power substations, traction power substations, switching substations, and related facilities at the Hoboken Terminal/Yard (The 'Depot', Observer Highway, and Henderson Substations), Meadows Maintenance Complex (Building 9, Mason, and ROC Substations), and Bay Head Yard (Bay Head Substation) operating locations that were damaged as a result of Super Storm Sandy. This project will replace substation infrastructure that was damaged and incorporate resiliency features in the design to guard against future storm related events.

Additionally, GF manages and coordinates the civil, electrical, architectural, structural, geotechnical, and environmental disciplines. Gannett Fleming also manages the development of plans, reports and specifications. The work involves coordinating survey and mapping efforts, preparing a damage assessment report, designing hardening measures (trap bags, trenches and pumps), site layouts and designing site specific substations. Further, Gannett Fleming manages environmental activities that involve performing samplings and collecting data from monitoring wells at all site locations; preparing documents for NJDEP permits (including freshwater wetland, CAFRA, and Flood Hazard permits, and NJ Meadowlands Commission); and implementing soil erosion and sediment control measures.

PORTAL BRIDGE CAPACITY ENHANCEMENT

NEWARK, NEW JERSEY

Client: NJ Transit
Contact:
Completion Date: 2014
Construction Cost: $1 billion

Gannett Fleming

PROJECT HIGHLIGHTS

- Major railroad bridge replacent project
- Complex track and systems work
- Amtrak Northeast Corridor
- Included 29 bridges, and civil, track, signals, and catenary design
- Coordination with Amtrak and NJ Transit
- Preliminary and final design

KEY STAFF INVOLVEMENT:

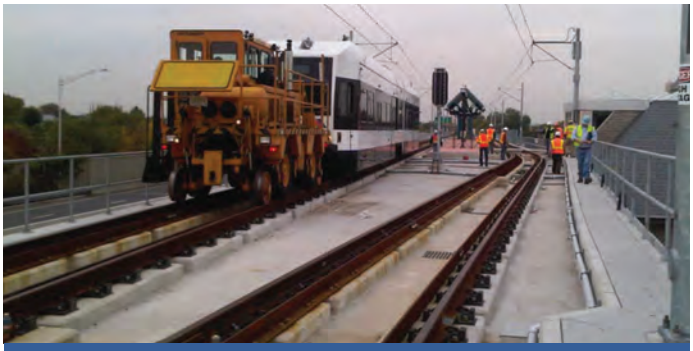
Richard Cross – Project Manager
John Legath – Track Engineer
David Howell – Deputy Project Manager
Bruce Smith – Quality Assurance / Quality Control
James Douglass – Scheduler
Greg Nazarow – Lead Rail Operations/Simulation Analyst

Gannett Fleming is leading a joint venture to design the replacement of 2.5 miles of the Amtrak Northeast Corridor between Newark, NJ and New York City. This corridor is the most heavily travelled railroad in the country. Work involves reconfiguration of the corridor and associated interlockings carrying 472 trains/day through the environmentally sensitive Hackensack Meadowlands. The project was successfully advanced by the team through an accelerated EIS effort.

Under the Preliminary Engineering phase, the two-track railroad corridor traversing the existing bridge was expanded to five tracks and elevated to allow the existing swing bridge to be replaced by two fixed bridges above the Hackensack River. This eliminated a long-standing bottleneck along this critical corridor and minimized operations and maintenance concerns. The reconfiguration of the corridor tracks and associated interlockings was designed to allow for efficient sorting of trains.

The Preliminary Engineering included the design of 29 bridges with 124 spans and all related civil, track, signal, catenary, and electric traction substation design work. The new river crossings design consisted of two, three-span, network tied arch bridges to provide 50 foot clearance over the water. There was also a “duckunder” structure designed to enable westbound NJ Transit trains leaving New York to pass under the Amtrak Northeast Corridor.

HUDSON-BERGEN LIGHT RAIL MOS-3



BAYONNE, NEW JERSEY

Client: NJ Transit
Contact:
Completion Date: 2011
Construction Cost: $60 million

Gannett Fleming

PROJECT HIGHLIGHTS

- Bridges and retaining wall design
- Extensive civil/site engineering and stormwater design
- Track, signal, communications and traction powers systems
- Geotechnical engineering
- Utilities design
- Accelerated bridge construction methods

KEY STAFF INVOLVEMENT:

David Boaté – Quality Assurance
Terry Shantz – Lead Catenary Engineer
Agnieszka Lapinski – Structural Engineer

GF served as the general design engineering consultant and architect/engineer of record for the extension of the Hudson-Bergen Light Rail system from the current 22nd Street terminal to a new 8th Street station located to extend transit service to existing residential areas in the South Bayonne area. GF work included for architectural, building systems, civil, site, structural, geotechnical and structural engineering design; track, signal, communications, traction power and overhead catenary system support infrastructure engineering design; and construction support services.

The project included the design of a 21-span viaduct, a two-story station building, and a 0.3 mile long post-and-panel retaining wall for embankment track sections. Train system design elements included track plinths, traction power/electrification conduit systems, corrosion control, stray current control, overhead catenary system foundations and viaduct mounting details, and communication systems. Civil/site engineering efforts included station plaza and platform design in compliance with ADA, kiss-n-ride lot design, utilities engineering, landscaping design, and signalized intersection engineering. Maintenance and protection of Bayonne city street traffic flows were critical and were accommodated through detailed, staged construction plan development.

POSITIVE TRAIN CONTROL

SYSTEMWIDE, NEW JERSEY/NEW YORK

Client: NJ Transit
Contact:
Completion Date: 2013
Construction Cost: $1 million

Gannett Fleming

PROJECT HIGHLIGHTS

- Engineering and construction assistance services
- Improved systemwide functionality and safety
- Compliance with FRA Regulations
- Plan development and implementation
- Operations and maintenance support
- System to be implemented on Raritan

KEY STAFF INVOLVEMENT:

Joseph Bonaduce – Project Manager
Dan Mitten – Radio Communications

In January 2010 the Federal Railroad Administration (FRA) issued a final ruling on the regulations for implementing the Rail Safety Improvement Act of 2008. The Act defines the criteria for certain passenger and freight rail lines requiring the implementation of Positive Train Control (PTC) systems. This final rule includes required functionalities of PTC system technology and the means by which PTC systems will be certified.

Gannett Fleming is responsible for providing engineering and construction assistance services for the implementation of Advanced Speed Enforcement System (ASES) on NJT's commuter rail network. Tasks involve providing direction on the functionality of the system for adherence to FRA regulations and working with the contractor to develop and test subsystem modifications for improved reliability and performance without compromising safety.

GF is providing support services on the development and preparation of specifications for the implementation of a PTC System. Tasks include development of a PTCIP and PTC Development Plan; prototype PTC development; installation and testing of system equipment; development of a PTC Safety Plan; wayside, on-board and office implementation; and ongoing support for operation and maintenance of the PTC System once completed.

ROUTE 35 BRIDGE OVER RARITAN RIVER

PERTH AMBOY, NEW JERSEY

Client: New Jersey Dept. of Transportation
Contact:
Completion Date: 2018 (est.)
Construction Cost: $1.5 billion

HALEY ALDRICH

PROJECT HIGHLIGHTS

- 4,000 ft. bridge replacement project
- Fast tracked design schedule
- Next bridge upstream to NJ Transit Raritan River Bridge
- High capacity driven pile and drilled shaft foundations
- Ground improvement techniques address difficult soil conditions
- Protection of existing active bridge during construction

KEY STAFF INVOLVEMENT:

Ed Zamiskie – Geotechnical Project Manager
Joe Griffin – Constructability (Griffin Engineering)

Haley & Aldrich was the geotechnical engineer of record for the replacement of the Victory Bridge between Perth Amboy and Sayreville. After a terminated design-build contact, the NJDOT needed to regain significant time and a compressed design schedule was executed. The 1920 bridge was a swing bridge spanning the Raritan River between Perth Amboy and Sayreville.

The new bridge is of a high-level precast segmental concrete structure. The site contained highly variable geologic conditions including thick organic silt deposits below the river and marsh areas, loose saturated alluvium, and dense silty and clayey glacial soils. Very hard diabase bedrock was found at 80- to 110-ft below grade or river level. The mixed geologic conditions and constructability issues required the evaluation and use of varying deep foundation types and ground improvement methods: 24 in. dia pipe piles were chosen for the land piers and 6 and 8-ft dia drilled shafts were chosen for the water piers, and the soft deposits in the river required the shafts (up to 120 ft long) to be socketed into diabase bedrock to resist large lateral loads due to seismic events and vessel impact.

A combination of ground improvement techniques were designed to address compressible and liquefaction susceptible soils at the bridge approaches which required embankment fills up to 30 ft above the existing grades. Preloading/surcharging and wick drains were designed to stabilize the compressible soils. In addition, a geosynthetic-supported embankment above vibro concrete columns was designed to mitigate an area of loose saturated sands.

PROJECT LOCATION MAP

KEY ISSUES

APPROACH SPAN DESIGN

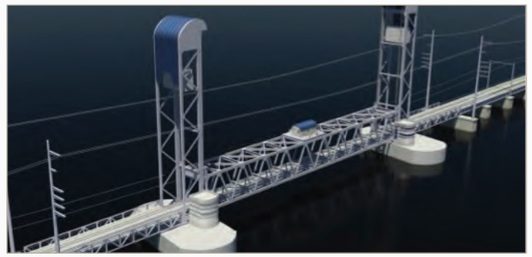
Key Issues:

- Structure type
- Pier layout
- Flood resilience
- Deck type
- Constructability
- Access issues
- Durability

AESTHETIC CONSIDERATIONS

Key Issues:

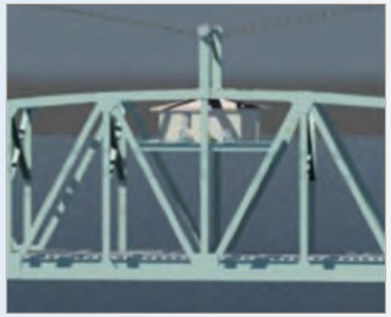
- Context sensitivity
- SHPO consultation
- Public acceptance
- Maintenance
- Visual character



MAINTAINING RAIL OPERATIONS

Key Issues:

- Construction staging
- Equipment clearances
- Track/systems tie-ins
- Movement monitoring
- Operations analysis



- ✓ SPAN DRIVE - efficient skew control and ease of maintenance
- ✓ ROPE DRIVE SYSTEM – dependable, durable and maintainable
- ✓ SHEAVE DESIGN - proven and durable detailing
- ✓ AUXILIARY COUNTERWEIGHT – dependable span balance

MOVABLE SPAN OPERATIONS

Key Issues:

- Reliability
- Dependability
- Efficiency
- Longevity
- Maintenance

SUPPORT OF HIGH TENSION POWER LINES

Key Issues:

- Staging
- Clearances
- Efficiency
- Access
- Maintenance

SUPPORT ON TOWERS

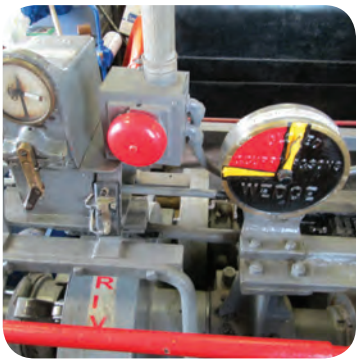
MONOPOLES

OUTRIGGERS










Hardesty & Hanover/Gannett Fleming Joint Venture
1037 Raymond Blvd #1420
Newark, NJ 07102

Hardesty & Hanover | Gannett Fleming

SEPTEMBER 21, 2015

REVISED 03/24/2016

NJ TRANSIT
The Way To Go.

Hardesty & Hanover | Gannett Fleming

COST PROPOSAL - VOLUME A

(RFP) No. 15-044
Design, Engineering and Construction Assistance Services for the Replacement of the

RARITAN RIVER DRAWBRIDGE

NJ TRANSIT RFP No. 15-044

Design, Engineering and Construction Assistance Services
for the Replacement of Raritan River Bridge

COST & FEE RECAP - TEAM

(RFP ATTACHMENT F-1)

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

COST AND FEE RECAP - TEAM

FIRM	MAN HOURS	SALARY	OVERHEAD RATE	OVERHEAD	SUBTOTAL	FIXED FEE @ 10%	DIRECT EXPENSES	TOTAL COST	DBE PERCENTAGE
HARDESTY & HANOVER (JV)	16,693	$1,029,688	157.40%	$1,620,729	$2,650,417	$265,042	$1,139,694 *	$4,055,152	
GANNETT FLEMING (JV)	13,377	$835,790	159.17%	$1,330,327	$2,166,117	$216,612	$1,139,694 *	$3,522,422	
HALEY & ALDRICH	3,824	$162,404	220.94%	$358,815	$521,218	$52,122	$31,755	$605,095	
GRIFFIN	100	$9,000	152.30%	$13,707	$22,707	$2,271	$220	$25,198	
NAIK (DBE)	4,404	$170,238	127.09%	$216,356	$386,594	$38,659	$192,480	$617,733	6.6%
ENVISION (DBE)	2,336	$122,079	137.51%	$167,871	$289,950	$28,995	$17,280	$336,225	3.6%
JCMS (DBE)	1,014	$58,429	117.32%	$68,549	$126,978	$12,698	$760	$140,436	1.5%
RADIN (DBE)	281	$10,737	155.17%	$16,661	$27,398	$2,740	$220	$30,357	0.3%
SJH (DBE)	312	$17,880	140.00%	$25,032	$42,911	$4,291	$220	$47,422	0.5%
PROJECT TOTAL	**42,341**	**$2,416,245**		**$3,818,045**	**$6,234,290**	**$623,429**	**$2,522,322**	**$9,380,041**	**12.5%**
DBE VENDORS									
JERSEY BORINGS								$1,985,150	21.2%
ESTEBAN								$24,500	0.3%
							TOTAL DBE %		**33.9%**

* Includes cost of DBE Vendors

NJ TRANSIT RFP No. 15-044

Design, Engineering and Construction Assistance Services
for the Replacement of Raritan River Bridge

COST & FEE RECAP BY FIRM/TASK

(RFP ATTACHMENT F-2)

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044
ESTIMATE BY FIRM/TASK

PROJECT TOTAL BY TASK - H&H / GANNETT FLEMING JOINT VENTURE TEAM							
TASK	DESCRIPTION	TOTAL HOURS	SALARY	OVERHEAD	SUBTOTAL	FIXED FEE	TOTAL COST
TASK 1	PROJECT MANAGEMENT	6,395	$477,404	$738,206	$1,215,610	$121,561	$1,337,171
1.01	Project Management Plan	2,596	$252,395	$399,428	$651,823	$65,182	$717,005
1.02	Project Controls	7	$682	$1,085	$1,767	$177	$1,944
1.03	Project Schedule	697	$35,139	$55,931	$91,071	$9,107	$100,178
1.04	Records Management	1,371	$57,622	$79,254	$136,876	$13,688	$150,563
1.05	Monthly Progress Reporting	203	$17,671	$27,874	$45,544	$4,554	$50,099
1.06	Quality Control	220	$16,518	$26,062	$42,580	$4,258	$46,838
1.07	Quality Management Plan (QMP)	80	$7,147	$11,249	$18,396	$1,840	$20,236
1.08	QMP Requirements	40	$3,573	$5,625	$9,198	$920	$10,118
1.09	Design Control	81	$7,229	$11,379	$18,608	$1,861	$20,469
1.10	Control of Quality Records	241	$13,975	$19,810	$33,784	$3,378	$37,163
1.11	Internal Quality Audits	48	$3,471	$5,464	$8,935	$894	$9,829
1.12	Configuration Management	250	$13,750	$18,908	$32,658	$3,266	$35,923
1.13	Project Meetings	361	$30,365	$48,015	$78,380	$7,838	$86,218
1.14	Payment Procedures	200	$17,867	$28,123	$45,990	$4,599	$50,589
TASK 2	RISK MANAGEMENT	622	$60,514	$95,948	$156,462	$15,646	$172,108
	Risk Identification	88	$8,585	$13,616	$22,201	$2,220	$24,421
	Preliminary Workshop	86	$8,353	$13,351	$21,704	$2,170	$23,874
	Draft Risk Register	122	$11,906	$18,831	$30,737	$3,074	$33,811
	Risk Management Workshop	92	$8,787	$14,041	$22,828	$2,283	$25,111
	Risk Register	92	$8,965	$14,203	$23,169	$2,317	$25,486
	Risk Management Plan	142	$13,917	$21,906	$35,823	$3,582	$39,405
TASK 3	SYSTEM SECURITY & EMERGENCY MGMT	606	$54,932	$87,436	$142,368	$14,237	$156,605
PHASE I - CONCEPTUAL & PRELIMINARY DESIGN							
PHASE IA - CONCEPTUAL DESIGN							
TASK 4.1	Data Collection & Design Criteria	400	$24,531	$38,863	$63,394	$6,339	$69,733
TASK 4.2	Survey & Base Mapping	874	$34,714	$47,151	$81,865	$8,187	$90,052
TASK 4.3	Right-of-Way Search	312	$13,188	$16,988	$30,176	$3,018	$33,194
TASK 4.4	Utility Investigation	382	$17,106	$22,444	$39,550	$3,955	$43,505
TASK 4.5	Initial Geotechnical Investigation	512	$27,299	$46,114	$73,412	$7,341	$80,754
TASK 4.7	Navigation Study	300	$22,130	$34,832	$56,962	$5,696	$62,658
TASK 4.8	Conceptual Design	5,519	$326,433	$498,630	$825,063	$82,506	$907,569
1	Alignment Alternatives	723	$45,049	$71,704	$116,753	$11,675	$128,429
2	Bridges	2,514	$147,861	$228,635	$376,497	$37,650	$414,146
	Movable Span	*1,000*	*$69,507*	*$109,404*	*$178,912*	*$17,891*	*$196,803*
	Approach Spans	*1,514*	*$78,354*	*$119,231*	*$197,585*	*$19,759*	*$217,344*
3	Civil Design	340	$18,084	$28,785	$46,869	$4,687	$51,556
4	Traction Power/Electrical	652	$36,600	$58,256	$94,855	$9,486	$104,341
5	Constructability	374	$25,622	$40,078	$65,700	$6,570	$72,270
6	Construction Cost	612	$34,683	$46,574	$81,257	$8,126	$89,383
7	Construction Schedule	304	$18,534	$24,597	$43,131	$4,313	$47,444
TASK 4.9	Feasibility Report	404	$25,586	$40,477	$66,063	$6,606	$72,669
TASK 4.10	Value Engineering	933	$64,366	$93,214	$157,580	$15,758	$173,338
TASK 4.11	NEPA Consultant Coordination	404	$29,359	$46,446	$75,805	$7,581	$83,386
	TOTAL PHASE IA	10,040	$584,713	$885,159	$1,469,871	$146,987	$1,616,859
PHASE IB - PRELIMINARY DESIGN							
TASK 4.12	Preliminary Design	12,114	$671,095	$1,055,606	$1,726,701	$172,670	$1,899,371
4.12.A	Update Design Criteria	100	$7,632	$12,073	$19,706	$1,971	$21,676
4.12.B	Bridge Design	5,745	$313,024	$493,433	$806,458	$80,646	$887,104
	Movable Span - Structural	*1,919*	*$113,012*	*$177,881*	*$290,892*	*$29,089*	*$319,982*
	Movable Span - Electrical	*885*	*$40,969*	*$64,485*	*$105,454*	*$10,545*	*$115,999*
	Movable Span - Mechanical	*885*	*$43,228*	*$68,041*	*$111,269*	*$11,127*	*$122,396*
	Approach Spans	*2,056*	*$115,816*	*$183,027*	*$298,842*	*$29,884*	*$328,726*
4.12.C	Track Design	395	$26,470	$42,132	$68,601	$6,860	$75,461
4.12.D	Preliminary Civil Design	1,590	$79,796	$133,104	$212,901	$21,290	$234,191
4.12.E	Buildings & Facilities	196	$10,873	$17,114	$27,987	$2,799	$30,786
4.12.F	Traction Power/Electrical/Bridge Controls	2,186	$116,821	$185,668	$302,490	$30,249	$332,738
	Traction Power	*626*	*$37,275*	*$59,331*	*$96,607*	*$9,661*	*$106,267*
	Electrical	*1,560*	*$79,546*	*$126,337*	*$205,883*	*$20,588*	*$226,471*
	Bridge Controls	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.G	Signal Systems	108	$8,035	$12,790	$20,825	$2,083	$22,908
4.12.H	Communications	650	$39,684	$63,164	$102,848	$10,285	$113,132
4.12.I	Cost & Schedule	1,144	$68,759	$96,127	$164,886	$16,489	$181,374
TASK 4.13	Supplemental Survey	484	$17,307	$21,995	$39,302	$3,930	$43,232
TASK 4.14	ROW & Property Acquisition (PAECE)	152	$6,466	$8,218	$14,685	$1,468	$16,153
TASK 4.15	Utility Relocation	1,748	$69,225	$87,978	$157,203	$15,720	$172,923
TASK 4.16	Detailed Geotech Investigation	8,680	$399,785	$722,380	$1,122,165	$112,217	$1,234,382
TASK 4.18	As Directed - Preliminary Design	1,500	$74,804	$115,119	$189,923	$18,992	$208,915
	TOTAL PHASE IB	24,678	$1,238,682	$2,011,297	$3,249,979	$324,998	$3,574,978
	TOTAL PHASE I	34,718	$1,823,394	$2,896,456	$4,719,850	$471,985	$5,191,835
	TOTAL LABOR	42,341	$2,416,245	$3,818,045	$6,234,290	$623,429	$6,857,719
	DIRECT EXPENSES						$2,522,322
	TOTAL COST						$9,380,041

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044
ESTIMATE BY FIRM/TASK

FIRM: Hardesty & Hanover

TASK	DESCRIPTION	TOTAL HOURS	SALARY	OVERHEAD	SUBTOTAL	FIXED FEE	TOTAL COST
TASK 1	PROJECT MANAGEMENT	2,435	$217,735	$342,715	$560,450	$56,046	$616,495
1.01	Project Management Plan	1,407	$130,459	$205,342	$335,801	$33,580	$369,381
1.02	Project Controls	0	$0	$0	$0	$0	$0
1.03	Project Schedule	0	$0	$0	$0	$0	$0
1.04	Records Management	0	$0	$0	$0	$0	$0
1.05	Monthly Progress Reporting	160	$14,294	$22,498	$36,792	$3,679	$40,471
1.06	Quality Control	180	$13,017	$20,489	$33,507	$3,351	$36,857
1.07	Quality Management Plan (QMP)	80	$7,147	$11,249	$18,396	$1,840	$20,236
1.08	QMP Requirements	40	$3,573	$5,625	$9,198	$920	$10,118
1.09	Design Control	80	$7,147	$11,249	$18,396	$1,840	$20,236
1.10	Control of Quality Records	40	$2,893	$4,553	$7,446	$745	$8,191
1.11	Internal Quality Audits	48	$3,471	$5,464	$8,935	$894	$9,829
1.12	Configuration Management	0	$0	$0	$0	$0	$0
1.13	Project Meetings	200	$17,867	$28,123	$45,990	$4,599	$50,589
1.14	Payment Procedures	200	$17,867	$28,123	$45,990	$4,599	$50,589
TASK 2	RISK MANAGEMENT	592	$56,021	$91,325	$149,346	$14,935	$164,281
	Risk Identification	80	$7,841	$12,341	$20,182	$2,018	$22,200
	Preliminary Workshop	80	$7,841	$12,341	$20,182	$2,018	$22,200
	Draft Risk Register	120	$11,761	$18,512	$30,273	$3,027	$33,300
	Risk Management Workshop	80	$7,841	$12,341	$20,182	$2,018	$22,200
	Risk Register	90	$8,821	$13,884	$22,705	$2,270	$24,975
	Risk Management Plan	142	$13,917	$21,906	$35,823	$3,582	$39,405
TASK 3	SYSTEM SECURITY & EMERGENCY MGMT	0	$0	$0	$0	$0	$0
PHASE I - CONCEPTUAL & PRELIMINARY DESIGN							
PHASE IA - CONCEPTUAL DESIGN							
TASK 4.1	Data Collection & Design Criteria	180	$10,356	$16,300	$26,656	$2,666	$29,321
TASK 4.2	Survey & Base Mapping	0	$0	$0	$0	$0	$0
TASK 4.3	Right-of-Way Search	0	$0	$0	$0	$0	$0
TASK 4.4	Utility Investigation	0	$0	$0	$0	$0	$0
TASK 4.5	Initial Geotechnical Investigation	400	$21,659	$34,092	$55,751	$5,575	$61,326
TASK 4.7	Navigation Study	300	$22,130	$34,832	$56,962	$5,696	$62,658
TASK 4.8	Conceptual Design	1,841	$120,631	$189,874	$310,505	$31,051	$341,556
1	Alignment Alternatives	0	$0	$0	$0	$0	$0
2	Bridges	1,613	$105,942	$166,752	$272,694	$27,269	$299,963
	Movable Span	*1,000*	*$69,507*	*$109,404*	*$178,912*	*$17,891*	*$196,803*
	Approach Spans	*613*	*$36,435*	*$57,348*	*$93,782*	*$9,378*	*$103,161*
3	Civil Design	0	$0	$0	$0	$0	$0
4	Traction Power/Electrical	0	$0	$0	$0	$0	$0
5	Constructability	60	$4,823	$7,592	$12,415	$1,242	$13,657
6	Construction Cost	116	$5,875	$9,246	$15,121	$1,512	$16,633
7	Construction Schedule	52	$3,992	$6,283	$10,275	$1,028	$11,303
TASK 4.9	Feasibility Report	100	$6,090	$9,586	$15,676	$1,568	$17,244
TASK 4.10	Value Engineering	160	$10,905	$17,165	$28,070	$2,807	$30,877
TASK 4.11	NEPA Consultant Coordination	200	$16,112	$25,361	$41,474	$4,147	$45,621
	TOTAL PHASE IA	3,181	$207,884	$327,209	$535,094	$53,509	$588,603
PHASE IB - PRELIMINARY DESIGN							
TASK 4.12	Preliminary Design	4,725	$282,140	$412,609	$674,749	$67,475	$742,224
4.12.A	Update Design Criteria	50	$4,241	$6,675	$10,916	$1,092	$12,008
4.12.B	Bridge Design	3,991	$216,146	$340,214	$556,360	$55,636	$611,996
	Movable Span - Structural	*1,919*	*$113,012*	*$177,881*	*$290,892*	*$29,089*	*$319,982*
	Movable Span - Electrical	*885*	*$40,969*	*$64,485*	*$105,454*	*$10,545*	*$115,999*
	Movable Span - Mechanical	*885*	*$43,228*	*$68,041*	*$111,269*	*$11,127*	*$122,396*
	Approach Spans	*302*	*$18,937*	*$29,807*	*$48,745*	*$4,874*	*$53,619*
4.12.C	Track Design	0	$0	$0	$0	$0	$0
4.12.D	Preliminary Civil Design	0	$0	$0	$0	$0	$0
4.12.E	Buildings & Facilities	196	$10,873	$17,114	$27,987	$2,799	$30,786
4.12.F	Traction Power/Electrical/Bridge Controls	0	$0	$0	$0	$0	$0
	Traction Power	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Bridge Controls	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.G	Signal Systems	0	$0	$0	$0	$0	$0
4.12.H	Communications	0	$0	$0	$0	$0	$0
4.12.I	Cost & Schedule	488	$30,880	$48,605	$79,485	$7,948	$87,433
TASK 4.13	Supplemental Survey	0	$0	$0	$0	$0	$0
TASK 4.14	ROW & Property Acquisition (PAECE)	0	$0	$0	$0	$0	$0
TASK 4.15	Utility Relocation	0	$0	$0	$0	$0	$0
TASK 4.16	Detailed Geotech Investigation	5,160	$253,234	$398,591	$651,825	$65,183	$717,008
TASK 4.18	As Directed - Preliminary Design	600	$30,674	$48,280	$78,954	$7,895	$86,849
	TOTAL PHASE IB	10,485	$546,048	$859,480	$1,405,527	$140,553	$1,546,080
	TOTAL PHASE I	13,666	$753,932	$1,186,689	$1,940,621	$194,062	$2,134,683
	TOTAL LABOR	16,693	$1,029,688	$1,620,729	$2,650,417	$265,042	$2,915,458
	DIRECT EXPENSES						$1,139,694
	TOTAL COST						$4,055,152

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044
ESTIMATE BY FIRM/TASK

FIRM: Gannett Fleming

TASK	DESCRIPTION	TOTAL HOURS	SALARY	OVERHEAD	SUBTOTAL	FIXED FEE	TOTAL COST
TASK 1	PROJECT MANAGEMENT	2,140	$177,379	$282,334	$459,713	$45,971	$505,685
1.01	Project Management Plan	1,189	$121,936	$194,086	$316,022	$31,602	$347,625
1.02	Project Controls	7	$682	$1,085	$1,767	$177	$1,944
1.03	Project Schedule	697	$35,139	$55,931	$91,071	$9,107	$100,178
1.04	Records Management	1	$82	$130	$212	$21	$233
1.05	Monthly Progress Reporting	43	$3,377	$5,375	$8,752	$875	$9,628
1.06	Quality Control	40	$3,501	$5,572	$9,073	$907	$9,980
1.07	Quality Management Plan (QMP)	0	$0	$0	$0	$0	$0
1.08	QMP Requirements	0	$0	$0	$0	$0	$0
1.09	Design Control	1	$82	$130	$212	$21	$233
1.10	Control of Quality Records	1	$82	$130	$212	$21	$233
1.11	Internal Quality Audits	0	$0	$0	$0	$0	$0
1.12	Configuration Management	0	$0	$0	$0	$0	$0
1.13	Project Meetings	161	$12,498	$19,893	$32,391	$3,239	$35,630
1.14	Payment Procedures	0	$0	$0	$0	$0	$0
TASK 2	RISK MANAGEMENT	16	$1,434	$2,282	$3,715	$372	$4,087
	Risk Identification	6	$600	$955	$1,555	$156	$1,711
	Preliminary Workshop	2	$200	$318	$518	$52	$570
	Draft Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Workshop	8	$634	$1,009	$1,642	$164	$1,806
	Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Plan	0	$0	$0	$0	$0	$0
TASK 3	SYSTEM SECURITY & EMERGENCY MGMT	606	$54,932	$87,436	$142,368	$14,237	$156,605
PHASE I - CONCEPTUAL & PRELIMINARY DESIGN							
PHASE IA - CONCEPTUAL DESIGN							
TASK 4.1	Data Collection & Design Criteria	220	$14,175	$22,563	$36,738	$3,674	$40,412
TASK 4.2	Survey & Base Mapping	168	$9,454	$15,049	$24,503	$2,450	$26,953
TASK 4.3	Right-of-Way Search	12	$709	$1,129	$1,838	$184	$2,022
TASK 4.4	Utility Investigation	32	$2,194	$3,492	$5,685	$569	$6,254
TASK 4.5	Initial Geotechnical Investigation	12	$709	$1,129	$1,838	$184	$2,022
TASK 4.7	Navigation Study	0	$0	$0	$0	$0	$0
TASK 4.8	Conceptual Design	2,582	$145,089	$230,939	$376,028	$37,603	$413,631
1	Alignment Alternatives	723	$45,049	$71,704	$116,753	$11,675	$128,429
2	Bridges	485	$24,284	$38,652	$62,936	$6,294	$69,230
	Movable Span	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*485*	*$24,284*	*$38,652*	*$62,936*	*$6,294*	*$69,230*
3	Civil Design	340	$18,084	$28,785	$46,869	$4,687	$51,556
4	Traction Power/Electrical	652	$36,600	$58,256	$94,855	$9,486	$104,341
5	Constructability	214	$11,798	$18,780	$30,578	$3,058	$33,636
6	Construction Cost	116	$6,282	$9,999	$16,280	$1,628	$17,908
7	Construction Schedule	52	$2,992	$4,763	$7,756	$776	$8,531
TASK 4.9	Feasibility Report	296	$19,060	$30,337	$49,397	$4,940	$54,336
TASK 4.10	Value Engineering	241	$12,653	$20,140	$32,794	$3,279	$36,073
TASK 4.11	NEPA Consultant Coordination	204	$13,247	$21,085	$34,332	$3,433	$37,765
	TOTAL PHASE IA	3,767	$217,291	$345,862	$563,152	$56,315	$619,468
PHASE IB - PRELIMINARY DESIGN							
TASK 4.12	Preliminary Design	6,248	$351,230	$559,053	$910,284	$91,028	$1,001,312
4.12.A	Update Design Criteria	50	$3,391	$5,398	$8,789	$879	$9,668
4.12.B	Bridge Design	1,566	$88,733	$141,237	$229,970	$22,997	$252,967
	Movable Span - Structural	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Mechanical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*1,566*	*$88,733*	*$141,237*	*$229,970*	*$22,997*	*$252,967*
4.12.C	Track Design	395	$26,470	$42,132	$68,601	$6,860	$75,461
4.12.D	Preliminary Civil Design	1,400	$69,933	$111,313	$181,246	$18,125	$199,371
4.12.E	Buildings & Facilities	0	$0	$0	$0	$0	$0
4.12.F	Traction Power/Electrical/Bridge Controls	2,005	$109,905	$174,936	$284,842	$28,484	$313,326
	Traction Power	*626*	*$37,275*	*$59,331*	*$96,607*	*$9,661*	*$106,267*
	Electrical	*1,379*	*$72,630*	*$115,605*	*$188,235*	*$18,824*	*$207,059*
	Bridge Controls	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.G	Signal Systems	108	$8,035	$12,790	$20,825	$2,083	$22,908
4.12.H	Communications	650	$39,684	$63,164	$102,848	$10,285	$113,132
4.12.I	Cost & Schedule	74	$5,078	$8,083	$13,162	$1,316	$14,478
TASK 4.13	Supplemental Survey	0	$0	$0	$0	$0	$0
TASK 4.14	ROW & Property Acquisition (PAECE)	0	$0	$0	$0	$0	$0
TASK 4.15	Utility Relocation	0	$0	$0	$0	$0	$0
TASK 4.16	Detailed Geotech Investigation	0	$0	$0	$0	$0	$0
TASK 4.18	As Directed - Preliminary Design	600	$33,524	$53,360	$86,884	$8,688	$95,572
	TOTAL PHASE IB	6,848	$384,754	$612,413	$997,168	$99,717	$1,096,884
	TOTAL PHASE I	10,615	$602,045	$958,275	$1,560,320	$156,032	$1,716,352
	TOTAL LABOR	13,377	$835,790	$1,330,327	$2,166,117	$216,612	$2,382,729
	DIRECT EXPENSES						$1,139,694
	TOTAL COST						$3,522,422

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044
ESTIMATE BY FIRM/TASK

FIRM: Haley & Aldrich

TASK	DESCRIPTION	TOTAL HOURS	SALARY	OVERHEAD	SUBTOTAL	FIXED FEE	TOTAL COST
TASK 1	PROJECT MANAGEMENT	0	$0	$0	$0	$0	$0
1.01	Project Management Plan	0	$0	$0	$0	$0	$0
1.02	Project Controls	0	$0	$0	$0	$0	$0
1.03	Project Schedule	0	$0	$0	$0	$0	$0
1.04	Records Management	0	$0	$0	$0	$0	$0
1.05	Monthly Progress Reporting	0	$0	$0	$0	$0	$0
1.06	Quality Control	0	$0	$0	$0	$0	$0
1.07	Quality Management Plan (QMP)	0	$0	$0	$0	$0	$0
1.08	QMP Requirements	0	$0	$0	$0	$0	$0
1.09	Design Control	0	$0	$0	$0	$0	$0
1.10	Control of Quality Records	0	$0	$0	$0	$0	$0
1.11	Internal Quality Audits	0	$0	$0	$0	$0	$0
1.12	Configuration Management	0	$0	$0	$0	$0	$0
1.13	Project Meetings	0	$0	$0	$0	$0	$0
1.14	Payment Procedures	0	$0	$0	$0	$0	$0
TASK 2	RISK MANAGEMENT	14	$1,060	$2,341	$3,400	$340	$3,741
	Risk Identification	2	$145	$320	$464	$46	$511
	Preliminary Workshop	4	$313	$691	$1,004	$100	$1,104
	Draft Risk Register	2	$145	$320	$464	$46	$511
	Risk Management Workshop	4	$313	$691	$1,004	$100	$1,104
	Risk Register	2	$145	$320	$464	$46	$511
	Risk Management Plan	0	$0	$0	$0	$0	$0
TASK 3	SYSTEM SECURITY & EMERGENCY MGMT	0	$0	$0	$0	$0	$0
PHASE I - CONCEPTUAL & PRELIMINARY DESIGN							
PHASE IA - CONCEPTUAL DESIGN							
TASK 4.1	Data Collection & Design Criteria	0	$0	$0	$0	$0	$0
TASK 4.2	Survey & Base Mapping	0	$0	$0	$0	$0	$0
TASK 4.3	Right-of-Way Search	0	$0	$0	$0	$0	$0
TASK 4.4	Utility Investigation	0	$0	$0	$0	$0	$0
TASK 4.5	Initial Geotechnical Investigation	100	$4,930	$10,893	$15,823	$1,582	$17,406
TASK 4.7	Navigation Study	0	$0	$0	$0	$0	$0
TASK 4.8	Conceptual Design	0	$0	$0	$0	$0	$0
1	Alignment Alternatives	0	$0	$0	$0	$0	$0
2	Bridges	0	$0	$0	$0	$0	$0
	Movable Span	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
3	Civil Design	0	$0	$0	$0	$0	$0
4	Traction Power/Electrical	0	$0	$0	$0	$0	$0
5	Constructability	0	$0	$0	$0	$0	$0
6	Construction Cost	0	$0	$0	$0	$0	$0
7	Construction Schedule	0	$0	$0	$0	$0	$0
TASK 4.9	Feasibility Report	0	$0	$0	$0	$0	$0
TASK 4.10	Value Engineering	0	$0	$0	$0	$0	$0
TASK 4.11	NEPA Consultant Coordination	0	$0	$0	$0	$0	$0
	TOTAL PHASE IA	100	$4,930	$10,893	$15,823	$1,582	$17,406
PHASE IB - PRELIMINARY DESIGN							
TASK 4.12	Preliminary Design	190	$9,863	$21,791	$31,654	$3,165	$34,820
4.12.A	Update Design Criteria	0	$0	$0	$0	$0	$0
4.12.B	Bridge Design	0	$0	$0	$0	$0	$0
	Movable Span - Structural	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Mechanical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.C	Track Design	0	$0	$0	$0	$0	$0
4.12.D	Preliminary Civil Design	190	$9,863	$21,791	$31,654	$3,165	$34,820
4.12.E	Buildings & Facilities	0	$0	$0	$0	$0	$0
4.12.F	Traction Power/Electrical/Bridge Controls	0	$0	$0	$0	$0	$0
	Traction Power	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Bridge Controls	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12 G	Signal Systems	0	$0	$0	$0	$0	$0
4.12 H	Communications	0	$0	$0	$0	$0	$0
4.12.I	Cost & Schedule	0	$0	$0	$0	$0	$0
TASK 4.13	Supplemental Survey	0	$0	$0	$0	$0	$0
TASK 4.14	ROW & Property Acquisition (PAECE)	0	$0	$0	$0	$0	$0
TASK 4.15	Utility Relocation	0	$0	$0	$0	$0	$0
TASK 4.16	Detailed Geotech Investigation	3,520	$146,551	$323,789	$470,340	$47,034	$517,374
TASK 4.18	As Directed - Preliminary Design	0	$0	$0	$0	$0	$0
	TOTAL PHASE IB	3,710	$156,414	$345,581	$501,995	$50,199	$552,194
	TOTAL PHASE I	3,810	$161,344	$356,474	$517,818	$51,782	$569,600
	TOTAL LABOR	3,824	$162,404	$358,815	$521,218	$52,122	$573,340
	DIRECT EXPENSES						$31,755
	TOTAL COST						$605,095

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044
ESTIMATE BY FIRM/TASK

FIRM: Griffin

TASK	DESCRIPTION	TOTAL HOURS	SALARY	OVERHEAD	SUBTOTAL	FIXED FEE	TOTAL COST
TASK 1	PROJECT MANAGEMENT	0	$0	$0	$0	$0	$0
1.01	Project Management Plan	0	$0	$0	$0	$0	$0
1.02	Project Controls	0	$0	$0	$0	$0	$0
1.03	Project Schedule	0	$0	$0	$0	$0	$0
1.04	Records Management	0	$0	$0	$0	$0	$0
1.05	Monthly Progress Reporting	0	$0	$0	$0	$0	$0
1.06	Quality Control	0	$0	$0	$0	$0	$0
1.07	Quality Management Plan (QMP)	0	$0	$0	$0	$0	$0
1.08	QMP Requirements	0	$0	$0	$0	$0	$0
1.09	Design Control	0	$0	$0	$0	$0	$0
1.10	Control of Quality Records	0	$0	$0	$0	$0	$0
1.11	Internal Quality Audits	0	$0	$0	$0	$0	$0
1.12	Configuration Management	0	$0	$0	$0	$0	$0
1.13	Project Meetings	0	$0	$0	$0	$0	$0
1.14	Payment Procedures	0	$0	$0	$0	$0	$0
TASK 2	RISK MANAGEMENT	0	$0	$0	$0	$0	$0
	Risk Identification	0	$0	$0	$0	$0	$0
	Preliminary Workshop	0	$0	$0	$0	$0	$0
	Draft Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Workshop	0	$0	$0	$0	$0	$0
	Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Plan	0	$0	$0	$0	$0	$0
TASK 3	SYSTEM SECURITY & EMERGENCY MGMT	0	$0	$0	$0	$0	$0
PHASE I - CONCEPTUAL & PRELIMINARY DESIGN							
PHASE IA - CONCEPTUAL DESIGN							
TASK 4.1	Data Collection & Design Criteria	0	$0	$0	$0	$0	$0
TASK 4.2	Survey & Base Mapping	0	$0	$0	$0	$0	$0
TASK 4.3	Right-of-Way Search	0	$0	$0	$0	$0	$0
TASK 4.4	Utility Investigation	0	$0	$0	$0	$0	$0
TASK 4.5	Initial Geotechnical Investigation	0	$0	$0	$0	$0	$0
TASK 4.7	Navigation Study	0	$0	$0	$0	$0	$0
TASK 4.8	Conceptual Design	100	$9,000	$13,707	$22,707	$2,271	$24,978
1	Alignment Alternatives	0	$0	$0	$0	$0	$0
2	Bridges	0	$0	$0	$0	$0	$0
	Movable Span	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
3	Civil Design	0	$0	$0	$0	$0	$0
4	Traction Power/Electrical	0	$0	$0	$0	$0	$0
5	Constructability	100	$9,000	$13,707	$22,707	$2,271	$24,978
6	Construction Cost	0	$0	$0	$0	$0	$0
7	Construction Schedule	0	$0	$0	$0	$0	$0
TASK 4.9	Feasibility Report	0	$0	$0	$0	$0	$0
TASK 4.10	Value Engineering	0	$0	$0	$0	$0	$0
TASK 4.11	NEPA Consultant Coordination	0	$0	$0	$0	$0	$0
	TOTAL PHASE IA	100	$9,000	$13,707	$22,707	$2,271	$24,978
PHASE IB - PRELIMINARY DESIGN							
TASK 4.12	Preliminary Design	0	$0	$0	$0	$0	$0
4.12.A	Update Design Criteria	0	$0	$0	$0	$0	$0
4.12.B	Bridge Design	0	$0	$0	$0	$0	$0
	Movable Span - Structural	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Mechanical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.C	Track Design	0	$0	$0	$0	$0	$0
4.12.D	Preliminary Civil Design	0	$0	$0	$0	$0	$0
4.12.E	Buildings & Facilities	0	$0	$0	$0	$0	$0
4.12.F	Traction Power/Electrical/Bridge Controls	0	$0	$0	$0	$0	$0
	Traction Power	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Bridge Controls	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.G	Signal Systems	0	$0	$0	$0	$0	$0
4.12.H	Communications	0	$0	$0	$0	$0	$0
4.12.I	Cost & Schedule	0	$0	$0	$0	$0	$0
TASK 4.13	Supplemental Survey	0	$0	$0	$0	$0	$0
TASK 4.14	ROW & Property Acquisition (PAECE)	0	$0	$0	$0	$0	$0
TASK 4.15	Utility Relocation	0	$0	$0	$0	$0	$0
TASK 4.16	Detailed Geotech Investigation	0	$0	$0	$0	$0	$0
TASK 4.18	As Directed - Preliminary Design	0	$0	$0	$0	$0	$0
	TOTAL PHASE IB	0	$0	$0	$0	$0	$0
	TOTAL PHASE I	100	$9,000	$13,707	$22,707	$2,271	$24,978
	TOTAL LABOR	100	$9,000	$13,707	$22,707	$2,271	$24,978
	DIRECT EXPENSES						$220
	TOTAL COST						$25,198

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044
ESTIMATE BY FIRM/TASK

FIRM: Naik

TASK	DESCRIPTION	TOTAL HOURS	SALARY	OVERHEAD	SUBTOTAL	FIXED FEE	TOTAL COST
TASK 1	PROJECT MANAGEMENT	0	$0	$0	$0	$0	$0
1.01	Project Management Plan	0	$0	$0	$0	$0	$0
1.02	Project Controls	0	$0	$0	$0	$0	$0
1.03	Project Schedule	0	$0	$0	$0	$0	$0
1.04	Records Management	0	$0	$0	$0	$0	$0
1.05	Monthly Progress Reporting	0	$0	$0	$0	$0	$0
1.06	Quality Control	0	$0	$0	$0	$0	$0
1.07	Quality Management Plan (QMP)	0	$0	$0	$0	$0	$0
1.08	QMP Requirements	0	$0	$0	$0	$0	$0
1.09	Design Control	0	$0	$0	$0	$0	$0
1.10	Control of Quality Records	0	$0	$0	$0	$0	$0
1.11	Internal Quality Audits	0	$0	$0	$0	$0	$0
1.12	Configuration Management	0	$0	$0	$0	$0	$0
1.13	Project Meetings	0	$0	$0	$0	$0	$0
1.14	Payment Procedures	0	$0	$0	$0	$0	$0
TASK 2	RISK MANAGEMENT	0	$0	$0	$0	$0	$0
	Risk Identification	0	$0	$0	$0	$0	$0
	Preliminary Workshop	0	$0	$0	$0	$0	$0
	Draft Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Workshop	0	$0	$0	$0	$0	$0
	Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Plan	0	$0	$0	$0	$0	$0
TASK 3	SYSTEM SECURITY & EMERGENCY MGMT	0	$0	$0	$0	$0	$0
PHASE I - CONCEPTUAL & PRELIMINARY DESIGN							
PHASE IA - CONCEPTUAL DESIGN							
TASK 4.1	Data Collection & Design Criteria	0	$0	$0	$0	$0	$0
TASK 4.2	Survey & Base Mapping	706	$25,260	$32,103	$57,362	$5,736	$63,099
TASK 4.3	Right-of-Way Search	300	$12,479	$15,859	$28,338	$2,834	$31,172
TASK 4.4	Utility Investigation	350	$14,912	$18,952	$33,865	$3,386	$37,251
TASK 4.5	Initial Geotechnical Investigation	0	$0	$0	$0	$0	$0
TASK 4.7	Navigation Study	0	$0	$0	$0	$0	$0
TASK 4.8	Conceptual Design	300	$11,304	$14,366	$25,670	$2,567	$28,237
1	Alignment Alternatives	0	$0	$0	$0	$0	$0
2	Bridges	300	$11,304	$14,366	$25,670	$2,567	$28,237
	Movable Span	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*300*	*$11,304*	*$14,366*	*$25,670*	*$2,567*	*$28,237*
3	Civil Design	0	$0	$0	$0	$0	$0
4	Traction Power/Electrical	0	$0	$0	$0	$0	$0
5	Constructability	0	$0	$0	$0	$0	$0
6	Construction Cost	0	$0	$0	$0	$0	$0
7	Construction Schedule	0	$0	$0	$0	$0	$0
TASK 4.9	Feasibility Report	8	$436	$554	$990	$99	$1,089
TASK 4.10	Value Engineering	0	$0	$0	$0	$0	$0
TASK 4.11	NEPA Consultant Coordination	0	$0	$0	$0	$0	$0
	TOTAL PHASE IA	1,664	$64,391	$81,834	$146,225	$14,623	$160,848
PHASE IB - PRELIMINARY DESIGN							
TASK 4.12	Preliminary Design	56	$2,243	$2,851	$5,094	$509	$5,603
4.12.A	Update Design Criteria	0	$0	$0	$0	$0	$0
4.12.B	Bridge Design	0	$0	$0	$0	$0	$0
	Movable Span - Structural	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Mechanical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.C	Track Design	0	$0	$0	$0	$0	$0
4.12.D	Preliminary Civil Design	0	$0	$0	$0	$0	$0
4.12.E	Buildings & Facilities	0	$0	$0	$0	$0	$0
4.12.F	Traction Power/Electrical/Bridge Controls	0	$0	$0	$0	$0	$0
	Traction Power	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Bridge Controls	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.G	Signal Systems	0	$0	$0	$0	$0	$0
4.12.H	Communications	0	$0	$0	$0	$0	$0
4.12.I	Cost & Schedule	56	$2,243	$2,851	$5,094	$509	$5,603
TASK 4.13	Supplemental Survey	484	$17,307	$21,995	$39,302	$3,930	$43,232
TASK 4.14	ROW & Property Acquisition (PAECE)	152	$6,486	$8,218	$14,685	$1,468	$16,153
TASK 4.15	Utility Relocation	1,748	$69,225	$87,978	$157,203	$15,720	$172,923
TASK 4.16	Detailed Geotech Investigation	0	$0	$0	$0	$0	$0
TASK 4.18	As Directed - Preliminary Design	300	$10,606	$13,479	$24,086	$2,409	$26,494
	TOTAL PHASE IB	2,740	$105,847	$134,521	$240,369	$24,037	$264,406
	TOTAL PHASE I	4,404	$170,238	$216,356	$386,594	$38,659	$425,253
	TOTAL LABOR	4,404	$170,238	$216,356	$386,594	$38,659	$425,253
	DIRECT EXPENSES						$192,480
	TOTAL COST						$617,733

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044
ESTIMATE BY FIRM/TASK

FIRM: Envision

TASK	DESCRIPTION	TOTAL HOURS	SALARY	OVERHEAD	SUBTOTAL	FIXED FEE	TOTAL COST
TASK 1	PROJECT MANAGEMENT	1,820	$82,290	$113,157	$195,447	$19,545	$214,992
1.01	Project Management Plan	0	$0	$0	$0	$0	$0
1.02	Project Controls	0	$0	$0	$0	$0	$0
1.03	Project Schedule	0	$0	$0	$0	$0	$0
1.04	Records Management	1,370	$57,540	$79,123	$136,663	$13,666	$150,330
1.05	Monthly Progress Reporting	0	$0	$0	$0	$0	$0
1.06	Quality Control	0	$0	$0	$0	$0	$0
1.07	Quality Management Plan (QMP)	0	$0	$0	$0	$0	$0
1.08	QMP Requirements	0	$0	$0	$0	$0	$0
1.09	Design Control	0	$0	$0	$0	$0	$0
1.10	Control of Quality Records	200	$11,000	$15,126	$26,126	$2,613	$28,739
1.11	Internal Quality Audits	0	$0	$0	$0	$0	$0
1.12	Configuration Management	250	$13,750	$18,908	$32,658	$3,266	$35,923
1.13	Project Meetings	0	$0	$0	$0	$0	$0
1.14	Payment Procedures	0	$0	$0	$0	$0	$0
TASK 2	RISK MANAGEMENT	0	$0	$0	$0	$0	$0
	Risk Identification	0	$0	$0	$0	$0	$0
	Preliminary Workshop	0	$0	$0	$0	$0	$0
	Draft Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Workshop	0	$0	$0	$0	$0	$0
	Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Plan	0	$0	$0	$0	$0	$0
TASK 3	SYSTEM SECURITY & EMERGENCY MGMT	0	$0	$0	$0	$0	$0
PHASE I - CONCEPTUAL & PRELIMINARY DESIGN							
PHASE IA - CONCEPTUAL DESIGN							
TASK 4.1	Data Collection & Design Criteria	0	$0	$0	$0	$0	$0
TASK 4.2	Survey & Base Mapping	0	$0	$0	$0	$0	$0
TASK 4.3	Right-of-Way Search	0	$0	$0	$0	$0	$0
TASK 4.4	Utility Investigation	0	$0	$0	$0	$0	$0
TASK 4.5	Initial Geotechnical Investigation	0	$0	$0	$0	$0	$0
TASK 4.7	Navigation Study	0	$0	$0	$0	$0	$0
TASK 4.8	Conceptual Design	0	$0	$0	$0	$0	$0
1	Alignment Alternatives	0	$0	$0	$0	$0	$0
2	Bridges	0	$0	$0	$0	$0	$0
	Movable Span	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
3	Civil Design	0	$0	$0	$0	$0	$0
4	Traction Power/Electrical	0	$0	$0	$0	$0	$0
5	Constructability	0	$0	$0	$0	$0	$0
6	Construction Cost	0	$0	$0	$0	$0	$0
7	Construction Schedule	0	$0	$0	$0	$0	$0
TASK 4.9	Feasibility Report	0	$0	$0	$0	$0	$0
TASK 4.10	Value Engineering	516	$39,789	$54,714	$94,503	$9,450	$103,953
TASK 4.11	NEPA Consultant Coordination	0	$0	$0	$0	$0	$0
	TOTAL PHASE IA	516	$39,789	$54,714	$94,503	$9,450	$103,953
PHASE IB - PRELIMINARY DESIGN							
TASK 4.12	Preliminary Design	0					
4.12.A	Update Design Criteria	0	$0	$0	$0	$0	$0
4.12.B	Bridge Design	0	$0	$0	$0	$0	$0
	Movable Span - Structural	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Mechanical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.C	Track Design	0	$0	$0	$0	$0	$0
4.12.D	Preliminary Civil Design	0	$0	$0	$0	$0	$0
4.12.E	Buildings & Facilities	0	$0	$0	$0	$0	$0
4.12.F	Traction Power/Electrical/Bridge Controls	0	$0	$0	$0	$0	$0
	Traction Power	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Bridge Controls	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.G	Signal Systems	0	$0	$0	$0	$0	$0
4.12.H	Communications	0	$0	$0	$0	$0	$0
4.12.I	Cost & Schedule	0	$0	$0	$0	$0	$0
TASK 4.13	Supplemental Survey	0	$0	$0	$0	$0	$0
TASK 4.14	ROW & Property Acquisition (PAECE)	0	$0	$0	$0	$0	$0
TASK 4.15	Utility Relocation	0	$0	$0	$0	$0	$0
TASK 4.16	Detailed Geotech Investigation	0	$0	$0	$0	$0	$0
TASK 4.18	As Directed - Preliminary Design	0	$0	$0	$0	$0	$0
	TOTAL PHASE IB	0	$0	$0	$0	$0	$0
	TOTAL PHASE I	516	$39,789	$54,714	$94,503	$9,450	$103,953
	TOTAL LABOR	2,336	$122,079	$167,871	$289,950	$28,995	$318,945
	DIRECT EXPENSES						$17,280
	TOTAL COST						$336,225

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044
ESTIMATE BY FIRM/TASK

FIRM: JCMS

TASK	DESCRIPTION	TOTAL HOURS	SALARY	OVERHEAD	SUBTOTAL	FIXED FEE	TOTAL COST
TASK 1	PROJECT MANAGEMENT	0	$0	$0	$0	$0	$0
1.01	Project Management Plan	0	$0	$0	$0	$0	$0
1.02	Project Controls	0	$0	$0	$0	$0	$0
1.03	Project Schedule	0	$0	$0	$0	$0	$0
1.04	Records Management	0	$0	$0	$0	$0	$0
1.05	Monthly Progress Reporting	0	$0	$0	$0	$0	$0
1.06	Quality Control	0	$0	$0	$0	$0	$0
1.07	Quality Management Plan (QMP)	0	$0	$0	$0	$0	$0
1.08	QMP Requirements	0	$0	$0	$0	$0	$0
1.09	Design Control	0	$0	$0	$0	$0	$0
1.10	Control of Quality Records	0	$0	$0	$0	$0	$0
1.11	Internal Quality Audits	0	$0	$0	$0	$0	$0
1.12	Configuration Management	0	$0	$0	$0	$0	$0
1.13	Project Meetings	0	$0	$0	$0	$0	$0
1.14	Payment Procedures	0	$0	$0	$0	$0	$0
TASK 2	RISK MANAGEMENT	0	$0	$0	$0	$0	$0
	Risk Identification	0	$0	$0	$0	$0	$0
	Preliminary Workshop	0	$0	$0	$0	$0	$0
	Draft Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Workshop	0	$0	$0	$0	$0	$0
	Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Plan	0	$0	$0	$0	$0	$0
TASK 3	SYSTEM SECURITY & EMERGENCY MGMT	0	$0	$0	$0	$0	$0
PHASE I - CONCEPTUAL & PRELIMINARY DESIGN							
PHASE IA - CONCEPTUAL DESIGN							
TASK 4.1	Data Collection & Design Criteria	0	$0	$0	$0	$0	$0
TASK 4.2	Survey & Base Mapping	0	$0	$0	$0	$0	$0
TASK 4.3	Right-of-Way Search	0	$0	$0	$0	$0	$0
TASK 4.4	Utility Investigation	0	$0	$0	$0	$0	$0
TASK 4.5	Initial Geotechnical Investigation	0	$0	$0	$0	$0	$0
TASK 4.7	Navigation Study	0	$0	$0	$0	$0	$0
TASK 4.8	Conceptual Design	520	$30,108	$35,322	$65,430	$6,543	$71,973
1	Alignment Alternatives	0	$0	$0	$0	$0	$0
2	Bridges	0	$0	$0	$0	$0	$0
	Movable Span	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
3	Civil Design	0	$0	$0	$0	$0	$0
4	Traction Power/Electrical	0	$0	$0	$0	$0	$0
5	Constructability	0	$0	$0	$0	$0	$0
6	Construction Cost	320	$18,558	$21,772	$40,329	$4,033	$44,362
7	Construction Schedule	200	$11,550	$13,550	$25,100	$2,510	$27,611
TASK 4.9	Feasibility Report	0	$0	$0	$0	$0	$0
TASK 4.10	Value Engineering	16	$1,019	$1,195	$2,214	$221	$2,435
TASK 4.11	NEPA Consultant Coordination	0	$0	$0	$0	$0	$0
	TOTAL PHASE IA	536	$31,126	$36,517	$67,644	$6,764	$74,408
PHASE IB - PRELIMINARY DESIGN							
TASK 4.12	Preliminary Design	478	$27,303	$32,032	$59,335	$5,933	$65,268
4.12.A	Update Design Criteria	0	$0	$0	$0	$0	$0
4.12.B	Bridge Design	0	$0	$0	$0	$0	$0
	Movable Span - Structural	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Mechanical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.C	Track Design	0	$0	$0	$0	$0	$0
4.12.D	Preliminary Civil Design	0	$0	$0	$0	$0	$0
4.12.E	Buildings & Facilities	0	$0	$0	$0	$0	$0
4.12.F	Traction Power/Electrical/Bridge Controls	0	$0	$0	$0	$0	$0
	Traction Power	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Bridge Controls	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.G	Signal Systems	0	$0	$0	$0	$0	$0
4.12.H	Communications	0	$0	$0	$0	$0	$0
4.12.I	Cost & Schedule	478	$27,303	$32,032	$59,335	$5,933	$65,268
TASK 4.13	Supplemental Survey	0	$0	$0	$0	$0	$0
TASK 4.14	ROW & Property Acquisition (PAECE)	0	$0	$0	$0	$0	$0
TASK 4.15	Utility Relocation	0	$0	$0	$0	$0	$0
TASK 4.16	Detailed Geotech Investigation	0	$0	$0	$0	$0	$0
TASK 4.18	As Directed - Preliminary Design	0	$0	$0	$0	$0	$0
	TOTAL PHASE IB	478	$27,303	$32,032	$59,335	$5,933	$65,268
	TOTAL PHASE I	1,014	$58,429	$68,549	$126,978	$12,698	$139,676
	TOTAL LABOR	1,014	$58,429	$68,549	$126,978	$12,698	$139,676
	DIRECT EXPENSES						$760
	TOTAL COST						$140,436

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044
ESTIMATE BY FIRM/TASK

FIRM: Radin

TASK	DESCRIPTION	TOTAL HOURS	SALARY	OVERHEAD	SUBTOTAL	FIXED FEE	TOTAL COST
TASK 1	PROJECT MANAGEMENT	0	$0	$0	$0	$0	$0
1.01	Project Management Plan	0	$0	$0	$0	$0	$0
1.02	Project Controls	0	$0	$0	$0	$0	$0
1.03	Project Schedule	0	$0	$0	$0	$0	$0
1.04	Records Management	0	$0	$0	$0	$0	$0
1.05	Monthly Progress Reporting	0	$0	$0	$0	$0	$0
1.06	Quality Control	0	$0	$0	$0	$0	$0
1.07	Quality Management Plan (QMP)	0	$0	$0	$0	$0	$0
1.08	QMP Requirements	0	$0	$0	$0	$0	$0
1.09	Design Control	0	$0	$0	$0	$0	$0
1.10	Control of Quality Records	0	$0	$0	$0	$0	$0
1.11	Internal Quality Audits	0	$0	$0	$0	$0	$0
1.12	Configuration Management	0	$0	$0	$0	$0	$0
1.13	Project Meetings	0	$0	$0	$0	$0	$0
1.14	Payment Procedures	0	$0	$0	$0	$0	$0
TASK 2	RISK MANAGEMENT	0	$0	$0	$0	$0	$0
	Risk Identification	0	$0	$0	$0	$0	$0
	Preliminary Workshop	0	$0	$0	$0	$0	$0
	Draft Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Workshop	0	$0	$0	$0	$0	$0
	Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Plan	0	$0	$0	$0	$0	$0
TASK 3	SYSTEM SECURITY & EMERGENCY MGMT	0	$0	$0	$0	$0	$0
PHASE I - CONCEPTUAL & PRELIMINARY DESIGN							
PHASE IA - CONCEPTUAL DESIGN							
TASK 4.1	Data Collection & Design Criteria	0	$0	$0	$0	$0	$0
TASK 4.2	Survey & Base Mapping	0	$0	$0	$0	$0	$0
TASK 4.3	Right-of-Way Search	0	$0	$0	$0	$0	$0
TASK 4.4	Utility Investigation	0	$0	$0	$0	$0	$0
TASK 4.5	Initial Geotechnical Investigation	0	$0	$0	$0	$0	$0
TASK 4.7	Navigation Study	0	$0	$0	$0	$0	$0
TASK 4.8	Conceptual Design	0	$0	$0	$0	$0	$0
1	Alignment Alternatives	0	$0	$0	$0	$0	$0
2	Bridges	0	$0	$0	$0	$0	$0
	Movable Span	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
3	Civil Design	0	$0	$0	$0	$0	$0
4	Traction Power/Electrical	0	$0	$0	$0	$0	$0
5	Constructability	0	$0	$0	$0	$0	$0
6	Construction Cost	0	$0	$0	$0	$0	$0
7	Construction Schedule	0	$0	$0	$0	$0	$0
TASK 4.9	Feasibility Report	0	$0	$0	$0	$0	$0
TASK 4.10	Value Engineering	0	$0	$0	$0	$0	$0
TASK 4.11	NEPA Consultant Coordination	0	$0	$0	$0	$0	$0
	TOTAL PHASE IA	0	$0	$0	$0	$0	$0
PHASE IB - PRELIMINARY DESIGN							
TASK 4.12	Preliminary Design	281	$10,737	$16,661	$27,398	$2,740	$30,137
4.12.A	Update Design Criteria	0	$0	$0	$0	$0	$0
4.12.B	Bridge Design	100	$3,821	$5,929	$9,750	$975	$10,725
	Movable Span - Structural	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Mechanical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*100*	*$3,821*	*$5,929*	*$9,750*	*$975*	*$10,725*
4.12.C	Track Design	0	$0	$0	$0	$0	$0
4.12.D	Preliminary Civil Design	0	$0	$0	$0	$0	$0
4.12.E	Buildings & Facilities	0	$0	$0	$0	$0	$0
4.12.F	Traction Power/Electrical/Bridge Controls	181	$6,916	$10,732	$17,648	$1,765	$19,412
	Traction Power	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Electrical	*181*	*$6,916*	*$10,732*	*$17,648*	*$1,765*	*$19,412*
	Bridge Controls	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.G	Signal Systems	0	$0	$0	$0	$0	$0
4.12.H	Communications	0	$0	$0	$0	$0	$0
4.12.I	Cost & Schedule	0	$0	$0	$0	$0	$0
TASK 4.13	Supplemental Survey	0	$0	$0	$0	$0	$0
TASK 4.14	ROW & Property Acquisition (PAECE)	0	$0	$0	$0	$0	$0
TASK 4.15	Utility Relocation	0	$0	$0	$0	$0	$0
TASK 4.16	Detailed Geotech Investigation	0	$0	$0	$0	$0	$0
TASK 4.18	As Directed - Preliminary Design	0	$0	$0	$0	$0	$0
	TOTAL PHASE IB	281	$10,737	$16,661	$27,398	$2,740	$30,137
	TOTAL PHASE I	281	$10,737	$16,661	$27,398	$2,740	$30,137
	TOTAL LABOR	281	$10,737	$16,661	$27,398	$2,740	$30,137
	DIRECT EXPENSES						$220
	TOTAL COST						$30,357

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044
ESTIMATE BY FIRM/TASK

FIRM: SJH

TASK	DESCRIPTION	TOTAL HOURS	SALARY	OVERHEAD	SUBTOTAL	FIXED FEE	TOTAL COST
TASK 1	PROJECT MANAGEMENT	0	$0	$0	$0	$0	$0
1.01	Project Management Plan	0	$0	$0	$0	$0	$0
1.02	Project Controls	0	$0	$0	$0	$0	$0
1.03	Project Schedule	0	$0	$0	$0	$0	$0
1.04	Records Management	0	$0	$0	$0	$0	$0
1.05	Monthly Progress Reporting	0	$0	$0	$0	$0	$0
1.06	Quality Control	0	$0	$0	$0	$0	$0
1.07	Quality Management Plan (QMP)	0	$0	$0	$0	$0	$0
1.08	QMP Requirements	0	$0	$0	$0	$0	$0
1.09	Design Control	0	$0	$0	$0	$0	$0
1.10	Control of Quality Records	0	$0	$0	$0	$0	$0
1.11	Internal Quality Audits	0	$0	$0	$0	$0	$0
1.12	Configuration Management	0	$0	$0	$0	$0	$0
1.13	Project Meetings	0	$0	$0	$0	$0	$0
1.14	Payment Procedures	0	$0	$0	$0	$0	$0
TASK 2	RISK MANAGEMENT	0	$0	$0	$0	$0	$0
	Risk Identification	0	$0	$0	$0	$0	$0
	Preliminary Workshop	0	$0	$0	$0	$0	$0
	Draft Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Workshop	0	$0	$0	$0	$0	$0
	Risk Register	0	$0	$0	$0	$0	$0
	Risk Management Plan	0	$0	$0	$0	$0	$0
TASK 3	SYSTEM SECURITY & EMERGENCY MGMT	0	$0	$0	$0	$0	$0
PHASE I - CONCEPTUAL & PRELIMINARY DESIGN							
PHASE IA - CONCEPTUAL DESIGN							
TASK 4.1	Data Collection & Design Criteria	0	$0	$0	$0	$0	$0
TASK 4.2	Survey & Base Mapping	0	$0	$0	$0	$0	$0
TASK 4.3	Right-of-Way Search	0	$0	$0	$0	$0	$0
TASK 4.4	Utility Investigation	0	$0	$0	$0	$0	$0
TASK 4.5	Initial Geotechnical Investigation	0	$0	$0	$0	$0	$0
TASK 4.7	Navigation Study	0	$0	$0	$0	$0	$0
TASK 4.8	Conceptual Design	176	$10,301	$14,422	$24,723	$2,472	$27,196
1	Alignment Alternatives	0	$0	$0	$0	$0	$0
2	Bridges	116	$6,332	$8,865	$15,197	$1,520	$16,717
	Movable Span		*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*116*	*$6,332*	*$8,865*	*$15,197*	*$1,520*	*$16,717*
3	Civil Design	0	$0	$0	$0	$0	$0
4	Traction Power/Electrical	0	$0	$0	$0	$0	$0
5	Constructability	0	$0	$0	$0	$0	$0
6	Construction Cost	60	$3,969	$5,557	$9,526	$953	$10,479
7	Construction Schedule	0	$0	$0	$0	$0	$0
TASK 4.9	Feasibility Report	0	$0	$0	$0	$0	$0
TASK 4.10	Value Engineering	0	$0	$0	$0	$0	$0
TASK 4.11	NEPA Consultant Coordination	0	$0	$0	$0	$0	$0
	TOTAL PHASE IA	176	$10,301	$14,422	$24,723	$2,472	$27,196
PHASE IB - PRELIMINARY DESIGN							
TASK 4.12	Preliminary Design	136	$7,578	$10,610	$18,188	$1,819	$20,007
4.12.A	Update Design Criteria	0	$0	$0	$0	$0	$0
4.12.B	Bridge Design	88	$4,324	$6,053	$10,377	$1,038	$11,415
	Movable Span - Structural	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Movable Span - Mechanical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Approach Spans	*88*	*$4,324*	*$6,053*	*$10,377*	*$1,038*	*$11,415*
4.12.C	Track Design	0	$0	$0	$0	$0	$0
4.12.D	Preliminary Civil Design	0	$0	$0	$0	$0	$0
4.12.E	Buildings & Facilities	0	$0	$0	$0	$0	$0
4.12.F	Traction Power/Electrical/Bridge Controls	0	$0	$0	$0	$0	$0
	Traction Power	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Electrical	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
	Bridge Controls	*0*	*$0*	*$0*	*$0*	*$0*	*$0*
4.12.G	Signal Systems	0	$0	$0	$0	$0	$0
4.12.H	Communications	0	$0	$0	$0	$0	$0
4.12.I	Cost & Schedule	48	$3,254	$4,556	$7,811	$781	$8,592
TASK 4.13	Supplemental Survey	0	$0	$0	$0	$0	$0
TASK 4.14	ROW & Property Acquisition (PAECE)	0	$0	$0	$0	$0	$0
TASK 4.15	Utility Relocation	0	$0	$0	$0	$0	$0
TASK 4.16	Detailed Geotech Investigation	0	$0	$0	$0	$0	$0
TASK 4.18	As Directed - Preliminary Design	0	$0	$0	$0	$0	$0
	TOTAL PHASE IB	136	$7,578	$10,610	$18,188	$1,819	$20,007
	TOTAL PHASE I	312	$17,880	$25,032	$42,911	$4,291	$47,202
	TOTAL LABOR	312	$17,880	$25,032	$42,911	$4,291	$47,202
	DIRECT EXPENSES						$220
	TOTAL COST						$47,422

NJ TRANSIT RFP No. 15-044

Design, Engineering and Construction Assistance Services
for the Replacement of Raritan River Bridge

COST & FEE RECAP BY FIRM/TASK/INDIVIDUAL

(RFP ATTACHMENT F-3)

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: PROJECT TOTAL

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		HARDESTY & HANOVER	OVERHEAD RATE		167.40%	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	1,460	$98.86	$141,416
	2	Charlie Geer, PE	Risk Manager	592	$98.01	$58,021
	3	David Tuckman, PE	OPM, STR Eng VII	787	$81.81	$62,748
	4	Steve Hartacker, PE, SE	QAQC, STR Eng VI	268	$72.32	$19,381
	5	Steve Horn, PE	STR Eng VII	60	$80.39	$4,823
	6	Peter Roody, PE	STR Eng VIII	472	$86.51	$40,832
	7	Michael Hawkins, PE	STR Eng VIII	370	$106.14	$39,271
	8	Steve Mikucki, PE	MECH Eng VII	270	$86.43	$23,335
	9	Alex Noble, PE	ELEC Eng VI	279	$70.29	$19,611
	10	Paul Connolly, PE	STR Eng VII	333	$80.09	$26,671
	11	Glen Schetelich, PE	STR Eng VIII	204	$109.79	$22,398
	12	Raymond Mankbadi, PE	STR Eng VIII	690	$86.56	$59,740
	13	Mishac Yegian, PE, PhD	STR Eng VIII	103	$76.13	$7,841
	14	David Marcic, PE, SE	STR Eng VI	318	$72.55	$23,072
	15	Jerry DiMaggio,PE	STR Eng VIII	60	$76.13	$4,568
	16	David Gerber, PE	STR Eng VI	225	$75.83	$17,016
	17	Drew DelleDonne, RA	STR Eng VI	80	$69.83	$5,587
		SUPPORT STAFF				
	18	Support Staff	STR I-V	6,984	$46.04	$321,546
	19	Support Staff	MECH I-V	810	$46.04	$37,293
	20	Support Staff	ELEC I-V	806	$46.04	$37,109
	21	Support Staff	CAD/ ADMIN	1,542	$37.23	$57,409
GANNETT FLEMING		GANNETT FLEMING	OVERHEAD RATE		169.17%	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	1,272	$105.40	$134,089
	2	David Howell, PE	Rail Sys. Lead	940	$64.70	$60,818
	3	Bruce Smith	Quality Control	0	$63.80	$0
	4	Robert Matthews, PE	Civil Lead	382	$79.20	$30,254
	5	Steven Zapoticzny, PE	Site/Civil	534	$43.70	$23,336
	6	Agnieszkka Lapinski, PE	Sr. Structural	186	$72.00	$13,392
	7	John Legath, PE	Track	731	$64.10	$46,857
	8	Terry Shantz, PE	Cat/ Trans	48	$99.20	$4,762
	9	Bryan Shober, PE	Cat/ Trans	198	$84.30	$16,691
	10	Greg Nazarow	Rail Ops	62	$79.20	$4,910
	11	Ian Martin	Rail Ops	78	$76.60	$5,975
	12	Neil Walker	Comms	185	$73.70	$13,635
	13	James Sgro	Comms	80	$90.00	$7,200
	14	Theodore Bandy, PE	Sys. Integ.	123	$100.00	$12,300
	15	Stephen Barkovich	Sys. Integ.	488	$59.10	$28,841
	16	Richard Lentz	Signals	49	$81.90	$4,013
	17	Joseph Bonaduce	Signals	78	$100.70	$7,855
	18	Alireza Edraki, PE, PMP	Safety & Sec.	460	$99.60	$45,816
	19	McEwan van der Mandele, CPP	Safety & Sec.	360	$77.70	$27,972
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	5,506	$50.37	$277,337
	21	Administrative Support Staff	CAD/ ADMIN	1,617	$43.14	$69,757
H&A		HALEY & ALDRICH	OVERHEAD RATE		226.34%	
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	275	$84.06	$23,117
	2	Project Engineer	Project Engineer	399	$60.60	$24,179
	3	Engineering Staff	Eng Staff	410	$50.69	$20,783
	4	Junior Engineering Staff	Jr. Eng Staff	2,410	$34.99	$84,326
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	330	$30.30	$9,999
GE		GRIFFIN ENGINEERING	OVERHEAD RATE		182.30%	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev	100	$90.00	$9,000

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		NAIK CONSULTING GROUP	OVERHEAD RATE		127.09%	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	154	$90.56	$13,948
	2	Rich Baron	SURV PM	86	$58.30	$5,014
	3	Project Surveyor	SURV Proj. Surv.	168	$47.50	$7,980
	4	Party Chief	SURV Inst. Tech.	408	$37.21	$15,182
	5	Instrument Technician	SURV Inst. Tech.	408	$28.62	$11,677
	6	Ron Rotunno, PE	UTIL Mgr	118	$74.66	$8,681
	7	Senior Utility Engineer	UTIL Sen. Eng	280	$45.79	$12,821
	8	Utility Engineering Staff	UTIL Eng Staff	780	$37.79	$29,476
	9	Senior Structural Engineer	STR Sen. Eng	128	$54.50	$6,976
	10	Structural Engineering Staff	STR Eng Staff	422	$29.22	$12,331
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	64	$58.19	$3,724
	12	CAD Technicians	CAD Tech	1,390	$30.54	$42,451
ENVISION		ENVISION	OVERHEAD RATE		137.51%	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	1,370	$42.00	$57,540
	2	Thomas Hartley	VE Team Lead	204	$94.40	$19,258
	3	Configuration Management	Config. Mgmt.	450	$55.00	$24,750
	4	Value Engineering Team	VE Team	256	$75.52	$19,333
		SUPPORT STAFF				
	5	Administration	Admin	56	$21.40	$1,198
JCMS		JCMS	OVERHEAD RATE		117.32%	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	462	$63.67	$29,416
	2	Junior Estimator	Junion Est.	248	$46.20	$11,458
	3	Project Controls	PC	304	$57.75	$17,556
RADIN		RADIN	OVERHEAD RATE		185.17%	
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	281	$38.21	$10,737
SJH		SJH	OVERHEAD RATE		140.00%	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	52	$84.24	$4,380
	2	Senior Engineering Staff	Sen. Eng Staff	156	$59.58	$9,294
	3	Engineering Staff	Eng. Staff	104	$40.43	$4,205

TEAM SUMMARY

TOTAL ESTIMATED HOURS	42,341	
Total Salary		$2,416,248
Overhead		$3,818,048
Subtotal		$6,234,296
Fixed Fee	10%	$623,429
Total Direct Costs		$2,522,322
TOTAL COST		$9,380,041

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL TASK

TASK: 1 Project Management

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**			**OVERHEAD RATE**	**187.46%**
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	1,400	$96.86	$135,604
	2	Charlie Geer, PE	Risk Manager	0	$96.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	767	$81.81	$62,748
	4	Steve Harlacker, PE, SE	QA/QC, STR Eng VI	268	$72.32	$19,381
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$106.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**			**OVERHEAD RATE**	**188.17%**
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	1,104	$105.40	$116,362
	2	David Howell, PE	Rail Sys. Lead	80	$64.70	$5,176
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	142	$79.20	$11,246
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	12	$64.10	$769
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	6	$79.20	$475
	11	Ian Martin	Rail Ops	12	$76.60	$919
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	47	$100.00	$4,700
	15	Stephen Barkovich	Sys. Integ.	30	$59.10	$1,773
	16	Richard Lentz	Signals	11	$81.90	$901
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwen van der Mendele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$75.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	696	$50.37	$35,058
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**			**OVERHEAD RATE**	**239.34%**
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.08	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CAD/V Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**			**OVERHEAD RATE**	**182.39%**
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**			**OVERHEAD RATE**	**127.09%**
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**			**OVERHEAD RATE**	**137.51%**
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	1,370	$42.00	$57,540
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	450	$55.00	$24,750
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**			**OVERHEAD RATE**	**117.32%**
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**			**OVERHEAD RATE**	**185.17%**
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**			**OVERHEAD RATE**	**140.00%**
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	6,395		
Total Salary			$477,484
Overhead			$738,206
Subtotal			$1,215,610
Fixed Fee		10%	$121,561
Total Direct Costs			$47,863
TOTAL COST			$1,385,034

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 2 Risk Management

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		HARDESTY & HANOVER		OVERHEAD RATE	157.40%	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	592	$98.01	$58,021
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Harlacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$108.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$78.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$78.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		GANNETT FLEMING		OVERHEAD RATE	159.17%	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$84.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	8	$79.20	$634
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapenski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$84.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walker	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	8	$100.00	$800
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	18	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		HALEY & ALDRICH		OVERHEAD RATE	220.94%	
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	9	$84.06	$757
	2	Project Engineer	Project Engineer	5	$60.60	$303
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		GRIFFIN ENGINEERING		OVERHEAD RATE	152.30%	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		NAIK CONSULTING GROUP		OVERHEAD RATE	127.09%	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		ENVISION		OVERHEAD RATE	137.51%	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		JCMS		OVERHEAD RATE	117.32%	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$48.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		RADIN		OVERHEAD RATE	156.17%	
		TECHNICAL STAFF				
	1	Chitra Radin	Dsc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		SJH		OVERHEAD RATE	140.00%	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	622	
Total Salary		$60,514
Overhead		$95,948
Subtotal		$156,462
Fixed Fee	10%	$15,646
Total Direct Costs		$4,340
TOTAL COST		$176,448

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 3 System Security

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**		**OVERHEAD RATE**	**187.46%**	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.66	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Harlacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$108.14	$0
	8	Steve Mlaucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$89.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$48.04	$0
	19	Support Staff	MECH I-V	0	$48.04	$0
	20	Support Staff	ELEC I-V	0	$48.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**		**OVERHEAD RATE**	**158.17%**	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$84.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapolczny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$84.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$89.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	4	$81.90	$328
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	360	$99.60	$35,856
	19	McEwan van der Mandele, CPP	Safety & Sec.	240	$77.70	$18,648
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	2	$50.37	$101
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**		**OVERHEAD RATE**	**220.94%**	
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$80.80	$0
	3	Engineering Staff	Eng Staff	0	$50.89	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**		**OVERHEAD RATE**	**182.30%**	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**		**OVERHEAD RATE**	**127.08%**	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**		**OVERHEAD RATE**	**137.51%**	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**		**OVERHEAD RATE**	**117.32%**	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**		**OVERHEAD RATE**	**156.17%**	
		TECHNICAL STAFF				
	1	Chitra Radin	Desc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**		**OVERHEAD RATE**	**140.00%**	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	606	
Total Salary		$84,932
Overhead		$87,438
Subtotal		$142,368
Fixed Fee	10%	$14,237
Total Direct Costs		$0
TOTAL COST		$156,605

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.1 Data Collection

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		HARDESTY & HANOVER	OVERHEAD RATE		167.40%	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Harlacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	8	$86.51	$692
	7	Michael Hawkins, PE	STR Eng VIII	8	$106.14	$849
	8	Steve Mikucki, PE	MECH Eng VII	8	$86.43	$691
	9	Alex Noble, PE	ELEC Eng VI	8	$70.29	$562
	10	Paul Connolly, PE	STR Eng VII	24	$80.09	$1,922
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$78.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	48	$46.04	$2,210
	19	Support Staff	MECH I-V	36	$46.04	$1,657
	20	Support Staff	ELEC I-V	32	$46.04	$1,473
	21	Support Staff	CAD/ ADMIN	8	$37.23	$298
GANNETT FLEMING		GANNETT FLEMING	OVERHEAD RATE		159.17%	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$84.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	8	$79.20	$634
	5	Steven Zapoticzny, PE	Site/Civil	24	$43.70	$1,049
	6	Agnieszkka Lapinski, PE	Sr. Structural	12	$72.00	$864
	7	John Legath, PE	Track	8	$64.10	$513
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	8	$79.20	$634
	11	Ian Martin	Rail Ops	12	$76.60	$919
	12	Ned Walker	Comms	0	$73.70	$0
	13	James Sgro	Comms	40	$90.00	$3,600
	14	Theodore Bandy, PE	Sys. Integ.	4	$100.00	$400
	15	Stephen Barkovich	Sys. Integ.	30	$59.10	$1,773
	16	Richard Lentz	Signals	2	$81.90	$164
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	18	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	72	$50.37	$3,627
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		HALEY & ALDRICH	OVERHEAD RATE		220.94%	
		TECHNICAL STAFF				
	1	Ed Zamenkie, PE	Lead Geotechnical Eng	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		GRIFFIN ENGINEERING	OVERHEAD RATE		162.30%	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		NAIK CONSULTING GROUP	OVERHEAD RATE		127.09%	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr.	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		ENVISION	OVERHEAD RATE		137.51%	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		JCMS	OVERHEAD RATE		117.32%	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$83.67	$0
	2	Junior Estimator	Junion Est.	0	$48.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		RADIN	OVERHEAD RATE		158.17%	
		TECHNICAL STAFF				
	1	Chitra Radin	Desc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		SJH	OVERHEAD RATE		140.00%	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	400	
Total Salary		$24,531
Overhead		$38,863
Subtotal		$63,394
Fixed Fee	10%	$6,339
Total Direct Costs		$0
TOTAL COST		$69,733

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.2 Survey & Mapping

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**			**OVERHEAD RATE**	**187.46%**
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	QPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QA/QC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$106.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.78	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.63	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**			**OVERHEAD RATE**	**156.17%**
		TECHNICAL STAFF				
	1	Richard Cross, PE	QPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	40	$64.70	$2,588
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$64.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ	48	$59.10	$2,837
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	80	$50.37	$4,030
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**			**OVERHEAD RATE**	**220.94%**
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**			**OVERHEAD RATE**	**182.30%**
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$60.60	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**			**OVERHEAD RATE**	**127.09%**
		TECHNICAL STAFF				
	1	John Tan, PE	PM	20	$90.56	$1,811
	2	Rich Baron	SURV PM	20	$58.30	$1,166
	3	Project Surveyor	SURV Proj. Surv.	40	$47.50	$1,900
	4	Party Chief	SURV Inst. Tech.	208	$37.21	$7,740
	5	Instrument Technician	SURV Inst. Tech.	208	$28.62	$5,953
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	10	$58.19	$582
	12	CAD Technicians	CAD Tech	200	$30.54	$6,108
ENVISION		**ENVISION**			**OVERHEAD RATE**	**137.51%**
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**			**OVERHEAD RATE**	**117.32%**
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**			**OVERHEAD RATE**	**156.17%**
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**			**OVERHEAD RATE**	**140.06%**
		TECHNICAL STAFF				
	1	S Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	874	
Total Salary		$34,714
Overhead		$47,151
Subtotal		$81,865
Fixed Fee	10%	$8,187
Total Direct Costs		$191,729
TOTAL COST		$281,772

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.3 ROW Research

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		HARDESTY & HANOVER	OVERHEAD RATE	187.40%		
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$98.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$108.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.63	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		GANNETT FLEMING	OVERHEAD RATE	169.17%		
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$84.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapenski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$84.10	$0
	8	Terry Shantz, PE	Cat/ Trains	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Ned Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	12	$59.10	$709
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		HALEY & ALDRICH	OVERHEAD RATE	230.84%		
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.08	$0
	2	Project Engineer	Project Engineer	0	$80.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		GRIFFIN ENGINEERING	OVERHEAD RATE	152.30%		
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		NAIK CONSULTING GROUP	OVERHEAD RATE	127.09%		
		TECHNICAL STAFF				
	1	John Tan, PE	PM	16	$90.56	$1,449
	2	Rich Baron	SURV PM	30	$58.30	$1,749
	3	Project Surveyor	SURV Proj. Surv	60	$47.50	$2,850
	4	Party Chief	SURV Inst. Tech.	60	$37.21	$2,233
	5	Instrument Technician	SURV Inst. Tech.	60	$28.62	$1,717
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	8	$58.19	$466
	12	CAD Technicians	CAD Tech	66	$30.54	$2,016
ENVISION		ENVISION	OVERHEAD RATE	137.51%		
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		JCMS	OVERHEAD RATE	117.32%		
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		RADIN	OVERHEAD RATE	158.17%		
		TECHNICAL STAFF				
	1	Chitra Radin	Desc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynsku	CAD IV	0	$38.21	$0
SJH		SJH	OVERHEAD RATE	140.00%		
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	312	
Total Salary		$13,188
Overhead		$16,988
Subtotal		$30,176
Fixed Fee	10%	$3,018
Total Direct Costs		$0
TOTAL COST		$33,194

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.4 Utility Investigation

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**			**OVERHEAD RATE**	**187.40%**
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QADC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$106.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.06	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.56	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CADD ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**			**OVERHEAD RATE**	**188.17%**
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$84.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapobczny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$84.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$88.20	$0
	9	Bryan Shober, PE	Cat/ Trans	12	$84.30	$1,012
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walker	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	20	$59.10	$1,182
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$89.60	$0
	18	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CADD ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**			**OVERHEAD RATE**	**228.84%**
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CADD ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**			**OVERHEAD RATE**	**182.39%**
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$80.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**			**OVERHEAD RATE**	**127.09%**
		TECHNICAL STAFF				
	1	John Tan, PE	PM	20	$90.56	$1,811
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	15	$74.66	$1,195
	7	Senior Utility Engineer	UTIL Sen. Eng.	60	$45.79	$2,747
	8	Utility Engineering Staff	UTIL Eng Staff	140	$37.78	$5,291
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	14	$58.19	$815
	12	CAD Technicians	CAD Tech	100	$30.54	$3,054
ENVISION		**ENVISION**			**OVERHEAD RATE**	**137.51%**
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$84.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**			**OVERHEAD RATE**	**117.32%**
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.87	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**			**OVERHEAD RATE**	**186.17%**
		TECHNICAL STAFF				
	1	Chitra Radin	Dsc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**			**OVERHEAD RATE**	**140.00%**
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	382	
Total Salary		$17,106
Overhead		$22,444
Subtotal		$39,550
Fixed Fee	10%	$3,958
Total Direct Costs		$0
TOTAL COST		$43,508

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.5 Geotech Investigation

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**		**OVERHEAD RATE**	**187.40%**	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Harlacker, PE, SE	QA/QC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$108.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	80	$86.58	$6,926
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	320	$46.04	$14,733
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**		**OVERHEAD RATE**	**158.17%**	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$84.76	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapotoczny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$84.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$95.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	12	$59.10	$709
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**		**OVERHEAD RATE**	**220.94%**	
		TECHNICAL STAFF				
	1	Ed Zaminskas, PE	Lead Geotechnical Eng.	8	$84.06	$672
	2	Project Engineer	Project Engineer	24	$60.60	$1,454
	3	Engineering Staff	Eng Staff	30	$50.69	$1,521
	4	Junior Engineering Staff	Jr. Eng Staff	28	$34.99	$980
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	10	$30.30	$303
GE		**GRIFFIN ENGINEERING**		**OVERHEAD RATE**	**152.30%**	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**		**OVERHEAD RATE**	**127.09%**	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**		**OVERHEAD RATE**	**137.51%**	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**		**OVERHEAD RATE**	**117.32%**	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**		**OVERHEAD RATE**	**156.17%**	
		TECHNICAL STAFF				
	1	Chitra Radin	Dsc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**		**OVERHEAD RATE**	**140.00%**	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	512	
Total Salary		$27,299
Overhead		$46,114
Subtotal		$73,412
Fixed Fee	10%	$7,341
Total Direct Costs		$0
TOTAL COST		$80,754

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.7 Navigation Study

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**			**OVERHEAD RATE**	**187.46%**
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$96.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Harlacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	48	$86.51	$4,152
	7	Michael Hawkins, PE	STR Eng VIII	0	$108.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	100	$109.79	$10,979
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	152	$46.04	$6,998
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**			**OVERHEAD RATE**	**169.17%**
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$64.76	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapotoczny, PE	Sta/Civil	0	$43.70	$0
	6	Agnieszka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$64.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$90.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Waller	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**			**OVERHEAD RATE**	**220.94%**
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**			**OVERHEAD RATE**	**152.30%**
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**			**OVERHEAD RATE**	**127.09%**
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**			**OVERHEAD RATE**	**137.51%**
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**			**OVERHEAD RATE**	**117.32%**
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est	0	$63.87	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**			**OVERHEAD RATE**	**188.17%**
		TECHNICAL STAFF				
	1	Chara Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**			**OVERHEAD RATE**	**140.00%**
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	300	
Total Salary		$22,130
Overhead		$34,831
Subtotal		$56,961
Fixed Fee	10%	$5,696
Total Direct Costs		$0
TOTAL COST		$62,658

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.8 Conceptual Design

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		HARDESTY & HANOVER	OVERHEAD RATE		157.40%	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	60	$80.39	$4,823
	6	Peter Roody, PE	STR Eng VIII	70	$86.51	$6,056
	7	Michael Hawkins, PE	STR Eng VIII	90	$106.14	$9,552
	8	Steve Mikucki, PE	MECH Eng VII	52	$86.43	$4,494
	9	Alex Noble, PE	ELEC Eng VI	51	$70.29	$3,585
	10	Paul Connolly, PE	STR Eng VII	111	$80.09	$8,890
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	212	$86.58	$18,355
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	210	$72.55	$15,236
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	145	$75.83	$10,996
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	630	$46.04	$29,005
	19	Support Staff	MECH I-V	105	$46.04	$4,834
	20	Support Staff	ELEC I-V	105	$46.04	$4,834
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		GANNETT FLEMING	OVERHEAD RATE		159.17%	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	150	$64.70	$9,705
	3	Bruce Smith	Quality Control	0	$63.80	$0
	4	Robert Matthews, PE	Civil Lead	64	$79.20	$5,069
	5	Steven Zapoticzny, PE	Site/Civil	80	$43.70	$3,496
	6	Agnieszkka Lapinski, PE	Sr. Structural	42	$72.00	$3,024
	7	John Legath, PE	Track	336	$64.10	$21,538
	8	Terry Shantz, PE	Cat/ Trans	24	$99.20	$2,381
	9	Bryan Shober, PE	Cat/ Trans	28	$84.30	$2,360
	10	Greg Nazarow	Rail Ops	20	$79.20	$1,584
	11	Ian Martin	Rail Ops	20	$76.60	$1,532
	12	Neil Waller	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	28	$100.00	$2,800
	15	Stephen Barkovich	Sys. Integ.	140	$59.10	$8,274
	16	Richard Lentz	Signals	4	$81.90	$328
	17	Joseph Bonaduce	Signals	40	$100.70	$4,028
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
		Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	1,340	$50.37	$67,496
	21	Administrative Support Staff	CAD/ ADMIN	266	$43.14	$11,475
H&A		HALEY & ALDRICH	OVERHEAD RATE		220.94%	
		TECHNICAL STAFF				
	1	Ed Zamrskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		GRIFFIN ENGINEERING	OVERHEAD RATE		152.30%	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	100	$90.00	$9,000

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		NAIK CONSULTING GROUP	OVERHEAD RATE		127.09%	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	96	$54.50	$5,232
	10	Structural Engineering Staff	STR Eng Staff	120	$29.22	$3,506
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	84	$30.54	$2,565
ENVISION		ENVISION	OVERHEAD RATE		137.51%	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		JCMS	OVERHEAD RATE		117.32%	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	216	$63.67	$13,753
	2	Junior Estimator	Junion Est.	104	$46.20	$4,805
	3	Project Controls	PC	200	$57.75	$11,550
RADIN		RADIN	OVERHEAD RATE		155.17%	
		TECHNICAL STAFF				
	1	Chitra Radin	Desc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		SJH	OVERHEAD RATE		140.00%	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	36	$84.24	$3,033
	2	Senior Engineering Staff	Sen. Eng Staff	84	$59.58	$5,005
	3	Engineering Staff	Eng. Staff	56	$40.43	$2,264

TEAM SUMMARY

TOTAL ESTIMATED HOURS	5,819		
Total Salary			$328,433
Overhead			$498,630
Subtotal			$825,063
Fixed Fee		10%	$82,506
Total Direct Costs			$0
TOTAL COST			$907,569

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.9 Feasibility Report

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**			**OVERHEAD RATE**	**187.40%**
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.66	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	OPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QA/QC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	6	$86.51	$519
	7	Michael Hawkins, PE	STR Eng VIII	8	$106.14	$849
	8	Steve Mikucki, PE	MECH Eng VII	10	$86.43	$864
	9	Alex Noble, PE	ELEC Eng VI	10	$70.29	$703
	10	Paul Connolly, PE	STR Eng VII	6	$80.09	$481
	11	Glen Schielein, PE	STR Eng VIII	0	$109.76	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	34	$46.04	$1,565
	19	Support Staff	MECH I-V	8	$46.04	$368
	20	Support Staff	ELEC I-V	8	$46.04	$368
	21	Support Staff	CAD/ ADMIN	10	$37.23	$372
GANNETT FLEMING		**GANNETT FLEMING**			**OVERHEAD RATE**	**186.17%**
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	16	$64.76	$1,165
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	24	$79.20	$1,901
	5	Steven Zapoticzny, PE	Site/Civil	6	$43.70	$262
	6	Agnieszkka Lapinski, PE	Sr. Structural	0	$72.60	$0
	7	John Legath, PE	Track	36	$64.16	$2,308
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	16	$84.30	$1,349
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	22	$76.60	$1,685
	12	Neil Walker	Comms	20	$73.70	$1,474
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	24	$81.90	$1,966
	17	Joseph Bonaduce	Signals	8	$100.70	$806
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	20	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$75.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	122	$50.37	$6,145
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**			**OVERHEAD RATE**	**228.84%**
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**			**OVERHEAD RATE**	**182.30%**
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**			**OVERHEAD RATE**	**127.09%**
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	8	$54.50	$436
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**			**OVERHEAD RATE**	**137.51%**
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**			**OVERHEAD RATE**	**117.32%**
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**			**OVERHEAD RATE**	**155.17%**
		TECHNICAL STAFF				
	1	Chitra Radet	Dsc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**			**OVERHEAD RATE**	**140.00%**
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	**404**	
Total Salary		**$25,586**
Overhead		**$40,477**
Subtotal		**$66,063**
Fixed Fee	**10%**	**$6,606**
Total Direct Costs		**$864**
TOTAL COST		**$73,533**

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.10 Value Engineering

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**		**OVERHEAD RATE**	**187.40%**	
		TECHNICAL STAFF				
	1	Misha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	OPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QA/QC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	48	$86.51	$4,152
	7	Michael Hawkins, PE	STR Eng VIII	16	$108.14	$1,698
	8	Steve Mikucki, PE	MECH Eng VII	12	$86.43	$1,037
	9	Alex Noble, PE	ELEC Eng VI	12	$70.29	$843
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schelekich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$99.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	24	$46.04	$1,105
	19	Support Staff	MECH I-V	16	$46.04	$737
	20	Support Staff	ELEC I-V	16	$46.04	$737
	21	Support Staff	CAD/ ADMIN	16	$37.23	$596
GANNETT FLEMING		**GANNETT FLEMING**		**OVERHEAD RATE**	**189.17%**	
		TECHNICAL STAFF				
	1	Richard Cross, PE	OPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$64.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapolczny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszka Lapinski, PE	Sr. Structural	12	$72.00	$864
	7	John Legarth, PE	Track	38	$64.16	$2,308
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	2	$84.30	$169
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Waller	Comms	0	$73.70	$0
	13	James Spiro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	4	$100.00	$400
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	18	McEwen van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	117	$50.37	$5,893
	21	Administrative Support Staff	CAD/ ADMIN	70	$43.14	$3,020
H&A		**HALEY & ALDRICH**		**OVERHEAD RATE**	**220.84%**	
		TECHNICAL STAFF				
	1	Ed Zaninskie, PE	Lead Geotechnical Eng.	0	$84.08	$0
	2	Project Engineer	Project Engineer	0	$80.80	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**		**OVERHEAD RATE**	**182.38%**	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev	0	$90.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**		**OVERHEAD RATE**	**127.09%**	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**		**OVERHEAD RATE**	**137.51%**	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	204	$94.40	$19,258
	3	Configuration Management	Config. Mgmt	0	$55.00	$0
	4	Value Engineering Team	VE Team	256	$75.52	$19,333
		SUPPORT STAFF				
	5	Administration	Admin	56	$21.40	$1,198
JCMS		**JCMS**		**OVERHEAD RATE**	**117.32%**	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	16	$63.67	$1,019
	2	Junior Estimator	Junion Est	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**		**OVERHEAD RATE**	**158.17%**	
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**		**OVERHEAD RATE**	**140.00%**	
		TECHNICAL STAFF				
	1	S Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	933	
Total Salary		$64,366
Overhead		$93,214
Subtotal		$157,580
Fixed Fee	10%	$15,758
Total Direct Costs		$16,520
TOTAL COST		$189,858

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.11 NEPA Coordination

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**			**OVERHEAD RATE**	**157.40%**
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	OPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	12	$86.51	$1,038
	7	Michael Hawkins, PE	STR Eng VIII	0	$108.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	104	$109.79	$11,418
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.56	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$78.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$78.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	60	$46.04	$2,762
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CADD ADMIN	24	$37.23	$894
GANNETT FLEMING		**GANNETT FLEMING**			**OVERHEAD RATE**	**159.17%**
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	192	$64.70	$12,422
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	8	$64.10	$513
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	2	$79.20	$158
	11	Ian Martin	Rail Ops	2	$76.60	$153
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CADD ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**			**OVERHEAD RATE**	**220.94%**
		TECHNICAL STAFF				
	1	Ed Zamrskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CADD ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**			**OVERHEAD RATE**	**152.30%**
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**			**OVERHEAD RATE**	**127.09%**
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**			**OVERHEAD RATE**	**137.81%**
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**			**OVERHEAD RATE**	**117.32%**
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**			**OVERHEAD RATE**	**185.17%**
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**			**OVERHEAD RATE**	**140.00%**
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	464	
Total Salary		$29,359
Overhead		$46,448
Subtotal		$75,806
Fixed Fee	10%	$7,581
Total Direct Costs		$0
TOTAL COST		$83,386

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.12A Design Criteria

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**		**OVERHEAD RATE**	**187.40%**	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Harlacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	10	$86.51	$865
	7	Michael Hawkins, PE	STR Eng VIII	8	$106.14	$849
	8	Steve Mikucki, PE	MECH Eng VII	8	$86.43	$691
	9	Alex Noble, PE	ELEC Eng VI	8	$70.29	$562
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	8	$86.58	$693
	13	Mishac Yeglan, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	8	$72.55	$580
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$89.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**		**OVERHEAD RATE**	**169.17%**	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	8	$105.40	$843
	2	David Howell, PE	Rail Sys. Lead	0	$64.76	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapinski, PE	Sr. Structural	20	$72.00	$1,440
	7	John Legath, PE	Track	0	$64.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	20	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	22	$50.37	$1,108
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**		**OVERHEAD RATE**	**220.94%**	
		TECHNICAL STAFF				
	1	Ed Zamiskie, PE	Lead Geotechnical Eng	0	$84.08	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**		**OVERHEAD RATE**	**182.30%**	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**		**OVERHEAD RATE**	**127.09%**	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**		**OVERHEAD RATE**	**137.51%**	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**		**OVERHEAD RATE**	**117.32%**	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**		**OVERHEAD RATE**	**155.17%**	
		TECHNICAL STAFF				
	1	Chitra Radin	Desc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
S.J.H.		**SJH**		**OVERHEAD RATE**	**140.00%**	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	100	
Total Salary		$7,632
Overhead		$12,073
Subtotal		$19,706
Fixed Fee	10%	$1,971
Total Direct Costs		$0
TOTAL COST		$21,676

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.12B Bridge Design

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**			**OVERHEAD RATE**	**187.40%**
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$98.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartlacker, PE, SE	QAQC, STR Eng VI	0	$72.02	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	200	$86.51	$17,302
	7	Michael Hawkins, PE	STR Eng VIII	200	$108.14	$21,228
	8	Steve Mikucki, PE	MECH Eng VII	140	$86.43	$12,100
	9	Alex Noble, PE	ELEC Eng VI	140	$70.29	$9,840
	10	Paul Connolly, PE	STR Eng VII	172	$80.09	$13,776
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.78	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	80	$86.58	$6,926
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	100	$72.55	$7,255
	15	Jerry DiMaggio,PE	STR Eng VIII	60	$76.13	$4,568
	16	David Gerber, PE	STR Eng VI	80	$75.63	$6,050
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	609	$46.04	$28,039
	19	Support Staff	MECH I-V	385	$46.04	$17,726
	20	Support Staff	ELEC I-V	385	$46.04	$17,726
	21	Support Staff	CAD/ ADMIN	1,440	$37.23	$53,611
GANNETT FLEMING		**GANNETT FLEMING**			**OVERHEAD RATE**	**159.17%**
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	20	$105.40	$2,108
	2	David Howell, PE	Rail Sys. Lead	0	$84.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapotoczny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszka Lapinski, PE	Sr. Structural	100	$72.00	$7,200
	7	John Legath, PE	Track	0	$84.10	$0
	8	Terry Shantz, PE	Catl Trans	0	$99.20	$0
	9	Bryan Shober, PE	Catl Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	100	$99.60	$9,960
	19	McEwan van der Mandele, CPP	Safety & Sec.	120	$77.70	$9,324
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$75.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	1,003	$50.37	$50,521
	21	Administrative Support Staff	CAD/ ADMIN	223	$43.14	$9,620
H&A		**RALEY & ALDRICH**			**OVERHEAD RATE**	**238.84%**
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.08	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**			**OVERHEAD RATE**	**182.30%**
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$80.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**			**OVERHEAD RATE**	**127.09%**
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.82	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engeneering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.64	$0
ENVISION		**ENVISION**			**OVERHEAD RATE**	**137.51%**
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**			**OVERHEAD RATE**	**117.32%**
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**			**OVERHEAD RATE**	**158.17%**
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	100	$38.21	$3,821
SJH		**SJH**			**OVERHEAD RATE**	**140.00%**
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	40	$59.58	$2,383
	3	Engineering Staff	Eng. Staff	48	$40.43	$1,941

TEAM SUMMARY

TOTAL ESTIMATED HOURS	5,745		
Total Salary			$313,024
Overhead			$493,433
Subtotal			$806,458
Fixed Fee		10%	$80,646
Total Direct Costs			$162
TOTAL COST			$887,266

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.12C Track Design

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**		**OVERHEAD RATE**	**167.40%**	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Harlacker, PE, SE	QADC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$105.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Manikbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.63	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CADD ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**		**OVERHEAD RATE**	**188.17%**	
		TECHNICAL STAFF				
	1	Richard Cross, PE	OPM	20	$105.40	$2,108
	2	David Howell, PE	Rail Sys. Lead	80	$64.70	$5,176
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapolczny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	275	$64.10	$17,628
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	10	$79.20	$792
	11	Ian Martin	Rail Ops	10	$76.60	$766
	12	Neil Walker	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodora Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CADD ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**		**OVERHEAD RATE**	**220.94%**	
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.08	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CADD ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**		**OVERHEAD RATE**	**182.30%**	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**		**OVERHEAD RATE**	**127.09%**	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**		**OVERHEAD RATE**	**137.51%**	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**		**OVERHEAD RATE**	**117.32%**	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**		**OVERHEAD RATE**	**156.17%**	
		TECHNICAL STAFF				
	1	Chitra Radin	Desc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**		**OVERHEAD RATE**	**140.00%**	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	395		
Total Salary			$26,470
Overhead			$42,132
Subtotal			$68,601
Fixed Fee		10%	$6,860
Total Direct Costs			$162
TOTAL COST			$75,623

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL TASK

TASK: 4.12D Civil Design

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**			**OVERHEAD RATE**	**187.40%**
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Harlacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.36	$0
	6	Peter Roody, PE	STR Eng VIII	0	$88.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$106.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$78.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$78.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CADD ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**			**OVERHEAD RATE**	**159.17%**
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$64.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	136	$79.20	$10,771
	5	Steven Zapoticzny, PE	Site/Civil	424	$43.70	$18,529
	6	Agnieszka Lapinski, PE	Sr. Structural	0	$72.05	$0
	7	John Legath, PE	Track	0	$84.16	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$78.60	$0
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.80	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	608	$50.37	$30,625
	21	Administrative Support Staff	CADD ADMIN	232	$43.14	$10,008
H&A		**HALEY & ALDRICH**			**OVERHEAD RATE**	**220.84%**
		TECHNICAL STAFF				
	1	Ed Zaminskas, PE	Lead Geotechnical Eng.	20	$84.08	$1,681
	2	Project Engineer	Project Engineer	40	$60.60	$2,424
	3	Engineering Staff	Eng Staff	80	$50.69	$4,055
	4	Junior Engineering Staff	Jr. Eng Staff	40	$34.99	$1,400
		SUPPORT STAFF				
	5	CADD Project Assistant	CADD ADMIN	10	$30.30	$303
GE		**GRIFFIN ENGINEERING**			**OVERHEAD RATE**	**182.39%**
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**			**OVERHEAD RATE**	**127.09%**
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.68	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**			**OVERHEAD RATE**	**137.51%**
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**			**OVERHEAD RATE**	**117.32%**
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**			**OVERHEAD RATE**	**168.17%**
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**			**OVERHEAD RATE**	**140.00%**
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	1,590	
Total Salary		$79,796
Overhead		$133,104
Subtotal		$212,901
Fixed Fee	10%	$21,290
Total Direct Costs		$162
TOTAL COST		$234,353

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.12E Buildings & Facilities

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**		**OVERHEAD RATE**	**167.40%**	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Harlacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	20	$86.51	$1,730
	7	Michael Hawkins, PE	STR Eng VIII	0	$105.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	60	$69.83	$4,190
		SUPPORT STAFF				
	18	Support Staff	STR I-V	72	$46.04	$3,315
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	44	$37.23	$1,638
GANNETT FLEMING		**GANNETT FLEMING**		**OVERHEAD RATE**	**159.17%**	
		TECHNICAL STAFF				
	1	Richard Cross, PE	OPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$64.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$64.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walker	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**		**OVERHEAD RATE**	**228.94%**	
		TECHNICAL STAFF				
	1	Ed Zaminskue, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**		**OVERHEAD RATE**	**152.30%**	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**		**OVERHEAD RATE**	**127.09%**	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**		**OVERHEAD RATE**	**137.51%**	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$84.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**		**OVERHEAD RATE**	**117.32%**	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**		**OVERHEAD RATE**	**188.17%**	
		TECHNICAL STAFF				
	1	Chitra Radin	Dsc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**		**OVERHEAD RATE**	**140.00%**	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	196	
Total Salary		$10,873
Overhead		$17,114
Subtotal		$27,987
Fixed Fee	10%	$2,799
Total Direct Costs		$162
TOTAL COST		$30,948

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.12F TP / Electrical

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**		**OVERHEAD RATE**	**167.46%**	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$105.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**		**OVERHEAD RATE**	**159.17%**	
		TECHNICAL STAFF				
	1	Richard Cross, PE	OPM	20	$105.40	$2,108
	2	David Howell, PE	Rail Sys. Lead	200	$64.70	$12,940
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$64.10	$0
	8	Terry Shantz, PE	Cat/ Trans	24	$99.20	$2,381
	9	Bryan Shober, PE	Cat/ Trans	140	$84.30	$11,802
	10	Greg Nazarow	Rail Ops	16	$79.20	$1,267
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	32	$100.00	$3,200
	15	Stephen Barkovich	Sys. Integ.	196	$59.10	$11,584
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	18	McEwen van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	722	$50.37	$36,367
	21	Administrative Support Staff	CAD/ ADMIN	655	$43.14	$28,257
H&A		**HALEY & ALDRICH**		**OVERHEAD RATE**	**220.94%**	
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.08	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.89	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**		**OVERHEAD RATE**	**182.30%**	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**		**OVERHEAD RATE**	**127.09%**	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**		**OVERHEAD RATE**	**137.51%**	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**		**OVERHEAD RATE**	**117.32%**	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**		**OVERHEAD RATE**	**156.17%**	
		TECHNICAL STAFF				
	1	Chitra Radin	Dsc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	181	$38.21	$6,916
SJH		**SJH**		**OVERHEAD RATE**	**140.00%**	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	2,156	
Total Salary		$118,621
Overhead		$185,668
Subtotal		$302,490
Fixed Fee	10%	$30,249
Total Direct Costs		$162
TOTAL COST		$332,900

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.12G Signal Systems

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**			**OVERHEAD RATE**	**187.40%**
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$98.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	OPM, STR Eng VII	0	$81.81	$0
	4	Steve Harlacker, PE, SE	QAQC, STR Eng VI	0	$72.33	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$98.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$106.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**			**OVERHEAD RATE**	**189.17%**
		TECHNICAL STAFF				
	1	Richard Cross, PE	OPM	15	$105.40	$1,686
	2	David Howell, PE	Rail Sys. Lead	20	$64.70	$1,294
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapolicznyj, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkaa Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$64.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ	0	$59.10	$0
	16	Richard Lentz	Signals	2	$81.90	$164
	17	Joseph Bonaduce	Signals	30	$100.70	$3,021
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	18	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	20	$50.37	$1,007
	21	Administrative Support Staff	CAD/ ADMIN	20	$43.14	$863
H&A		**HALEY & ALDRICH**			**OVERHEAD RATE**	**220.34%**
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**			**OVERHEAD RATE**	**182.30%**
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**			**OVERHEAD RATE**	**127.09%**
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**			**OVERHEAD RATE**	**137.51%**
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**			**OVERHEAD RATE**	**117.32%**
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$83.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**			**OVERHEAD RATE**	**168.17%**
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynsku	CAD IV	0	$38.21	$0
SJH		**SJH**			**OVERHEAD RATE**	**140.00%**
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	108		
Total Salary			$8,035
Overhead			$12,790
Subtotal			$20,825
Fixed Fee		10%	$2,083
Total Direct Costs			$0
TOTAL COST			$22,908

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.12H Communications

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**		**OVERHEAD RATE**	**167.40%**	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$98.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$106.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**		**OVERHEAD RATE**	**189.17%**	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	16	$105.40	$1,686
	2	David Howell, PE	Rail Sys. Lead	120	$64.70	$7,764
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$84.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Ned Walter	Comms	165	$73.70	$12,161
	13	James Sgro	Comms	40	$90.00	$3,600
	14	Theodore Bandy, PE	Sys. Integ	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	18	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	158	$50.37	$7,958
	21	Administrative Support Staff	CAD/ ADMIN	151	$43.14	$6,514
H&A		**HALEY & ALDRICH**		**OVERHEAD RATE**	**220.84%**	
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.50	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**		**OVERHEAD RATE**	**182.30%**	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**		**OVERHEAD RATE**	**127.09%**	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**		**OVERHEAD RATE**	**137.51%**	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**		**OVERHEAD RATE**	**117.32%**	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**		**OVERHEAD RATE**	**166.17%**	
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**		**OVERHEAD RATE**	**140.00%**	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.56	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	558	
Total Salary		$39,884
Overhead		$63,164
Subtotal		$102,848
Fixed Fee	10%	$10,285
Total Direct Costs		$162
TOTAL COST		$113,294

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.12I Cost & Schedule

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**			**OVERHEAD RATE 187.40%**	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QA/QC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	50	$86.51	$4,325
	7	Michael Hawkins, PE	STR Eng VIII	40	$106.14	$4,246
	8	Steve Mikucki, PE	MECH Eng VII	40	$86.43	$3,457
	9	Alex Noble, PE	ELEC Eng VI	50	$70.29	$3,514
	10	Paul Connolly, PE	STR Eng VII	20	$80.09	$1,602
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.56	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	20	$69.83	$1,397
		SUPPORT STAFF				
	18	Support Staff	STR I-V	108	$46.04	$4,972
	19	Support Staff	MECH I-V	80	$46.04	$3,683
	20	Support Staff	ELEC I-V	80	$46.04	$3,683
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**			**OVERHEAD RATE 158.17%**	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	8	$105.40	$843
	2	David Howell, PE	Rail Sys. Lead	40	$64.70	$2,588
	3	Bruce Smith	Quality Control	0	$63.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapoticzny, PE	Ste/Civil	0	$43.70	$0
	6	Agnieszkka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	20	$64.10	$1,282
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$78.60	$0
	12	Ned Waller	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ	0	$59.10	$0
	16	Richard Lentz	Signals	2	$81.90	$164
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	18	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	4	$50.37	$201
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**			**OVERHEAD RATE 220.94%**	
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**			**OVERHEAD RATE 192.30%**	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**			**OVERHEAD RATE 127.09%**	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	24	$54.50	$1,308
	10	Structural Engineering Staff	STR Eng Staff	32	$29.22	$935
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**			**OVERHEAD RATE 137.51%**	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**			**OVERHEAD RATE 117.32%**	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	230	$63.67	$14,644
	2	Junior Estimator	Junion Est.	144	$46.20	$6,653
	3	Project Controls	PC	104	$57.75	$6,006
RADIN		**RADIN**			**OVERHEAD RATE 158.17%**	
		TECHNICAL STAFF				
	1	Chaira Radin	Dsc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynsku	CAD IV	0	$38.21	$0
SJH		**SJH**			**OVERHEAD RATE 140.00%**	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	16	$84.24	$1,348
	2	Senior Engineering Staff	Sen. Eng Staff	32	$59.58	$1,907
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	1,144	
Total Salary		$68,759
Overhead		$96,127
Subtotal		$164,886
Fixed Fee	10%	$16,489
Total Direct Costs		$0
TOTAL COST		$181,374

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL TASK

TASK: 4.13 Supplemental Survey

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**			**OVERHEAD RATE**	**157.48%**
		TECHNICAL STAFF				
	1	Misha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Gear, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartlacker, PE, SE	QA/QC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$106.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Orin Scheteich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**			**OVERHEAD RATE**	**188.17%**
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$84.70	$0
	3	Bruce Smith	Quality Control	0	$83.90	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$84.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$78.60	$0
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**			**OVERHEAD RATE**	**220.84%**
		TECHNICAL STAFF				
	1	Ed Zamelska, PE	Lead Geotechnical Eng.	0	$84.00	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.96	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**			**OVERHEAD RATE**	**182.30%**
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**			**OVERHEAD RATE**	**127.09%**
		TECHNICAL STAFF				
	1	John Tan, PE	PM	12	$90.56	$1,087
	2	Rich Baron	SURV PM	16	$58.30	$933
	3	Project Surveyor	SURV Proj. Surv.	28	$47.50	$1,330
	4	Party Chief	SURV Inst. Tech.	140	$37.21	$5,209
	5	Instrument Technician	SURV Inst. Tech.	140	$28.62	$4,007
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	8	$58.19	$466
	12	CAD Technicians	CAD Tech	140	$30.54	$4,276
ENVISION		**ENVISION**			**OVERHEAD RATE**	**137.51%**
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**			**OVERHEAD RATE**	**117.32%**
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**			**OVERHEAD RATE**	**156.17%**
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**			**OVERHEAD RATE**	**140.00%**
		TECHNICAL STAFF				
	1	S Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	484		
Total Salary			$17,307
Overhead			$21,995
Subtotal			$39,302
Fixed Fee		10%	$3,930
Total Direct Costs			$0
TOTAL COST			$43,232

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.14 ROW / Property

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		HARDESTY & HANOVER	OVERHEAD RATE		167.40%	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$96.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$96.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$108.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Manikbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DeSeDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		GANNETT FLEMING	OVERHEAD RATE		159.17%	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$64.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapotoczny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$64.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Ned Walker	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edrski, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		HALEY & ALDRICH	OVERHEAD RATE		220.84%	
		TECHNICAL STAFF				
	1	Ed Zaminskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		GRIFFIN ENGINEERING	OVERHEAD RATE		182.30%	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		NAIK CONSULTING GROUP	OVERHEAD RATE		127.09%	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	8	$90.56	$724
	2	Rich Baron	SURV PM	20	$58.30	$1,166
	3	Project Surveyor	SURV Proj. Surv.	40	$47.50	$1,900
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	4	$58.19	$233
	12	CAD Technicians	CAD Tech	80	$30.54	$2,443
ENVISION		ENVISION	OVERHEAD RATE		137.51%	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		JCMS	OVERHEAD RATE		117.32%	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		RADIN	OVERHEAD RATE		155.17%	
		TECHNICAL STAFF				
	1	Chitra Radin	Desc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		SJH	OVERHEAD RATE		140.00%	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	152		
Total Salary			$6,466
Overhead			$8,219
Subtotal			$14,685
Fixed Fee		10%	$1,468
Total Direct Costs			$0
TOTAL COST			$16,153

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.15 Utility Relocation

FIRM: H&H / GANNETT FLEMING JV

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**		**OVERHEAD RATE**	**187.40%**	
		TECHNICAL STAFF				
	1	Misha Szumanski, PE	PM, STR Eng VIII	0	$95.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Herlacker, PE, SE	QAQC, STR Eng VI	0	$72.32	$0
	5	Steve Hom, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$106.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.83	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	0	$46.04	$0
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CADD ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**		**OVERHEAD RATE**	**168.17%**	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$84.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapolitzny, PE	Sta/Civil	0	$43.70	$0
	6	Agnieszjka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$84.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
		Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CADD ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**		**OVERHEAD RATE**	**230.84%**	
		TECHNICAL STAFF				
	1	Ed Zaminskas, PE	Lead Geotechnical Eng	0	$84.08	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CADD ADMIN	0	$30.30	$0
GE		**GRIFFIN ENGINEERING**		**OVERHEAD RATE**	**182.38%**	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**		**OVERHEAD RATE**	**127.09%**	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	48	$90.56	$4,347
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	100	$74.66	$7,466
	7	Senior Utility Engineer	UTIL Sen. Eng.	220	$45.79	$10,074
	8	Utility Engineering Staff	UTIL Eng Staff	640	$37.79	$24,186
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	20	$58.19	$1,164
	12	CAD Technicians	CAD Tech	720	$30.54	$21,989
ENVISION		**ENVISION**		**OVERHEAD RATE**	**137.51%**	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**		**OVERHEAD RATE**	**117.32%**	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**		**OVERHEAD RATE**	**185.17%**	
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**		**OVERHEAD RATE**	**140.00%**	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	1,748		
Total Salary			$69,225
Overhead			$87,978
Subtotal			$157,203
Fixed Fee		10%	$15,720
Total Direct Costs			$0
TOTAL COST			$172,923

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.16 Geotech Investigation

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		**HARDESTY & HANOVER**		**OVERHEAD RATE**	**187.48%**	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	0	$98.86	$0
	2	Charlie Geer, PE	Risk Manager	0	$98.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Harlacker, PE, SE	QA/QC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$106.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	310	$86.58	$26,840
	13	Mishac Yegian, PE, PhD	STR Eng VIII	103	$76.13	$7,841
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$89.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	4,747	$46.04	$218,554
	19	Support Staff	MECH I-V	0	$46.04	$0
	20	Support Staff	ELEC I-V	0	$46.04	$0
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		**GANNETT FLEMING**		**OVERHEAD RATE**	**168.17%**	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	0	$105.40	$0
	2	David Howell, PE	Rail Sys. Lead	0	$84.70	$0
	3	Bruce Smith	Quality Control	0	$83.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lepinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$84.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$78.80	$0
	12	Neil Walker	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	18	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	0	$50.37	$0
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		**HALEY & ALDRICH**		**OVERHEAD RATE**	**220.84%**	
		TECHNICAL STAFF				
	1	Ed Zamenske, PE	Lead Geotechnical Eng.	238	$84.06	$20,008
	2	Project Engineer	Project Engineer	330	$60.60	$19,998
	3	Engineering Staff	Eng Staff	300	$50.69	$15,207
	4	Junior Engineering Staff	Jr. Eng Staff	2,342	$34.99	$81,947
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	310	$30.30	$9,393
GE		**GRIFFIN ENGINEERING**		**OVERHEAD RATE**	**182.30%**	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		**NAIK CONSULTING GROUP**		**OVERHEAD RATE**	**127.09%**	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	0	$90.56	$0
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	0	$29.22	$0
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		**ENVISION**		**OVERHEAD RATE**	**137.51%**	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		**JCMS**		**OVERHEAD RATE**	**117.32%**	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		**RADIN**		**OVERHEAD RATE**	**168.17%**	
		TECHNICAL STAFF				
	1	Chitra Radin	Dsc. Lead	0	$160.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		**SJH**		**OVERHEAD RATE**	**140.00%**	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	8,680		
Total Salary			$399,785
Overhead			$722,380
Subtotal			$1,122,165
Fixed Fee		10%	$112,217
Total Direct Costs			$1,260,025
TOTAL COST			$3,494,407

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE RFP NO. 15-044

ESTIMATE BY INDIVIDUAL/TASK

TASK: 4.18 As Directed

FIRM: H&H / GANNETT FLEMING JV

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
HARDESTY & HANOVER		HARDESTY & HANOVER	OVERHEAD RATE		187.40%	
		TECHNICAL STAFF				
	1	Visha Szumanski, PE	PM, STR Eng VIII	60	$96.86	$5,812
	2	Charlie Geer, PE	Risk Manager	0	$99.01	$0
	3	David Tuckman, PE	DPM, STR Eng VII	0	$81.81	$0
	4	Steve Hartacker, PE, SE	QA/QC, STR Eng VI	0	$72.32	$0
	5	Steve Horn, PE	STR Eng VII	0	$80.39	$0
	6	Peter Roody, PE	STR Eng VIII	0	$86.51	$0
	7	Michael Hawkins, PE	STR Eng VIII	0	$108.14	$0
	8	Steve Mikucki, PE	MECH Eng VII	0	$86.43	$0
	9	Alex Noble, PE	ELEC Eng VI	0	$70.29	$0
	10	Paul Connolly, PE	STR Eng VII	0	$80.09	$0
	11	Glen Schetelich, PE	STR Eng VIII	0	$109.79	$0
	12	Raymond Mankbadi, PE	STR Eng VIII	0	$86.58	$0
	13	Mishac Yegian, PE, PhD	STR Eng VIII	0	$76.13	$0
	14	David Marcic, PE, SE	STR Eng VI	0	$72.55	$0
	15	Jerry DiMaggio,PE	STR Eng VIII	0	$76.13	$0
	16	David Gerber, PE	STR Eng VI	0	$75.63	$0
	17	Drew DelleDonne, RA	STR Eng VI	0	$69.83	$0
		SUPPORT STAFF				
	18	Support Staff	STR I-V	180	$46.04	$8,287
	19	Support Staff	MECH I-V	180	$46.04	$8,287
	20	Support Staff	ELEC I-V	180	$46.04	$8,287
	21	Support Staff	CAD/ ADMIN	0	$37.23	$0
GANNETT FLEMING		GANNETT FLEMING	OVERHEAD RATE		158.17%	
		TECHNICAL STAFF				
	1	Richard Cross, PE	DPM	60	$105.40	$6,324
	2	David Howell, PE	Rail Sys. Lead	0	$64.70	$0
	3	Bruce Smith	Quality Control	0	$63.80	$0
	4	Robert Matthews, PE	Civil Lead	0	$79.20	$0
	5	Steven Zapoticzny, PE	Site/Civil	0	$43.70	$0
	6	Agnieszkka Lapinski, PE	Sr. Structural	0	$72.00	$0
	7	John Legath, PE	Track	0	$64.10	$0
	8	Terry Shantz, PE	Cat/ Trans	0	$99.20	$0
	9	Bryan Shober, PE	Cat/ Trans	0	$84.30	$0
	10	Greg Nazarow	Rail Ops	0	$79.20	$0
	11	Ian Martin	Rail Ops	0	$76.60	$0
	12	Neil Walter	Comms	0	$73.70	$0
	13	James Sgro	Comms	0	$90.00	$0
	14	Theodore Bandy, PE	Sys. Integ.	0	$100.00	$0
	15	Stephen Barkovich	Sys. Integ.	0	$59.10	$0
	16	Richard Lentz	Signals	0	$81.90	$0
	17	Joseph Bonaduce	Signals	0	$100.70	$0
	18	Alireza Edraki, PE, PMP	Safety & Sec.	0	$99.60	$0
	19	McEwan van der Mandele, CPP	Safety & Sec.	0	$77.70	$0
	19	Ramesh Rajagopal, PE	Hydraulics & Hydrology	0	$73.30	$0
		SUPPORT STAFF				
	20	Technical Support Staff	Eng. Staff	540	$50.37	$27,200
	21	Administrative Support Staff	CAD/ ADMIN	0	$43.14	$0
H&A		HALEY & ALDRICH	OVERHEAD RATE		220.94%	
		TECHNICAL STAFF				
	1	Ed Zamrskie, PE	Lead Geotechnical Eng.	0	$84.06	$0
	2	Project Engineer	Project Engineer	0	$60.60	$0
	3	Engineering Staff	Eng Staff	0	$50.69	$0
	4	Junior Engineering Staff	Jr. Eng Staff	0	$34.99	$0
		SUPPORT STAFF				
	5	CADD/ Project Assistant	CAD/ ADMIN	0	$30.30	$0
GE		GRIFFIN ENGINEERING	OVERHEAD RATE		182.30%	
		TECHNICAL STAFF				
	1	Joe Griffin, PE	Const. Rev.	0	$90.00	$0

NON - DBE FIRMS

DBE FIRMS

	NO.	PERSON NAME	PROJECT TITLE / DISCIPLINE	ESTIMATED HOURS	HOURLY RATE	TOTAL SALARY
NAIK		NAIK CONSULTING GROUP	OVERHEAD RATE		127.09%	
		TECHNICAL STAFF				
	1	John Tan, PE	PM	30	$90.56	$2,717
	2	Rich Baron	SURV PM	0	$58.30	$0
	3	Project Surveyor	SURV Proj. Surv.	0	$47.50	$0
	4	Party Chief	SURV Inst. Tech.	0	$37.21	$0
	5	Instrument Technician	SURV Inst. Tech.	0	$28.62	$0
	6	Ron Rotunno, PE	UTIL Mgr	0	$74.66	$0
	7	Senior Utility Engineer	UTIL Sen. Eng.	0	$45.79	$0
	8	Utility Engineering Staff	UTIL Eng Staff	0	$37.79	$0
	9	Senior Structural Engineer	STR Sen. Eng.	0	$54.50	$0
	10	Structural Engineering Staff	STR Eng Staff	270	$29.22	$7,889
		SUPPORT STAFF				
	11	CAD Manager	CAD Mgr	0	$58.19	$0
	12	CAD Technicians	CAD Tech	0	$30.54	$0
ENVISION		ENVISION	OVERHEAD RATE		137.51%	
		TECHNICAL STAFF				
	1	Kurt Buettler	Doc. Ctrl. Mgr	0	$42.00	$0
	2	Thomas Hartley	VE Team Lead	0	$94.40	$0
	3	Configuration Management	Config. Mgmt.	0	$55.00	$0
	4	Value Engineering Team	VE Team	0	$75.52	$0
		SUPPORT STAFF				
	5	Administration	Admin	0	$21.40	$0
JCMS		JCMS	OVERHEAD RATE		117.32%	
		TECHNICAL STAFF				
	1	K. Meehan	Senior Est.	0	$63.67	$0
	2	Junior Estimator	Junion Est.	0	$46.20	$0
	3	Project Controls	PC	0	$57.75	$0
RADIN		RADIN	OVERHEAD RATE		155.17%	
		TECHNICAL STAFF				
	1	Chitra Radin	Disc. Lead	0	$100.00	$0
		SUPPORT STAFF				
	2	Beth Uczynski	CAD IV	0	$38.21	$0
SJH		SJH	OVERHEAD RATE		140.00%	
		TECHNICAL STAFF				
	1	S. Jayakumaran	Civil Eng VIII	0	$84.24	$0
	2	Senior Engineering Staff	Sen. Eng Staff	0	$59.58	$0
	3	Engineering Staff	Eng. Staff	0	$40.43	$0

TEAM SUMMARY

TOTAL ESTIMATED HOURS	1,500	
Total Salary		$74,804
Overhead		$115,119
Subtotal		$189,923
Fixed Fee	10%	$18,992
Total Direct Costs		$0
TOTAL COST		$208,915

NJ TRANSIT RFP No. 15-044

Design, Engineering and Construction Assistance Services
for the Replacement of Raritan River Bridge

DIRECT EXPENSES DETAIL

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE
RFP MO 15-044

DIRECT EXPENSES SUMMARY BY TASK	
FIRM: Hardesty & Hanover/ Gannett Fleming JV	**Total Cost**
TASK 1: Project Management	
REPRODUCTION	$24,243.00
TRAVEL	$18,240.00
SURVEY & TESTING	
MISCELLANEOUS	$5,380.00
TOTAL DIRECT EXPENSES	**$47,863.00**
TASK 2: Risk Management	
REPRODUCTION	
TRAVEL	$4,360.00
SURVEY & TESTING	
MISCELLANEOUS	
TOTAL DIRECT EXPENSES	**$4,360.00**
TASK 4.2: Survey & Base Mapping	
REPRODUCTION	
TRAVEL	$3,520.00
SURVEY & TESTING	$188,200.00
MISCELLANEOUS	
TOTAL DIRECT EXPENSES	**$191,720.00**
TASK 4.9: Feasibility Report	
REPRODUCTION	
TRAVEL	$863.50
SURVEY & TESTING	
MISCELLANEOUS	
TOTAL DIRECT EXPENSES	**$863.50**
TASK 4.10: Value Engineering	
REPRODUCTION	
TRAVEL	$16,520.00
SURVEY & TESTING	
MISCELLANEOUS	
TOTAL DIRECT EXPENSES	**$16,520.00**
TASK 4.12: Preliminary Design	
REPRODUCTION	
TRAVEL	$970.50
SURVEY & TESTING	
MISCELLANEOUS	
TOTAL DIRECT EXPENSES	**$970.50**
TASK 4.16: Detailed Geotechnical Investigation	
REPRODUCTION	
TRAVEL	$43,725.00
SURVEY & TESTING	$2,216,300.00
MISCELLANEOUS	
TOTAL DIRECT EXPENSES	**$2,260,025.00**
TOTAL DIRECT EXPENSES	**$2,522,322.00**

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE
RFP MO 15-044

DIRECT EXPENSES SUMMARY BY FIRM	
FIRM: Hardesty & Hanover/ Gannett Fleming JV	**Total Cost**
H&H/GF Joined Venture	
REPRODUCTION	$24,243.00
TRAVEL	$37,164.00
SURVEY & TESTING	$2,216,300.00
MISCELLANEOUS	$1,680.00
TOTAL DIRECT EXPENSES	**$2,279,387.00**
Haley & Aldrich	
REPRODUCTION	
TRAVEL	$30,995.00
SURVEY & TESTING	
MISCELLANEOUS	$760.00
TOTAL DIRECT EXPENSES	**$31,755.00**
Griffin Engineering	
REPRODUCTION	
TRAVEL	
SURVEY & TESTING	
MISCELLANEOUS	$220.00
TOTAL DIRECT EXPENSES	**$220.00**
Naik Consulting Group	
REPRODUCTION	
TRAVEL	$3,520.00
SURVEY & TESTING	$188,200.00
MISCELLANEOUS	$760.00
TOTAL DIRECT EXPENSES	**$192,480.00**
Envision	
REPRODUCTION	
TRAVEL	$16,520.00
SURVEY & TESTING	
MISCELLANEOUS	$760.00
TOTAL DIRECT EXPENSES	**$17,280.00**
JCMS	
REPRODUCTION	
TRAVEL	
SURVEY & TESTING	
MISCELLANEOUS	$760.00
TOTAL DIRECT EXPENSES	**$760.00**
Radin	
REPRODUCTION	
TRAVEL	
SURVEY & TESTING	
MISCELLANEOUS	$220.00
TOTAL DIRECT EXPENSES	**$220.00**
SJH	
REPRODUCTION	
TRAVEL	
SURVEY & TESTING	
MISCELLANEOUS	$220.00
TOTAL DIRECT EXPENSES	**$220.00**
TEAM TOTAL	**$2,522,322.00**

EXPENSES DETAIL - REPRODUCTION

FIRM: Hardesty & Hanover/ Gannett Fleming JV

TASK 1: Project Management

Books - 8 ½ x 11 (*)	No.	Pages	Copies (*)	Total Sheets	Cost (B/W)	Cost (Color)	Binding	Total
Project Management Plan - Draft	1	150	12	1,800	$0.05		$4.00	$138.00
Project Management Plan - Final	1	150	12	1,800	$0.05		$4.00	$138.00
Quality Management Plan	1	150	12	1,800	$0.05		$4.00	$138.00
Design Control Plan	1	100	12	1,200	$0.05		$4.00	$108.00
Configuration Management Plan	1	100	12	1,200	$0.05		$4.00	$108.00
Design Management Plan	1	100	12	1,200	$0.05		$4.00	$108.00
Interface & Integration Mgmt Plan	1	150	12	1,800	$0.05		$4.00	$138.00
TOTAL PRINTING			84	10,800				$876.00
DELIVERY ($200 per trip, 4 trips)	4							$800.00
TOTAL COST								$1,676.00

Notes:
(*) Distribution - Team (8 books) + Clien (4 books)

TASK 2: Risk Management

Books - 8 ½ x 11 (*)	No.	Pages	Copies (*)	Total Sheets	Cost (B/W)	Cost (Color)	Binding	Total
Risk Management Plan - Draft	1	100	12	1,200	$0.05		$4.00	$108.00
Risk Management Plan - Final	1	100	12	1,200	$0.05		$4.00	$108.00
TOTAL PRINTING				2,400				$216.00
DELIVERY ($200 per trip)	1							$200.00
TOTAL COST								$416.00

Notes:
(*) Distribution - Team (4 books) + Clien (8 books)

TASK 3: Systems Safety & Management

Books - 8 ½ x 11 (*)	No.	Pages	Copies (*)	Total Sheets	Cost (B/W)	Cost (Color)	Binding	Total
Systems Safety & Mgmt - Draft	1	100	12	1,200	$0.05		$4.00	$108.00
Systems Safety & Mgmt - Final	1	100	12	1,200	$0.05		$4.00	$108.00
TOTAL PRINTING				2,400				$216.00
DELIVERY ($200 per trip)	1							$200.00
TOTAL COST								$416.00

Notes:
(*) Distribution - Team (4 books) + Clien (8 books)

TASK 4.5: Concept Geotechnical Report

Books - 8 ½ x 11 (*)	No.	Pages	Copies (*)	Total Sheets	Cost (B/W)	Cost (Color)	Binding	Total
Concept Geotech Report	1	50	12	600	$0.05		$4.00	$78.00
TOTAL PRINTING				600				$78.00
DELIVERY ($200 per trip)	1							$200.00
TOTAL COST								$278.00

Notes:
(*) Distribution - Team (6 books) + Clien (6 books)

TASK 4.7: Navigational Study

Books - 8 ½ x 11 (*)	Pages	Pages	Copies (*)	Total Sheets	Cost (B/W)	Cost (Color)	Binding	Total
Navigational Study - Draft	1	50	12	600	$0.05		$4.00	$78.00
Navigational Study - Final	1	50	12	600		$0.50	$4.00	$348.00
TOTAL PRINTING				600				$426.00
DELIVERY ($200 per trip)	1							$200.00
TOTAL COST								$626.00

Notes:
(*) Distribution - Team (6 books) + Clien (6 books)

TASK 4.9: Feasibility Report

Books - 8 ½ x 11 (*)	No.	Pages	Copies (*)	Total Sheets	Cost (B/W)	Cost (Color)	Binding	Total
Feasibility Report - Draft	1	200	18	3,600	$0.05		$4.00	$252.00
Feasibility Report - Final	1	200	18	3,600		$0.50	$4.00	$1,872.00
TOTAL				3,600				$2,124.00
Drawings (*)	**No.**	**Sheets (**)**	**Copies (*)**	**Total Sheets**	**Cost (B/W)**	**Cost (Color)**	**Binding**	**Total**
Full Size	2	40	18	1,440	$0.50		$0.50	$738.00
Half Size - 11 x 17	2	40	18	1,440	$0.10		$4.00	$288.00
TOTAL				1,440				$1,026.00
TOTAL PRINTING								$3,150.00
DELIVERY ($500 per trip)	2							$1,000.00
TOTAL COST								$4,150.00

Notes:
(*) Distribution - Team (8 sets) + Clien (10 sets)
(**) 8 disciplines, 5 drawings per discipline = total 40 dwgs, 2 submissions

EXPENSES DETAIL - REPRODUCTION

FIRM: Hardesty & Hanover/ Gannett Fleming JV

TASK 4.10: VE Report

Books - 8 ½ x 11 (*)	No.	Pages	Copies (*)	Total Sheets	Cost (B/W)	Cost (Color)	Binding	Total
VE Report - Draft	1	150	18	2,700	$0.05		$4.00	$207.00
VE Report - Final	1	150	18	2,700	$0.05		$4.00	$207.00
TOTAL PRINTING				2,700				$414.00
DELIVERY ($71.5 per trip)	2							$143.00
TOTAL COST								$557.00

Notes:
(*) Distribution - Team (8 books) + Clien (10 books)

TASK 4.12: Preliminary Design

Books - 8 ½ x 11 (*)	No	Pages	Copies (*)	Total Sheets	Cost (B/W)	Cost (Color)	Binding	Total
Project Definition Report - Draft	1	200	20	4,000	$0.05		$4.00	$280.00
Project Definition Report - Final	1	200	20	4,000		$0.50	$4.00	$2,080.00
Specifications	2	200	20	4,000	$0.05		$4.00	$360.00
Cost Estimate	2	150	20	3,000	$0.05		$4.00	$310.00
Calculations	2	700	20	14,000	$0.05		$4.00	$860.00
TOTAL				4,000				$3,890.00
Drawings (*)	**No**	**Sheets (**)**	**Copies (*)**	**Total Sheets**	**Cost (B/W)**	**Cost (Color)**	**Binding**	**Total**
Full Size	2	240	20	9,600	$0.50		$0.50	$4,820.00
Half Size - 11 x 17	2	240	20	9,600	$0.10		$4.00	$1,120.00
TOTAL				9,600				$5,940.00
TOTAL PRINTING								$9,830.00
DELIVERY ($500 per trip)	2							$1,000.00
TOTAL COST								$10,830.00

Notes:
(*) Distribution - Team (10 sets) + Clien (10 sets)
(**) 8 disciplines, 30 drawings per discipline = total 240 dwgs, 2 submissions

TASK 4.14: ROW & Property Acquisition (PAECE Report)

Books - 8 ½ x 11 (*)	No	Pages	Copies (*)	Total Sheets	Cost (B/W)	Cost (Color)	Binding	Total
PAECE Report - Draft	1	100	14	1,400	$0.05		$4.00	$126.00
PAECE Report - Final	1	100	14	1,400		$0.50	$4.00	$756.00
TOTAL				1,400				$882.00
Drawings (*)	**No**	**Sheets (**)**	**Copies (*)**	**Total Sheets**	**Cost (B/W)**	**Cost (Color)**	**Binding**	**Total**
Full Size	2	20	14	560	$0.50		$0.50	$294.00
Half Size - 11 x 17	2	20	14	560	$0.10		$4.00	$168.00
TOTAL				560				$462.00
TOTAL PRINTING								$1,344.00
DELIVERY ($200 per trip)	2							$400.00
TOTAL COST								$1,744.00

Notes:
(*) Distribution - Team (4 sets) + Clien (10 sets)
(**) 20 drawings, 2 submissions

TASK 4.16: Detailed Geotechnical Investigation (Geotechnical Report)

Books - 8 ½ x 11 (*)	No.	Pages	Copies (*)	Total Sheets	Cost (B/W)	Cost (Color)	Binding	Total
Geotechnical Report - Draft	1	200	18	3,600	$0.05		$4.00	$252.00
Geotechnical Report - Final	1	200	18	3,600		$0.50	$4.00	$1,872.00
TOTAL				3,600				$2,124.00
Drawings (*)	**No.**	**Sheets (**)**	**Copies (*)**	**Total Sheets**	**Cost (B/W)**	**Cost (Color)**	**Binding**	**Total**
Full Size	2	40	18	1,440	$0.50		$0.50	$738.00
Half Size - 11 x 17	2	40	18	1,440	$0.10		$4.00	$288.00
TOTAL				1,440				$1,026.00
TOTAL PRINTING								$3,150.00
DELIVERY ($200 per trip)	2							$400.00
TOTAL COST								$3,550.00

Notes:
(*) Distribution - Team (8 sets) + Clien (10 sets)
(**) 40 drawings, 2 submissions

TOTAL PRINTING COSTS	$24,243.00

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE
RFP MO. 15-044

EXPENSES DETAIL - TRAVEL

FIRM: Hardesty & Hanover/ Gannett Fleming JV

TASK 1: Project Management

PROJECT MEETINGS (*)	No. of Staff	No. of Trips	Fare	Total Cost
Hardesty & Hanover				
NYC	4	24	$10.00	$960.00
Trenton, NJ	3	24	$25.00	$1,800.00
TOTAL H&H				**$2,760.00**
Gannett Fleming				
Audubon, PA	4	24	$150.00	$14,400.00
Plainfield, NJ	3	24	$10.00	$720.00
TOTAL GF				**$15,120.00**
Haley & Aldrich				
Parsippany, NJ	1	24	$15.00	$360.00
TOTAL H&A				**$360.00**
TOTAL COST				**$18,240.00**

Notes:
(*) Train trips to project meetings - 1 progress meeting & 1 coordination meeting per month

TASK 2: Risk Management

MEETINGS / WORKSHOPS (*)	No. of Trips	Days Each	Lodging	M&E	Total	Air Fare	Total Cost
Hardesty & Hanover							
Risk Manager	4	2	$134	$61	$1,560.00	$2,800.00	$4,360.00
TOTAL H&H							**$4,360.00**
TOTAL COST							**$4,360.00**

Notes:
(*) Tips to VE Vorksops - 4 meetings

TASK 4.2: Survey & Base Mapping

FIELD SURVEY (*)	No. of Trips	Miles	Cost / Mile	Total	Tolls	Rental	Total Cost
Naik Consulting Group							
Edison, NJ	44	30	$0.55	$726.00	$440.00		$1,166.00
NYC	44	70	$0.55	$1,694.00	$660.00		$2,354.00
TOTAL NAIK							**$3,520.00**

Notes:
(*) 2 cars, 2 months (44 days)

TASK 4.9: Feasibility Report

SITE VISITS (*)	No. of Trips	Miles	Cost / Mile	Total	Tolls	Rental	Total Cost
Hardesty & Hanover							
NYC	2	70	$0.55	$77.00	$30.00		$107.00
Trenton, NJ	2	90	$0.55	$99.00	$20.00		$119.00
TOTAL H&H							**$226.00**
Gannett Fleming							
Audubon, PA	4	250	$0.55	$550.00	$60.00		$610.00
Plainfield, NJ	2	25	$0.55	$27.50			$27.50
TOTAL GF							**$637.50**
TOTAL COST							**$863.50**

Notes:
(*) Trips by car

TASK 4.10: VE Report

VE WORKSHOP (*)	No. of Trips	Days Each	Lodging	M&E	Total	Air Fare	Total Cost
Envision							
VE Staff (4 people)	2	7	$134	$61	$10,920.00	$5,600.00	$16,520.00
TOTAL ENVISION							**$16,520.00**
TOTAL COST							**$16,520.00**

Notes:
(*) Trips to VE workshop

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE
RFP MO 15-044

EXPENSES DETAIL - TRAVEL

FIRM: Hardesty & Hanover/ Gannett Fleming JV

TASK 4.12: Preliminary Design

SITE VISITS (*)	No. of Trips	Miles	Cost / Mile	Total	Tolls	Rental	Total Cost
Hardesty & Hanover							
NYC	4	70	$0.55	$154.00	$60.00		$214.00
Trenton, NJ	2	90	$0.55	$99.00	$20.00		$119.00
TOTAL H&H							$333.00
Gannett Fleming							
Audubon, PA	4	250	$0.55	$550.00	$60.00		$610.00
Plainfield, NJ	2	25	$0.55	$27.50			$27.50
TOTAL GF							$637.50
TOTAL COST							$970.50

Notes:
(*) Trips by car

TASK 4.16: Detailed Geotechnical Investigation

BORING INSPECTIONS (*)	No. of Trips	Miles	Cost / Mile	Total	Tolls	Rental (**)	Total Cost
Hardesty & Hanover							
Trenton, NJ	220	90	$0.55	$10,890.00	$2,200.00		$13,090.00
TOTAL H&H							$13,090.00
Haley & Aldrich							
Parsippany, NJ	330	90	$0.55	$16,335.00	$3,300.00	11000	$30,635.00
TOTAL H&A							$30,635.00
TOTAL COST							$43,725.00

Notes:
(*) Daily inspections, 5 inspectors, 5 months (110 days)
(*) Car rental $100 per day

TOTAL TRAVEL COSTS	$88,199.00

NJT REPLACEMENT OF RARITAN RIVER DRAWBRIDGE
RFP MO. 15-044

EXPENSES DETAIL - SURVEY & TESTING			
FIRM: Hardesty & Hanover/ Gannett Fleming JV			
TASK 4.2: Survey & Base Mapping			
Naik Consulting Group			
EQUIPMENT	Days	Cost / Day	Total Cost
MPT Truck	4	$800.00	$3,200.00
TOTAL EQUIPMENT			**$3,200.00**
SURVEY (*)			Lump Sum
Photogrammetry - GEOD			$85,000.00
Subsurface Utility Survey - Taylor Wiseman Taylor (SUE)			$100,000.00
TOTAL SURVEY			**$185,000.00**
TOTAL COST			**$188,200.00**
TASK 4.16: Detailed Geotechnical Investigation			
BORINGS & SURVEY (*)			Lump Sum
Borings			$1,985,150.00
Geophisical Survey			$16,150.00
Diving Inspection Allowance - As Needed (**)			$15,000.00
Testing Lab			$200,000.00
TOTAL SURVEY			**$2,216,300.00**
Notes: (*) See backup (**) It's an allowance. The scope cannot be determined without knowing the actual conditions			
TOTAL SURVEY & TESTING			**$2,404,500.00**

EXPENSES DETAIL - MISCELLANEOUS ODCs			
FIRM: Hardesty & Hanover/ Gannett Fleming JV			
TASK 1: Project Management			
	Months	Cost / Month	Total Cost
JV FIRMS (H&H and GF)			
Postage / Fedex	12	$100.00	$1,200.00
Delivery	12	$40.00	$480.00
Other (phone, photos, etc.)			$200.00
TOTAL JV			$1,680.00
SUBCONSULTANTS			
Major Subs (H&A, Envision, JCMS)			
Postage / Fedex	12	$30.00	$360.00
Delivery	12	$25.00	$300.00
Other (phone, photos, etc.)			$100.00
TOTAL EACH SUB			$760.00
Other Subs (Griffin, Radin, SJH)			
Postage / Fedex	12	$15.00	$180.00
Other (phone, photos, etc.)			$40.00
TOTAL EACH SUB			$220.00
H&A			$760.00
Griffin			$220.00
Naik			$760.00
Envision			$760.00
JCMS			$760.00
Radin			$220.00
SJH			$220.00
TOTAL SUBCONSULTANTS			$3,700.00
TOTAL MISCELLANEOUS ODCs			**$5,380.00**

NJ TRANSIT RFP No. 15-044

Design, Engineering and Construction Assistance Services
for the Replacement of Raritan River Bridge

DIRECT EXPENSE BACKUP

Expense Backup: Printing Quote

A. Esteban & Company, Inc.

132 West 36th St, 10th fl
New York, NY 10018

September 16, 2015

Ms. Visha Szumanski
Hardesty & Hanover
1501 Broadway
New York, NY10023

Re: Digital Reproduction costs / NJ Transit Raritan River Bridge

Dear Ms. Szumanski:

Thank you for the opportunity to quote on your present printing requirements. The prices are as follows:

WIDE FORMAT		
1.	Digital Printing on Bond, 1st copy	$ 0.08 sq.ft.
2.	Digital Printing on Bond, add'l copy	$ 0.08 sq.ft.
3.	Digital Printing on Bond, half-size 1st	$ 0.08 sq.ft.
4.	Digital Printing on Bond, half-size add'l	$ 0.08 sq.ft.
5.	Print binding w-strip	$ 0.50 each
6.	**Cad Plotting Bond B/W 1st plot**	**$ 0.08 sq. ft.**
7.	**Cad Plotting Bond B/W add'l**	**$ 0.08 sq. ft**
8.	Color plot on Pres Bond (Inkjet)	$ 2.50 sq. ft.
9.	Color plot on Gloss/Semi Photo (Inkjet)	$ 5.00 sq. ft.
10.	Mounting on foamcore	$ 4.00 sq. ft.
11.	Laminating	$ 4.00 sq. ft.
SMALL FORMAT		
12.	Photocopy 8.5" x 11" B/W	$ 0.05 each
13.	Photocopy 8.5" x 11" color	$ 0.50 each
14.	Photocopy 11" x 17" B/W	$ 0.10 each
15.	Photocopy 11" x 17" color	$ 0.75 each
16.	Acco bind, 8.5" x 11"	$ 3.00 each
17.	GBC Bind/Wire O Bind , 8.5 x 11"	$ 3.00 each
18.	Acetate front / black vinyl back	$ 1.00 each
WEB-BASED DOCUMENT MANAGEMENT- DIGITAL SERVICES		
19.	PDF conversion	$ 0.25 ea.
20.	Rename-update Master/per file	$ 0.50 ea.
21.	Scan, upload, & index DWGS to PROJECTWEB system	**No Charge**
22.	Scan, upload, & index SPECS to PROJECTWEB system	**No Charge**
23.	Use of ProjectWeb (Unlimited Users)	**No Charge**
24.	FTP Hosting Monthly - up to 4.99GB	$ 10.00
25.	FTP Hosting Monthly - over 5 GB	$ 20.00
26.	FTP Hosting Monthly - over 25 GB	$ 49.00
27.	Projectweb/FTP Download Throughput up to 25k mb	$ 0.10/MB
27a.	Projectweb/FTP Download Throughput 25k-50k mb	$ 0.075/MB
27b.	Projectweb/FTP Download Throughput over 50k mb	$ 0.05/MB

If I can help you further please contact me at (212) 714-0102. Thank you for thinking of us.

Sincerely,

Chris Esteban

Expense Backup: Survey - Photogrammetry

GEOD CORPORATION
PHOTOGRAMMETRIC SCIENCES - SURVEY TECHNOLOGIES
18-24 Kanouse Road • Newfoundland, NJ 07435 • (973) 697-2122 • FAX (973) 838-6433

SUMMARY OF STAFFING

CLIENT: Naik — June 25, 2015

PROJECT: NJ Transit over the Raritan River — GEOD # p15-091

TITLE	ASCE GRADE	TASKS 1	2	3	4	5	TOTAL HOURS	CURRENT HOURLY RATE	DIRECT TECHNICAL LABOR
Principal/Owner	PIX	12	6	0	0	0	18	$65.05	$1,170.90
Project Manager	PV	48	24	0	0	0	72	$50.94	$3,667.68
Senior Technician	ET5	280	40				320	$39.82	$12,742.40
Technician	ET4	200					200	$31.15	$6,230.00
Chief of Party	ET4		100				100	$34.87	$3,487.00
Instrumentperson	ET3		100				100	$28.34	$2,834.00
Rodperson	ET2						0	$21.63	$0.00
Clerical Salaries	Clerical						0	$28.99	$0.00
TOTAL		540	270	0	0	0	810		$30,131.98

DIRECT EXPENSES:			
Aerial Photography			$3,995.00
Subsistence		days @ per day	$0.00
Mileage	2727	miles @ $0.55/mile	$1,500.00
Closings		days @ per day	$0.00
Scanned Images on CD			$0.00
Materials, Postage, Repro etc			$250.00
Other			$0.00
	Direct Expense Total:		**$5,745.00**

	PAYROLL	$30,131.98
142.9%	OVERHEAD	$43,058.60
18%	FEE	$5,423.76
	DIRECT EXPENSES	$5,745.00
	TOTAL	**$84,359.34**

TASKS

1) Obtain 1.8cm digital imagery, provide photo control w/ 4 pairs, prepare LAMP mapping along RR R-O-W with 1' DTM contours in NJ Transit specification MicroStation V8i/SelectCAD
2) Set ±68 preflight targets and 4 control pairs. Perform control survey and prepare control report.

Note: Mapping limits for 3.4 miles begin at 400' total width for abutments + 500', then taper to 100' total width at project ends as per the Google Earth file p15-091 Limits.kmz accompanying this summary of hours spreadsheet.

Expense Backup: Subsurface Utility Survey

RFP NO. 15-044 NJ TRANSIT BRIDGE OVER RARITAN RIVER

6/25/2015
REVISED 10-12-15

SUE TASK	DESIGNATING (DAYS)	2 MAN CREW DAILY RATE PER DAY	DESIGNATING TOTAL ESTIMATE	
PERTH AMBOY				
DESIGNATING (ASSUME 10 DAYS, 10 HOUR DAYS)	10	$2,100	$21,000	
SOUTH AMBOY				
DESIGNATING (ASSUME 10 DAYS, 10 HOUR DAYS)	10	$2,100	$21,000	$42,000

SUE TASK	TEST HOLES ASSUME 3 PER DAY)	3 MAN CREW DAILY RATE PER DAY	TEST HOLES TOTAL ESTIMATE	
PERTH AMBOY				
TEST HOLES (ASSUME 15 TEST HOLES, ON LAND ONLY)	5	$4,500	$22,500	
SOUTH AMBOY				
TEST HOLES (ASSUME 15 TEST HOLES, ON LAND ONLY)	5	$4,500	$22,500	$45,000

ASSUMPTIONS:
NJ TRANSIT FLAGGING COSTS NOT INCLUDED IN THIS COSTS.
GF TO COORDINATE THE EFFORT AND COST OF NJ TRANSIT FLAGGING.

ESTIMATE:	$87,000
TRAFFIC CONTROL:	$13,000
TOTAL ESTIMATED COSTS:	**$100,000**

Expense Backup: Borings

JERSEY BORING & DRILLING CO.,INC.

36 PIER LANE WEST, FAIRFIELD, NJ 07004

PHONE (973) 287-6857 FAX (973) 521-7891

To: Name: Ed Zamiskie
Company: Haley & Aldrich

From: Dennis Spearnock
Date: 6/30/2015

Phone No: 973-658-3909
E-Mail: ezamiskie@haleyaldrich.com

Page 1 of 2

Quote No. Q15-251
Revised: 9/17/2015

Project: NJT Raritan River Bridge
Perth Amboy-South Amboy, NJ

Jersey Boring and Drilling Co., Inc. is pleased to present this proposal to conduct seventy (70) water borings and ten (10) land borings to a depth of approximately seventy five to one hundred thirty five (75'-135') feet at the above mentioned site. Cone penetrometer testing will be performed with truck mounted drilling equipment.

Land Borings

ITEM	UNIT RATE	UNITS	QUANTITY	TOTAL
Mobilization/demobilization rig----------	$ 7,000.00	LS	1	$ 7,000.00
Railroad safety training(Water & land)------	$ 10,000.00	LS	1	$ 10,000.00
Soil drilling with continuous sampling to ten feet and at five foot intervals thereafter----------	$ 39.00	Per foot	800	$ 31,200.00
N-size rock coring or coring obstructions, i	$ 65.00	Per foot	120	$ 7,800.00
Steel Shelby tubes----------	$ 150.00	Each	10	
Grouting of boreholes----------	$ 5.00	Per foot	920	$ 4,600.00
Drums, if required----------	$ 100.00	Each	20	$ 2,000.00
NJDEP boring permit----------	$ 1,800.00	Each	2	$ 3,600.00
Crosshole seismic testing, 3 hole array-----	$ 12,000.00	Each	2	$ 24,000.00
Crosshole seismic testing, casing install---	$ 49.00	Per foot	600	$ 29,400.00
Stand by time----------	$ 300.00	Crew Hour	2	$ 600.00
Cone Penetrometer Soundings----------	$ 27.00	Per foot	500	$ 13,500.00
			ESTIMATED TOTAL	**$ 133,700.00**

Water Borings

ITEM	UNIT RATE	UNITS	QUANTITY	TOTAL
Mobilization/demobilization 2 rigs----------	$ 82,000.00	LS	1	$ 82,000.00
Sinking casing minimum 10' below mudline, including water----------	$ 62.00	Per foot	2100	$ 130,200.00
Soil drilling with continuous sampling to ten feet and at five foot intervals thereafter, 0-50'----------	$ 124.00	Per foot	3500	$ 434,000.00
Soil drilling with continuous sampling to ten feet and at five foot intervals thereafter, 50-100'----------	$ 141.00	Per foot	3000	$ 423,000.00
Soil drilling with continuous sampling to ten feet and at five foot intervals thereafter100-150'----------	$ 189.00	Per foot	1750	$ 330,750.00

N-size rock coring or coring obstructions, i	$ 215.00	Per foot	2100	$	451,500.00
Additional split spoon samples----------	$ 75.00	Each	0		
Steel Shelby tubes----------	$ 550.00	Each	20	$	11,000.00
Grouting of boreholes----------	$ 10.00	Per foot	10350	$	103,500.00
Drums, if required----------	$ 100.00	Each	140	$	14,000.00
NJDEP test boring site permit----------	$ 1,800.00	Each	2	$	3,600.00
Stand by time----------	$ 800.00	Crew Hour	2	$	1,600.00

ESTIMATED TOTAL $ 1,985,150.00

NOTE:

NJ DEP requires coordinates for all wells and permitted borings to be given in the NJ State Plane system either by a licensed surveyor or with differential GPS. Client to provide NJ State Plane coordinates including name license number of the surveyor.
All drums/drill cuttings to remain on site for testing and disposal by others.
We will require a site visit and a boring location plan prior to entering a contract to perform the work.
Jersey Boring and Drilling Co., Inc. will provide driller's field logs. Typed logs can be provided for a fee of $80.00 per hour with a one hour minimum charge. Engineering reports and inspections will be the responsibility of the client and is not included in our services.
All fees are based on providing our standard insurance.
On water boring fees are based on two barges working continuous twenty four hour operation, excluding weekends. Land fees are based on working weekdays between the hours of 7:00am and 3:30pm. Additional premium rates will be charged for other hours. Time not worked due to Railroad issues will be billed at the applicable standby rate.
If flagmen are required they shall be provided at no cost to Jersey Boring.

We will call for a utility mark out, however the location of any on site under-ground utilities, tanks, or buried structures must be identified by the client or owner before we can start drilling. The initial one-call fee is included in the price for mobilization/Demobilization. A fee of $50.00 will be billed for additional one-calls required due to project scheduling conflicts or cancellations.

Our employees are members of Local 1556 in NYC with the classification of core drillers. Any additional union employees required to satisfy other unions will be the responsibility of others.

Samples will be stored in our facilities for up to one year from the date of drilling. After one year all samples not taken by the client will be disposed of at our discretion.

It is our assumption that the site is not contaminated with hazardous materials, if any should be encountered during the drilling activities, the client will be contacted and a mutual agreement will be made about how to proceed. Any additional cost due to the hazardous materials will be agreed to before drilling resumes.

If the above terms and conditions are acceptable to you, please sign the bottom of this fee schedule and return it to us by fax, or supply us with a signed copy of your purchase order or contract, issued by the party responsible for payment.

These prices will remain in effect for 90 days from date quoted.

Thank you for the opportunity to be of service on this project. If you have any questions or require additional information please call me at 973-242-3800.

Dennis Spearnock

Ed Zamiskie Date

Expense Backup: Geotechnical Lab Testing

RARITAN BRIDGE - NEW YORK & LONG BRANCH RAILROAD

Laboratory testing cost for Soil and Rock samples:

Test Description	Unit Cost	Unit	No of Test	Amount	Remark (Total nos. SPT boring = 86 Approx.)
Visual Description and Identification of Soil	$15.0	Per Sample	40	$600.0	
Water (Moisture) Content of Soil	$7.5	Per test	172	$1,290.0	Two test per boring
Organic Content	$35.0	Per test	33	$1,155.0	Three test per approach boring (11 SPT)
pH of Soil	$30.0	Per test	172	$5,160.0	Two test per boring
Specific Gravity of Soil	$80.0	Per test	86	$6,880.0	One test per boring
Soil Chemical Analysis	$135.0	Per test	86	$11,610.0	One test per boring
Atterberg Limits	$95.0	Per test	258	$24,510.0	Three test per boring
Sieve Analysis	$60.0	Per test	430	$25,800.0	Five test per boring
Hydrometer Analysis	$80.0	Per test	172	$13,760.0	Two test per boring
Soil Resistivity	$55.0	Per test	172	$9,460.0	Two test per boring
Undisturbed Tube Sample Extrusion Only	$30.0	Per Tube	86	$2,580.0	One test per boring
Consolidated Isotropically Undrained (Bridge)	$950.0	Per test	38	$36,100.0	One test per substructure unit
Consolidated Isotropically Undrained (Approach fill)	$950.0	Per test	11	$10,450.0	One test per approach boring (11 SPT)
Unconfined Compressive Strength- Rock	$195.0	Per Test	150	$29,250.0	Two test per bridge boring (75 SPT)
Point Load Strength	$125.0	Per Test	75	$9,375.0	One test per bridge boring (75 SPT)
Moh's Hardness	$25.0	Per Test	225	$5,625.0	Three test per bridge boring (75 SPT)
Conventional One-Dimensional Consolidation	$525.0	Per Test	11	$5,775.0	One test per approach boring (11 SPT)

Total: $199,380

Say $200,000

Expense Backup: Geophisical Survey

Aqua Survey, Inc.
469 Point Breeze Road
Flemington, New Jersey 08822

908-788-8700 T
908-788-9165 F

Dolce @aquasurvey.com

To	EDWARD ZAMISKIE	From	Tom Dolce
Group Location	Haley & Aldrich, Inc. Parsippany, NJ	Title	Vice President
Email Phone Cell	ezamiskie@halevaldrich.com (973) 658-3909 (973) 713-4045	Date	April 6, 2015
Project	Geophysical & Bathymetric Survey Raritan River	Proposal	GEO-040815-159

Thank you for your interest in Aqua Survey's capabilities and your request for a quote to perform survey services in the Raritan River in New Jersey.

Experience, Vessels & Equipment: Since 1975 Aqua Survey, Inc. (ASI) has been providing vessel-based sampling and surveying services throughout the United States and the Caribbean as well as internationally. Aqua Survey's vessels are configured and

equipped to safely provide all the requested support identified in your request for a cost proposal. All of ASI's personnel are OSHA Hazwoper 40-hour trained. Aqua Survey places safety at the top of our company's objectives. Aqua Survey currently owns and operates the vessels and equipment and has the well-seasoned professional staff of degreed mariners to make your project a success.

Aqua Survey owns and operates over 20 sampling and surveying research vessels ranging in size and function from a four-person amphibious vehicle, to various sized jon boats, to geophysical survey vessels, to our 30-foot landing-craft coring and surveying boat to our latest acquisition, the 34-foot pontoon the R/V Edison. Having a fleet of vessels in-house allows Aqua Survey to deploy the right vessel for vastly differing river and lake conditions. Aqua Survey maintains appropriate levels of insurance for all vessels and on-water activities, operates all vessels in full compliance with United States Coast Guard rules and regulations and in compliance with the Jones Act. All vessels, at a minimum, are equipped with safety equipment for all crew members and passengers (clients). All captains are U.S. Coast Guard Licensed operators. We propose to commit an appropriately sized and equipped vessel to perform geophysical and bathymetric surveying in the Raritan River at the NJ Transit Bridge.

Bathymetric Survey

Aqua Survey will mobilize, deploy and demobilize a survey boat, Odom CVM depth sounder, or equivalent, DGPS precision positioning equipment and survey crew to your project sites to perform a bathymetric survey. Using lanes spaced 25 feet apart, Aqua Survey will run the appropriate number of track lines 1,000 feet east and west of the bridge across the main stem of the channel where the current swing bridge is located. ASI will run survey lines across the entire width of the river to get adequate coverage for this survey. Aqua Survey will use Hypack for survey control, ship track recording, and data acquisition. Depth measurements will be corrected to mean low water (MLW) as a vertical datum unless told otherwise.

Deliverables: Data will be processed and survey map produced as E-size drawings and on a CD-ROM as both an Auto-CAD and/or ASCII version file. The data reduction and mapping work will be completed within one work of the completion of the fieldwork.

Side-Scan Sonar Survey

An Edgetech 4125 dual frequency (400kHz/900kHz) side-scan sonar system will be used for this survey. Range scale will be set to no greater than 165 feet, with approximately 50 foot spacing for lines run parallel with the flow of the river. That will result in greater than 300 percent coverage of the riverbed. During the survey, the sonar will be constantly monitored and tuned to ensure the highest quality records possible are recorded. Positioning data from the DGPS will be collected and electronically paired with the side-scan sonar records to allow the location of targets to be determined during the survey and during post-processing. Following the survey, the individual records will

be analyzed to detect the current status of the rip rap near the bridge and pier structures and any other debris or submerged objects. Any such targets will be noted, coordinates provided and target files created with data for each target annotated.

Magnetometer Survey

A magnetometer survey will be conducted in order to detect the presence of the buried cable utilities. The survey methodology is designed to provide data indicating the position, and relative size of ferrous targets in the survey area.

Aqua Survey will use their Geometrics G-882 marine cesium magnetometer. The survey will be conducted in order to detect and locate potential utilities crossing in the X and Y plane. The survey methodology will be designed to provide data indicating the position of any utilities in the survey areas within ± 3 feet. ASI will not be able to determine burial depth for the cables with any certainty. Survey lines will be run longitudinally along the river at 50-foot intervals to ensure complete coverage of the survey area. During the survey, the sensor will be towed at several different depths to get as near the bottom as possible and to ensure the sensors were not detecting the vessel itself. Data will be recorded at no greater than 0.5-second intervals and electronically paired with positioning data from the DPGS system in an onboard computer running Hypack survey software. To ensure reliable target identification and assessment, analysis of the magnetic data will be carried out as it is generated. Significant magnetic anomalies will be marked as targets during the survey and will be re-surveyed using the magnetometer to better determine the size and characteristics of the anomaly. Fiber optic cables maybe hard to detect with the magnetometers unless they are encased in metallic piping or similar casing.

Post-processing of the data will involve examining each survey line individually and annotating anomalies detected. Using contouring software, magnetic data generated during the survey will also be contour plotted at 10 gamma intervals for analysis and accurate location of the material generating each magnetic anomaly as well as determining the presence of clusters of targets. Magnetic targets will be isolated and analyzed in accordance with intensity, duration, aerial extent and signature characteristics.

We are estimating three days of field surveying to complete the on-water work and a week to complete all the data reduction and reporting.

ASI's pricing follows:

Mob/Demob	$ 1,800 Lump Sum
Survey Field Work ($ 4,200 Per Day)	$12,600 Lump Sum
Data Processing and Summary Report	$ 1,750 Lump Sum
Total Cost -	**$16,150**

Payment: Payment terms are Net 30 days from date of invoice.

Scheduling and Authorization: Please read the following Terms and Conditions, they will govern ASI's contractual relationship with you the Client. ASI must receive written authorization from the Client to schedule a project.

Terms and Conditions:

If you feel our policies may not be appropriate for your project, please let us know and we will do what we can to work with your request.

1. Client – The public body or authority, corporation, association, firm or person with whom Aqua Survey, Inc. has entered into Agreement for the provision of services.
2. ASI – Aqua Survey, Inc. with corporate offices at 469 Point Breeze Road, Flemington, New Jersey 08822 is the corporation retained to provide services as stated in this Agreement.
3. Point-of-Refusal - Point-of-refusal is the point at which applied coring technology can no longer penetrate the target material at a reasonable rate. This may be caused by a variety of conditions including: rock, large stones, gravel, debris or other barriers.
4. Right of Entry – The Client will provide for right of entry of employees, agents, or subcontractors of ASI to perform and complete work that is subject of this Agreement.
5. Indemnity – The Client will provide ASI information regarding the specific locations of all known underground manmade-structures and utilities. ASI will indemnify the Client from damages caused by ASI during the provision of services to these identified structures and utilities. ASI shall not be responsible and shall be held harmless by the Client for damages to any structure or utility not identified by the Client.
6. Mob/Demob – Mobilization/Demobilization is the time period, work and costs associated with the mobilization of personnel and equipment to Client's work site and the demobilization of equipment and personnel from the work site after the conclusion of provision of services.
7. Day Rate – ASI's day rate takes effect at the time ASI equipment and personnel have arrived at the work site. The length of the work day governed by the day rate is 8-hours unless otherwise specified to in the Agreement. Time over the agreed-to work period during a day will be billed on a prorated basis. Day Rate will be billed for on-site required training.

8. Weather Day – A weather day is a day that weather conditions make the provision of services unsafe or the likelihood of productivity unacceptably low. A weather day is declared by ASI's field team leader after consultation with Client. Weather Days will be billed at full day rate. Only one weather day per site has been allowed for.
9. Client-Directed Standby Time – After mobilization has been completed and ASI is ready to enter the work site, has entered the work site or has commenced work, a prorated day rate will be billed for up to 8 hours for all Client directed standby time including, but not limited to, lockout, shutdown, labor actions, etc. This rate will also prevail for time spent at work site after the provision of field services has been completed and ASI personnel and equipment are not allowed to leave the work site to begin demobilization. A full day rate will be billed for scheduled work days that are cancelled without at least 96-hours advance warning.
10. All pricing is based on OSHA level "D" safety protection unless otherwise specified in the Agreement. Work requiring a higher level of personal protective equipment and not specified in the Agreement is subject to additional charges.
11. Insurance Coverage – ASI carries normal and customary insurance coverage and limits and will provide an insurance certificate upon Client's request. Any additional coverage or increased limits requested/required by Client will be billed at cost plus 15%.
12. Vessel/Equipment at Risk Notification – If ASI is requested to operate vessels or equipment in high risk areas (e.g., over a collapsed/submerged pier) or under conditions that pose much greater wear and tear on the vessels and equipment than normal (e.g., ice flow conditions), the vessel's U.S.C.G. licensed captain will determine if the vessel or equipment is at risk, the captain will place Client on notice: Client is at risk and becomes liable for the repair or replacement of equipment that may be damaged if ASI continues to provide services in accordance with the Agreement in such declared areas.
13. The use of markout services and of geophysical equipment to detect submerged or embedded utilities lessens the probability of damaging such utilities but does not eliminate the possibility of Aqua Survey's equipment damaging utilities. ASI makes no claims the use of geophysical survey equipment will locate all unseen utilities.
14. Additional Services – The rates included in the Agreement are for the services specified. Additional administrative work that may be required will be billed at $125 per hour.
15. Line item prices are not offered on an ala carte basis. ASI prices/discounts projects keeping in mind all of the tasks being requested, not each one individually. Additional fees may be applied if the Client does not select the full suite of services offered in this proposal (unless that service is labeled "optional").
16. Payment Terms – Your price schedule is based on a Net 30 day terms of payment. For longer than 30 days or for other alternative payment plans, Aqua Survey reserves the right to increase the cost of services. Alternative plans must be approved in writing by ASI.

17. Invoicing – Whenever a vessel is to be mobilized for a Client's project, Aqua Survey will invoice the Client the Mobilization/Demobilization fee when the project is authorized and scheduled. Additional invoices will be issued at project milestones or agreed upon billing cycles.

Understood and Accepted:

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Edward Zamiskie - Haley & Aldrich, Inc.

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Date