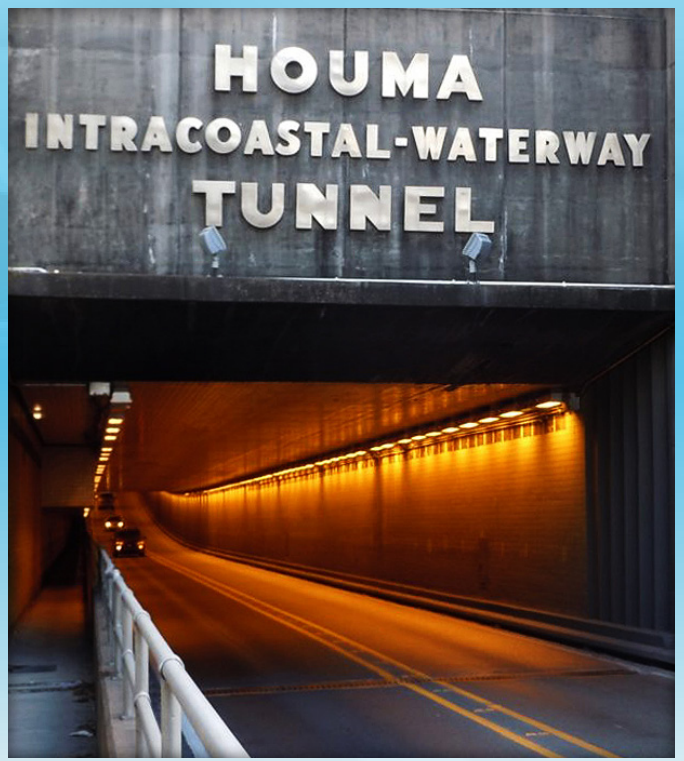
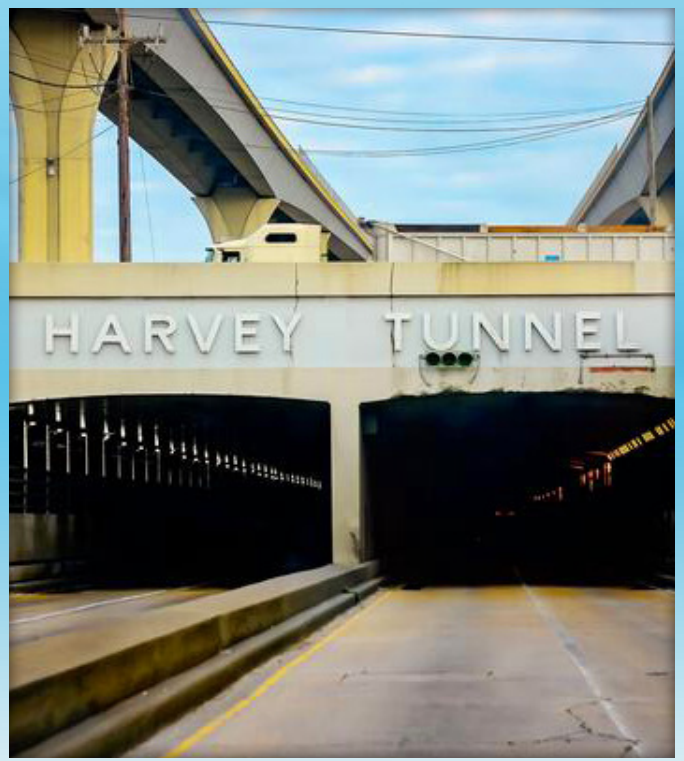
Contract No. 4400028222

IDIQ Contract for Tunnel Inspection Services Statewide

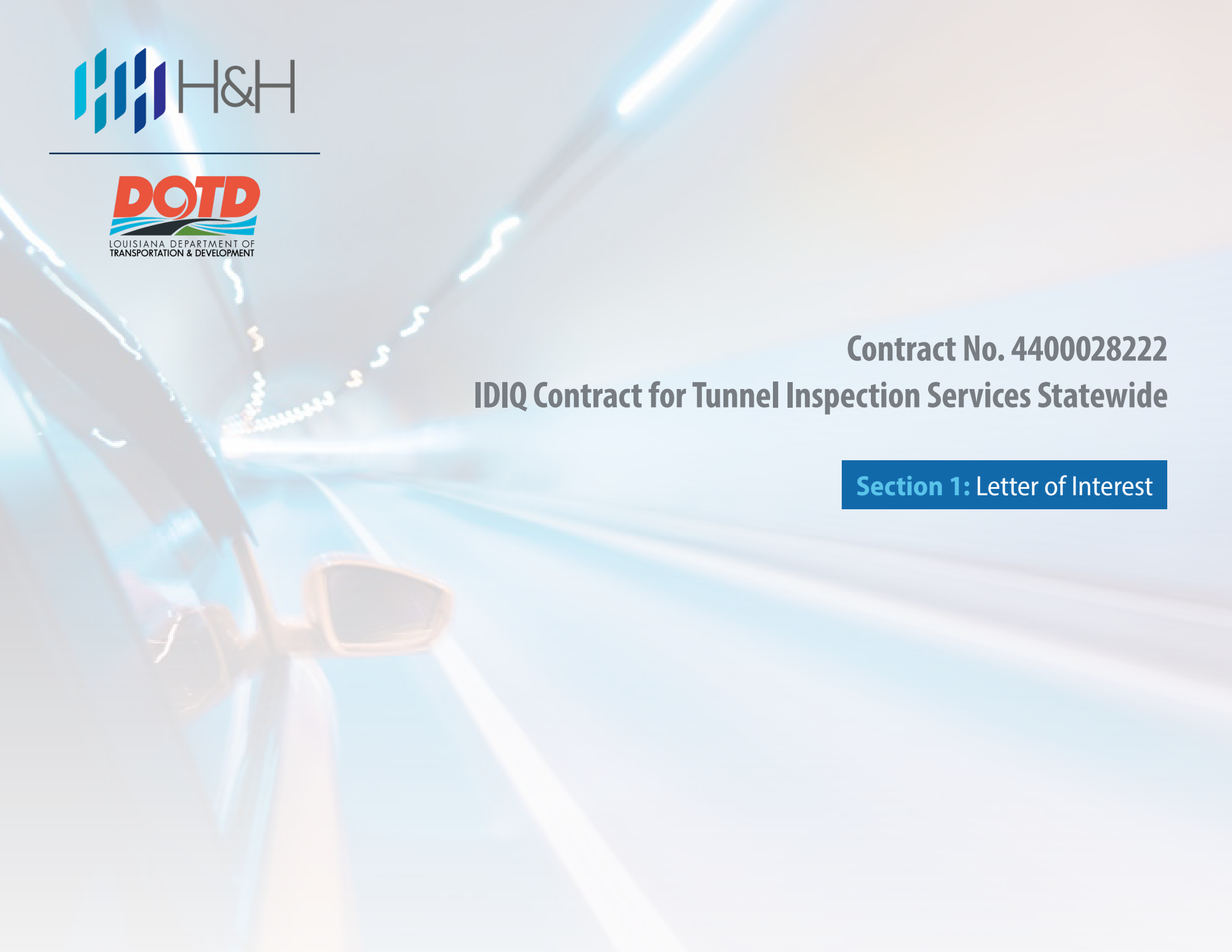




SUBMITTED BY:

Hardesty & Hanover, LLC

DECEMBER 2023



Contract No. 4400028222
IDIQ Contract for Tunnel Inspection Services Statewide

Section 1: Letter of Interest

3850 N. Causeway Boulevard
Suite 1625
Metairie, LA 70002
T: 504.962.9212
www.hardestyhanover.com

December 19, 2023

Submitted via email: DOTDConsultantAds80@la.gov

Re: IDIQ Contract for Tunnel Inspection Services - Statewide
Contract No. 4400028222

Dear Consultant Evaluation Committee Members:

Hardesty & Hanover, LLC (H&H) welcomes this opportunity to propose on the IDIQ Contract for Tunnel Inspection Services (Houma and Harvey) for LADOTD. We are known for offering comprehensive, industry-leading engineering services and putting our clients first. We bring a proven legacy of providing engineering excellence for over 135 years. H&H has included APS Engineering and Testing, LLC to meet the 4% DBE goal. We have successfully teamed with APS Engineering and Testing, LLC. on previous projects.

H&H has a full in-house structural, mechanical, architectural, electrical, geotechnical and construction inspection capabilities. Our Team is prepared to handle this contract with years of experience in tunnel inspection and development of repair and rehabilitation plans for structural/geotechnical and electrical/mechanical components of tunnels. We have experience with inspection/evaluation of defects as well as any other services related to maintenance, preservation, and replacement for tunnels. H&H staff have worked on many LADOTD projects in the past and are familiar with LADOTD processes and standards as well as LADOTD Tunnel Asset software and InspectX.

As Project Manager for this contract, Dr. Naghavi, a highly respected, experienced, and effective project manager will lead the H&H team. He is a former LADOTD engineer/administrator with 42 years of inspection and design experience with LADOTD tunnels, bridges, and roadways. He will ensure that the project deliverables associated with this contract are delivered on time, within budget, and in compliance with the latest procedures and standards.

Dr. Naghavi will be supported by experienced Team Leaders such as Ryan Nolan, PE and David Lynch, PE (Structural), Chris Svara, PE and Mike Tiné, PE (Electrical), and Don Marinelli, PE and Jason Biddle, PE (Mechanical). Each discipline team leader has completed the NHI 130110 Tunnel Safety Inspection course, completed inspections in accordance with the Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) Manual and rated tunnel elements in accordance with the Specifications for the National Tunnel Inventory (SNTI). The multiple number of qualified/experienced Team Leaders and support staff in each required discipline assigned to this contract will allow us to form multiple inspection teams when multiple task orders are assigned simultaneously.

We look forward to the opportunity to continue working with LADOTD on this important contract. If you have any questions regarding our proposal, please do not hesitate to contact me, directly at 504.962.9212 or bnaghavi@hardestyhanover.com.

Sincerely,

Hardesty & Hanover

Babak Naghavi

Babak Naghavi, PhD, PE, PH
Regional Manager

DOTD FORM: 24-102

(Revised January 1, 2023)

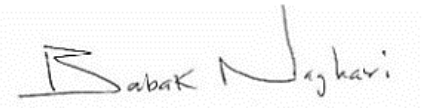
PROPOSAL TO PROVIDE CONSULTANT SERVICES

Prime consultant shall complete the DOTD Form 24-102 without altering the Form's text; however, the instruction and/or guidance for Sections 12 through 23 can be removed but do not remove Section title and number.

ANY CONSULTANT FAILING TO SUBMIT ANY OF THE INFORMATION REQUIRED ON THE DOTD FORM 24-102, OR PROVIDING INACCURATE INFORMATION ON THE DOTD FORM 24-102, MAY BE CONSIDERED NON-RESPONSIVE.

1. Contract Name as shown in the advertisement	IDIQ CONTRACT FOR TUNNEL INSPECTION SERVICES STATEWIDE
2. Contract Number(s) as shown in the advertisement	4400028222
3. State Project Number(s), if shown in the advertisement	N/A
4. Prime consultant name **(name must match as registered with the Louisiana Secretary of State where such registration is required by law**)	Hardesty & Hanover, LLC
5. Prime consultant license number (as registered with the Louisiana Professional Engineering and Land Surveying Board (LAPELS) if registration is required under Louisiana law)	LAPELS: EF.0005124 CAGE: 1MD51 DUNS: 05-455-2252
6. Prime consultant mailing address	3850 N. Causeway Blvd., Suite 1625 Metairie, LA 70002
7. Prime consultant physical address (existing or to be established, if location is used as an evaluation criteria)	3850 N. Causeway Blvd., Suite 1625 Metairie, LA 70002
8. Name, title, phone number, and email address of prime consultant's contract point of contact	Babak Naghavi, PE, Regional Manager, 504.962.9212, bnaghavi@hardestyhanover.com
9. Name, title, phone number, and email address of the official with signing authority for this proposal	Babak Naghavi, PE, Regional Manager, 504.962.9212, bnaghavi@hardestyhanover.com

Prime consultant should enter the firm name in the footer at the bottom of this page. (It will carry over to subsequent pages.)

10. This is to certify that all information contained herein is accurate and true, and that the team presently has sufficient staff to perform these services within the designated time frame. By submitting this proposal, proposer certifies that it is not engaged in a boycott of Israel and it will, for the duration of its contract obligations, refrain from a boycott of Israel. Proposer also certifies and agrees that the following information is correct: In preparing its response, the proposer has considered all proposals submitted from qualified, potential subcontractors and suppliers, and has not, in the solicitation, selection, or commercial treatment of any subcontractor or supplier, refused to transact or terminated business activities, or taken other actions intended to limit commercial relations, with a person or entity that is engaging in commercial transactions in Israel or Israeli-controlled territories, with the specific intent to accomplish a boycott or divestment of Israel. The proposer also has not retaliated against any person or other entity for reporting such refusal, termination, or commercially limiting actions. DOTD reserves the right to reject the response of the bidder or proposer if this certification is subsequently determined to be false, and to terminate any contract awarded based on such a false response.	 Babak Naghavi, PE 12/19/2023 Date:
11. If a Disadvantaged Business Enterprise (DBE) goal has been set for this advertisement, indicate which firm(s) will be used to meet the DBE goal and each firm(s)' percentage.	Firm(s): APS Engineering and Testing, LLC Firm(s)' %: 4%

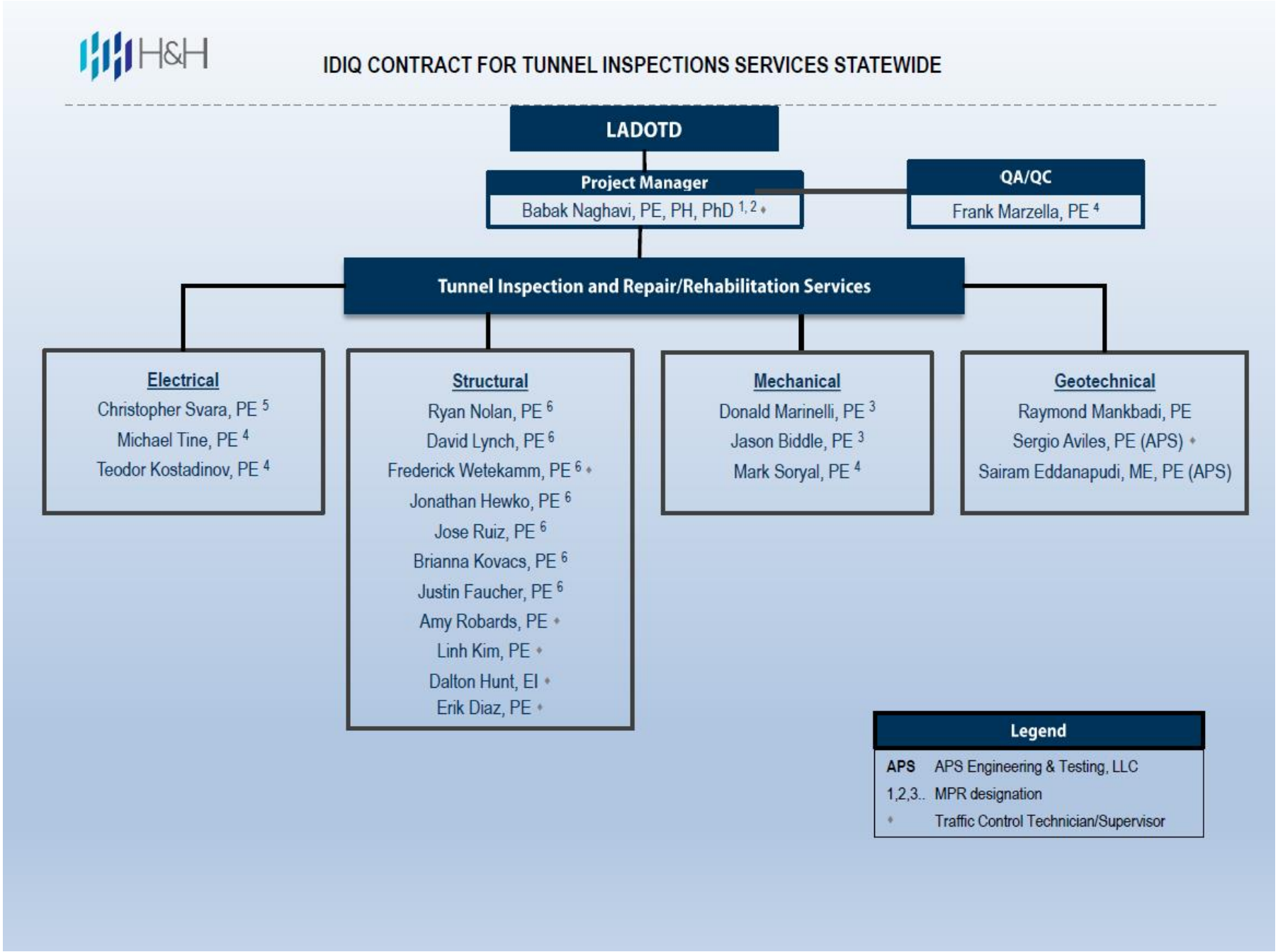
12. <u>Past Performance Evaluation Discipline Table:</u>

Past Performance Evaluation Discipline(s)	% of Overall Contract	Prime: Hardesty & Hanover	A P S Engineering and Testing, LLC	Firm C	Firm D	Firm E	Each Discipline must total to 100%
Bridge	96%	100%					**100%**
Geotech	4%		100%				**100%**
Identify the percentage of work for the **<u>overall contract</u>** to be performed by the prime consultant and each sub-consultant.							
Percent of Contract	100%	96%	4%				**100%**

13. Firm Size:

Firm name	DOTD Job Classification	Number of personnel committed to this contract	Total number of personnel available in this DOTD Job Classification (if needed)
Hardesty & Hanover, LLC	Principal	1	3
	Supervisor – Eng	4	10
	Engineer	8	22
	Engineer - Other	8	20
	Inspector - Bridge	4	16
	Engineer Intern	2	10
	Administrative	1	3
APS Engineering & Testing, LLC	Engineer	2	3
	Engineer Intern	1	1
	Administrative	1	2

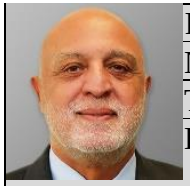
14. Organizational Chart:



15. Minimum Personnel Requirements:

MPR No. Do not insert wording from ad	Personnel being used to meet the MPR (Individual(s) may not satisfy more than one MPR unless specifically allowed by Attachment B of the advertisement)	Firm employed by	Type of license and discipline meeting MPR/ certification & number (Ex: PE # - Civil)	State of license	License / certification expiration date
1	Babak Naghavi, PE	Hardesty & Hanover, LLC	PE # 20745 – Civil	LA	9/30/2024
2	Babak Naghavi, PE	Hardesty & Hanover, LLC	PE #20745 – Civil	LA	9/30/2024
3	Donald Marinelli, PE	Hardesty & Hanover, LLC	PE #43538 – Mechanical	LA	9/30/2025
3	Jason Biddle, PE	Hardesty & Hanover, LLC	PE #43431 – Mechanical	LA	9/30/2025
4	Michael Tine, PE	Hardesty & Hanover, LLC	PE #40935 – Electrical	MD	7/13/2025
4	Frank Marzella, PE	Hardesty & Hanover, LLC	PE #78201 – Mechanical	FL	2/28/2025
4	Teodor Kostadinov, PE	Hardesty & Hanover, LLC	PE #54040 – Electrical	MD	03/11/2025
4	Mark Soryal, PE	Hardesty & Hanover, LLC	PE #101694 – Mechanical	NY	09/30/2024
5	Christopher Svara, PE	Hardesty & Hanover, LLC	PE #44080 – Electrical	LA	3/31/2024
6	David Lynch, PE	Hardesty & Hanover, LLC	PE #44457 – Civil	MD	10/10/2025
6	Frederick Wetekamm, PE	Hardesty & Hanover, LLC	PE #25369 – Civil	LA	3/31/2024
6	Jonathan Hewko, PE	Hardesty & Hanover, LLC	PE #53578 – Civil	MD	12/9/2024
6	Jose Ruiz, PE	Hardesty & Hanover, LLC	PE #081630 – Civil	NY	1/31/2027
6	Justin Faucher, PE	Hardesty & Hanover, LLC	PE #19427 – Civil	DE	6/30/2024
6	Ryan Nolan, PE	Hardesty & Hanover, LLC	PE #44583 – Civil	LA	9/30/2024
6	Brianna Kovacs, PE	Hardesty & Hanover, LLC	PE #51187 – Civil	MD	12/06/2025

16. Staff Experience:



Firm employed by	Hardesty & Hanover		
Name	Babak Naghavi, PE, PhD	Years of relevant experience with this employer	7
Title	Regional Manager/Louisiana	Years of relevant experience with other employer(s)	35
Degree(s) / Years / Specialization	Ph.D. / 1993 / Civil Engineering M.S. / 1982 / Civil Engineering B.S. / 1979 / Civil Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 20745 / LA / 9/30/2024; 82467 / FL / 2/28/2025; 18750 / AR / 12/31/2024 **Certifications:** FHWA NHI 130055 Safety Inspection of In-Service Bridges; FHWA-NHI 130053 Bridge Inspection Refresher Training; FHWA NHI 130087 Inspection & Maintenance Ancillary Hwy Struct.; FHWA 130101 Introduction to Safety Inspections of In-Service Bridges; Work Zone Traffic Control Flagger/Technician/Supervisor; NHI 130091 Underwater Bridge Inspection; NHI Pump Station Design, NHI Nondestructive Evaluation of Structures		
Year registered: 1983	Discipline: Civil Engineering		
Contract role(s) / brief description of responsibilities	Project Manager; **Meets MPR 1 and 2**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
06/14 – 11/15	**Contract No. 4400004383: Statewide Tunnel Inspection Services | Statewide, LA | LADOTD** **Project Manager** (subconsultant) for the tunnel inspection services which involved structural inspection of various elements of the tunnel and the approach roadway, evaluation, and preparation of the report. In-service inspection of tunnels in District 02 included the Harvey Tunnel, Belle Chasse Tunnel, and Houma Tunnel. Reports and detailed drawings were generated for each inspection that included the results of the inspection as well as other pertinent data and recommendations.
04/11 – 10/12	**S.P. No. 700-38-0110: Belle Chasse Tunnel – Electrical, Mechanical and Structural Rehabilitation Design | Plaquemines Parish, LA | LADOTD** **Project Manager** (subconsultant) providing inspection, design support and construction engineering & inspection services for the repair/rehabilitation of the Belle Chasse Tunnel. Scope of work included leak sealing by injection of grout/resin materials with associated sealing of joints; repair of existing gratings and supporting concrete; replacement of the existing lighting system; installation of tunnel height detection system at tunnel entrances; repair or refurbishment of all discharge piping; installation of the generator and automatic transfer switch; replacement of louvers for ventilation rooms; replacement of ventilation fan motors; and the repair/replacement of pumps and motors.
06/22 – 07/23	**Mechanical and Electrical Inspection Services for Klyde Warren Tunnel | Dallas, TX | TXDOT** **Project Manager** (subconsultant) for performing tunnel inspection services which involved inspection of mechanical and electrical elements of the Klyde Warren Tunnel located in Dallas Texas for TxDOT. This Task was performed under a statewide IDIQ contract. Inspections were performed in accordance with the FHWA Tunnel Operations Maintenance Inspection and Evaluation (TOMIE) Manual. Mechanical inspections included: tunnel ventilation, air conditioning, heating control units, plumbing, tunnel drainage and pumping systems, emergency generators, fire protection, and flood gates. Electrical inspections included: power distribution, emergency power, lighting, emergency lighting, fire detection, air-quality monitoring, cameras and safety systems, Communications, etc. An inspection report was prepared detailing inspections results, deficiencies, and recommended repairs.
05/19 – 10/19	**Annual Inspection of Seabrook Railroad Bridge | Port of New Orleans, LA | Port of New Orleans** **Project Manager** for annual inspection of the Seabrook Trunnion Bascule Bridge crossing the Inner Harbor Navigation Canal. Services included routine and fracture critical inspection, involving structural, mechanical, and electrical inspection for all bascule components, counterweight, and tower span per the Bridge Safety Management Program as well as NBIS and element inspection for the bridge.

11/18 – 12/18	**2018 NBIS Inspection of I-110 Bridge over Biloxi Back Bay | Harrison, MS | MDOT** **Project Manager** for routine/fracture critical inspection of I-110 Bridge over Biloxi Back Bay for Mississippi Department of Transportation. Inspection included electrical, mechanical and structural inspection of the bascule and anchor spans and NBIS and element inspection for the entire bridge in accordance with state, AASHTO and FHWA requirements.
06/23 - Present	**H.009730.5 In-Depth Bridge Inspection of Complex Structures | Statewide, LA | LADOTD** **Project Manager** for inspection of complex structures such as cantilever trusses, cable-stayed bridges, steel vertical lift bridges, and plate girder bascule bridges statewide under separate task orders. Inspection of two steel truss bridges (Jimmie Davis and Miller's Bluff) and a vertical lift bridge (West Fork) have been completed to date.
01/19 – Present	**Lapalco Boulevard Movable Bridge over Harvey Canal | Jefferson Parish, LA | Jefferson Parish DPW** **Project Manager** for the pre-design inspection and design of a new three-lane double bascule movable bridge crossing of Harvey Canal and the widening of the existing four-lane Lapalco Boulevard to provide a facility carrying three lanes of traffic in each direction. The new bridge is constructed as an independent structure immediately adjacent and north of the existing bridge with a new operator house. The project includes rehabilitation to the existing four-lane bridge with three lanes of traffic and a new pedestrian/bike lane. Scope includes improvements to bridge and roadway approaches for eastbound and westbound traffic as well as development of a Traffic Control Plan.
06/17 – Present	**H.002798.6 Bayou Teche Movable Bridge at Oaklawn | St. Mary Parish, LA | LADOTD** **Project Manager** responsible for design, calculations, and plan preparation of the bridge power distribution and relay-based control system for this movable bridge located in St. Mary Parish, LA. The new through girder swing-span rotates with hydraulically actuated slewing (push-pull) cylinders. H&H is currently providing construction phase services for the project.
03/18 – Present	**SR 609 Bascule Bridge over Old Fort Bayou Rehabilitation | Ocean Springs, MS | MDOT** **Project Manager** responsible for full rehabilitation of SR 609 bascule bridge as a task-order to the IDIQ Master Bridge Contract which includes developing standard and special bridge services statewide for MDOT. Scope of work includes inspection and rehabilitation of structural, mechanical, and electrical bridge components, roadway approaches and development of maintenance and repair plans. All designs are in accordance to AASHTO, FHWA and MDOT guidelines and specifications. H&H is currently providing construction phase services for the project.
01/20 – 02/20	**Almonaster Avenue Railroad Bridge over the Industrial Canal | New Orleans, LA | Port of New Orleans** **Project Manager** for the bridge assessment, complete rehabilitative engineering design, and construction inspection services required for the partial replacement of the Almonaster Avenue Bridge, a movable Strauss-heel trunnion bridge. H&H's 2019 assessment of the circa-1920 bridge revealed that improvements to the electrical and mechanical systems, superstructure, and counterweight were required to return this bridge to its full operating capability. Although the existing substructure could remain, modifications were deemed necessary to accommodate the rehabilitated superstructure.
03/08 - 11/10	**S.P. No. 700-99-0405: Crescent City Connection Division-Annual Bridge Inspection, LA | LADOTD** **Project Manager** for subconsultant firm for performing annual inspection services the bridge & related facilities. Contract included: superstructure inspection, including physical and maintenance inspection of the main bridge crossing Mississippi; structural steel paint inspection; as well as inspection of approaches; ferry & toll facilities; pontoons; moorings; pedestrian bridges; buildings at CCCD-owned facilities in Orleans, Jefferson, & St. Bernard Parishes. Scope also included preparation of a final inspection report and proposed engineering recommendations to address the identified deficiencies.
01/22 – Present	**Cedar Lake Bridge Inspection | Biloxi, MS | Mississippi OSARC** **Project Manager** responsible for in-depth electrical inspection for the swing bridge. Oversaw the detailed inspection of the existing span drive, warning gates, limit switches, motor control center, termination cabinets, and control console. Scope of Work included inspecting bridge operations and visually evaluating cables; performing testing of electrical service, motors, motor brakes, and span locks; reviewing previous bridge inspection reports and preparing checklist for field evaluation of corrected and uncorrected deficiencies. Tasks include submitting a detailed report to the client that documented deficiencies, and recommendations.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Donald Marinelli, PE	Years of relevant experience with this employer	18
Title	Mechanical Engineer	Years of relevant experience with other employer(s)	0
Degree(s) / Years / Specialization	M.E. / 2010 / Mechanical Engineering B.S. / 2005 / Mechanical Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 43538 / LA / 9/30/2025; **Certifications**: FHWA NHI 130110 Tunnel Safety Inspection; FHWA NHI 130125 Tunnel Inspection Refresher Training; FHWA NHI 130078 Fracture Critical Inspection Techniques for Steel Bridges; FHWA NHI 130055 Safety Inspection of In-Service Bridges; FHWA-NHI 130053 Bridge Inspection Refresher Training; FHWA NHI 130124 Tunnel Inspection Refresher WBT Prerequisite; FHWA 130101 Introduction to Safety Inspections of In-Service Bridges; OSHA Confined Space; NFPA 25 (Inspection of Fire Suppression Systems); NFPA 20 (Fire Protection)		
Year registered: 2019	Discipline: Mechanical Engineering		
Contract role(s) / brief description of responsibilities	Mechanical Engineer/Inspector; **Meets MPR 3**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
03/18 – 11/18	**2018 Alaskan Way Tunnel (99/540) In-Depth Electrical and Mechanical Inspection | Seattle, WA | WSDOT** **Lead Mechanical Engineer/Team Leader** responsible for the tunnel mechanical systems. Hardesty & Hannover was selected to perform an In-Depth Electrical and Mechanical Inspection in conformance with Federal Requirements for the (NTIS) for an Initial Inspection and In-Depth Inspection of the Electrical and Mechanical Systems. The tunnel is a 2.5-mile long single bore tunnel with two southbound lanes in the upper roadway, two northbound lanes in the lower roadway, and a lower section utilidor for the pumping equipment. There is a north and a south operations building each with four 500HP extraction ventilation fans and two maintenance air fans. Each roadway is equipped with multiple 75HP jet fans and roadway dampers evenly spaced through the tunnels for the extraction fans. The tunnel has a fire pipe deluge system and pumping system to remover the water. The tunnel has a communication system- based control system with PLC controllers, hundreds of cameras with DVR controllers, a fire detection system, an air monitoring system, and a complete security system. Each piece of equipment is remotely accessible and operable from the control system, with centers in each operations building. The majority of the electrical and mechanical equipment was visually inspected and operationally tested.
11/18 – 03/19	**In-Depth Mechanical and Electrical Inspection of the Mercer Island Tunnel | Mercer Island, WA | WSDOT** **Mechanical Engineer** for the NTIS inspection of the Mercer Island Tunnel mechanical systems. Inspection included visual inspection and operational testing of centrifugal fans, pressurization fans, dampers, water supply piping and valves, fire suppression system, roadway standpipes, emergency egress, drainage system, generators, and facility maintenance fans.
06/22 – 07/23	**Mechanical and Electrical Inspection Services for Klyde Warren Tunnel | Dallas, TX | TXDOT** **QC Mechanical Engineer** (subconsultant) for performing tunnel inspection services which involved inspection of mechanical and electrical elements of the Klyde Warren Tunnel located in Dallas Texas for TxDOT. This Task was performed under a statewide IDIQ contract. Inspections were performed in accordance with the FHWA Tunnel Operations Maintenance Inspection and Evaluation (TOMIE) Manual. Mechanical inspections include: tunnel ventilation, air conditioning, heating control units, plumbing, tunnel drainage and pumping systems, emergency generators, fire protection, and flood gates. Electrical inspections included: power distribution, emergency power, lighting, emergency lighting, fire detection, air-quality monitoring, cameras and safety systems, Communications, etc. An inspection report was prepared detailing inspections results, deficiencies, and recommended repairs.

06/19 – 11/21	**Annual Inspection of Seabrook and Almonaster Bridges over Navigation Canal | Metairie, LA | Port of New Orleans** **Inspection Team Leader** for the condition assessment of two single-leaf Strauss Truss bascule bridges located in Orleans Parish. Each bridge carries two railroad crossings over the Inner Harbor Navigational Canal using a main truss bascule span and multiple approach spans. Ryan performed multiple cycles of hands-on inspections for these bridges using climbing/rope access techniques. The Seabrook bridge has a total length of 261-feet with a Bascule Span length of 117-feet, a Tower Span of 42-feet, and Approach Spans totaling 102-feet in length. The bridge is approximately 30-feet wide center of truss to center of truss. The railway clearance envelope within the truss is 22-feet high by 27½-feet wide. The Almonaster Bridge has a total length of 240-feet, 8-inches with a Bascule Span length of 117-fee, a Tower Span of 42-feet, and Approach Spans totaling 82-feet. The railway is approximately 30-feet wide and is flanked on both sides by a closed vehicular roadway that is approximately 17.5-feet wide, with 11-feet of access designated for pedestrian traffic. The inspections culminated in a comprehensive report with condition ratings and repair recommendations.
10/17 – 09/22	**2017 MDTA Annual Facilities Inspection (2017-2021) | Statewide, MD | Maryland Transportation Authority** **Project Manager/Lead Mechanical Engineer** for the interim inspection of the Fort McHenry Tunnel and Baltimore Harbor Tunnel ventilation building tunnel mechanical systems. Mechanical systems inspected included centrifugal fans, drainage pump systems, and tunnel fire suppression systems. Project Manager for the project to provide engineering services for the Baltimore Harbor Tunnel and Fort McHenry Tunnel ventilation fans and pump systems. Responsibilities included evaluating mechanical systems to identify repairs, designing repair details and cost estimates to complete repairs, solicit bids from MDTA's On-Call Contractors, review contractor shop drawings, and perform construction engineering services to inspect the repairs.
09/10 – 10/17	**Tunnel Facilities Inspection Contract – AE 2761 | Baltimore, MD | Maryland Transportation Authority** **Lead Mechanical Engineer** responsible for mechanical biennial and interim inspections of the Baltimore Harbor and Fort McHenry Tunnels including the exhaust duct, fresh air duct and roadway levels for the multi-discipline inspection. The inspections included the tunnel ventilation centrifugal fans, drainage pump system, and tunnel fire suppression system, visual inspection, operational testing, and review of tunnel maintenance documents and NFPA testing documents. Involved with evaluating and determining the necessary repairs to return each component to operation, developing repair details and cost estimates to complete the repair, soliciting bids from the on-call contractors with MDTA to complete the repairs, reviewing contractors shop drawings, and performing construction engineering services to inspect the contractor while completing the repairs.
09/17 – 09/22	**Annual Facilities Inspection Services (AE3015) | Statewide, MD | Maryland Transportation Authority** **Lead Mechanical Engineer** for the routine, in-depth and emergency inspection of MDTA-owned bridges and tunnels. Project work included: 1) Tunnel Inspection of two tubes of the Baltimore Harbor Tunnel, BHT Fairfield and Canton ventilation buildings and the four bores of the Fort McHenry Tunnel facilities plus the East and West ventilation and west annex buildings including delineating deteriorated concrete in FMT lower plenums. 2) Tunnel Inspection for the annual inspection of Fort McHenry Tunnel ventilation building, including performing special confined space inspection of east portal pump wet well for infiltration investigation. 3) Tunnel Inspection for emergency inspection in response to waterline leak in BHT east tube. Coordinated with CFMO to inspect roadway and fresh air duct; participated in evaluation and development of repairs. 4) Tunnel Inspection for emergency inspection in response to FMT lower plenum waterline break in Bore 3; participated in evaluation and repair development. 5) Tunnel Inspection for emergency inspection, evaluation and assessment of over-height vehicle in the Baltimore Harbor Tunnel. Interior ceiling panels and pavement were inspected and assessed.
09/20 – 02/22	**Four Tunnel Inspections as per TOMIE Manual | New York, NY | NYCDOT** **Lead Mechanical Engineer** for NTIS inspection of the mechanical systems of the 1st Avenue Tunnel, Park Avenue Tunnel, West Street Underpass and Battery Park Underpass. The mechanical system inspection included ventilation systems, axial fans, centrifugal fans, carbon monoxide sensors, drainage system, drainage pumps, fire suppression systems, fire suppression standpipe and piping, emergency egress and egress signage.
01/21 – 04/21	**2021 Washington Convention Center Tunnel & Riverside Lift Bridge In-depth Inspections | Seattle & Hoquiam, WA | WSDOT** **Lead Mechanical Engineer** for NTIS inspection of the mechanical systems of the Washington State Convention Center Tunnel. The mechanical system inspection included diesel engine fire pumps, foam concentrate pumps, roadway foam sprinkler system, diesel generators, roadway fire standpipe systems. Inspection testing included water-only deluge testing, foam concentrate pump operational testing, fire pump operational testing, and diesel generator testing.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Jason Biddle, PE	Years of relevant experience with this employer	12
Title	Mechanical Engineer	Years of relevant experience with other employer(s)	0
Degree(s) / Years / Specialization	B.S. / 2010 / Mechanical Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 0043431 / LA / 9/30/2025 **Certifications:** FHWA NHI 130110 Tunnel Safety Inspection; FHWA NHI 130125 Tunnel Inspection Refresher Training; FHWA NHI 130078 Fracture Critical Inspection Techniques for Steel Bridges; FHWA NHI 130055 Safety Inspection of In-Service Bridges; FHWA-NHI 130053 Bridge Inspection Refresher Training; FHWA NHI 130124 Tunnel Inspection Refresher WBT Prerequisite; FHWA 130101 Introduction to Safety Inspections of In-Service Bridges; OSHA 10 Hr. Construction Safety; CPR / First Aid; OSHA Confined Space		
Year registered: 2019	Discipline: Mechanical Engineering		
Contract role(s) / brief description of responsibilities	Mechanical Engineer/Inspector; **Meets MPR 3**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
08/17 – 09/22	**2017 Annual Facilities Inspection Services | Statewide, MD | Maryland Transportation Authority** **Mechanical Engineer** for multiple bridges and tunnels projects as part of the on-call contract. Responsibilities for the Fort McHenry Tunnel (FMT) and Baltimore Harbor Tunnel (BHT) on-call tasks include providing on-site engineering support and inspection for tunnel ventilation fan systems and pump system issues and developing task order repair documents for various fan and pump system components (including fan damper system repairs, fan motor repairs, MCC repairs, and fan shaft replacement). Emergency engineering support was also provided for BHT fire line repair work within the tunnel. Additional responsibilities for the on-call contract included performing quality control review of the Interim inspection reports completed for the Baltimore Harbor Tunnel and Fort McHenry Tunnel fan and pump systems. During the completion of the various tunnel task order repairs, Jason provided various construction support services (including shop drawing and on-site engineering support and inspection) and coordination between the contractors, tunnel operations personnel, and other construction support personnel.
03/18 – 11/18	**2018 Alaskan Way Tunnel (99/540) In-Depth Electrical and Mechanical Inspection | Seattle, WA | WSDOT** **Lead Mechanical Engineer** responsible for the tunnel mechanical systems. Hardesty & Hannover was selected to perform an In-Depth Electrical and Mechanical Inspection in conformance with Federal Requirements for the (NTIS) for an Initial Inspection and In-Depth Inspection of the Electrical and Mechanical Systems. The tunnel is a 2.5-mile long single bore tunnel with two southbound lanes in the upper roadway, two northbound lanes in the lower roadway, and a lower section utilidor for the pumping equipment. There is a north and a south operations building each with four 500HP extraction ventilation fans and two maintenance air fans. Each roadway is equipped with multiple 75HP jet fans and roadway dampers evenly spaced through the tunnels for the extraction fans. The tunnel has a fire pipe deluge system and pumping system to remover the water. The tunnel has a communication system- based control system with PLC controllers, hundreds of cameras with DVR controllers, a fire detection system, an air monitoring system, and a complete security system. Each piece of equipment is remotely accessible and operable from the control system, with centers in each operations building. The majority of the electrical and mechanical equipment was visually inspected and operationally tested.
01/12 – 06/13	**Pennington Avenue Drawbridge Rehabilitation | Baltimore, MD | City of Baltimore** **Mechanical Engineer** responsible for construction inspection of the mechanical systems as part of substructure and superstructure rehabilitation for the twin, double-leaf Hopkins trunnion-type bascule bridge. Mechanical system design included rehabilitation of the span drive machinery, trunnion bearings and live load bearings and the complete replacement of the center lock and tail lock machinery.

08/11 – 12/16	**Tunnel Facilities Inspection Contract – AE 2761 | Baltimore, MD | Maryland Transportation Authority** **Mechanical Engineer** for the project involving the biennial and interim safety inspections of multiple assets, including the I-95 Fort McHenry Tunnel ventilation and pump systems and the I-895 Baltimore Harbor Tunnel ventilation systems. Responsibilities included inspection of various mechanical system (including the tunnel ventilation fans and pump room components) and preparation of reports. Additionally, provided engineering support for various repairs to the Fort McHenry Tunnel and Baltimore Harbor Tunnel ventilation fans, including fan shaft modification and repair, motor repairs, fan control system repairs, and ventilation fan damper system repairs.
09/15 – 05/16	**Preventative Maintenance Documents for Fort McHenry Tunnel and Baltimore Harbor Tunnel Pump Systems | Baltimore, MD | Maryland Transportation Authority** **Mechanical Engineer** for the preparation of maintenance documents for the mechanical and electrical components of the Fort McHenry Tunnel and Baltimore Harbor Tunnel drainage pump systems and fire protection pump systems. Developed maintenance documents for the drainage pump and fire pump systems, including component identification reports to describe how the various pump system components are interconnected and function, maintenance procedures and checklists, and lubrication schematics. Fire protection pump system maintenance plans were developed per NFPA 25 requirements. A cost estimate for the total annual maintenance of the drainage pump and booster pump systems were also developed to allow the Owner to budget for future maintenance costs properly.
06/22 – 07/23	**Mechanical and Electrical Inspection Services for Klyde Warren Tunnel | Dallas, TX | TXDOT** **Lead Mechanical Engineer** (subconsultant) for performing tunnel inspection services which involved inspection of mechanical and electrical elements of the Klyde Warren Tunnel located in Dallas Texas for TxDOT. This Task was performed under a statewide IDIQ contract. Inspections were performed in accordance with the FHWA Tunnel Operations Maintenance Inspection and Evaluation (TOMIE) Manual. Mechanical inspections include: tunnel ventilation, air conditioning, heating control units, plumbing, tunnel drainage and pumping systems, emergency generators, fire protection, and flood gates. Electrical inspections included: power distribution, emergency power, lighting, emergency lighting, fire detection, air-quality monitoring, cameras and safety systems, Communications, etc. An inspection report was prepared detailing inspections results, deficiencies, and recommended repairs.
08/11 – 03/15	**Bridge Safety Inspection Services (1415) | Statewide, DE | DELDOT** **Mechanical Engineer** for the project involving an on-call contract to provide condition inspections and evaluations of eight movable bridges. H&H was responsible for AASHTO routine inspections for eight of Delaware's movable bridges, creation of operations and maintenance manuals for all bridges, documentation of the mechanical and electrical as-built conditions, and emergency response of operational failures. Responsibilities included performing AASHTO routine inspections of the mechanical systems for Cedar Creek (bobtail swing), Rehoboth Boulevard (single-leaf Scherzer rolling lift bascule), and Front Street (single-leaf bascule) bridges, creation of the mechanical system operations and maintenance manuals, development of bridge specific inspection manuals for the interaction of structural and mechanical components, and emergency response for operational failures and Hurricane Sandy damage assessment.
08/11 – 03/17	**Movable Bridge Engineering Services | Statewide, MD | Maryland State Highway Administration** **Mechanical Engineer** for the project involving the on-call contract to perform structural, mechanical and electrical condition inspection, evaluation and design for emergency bridge repair and rehabilitation services of movable bridges, statewide, for the State Highway Administration's Bridge Inspection and Remedial Engineering Division. Responsibilities included performing the inspection of the mechanical systems at each bridge, inspection report preparation, rehabilitation design, and on-call field assignments as a result of operational issues.

16. Staff Experience:

Firm employed by	**Hardesty & Hanover**		
Name	Ryan Nolan, PE	Years of relevant experience with this employer	11
Title	Senior Structural Engineer	Years of relevant experience with other employer(s)	18
Degree(s) / Years / Specialization	B.S. / 1994 / Civil Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 44583 / LA / 9/30/2024; **Certifications:** FHWA-NHI 130110 Tunnel Safety Inspections; FHWA NHI 130125 Tunnel Inspection Refresher Training; FHWA NHI 130078 Fracture Critical Inspection Techniques for Steel Bridges; FHWA NHI 130055 Safety Inspection of In-Service Bridges; FHWA-NHI 130053 Bridge Inspection Refresher Training; FHWA NHI 130124 Tunnel Inspection Refresher WBT Prerequisite; ; FHWA NHI 130087 Inspection & Maintenance Ancillary Hwy Struct; OSHA Confined Space Entry; SPRAT I; Temporary Traffic Control Manager		
Year registered	2020	Discipline	Civil Engineering
Contract role(s) / brief description of responsibilities	Structural Engineer/Inspector; **Meets MPR 3 and 6**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
09/17 – 09/22	**Annual Facilities Inspection Services (AE3015) | Statewide, MD | Maryland Transportation Authority** **Deputy Project Manager/Task Manager/Inspection Team Leader** for the routine, in-depth and emergency inspection of MDTA- owned bridges and tunnels. Project work includes: 1) Tunnel Inspection of two tubes of the Baltimore Harbor Tunnel, BHT Fairfield and Canton ventilation buildings and the four bores of the Fort McHenry Tunnel facilities plus the East and West ventilation and west annex buildings including delineating deteriorated concrete in FMT lower plenums. 2) Tunnel Inspection for the annual inspection of Fort McHenry Tunnel ventilation building, including performing special confined space inspection of east portal pump wet well for infiltration investigation. 3) Tunnel Inspection for emergency inspection in response to waterline leak in BHT east tube. Coordinated with CFMO to inspect roadway and fresh air duct; participated in evaluation and development of repairs. 4) Tunnel Inspection for emergency inspection in response to FMT lower plenum waterline break in Bore 3; participated in evaluation and repair development. 5) Tunnel Inspection for emergency inspection, evaluation and assessment of over-height vehicle in the Baltimore Harbor Tunnel. Interior ceiling panels and pavement were inspected and assessed.
09/10 – 12/16	**Annual Facilities Inspection Services | Statewide, MD | Maryland Transportation Authority** **Task Manager/Inspection Team Leader** responsible for the implementation and oversight of the annual inspection and documentation of 1,500+ assets, notably, the Chesapeake Bay Bridges, U.S. 301 Potomac River Crossing and the Baltimore Harbor and Fort McHenry Tunnels. Assets include ancillary structures, retaining walls, noise walls, underground stormwater management structures and small structures. Assets cross Amtrak, MTA, CSX Transportation, Norfolk Southern and Canton Railroad rights-of-ways. Team Leader for Bay Bridge Eastbound: deck truss spans, suspension spans; Westbound through truss spans; Francis Scott Key Bridge truss spans; audits of the Bridge deck truss spans. Includes varying degrees of hands-on, interim, and visual annual inspections requiring phased MOT and non-destructive testing for pins, anchor tie-downs, and pole base thickness readings. Served as Acting Bridge Inspection Project Manager responsible for working on-site representing MDTA for over two and half years. Oversaw 27 consultants performing annual inspections of the Authority's 1,500+ assets. Coordinated the development and implementation of the Office of Engineering and Construction Inspection Manual including tunnel sections and the OEC's inspection database management system Authority Structures Inspections and Repairs (ASIR). Mr. Nolan also participated in peer reviews with members from FHWA and other state agencies pertaining to the system-wide inspection program. 1) Responded to multiple emergencies in FMT and BHT tunnels due to vehicle impacts and fires. 2) Oversaw the condition inspection of the BHT Ventilation Building. Ryan was responsible for transitioning these duties to the subsequent permanent Inspection Managers.

05/10 – 10/10	**Metro Tunnel Structural Monitoring | Baltimore, MD | Maryland Transit Authority** **Tunnel Inspection Team Leader** responsible for the inspection of portions of the Maryland Transit Administration Metro Tunnel entering Johns Hopkins Station. In response to building construction activities adjacent to the Metro tunnel location, Team Leader responsible for defining and implementing monitoring plan that involved a preconstruction assessment, establishment of monitoring points, regular inspections during construction, survey comparison and final documentation.
09/02 – 09/06	**Citywide Bridge Inspection Program | Washington, DC | DDOT** **Project Engineer/Inspection Team Leader** responsible for comprehensive inspection of approximately 250 structures over highways, streams, railroads (CSX&T, Amtrak and WMATA); Inspections included I-395 tunnels, confined space, soundings, underwater and daily security coordination. Included were reports, SI&A/PONTIS, and recommendations. Mr. Nolan was also the project engineer responsible for managing the Level II Underwater Inspections of 21 bridges for DDOT.
09/20 – 03/22	**Four Tunnel Inspections as per TOMIE Manual | New York, NY | NYCDOT** **Tunnel Inspection Team Leader** serving as the lead structural inspector and lead tunnel inspector for the inspection of the Park Avenue, First Avenue, Battery Park Underpass, and West Street tunnels. Inspections included the structural, mechanical, and electrical condition assessment for developing and submitting reports in accordance with the National Tunnel Inspection Standards.
06/17 – 04/21	**SLSMC Bridge 6 and Bridge 5 | Ontario, Canada | Maryland DOT/State Highway Administration (MDTA 2016-01; AE3015)** **Inspection Team Leader** for the routine, in-depth and emergency inspection of MDTA- owned bridges and tunnels. Project work included: 1) Tunnel Inspection of two tubes of the Baltimore Harbor Tunnel, BHT Fairfield and Canton ventilation buildings and the four bores of the Fort McHenry Tunnel facilities plus the East and West ventilation and west annex buildings including delineating deteriorated concrete in FMT lower plenums. 2) Tunnel Inspection for the annual inspection of Fort McHenry Tunnel ventilation building, including performing special confined space inspection of east portal pump wet well for infiltration investigation. 3) Tunnel Inspection for emergency inspection in response to waterline leak in BHT east tube. Coordinated with CFMO to inspect roadway and fresh air duct; participated in evaluation and development of repairs. 4) Tunnel Inspection for emergency inspection in response to FMT lower plenum waterline break in Bore 3; participated in evaluation and repair development. 5) Tunnel Inspection for emergency inspection, evaluation and assessment of over-height vehicle in the Baltimore Harbor Tunnel. Interior ceiling panels and pavement were inspected and assessed.
04/07 – 12/21	**Route I-110 over Back Bay | Biloxi, MS | MDOT** **Inspection Team Leader** for the condition assessment of the I-110 Bridge which is a double-leaf rolling bascule bridge, built in 1973, and carries 4 lanes of interstate traffic and a pedestrian walkway. The bridge consists of one main bascule span and 56 approach spans, for a total length of 5,728 feet. The bascule span length measures 210'-0" from center to center of the roll. From heel to heel of main girders the bascule span length measures 262'-0". The heels of each bascule girder receive uplift support under highway loading by the flanking steel anchor spans. Including the flanking anchor spans the total length of the steel portion of this bridge is 500'-0". The roadway is approximately 38-ft wide at the approaches and bascule in each direction, 88-ft wide total, with a 5-ft. wide sidewalk on the east side separated from the roadway by a concrete barrier. Inspections were performed at night to reduce impact to traffic and culminated in a comprehensive report with condition ratings and repair recommendations.
06/19 – 11/21	**Annual Inspection of Seabrook and Almonaster Bridges over Navigation Canal | Metairie, LA | Port of New Orleans** **Inspection Team Leader** for the condition assessment of two single-leaf Strauss Truss bascule bridges located in Orleans Parish. Each bridge carries two railroad crossings over the Inner Harbor Navigational Canal using a main truss bascule span and multiple approach spans. Ryan performed multiple cycles of hands-on inspections for these bridges using climbing/rope access techniques. The Seabrook bridge has a total length of 261-feet with a Bascule Span length of 117-feet, a Tower Span of 42-feet, and Approach Spans totaling 102-feet in length. The bridge is approximately 30-feet wide center of truss to center of truss. The railway clearance envelope within the truss is 22-feet high by 27½-feet wide. The Almonaster Bridge has a total length of 240-feet, 8-inches with a Bascule Span length of 117-fee, a Tower Span of 42-feet, and Approach Spans totaling 82-feet. The railway is approximately 30-feet wide and is flanked on both sides by a closed vehicular roadway that is approximately 17.5-feet wide, with 11-feet of access designated for pedestrian traffic. The inspections culminated in a comprehensive report with condition ratings and repair recommendations.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Michael Tine, PE	Years of relevant experience with this employer	22
Title	Senior Electrical Engineer	Years of relevant experience with other employer(s)	1
Degree(s) / Years / Specialization		B.S. / 2000 / Electrical Engineering	
Active registration number / state / expiration date		**Professional Engineer:** 40935 / MD / 7/13/2025 **Certifications:** FHWA NHI 130110 Tunnel Safety Inspection; FHWA NHI 130125 Tunnel Inspection Refresher Training; FHWA 130101 Introduction to Safety Inspections of In-Service Bridges; Confined Space Training; CPR Training; Allen Bradley PLC Control Logix System Fundamentals; Mike Holt Bonding and Grounding Seminar	
Year registered	2011	Discipline	Electrical Engineering
Contract role(s) / brief description of responsibilities		Electrical Engineer/Inspector; **Meets MPR 4**	

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
11/10 – 11/16	**Annual Facilities Inspection Services (AE2761) | Statewide, MD | Maryland Transportation Authority** **Lead Electrical Engineer** responsible for all tunnel electrical engineering services. Project work included: 1) Evaluated electrical systems at Baltimore Harbor and Fort McHenry Tunnels to identify repairs and provide troubleshooting services as required to retain fan and pump operability including exhaust and supply motor failure and repair, damper motor failure and replacement, timing relay failure and replacement, RTD Thermal sensor failure, contactor failure and repair. Provided engineering support during repairs by MDTA on- call contractor. 2) Performed investigation of the portal pump systems at Baltimore Harbor Tunnel during a high-water alarm which caused flooding at the Canton, Mid River, and Fairfield locations. Prepared task order documents for recommended work including PLC updates and high-water alarm operation. 3) Developed task order documents to replace Baltimore Harbor Tunnel Fairfield ventilation building shaft pump including installing a new disconnect switch and new control enclosure. 4) Developed task order documents for the replacement of portal pump systems and associated conduit and wire. Reviewed contractors shop drawings and provided engineering support during construction.
03/18 – 11/18	**2018 Alaskan Way Tunnel (99/540) In-Depth Electrical and Mechanical Inspection | Seattle, WA | WSDOT** **Lead Electrical Engineer** responsible for the tunnel electrical systems. Hardesty & Hannover was selected to perform an In-Depth Electrical and Mechanical Inspection in conformance with Federal Requirements for the (NTIS) for an Initial Inspection and In-Depth Inspection of the Electrical and Mechanical Systems. The tunnel is a 2.5-mile long single bore tunnel with two southbound lanes in the upper roadway, two northbound lanes in the lower roadway, and a lower section utilidor for the pumping equipment. There is a north and a south operations building each with four 500HP extraction ventilation fans and two maintenance air fans. Each roadway is equipped with multiple 75HP jet fans and roadway dampers evenly spaced through the tunnels for the extraction fans. The tunnel has a fire pipe deluge system and pumping system to remover the water. The tunnel has a communication system- based control system with PLC controllers, hundreds of cameras with DVR controllers, a fire detection system, an air monitoring system, and a complete security system. Each piece of equipment is remotely accessible and operable from the control system, with centers in each operations building. The majority of the electrical and mechanical equipment was visually inspected and operationally tested.

09/17 – 09/22	**Annual Facilities Inspection Services (AE3015) | Statewide, MD | Maryland Transportation Authority** **Lead Electrical Engineer** for the routine, in-depth and emergency inspection of MDTA- owned bridges and tunnels. Project work included: 1) Tunnel Inspection of two tubes of the Baltimore Harbor Tunnel, BHT Fairfield and Canton ventilation buildings and the four bores of the Fort McHenry Tunnel facilities plus the East and West ventilation and west annex buildings including delineating deteriorated concrete in FMT lower plenums. 2) Tunnel Inspection for the annual inspection of Fort McHenry Tunnel ventilation building, including performing special confined space inspection of east portal pump wet well for infiltration investigation. 3) Tunnel Inspection for emergency inspection in response to waterline leak in BHT east tube. Coordinated with CFMO to inspect roadway and fresh air duct; participated in evaluation and development of repairs. 4) Tunnel Inspection for emergency inspection in response to FMT lower plenum waterline break in Bore 3; participated in evaluation and repair development. 5) Tunnel Inspection for emergency inspection, evaluation and assessment of over-height vehicle in the Baltimore Harbor Tunnel. Interior ceiling panels and pavement were inspected and assessed.
06/22 – 07/23	**Mechanical and Electrical Inspection Services for Klyde Warren Tunnel | Dallas, TX | TXDOT** **Electrical Engineer** (subconsultant) for performing tunnel inspection services which involved inspection of mechanical and electrical elements of the Klyde Warren Tunnel located in Dallas Texas for TxDOT. This Task was performed under a statewide IDIQ contract. Inspections were performed in accordance with the FHWA Tunnel Operations Maintenance Inspection and Evaluation (TOMIE) Manual. Mechanical inspections include: tunnel ventilation, air conditioning, heating control units, plumbing, tunnel drainage and pumping systems, emergency generators, fire protection, and flood gates. Electrical inspections included: power distribution, emergency power, lighting, emergency lighting, fire detection, air-quality monitoring, cameras and safety systems, Communications, etc. An inspection report was prepared detailing inspections results, deficiencies, and recommended repairs.
11/08 – 08/10	**Annual Facilities Inspection Services Task Order Contract (AE769) | Statewide, MD | Maryland Transportation Authority** **Electrical Engineer** responsible for the inspection and evaluation of Fort McHenry Tunnel. Responsibilities included visual inspection of all electrical components including, fan motors, pumps conduit, lighting, switchgear, dampers, limit switches, etc. Operational testing including motor current, vibration measurements, voltage measurements and insulation resistance measurements. As part of the inspection the ventilation building, tunnel bores and the main control station (AOC) were inspected.
03/08 – 05/08	**2008 Facility Inspection Services Task Order Contract | Baltimore, MD | Maryland Transportation Authority** **Electrical Engineer** responsible for the inspection and evaluation of Fort McHenry Tunnel for MDTA. Responsibilities included visual inspection of all electrical components including, fan motors, pumps conduit, lighting, switchgear, dampers, limit switches, etc. Operational testing including motor current, vibration measurements, voltage measurements and insulation resistance measurements. As part of the inspection the ventilation building, tunnel bores and the main control station (AOC) were inspected.
10/06 – 12/06	**Facility Inspection Services Task Order Contract | Baltimore, MD | Maryland Transportation Authority** **Electrical Engineer** responsible for the inspection and evaluation of Fort McHenry Tunnel for MDTA. Responsibilities included visual inspection of all electrical components including, fan motors, pumps conduit, lighting, switchgear, dampers, limit switches, etc. Operational testing including motor current, vibration measurements, voltage measurements and insulation resistance measurements. As part of the inspection the ventilation building, tunnel bores and the main control station (AOC) were inspected.
06/15 – 05/16	**Baltimore Harbor Tunnel Fan Replacement PS&E | Baltimore, MD | Maryland Transportation Authority** **Electrical Engineer** providing constructability review of the PS&E plan set and technical special provisions for the replacement of the Baltimore Harbor Tunnel. The construction scope replaced all 32 tunnel ventilation fans, structural and architectural modifications to the ventilation buildings, and electrical rehabilitation at an estimated cost of $60 million. Responsibilities included performing a review of the electrical plan set including electrical special provisions.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Christopher Svara, PE	Years of relevant experience with this employer	28
Title	Electrical Engineer	Years of relevant experience with other employer(s)	2
Degree(s) / Years / Specialization	B.S. / 1993 / Electrical Engineering B.S., 1993, Applied Physics,		
Active registration number / state / expiration date	**Professional Engineer:** 44080 / LA / 3/31/2024 **Certificates:** FHWA NHI 130110 Tunnel Safety Inspection; FHWA NHI 130125 Tunnel Inspection Refresher Training; FHWA NHI 130124 Tunnel Inspection Refresher WBT Prerequisite		
Year registered	2019	Discipline	Electrical Engineer
Contract role(s) / brief description of responsibilities	Electrical Engineer/Inspector; **Meets MPR 5**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
10/18 – 03/19	**2018 Alaskan Way Tunnel (99/540) In-Depth Electrical and Mechanical Inspection | Seattle, WA | WSDOT** **Project Manager and Lead Electrical Engineer** for work that included inspecting the electrical systems of the tunnel to prepare a list of recommendations for repairers, deficiencies and preventive maintenance. H&H was selected to perform an In-Depth Electrical and Mechanical Inspection in conformance with Federal Requirements for the (NTIS) for an Initial Inspection and In-Depth Inspection of the Electrical and Mechanical Systems. The tunnel is a 2.5-mile-long single bore tunnel with two southbound lanes in the upper roadway, two northbound lanes in the lower roadway, and a lower section utilidor for the pumping equipment. There is a north and a south operations building each with four 500HP extraction ventilation fans and two maintenance air fans. Each roadway is equipped with multiple 75HP jet fans and roadway dampers evenly spaced through the tunnels for the extraction fans. The tunnel has a fire pipe deluge system and pumping system to remove the water. The tunnel has a communication system-based control system with PLC controllers, hundreds of cameras with DVR controllers, a fire detection system, an air monitoring system, and a complete security system. Each piece of equipment is remotely accessible and operable from the control system, with centers in each operations building.
09/17 – 09/22	**Annual Facilities Inspection Services (AE3015) | Statewide, MD | Maryland Transportation Authority** **Lead Electrical Engineer** for the routine, in-depth and emergency inspection of MDTA- owned bridges and tunnels. Project work included: 1) Tunnel Inspection of two tubes of the Baltimore Harbor Tunnel, BHT Fairfield and Canton ventilation buildings and the four bores of the Fort McHenry Tunnel facilities plus the East and West ventilation and west annex buildings including delineating deteriorated concrete in FMT lower plenums. 2) Tunnel Inspection for the annual inspection of Fort McHenry Tunnel ventilation building, including performing special confined space inspection of east portal pump wet well for infiltration investigation. 3) Tunnel Inspection for emergency inspection in response to waterline leak in BHT east tube. Coordinated with CFMO to inspect roadway and fresh air duct; participated in evaluation and development of repairs. 4) Tunnel Inspection for emergency inspection in response to FMT lower plenum waterline break in Bore 3; participated in evaluation and repair development. 5) Tunnel Inspection for emergency inspection, evaluation and assessment of over-height vehicle in the Baltimore Harbor Tunnel. Interior ceiling panels and pavement were inspected and assessed.
06/22 – 07/23	**Mechanical and Electrical Inspection Services for Klyde Warren Tunnel | Dallas, TX | TXDOT** **QC Electrical Engineer** (subconsultant) for performing tunnel inspection services which involved inspection of mechanical and electrical elements of the Klyde Warren Tunnel located in Dallas Texas for TxDOT. This Task was performed under a statewide IDIQ contract. Inspections were performed in accordance with the FHWA Tunnel Operations Maintenance Inspection and Evaluation (TOMIE) Manual. Mechanical inspections include: tunnel ventilation, air conditioning, heating control units, plumbing, tunnel drainage and pumping systems, emergency generators, fire protection, and flood gates. Electrical inspections included: power distribution, emergency power, lighting, emergency lighting, fire detection, air-quality monitoring, cameras and safety systems, Communications, etc. An inspection report was prepared detailing inspections results, deficiencies, and recommended repairs.

08/13 – 09/14	**Tunnel Facilities Inspection Contract – AE 2761 | Baltimore, MD | Maryland Transportation Authority** **Electrical Engineer** for electrical biennial and interim inspections of the Baltimore Harbor and Fort McHenry Tunnels including the exhaust duct, fresh air duct and roadway levels for the multi-discipline inspection. The inspections included the tunnel ventilation centrifugal fans, drainage pump system, and tunnel fire suppression system, visual inspection, operational testing, and review of tunnel maintenance documents and NFPA testing documents. Involved with evaluating and determining the necessary repairs to return each component to operation, developing repair details and cost estimates to complete the repair, soliciting bids from the on-call contractors with MDTA to complete the repairs, reviewing contractors shop drawings, and performing construction engineering services to inspect the contractor while completing the repairs.
12/99 – 01/04	**Battery Park Tunnel Ventilation and Electrical Systems Rehabilitation | New York, NY | NYCDOT** **Electrical Engineer** responsible for designing new electrical and control systems consisting of a PLC-based SCADA system to control and monitor power distribution, tunnel ventilation, lighting, and traffic control equipment. Included complete remote control and monitoring of systems from Department headquarters. Battery Park Underpass is a four-lane, bi-directional, 2263.5-ft tunnel with four supply ventilation chambers and one central exhaust ventilation chamber. Work included replacement of all existing fans with 40HP, two-speed fan units with solid-state smart controllers networked to a PLC. The ventilation rate is calculated and adjusted by the PLC according to the CO level detected in the tunnel by the new CO monitoring system. The PLC system has remote control and monitoring capabilities and reports to the NYCDOT Operations Office. Fire detection is provided through a new heat-sensing system routed throughout the tunnel roadway and by local smoke detectors in the ventilation chambers. The PLC interfaces with two new VMS boards and traffic control equipment located throughout the tunnel.
08/19 – 02/20	**In-Depth Electrical and Mechanical Mercer Island Tunnel Inspection | Mercer Island, WA | WSDOT** **Project Manager/Lead Electrical Engineer** for work that included inspecting the electrical systems of the tunnel to prepare a list of recommendations for repairers, deficiencies and preventive maintenance. H&H was selected to perform an In-Depth Electrical and Mechanical Inspection in conformance with Federal Requirements for the (NTIS) for an Initial and In-Depth Inspection of the Electrical and Mechanical Systems. The tunnel is a 1,112.9-foot cut and cover tunnel with two roadway sections and one transit section. There is a single operation building each with supply and exhaust fans. Each roadway is equipped with multiple dampers evenly spaced through the tunnels. The tunnel has a fire pipe deluge system. The tunnel has a communication system based control system with PLC controllers, hundreds of cameras with DVR controllers, a fire detection system, an air monitoring system, and a complete security system. Each piece of equipment is remotely accessible and operable from the control system. The majority of the electrical and mechanical equipment was visually inspected and operationally tested during the inspection.
12/18 – Present	**East Link Extension Sound Transit Expansion | Seattle, WA | WSDOT** **Lead Electrical Engineer** responsible for providing inspection services, construction support and design review to fully integrate the Sound Transit Light Rail expansion on the I90 floating bridges and associated Mercer Island and Mount Baker Tunnels. Work includes coordinating work with Seattle City Light, medium voltage power distribution, low voltage power distribution, cathodic and stray current mitigation, and remote control and monitoring of the bridges. Tunnels and floating bridges are a highly-specialized electrical systems, and the addition of light rail onto a floating bridge has never been performed prior to this project. Work includes attending design and construction meetings, on-site construction inspection, show drawing and testing review, and Request for Information submittals.
06/20 – 12/21	**First Avenue Tunnel Ventilation and Electrical Systems Rehabilitation | New York, NY | NYCDOT** **Electrical Engineer** responsible for designing new electrical and control systems consisting of a PLC-based SCADA system to control and monitor power distribution, tunnel ventilation, lighting, and traffic control equipment. Included complete remote control and monitoring of systems from Department headquarters. First Avenue Tunnel is a four-lane, 1,377-foot-long, uni-directional tunnel with three separate ventilation chambers. The 21 fans were replaced with new 10HP, two-speed reversible fans directly controlled by networked controllers via a PLC. The design included the electrical distribution, control, tunnel roadway lighting and alarm systems for life safety issues. Fire detection is provided through a new heat-sensing system routed throughout the tunnel roadway and by local smoke detectors in the control room. This system, also designed for remote control and monitoring by the NYCDOT Operations Office, controls the ventilation rate according to the detected CO level in the tunnel. The PLC interfaces with two new Variable Message System (VMS) boards and traffic control equipment located throughout the tunnel to alert motorists as required.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	David Lynch, PE	Years of relevant experience with this employer	5
Title	Senior Structural Engineer	Years of relevant experience with other employer(s)	20
Degree(s) / Years / Specialization	B.S. / 1997 / Civil Engineering (Structural Emphasis)		
Active registration number / state / expiration date	**Professional Engineer:** 44457 / MD / 10/10/2025 **Certifications:** NTIS Certified Tunnel Inspection Program Manager; NBIS Certified Team Leader and Program Manager; FHWA NHI 130110 Tunnel Safety Inspection; FHWA NHI 130125 Tunnel Inspection Refresher Training; NHI 130078 Fracture Critical Inspection Techniques for Steel Bridges; FHWA NHI 130055 Safety Inspection of In-Service Bridges; FHWA-NHI 130053 Bridge Inspection Refresher Training; FHWA NHI 130124 Tunnel Inspection Refresher WBT Prerequisite; FHWA NHI 130101 Introduction to Safety Inspections of In-Service Bridges;		
Year registered	2013	Discipline	Civil Engineering
Contract role(s) / brief description of responsibilities	Structural Engineer/Inspector; **Meets MPR 6**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
01/17 – Present	**NTIS Revision of the Maryland Transportation Authority's Tunnel Inspection Manual | Baltimore, MD | MTA** **Project Manager/Lead Author** of the comprehensive revision of Chapter 10, Tunnel Inspections, for the Maryland Transportation Authority's Facility Inspection Manual. Applied the practical experiences of leading the inspection of the client's two signature tunnels to comprehensively rewrite their Tunnel Inspection Manual including the following: Revising previous NBIS-style inspection practices to meet the requirements of the National Tunnel Inspection Standards; established the baseline Inventory Data; detailed efficient practices for completing NTIS field inspections and report writing; coordinated the incorporation of functional systems including client mandated Agency Defined Elements; provided step-by-step instructions for reporting using the client's proprietary asset management software; and assisting the client during FHWA audits of their tunnel inspection program.
12/17 – 09/22	**Annual Facilities Inspection Services (AE3015) | Statewide, MD | Maryland Transportation Authority** **Lead Structural Engineer** for the routine, in-depth and emergency inspection of MDTA- owned bridges and tunnels. Project work included: 1) Tunnel Inspection of two tubes of the Baltimore Harbor Tunnel, BHT Fairfield and Canton ventilation buildings and the four bores of the Fort McHenry Tunnel facilities plus the East and West ventilation and west annex buildings including delineating deteriorated concrete in FMT lower plenums. 2) Tunnel Inspection for the annual inspection of Fort McHenry Tunnel ventilation building, including performing special confined space inspection of east portal pump wet well for infiltration investigation. 3) Tunnel Inspection for emergency inspection in response to waterline leak in BHT east tube. Coordinated with CFMO to inspect roadway and fresh air duct; participated in evaluation and development of repairs. 4) Tunnel Inspection for emergency inspection in response to FMT lower plenum waterline break in Bore 3; participated in evaluation and repair development. 5) Tunnel Inspection for emergency inspection, evaluation and assessment of over-height vehicle in the Baltimore Harbor Tunnel. Interior ceiling panels and pavement were inspected and assessed.
07/19 – Present	**2020 Inspection of The Francis Scott Key Memorial Facility | Baltimore, MD | Maryland Transportation Authority** **Project Manager** of the $867,000 task for the inspection of structural and electrical and mechanical assets along the I-695 corridor on the southeast portion of the Baltimore Beltway, concurrent with the Fort McHenry Tunnel North Facility. Overseeing in-house personnel and subconsultants and vendors to provide inspection and reporting services in accordance with NBIS and client mandated inspection and asset management requirements. Prepared scope and fee proposals, tracking, and billing for the inspection of 31 multi-span NBIS bridges, 10 high-mast lights, 33 sign structures, traffic safety features, the toll plaza, and related small structures. The Curtis Creek Bridge, a four-bascule span, is at the heart of the facility. The United States Coast Guard's Curtis Creek maintenance and operations facility relies on the timely operation of the moveable spans.

09/20 – 03/22	**Four Tunnel Inspections as per TOMIE Manual | New York, NY | NYCDOT** **Inspection Team Leader** served as the lead structural inspector and lead tunnel inspector for the inspection of the Park Avenue, First Avenue, Battery Park Underpass, and West Street tunnels. Inspections included the structural, mechanical, and electrical condition assessment for developing and submitting reports in accordance with the National Tunnel Inspection Standards.
06/16 – 06/18	**2017 Inaugural NTIS Inspection of the Fort McHenry Tunnel | Baltimore, MD | Maryland Transportation Authority** **Project Manager/Lead Tunnel Inspector** of the Inaugural NTIS Inspection of the Fort McHenry Tunnel Facility. Led the NTIS inspection of the complex tunnel facility including coordination with the client's engineering, operations, and maintenance personnel and structural, mechanical, and electrical engineers. The 1985 tunnel facility is a four-bore submerged tube style facility over a mile long with cut-and- cover portions at both ends and integrated vent buildings. Functional systems included redundant electrical system; transverse forced air ventilation; fire protection and security operations; drainage and pumping system; and lighting. Defined, quantified, and rated the National Tunnel Elements and developed Agency Defined Elements.
07/14 – 12/18	**Annual Facilities Inspection Services, Contract AE 2761 | Baltimore, MD | Maryland Transportation Authority** **Project Manager** for a $2.95 million multiyear contract to provide for the inspection of a wide variety of structures in the MDTA's inventory. Coordination frequently included multiple public agencies (Federal, State, and local), subconsultants, access equipment vendors, maintenance of traffic, and maritime operations. Prepared scope and fee proposals, booked, tracked, and billed for a total of 22 Tasks included three of the authority's five signature structures, dozens of NBIS bridges of a wide array of design.
06/16 – 07/18	**2017 Inaugural NTIS Inspection of the Baltimore Harbor Tunnel | Baltimore, MD | Maryland Transportation Authority** **Project Manager/Lead Tunnel Inspector** of the Inaugural NTIS Inspection of the Baltimore Harbor Tunnel Facility. Led the NTIS inspection of the complex tunnel facility, including coordination with the client's engineering, operations, and maintenance personnel and structural, mechanical, and electrical engineers. The 1958 tunnel facility is a two-bore submerged tube style facility over a mile long with cut-and- cover portions at both ends. The vent building at the south end is integrated into the tunnel, while the north end vent building is offset. Functional systems include redundant electrical system; transverse forced air ventilation; fire protection and security operations; drainage and pumping system; and lighting.
07/19 – Present	**2020 Inspection of Fort McHenry Tunnel North Facility | Baltimore, MD | Maryland Transportation Authority** **Project Manager** of the $891,000 task for the inspection of structural assets along the I-95 corridor, north of the Fort McHenry Tunnel. Overseeing and coordinating the efforts of multiple consultants and in-house personnel on behalf of the client to meet NBIS and client mandated inspection and asset management requirements including the client's maintenance and operations personnel, engineering consultants, maintenance of traffic, railroads, and equipment vendors. Prepared scope and fee proposals, tracking, and billing for the inspection of 36 multi-span NBIS bridges, 98 high-mast lights, 56 sign structures, traffic safety features, the toll plaza, and related small structures. Quality control and quality assurance are an integral part of the role in the delivery process.
07/19 – Present	**Consultant Structural Facility Engineer, Fort McHenry and Baltimore Harbor Tunnels | Baltimore, MD | MTA** **Lead Structural Engineer** for the evaluation and coordination of capital improvement and maintenance activities for the preservation of the Fort McHenry and Baltimore Harbor Tunnels. Includes review of available historical documents including as-built plans, shop drawings, repair and rehabilitation projects, maintenance contracts, and task order and emergency repairs; organizing and prioritizing repairs for inclusion in major rehabilitation projects or incorporation into ongoing maintenance and operations works; and development of systemic programs to enhance the state of good repair for both of the tunnel facilities with an emphasis on the efficient use of existing funding sources to meet current and future needs in a timely manner. Reviewed and commented on the 2019 inspections of the Fort McHenry and Baltimore Harbor Tunnels.

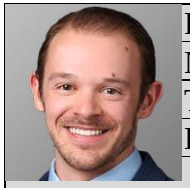
16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Frederick L. Wetekamm, III, PE	Years of relevant experience with this employer	5
Title	Senior Bridge Engineer	Years of relevant experience with other employer(s)	30
Degree(s) / Years / Specialization	M.E. / 2018 / Construction Management B.S. / 1984 / Civil Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 25369 / LA / 3/31/2024 **Certifications:** FHWA NHI 130078 Fracture Critical Inspection Techniques for Steel Bridges; FHWA NHI 130055 Safety Inspection of In-Service Bridges; FHWA-NHI 130053 Bridge Inspection Refresher Training; ATSSA Traffic Control Supervisor and Flagger; Maintenance & Rehabilitation of Historic Bridges (LADOTD); FHWA NHI #139005, Driven Pile Foundations – Construction Monitoring		
Year registered: 1993	Discipline: Civil Engineering		
Contract role(s) / brief description of responsibilities	Structural Engineer/Inspector; **Meets MPR 3 and 6**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
01/96 – 06/07	**LADOTD Bridge Maintenance Engineer | LADOTD** **Bridge Maintenance Engineer** responsible for managing the program for inspection, operation, and maintenance of tunnels and pump stations including the tunnel maintenance crews. Performed routine inspections of the three tunnels in the New Orleans Area **(Houma, Belle Chasse, and Harvey)** on annual basis for over 12 years. Inspections included evaluation of structural, lining, roadway, mechanical and electrical components. He was responsible for creating and distributing tunnel repair work orders to the appropriate LADOTD personnel and coordinating the repairs, materials, equipment, and labor for tunnel and pump station repairs, and coordinating media information and traffic control. Wrote major repair requests (sole source and biddable projects) and generated project plans and specifications for repair projects and accident damages. Wrote major repair requests (biddable projects) and generated project plans and specifications for repair projects for the tunnels and pump station projects. Served as the lead coordinator for the projects with LADOTD District and statewide forces, contractors, consultants, public officials, and media. Provided technical training to mechanics and electricians on implementing processes in the Manuals that increased the reliability and performance of the tunnels and pump stations. Provided damage assessments (DIR) for federally reimbursed repairs from hurricanes and tropical storms. He has extensive experience with specialized traffic requirements for the bridge/ tunnel couplets and District traffic and marine requirements for temporary closures.
08/20 - Present	**H.001498.6; LA 24 and LA 16 Company Canal Vertical Lift Bridge | Bourge, LA | LADOTD** **Construction Engineer/Inspector** responsible for delivering construction engineering and inspection services for a new vertical lift bridge and operator's house. Services include daily monitoring of all construction activities; maintaining all construction field records; coordinating with DOTD, contractor, parish government, and utilities; performing field testing; maintaining records of contractual operations, pay estimates and progress reports; preparing final estimate packages; conducting construction progress meetings; construction and close-out.
07/23 - Present	**H.009730.5 In-Depth Bridge Inspection of Complex Structures | Statewide, LA | LADOTD** **Lead Structural Inspector** performing inspection of complex structures such as cantilever trusses, cable-stayed bridges, steel vertical lift bridges, and plate girder bascule bridges statewide under separate task orders. Inspection of two steel truss bridges (Jimmie Davis and Miller's Bluff) and a vertical lift bridge (West Fork) have been completed to date.

07/16 – 09/18	**Bayou La Loutre Vertical Lift Bridge Rehabilitation (SP 002562) | St. Bernard Parish, LA | LADOTD** **Senior Project Engineer and CEI Inspector** in responsible charge. Contributed to the rehabilitation design to aid designers in understanding the bridge operation and maintenance preferences for the LADOTD and provided construction engineering and inspection services during construction. The Bayou La Loutre Bridge Rehabilitation Project scope consisted of bridge structural repairs, cleaning and painting of the bridge structure, installation of a new fender system, and replacement of the bridge operator house utilizing the current LADOTD BDEM and LSSRB. Built in 1957, this project was the first major rehabilitation to the bridge.
01/96 – 06/07	**Special Inspections of Bridges in District 02 (New Orleans Area) | LADOTD** **Team Leader and Structural Engineer** responsible for all special inspections required during tenure as Bridge Maintenance Engineer. Inspections included marine vessel accident damage inspections, motor vehicle accident damages, and post-storm damage assessments. Performed all construction contract repair inspections generated from special inspections. Performed 100% hands-on inspection of fracture critical girders, pier caps, primary members, structural deck, and secondary members.
09/18 – 12/18	**2018 Biennial Inspection, I-110 Bridge over Biloxi Back Bay, IDIQ Master Bridge Design Contract | Harrison, MS | MDOT** **Quality Control Engineer** responsible for preparation of the final inspection report for routine/fracture critical inspection including electrical, mechanical and structural inspection of all components of the bascule and anchor spans as well as NBIS and element inspections for the entire bridge in accordance with state, AASHTO and FHWA requirements.
11/15 – 03/18	**Danziger Vertical Lift Bridge Rehabilitation (SP 000303.6) | Orleans Parish, LA | LADOTD** **Project Area Engineer** in responsible charge of contract administration and supervising the Project Engineer and LADOTD Certified Inspectors for construction inspection. This project scope involved the replacement of the asphaltic concrete roadway on the lift span (310-lf x 72-lf) with a latex modified concrete, replace the lifting ropes, replace most of the mechanical operating components, and rehabilitation of the operator house.
10/18 – 01/21	**Annual Inspection of Almonaster Railroad Bascule Bridge over the Industrial Canal | New Orleans, LA | Port of New Orleans** **Structural Inspection Team Leader** for annual inspection of the Almonaster Avenue Railroad Bascule which involved the structural inspection including fracture critical steel, primary and secondary steel members; an electrical inspection of the electrical systems and controls, and mechanical inspection of the machinery.
05/19 – 10/19	**Annual Inspection of Seabrook Railroad Bridge | Port of New Orleans, LA | Port of New Orleans** **Project Engineer** for annual inspection of the Seabrook Trunnion Bascule Bridge crossing the Inner Harbor Navigation Canal. Services included routine and fracture critical inspection, involving structural, mechanical, and electrical inspection for all bascule components, counterweight, and tower span per the Bridge Safety Management Program as well as NBIS and element inspection for the bridge.
01/22 – Present	**Cedar Lake Bridge Inspection | Biloxi, MS | Mississippi OSARC** **Project Engineer** responsible for in-depth electrical inspection for the swing bridge. Oversaw inspection of the existing span drive, warning gates, limit switches, motor control center, termination cabinets, and control console. Observed bridge operations and visually evaluated cables. Performed testing of electrical service, motors, motor brakes, and span locks. Reviewed previous bridge inspection reports and prepared checklist for field evaluation of corrected and uncorrected deficiencies. Tasks included submitting a detailed report to the client that documented deficiencies, and recommendations.
05/23 – 11/23	**SR-605 Bridge Inspection | Gulf Port, MS | MDOT** **Senior Bridge Engineer** for the 2023 In-Depth, Nonredundant Steel Tension Member (NSTM), Routine, and Element Level Inspection of SR-605 Bridge over the Industrial Waterway. H&H performed an examination of included an examination of the bridge structural systems, the bridge mechanical and electrical systems, and an arm's length NSTMs, as requested by Mississippi DOT. The NBIS and element structural inspection consisted of a visual and hands-on examination of the approach spans, bascule and anchor spans, access platforms and ladders, operator house, and the fender system. The fracture critical inspection consisted of hands-on arm's length examination of the bascule span girders and floor beams.

16. Staff Experience:



Firm employed by	Hardesty & Hanover		
Name	Jonathan M. Hewko, PE	Years of relevant experience with this employer	6
Title	Structural Engineer	Years of relevant experience with other employer(s)	4
Degree(s) / Years / Specialization	B.S. / 2013 / Civil Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 53578 / MD / 12/9/2024 **Certifications:** FHWA NHI 130055 Safety Inspection of In-Service Bridges		
Year registered: 2018	Discipline: Civil Engineering		
Contract role(s) / brief description of responsibilities	Structural Engineer/Inspector; **Meets MPR 6**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
10/17 – 09/22	**Maryland Transportation Authority Facility Task Orders | Baltimore, MD | Maryland Transportation Authority** **Structural Engineer** responsible for composing task order documents for repair items on multiple MDTA facilities, including the Fort McHenry Tunnels, Baltimore Harbor Tunnels, Curtis Creek Bridge, and the Chesapeake Bay Bridge. Services included inspecting flagged repair items that are logged in the MDTA database from previous inspection reports to verify that the repairs were still valid. After inspecting and verifying flagged repairs, engineered design documents are developed which includes a formal construction procedure and any details for the contractor might need. Engineer's estimates were developed for each task and submitted for review.
06/20 – 07/22	**Four Tunnel Inspections as per TOMIE Manual | New York, NY | NYCDOT** **Structural Engineer** for the in-depth inspection and condition assessment of the structural, electrical, and mechanical components of the 1st Avenue and Park Avenue tunnels as part of a broader NYCDOT ESA assignment. These findings were documented in a Routine Inspection Report format developed by H&H in conjunction with NYCDOT, including prioritized recommendations for further maintenance and rehabilitation. In addition to the inspection, H&H also conducted a lighting survey for the tunnels, taking luminance and illuminance measurements along the tunnel roadways and walls. Inspection reports were prepared to SNTI and TOMIE specifications.
09/18 – Present	**Bridge No.6 Major Rehabilitation Design | Ontario, Canada | Saint Lawrence Seaway Management Corporation** **Structural Engineer** providing design development and review for this major rehabilitation of Bridge No. 6, an early 1930s twin rolling bascule lift bridge carrying two Canadian Railway (CN) tracks over the Welland Canal. After serving as the design consultant during the rehabilitation constructability study phase of this project, key issues the H&H team will address are replacing the segmental girder track and tread castings within the tight working windows of the SLSMC winter shutdown while coordinating with CN rail; identifying long lead items for procurement to meet the aggressive construction schedule; and coordinating rail passage during major rehabilitation.
12/17 – 08/19	**Raritan River Bridge Replacement | Perth Amboy/South Amboy, NJ | NJ TRANSIT** **Structural Engineer** for a post-Superstorm Sandy resiliency project for replacement of the Raritan River Bridge on NJ Coast Line and reconstruction of approximately one mile of railroad tracks between Perth Amboy and South Amboy Stations. Responsibilities included designing the framing plan needed to support the sheaves at the top of the vertical lift towers, which will support the main span during the operation of the bridge. Working with H&H architects, a design for supporting the operators control house was developed for the loads. Engineering calculations were developed using the AREMA Code Specifications for determining the adequacy of the members for the design loads.
11/15 – 01/17	**Margaret McDermott Bridge over the Trinity River | Dallas, TX | City of Dallas** **Field Engineer** responsible for designing staging layouts for the West Bound Bridge and developed complex lifting and erection plans. Composed multiple sequences of work to determine when arch segments should be erected. Performed daily field engineering tasks such as verifying capacities of steel members and surveying. Managed cost coding, quantity tracking, and equipment on the job site.

02/19 – 1/20	**Harlem River Lift Bridge Pier Rehabilitation | Bronx, NY | Metro North Railroad** **Structural Engineer** for the rehabilitation of the concrete river piers and miscellaneous improvements to the bridge. Work includes site investigation and reporting, preparation of detailed design, specifications, estimated construction schedules, construction cost estimates and construction support services while minimizing railroad operations impacts. The locations that will be addressed are the concrete river piers, safety flag remediation, and design of miscellaneous improvements for the bridge and the rehabilitation of Pier 4 and Pier 8 on the North Approach spans. The seismic analysis and repair/retrofit assessment and bridge design was performed with particular focus on the seismic behavior of the river caissons. Project includes constructing a complete detailed model of the dual-lift span rail bridge using SAP2000, including approaches and substructure, and analyzed for response-spectrum seismic loading. His main role was to take the seismic forces outputted from SAP2000 and analyze the existing bridge members to ensure they have adequate capacity during a seismic event. The piers were vulnerable to concrete breakout failure with the seismic forces, so a retrofit was designed to add additional capacity to the pier to resist the seismic forces.
06/17 – 09/19	**Arlington Memorial Bridge Replacement | Washington, DC | Federal Highway Administration - National Park Service** **Structural Engineer** on the design-build team for rehabilitation of the Arlington Memorial Bridge. The existing bridge consists of multiple-arch spans on the D.C. and Virginia approaches with a central double leaf bascule span. Project involved the rehabilitation of the approach arch spans, emergency repairs for the central double leaf bascule span, removal of central bascule span and replacing it with a fixed span. During initial pursuit phase of the project, developed estimates of the amount of steel required to repair all of the structurally deficient members in each existing bascule leaf. After award of the project, developed calculations and engineering drawings for various temporary structures to be used during the construction process. The various temporary structures include repairing the structurally deficient curb stringers and designing a wall system to support the existing counterweight while the existing bridge is demolished and rebuilt. One main component was to design a new fascia truss to replace the existing and reconnect it to the new fixed bridge. This was a crucial design element since the geometry of the existing fascia panels had to perfectly align and be re-installed in its original position. Construction support services were provided for throughout construction.
05/17 – 09/18	**Curtis Creek Rehabilitation | Baltimore, MD | Maryland Transportation Authority** **Structural Engineer** for the mechanical and electrical rehabilitation of the I-695 drawbridge (parallel double leaf bascule) over Curtis Creek. Jonathan designed anchoring system for the new mechanical equipment to be installed as part of the rehabilitation of the bridge as well as various structural components for the new machinery roof to be installed over the machinery. Produced the engineering drawings for the official contract set plans to be used during construction and developed the 100% engineers cost estimate.
10/17 – 01/18	**Chesapeake Bay Bridge Deck Rehabilitation | Annapolis, MD | Maryland Transportation Authority** **Structural Engineer** for deck replacement and associated repairs for deck truss portion of the Chesapeake Bay Bridge. Developed two construction schedules for the two re-decking options MDTA is considering for the project, either a full width deck replacement or a half width deck replacement. The schedules were developed using the Primavera P6 software. The critical path for the construction was shown for each option as well as the number of night-time closures needed for each option during the entire construction. An engineer's estimate was provided to MDTA for the two different re-decking options using unit costs that were developed for this project.
03/20 – 09/20	**Fort McHenry and Baltimore Harbor Tunnel Load Rating | Baltimore, MD | Maryland Transportation Authority** **Structural Engineer and Load Rating Engineer** for load rating analysis on the cut and cover sections of the Fort McHenry and Baltimore Harbor tunnels. The Fort McHenry Tunnel consisted of Cast in Place sections for both the East and West Cut and Cover approaches. All dead load effects and live load effects were extracted from SAP and the Load Rating analysis was completed utilizing excel to determine the respective load rating factor for each element analyzed. The Baltimore Harbor Tunnel Cut and Cover Section consists of and floor beam and girder floor system that bear on retaining walls. Due to the complex nature of the loading, each respective section was modeled in its entirety to accurately capture the live load effects of both the HL-93 and E-80 Design Live Load. The load effects on every floor beam and girder were extracted from CSiBridge and the governing floor beam type was determined and analyzed accordingly for the load effects. The supporting wall structures were rated using hand calculations using the dead and live load reactions extracted from CSiBridge considering the lateral load effects acting on the wall structures.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Jose Ruiz	Years of relevant experience with this employer	23
Title	Structural Engineer	Years of relevant experience with other employer(s)	10
Degree(s) / Years / Specialization	B.S. / 1987 / Civil Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 081630 / NY / 1/31/2027 **Certifications:** FHWA NHI 130110 Tunnel Safety Inspection; FHWA NHI 130055 Safety Inspection of In-Service Bridges, FHWA NHI 130053 Bridge Inspection Refresher Training		
Year registered	2004	Discipline	Structural Engineering
Contract role(s) / brief description of responsibilities	Structural Engineer/Inspector; **Meets MPR 6**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
06/20 – 07/22	**Four Tunnel Inspections as per TOMIE Manual | New York, NY | NYCDOT** **Team Leader** for the in-depth inspection and condition assessment of the structural, electrical, and mechanical components of the 1st Avenue and Park Avenue tunnels as part of a broader NYCDOT ESA assignment. These findings were documented in a Routine Inspection Report format developed by H&H in conjunction with NYCDOT, including prioritized recommendations for further maintenance and rehabilitation. In addition to the inspection, H&H also conducted a lighting survey for the tunnels, taking luminance and illuminance measurements along the tunnel roadways and walls. Inspection reports were prepared to SNTI and TOMIE specifications.
07/17 – 03/20	**Component Rehabilitation of 10 Bridges | New York, NY | NYCDOT** **Team Leader** responsible for the field inspection and verification of conditions of all superstructure and substructure elements of 10 bridges located in the boroughs of Bronx, Brooklyn, Queens, and Staten Island. The work consisted of evaluating the deteriorated bridge elements, in the superstructure and substructure, to rehabilitate the bridges and improve the overall condition rating.
04/12 – 02/13	**Route 1&9T (25) over St. Paul's Avenue Viaduct Replacement | Jersey City, NJ | NJDOT** **Structural Engineer** involved in the final scope development, environmental assessment document, initial and final design, and construction support services of the St. Paul's Ave. Bridge Replacement a $200 million project. The project area consists of the Route 1&9T over St. Paul's Avenue structure, Tonnele Circle and the Charlotte Ave/Route 7/Route 1&9T intersection. The project replaced 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 would provide connections to Route 1&9T, Route 7, Pulaski Skyway, Route 139, Route 1&9 north of Tonnele Circle, and local streets in Jersey City. There are a total of 11 proposed bridge structures, 45 retaining walls,11 sign structures, numerous ITS structures, and two catenary structures within the project limits. Worked involved staged construction over Conrail and electrified NJ TRANSIT tracks as well as active roadways. Bridge design and detailing work included composite, plate girder design; Integral Steel Box Pier caps; tying a new ramp into and widening the Pulaski Skyway; curved girder design; beam design for heavily skewed bridges; parapet and deck overhang design for TL-5 loading; and post-tensioned pier repairs. All work done in accordance with AASHTO LRFD with HL-93 live loading.
12/07 – 07/09	**2007 Barrier Gates Replacement Route 71 Monmouth County Route 88 | Ocean County, NJ | NJDOT** **Structural Engineer** responsible for the design and detail of Barrier and Warning Gates platforms which were built into the existing bridge approach spans. The work also included partial modifications to the sidewalks, parapet, and railings as well as preliminary and final design of recommended alternative including estimated cost. The project consisted of preliminary and final engineering design services for the provision of replacement traffic barrier gates and associated structural and electrical work at Route 71 over the Shark River and Route 88 over Inland Waterway. Roadway intersection improvements and highway lighting design; complete electrical rehabilitation of Route 71 and Route 88 Bridges, and complete mechanical rehabilitation of Route 71 Bridge; and Control House Expansion and rearrangement of electrical facilities were included.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Brianna Kovacs, PE	Years of relevant experience with this employer	6
Title	Structural Engineer	Years of relevant experience with other employer(s)	3
Degree(s) / Years / Specialization	B.S. / 2017 / Civil Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 51187 / MD / 12/6/2025; **Certifications:** FHWA NHI 130110 Tunnel Safety Inspection; FHWA-NHI 130055 Safety Inspection of In-Service Bridges; FHWA-NHI 130053 Bridge Inspection Refresher Training; FHWA NHI 130087 Inspection & Maintenance Ancillary Hwy Struct.		
Year registered	2021	Discipline	Civil Engineering
Contract role(s) / brief description of responsibilities	Structural Engineer/Inspector; **Meets MPR 6**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
12/17 – 09/22	**Annual Facilities Inspection Services (AE3015) | Statewide, MD | Maryland Transportation Authority** **Structural Tunnel Inspector** for the routine, in-depth and emergency inspection of MDTA- owned bridges and tunnels. Project work included: 1) Tunnel Inspection of two tubes of the Baltimore Harbor Tunnel, BHT Fairfield and Canton ventilation buildings and the four bores of the Fort McHenry Tunnel facilities plus the East and West ventilation and west annex buildings including delineating deteriorated concrete in FMT lower plenums. 2) Tunnel Inspection for the annual inspection of Fort McHenry Tunnel ventilation building, including performing special confined space inspection of east portal pump wet well for infiltration investigation. 3) Tunnel Inspection for emergency inspection in response to waterline leak in BHT east tube. Coordinated with CFMO to inspect roadway and fresh air duct; participated in evaluation and development of repairs. 4) Tunnel Inspection for emergency inspection in response to FMT lower plenum waterline break in Bore 3; participated in evaluation and repair development. 5) Tunnel Inspection for emergency inspection, evaluation and assessment of over-height vehicle in the Baltimore Harbor Tunnel. Interior ceiling panels and pavement were inspected and assessed.
06/20 – 05/22	**Four Tunnel Inspections as per TOMIE Manual | New York, NY | NYCDOT** **Structural Bridge Inspector and Load Rating Engineer** for the in-depth inspection and load rating analysis of the 1st Avenue and Park Avenue tunnels as part of a broader New York City Department of Transportation (NYCDOT) ESA assignment. The inspection included ventilation systems, axial fans, centrifugal fans, carbon monoxide sensors, drainage system, drainage pumps, fire suppression systems, fire suppression standpipe and piping, emergency egress, and egress signage. These findings were documented in a Routine Inspection Report format developed by H&H in conjunction with NYCDOT, including prioritized recommendations for further maintenance and rehabilitation. In addition to the inspection, H&H also conducted a lighting survey for the tunnels, taking luminance and illuminance measurements along the tunnel roadways and walls. Inspection reports were prepared to SNTI and TOMIE specifications.
11/22 – Present	**Facility Inspections, Baltimore Harbor Tunnel (BHT) | Baltimore, MD | Maryland Transportation Authority** **Structural Tunnel Inspector** responsible for inspection of the tunnel roadway and walls and the lower plenum of the Baltimore Harbor Tunnel and Facility Inspections.
03/20 – 09/20	**Load Ratings for Fort McHenry (FMT) & Baltimore Harbor (BHT) Tunnels Cut & Cover | Baltimore, MD | Maryland Transportation Authority** **Load Rating Engineer** responsible for the load rating calculations of the FMT and BHT Tunnel cut and cover sections. The majority of the calculations were performed without analysis software due to the unique structure type.

09/17 – Present	**Bridge Inspection, Evaluation, and Rating Services | Statewide MD | Maryland State Highway Administration** **Structural Bridge Inspector** responsible for developing inspection cost proposal, coordination with subcontractor and equipment vendors, obtaining railroad permits and access as well as performing the inspections and developing reports for state-owned bridges in Baltimore County and Carroll County and city-owned bridges in Baltimore City.
09/17 – Present	**Rehoboth Avenue & Savannah Road Rehabilitation | Sussex County, DE | DELDOT** **Structural Designer** responsible for final designs, calculations, and drawings for the project involving structural, mechanical and electrical rehabilitation and repairs of the Rehoboth Avenue Bridge (single leaf, fixed trunnion bascule) and Lewes Canal Bridge (double-leaf Scherzer rolling lift bascule).
11/18 – 07/19	**Facilities Inspections, Inspection, Francis Scott Key Bridge | Baltimore, MD | Maryland Transportation Authority** **Structural Bridge Inspector** responsible for developing inspection cost proposal, coordination with subcontractors, owner, and equipment vendors, as well as performing the inspections and developing reports for physical on-site condition inspections and developing reports for the Francis Scott Key Bridge.
11/18 – 07/19	**Facilities Inspections, Inspection of William Preston Lane (WPL) Memorial Bridge | Baltimore, MD | Maryland Transportation Authority** **Structural Bridge Inspector** responsible for developing inspection cost proposal, coordination with subcontractors and equipment vendors, as well as performing physical on-site condition inspections and developing reports for the WPL Bridge (Chesapeake Bay Bridge).
08/18 – 09/18	**Facilities Inspections, Fort McHenry Tunnel On-Call Repairs | Baltimore, MD | Maryland Transportation Authority** **Structural Designer** responsible for developing task order repairs for the Fort McHenry Tunnel upper plenum structural repairs. The task included performing a site visit to inspect the deficiencies for developing the repair details.
07/18 – 11/18	**Hanover Street and Pennington Avenue Bridges| Baltimore City, MD | Maryland State Highway Administration** **Structural Designer** responsible for creating maintenance checklists for the project involving developing the maintenance contract for the movable bridges.
03/18 – 07/18	**Arlington Memorial Bridge Rehabilitation | Arlington, VA | District DOT** **Structural Designer** responsible for locating borings on-site and developing boring logs for the project involving structural rehabilitation and repairs of the Arlington Memorial Bridge. The existing bridge consists of multiple-arch spans on the D.C. and Virginia approaches with a central double-leaf bascule span. Project involves the rehabilitation of the approach arch spans, emergency repairs for the central double-leaf bascule span, removal and replacement of central bascule span with a fixed span.
09/17 – 05/18	**Facilities Inspections, JFK Memorial Highway | Statewide, Maryland | Maryland Transportation Authority** **Structural Bridge Inspector** responsible for developing inspection cost proposal, coordination with subcontractors and equipment vendors, as well as performing the inspections and developing reports for physical on-site condition inspections and developing reports for the I-95 John F. Kennedy Memorial Highway Facility.
07/17 – 10/17	**Comprehensive Engineering Services Contract, Curtis Creek | Statewide, MD | Maryland Transportation Authority** **Structural Designer** responsible for preliminary and final designs, calculations, and drawings of temporary and permanent structural repairs to the I-695 Bridges over Curtis Creek.
06/20 – 11/21	**Bridge BWC595001 Emergency Inspection and Rehabilitation | Statewide, MD | Maryland Transportation Authority** **Structural Bridge Inspector and Load Rating Engineer** responsible for initial emergency inspection, drawing repair plans and using load rating analysis software to perform the load rating based on the repair design.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Justin Faucher, PE	Years of relevant experience with this employer	7
Title	Structural Engineer	Years of relevant experience with other employer(s)	7
Degree(s) / Years / Specialization	B.S. / 2010 / Civil Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 19427 / DE / 6/30/2024 **Certifications:** FHWA NHI 130078 Fracture Critical Inspection Techniques for Steel Bridges; FHWA NHI 130055 Safety Inspection of In-Service Bridges; FHWA-NHI 130053 Bridge Inspection Refresher Training		
Year registered	2015	Discipline	Civil Engineering
Contract role(s) / brief description of responsibilities	Structural Engineer/Inspector; **Meets MPR 6**		

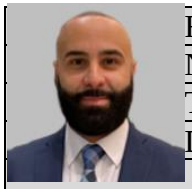
Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
08/10 – 02/14	**NBIS In-Depth Inspection of Highway Structures | Statewide, MD | Maryland Transportation Authority** **Team Member** for the In-Depth Inspections of the Francis Scott Key Bridge (I-695 over the Patapsco River), Baltimore Harbor Tunnel (I-895 under the Patapsco River), and William Preston Lane Jr. Memorial Bridge (US 50/US 301 over the Chesapeake Bay). Conducted complete NBIS In-Depth Inspections, including deck, approaches, superstructure, and substructure. Inspection responsibilities included multiple fracture critical members and fatigue prone details on suspension and truss spans. Additional responsibilities included inspection preparation, preparation of reports, maintenance recommendations, special inspection of truss span gusset plates, and emergency and on-call response.
01/10 - 02/14	**Fort McHenry and Baltimore Harbor Tunnels Ventilation Fans Repairs | Baltimore, MD | Maryland Transportation Authority** **Assistant Team Leader** for inspection of mechanical repairs in the Fort McHenry Tunnel and Baltimore Harbor Tunnel ventilation buildings for the Fort McHenry Tunnel east ventilation building and both Baltimore Harbor Tunnel ventilation buildings.
03/14 – 09/15	**Bridge Safety Inspection Services | Statewide, DE | DELDOT** **Team Leader/Team Member** responsible for the inspection of state-owned bridges in accordance with NBIS and DELDOT standards including deck, approaches, superstructure, substructure, and structural movable elements. Inspection teams were assigned to perform inspections on signature bridges, highway on- and off-ramps, highway overpasses and water/railroad crossings. Duties included coordination with sub-consultants and vendors, coordination and performing field inspections, and review and preparation of bridge inspection reports. Inspection responsibilities included multiple fracture critical members and fatigue prone details on girder and truss spans. Additional responsibilities included inspection preparation, preparation of reports, maintenance recommendations, and emergency and on-call response.
07/23 – Present	**H.009730.5 In-Depth Bridge Inspection of Complex Structures | Statewide, LA | LADOTD** **Structural Inspector** performing inspection of complex structures such as cantilever trusses, cable-stayed bridges, steel vertical lift bridges, and plate girder bascule bridges statewide under separate task orders. Inspection of two steel truss bridges (Jimmie Davis and Miller's Bluff) and a vertical lift bridge (West Fork) have been completed to date.
05/20 – 04/22	**Electric Utilities Transmission Substation Improvement Projects | Various Locations, PA | PPL** **Structural Engineer** for a project to improve and upgrade transmission substations and switchyards throughout PPL's network. Prepared and reviewed detailed calculations, design drawings, and layouts of steel and aluminum structures, concrete foundations, site grading, and drainage systems in brownfield yards. Inspected existing structures and foundations to certify structures for continued use and develop repair details and specifications. Created models for load rating of existing structures to certify ongoing or additional loads; created models for load rating of existing design for use at new locations. Supported material ordering processes through material request creation and review of vendor submittals. Supported construction through RFI response and shop drawing review.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Teodor Kostadinov, PE	Years of relevant experience with this employer	5
Title	Electrical Quality Lead	Years of relevant experience with other employer(s)	5
Degree(s) / Years / Specialization	M.E. / 2015 / Electrical Engineering B.S. / 2012 / Electrical Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 54040 / MD / 3/11/2025 **Certifications:** FHWA NHI 130110 Tunnel Safety Inspection; FHWA NHI 130125 Tunnel Inspection Refresher Training; FHWA NHI 130124 Tunnel Inspection Refresher WBT Prerequisite; FHWA 130101 Introduction to Safety Inspections of In-Service Bridges		
Year registered: 2021	Discipline: Electrical Engineering		
Contract role(s) / brief description of responsibilities	Electrical Engineer/Inspector; **Meets MPR 4**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
09/20 – 11/21	**Four Tunnel Inspections as per TOMIE Manual | New York, NY | NYCDOT** **Electrical Team Leader** for the in-depth inspection and lighting survey of the 1st Avenue and Park Avenue tunnels as part of a broader NYCDOT ESA assignment. As Electrical Team Leader, Teodor was responsible for the inspection and condition assessment of electrical equipment throughout the two tunnels. These findings were documented in a Routine Inspection Report format developed by H&H in conjunction with NYCDOT, including prioritized recommendations for further maintenance and rehabilitation. In addition to the inspection, H&H also conducted a lighting survey for the two tunnels, taking luminance and illuminance measurements along the tunnel roadways and walls. Inspection reports were prepared to SNTI and TOMIE specifications.
08/18 – 03/19	**In-Depth Electrical and Mechanical Inspection of the SR 99 Alaskan Way Tunnel | Seattle, WA | WSDOT** **Electrical Engineer** who performed an initial inspection and in-depth inspection on the newly completed Alaskan Viaduct replacement project. Inspections were done in conformance with Federal Requirements for the Nation Tunnel Inspection Standards (NTIS). The 2.5-mile-long single bore tunnel has two southbound lanes in the upper roadway, two northbound lanes in the lower roadway, and a lower section utilidor for the pumping equipment. There is a north and a south operations building each with four 500HP extraction ventilation fans and two maintenance air fans. Each roadway is equipped with multiple 75HP jet fans and roadway dampers evenly spaced through the tunnels for the extraction fans. A fire pipe deluge system and pumping system to remove the water is also featured.
01/16 – 05/17	**Open Road Tolling for the Queens Midtown Tunnel and Brooklyn Battery Tunnel | New York, NY | NYCDOT** **Electrical Engineer** responsible for the design of the power and communication systems as part of an accelerated Open Road Tolling (ORT) initiative sanctioned by the Governor of NY. The project included accelerated design schedule incorporating Design-Build like coordination with the Contractor to have a new ORT tolling system operational within a 6-month time frame at both the QMT and BBT locations. Mr. Kostadinov was responsible for design of the complete power distribution system for the QMT project, partial power distribution of the BBT project, and partial communication infrastructure for both QMT and BBT.
06/17 – 01/18	**Final Design for Lighting in TBTA Facilities | New York, NY | New York Power Authority** **Electrical Engineer** for the addition of LED lighting for TBTA bridges and tunnels. Engineering designs necessary to implement the architectural lighting schemes as part of the NYC Crossings Initiative. This involved more than 6,000 individual light fixtures to be mounted at various TBTA facilities. Responsibilities included modification of existing electrical power feed design, lighting calculations, lighting location, and new conduit run layouts.

16. Staff Experience:



Firm employed by	Hardesty & Hanover		
Name	Mark Soryal, PE	Years of relevant experience with this employer	12
Title	Mechanical Engineer/Construction Inspector	Years of relevant experience with other employer(s)	0
Degree(s) / Years / Specialization	B.S. / 2011 / Mechanical Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 101694 / NY / 9/30/2024 **Certifications:** FHWA NHI 130110 Tunnel Safety Inspection; FHWA NHI 130125 Tunnel Inspection Refresher Training; FHWA NHI 130124 Tunnel Inspection Refresher WBT Prerequisite; FHWA 130101 Introduction to Safety Inspections of In-Service Bridges		
Year registered	2019	Discipline	Mechanical Engineering
Contract role(s) / brief description of responsibilities	Mechanical Engineer/Inspector; **Meets MPR 4**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
09/20 – 02/21	**Four Tunnel Inspections as per TOMIE Manual | New York, NY | NYCDOT** **Mechanical Assistant Team Leader** for the in-depth inspection of the Park Avenue and First Avenue underpass tunnels. Mr. Soryal's responsibilities included in-depth inspection of key systems including drainage, HVAC, and fire suppression systems. Mr. Soryal additionally performed vibration testing of tunnel fans. These inspections were part of a broader Engineering Services Agreement for NYCDOT, for which H&H performed in-depth inspections of 4 underpass tunnels throughout the city and submitted inspection reports and repair recommendations according to the TOMIE manual.
09/22 – 02/23	**2022 Tunnel Inspection as per TOMIE Manual | New York, NY | NYCDOT** **Mechanical Team Leader** responsible for the inspection and condition assessment of mechanical equipment throughout the 1st Avenue tunnel. These findings were documented in a Routine Inspection Report format developed by H&H in conjunction with NYCDOT, including prioritized recommendations for further maintenance and rehabilitation.
06/15 – 05/16	**Battery Park Underpass Rehabilitation | New York, NY | NYCDOT** **Mechanical Inspector** responsible for the mechanical construction work related to the ventilation chamber fans as well as the electrical upgrades. H&H was a major subconsultant providing on-call construction management and inspection for various projects throughout the five boroughs of New York City. The tunnel was completely flooded during Hurricane Sandy and the project repaired/replaced all affected mechanical and electrical equipment.
06/16 – 06/19	**Marine Parkway, Gil Hodges Memorial Bridge | Brooklyn, NY | Triborough Bridge and Tunnel Authority** **Senior Mechanical Construction Engineer Inspector** for $129 million construction contract. Responsible for field and shop construction inspection for work associated with Friction Mitigation, Machinery Rehabilitation, Painting, Architectural and Maintenance and Protection of Traffic. Friction mitigation work included refinishing trunnion journals and performing Magnetic Particle Testing, replacing span guide rollers, replacing counterweight guide shoes, balancing the lift span, re-tensioning the counterweight ropes and performing strain gage testing. Machinery Rehabilitation work included auxiliary counterweights, new wire rope lubrication system, replacing all span operating machinery and supports and air buffers. Architectural work included ceiling supports, concrete boards, gypsum finish, wall insulation, rollup doors and hollow metal doors. Provided technical advisement regarding construction and design related issues, client and project team advice on field coordination issues, means and methods reviews, existing condition evaluations and constructability reviews. Performed hands-on inspection of the machinery alignment to confirm installation values were within designer/manufacturer's required tolerances. Monitored painting operations of the new machinery supports as well as new machinery components.

11/20 – 12/20	**Inspection and Load Rating of the Park Avenue and First Avenue Tunnels | New York, NY | NYCDOT** **Assistant/Lead Mechanical Engineer** for the in-depth inspection of the Park Avenue and First Avenue underpass tunnels. Mr. Soryal's responsibilities included in-depth inspection of key systems including drainage, HVAC, and fire suppression systems. Mr. Soryal additionally performed in-depth inspection of the concrete structure and vibration testing of tunnel fans. These inspections were part of a broader Engineering Services Agreement for NYCDOT, for which H&H performed in-depth inspections of four underpass tunnels throughout the city and submitted inspection reports and repair recommendations according to the TOMIE manual.
06/15 – 05/16	**Battery Park Underpass Rehabilitation | New York, NY | NYCDOT** **Mechanical Inspector** responsible for the mechanical construction work related to the ventilation chamber fans as well as the electrical upgrades. H&H was a major subconsultant providing on-call construction management and inspection for various projects throughout the five boroughs of New York City. Projects involved bridges, tunnels, roadways, ferry terminals, and other transportation facilities on a Task Order basis. Field inspection required on short-notice 24 hours/day, 7 days/week. Assignments included Resident Engineering and Inspection for repair of the Battery Park Underpass tunnel due to damage sustained in Hurricane Sandy. The tunnel was completely flooded during the storm and the project repaired/replaced all affected mechanical and electrical equipment.
03/16 – 02/19	**Rehabilitation of the Rio Hondo Lift Bridge | Rio Hondo, TX | TXDOT** **Mechanical Engineer and Construction Inspector** responsible for the construction support services, review of shop drawings, project submittals and installation procedures, and responding to RFI's submitted by the contractor for the replacement and rehabilitation of the existing operating machinery. In the second phase of the project H&H provided the final design package which included numerous structural repairs to the movable bridge structure and bridge towers, a new electrical power and control system, and machinery rehabilitation. H&H developed a proposed construction schedule that avoided impact to USCG navigation while minimizing roadway closure durations. H&H also assisted in the development of and participated in an extensive public outreach program to inform the local community of the project impacts and respond to questions from the stakeholders and community members. For the final phases, H&H will be providing construction support services and development of a maintenance manual.
02/19 – 04/22	**Madison Avenue Bridge (swing bridge) Over Harlem River | New York, NY | NYCDOT** **Mechanical Construction Engineering Inspector** for NYCDOT contract #HBX644S for the replacement of span drive machinery, primary and secondary reducers and bearings; replacement of rack and pinions, center pin rehabilitation; replacement of end lifts at rest piers; replacement of centering locks, machinery, and receiving sockets at rest piers; new hydraulic auxiliary drive diesel powered by HPU and generator, removal of non-operational machinery; new electrically operated brakes; rehabilitation of machinery supports; new shafts and couplings; and cleaning, lubrication and adjustment of drum girder roller assembly. Mr. Soryal performed shop and field construction inspections per contract requirements. Field work included observation of field surveys (general surveying and span tracking during operation with FARO laser tracking system), electrical demolition and installation of temporary electrical items, and general demolition of existing structural and mechanical components slated for replacement under contract. Inspection reports were created to track shop work progress and MURK 1 DWRs were produced for field work tracking. Work also included reviewing and providing comments to change orders and coordinating with client, contractor, and designer to address field conditions to aid in streamlining work.
12/18 – 04/22	**Construction Engineering & Inspection Services for the Rehabiltiation of the Broadway Bridge (Vertical Lift) | New York, NY | NYCDOT** **Mechanical Construction Engineering Inspector** for the rehabilitation of the Broadway Bridge over the Harlem River. Project mechanical construction inspection work included: clean and inspect all the ropes, and replace select ropes; replacement of primary reducers and provide shaft for auxiliary power; replacement of all pillow block sleeve bearing bushings; replacement of motor and machinery brakes; removal of abandoned rope oiling system; replacement of upper and lower air buffers; replacement of span lock machinery; replacement of elevators; balancing the lift span; repair of centering device. Responsible for reducer testing witnessing and performed thermal photography to aid in inspection/reporting effort.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Amy Robards, PE	Years of relevant experience with this employer	5
Title	Bridge Inspection Team Leader	Years of relevant experience with other employer(s)	7
Degree(s) / Years / Specialization		B.S. / 2012 / Civil Engineering	
Active registration number / state / expiration date		**Professional Engineer:** 41718 / LA / 9/30/2025 **Certifications:** FHWA NHI 130078 Fracture Critical Inspection Techniques for Steel Bridges; FHWA NHI 130055 Safety Inspection of In-Service Bridges; FHWA-NHI 130053 Bridge Inspection Refresher Training; ATSSA Traffic Control Supervisor and Flagger	
Year registered	2017	Discipline	Civil Engineering
Contract role(s) / brief description of responsibilities		Structural Engineer/Inspector (Field Support)	

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
07/23 - Present	**H.009730.5 In-Depth Bridge Inspection of Complex Structures | Statewide, LA | LADOTD** **Lead Structural Inspector** performing inspection of complex structures such as cantilever trusses, cable-stayed bridges, steel vertical lift bridges, and plate girder bascule bridges statewide under separate task orders. Inspection of two steel truss bridges (Jimmie Davis and Miller's Bluff) and a vertical lift bridge (West Fork) have been completed to date.
12/17 – 09/22	**Annual Facilities Inspection Services (AE3015) | Statewide, MD | Maryland Transportation Authority** **Structural Engineer** for the routine, in-depth and emergency inspection of MDTA-owned bridges and tunnels. Project work: 1) Tunnel Inspection of two tubes of the Baltimore Harbor Tunnel, BHT Fairfield and Canton ventilation buildings and the four bores of the Fort McHenry Tunnel facilities plus East and West ventilation and west annex buildings including delineating deteriorated concrete in FMT lower plenums. 2) Tunnel Inspection for the annual inspection of Fort McHenry Tunnel ventilation building, including performing special confined space inspection of east portal pump wet well for infiltration investigation. 3) Tunnel Inspection for emergency inspection in response to waterline leak in BHT east tube. Coordinated with CFMO to inspect roadway and fresh air duct; participated in evaluation and development of repairs. 4) Tunnel Inspection for emergency inspection in response to FMT lower plenum waterline break in Bore 3; participated in evaluation and repair development. 5) Tunnel Inspection for emergency inspection, evaluation and assessment of over-height vehicle in the Baltimore Harbor Tunnel. Interior ceiling panels and pavement were inspected and assessed.
08/20 – Present	**H.001498.6; LA 24 and LA 16 Company Canal Vertical Lift Bridge | Bourge, LA | LADOTD** **Project Engineer** delivering construction engineering and inspection services for a new vertical lift bridge and operator's house. Services include daily monitoring of all construction activities; maintaining all construction field records; coordinating with DOTD, contractor, parish government, and utilities; performing field testing; maintaining records of contractual operations, pay estimates and progress reports; preparing final estimate packages; conducting construction progress meetings; construction close-out, etc.
03/16 – 10/17	**US 190 Mississippi River Bridge | Baton Rouge, LA | LADOTD** **Structural Inspector** responsible for providing construction engineering and inspection services required during the repairs to the US 190 Mississippi River Bridge approaches in Baton Rouge, LA. Included in the project were assorted repairs as well as the replacement of anchor bolts at concrete footings and other steel approach spans elements.
12/15 – 05/18	**Huey P. Long Bridge over the Mississippi River Annual Inspections | Bridge City, LA | New Orleans Public Belt Railroad & LADOTD** **Structural Engineer** providing annual inspection services for the main bridge and railroad approaches of the Huey P. Long Bridge, a 2,400-foot-long cantilevered steel through truss bridge that carries a two-track railroad line and three lanes of US 90, as well as the turntable span and maintenance facilities. Inspected the primary members on the deck truss, main spans, piers, towers, and girders using standard climbing techniques and used technical access (rappelling) to inspect the piers. Contributed to the pre-inspection planning and coordination and writing final inspection reports.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Frank Marzella, PE	Years of relevant experience with this employer	24
Title	Principal Associate	Years of relevant experience with other employer(s)	12
Degree(s) / Years / Specialization	B.E. / 1988 / Mechanical Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 78201 / FL / 2/28/2025 **Certifications:** FHWA NHI 130110 Tunnel Safety Inspection; FHWA NHI 130125 Tunnel Inspection Refresher Training; FHWA NHI 130124 Tunnel Inspection Refresher WBT Prerequisite		
Year registered	1993	Discipline	Mechanical Engineering
Contract role(s) / brief description of responsibilities	Quality Control; **Meets MPR 4**		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
11/18 – 04/19	**2018 Alaskan Way Tunnel (99/540) In-Depth Electrical and Mechanical Inspection | Seattle, WA | WSDOT** **Project Manager/Quality Control Engineer** for the baseline mechanical & electrical tunnel system inspection on this new facility. Hardesty & Hanover was selected to perform an In-Depth Electrical and Mechanical Inspection in conformance with Federal Requirements for the Nation Tunnel Inspection Standards (NTIS) for an Initial Inspection and In-Depth Inspection of the Electrical and Mechanical Systems. The tunnel is a 2.5-mile long single-bore tunnel with two southbound lanes in the upper roadway, two northbound lanes in the lower roadway, and a lower section utilidor for the pumping equipment. There are a north and south operations building, each with four 500HP extraction ventilation fans and two maintenance air fans. Each roadway is equipped with multiple 75HP jet fans and roadway dampers evenly spaced through the tunnels for the extraction fans. The tunnel has a fire pipe deluge system and pumping system to remover the water. The tunnel has a communication system-based control system with PLC controllers, hundreds of cameras with DVR controllers, a fire detection system, an air monitoring system, and a complete security system. Each piece of equipment is remotely accessible and operable from the control system, with centers in each operation building. The majority of the electrical and mechanical equipment was visually inspected and operationally tested during the inspection. Detailed reports were developed along with repair recommendations.
08/17 – Present	**East Link Extension Sound Transit Expansion | Seattle, WA | WSDOT** **Project Manager** responsible for providing construction support and design review to fully integrate the Sound Transit Light Rail expansion on the I90 floating bridges and associated access tunnels. Work includes coordinating work with Seattle City Light, medium voltage power distribution, low voltage power distribution, cathodic and stray current mitigation, and remote control and monitoring of the bridges. Floating bridges include a highly specialized electrical system and the addition of light rail onto a floating bridge had never been performed before this project. Work includes attending design and construction meetings, on-site construction inspection, show drawing and testing review, and Request for Information submittals.
01/21 – 04/21	**Washington State Convention Center Tunnel & Riverside Lift Bridge In-depth Inspections | Seattle & Hoquiam, WA | WSDOT** **Project Manager/Quality Control Engineer** for NTIS inspection of the mechanical & electrical systems of the Washington State Convention Center Tunnel. The mechanical system inspection included diesel engine fire pumps, foam concentrate pumps, roadway foam sprinkler system, diesel generators, roadway fire standpipe systems. Inspection testing included water-only deluge testing, foam concentrate pump operational testing, fire pump operational testing, and diesel generator testing. The mechanical inspection of the Riverside Bridge included the tower span drive machinery, span lock machinery, counterweight trunnions and sheaves, live load bearings, span guides, counterweight guides, traffic gates, and a resistance barrier gate.

11/20 – 01/21	**Bremerton Tunnel & 1st Avenue Bascule Bridge In-depth Inspections | Bremerton & Seattle, WA | WSDOT** **Project Manager/Quality Control Engineer** for NTIS inspection of the mechanical & electrical systems of the Bremerton Tunnel. The mechanical system inspection includes six jet fans, fire suppression system piping, roadway standpipes, drainage pumps, catch basins, emergency generator, and traffic gates. Inspection testing included fan operational testing, vibration testing, pump operational testing, and standpipe flow testing.
08/19 – 01/20	**Mercer Island Tunnel In-depth Electrical & Mechanical Inspections | Mercer Island, WA | WSDOT** **Project Manager/Quality Control Engineer** for work that included inspecting the mechanical & electrical systems of the tunnel to prepare a list of recommendations for repairs, deficiencies, and preventive maintenance. Hardesty & Hanover was selected to perform an in-depth electrical and mechanical inspection in conformance with federal requirements for the (NTIS) for an Initial Inspection and In-Depth Inspection of the Electrical and Mechanical Systems. The tunnel is a 1,112.9-foot cut and cover tunnel with two roadway sections and one transit section. There is a single operation building, each with supply and exhaust fans. The mechanical systems included centrifugal fans, fire suppression systems (foam deluge system and standpipe system), ventilation building HVAC equipment, emergency egress passageways, and roadway emergency egress signage. The majority of the electrical and mechanical equipment was visually inspected and operationally tested during the inspection.
03/13 – 04/14	**Rio Hondo Lift Bridge | Cameron County, TX | TXDOT** **Project QC Engineer** for the rehabilitation of a 145-foot lift span thru-plate girder bridge over the Arroyo Colorado. The project entailed the complete inspection and evaluation of all electrical, mechanical, and structural components, as well as the design of rehabilitation to those systems. Frank provided quantity reviews of the mechanical system design at various milestones through the design phase.
03/21 – 06/21	**Hood Canal Bridge In-depth Mechanical & Electrical Inspections | Kitsap County, WA | WSDOT** **Project Manager and Mechanical QC Engineer** for the inspection of the Hood Canal Bridge. The mechanical inspection included the lift span hydraulic power units, lift span cylinders, guides and live load bearings, span drive machinery, end lock hydraulic power units, end lock machinery, center lock hydraulic power units, center lock machinery, span support system including the guide roller assemblies, centering pyramids and bumpers, and traffic, barrier, and storm gates. Detailed reports were developed along with repair recommendations.
01/01 – 12/01	**Wantagh Parkway Bridges (over Sloop Channel & over Goose Creek) | Nassau County, NY | NYDOT** **Quality Assurance/Quality Control** responsible for design plan review and overall project coordination for the replacement of a fixed bridge with a 712-foot-long bridge that included a 105-foot, double-leaf bascule span. A hydraulic emergency investigation found the failure of the Goose Creek Bridge was due to scour. Scope of work Included complete in-house structural, mechanical, and electrical design and complex provisions for anticipated deep pier scour, a site-specific seismic analysis, a scour monitoring program, and construction support services.
12/99 – 01/04	**Battery Place Widening/Battery Park Underpass Ventilation Study | New York, NY | NYCDOT** **Mechanical Engineer/Project Manager** responsible for mechanical system work for a tunnel realignment and widening project that included this ventilation study. Involved with the coordination of ventilation requirements, design of roadway lighting, fire detection modification design, and mechanical/electrical and control system upgrades.
07/10 – 05/17	**SR 520 Evergreen Point Bridge and Landings Project | Seattle, WA | WSDOT** **Quality Control Engineer** on this design-build project to replace the SR 520 Floating Bridge with a new parallel bridge and maintenance facility. Prepared a design-build Request for Qualifications and Request for Proposal for the replacement SR 520 Evergreen Point Floating Bridge and Bridge Maintenance Facility. The floating bridge work included preliminary design and complete technical requirements for a specialized structure. The Maintenance Facility included preliminary design and complete technical requirements for LEED compliant facility and is listed above as a separate project. The work also included support during the bidding and selection process as well as reviewing the design-build team's design submittals, attending task force meetings with the design-build team to keep the project requirements clear, and reviewing construction submittals.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Raymond Mankbadi	Years of relevant experience with this employer	17
Title	Director Geotechnical Engineering	Years of relevant experience with other employer(s)	27
Degree(s) / Years / Specialization		M.S. / 1985 / Civil Engineering B.S. / 1978 / Civil Engineering	
Active registration number / state / expiration date		**Professional Engineer:** 16547 / CT / 1/31/2024 , 51124 / MD / 6/8/2025	
Year registered	1989	Discipline	Civil Engineering
Contract role(s) / brief description of responsibilities		Geotechnical Engineer/Inspector	

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
11/20 – 01/21	**Four Tunnel Inspections as per TOMIE Manual | New York, NY | NYCDOT** **Lead Geotechnical Engineer** for the in-depth inspection and condition assessment of the 1st Avenue and Park Avenue tunnels as part of a broader NYCDOT ESA assignment. These findings were documented in a Routine Inspection Report format developed by H&H in conjunction with NYCDOT, including prioritized recommendations for further maintenance and rehabilitation. In addition to the inspection. Inspection reports were prepared to SNTI and TOMIE specifications.
02/12 – 03/13	**Study & Preliminary Design for RFK Bridge to Northbound Harlem River Dr (RK-23) | New York, NY | Triborough Bridge and Tunnel Authority** **Lead Geotechnical Engineer** responsible for feasibility study for a new ramp to provide a direct connection from the RFK Bridge to the northbound Harlem River Drive located in the Borough of Manhattan, New York City. The need for the proposed connector ramp results from vehicular movement experiencing delays, local congestion, and local community pollution. The study evaluated various alignment alternates for a one way, one lane passenger vehicle ramp operation with provision for passing a stalled vehicle by another of the same type for a design speed of 35 mph. The structure is anticipated to carry an ADT over 19,000 vehicles per day. The study identified the most prudent and feasible alternatives to provide a direct connection from the RFK Bridge to northbound Harlem River Drive. Design of the new structure must meet current standards to the extent possible, while also avoiding, lessening, or mitigating impacts and effects to surrounding properties and jurisdictions.
01/20 – Present	**Almonaster Avenue Bridge over the Industrial Canal | New Orleans, LA | Port of New Orleans** **Lead Geotechnical Engineer** for the bridge assessment, complete rehabilitative engineering design, and construction inspection services required for the partial replacement of the Almonaster Avenue Bridge, a movable Strauss-heel trunnion bridge. H&H's 2019 assessment of the circa-1920 bridge revealed that improvements to the electrical and mechanical systems, superstructure, and counterweight were required to return this bridge to its full operating capability. Although the existing substructure could remain, modifications were deemed necessary to accommodate the rehabilitated superstructure.
01/19 – Present	**Lapalco Bridge | Jefferson Parish, LA | Jefferson Parish** **Lead Geotechnical Engineer** for a six-lane bascule bridge parallel and adjacent to the existing bridge. The new bridge will carry three westbound lanes and the existing bridge will be modified to carry three eastbound lanes plus a pedestrian and bicycle path. Project scope includes the design of a new three-lane double-leaf bascule bridge and approach spans that will be north of and parallel to the existing bridge, as well as design modifications to the existing bridge to reconfigure it to include three eastbound lanes plus a pedestrian and bicycle path. H&H's preliminary design work included a visual structural inspection of the fracture critical elements, primary and secondary structural members, as well as electrical and mechanical systems inspections.

02/14 – 12/16	**Rehabilitation of Swing Bridge (BNSF #32.06) over Bayou Des Allemands | Des Allemands, LaFourche & St. Charles, LA | BNSF Railway Co.** **Lead Geotechnical Engineer** for a 90-foot single track swing span, two jump spans, and ten approach spans of prestressed concrete box beam, crosses the Des Allemands Bayou in Des Allemands, LA. The 90-foot swing span was replaced on the existing substructures which were reinforced by adding micropiles. Two jump spans were rehabilitated also. Hardesty & Hanover provided professional engineering services for the development of final bridge and track designs, permitting, construction contract documents, construction management and construction support for the rehabilitation of the bridge. A project with an estimated construction cost of about $15 million. The project included the replacement of spans all associated mechanical and electrical components as well as evaluation, rating and improvement of swing span substructure and foundations. Lead Geotechnical Engineer involved in the design, construction support, and testing of micropiles.
06/19 – 09/20	**SR-605 Bascule Bridge over Industrial Waterway | Gulf Port, MS | MDOT** **Lead Geotechnical Engineer** responsible for design, plan review, and quality control for full rehabilitation design of the SR-605 bascule bridge as a task-order to the IDIQ Master Bridge Contract. The scope includes engineering assessment; mechanical, electrical, and structural designs; and preparation of Traffic Control Plans. All designs will be completed in accordance with AASHTO, FHWA, and MDOT guidelines and specifications.
05/12 – 06/13	**Design-Build for RFK Bridge Manhattan-Queens Ramp Replacement (RK-73) | New York, NY | Triborough Bridge and Tunnel Authority** **Lead Geotechnical Engineer** in charge of preparing subsurface investigation, foundations design, seismic retrofit design of permanent and temporary foundation, and developing geotechnical report. The RK-73 project included the design and construction of Ramp MQ of the Robert F. Kennedy Bridge through a design-build contract on Randall's Island. The ramp replacement included roadway widening, and seismic design retrofit.
01/12 – 10/16	**Garden State Parkway SB & NB Bridges over Great Egg Harbor & Drag Channel | Atlantic & Cape May Counties, NJ | NJ Turnpike Authority** **Lead Geotechnical Engineer** responsible for all geotechnical aspects of the design and construction including pile foundation design, soil improvement, sign structures, retaining walls, reinforcement embankment on soft soils and instrumentation for two new bridges crossing Great Egg Harbor and Drag Channel. ($140M). The project also included cofferdam for deep water and water nose mitigation for protection of the fish. Prestressed Concrete piles were utilized in the foundations and CMC for soil improvement. All work was performed in accordance with AASHTO LRFD Bridge Specifications and FHWA Geotechnical Engineering Manuals and Circulars.
12/11 – 05/17	**Flagler Memorial Bascule Bridge Replacement Design/Build | West Palm Beach, FL | Florida DOT** **Geotechnical Engineer of Record** responsible for all geotechnical aspects of the design and construction including subsurface investigation program development, foundation design, cofferdam, geotechnical analysis, and report preparation. This project consisted of complete replacement of the existing bridge with a new four-lane divided bridge. 60-inch diameter drilled shaft embedded in overburden soils with post grouted tip are utilized to support new bridge structure and the approach roadway embankment are supported on 36-inch diameter drilled caissons.
11/19 - Present	**Geotechnical Engineering and Engineering Geology Staff Augmentation | Statewide, NJ | New Jersey DOT** **Project Manager** responsible for maintaining the team's budget, schedule, and scope of work and for the quality management of all work efforts – analyses, reports and design plans and specifications. The work performed under this agreement includes development of an Asset Management Database for retaining walls constructed within NJDOT ROW, as well as rock slope stability analysis and condition surveys of all previously installed mechanical rockfall mitigation and developing remaining service life estimates. Efforts under this task order agreement include Geotechnical Data Management System (GDMS) Review, and Quality Control and Quality Assurance Services on as-needed basis for the Engineering Geology Unit.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Linh Kim, PE	Years of relevant experience with this employer	3
Title	Civil Engineer	Years of relevant experience with other employer(s)	2
Degree(s) / Years / Specialization	B.S. / 2017 / Civil Engineering		
Active registration number / state / expiration date	**Professional Engineer:** 47527 / LA / 9/30/2025 **Certifications:** NHI 130055 – Safety Inspection of In-Services Bridges; ATSSA Traffic Control Supervisor and Flagger		
Year registered: 2023	Discipline: Civil Engineering		
Contract role(s) / brief description of responsibilities	Structural Engineer/Inspector (Field Support)		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
07/23 - Present	**H.009730.5 In-Depth Bridge Inspection of Complex Structures | Statewide, LA | LADOTD** **Structural Inspector** performing inspection of complex structures such as cantilever trusses, cable-stayed bridges, steel vertical lift bridges, and plate girder bascule bridges statewide under separate task orders. Inspection of two steel truss bridges (Jimmie Davis and Miller's Bluff) and a vertical lift bridge (West Fork) have been completed to date.
10/21 – 07/22	**Tennessee Bridge Inspection and Load Rating | Decatur, AL | Norfolk Southern Corp.** **Structural Engineer Intern** provided inspection, load rating, and engineering design services under the Systemwide Engineering and Design Services contract. The steel repairs at Gulf Division MP 362.60-A Decatur, AL task was awarded to H&H through this contract. The task involved the performance of an on-site inspection, the preparation of load rating calculations and the development of repair plans for the structure in accordance with the scope of work. The structure consists of three superstructure types: vertical lift span, deck plate girder span and seven through truss spans.
9/20 – Present	**Almonaster Avenue Railroad Bridge over the Industrial Canal | New Orleans, LA | Port of New Orleans** **Structural Inspector** assisting with a variety of repairs on this steel Strauss Trunnion Bascule Bridge. Major work included replacement of components of the railroad floor system stringers and floor beams that rated lower than E-60 and replacement of deteriorated lateral connection plates. The cracked concrete on the rest pier in the area of the bearings was removed and replaced with higher strength concrete. The replacement and tightening of loose or missing fasteners throughout the entire structure was also included in the repair scope. Scope included bridge design and repair plans, contract specifications, construction inspection, construction support services.
01/19 - 04/19	**H.009498.5: LA 121: Calcasieu River Bridge | Lake Charles, LA | LADOTD** **Civil Engineer Intern.** Designed and detailed an LG-36 (I-Beam) Concrete Prestressed Girder Bridge using continuous deck spans on a horizontal curve with a 5% slope. The continuous deck spans were 240-foot- long using four 60-foot-long deck spans with a bridge width of 42.5-foot-wide. The superstructure and girders were designed using Bentley's Conspan software and DOTD's Bridge Design Evaluation Manual. The substructure consists of pile bents that were designed using STAAD Modeling software and Excel.
02/21 – Present	**Lapalco Boulevard Movable Bridge over Harvey Canal | Westwego, LA | Jefferson Parish DPW/LADOTD** **Structural Engineer** for the pre-design inspection, rehabilitation, and widening of the existing four-lane Lapalco Boulevard to provide a facility carrying three lanes of traffic in each direction, as well as the design of a new three-lane double bascule movable bridge crossing of Harvey Canal. The scope of services also includes the design of a new bridge to be constructed as an independent structure immediately adjacent and north of the existing bridge with a new operator house. All design work is accordance to LADOTD Standards and Specifications and reviewed by LADOTD. Load rating was performed using AASHTOWare BrDR load rating software.

04/22 – 12/22	**SR 605 Bascule Bridge over Industrial Waterway | Harrison County, MS | MDOT** **Civil Engineer** for the comprehensive rehabilitation of this bascule bridge over the Industrial Waterway. Work also included design and detailing of a new PPC pile-supported reinforced concrete generator platform. All designs are in accordance with AASHTO, FHWA, and MDOT guidelines and specifications. Load rating was performed using AASHTOWare BrDR load rating software.
06/22 – 08/23	**SR 609 Movable Bascule Bridge Inspection and Load Rating | Ocean Springs, MS | MDOT** **Civil Engineer** for inspection of SR 609 Bridge. Scope of work included the in-depth, NSTM, routine, and element level inspection of structural, mechanical, and electrical components of the bridge, as well as the roadway approaches. Load rating was performed using AASHTOWare BrDR load rating software.
08/20 – Present	**H.001498.6; LA 24 and LA 16 Company Canal Vertical Lift Bridge | Bourge, LA | LADOTD** **Civil Engineer** delivering construction engineering and inspection services for a new vertical lift bridge and operator's house. Services include daily monitoring of all construction activities; maintaining all construction field records; coordinating with DOTD, contractor, parish government, and utilities; performing field testing; maintaining records of contractual operations, pay estimates and progress reports; preparing final estimate packages; conducting construction progress meetings; construction close-out, etc.
08/19 – 09/19	**H.001707.5: LA 507: Saline Bayou Relief Bridge | LADOTD** **Civil Engineer Intern.** Completed General Plan revisions, such as checking guard rail design, geotextile fabric, and riprap design. Calculated bridge estimate quantities and revised the general notes/index.
09/19 – 11/19	**H.009482.5: LA 113: Jim Burney Branch Bridge | LADOTD** **Civil Engineer Intern.** Prepared 60% final plans review and submittal. Completed revisions for initial design due to comments from the district and Project Engineer reviewer. Completed a bridge rating using AASHTOWare Bridge Rating software and STAAD Analysis.
09/19 – 11/19	**H.002176.5: LA 10 Bridges (Burton's Lake, Bayou HaHa, Bayou TawPaw) | LADOTD** **Civil Engineer Intern.** Created General Plans set for three different bridges after receiving information from Road Design and Hydraulics. Prepared 60% Preliminary Plans Set to be sent out Hydraulics, Property Survey, and Subgrade Soil Survey sections.
11/19 – 12/19	**H.009498.5: LA 121: Calcasieu River Bridge | Lake Charles, LA | LADOTD** **Civil Engineer Intern.** Completed revisions for my initial design for this project via Project Engineer's review. Prepared a deep soil boring request.
12/19 – 04/20	**I-10: Texas State Line - East of Coone Gully | LADOTD** **Civil Engineer Intern.** Checked bent detail and quantities for 3 of 5 bridge sites (6 bridges total). Completed a bridge rating using AASHTOWare Bridge Rating software and STAAD Analysis for all bridge sites (10 bridges total). Checked Pile data quantities to ensure Geotechnical and Bridge Plans have the same values. Designed a custom elastomeric bearing pad for prestressed girder bridges.
12/19 – 01/20	**US 371: KCS RR Overpass HBI | LADOTD** **Civil Engineer Intern.** Designed and detailed an alignment study for two bridge sites with a railroad overpass.
03/19 - 04/19	**H.010916.6: Prien Lake Re-Deck & Safety Improvements | LADOTD** **Civil Engineer Intern.** Completed shop drawings for end dams. Added #7 bars staggering at continuous deck joints to support spans at continuous deck joints. Created a change order for sheets showing bridge plan views.

16. Staff Experience:

Firm employed by	Hardesty & Hanover		
Name	Dalton Hunt, EI	Years of relevant experience with this employer	2
Title	Civil Designer	Years of relevant experience with other employer(s)	0
Degree(s) / Years / Specialization	B.S. / 2017 / Civil Engineering		
Active registration number / state / expiration date	**Engineer in Training**: 35118 / LA / 9/30/2024 **Certifications:** NHI 130055 – Safety Inspection of In-Services Bridges; ATSSA Traffic Control Supervisor and Flagger		
Year registered: 2022	Discipline: Civil Engineering		
Contract role(s) / brief description of responsibilities	Structural Designer/Inspector (Field Support)		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
06/23 - Present	**H.009730.5 In-Depth Bridge Inspection of Complex Structures | Statewide, LA | LADOTD** **Structural Inspector** for inspection of complex structures such as cantilever trusses, cable-stayed bridges, steel vertical lift bridges, and plate girder bascule bridges statewide under separate task orders. Inspection of two steel truss bridges (Jimmie Davis and Miller's Bluff) and a vertical lift bridge (West Fork) have been completed to date.
01/22 – 11/22	**Almonaster Avenue Bridge Rehabilitation and New Connector Road | New Orleans, LA | Port of New Orleans** **Engineer Intern** for the bridge assessment, complete rehabilitative engineering design, and road design services required for the partial replacement of the Almonaster Avenue Bridge and a new connector road. The road design services include a new alignment for the connecting road, including all drainage structures. H&H also developed a hydraulic study and site plan that includes several retention ponds for drainage improvements. All design work is according to LADOTD Standards and Specifications and reviewed by LADOTD.
04/22 – 12/22	**SR 605 Bascule Bridge over Industrial Waterway | Harrison County, MS | MDOT** **Engineer Intern** for the comprehensive rehabilitation of this bascule bridge over the Industrial Waterway. Work also included design and detailing of a new PPC pile-supported reinforced concrete generator platform. All designs are in accordance with AASHTO, FHWA, and MDOT guidelines and specifications. Load rating was performed using AASHTOWare BrDR load rating software.
06/22 – 08/23	**SR 609 Movable Bascule Bridge Inspection and Load Rating | Ocean Springs, MS | MDOT** **Engineer Intern** for inspection of SR 609 Bridge. Scope of work included the in-depth, NSTM, routine, and element level inspection of structural, mechanical, and electrical components of the bridge, as well as the roadway approaches. Load rating was performed using AASHTOWare BrDR load rating software.
02/22 – Present	**Lapalco Boulevard Movable Bridge over Harvey Canal | Westwego, LA | Jefferson Parish DPW/LADOTD** **Engineer Intern** for the pre-design inspection, rehabilitation, and widening of the existing four-lane Lapalco Boulevard to provide a facility carrying three lanes of traffic in each direction, as well as the design of a new three-lane double bascule movable bridge crossing of Harvey Canal. The scope of services also includes the design of a new bridge to be constructed as an independent structure immediately adjacent and north of the existing bridge with a new operator house. All design work is accordance to LADOTD Standards and Specifications and reviewed by LADOTD. Load rating was performed using AASHTOWare BrDR load rating software.
04/22 – Present	**H.001498.6; LA 24 and LA 16 Company Canal Vertical Lift Bridge | Bourge, LA | LADOTD** **Civil Intern** delivering construction engineering and inspection services for a new vertical lift bridge and operator's house. Services include daily monitoring of all construction activities; maintaining all construction field records; coordinating with DOTD, contractor, parish government, and utilities; performing field testing; maintaining records of contractual operations, pay estimates and progress reports; preparing final estimate packages; conducting construction progress meetings; construction close-out, etc.

16. Staff Experience:

Firm employed by A P S Engineering and Testing, LLC			
Name	Sergio Aviles, P.E.	Years of relevant experience with this employer	11
Title	President	Years of relevant experience with other employer(s)	10
Degree(s) / Years / Specialization	B.S. / 2001 / Civil Engineering Geotechnical		
Active registration number / state / expiration date	**Professional Engineer:** 0033571/ LA / 03-31-2024 **Certification:** Work Zone, Traffic Control Technician		
Year registered	2007	Discipline	Civil Engineering
Contract role(s) / brief description of responsibilities	Geotechnical Engineer		

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
05/19 - Present	**Project No. H.004791, Existing Belle Chasse Bridge and Tunnel Demolition and Decommissioning:** Mr. Aviles will review plan to defines Safety Assurance Review (SAR) for the implementation of documents developed for the Existing Belle Chasse Bridge and Tunnel Demolition and Decommissioning for the Geotechnical drawings.
11/19 – 06/22	**Project No. H.001352 and H.002273: Comite River Diversion Bridge at LA-67, LA-19 and LA-19 Railroad Bridge LA-67 and LA- 19** A P S was selected with the winning team for the design of the diversion CMAR project. A P S performed the Geotechnical Design for the project. Mr. Aviles was the Project Manager for the Project Design team.
09/19 – 05/23	**Project No. H.004100: I-10 Widening LA 415 to Essen LN | Baton Rouge, LA | LADOTD** A P S was tasked thru our DOTD Geotechnical retainer to drill and sample a total of 52 deep borings starting at the Washington Exit and ending at the LSU Lakes. A P S drilled a total of eight (8) over the waterborings and 44 land borings. Along with this drilling and sampling, A P S tested for strength and engineering characteristics of the soils with approximately 1000 Triaxial Compression, Unconsolidated Drained Or Undrained (UU) and Atterberg Limits. Mr. Aviles was the Project Manager to the Geotechnical Investigations.
04/23 – Present	**Project No. BA-0153 | Mid Barataria Sediment Diversion | CPRA** APS was tasked to provide quality assurance, inspection and testing throughout the construction of the sediment diversion. Mr. Aviles is the Manager of Inspection and Testing.
03/01 – 05/05	The following list consists of projects that Mr. Aviles did the design or assisted on the design while at LADOTD. These projects include pile design, slope stability, settlement analysis, and construction services (PDA, CAPWAP, and WEAP). **ON-SYSTEM PROJECTS LIST:** Mr. Aviles served as the staff geotechnical engineer while at the Pavement and Geotechnical Section for the following projects below. Projects include Embank Design, Pile Design, Drilled Shaft Design, MSE Wall Design, and Construction Supervision. Major project costs estimated over one million dollars: 015-04-0037 LA524-LA123 Route US165, 015-05-0035 LaSalle, 015-07-0044 (Route 165 Cadwell, 276-03-0016 Tangipahoa River Bridge, 3132 Innerloop 427-01-0029, 362-01-0009 Rat Bois, 452-01-0039 I-55 Cross Overs, 742-07- 0098 Susek Drive, Bayou Perrie and Sand Beach Bayou 103-01-0025, Broadway Ave.700-40-0127, Cameron Route LA. 27 193-02-0042, Causeway Boulevard interchange Route I-10 450-15-0098,Clayton-Greenville 026-03-0025, Crescent City Connection 283-08-0143(46), Cross Bayou Bridge 090-01-0020, Flannery at Florida 742-17-0008.

16. Staff Experience:

Firm employed by A P S Engineering and Testing, LLC			
Name	Sairam Eddanapudi, M.E., P.E	Years of relevant experience with this employer	10
Title	Chief Engineer	Years of relevant experience with other employer(s)	9

Degree(s) / Years / Specialization	M.E. / 2002 /Civil Engineering B. E. / 1999 / Civil Engineering
Active registration number / state / expiration date	**Professional Engineer:** 0035129/ LA / 03-31-2024
Year registered: 2008 / Discipline	Civil Engineering
Contract role(s) / brief description of responsibilities	Geotechnical Engineer

Experience dates (mm/yy–mm/yy)	Experience and qualifications relevant to the proposed contract; *i.e.*, "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the years of experience specified in the applicable MPR(s).
05/19 - Present	**Project No. H.004791, Existing Belle Chasse Bridge and Tunnel Demolition and Decommissioning:** Quality Assurance and Laboratory Manager responsible for conducting testing for the existing Belle Chasse Bridge and Tunnel Demolition and Decommissioning project.
11/19 – 06/22	**Project No. H.001352 and H.002273: Comite River Diversion Bridge at LA-67, LA-19 and LA-19 Railroad Bridge LA-67 and LA- 19** A P S was selected with the winning team for the design of the diversion CMAR project. A P S performed the Geotechnical Design for the project. Mr. Sai was the Senior Design Engineer for the Project Design team.
09/19 – 05/23	**Project No. H.004100: I-10 Widening LA 415 to Essen Ln | Baton Rouge, LA | LADOTD** A P S was tasked thru our DOTD Geotechnical retainer to drill and sample a total of 52 deep borings starting at the Washington Exit and ending at the LSU Lakes. A P S drilled a total of eight (8) over the waterborings and 44 land borings. Along with this drilling and sampling, A P S tested for strength and engineering characteristics of the soils with approximately 1000 Triaxial Compression, Unconsolidated Drained Or Undrained (UU) and Atterberg Limits. Mr. Sai was the project QA to the Geotechnical Investigations.
04/23 – Present	**Project No. BA-0153 | Mid Barataria Sediment Diversion | CPRA** APS was tasked to provide quality assurance, inspection and testing throughout the construction of the sediment diversion. Mr. Sai is the Assistant Quality Manager.
08/16 – 10/19	**Project No. H.012422: I-110 Interchange Modification at Terrace Ave | LADOTD** A P S was tasked thru our DOTD Geotechnical retainer to drill and sample a total of six (6) deep borings for the design of the Terrace Ave Exit. A P S tested for strength and engineering characteristics of the soils with approximately 100 Triaxial Compression, Unconsolidated Drained Or Undrained (UU) and Atterberg Limits performed by A P S Laboratory. Mr. Sai was QA to the Geotechnical Investigations.
11/17 – 02/18	**Project No. H.013193: US 61 Thompson Creek Bridge Replacement | LADOTD** A P S was tasked thru our DOTD Geotechnical retainer to drill and sample a total of eight (8) deep borings for the replacement bridge at US 61 over Thompson Creek. A P S tested for strength and engineering characteristics of the soils. Mr. Sai was QA to the Geotechnical Investigations.

17. Firm Experience:

Firm name	Hardesty & Hanover		Past Performance Evaluation Discipline(s)*	Bridge	
Project name	Facilities Inspection Services – AE 3015		Firm responsibility (prime or sub?)	Prime	
Project number	3015	Owner's name	Maryland Transportation Authority		
Project location	Baltimore, MD		Owner's Project Manager	Tekeste Amare	
Owner's address, phone, email	300 Authority Drive Baltimore, MD 21222 / 410.537.7800 / TAmare@mdta.state.md.us				
Services commenced by this firm (mm/yy)	10/19		Total consultant contract cost ($1,000's)	$15,000	
Services completed by this firm (mm/yy)	08/22		Cost of consultant services provided by this firm ($1,000's)	$4,500	

Hardesty & Hanover led a joint venture team on the $15 million multi-year contract to perform safety inspections, load ratings, and remedial design of the Maryland Transportation Authority's facilities Statewide. H&H led the effort to perform the inspections on all eight of the MDTA facilities including their Fort McHenry and Baltimore Harbor Tunnels.

H&H performed the routine and interim tunnel inspection for the **Fort McHenry Tunnel and Baltimore Harbor Tunnel ventilation buildings**. The inspection included National Tunnel Elements Ventilation System, Fans, Drainage and Pumping Systems, Pumps, Fire Suppression Systems, Electrical Distribution Systems, and Tunnel Operations and Security Systems.

The inspections included the tunnel ventilation systems, centrifugal fans, fan dampers, ductwork, drainage pump systems, drainage and fire pumps, valves and piping located within the ventilation buildings. The inspection included visual inspection, operational testing, vibration testing, and review of tunnel maintenance documents and NFPA testing documents.

H&H was also tasked with providing engineering support for evaluating necessary repairs to the tunnel structural, mechanical and electrical components. H&H has developed task order repairs documents for MDTAs On-Call Contractors to perform repairs. Engineering for task order development included sealing tunnel leaks, repairing concrete spalls, and emergency egress door repairs, centrifugal fan repairs, drainage pump replacement design, and fire pump repairs at both tunnels. Repair drawings, project specifications and developing engineer's estimates were performed for each task order assignment. On-site engineering support during construction was performed to inspect the installation to ensure the alignment of equipment was within tolerance and observe start-up testing.

H&H provided repair status updates during monthly progress meetings with MDTA to discuss repair schedules, fan and pump operations status, and any new repairs needed for the Fort McHenry Tunnel.

Key Personnel: Ryan Nolan, PE; Jason Biddle, PE; Donald Marinelli, PE; Chris Svara, PE; Michael Tine, PE; David Lynch, PE; Amy Robards, PE; Jonathan Hewko, PE; Brianna Kovacs, PE

17. Firm Experience:

Firm name	Hardesty & Hanover		Past Performance Evaluation Discipline(s)*	Bridge	
Project name	Alaskan Way Tunnel No. 99/540 In-Depth Mechanical and Electrical Inspection		Firm responsibility (prime or sub?)	Prime	
Project number	N/A	Owner's name	Washington Department of Transportation		
Project location	Seattle, WA		Owner's Project Manager	Duane Stone	
Owner's address, phone, email	WSDOT Bridge Preservation / PO Box 47340, Olympia, WA 98504 / 360.570.2576 / stonedu@wsdot.wa.gov				
Services commenced by this firm (mm/yy)	10/18	Total consultant contract cost ($1,000's)		$407	
Services completed by this firm (mm/yy)	03/19	Cost of consultant services provided by this firm ($1,000's)		$406	

The purpose of this inspection was to document the condition of the Alaskan Way Tunnel (Tunnel No. 99/540) as part of the In-Depth Mechanical and Electrical Inspection and to identify any deficiencies. This project was the Initial Inspection of the tunnel to inventory the mechanical and electrical equipment and provide a baseline of the tunnel condition, prior to allowing traffic in the roadway. The tunnel is a 2.5-mile long single-bore tunnel with two southbound lanes in the upper roadway, two northbound lanes in the lower roadway, and a lower section utilidor for the pumping equipment. There are north and south operations buildings, each with four 500HP extraction ventilation fans and two maintenance air fans. Each roadway is equipped with multiple 75HP jet fans and roadway dampers evenly spaced through the tunnels for the extraction fans. The tunnel has a fire pipe deluge system and pumping system to remover the water. The tunnel has a communication system-based control system with PLC controllers, hundreds of cameras with DVR controllers, a fire detection system, an air monitoring system, and a complete security system. Each piece of equipment is remotely accessible and operable from the control system, with centers in each operation building.

Mechanical: H&H performed a visual inspection, measurement inspection, and operational testing of the tunnel mechanical systems. The mechanical systems were inspected per the Tunnel Operations, Maintenance, Inspection, and Evaluation (TOMIE) manual. Alignment and clearance measurements were taken and recorded at the tunnel centrifugal fans and jet fans. A subcontractor specializing in machinery vibration measured, recorded, and analyzed vibration of all centrifugal fans, jet fans and maintenance air fans. The incoming water to the facility and the fire suppression system was visually inspected and operationally tested. Emergency egress throughout the tunnel roadway and walkways were verified to be clear of obstructions. The pump drainage systems was inspected and tested to confirm pump operation.

Electrical: H&H performed a visual inspection, measurement inspection, and operational testing of the tunnel electrical and life safety systems. The electrical system and equipment was analyzed for conformance with the 2017 National Electric Code (NEC), the 2015 TOMIE Manual, the 2015 Specifications for the National Tunnel Inventory, and the NFPA 502: Standard for Road Tunnels, Bridges, and Other Limited Access Highways. The life safety fire detection systems, CO Monitoring systems, and traffic control equipment were inspected and tested. The electrical insulation resistance of select conductors and motors were measured and recorded. Current measurements were taken of the electrical motors and nameplate information was recorded. Subcontractors specializing in NETA testing inspected and tested the medium voltage and low voltage switchgear circuit breakers. Subcontractors specializing in lighting measured the luminance and illuminance of the tunnel roadway egress pathways.

The 2.5-mile-long single-bore tunnel includes two SB lanes in the upper roadway, two northbound lanes in the lower roadway, and a lower section utilidor for the pumping equipment. Both north/south operations buildings have four 500HP extraction ventilation fans and two maintenance air fans. Each roadway is equipped with multiple 75HP jet fans and roadway dampers the extraction fans. The tunnel has a fire pipe deluge system and pumping a communication system-based control system with PLC controllers, hundreds of cameras with DVR controllers, a fire detection system, an air monitoring system, and a complete security system.

Key Personnel: Jason Biddle, PE; Donald Marinelli, PE; Chris Svara, PE; Michael Tíne, PE; Frank Marzella, PE; Teodor Kostadinov, PE

17. Firm Experience:

Firm name	Hardesty & Hanover		Past Performance Evaluation Discipline(s)*	Bridge	
Project name	Tunnel Facilities Inspection Contract – AE 2761		Firm responsibility (prime or sub?)	Prime	
Project number	2761	Owner's name	Maryland Transportation Authority		
Project location	Baltimore, MD		Owner's Project Manager	William Pines	
Owner's address, phone, email	300 Authority Drive, 2nd Floor, Baltimore, MD / 410.537.7873 / WPines@mdta.state.md.us				
Services commenced by this firm (mm/yy)	09/10		Total consultant contract cost ($1,000's)	$15,000	
Services completed by this firm (mm/yy)	12/16		Cost of consultant services provided by this firm ($1,000's)	$5,600	

Hardesty & Hanover led a joint venture team which managed a $15 million multi-year contract to perform safety inspections, load ratings, and remedial designs of the Maryland Transportation Authority's facilities statewide. H&H led the effort to perform the inspections on all eight of the MDTA facilities including their Fort McHenry and Baltimore Harbor Tunnels.

Inspections included the initial tunnel inspections in accordance with the National Tunnel Inspection standards (NTIS) for the Fort McHenry and Baltimore Harbor Tunnels. The biennial and interim inspections included structural, mechanical and electrical inspection of the Baltimore Harbor Tunnel including the exhaust duct, fresh air duct and roadway levels for the multi-discipline inspection. The inspections included the tunnel ventilation centrifugal fans, drainage pump system, and tunnel fire suppression system. Inspection included visual inspection, operational testing, and review of tunnel maintenance documents and NFPA testing documents.

H&H also assisted with establishing the inspection database for the National Tunnel Elements and Agency Defined Elements for the mechanical and electrical elements for the ventilation buildings.

H&H was also tasked with evaluating ventilation fans, tunnel drainage pumps, and fire pumps to determine the necessary repairs to return each component to operation, develop repair details and cost estimates to complete the repair, solicit bids from the on-call contractors with MDTA to complete the repairs, review contractors shop drawings, and perform construction engineering services to inspect the contractor while completing the repairs.

H&H provided repair status updates during monthly progress meetings with MDTA to discuss repair schedules, fan and pump operations status, and any new repairs needed for the Fort McHenry Tunnel. Tunnel ventilation fan repairs included replacing a fan shaft, replacing fan shaft bearings, rehabilitating fan motors (includes rewinding, motor bearings), replacing fan and motor V-belts, repairing fan inlet cones, and replacing damper, actuators motor contactors and overloads, and emergency stop buttons. Other engineering services provided by H&H included developing preventative maintenance procedures, lubrication schematics, maintenance forms, and a component identification report for the tunnel ventilation fans for MDTA Operations personnel use.

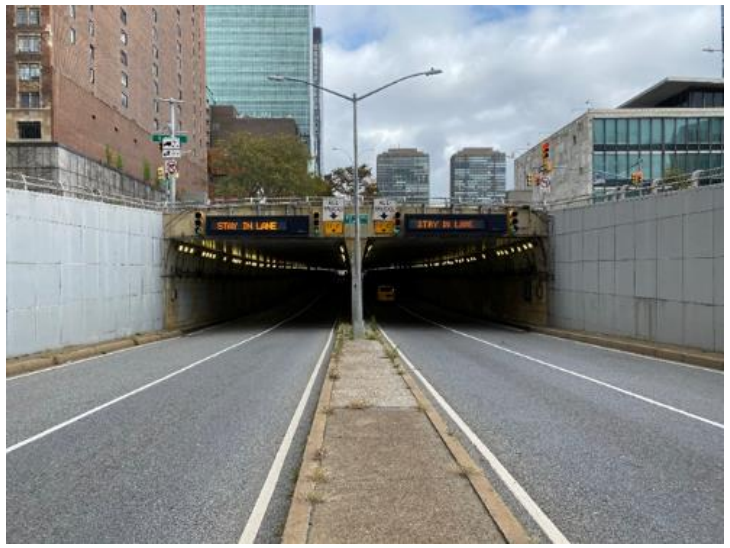
H&H also responded to an emergency request to assess flooding of the pump room. H&H found a broken water pipe as part of the fire suppression system. Investigation included evaluation of the pipe heat exchangers and low point pumps and discharge pipes. H&H provided a peer review of the PS&E contract documents for the complete fan replacement of 32 centrifugal fans to increase the fire capacity of the ventilation system to a 100-MW fire. This task included the review of the plans, contract specifications and engineer's estimate

Key Personnel: Ryan Nolan, PE; David Lynch, PE; Donald Marinelli, PE; Chris Svara, PE; Michael Tíne', PE; Jason Biddle, PE; Brianna Kovacs, PE; Ryan Nolan, PE; Justin Faucher, PE

17. Firm Experience:

Firm name	Hardesty & Hanover		Past Performance Evaluation Discipline(s)*	Bridge	
Project name	Engineering Service Agreement for Design and other related services, Citywide – Task Order No. 6: Four (4) Tunnel inspection per tunnel operations maintenance inspection and evaluation manual		Firm responsibility (prime or sub?)	Prime	
Project number		Owner's name	New York City DOT		
Project location	Manhattan, NY		Owner's Project Manager	Mitul Patel, PE	
Owner's address, phone, email	55 Water St., New York, NY 10041 / 212.839.4133 / mpatel@dot.nyc.gov				
Services commenced by this firm (mm/yy)	06/2020		Total consultant contract cost ($1,000's)	$999	
Services completed by this firm (mm/yy)	07/2022		Cost of consultant services provided by this firm ($1,000's)	$844	

1. The First Avenue Tunnel, Tunnel No. NYCDOTN3102, has two tubes with each carrying two lanes of northbound traffic from East 42nd Street to East 47th Street under the United Nations Plaza. The tunnel was constructed in 1950 and last rehabilitated in 2011. Each tube consists of the main roadway opening. The tunnel is approximately 1,377 feet in length and has a curb-to-curb width of 24'-0". The tunnel has twenty-one ventilation fans located on the east side of the tunnel.



2. The Park Avenue Tunnel, Tunnel No. NYCDOTN3101, carries one lane of northbound traffic from East 34th Street to East 39th Street. The tunnel was initially constructed in 1852 and was being rehabilitated at the time of inspection in 2020. The tunnel consists of the main roadway opening. The tunnel is approximately 1,394 feet in length, has a curb-to-curb width of 22'-6" and eight ventilation fans in the ceiling of the roadway.

3. The Battery Park Underpass, Tunnel No. NYCDOTN3103, carries two lanes of traffic in each direction from West Street to FDR Dr. The tunnel was initially constructed in 1954 and was recently rehabilitated. The tunnel consists of the main roadway opening. The tunnel is approximately 2,263 feet in length, has a minimum curb-to-curb width of 22'-0" each direction and twelve ventilation fans located within five ventilation chambers.

4. The West Street Underpass, Tunnel No. NYCDOTN3104, carries two lanes of southbound traffic from West Street to the Hugh L. Carey Tunnel. The underpass was initially constructed in 1946 and was recently rehabilitated. The tunnel consists of the main roadway opening. The tunnel is approximately 516 feet in length and has a minimum curb-to-curb width of 22'-0". The tunnel has two ventilation fans located in the fan chamber along the west wall of the tunnel.

Scope: H&H completed a comprehensive Routine Inspection recording the observations of conditions of the structural, civil, mechanical, electrical and lighting, fire and life safety, security, signs and protective systems following the guidelines of the Tunnel Operations Maintenance Inspection and Evaluation (TOMIE) Manual. All findings were recorded in accordance with the specifications for National Tunnel Inventory (SNTI). The work also included developing Work Zone Traffic Control plans to facilitate inspection of the tunnels.

In addition to the inspection effort, NYCDOT asked H&H to perform load ratings for the First Avenue Tunnel, the Park Avenue Tunnel, the Battery Park Underpass, and the West Street Underpass. The load ratings were performed in accordance with the guidelines established in FHWA Publication No. FHWA-HIF-19-010, Reference Guide for Load Rating of Tunnel Structures.

Key Personnel: Donald Marinelli, PE; Ryan Nolan, PE; David Lynch, PE; Jonathan Hewko, PE; Brianna Kovacs, PE; Mahesh Dhungel, PE; Teodor Kostadinov, PE; Mark Soryal, PE; Ray Mankbadi, PE

17. Firm Experience:

Firm name	Hardesty & Hanover		Past Performance Evaluation Discipline(s)*	Bridge	
Project name	Electrical & Mechanical Inspection of Klyde Warren Tunnel		Firm responsibility (prime or sub?)	Sub	
Project number	S200024TX.04; 88-1IDP5003	Owner's name	Texas Department of Transportation		
Project location	Dallas, TX		Owner's Project Manager	Justin Wilson, PE	
Owner's address, phone, email	6230 East Stassney Ln. Austin, TX 78744 / 512.463.8588 / justin.wilson2@txdot.gov				
Services commenced by this firm (mm/yy)	06/22	Total consultant contract cost ($1,000's)	N/A		
Services completed by this firm (mm/yy)	07/23	Cost of consultant services provided by this firm ($1,000's)	$181		

H&H performed a routine mechanical and electrical tunnel inspection of the Klyde Warren Tunnel compliant with TOMIE, NTIS and with the Tunnel Inspection Procedures.

The Klyde Warren Tunnel is a 10-lande structure that carries Woodall Rogers Freeway beneath the Klyde Warren Park in Dallas, TX. The total length of the tunnel is 1,225' oriented and stationed from Southwest to Northeast. The tunnel is comprised of 5 adjacent bridges. The St. Paul Street, Olive Street, and Pearl Street bridges were constructed in 1978, and the two infill bridges were constructed in 2012. Each of these connected adjacent structures together satisfy the definition of a tunnel structure.

There are a total of 26 ceiling mounted axial jet fans in the tunnel, with thirteen fans located in each bore. Each fan has a single motor powering the fixed-vane fan and is capable of operating in forward and reverse directions. Each fan motor has a control and power motor junction box. The fans can be controlled automatically from the tunnel management system, manually from the motor control centers located in Vaults B and C, or remotely via a laptop. Each bore, there are carbon monoxide (CO) sensors mounted to the ceiling. The sensors are located near the East portal, near the center of the tunnel and near the West portal.

The inspection was performed in four stages to allow for closure of only ½ of each bore (2-3 lanes) at a time.

The following systems were inspected and operationally tested: tunnel ventilation jet fans, motor control centers, stand-by generator and incoming power sources, conduit and wire system, lighting, drainage system, CCTV systems, operator HMI station, fire detection system, and fire protection system components. Light measures were conducted in accordance with ANSI/OIES RP-8-18 Recommended Practice for Design and Maintenance of Roadway and Parking Facility Lighting, and included zone measurements for threshold transition, and interior zones for the normal and emergency lighting systems.

Key Personnel: Jason Biddle, PE; Donald Marinelli, PE; Babak Naghavi, PE; Christopher Svara, PE; Michael Tine, PE;

17. Firm Experience:

Firm name	A P S Engineering and Testing, LLC		Past Performance Evaluation Discipline(s)*	Geotech	
Project name	**I-10 Widening LA 415 to Essen LN**		Firm responsibility (prime or sub?)	Sub	
Project number	H.004100	Owner's name	LADOTD		
Project location	Baton Rouge, LA		Owner's Project Manager	Kristy Smith, P.E.	
Owner's address, phone, email	1201 Capital Access Rd., Baton Rouge, LA. 70802-4438 | (225) 379-1016 | Kristy.Smith2@la.gov				
Services commenced by this firm (mm/yy)	09/19		Total consultant contract cost ($1,000's)	N/A	
Services completed by this firm (mm/yy)	05/23		Cost of consultant services provided by this firm ($1,000's)	$400K	

Scope- Geotechnical investigation to provide client with the necessary information for planning and design of I-10 widening. a p s was tasked to drill and sample a total of 52 deep borings starting at the Washington exit and ending at the LSU Lake S. along with this drilling and sampling, APS tested for strength and engineering characteristics of the soils. A total of eight (8) over the water borings and 44 land borings with approximately 1000 triaxial compression, unconsolidated drained or undrained (UU) and Atterberg limits performed.

KEY PERSONNEL:

Engineering:
Sergio Aviles, PE – Project Manager
Sai Eddanapudi, PE, PE - Project Manager
Surendra Raj Pathak, MS, PE – Staff Engineer

Laboratory Testing:
Segio Aviles, PE – QA/QC
Sai Eddanapudi, ME, PE – QA/QC

Drilling:
Van George – Driller
Melvin Vasquez – Drill Technician
Eric Bateaste - Driller

Similarities to Professional Geotechnical Services	
X	Geotechnical Explorations (GE)
X	Geotechnical Design (GD)
X	Geotechnical Construction (GC)
X	Topographic Survey (LC)
X	CMAR
X	Contract Management (CM)

17. Firm Experience:

Firm name	A P S Engineering and Testing, LLC		Past Performance Evaluation Discipline(s)*	Geotech	
Project name	Comite River Diversion Bridge at LA-67, LA-19 AND LA-19 Railroad Bridge		Firm responsibility (prime or sub?)	Sub	
Project number	H.001352 and H.002273	Owner's name	Huval & Associates, Inc.		
Project location	East Baton Rouge, LA		Owner's Project Manager	Thomas M. Gattles, III, P.E.	
Owner's address, phone, email	922 West Pont des Mouton Road Lafayette, LA 70507 | Wk: (337) 234-3798 Fax: (337) 234-2475 |tgattle@huvalassoc.com				
Services commenced by this firm (mm/yy)	05/20		Total consultant contract cost ($1,000's)	N/A	
Services completed by this firm (mm/yy)	06/22		Cost of consultant services provided by this firm ($1,000's)	$150K	

Scope – Geotechnical Engineering to provide client with the necessary information for planning and building of LA-19 RR Bridge – Slope St. Ability (Embankment), LA-19 RR Bridge – Embankment / MSE Wall Settlement / Retaining wall, LA 19 Twin Bridge S-PPC Piles, LA-67 Bridge – Drilled shafts. APS drilled and sampled all the borings for LADOTD and testing was performed in house by APS laboratory. All the necessary geotechnical design was performed by APS.

KEY PERSONNEL:

Engineering:
Sergio Aviles, PE – Project Manager
Sai Eddanapudi, PE, PE – Project Manager
Surendra Raj Pathak, MS, PE – Staff Engineer

Laboratory Testing:
Sergio Aviles, PE – QA/QC
Sai Eddanapudi, ME, PE – QA/QC

Drilling:
Van George – Driller
Eric Bateaste – Driller
Melvin Vasquez – Driller Technician
Oscar Johnson – Driller Technician
Trenton Anderson - Driller Technician

SIMILARITIES TO PROFESSIONAL GEOTECHNICAL SERVICES	
X	Geotechnical Explorations (GE)
X	Geotechnical Design (GD)
X	Geotechnical Construction (GC)
X	CMAR
X	Constructability
X	Contract Management (CM)

18. Approach and Methodology:

PROJECT UNDERSTANDING

This project is for inspection and repair/rehabilitation plan preparation for the structural/geotechnical and electrical /mechanical components of the two tunnels (Houma and Harvey) in Louisiana for five (5) years with a maximum compensation of $5,000,000. The following activities will be performed for each tunnel and LADOTD will be notified of any significant structural impact, anomalies, or deficiencies encountered. Scope of Work will include:

- Visual inspection of the structural/geotechnical components and evaluate defects found during the inspection.
- Non-destructive testing of the structural/geotechnical components and evaluate defects found during testing.
- Visual inspection of mechanical and electrical (i.e. ventilation and pumps) components.
- Any services related to inspection, maintenance, preservation, and replacement.
- All reporting will be submitted through LADOTD Tunnel Asset software, InspectX. Reporting will include element condition states, element notes, pictures and sketches of deficiencies, etc.

PROJECT TEAM AND KEY STAFF

H&H has assembled an engineering team experienced in planning, managing, and delivering tasks for tunnel inspections and design. Our project team has completed tunnel inspection throughout the country and bring this expertise to LADOTD.

H&H will provide structural, mechanical and electrical inspection and design teams to complete tunnel inspections and repair/rehabilitation designs. H&H has included APS Engineering and Testing, a DBE firm, for geotechnical services with whom we have a successful history of collaboration on many previous projects.

Babak Naghavi, PE, will be the Project Manager providing project/contract management for the contract.

Each discipline team leader has completed the NHI 130110 Tunnel Safety Inspection course, completed inspections in accordance with the Tunnel Operations, Maintenance, Inspection and Evaluation (TOMIE) Manual and rated tunnel elements in accordance with the Specifications for the National Tunnel Inventory (SNTI). Our PM will be supported by experienced Team Leaders such as Ryan Nolan, PE and David Lynch, PE (Structural), Chris Svara, PE and Mike Tiné, PE (Electrical), and Don Marinelli, PE and Jason Biddle, PE (Mechanical).

The multiple number of qualified/experienced Team Leaders and support staff in each required discipline assigned to this contract will allows us to form multiple inspection teams when multiple task orders are assigned simultaneously.

Our Team meets LADOTD's work zone requirements. Depending on the staffing requirements, H&H will ensure that additional staff will receive the required training if needed and at least one member of the field crew shall have completed the Traffic Control Supervisor, Traffic Control Technician, and/or Flagger training as required by LADOTD.

PROJECT OPERATION AND MANAGEMENT

Dr. Naghavi will manage the contract to ensure the project remains on-schedule and within budget. He will be the point of contact with the LADOTD PM regarding task assignments, proposals, schedule, and invoicing, and reporting of critical findings.

Task proposals will clearly identify the agreed-upon scope, detailed manhour estimates, and DBE participation. A proposed project schedule will be included in the task proposal. As the task progresses, any change to the project schedule will be communicated directly with the LADOTD PM.

Project financial controls will be utilized to track budgets and DBE usage. Invoices will be submitted monthly to LADOTD with progress reports detailing task and budget percent complete estimates.

QUALITY ASSURANCE/QUALITY CONTROL

A Quality Assurance/Quality Control (QA/QC) Plan will be developed in accordance with H&H's quality control and assurance program for the project to provide a mechanism by which all deliverables will be subject to a systematic and consistent review according to H&H policies including review of all sub-consultant work and deliverables. This Plan will adhere to established DOTD policies, procedures,

standards and guidelines in the preparation and review of all deliverables be submitted to the DOTD PM within 10 business days of the award notification.

OUR COMMITMENT TO SAFETY

Safety is a paramount concern for LADOTD and H&H while working at their facilities. It is our priority on all projects. H&H develops a project specific health and safety plan at the start of the contract. The health and safety plan will include safety procedures for working in tunnels. This includes working around traffic, working from heights, confined space access, and lockout/tagout requirements for mechanical and electrical equipment. Each project member will be required to review the safety plan and hold a safety meeting prior to starting the inspection each day. All safety meetings will be documented in the project records, including time and place, attendance, agenda, and resolution of issues raised at a meeting.

TUNNEL INSPECTION

H&H will develop a tunnel inspection plan for each tunnel. The inspection plan will determine inspection schedule, traffic management, access equipment, safety equipment, inspection equipment, personnel, testing equipment, and testing vendors needed to complete the inspection in accordance with the TOMIE Manual. The inspection plan will identify potential access issues to mitigate delays in completing the field activities.

The traffic management plan will be prepared and submitted to the District 02 for approval. When partial or full tunnel closures are permissible, all inspection discipline teams will utilize the closures to minimize the number of closures.

A sample schedule of a typical tunnel inspection is shown below.

Typical Tunnel Inspection Schedule

Task Description	Task	Month					
		1	2	3	4	5	6
Document Retrieval and Review	1	■					
Pre-Inspection Planning	2	■	■				
Inspection	3			■			
Draft Report	4			■	■		
QA/QC Reviews	5				■		
LADOTD Updates, Submit of Final Report	6					■	

The following elements were identified as being present within the Houma and Harvey tunnels within the National Tunnel Inventory. H&H will include any Agency Defined Elements (ADE) LADOTD requires inspection and rating. Identification of these elements will be identified early in the task and included in the tunnel inspection plan.

Structural Element Inspection

The structural elements identified at each tunnel will be assessed for damage, deterioration such as corrosion, cracks, buckles, spalls, delamination, leakage, efflorescence and staining using visual and tactile methods of inspection. The inspection team will access these elements on foot at the roadway level and using a bucket van/truck to reach the ceiling and upper walls.

- NTE 10001 Cast-in-Place Concrete Tunnel Liner
- NTE 10031 Concrete Cross Passageway
- NTE 10041 Concrete Interior Walls
- NTE 10051 Concrete Portal
- NTE 10111 Concrete Slab on Grade
- NTE 10133 and/or 10139 Joints

Civil Element Inspection

The civil elements at both tunnels will be assessed for damage and deterioration such spalls, delamination, cracks using visual and tactile methods of inspection.

- NTE 10151 Concrete Wearing Surface
- NTE 10158 Asphalt Wearing Surface
- NTE 10160 Steel Traffic Barrier
- NTE 10170 Steel Pedestrian Railing

Mechanical Systems Element Inspection

The mechanical system elements will utilize lockout/tagout procedures to safely inspect the systems. Maintenance, calibration and testing records will be reviewed as part of the inspection to determine recent activities at each system to identify common issues experienced at the tunnels.

- NTE 10200 Ventilation System:
  Inspection will include visual inspection and operational testing of the system. The ventilation system includes fans, fan controller, airways, dampers, damper controllers, air quality monitoring equipment, control panels and conduit. The motor and fan shaft speeds will be measured using a tachometer to compare to the motor nameplate. This will verify if the ventilation system is operating at the design speed during test operations. A simulated emergency test will be performed, if permitted, to ensure the ventilation system operates as intended during a fire event within various fire zones.
- NTE 10201 Fans:
  Inspection of the fans will include visual inspection and operational testing of each fan. Vibration testing will be performed at each fan motor and fan shaft bearing at full fan operating speed. Thermal images will be taken of the fan motors and bearings and accessible local terminations.

  Fan inspections includes fan motors, drive coupling or belts, shaft bearings, shafts, housings, and local fan control. Fan hardware and anchorages will be checked for tightness.

  Fan operation will be checked at all speeds and fan operation modes during the inspection. Vibration testing will only be analyzed at full fan speed.

- NTE 10300 Drainage and Pumping System:
  Inspection of the drainage and pumping systems will include visual inspection of the roadway drainage system and the pump systems present.

  The pumping systems include pumps, sump pumps, pump motors, pump controller, piping, valves, drains, and water treatment equipment.
- NTE 10301 Pumps:
  Drainage pumps will be visually inspected and operationally tested as part of the inspection. Pumps will be monitored for unusual noises, seal leakage, and system pressures. Thermal images will be taken of the local accessible controller terminations. All hardware and anchorages will be checked for tightness.
- NTE 10400 Emergency Generator:
  The emergency generator at each tunnel will be visually inspected and operationally tested during a no-load run test and load test when tunnel power is transferred to the generator.

Electrical & Lighting Systems Inspection

- NTE 10500 Electrical Distribution System, NTE 10550 Emergency Distribution System:
  Visual inspection will be performed of all switchgear, unit substations, switchboards, motor control centers, starters, drives, transformers, transfer switches, panelboards, conduits, wiring, and electrical receptacles. Thermographic (infrared) testing will be performed to assess any hot spots within the electrical distribution system. All GFCI outlets will be tested to ensure they trip correctly.

  Review of any NETA testing records will be completed to determine previous findings. If medium voltage equipment requires testing, a specialty subcontractor will be utilized to test the equipment.

  Covers to panelboards will only be removed for inspection up to the distribution level. Lighting panelboards will be inspected with the covers in place.

- NTE 10600 Tunnel Lighting Systems, NTE 10620 Emergency Lighting Systems:
  The tunnel lighting and emergency lighting system will be visually inspected and light level illuminance measurements will be taken at intervals of 150’ throughout the tunnel. In addition, tunnel step operation and threshold zones light level illuminance and luminance will be measured 10’ into each zone at the portal locations at all programmed light levels. Controllers will be visually and operationally inspected. Thermal images of the internal connections will be taken at the time of operation. Conduit and wiring related to the lighting system will be visually inspected.

Tunnel lighting systems consists of lighting fixtures, supports, bulb housings, lenses, light switches, junction boxes, wiring, conduit, cable, sensors, and controllers.

- NTE 10601 Tunnel Lighting Fixtures, NTE 10621 Emergency Lighting Fixtures:
  The tunnel lighting and emergency lighting fixtures, anchorages, hardware and supports will be hands-on inspected as part of the structural inspection of the tunnel. Access equipment used for the structural inspection will be used for the tunnel light fixtures. Operation of each light fixture will be verified from the roadway level.

Fire/Life Safety/Security System Element Inspection

- NTE 10650 Fire Detection System:
  Fire detection system will be visually inspected. The system includes tunnel fire alarm control panels, sensors/detectors, pull stations and horns/strobes. Wiring and conduits related to the fire detection system will also be visually inspected. Review of NFPA maintenance and testing records will be performed, if available.
- NTE 10700 Fire Protection System:
  The fire protection system will be visually inspected. The system includes fire valves, fire extinguishers, hose connections, piping, and valves. Wet testing of the fire protection system will not be performed during the inspection. Review of the NFPA testing records will be performed, if available.

- NTE 10750 Emergency Communications System:
  The emergency communication system will be tested to determine functionality. Coordination within LADOTD will be required to test this system.
- NTE 10800 Tunnel Operations and Security System:
  Tunnel operations and security system will be visually and operationally tested. This will include CCTV camera functional testing, antenna systems, and door access testing.

Signs Element Inspection

- NTE 10850 Traffic Signs:
  The traffic signs will be hands-on inspected as part of the structural inspection of the tunnel. The traffic sign elements include their supports, hardware, and anchorages.

INSPECTION REPORTING

Any critical findings observed during an inspection will be reported to the PM immediately from the field. H&H's PM will call the LADOTD to report the finding. The H&H inspection team will follow-up with a written summary of the finding with supporting photographs to document the finding.

Our team will employ a web-based document management system to provide a centralized repository for documents and to store and manage guidelines, reference materials, inspection notes, photographs, and project deliverables.

The National Tunnel Elements and Agency Defined Elements will be reported within LADOTDs Tunnel Asset software, InspectX. Element condition states will be rated in accordance with the SNTI. Condition notes, pictures and deficiency sketches will be included with each inspection report. Reports will be submitted as a draft for LADOTD review within 60 days of the start of the inspection. H&H will address LADOTD review comments and submit the final report.

REPAIR/REHABILITATION PLAN PREPARATION

Repair and rehabilitation design plan preparation will be completed in accordance with LADOTD design specifications following Bridge Design and Evaluation Manual, AASHTO, and NFPA 502 criteria. Tunnel repair projects are unique as they include electrical, mechanical, and structural interfaces. Our approach to tunnel scoping and repair is to identify the root cause of the deficiency and/or operational defect and holistically address the issue as it relates to all tunnel systems. H&H contract documents will also address constructability, phasing, and traffic control in the context of operations and maintenance of the tunnel. Plans will be submitted electronically in conformance with LADOTD Software Deliverable Standards for Electronic Plans.

19. Workload:

Firm(s) ALL FIRMS MUST BE REPRESENTED IN THIS TABLE	Past Performance Evaluation Discipline(s) *	Contract Number and State Project Number	Project Name	Remaining Unpaid Balance**
Hardesty & Hanover	Bridge	4400023909 H.002798.6	Oaklawn Bridge Walkway / Parking Lighting	$27,619
	Bridge	4400023511 H.009730.5 Task 1	Bridge Inspection of Complex Structures Routine Bridge Inspection Services 3 Bridges	$780,853
	Bridge	4400023511 H.009730.5 Task 2	Bridge Inspection of Complex Structures LADOTD Movable Bridge Inspection Manual	$988,039
	CE&I/OV	4400017430 H.001498.6	LA 24 and LA 316: Company Canal Bridge, Terrebonne Parish	$1,397,425
	CE&I/OV	4400024021 H.015028.6	LA 302: Bayou Barataria MB Replacement Route: LA 302	$5,133,702
APS Engineering and Testing, LLC	Geotech	4400091011 H.001271.5	Retainer Contract for Geotechnical Services- Cane River Bridge	$133,758
	Geotech	4400017262 H.012027	I-20: Union Pacific RR Overpass	$71,338
	Geotech	4400017262 H.012545	Wiggins Bayou Bridge	14,646

20. <u>Certifications/Licenses:</u>

Babak Naghavi

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

BABAK NAGHAVI

has Successfully Completed

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

LA DOTD/LTRC

Date: *January 10-12, 2023* *Hours of Instruction:* 18

Location: *Baton Rouge, LA*

Instructor

Instructor

Local Coordinator

Thomas Harman

Thomas Harman, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

Babak Naghavi

has participated in

FHWA-NHI-130087 Inspection & Maintenance of Ancillary Highway Structures

hosted by

Whitman, Requardt & Associates, LLP

Date: *February 4-5, 2015* ***Hours of Instruction:*** 12 Hours

Location: *Richmond, VA*

Instructor

Instructor

Local Coordinator

Valerie Briggs, Director
National Highway Institute

U.S. Department Of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

Babak Naghavi

has participated in

Safety Inspection of In-Service Bridges

hosted by

LA DOTD/LTRC

Date: **August 4-15, 2008** *Hours of Instruction:* 60

Location: **Baton Rouge, LA**

Instructor

Instructor

Local Coordinator

Joseph S. Taylor, Associate Administrator
Office of Professional and Corporate Development

ATSSA TRAINED

PROOF OF TRAINING

THIS CERTIFICATE HEREBY RECOGNIZES THAT

Babak Naghavi
has attended
Louisiana Traffic Control Supervisor Refresher
Training Course

8/18/2023 to 8/18/2027
Training Valid Through

New Orleans, LA
Location

Vice President of Education and Technical Services

President, CEO

ATSSA provides training and certification but neither constitutes employment by ATSSA.

ATSSA American Traffic Safety Services Association ATSSA.com

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

Babak Naghavi

has participated in

FHWA - NHI Course No. 130099A
Bridge Inspection Nondestructive Evaluation Seminar - BINS (2 Days)

hosted by

LA DOTD/LTRC

Date: October 6-7, 2015 ***Hours of Instruction:*** 13

Location: Baton Rouge, LA

Instructor

Local Coordinator

Instructor

Valerie Briggs, Director
National Highway Institute

Donald Marinelli

National Highway Institute

Certificate of Training

Donald Marinelli

has participated in

FHWA-NHI-130110 Tunnel Safety Inspection

hosted by

Maryland Transportation Authority

Date: July 28- August 01, 2014 *Hours of Instruction:* 31

Location: Baltimore, MD

Instructor — Local Coordinator

Instructor — Valerie Briggs, Director, National Highway Institute

National Highway Institute

Certificate of Training

Donald Marinelli

has Successfully Completed

FHWA-NHI-130125 Tunnel Safety Inspection Refresher

hosted by

Hardesty & Hanover

Date: May 16-18, 2023 *Hours of Instruction:* 15

Location: New York, NY

Instructor — Local Coordinator

Instructor — Stacey J. Caston, Acting Director, National Highway Institute

National Highway Institute

Certificate of Training

Marinelli Donald

has participated in

NHI Course No. FHWA-NHI-130101A

Prerequisite Assessment for Safety Inspection of In-Service Bridges - WEB-BASED

hosted by

National Highway Institute

Location: Web-Based Course *Hours of Instruction:* 1 hours

Date: 6/13/2014

Richard J. Barnaby, Director, National Highway Institute

National Highway Institute

Certificate of Training

Donald Marinelli

has participated in

FHWA-NHI-130078 Fracture Critical Inspection Techniques for Steel Bridges

hosted by

Whitman, Requardt & Associates, LLP

Date: August 14-17, 2018 *Hours of Instruction:* 25

Location: Baltimore, MD

Instructor — Local Coordinator

Instructor — Valerie Briggs, Director, National Highway Institute

National Highway Institute

Certificate of Training

Donald Marinelli

has participated in

FHWA-NHI-130055 Safety Inspection of In-Service Bridges

hosted by

AECOM Technical Services, Inc.

Date: August 20, 2010

Location: Baltimore, MD

Hours of Instruction: 80

CEU's: 60

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

National Highway Institute

Certificate of Training

Donald Marinelli

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

Whitman, Requardt & Associates, LLP

Date: October 6-8, 2020

Location: Virtual Delivery, MD

Hours of Instruction: 18

Instructor

Finn K. Hubbard

Instructor

Debra E. Rizzieri

Local Coordinator

Thomas Harman

Thomas Harman, Director
National Highway Institute

National Highway Institute

Certificate of Training

Marinelli Donald

has participated in

NHI Course No. FHWA-NHI-130124

Tunnel Safety Inspection Refresher WBT Prerequisite

hosted by

National Highway Institute

Location: *Web-Based Course*

Hours of Instruction: *4 hours*

Date: *8/27/2018*

Valerie Briggs, Director
National Highway Institute

National Highway Institute

Certificate of Training

Jason Biddle

has participated in

FHWA-NHI-130110 Tunnel Safety Inspection

hosted by

Whitman, Requardt and Associates, LLP

Date: September 19-23, 2016 *Hours of Instruction:* 32

Location: Baltimore, Maryland

Instructor — Local Coordinator

Instructor — Valerie Briggs, Director, National Highway Institute

National Highway Institute

Certificate of Training

Jason Biddle

has participated in

130125 Tunnel Inspection Refresher ILT

hosted by

Tennessee Department of Transportation

Date: December 14-16, 2020 *Hours of Instruction:* 17

Location: Online Delivery, TN

Instructor — Thomas Quinn, Local Coordinator

Instructor — Thomas Harman, Director, National Highway Institute

National Highway Institute

Certificate of Training

Jason Biddle

has participated in

NHI Course No. 130078

Fracture Critical Inspection Techniques for Steel Bridges

hosted by

RK&K

Date: June 25-28, 2018 *Hours of Instruction:* 25

Location: Baltimore, Maryland

Instructor — Local Coordinator

Instructor — Valerie Briggs, Director, National Highway Institute

National Highway Institute

Certificate of Training

Jason Biddle

has participated in

FHWA-NHI-130055 Safety Inspection of In-Service Bridges

hosted by

Marine Solutions, Inc.

Date: April 3-14, 2017 *Hours of Instruction:* 67

Location: Rosedale, MD

Instructor — Local Coordinator

Instructor — Valerie Briggs, Director, National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

Jason Biddle

has Successfully Completed

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

Suyash Consulting, LLC

Date: July 12-14, 2022 *Hours of Instruction:* 15 3/4

Location: Columbia, MD

Instructor

Instructor

Rahul S. Kesarkar
Local Coordinator

Thomas Harman
Thomas Harman, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE

Jason Biddle

has participated in

NHI Course No. FHWA-NHI-130124

Tunnel Safety Inspection Refresher WBT Prerequisite

hosted by

National Highway Institute

Location: *Web-Based Course* ***Hours of Instruction:*** *4 hours*

Date: *9/5/2020*

Michael Davies, P.E.
Director, National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NATIONAL HIGHWAY INSTITUTE

Jason Biddle

Saved to this PC

participated in

NHI Course No. FHWA-NHI-130101

Introduction to Safety Inspection of In-Service Bridges - WEB-BASED

hosted by

National Highway Institute

Location: *Web-Based Course* ***Hours of Instruction:*** *14 hours*

Date: *9/26/2016*

Valerie Briggs, Director
National Highway Institute

National Highway Institute

Certificate of Training

Ryan C. Nolan

has participated in

FHWA-NHI-130110 Tunnel Safety Inspection

hosted by

Maryland Transportation Authority

Date: July 28- August 01, 2014 *Hours of Instruction:* 31

Location: Baltimore, MD

Instructor

Local Coordinator

Instructor

Valerie Briggs, Director
National Highway Institute

National Highway Institute

Certificate of Training

Ryan C. Nolan

has Successfully Completed

FHWA-NHI-130125 Tunnel Safety Inspection Refresher

hosted by

Hardesty & Hanover

Date: May 16-18, 2023 *Hours of Instruction:* 15

Location: New York, NY

Instructor

Local Coordinator

Instructor

Stacey J. Caston, Acting Director
National Highway Institute

National Highway Institute

Certificate of Training

Ryan C. Nolan

has participated in

NHI Course No. 130078

Fracture Critical Inspection Techniques for Steel Bridges

hosted by

RK&K

Date: June 25-28, 2018 *Hours of Instruction:* 25

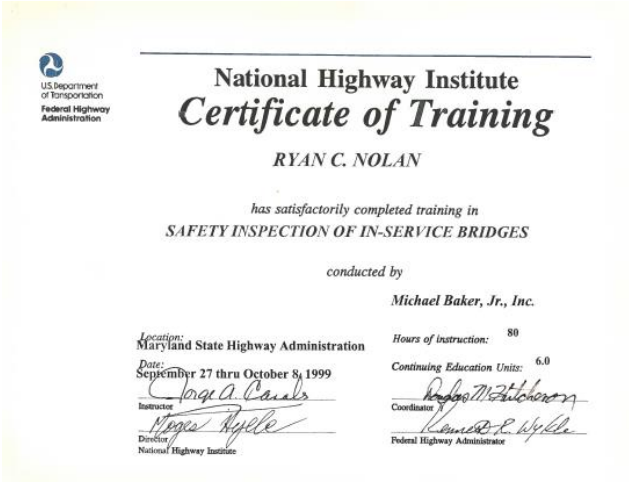
Location: Baltimore, Maryland

Instructor

Local Coordinator

Instructor

Valerie Briggs, Director
National Highway Institute



National Highway Institute

Certificate of Training

RYAN C. NOLAN

has satisfactorily completed training in

SAFETY INSPECTION OF IN-SERVICE BRIDGES

conducted by

Michael Baker, Jr., Inc.

Location: Maryland State Highway Administration *Hours of instruction:* 80

Date: September 27 thru October 8, 1999 *Continuing Education Units:* 6.0

Instructor

Coordinator

Director
National Highway Institute

Federal Highway Administrator

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

nhi national highway institute

Certificate of Training

Ryan C. Nolan

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

Stantec

Date: August 08-10, 2023
Location: Laurel, MD

Hours of Instruction: 18

Instructor

Instructor

Local Coordinator

Stacey J. Caston

Stacey J. Caston, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

NHI NATIONAL HIGHWAY INSTITUTE

Ryan Nolan

has participated in

NHI Course No. FHWA-NHI-130124

Tunnel Safety Inspection Refresher WBT Prerequisite

hosted by

National Highway Institute

Location: *Web-Based Course* ***Hours of Instruction:*** *4 hours*

Date: *9/5/2018*

Valerie Briggs

Valerie Briggs, Director
National Highway Institute

U.S. Department Of Transportation
Federal Highway Administration

National Highway Institute

NHI NATIONAL HIGHWAY INSTITUTE

Certificate of Training

Ryan Nolan

has participated in

FHWA-NHI-130087 Inspection & Maintenance of Ancillary Highway Structures

American Council of Engineering Companies of Metropolitan Washington ACEC/MW

Date: April 19-20, 2011
Location: Fairfax, Virginia

Hours of Instruction: 12

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

National Highway Institute

Certificate of Training

Michael J. Tine

has participated in

FHWA-NHI-130110 Tunnel Safety Inspection

hosted by

Maryland Transportation Authority

Date: *July 28- August 01, 2014* *Hours of Instruction:* 31

Location: *Baltimore, MD*

Instructor

Local Coordinator

Instructor

Valerie Briggs, Director
National Highway Institute

National Highway Institute

Certificate of Training

Michael J. Tine

has Successfully Completed

FHWA-NHI-130125 Tunnel Safety Inspection Refresher

hosted by

Hardesty & Hanover

Date: *May 16-18, 2023* *Hours of Instruction:* 15

Location: *New York, NY*

Instructor

Local Coordinator

Instructor

Stacey J. Caston, Acting Director
National Highway Institute

National Highway Institute

Certificate of Training

Michael Tine

has participated in

NHI Course No. FHWA-NHI-130101

Introduction to Safety Inspection of In-Service Bridges - WEB-BASED

hosted by

National Highway Institute

Location: *Web-Based Course* ***Hours of Instruction:*** *14 hours*

Date: *6/23/2014*

Richard J. Barnaby, Director
National Highway Institute

National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

NHI
NATIONAL HIGHWAY INSTITUTE

Certificate of Training

Christopher Svara

has participated in

FHWA-NHI-130110
Tunnel Safety Inspection

hosted by

Boston Society of Civil Engineers Section/ASCE

Date: *May 7-11, 2018*
Location: *Worcester, MA*

Hours of Instruction: 32

Instructor

Instructor

Local Coordinator

Valerie Briggs, Director
National Highway Institute

National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

nhi national highway institute

Certificate of Training

Christopher Svara

has Successfully Completed

FHWA-NHI-130125 Tunnel Safety Inspection Refresher

hosted by

Hardesty & Hanover

Date: *May 16-18, 2023*
Location: *New York, NY*

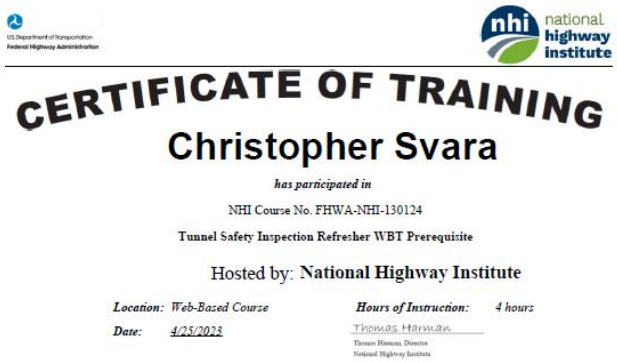
Hours of Instruction: 15

Instructor

Instructor

Local Coordinator

Stacey J. Caston, Acting Director
National Highway Institute



U.S. Department of Transportation
Federal Highway Administration

nhi national highway institute

CERTIFICATE OF TRAINING

Christopher Svara

has participated in

NHI Course No. FHWA-NHI-130124

Tunnel Safety Inspection Refresher WBT Prerequisite

Hosted by: **National Highway Institute**

Location: *Web-Based Course*
Date: *4/25/2023*

Hours of Instruction: *4 hours*

Thomas Harman

Thomas Harman, Director
National Highway Institute

National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

NHI NATIONAL HIGHWAY INSTITUTE

Certificate of Training

David S. Lynch

has participated in

FHWA-NHI-130110 Tunnel Safety Inspection

hosted by

Maryland Transportation Authority

Date: *July 28- August 01, 2014* ***Hours of Instruction:*** 31

Location: *Baltimore, MD*

Instructor

Local Coordinator

Instructor

Valerie Briggs, Director
National Highway Institute

National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

NHI NATIONAL HIGHWAY INSTITUTE

Certificate of Training

David S. Lynch

has participated in

FHWA-NHI-130125 - Tunnel Safety Inspection Refresher

hosted by

National Highway Institute

Date: **May 5-7, 2020** *Hours of Instruction:* **17**

Location: **Remote through Arlington, VA**

Instructor

Local Coordinator

Instructor

Nathaniel Coley, Jr.
Acting Director, National Highway Institute

National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

NHI NATIONAL HIGHWAY INSTITUTE

Certificate of Training

David S. Lynch

has participated in

FHWA-NHI-130078 Fracture Critical Inspection Techniques for Steel Bridges

hosted by

Whitman, Requardt and Associates, LLP

Date: *November 1-4, 2016* ***Hours of Instruction:*** 25

Location: *Baltimore, Maryland 21231*

Instructor

Local Coordinator

Instructor

Valerie Briggs, Director
National Highway Institute

National Highway Institute

U.S. Department Of Transportation
Federal Highway Administration

NHI NATIONAL HIGHWAY INSTITUTE

Certificate of Training

David S. Lynch

has participated in

FHWA-NHI-130055 Safety Inspection of In-Service Bridges

hosted by

Whitman, Requardt & Associates, LLP

Date: *June 2-13, 2014* ***Hours of Instruction:*** 67

Location: *Baltimore, Maryland*

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

David S. Lynch

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

Stantec

Date: August 08-10, 2023
Location: Laurel, MD

Hours of Instruction: 18

Instructor

Instructor

Local Coordinator

Stacey J. Caston, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

David Lynch

has participated in

NHI Course No. FHWA-NHI-130124

Tunnel Safety Inspection Refresher WBT Prerequisite

hosted by

National Highway Institute

Location: *Web-Based Course*
Date: *8/8/2019*

Hours of Instruction: *4 hours*

Michael Davies, P.E.
Director, National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

David Lynch

has participated in

NHI Course No. FHWA-NHI-130101

Introduction to Safety Inspection of In-Service Bridges - WEB-BASED

hosted by

National Highway Institute

Location: *Web-Based Course*
Date: *5/16/2014*

Hours of Instruction: *14 hours*

Richard J. Barnaby, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

FREDERICK WETEKAMM

has participated in

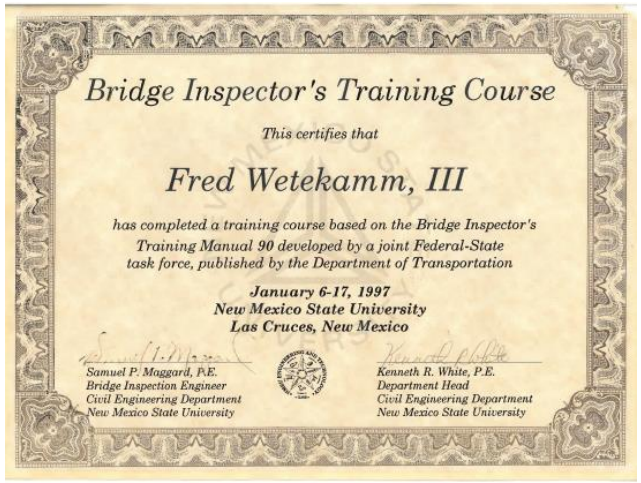
FHWA-NHI-130078 Fracture Critical Inspection Techniques for Steel Bridges

hosted by

LA DOTD/LTRC

Date: February 26 – March 1, 2019 *Hours of Instruction:* 25
Location: Baton Rouge, LA

Instructor
Instructor
Local Coordinator
Michael Davies, Director
National Highway Institute



Bridge Inspector's Training Course

This certifies that

Fred Wetekamm, III

has completed a training course based on the Bridge Inspector's Training Manual 90 developed by a joint Federal-State task force, published by the Department of Transportation

January 6-17, 1997
New Mexico State University
Las Cruces, New Mexico

Samuel P. Maggard, P.E.
Bridge Inspection Engineer
Civil Engineering Department
New Mexico State University

Kenneth R. White, P.E.
Department Head
Civil Engineering Department
New Mexico State University

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

FREDERICK WETEKAMM, P.E.

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

LA DOTD/LTRC

Date: January 7-9, 2019 *Hours of Instruction:* 18
Location: Baton Rouge, LA

Instructor
Instructor
Local Coordinator
Michael Davies, Director
National Highway Institute

ATSSA TRAINED

PROOF OF TRAINING

THIS CERTIFICATE HEREBY RECOGNIZES THAT

Frederick Wetekamm
has attended
Louisiana Traffic Control Supervisor Refresher
Training Course

9/8/2023 to 9/8/2027
Training Valid Through

Baton Rouge, LA
Location

Vice President of Education and Technical Services

President, CEO

ATSSA provides training and certification but neither constitutes employment by ATSSA

ATSSA American Traffic Safety Services Association ATSSA.com

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

Jonathan Hewko

has participated in

FHWA-NHI-130055 Safety Inspection of In-Service Bridges

hosted by

Whitman, Requardt & Associates, LLP

Date: *October 01-12, 2018*
Location: *Baltimore, MD 21231*

Hours of Instruction: 67

Instructor

Instructor

Local Coordinator

Valerie Briggs, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

Jose C. Ruiz

has participated in

FHWA-NHI-130110Tunnel Safety Inspection

hosted by

WSP USA

Date: *March 21-25, 2022*
Location: *Worcester, MA*

Hours of Instruction: 30

Instructor

Instructor

Local Coordinator

Thomas Harman

Thomas Harman, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

Jose C. Ruiz

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

Maryland Department of Transportation

Date: *June 04-06, 2019*
Location: *Baltimore, MD*

Hours of Instruction: 18

Instructor

Instructor

Local Coordinator

Michael Davis, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

nhi national highway institute

Certificate of Training

BRIANNA KOVACS

has Successfully Completed

NHI 130110

hosted by

HARDESTY & HANOVER

Date: 20-24 JUNE 2022
Location: NY NY

Hours of Instruction: 32

Instructor

Instructor

Local Coordinator

Thomas Harman

Thomas Harman, Director
National Highway Institute

U.S.Department of Transportation
Federal Highway Administration

National Highway Institute

NHI NATIONAL HIGHWAY INSTITUTE

Certificate of Training

Brianna Kovacs

has participated in

FHWA-NHI-130055 Safety Inspection of In-Service Bridges

hosted by

Whitman, Requardt & Associates, LLP

Date: October 01-12, 2018
Location: Baltimore, MD 21231

Hours of Instruction: 67

Instructor

Instructor

Local Coordinator

Valerie Briggs, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

nhi national highway institute

Certificate of Training

Brianna Kovacs

has Successfully Completed

NHI Course 130053
Bridge Inspection Refresher Training

hosted by

RK&K

Date: May 2 – 4, 2023
Location: Baltimore, Maryland

Hours of Instruction: 18

Instructor

Instructor

Local Coordinator

Stacey J. Caston

Stacey J. Caston, Acting Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

nhi national highway institute

Certificate of Training

Brianna Kovacs

has participated in

FHWA-NHI-130087 Inspection and Maintenance of Ancillary Highway Structures

hosted by

Traffic Planning and Design

Date: December 07-08, 2021
Location: Pottstown, PA

Hours of Instruction: 12

Instructor

Instructor

Local Coordinator

Thomas Harman

Thomas Harman, Director
National Highway Institute

National Highway Institute

Certificate of Training

Justin Faucher

has participated in

FHWA-NHI-130078 Fracture Critical Inspection Techniques for Steel Bridges

hosted by

ACEC/MW

Date: *June 11-14, 2013* ***Hours of Instruction:*** 21

Location: *Laurel, MD*

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

National Highway Institute

Certificate of Training

Justin Faucher

has participated in

FHWA-NHI-130055 Safety Inspection of In-Service Bridges

hosted by

AECOM Technical Services, Inc.

Date: August 20, 2010 ***Hours of Instruction:*** 80
CEU's: 60

Location: Baltimore, MD

Instructor

Instructor

Local Coordinator

Richard Barnaby, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

Justin Faucher

has participated in

FHWA-NHI-130053 – Bridge Inspection Refresher Training

hosted by

New Jersey Department of Transportation

Date: *June 28-30, 2022* *Hours of Instruction:* 18

Location: *Trenton, NJ*

Instructor

Instructor

Local Coordinator

Thomas Harman

Thomas Harman, Director
National Highway Institute

National Highway Institute

Certificate of Training

Teddy Kostadinov

has participated in

FHWA-NHI-130110-Tunnel Safety Inpsection

hosted by

ConnDOT

Date: April 9-13, 2018

Location: Newington, CT

Hours of Instruction: 32

Instructor

Instructor

Local Coordinator

Valerie Briggs, Director
National Highway Institute

National Highway Institute

Certificate of Training

Teodor Kostadinov

has Successfully Completed

FHWA-NHI-130125 Tunnel Safety Inspection Refresher

hosted by

Hardesty & Hanover

Date: May 16-18, 2023

Location: New York, NY

Hours of Instruction: 15

Instructor

Instructor

Local Coordinator

Stacey J. Caston, Acting Director
National Highway Institute

CERTIFICATE OF TRAINING

Teodor Kostadinov

has participated in

NHI Course No. FHWA-NHI-130124

Tunnel Safety Inspection Refresher WBT Prerequisite

Hosted by: National Highway Institute

Location: Web-Based Course

Date: 5/8/2023

Hours of Instruction: 4 hours

Thomas Harman, Director
National Highway Institute

National Highway Institute

Certificate of Training

Teodor Kostadinov

has participated in

NHI Course No. FHWA-NHI-130101

Introduction to Safety Inspection of In-Service Bridges - WEB-BASED

hosted by

National Highway Institute

Location: Web-Based Course

Date: 3/31/2018

Hours of Instruction: 14 hours

Valerie Briggs, Director
National Highway Institute

00 x 8.50 in

National Highway Institute

Certificate of Training

Mark Soryal

has participated in

FHWA-NHI-130110-Tunnel Safety Inpsection

hosted by

ConnDOT

Date: April 9-13, 2018
Location: Newington, CT

Hours of Instruction: 32

Instructor

Instructor

Local Coordinator

Valerie Briggs, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

Mark Soryal

has Successfully Completed

FHWA-NHI-130125 Tunnel Safety Inspection Refresher

hosted by

Hardesty & Hanover

Date: May 16-18, 2023
Location: New York, NY

Hours of Instruction: 15

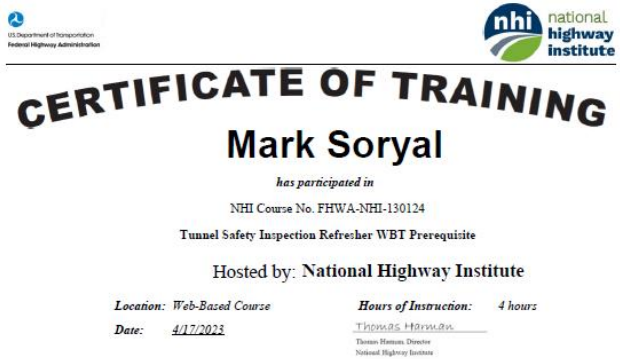
Instructor

Instructor

Local Coordinator

Stacey J. Caston

Stacey J. Caston, Acting Director
National Highway Institute



U.S. Department of Transportation
Federal Highway Administration

nhi national highway institute

CERTIFICATE OF TRAINING

Mark Soryal

has participated in

NHI Course No. FHWA-NHI-130124

Tunnel Safety Inspection Refresher WBT Prerequisite

Hosted by: National Highway Institute

Location: Web-Based Course
Date: 4/17/2023

Hours of Instruction: 4 hours

Thomas Harman

Thomas Harman, Director
National Highway Institute

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

Certificate of Training

Mark Soryal

has participated in

NHI Course No. FHWA-NHI-130101

Introduction to Safety Inspection of In-Service Bridges - WEB-BASED

hosted by

National Highway Institute

Location: Web-Based Course
Date: 3/15/2018

Hours of Instruction: 14 hours

Valerie Briggs

Valerie Briggs, Director
National Highway Institute

National Highway Institute

Certificate of Training

AMY ROBARDS

has participated in

FHWA-NHI-130078 Fracture Critical Inspection Techniques for Steel Bridges

hosted by

LA DOTD/LTRC

Date: April 5-8, 2022 Hours of Instruction: 25

Location: Baton Rouge, LA

Instructor

Instructor

Local Coordinator

Thomas Harman, Director
National Highway Institute

National Highway Institute

Certificate of Training

Amy Robards

has participated in

FHWA-NHI-130055

Safety Inspection of In Service Bridges

hosted by

Nebraska LTAP

Date: April 16-27 2018 Hours of Instruction: 67

Location: Lincoln, Nebraska

Instructor

Instructor

Local Coordinator

Valerie Briggs, Director
National Highway Institute

National Highway Institute

Certificate of Training

Amy Robards

has Successfully Completed

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

Office of State Aid Road Construction

Date: August 30-September 01, 2022 Hours of Instruction: 18

Location: Ridgeland, MS

Instructor

Instructor

Local Coordinator

Thomas Harman, Director
National Highway Institute

ATSSA TRAINED

PROOF OF TRAINING

THIS CERTIFICATE HEREBY RECOGNIZES THAT

Amy Robards
has attended
Traffic Control Supervisor Refresher-LA State Specific
Training Course

5/10/2021 to 5/10/2025
Training Valid Through

Director of Training

Baton Rouge, LA
Location

President, CEO

ATSSA provides training and certification but neither constitutes employment by ATSSA.

American Traffic Safety Services Association ATSSA.com

National Highway Institute

Certificate of Training

Frank Marzella

has participated in

FHWA-NHI-130110
Tunnel Safety Inspection

hosted by

Boston Society of Civil Engineers Section/ASCE

Date: *May 7-11, 2018*
Location: *Worcester, MA*

Hours of Instruction: 32

Instructor

Local Coordinator

Instructor

Valerie Briggs, Director
National Highway Institute

National Highway Institute

Certificate of Training

Frank Marzella

has Successfully Completed

FHWA-NHI-130125 Tunnel Safety Inspection Refresher

hosted by

Hardesty & Hanover

Date: *May 16-18, 2023*
Location: *New York, NY*

Hours of Instruction: 15

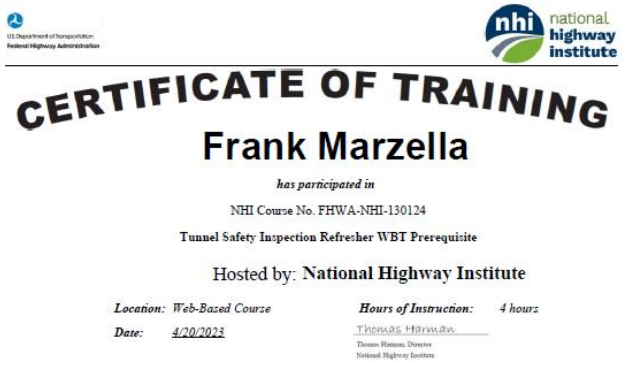
Instructor

Instructor

Local Coordinator

Stacey J. Caston

Stacey J. Caston, Acting Director
National Highway Institute



national highway institute

CERTIFICATE OF TRAINING

Frank Marzella

has participated in

NHI Course No. FHWA-NHI-130124

Tunnel Safety Inspection Refresher WBT Prerequisite

Hosted by: **National Highway Institute**

Location: *Web-Based Course*
Date: *4/20/2023*

Hours of Instruction: *4 hours*

Thomas Harman

Thomas Harman, Director
National Highway Institute

00 x 8.50 in

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

nhi national highway institute

Certificate of Training

Linh Thien Damien Kim

has Successfully Completed

FHWA-NHI-130055 Safety Inspection of In-Service Bridges

hosted by

Office of State Aid Road Construction

Date: March 21-April 01, 2022
Location: Ridgeland, MS

Hours of Instruction: 67

Instructor

Instructor

Local Coordinator

Thomas Harman

Thomas Harman, Director
National Highway Institute

ATSSA TRAINED

PROOF OF TRAINING

THIS CERTIFICATE HEREBY RECOGNIZES THAT

Linh Kim
has attended
Traffic Control Technician-LA State Specific
Training Course

8/4/2020 to 8/4/2020
Date

Vice President of Education and Technical Services

Baton Rouge, LA
Location

President, CEO

ATSSA provides training and certification but neither constitutes employment by ATSSA.

ATSSA American Traffic Safety Services Association ATSSA.com

ATSSA TRAINED

PROOF OF TRAINING

THIS CERTIFICATE HEREBY RECOGNIZES THAT

Linh Kim
has attended
Traffic Control Supervisor-LA State Specific
Training Course

2/16/2022 to 2/16/2026
Training Valid Through

Director of Training

New Orleans, LA
Location

President, CEO

ATSSA provides training and certification but neither constitutes employment by ATSSA.

ATSSA American Traffic Safety Services Association ATSSA.com

U.S. Department of Transportation
Federal Highway Administration

National Highway Institute

nhi national highway institute

Certificate of Training

Dalton Hunt

has Successfully Completed

FHWA-NHI-130055 Safety Inspection of In-Service Bridges

hosted by

Office of State Aid Road Construction

Date: *March 21-April 01, 2022*
Location: *Ridgeland, MS*

Hours of Instruction: 67

William R Hardesty PE
Instructor

James A Hanover PE
Instructor

Marie Allbritton
Local Coordinator

Thomas Harman
Thomas Harman, Director
National Highway Institute

ATSSA TRAINED

PROOF OF TRAINING

THIS CERTIFICATE HEREBY RECOGNIZES THAT

Dalton Hunt
has attended
Traffic Control Technician-LA State Specific
Training Course

2/15/2022 to 2/15/2026
Training Valid Through

New Orleans, LA
Location

Director of Training

President, CEO

ATSSA provides training and certification but neither constitutes employment by ATSSA.

ATSSA American Traffic Safety Services Association ATSSA.com

ATSSA TRAINED

PROOF OF TRAINING

THIS CERTIFICATE HEREBY RECOGNIZES THAT

Dalton Hunt
has attended
Traffic Control Supervisor-LA State Specific
Training Course

2/16/2022 to 2/16/2026
Training Valid Through

New Orleans, LA
Location

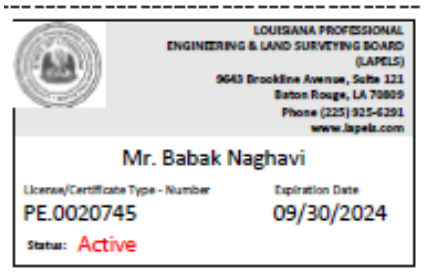
Director of Training

President, CEO

ATSSA provides training and certification but neither constitutes employment by ATSSA.

ATSSA American Traffic Safety Services Association ATSSA.com

Louisiana Professional Engineer Licenses



LOUISIANA PROFESSIONAL
ENGINEERING & LAND SURVEYING BOARD
(LAPELS)
9643 Brookline Avenue, Suite 121
Baton Rouge, LA 70809
Phone (225) 925-6291
www.lapels.com

Mr. Babak Naghavi

License/Certificate Type - Number: PE.0020745
Expiration Date: 09/30/2024
Status: Active

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(LAPELS)
9643 Brookline Avenue, Suite 121
Baton Rouge, LA 70809
Phone (225) 925-6291
www.lapels.com

Mr. Donald Joseph Marinelli

License/Certificate Type - Number: PE.0043538
Expiration Date: 09/30/2025
Status: Active

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(LAPELS)
9643 Brookline Avenue, Suite 121
Baton Rouge, LA 70809
Phone (225) 925-6291
www.lapels.com

Mr. Jason Andrew Biddle

License/Certificate Type - Number: PE.0043431
Expiration Date: 09/30/2025
Status: Active

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(LAPELS)
9643 Brookline Avenue, Suite 121
Baton Rouge, LA 70809
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www.lapels.com

Mr. Ryan Charles Nolan

License/Certificate Type - Number: PE.0044583
Expiration Date: 09/30/2024
Status: Active

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(LAPELS)
9643 Brookline Avenue, Suite 121
Baton Rouge, LA 70809
Phone (225) 925-6291
www.lapels.com

Mr. Frederick Louis Wetekamm III

License/Certificate Type - Number: PE.0025369
Expiration Date: 03/31/2024
Status: Active

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(LAPELS)
9643 Brookline Avenue, Suite 121
Baton Rouge, LA 70809
Phone (225) 925-6291
www.lapels.com

Mr. Christopher Hayden Svara

License/Certificate Type - Number: PE.0044080
Expiration Date: 03/31/2024
Status: Active

RTA

DOTD
LOUISIANA DEPARTMENT OF TRANSPORTATION & DEVELOPMENT

LOUISIANA UNIFIED CERTIFICATION PROGRAM

Disadvantaged Business Enterprise Program (DBE)

Small Business Element (SBE)

This is to certify that under Title 49, Part 26 of the Code of Federal Regulations & under the State of Louisiana United Certification Program (LAUCP)

APS Engineering and Testing, LLC

Is a Certified Disadvantaged Business Enterprise (DBE) & Small Business Element (SBE) in the following specialties:

NC221310, NC221320, NC541330, NC541370, NC541380, NC541620, NC541690

NOTE: There may be other approved NAICS Codes. The online DBE Directory includes a complete list of approved codes.

Certificate Eligibility: October 2023 to October 2024

This certificate is valid through the above date provided. This firm meets the on-going programmatic standard and fulfills the annual update requirement to remain in good standing as a DBE. This certification is subject to annual verification and suspension or revocation based upon reasonable cause to believe that the firm is ineligible.

Rhonda Wallace

Rhonda Wallace, DBE/SBE Programs Manager

Louisiana Department of Transportation & Development

PROOF OF TRAINING

THIS CERTIFICATE HEREBY RECOGNIZES THAT

Sergio Aviles

has attended

Traffic Control Technician Virtual Training

Training Course

1/24/2023 to 1/24/2027
Training Valid Through

CEU: 0.75

Director of Training

,
Location

President, CEO

ATSSA provides training and certification but neither constitutes employment by ATSSA.

This certificate provides proof of training, not certification.

American Traffic Safety Services Association ATSSA.com

21. QA/QC Plan:

QA/QC plan will be submitted to the DOTD PM within 10 business days of the award notification.

22. Sub-consultant information:

Firm Name (Name must match as registered with Louisiana's Secretary of State)	Address	Point of Contact and email address	Phone Number
APS Engineering and Testing, LLC	1645 Nicholson Drive Baton Rouge, LA 70802	Sergio Aviles sergio@aps-testing.com	225-456-5714

23. Location:

Not required by the advertisement.

3850 N. Causeway Blvd, Suite 1625
Metairie, LA 70002
T: 504.962.9212
la@hardestyhanover.com