



# CONTRACT NOS. 4400023921, 4400023922, 4400023923, 4400024185, 4400024186, 4400024187, 4400024188, AND 4400024189

# IDIQ CONTRACTS FOR BRIDGE PRESERVATION Statewide

SUBMITTED TO: Louisiana Department of Transportation & Development

> SUBMITED BY: Hardesty & Hanover

> > May 2022



www.hardestyhanover.com

May 10, 2022

Electronic Submission to DOTDCConsultantAds80@la.gov

Mr. Michael Gorbaty Consultant Contract Services Administrator Louisiana Department of Transportation and Development 1201 Capitol Access Road, Room 405-E Baton Rouge, LA 70802

#### Re: IDIQ CONTRACT FOR BRIDGE PRESERVATION – STATEWIDE Contract No. 4400023921, 4400023922, 4400023923, 4400024175, 4400024186, 4400024187, 4400024188, and 4400024189

Dear Mr. Gorbaty:

**Hardesty & Hanover** (H&H) is excited to present our team's qualifications for your *Bridge Preservation Statewide contract.* Our well-qualified team of multi-disciplined bridge and roadway engineers and inspectors have established outstanding reputations for managing and coordinating state and district-wide IDIQ bridge assessment and remedial design contracts.

**Proven Bridge Assessment and Remedial Design Services:** H&H's proven team of qualified bridge inspectors and engineers are capable, local, experienced, professional, and available. Our team of highly experienced specialists have provided Departments of Transportation with decades of comprehensive bridge engineering services for all types of fixed and movable bridges. From initial troubleshooting, annual inspection, special assessments and design services, to peer review, emergency response and O&M manuals development, we've dedicated our careers to maintaining and building bridge facilities that are reliable, efficient and meet our client's best interests and all applicable codes.

**DOTD Experience:** Staff assigned to this project have extensive experience using LADOTD standards and specifications with some working at LADOTD for over 25 years and/or working on prior LADOTD projects. We are intimately familiar with your procedures and design standards and will operate under this bridge preservation contract with virtually no learning curve. Staff from H&H meet all the MPRs required under this contract.

**Subconsultant/DBE Participation:** The H&H Team includes multiple firms with diverse specialties. We have worked with all of these subconsultants in the past. To meet the 3% DBE participation goal of this contract, we have included three highly qualified firms: APS Engineering & Testing, LLC, Gaea Consultants, LLC, and Urban Systems, Inc. All subconsultants and the work they will perform is shown below:

Firm	Specialty	Firm	Specialty
<b>APS Engineering &amp; Testing</b>	Geotechnical Services	KTA-Tator	Protective Coatings
Bridge Diagnostics, Inc.	NDT & Bridge	Moffatt & Nichol	Inspections/UW
	Instrumentation		Inspections
Chustz Survey	Survey Services	Urban Systems	Traffic Services
Gaea Consultants	Environmental & Permitting		

H&H would sincerely appreciate an opportunity to work with LADOTD on this important IDIQ bridge preservation contract. We'd appreciate your consideration and look forward to providing top-quality bridge assessment, remedial design and construction support services. Please do not hesitate to contact us if additional information on our extensive qualifications is needed. I can be reached by phone at 504.605.7940, or by email: bnaghavi@hardestyhanover.com.

Sincerely yours, Hardesty & Hanover

Sabak Neghari

Babak Naghavi, PE, PhD, PH Project Manager and Point of Contact

# **DOTD FORM: 24-102**

#### PROPOSAL TO PROVIDE CONSULTANT SERVICES

1.	Contract title as shown in the advertisement	IDIQ CONTRACTS FOR BRIDGE PRESERVATION STATEWIDE
2.	Contract number(s) as shown in the advertisement	4400023921, 4400023922, 400023923, 4400024185, 4400024186, 4400024187, 4400024188 AND 4400024189
3.	State Project Number(s), if shown in the advertisement	N/A
4.	Prime consultant name (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)	EF.0005124
6.	Prime consultant mailing address	3850 N. Causeway Boulevard, Ste. 1850 Metairie, LA 70002
7.	Prime consultant physical address (existing or to be established, if location is used as an evaluation criteria)	3850 N. Causeway Boulevard, Ste. 1850 Metairie, LA 70002
8.	Name, title, phone number, and email address of prime consultant's contract point of contact	Babak (Bobby) Naghavi, PhD, PE, PH, Regional Manager 504.605.7940   bnaghavi@hardestyhanover.com
9.	Name, title, phone number, and email address of the official with signing authority for this proposal	Paul Skelton, PE, Principal 504.962.9212   pskelton@hardestyhanover.com
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.	Signature (shall be the same person as #9): Date: May 9, 2022
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):Firm(s)' %:Percentage per firm will be based on individual TO assignmentsAPS Engineering and Testing, LLC - 2%Gaea Consultants, LLC - 2%Urban Systems, Inc 2%DBE Goal = 3%



Evaluation Discipline(s)	% of Overall Contract	Prime: Hardesty & Hanover	APS Eng. & Testing	Bridge Diagnostics	Chustz Survey	Gaea Consultants	KTA Tator	Moffatt & Nichol	Urban Systems	Each Discipline must tot 100%
Road	1%	100%								100%
Bridge	91%	90%		4.5%			1%	4.5%		100%
Traffic	2%								100%	100%
Geotech	2%		100%							100%
Survey	2%				100%					100%
Environmental	2%					100%				100%
Identify the percentage of work for the overall contract to be performed by the prime consultant and each sub-consultant.										
Percent of Contract	100%	83%	2%	4%	2%	2%	1%	4%	2%	

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



## 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	2	12
	Supervisor – Eng	8	18
	Engineer	15	38
	Engineer – Other	8	208
	Inspector – Bridge	6	32
	Supervisor - Arch	2	2
	Supervisor - Other	2	8
	Engineer Intern	4	46
	Administrative	2	28
	Engineer	2	2
APS Engineering & Testing, LLC	Driller	8	8
	Technician	12	12
Bridge Diagnostics, Inc.	Principal	3	3
	Supervisor – Eng	6	6
	Supervisor – Other	14	14
	Engineer – Other	4	4
	Engineer Intern	7	7
	Senior Technician	13	13
	Technician	4	4
	Computer Analyst	1	1
	Accountant	2	2



Firm Name	DOTD Job Classification	Number of personnel committed to this contract	Total number of personnel available in this DOTD Job Classification (if needed)
	Clerical	3	3
	Professional	6	6
Chustz Surveying, LLC	CADD Technician	1	3
	CADD Drafter	1	3
	GIS Analyst	1	3
	Instrument Man	2	5
	Party Chief	2	5
	Principal	1	1
	Rodman	2	5
	Surveyor	2	3
Gaea Consultants, LLC	Environmental Professional	3	3
KTA-Tator, Inc.	Supervisor – Other	2	12
	Senior Technician	1	1
Moffatt & Nichol	Accountant	1	10
	CADD Technician	1	75
	Engineer	4	25
	Inspector – Bridge	12	50
	Supervisor – Eng	2	8
	Technician	5	12
Urban Systems, Inc.	Supervisor- Eng	1	2
	Engineer	1	2

Firm Name	DOTD Job Classification	Number of personnel committed to this contract	Total number of personnel available in this DOTD Job Classification (if needed)
	Engineer- Other	1	1
	Engineer Intern	1	2
	CAD Technician	1	1
	Technician	2	4
	Clerical	1	2



#### **14. Organizational Chart:**



**PRIME CONSULTANT: HARDESTY & HANOVER** 

HH Hardesty &Hanover

#### **<u>15. Minimum Personnel Requirements:</u>**

MPR No.	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 / Certification & Number	State of License	License / Certification Expiration Date
1	Paul Skelton, PE	Hardesty & Hanover	PE (27039)	LA	3/31/2023
2	Babak (Bobby) Naghavi, PE	Hardesty & Hanover	PE (20745)	LA	9/30/2022
2	Tim Noles, PE	Hardesty & Hanover	PE (31675)	LA	9/30/2022
3	John Corven, PE	Hardesty & Hanover	PE (38309)	LA	3/31/2024
3	Dennis Gowins, PE	Hardesty & Hanover	PE (24468)	LA	9/30/2023
3	Rodney Jarrett, PE	Hardesty & Hanover	PE (43868)	LA	3/31/2024
4	Erik Diaz, PE	Hardesty & Hanover	PE (37712)	LA	9/30/2023
4	Roberto Viciedo, PE	Hardesty & Hanover	PE (36533)	LA	3/31/2024
5	Jason Biddle, PE	Hardesty & Hanover	PE (43431)	LA	9/30/2023
5	Travis Kimmins, PE	Hardesty & Hanover	PE (43676)	LA	3/31/2024
5	Don Marinelli, PE	Hardesty & Hanover	PE (43538)	LA	9/30/2023
5	Steve Mikucki, PE	Hardesty & Hanover	PE (44849)	LA	3/31/2023
6	Andrew Barthle, PE	Hardesty & Hanover	PE (34062)	LA	3/31/2023
6	Marco Lara, PE	Hardesty & Hanover	PE (44115)	LA	3/31/2024
6	Chris Svara, PE	Hardesty & Hanover	PE (44080)	LA	3/31/2024
7	Steve Harlacker, PE	Hardesty & Hanover	PE (37057)	LA	9/30/2022
7	Ben Hawthorne, PE	Hardesty & Hanover	PE (44620)	LA	9/30/2022
7	James Newberry, PE	Hardesty & Hanover	PE (45742)	LA	9/30/2023



MPR No.	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 / Certification & Number	State of License	License / Certification Expiration Date
7	Jim Phillips, PE	Hardesty & Hanover	PE (25091)	LA	3/31/2023
8	Robert Hideck, PE	Hardesty & Hanover	PE (41953)	LA	3/31/2024
9	Raymond Mankbadi, PE	Hardesty & Hanover	PE (41609)	LA	9/30/2023
9	Sergio Aviles, PE	APS Engineering & Testing	PE (33571)	LA	3/31/2024



Firm Employed by Name Title		nployed by	Hardesty & Hanover	Hardesty & Hanover				
		Paul Skelton, PE			Years of relevant experience with this employer	35		
			Principal-in-Charge		Years of relevant experience with other employer(s)	0		
Degree(s) /	Years / S	pecialization		B.E. / 1985 / Mech	. Engineering / State University of NY at Stony Brook			
Active regis	tration nu	umber / state	/ expiration date	Professional Engin	eer: 27039 / LA / 3/31/2023			
Year registered 1995 Discipline			Discipline	Mechanical Engine	ering			
Contract role(s) / brief description of responsibilities		n of responsibilities	Principal-in-Charg	ge – Meets MPR 1				
Experience	dates E	xperience ar	nd qualifications relev	ant to the property	osed contract; i.e., "designed drainage", "designed gin	ders",		
(mm/yy–mm/yy) "designed intersection", etc. Ex			ersection", etc. Experi	ience dates shoul	d cover the time specified in the applicable MPR(s).			
	H.	.002798.6; Bay	ou Teche Movable Bridg	je at Oaklawn Reha	bilitation, St. Mary Parish, LA – Louisiana DOTD			
	Pr	Principal for the bridge rehabilitation involving the electrical design, calculations, and plan preparation of the bridge power distribution						
06/17 – Pres	sent ar	and relay-based control system for this movable bridge located in St. Mary Parish, LA. Built in 1941, the original historically significant						
	br	bridge was replaced with a new hydraulically-operated swing bridge. The new through girder swing-span rotates with hydraulically						
actuated slewing (push-pull) cylinders. The project is currently in the post-design phase.								
	JU	Judge Seeber (Clairborne Ave) Vertical Lift Bridge over Industrial Canal Rehabilitation, New Orleans, LA – Louisiana DOTD						
	Pr	Principal-in-Charge for bridge rehabilitation services for this Preservation Priority Bridge. Services included vertical lift bridge						
	/12 of	the counterwo	ight ropos. The electrical s	isceliarieous siruciu	in kind using secondary resistance control operated with a drum s	switch		
00/00 - 00/		s preferred by t	he owner. The vertical lift r	ones were renlaced	using an innovative design connecting the rope socket to the liftin	a		
	nii	as pretened by the owner. The ventual intropes were replaced using an innovative design connecting the rope socket in the socket allows the ropes to be shimmed using a vertically elegated bin hele that allows for rope length adjustment to						
	he he	being the new source allows the topes to be still intervaling a ventuality elongated pit hole that allows for tope length adjustment to be shared as the new source and the transmission of the still adjustment to be still and the still adjustment to be still adjustment of the still adjustment to be						
	S	R-A1A/North C	auseway Bridge over IC	WW. Fort Pierce. F	L - Florida DOT District 4			
	Pr	rincipal-in-Cha	arge for the 4000-foot-long	bridge replacement	project which replaces a bascule span with a high-level fixed brid	ge that		
01/1/ 10/	ha ha	as 85-foot vertio	cal clearance over the navi	igable channel. The	preferred replacement fixed bridge alternative includes the FIB	5		
01/10-10/2	21 SU	superstructure and spans over Old Dixie Hwy and the FEC Railway. In addition to the new bridge, the project includes extending Juanita						
	A۱	Ave east from US-1 to Old Dixie Hwy and provisions for a new access roadway for the businesses south and north of the new bridge						
	ale	along SR A1A.						
	SI	R 609 Bascule	Bridge Rehabilitation, O	cean Springs, MS	- Mississippi DOT			
	Pr	rincipal respon	sible for full rehabilitation (	of SR 609 bascule b	ridge, as a task-order to the IDIQ Master Bridge Contract which in	cludes		
03/18 – Pres	sent de	eveloping stand	lard and special bridge ser	vices, statewide for	MDO1. Scope of work includes inspection and rehabilitation of structures of the structure o	uctural,		
	m	echanical, and	electrical components of the	he bridge, as well as	the roadway approaches and development of maintenance and r	epair		
	pla	ans. All designs	s are in accordance with A	ASHTU, FHWA and	MDUT guidelines and specifications.			



	SR 605 Bascule Bridge Rehabilitation, Ocean Springs, MS – Mississippi DOT
	Principal for full rehabilitation of SR 605 double-leaf bascule bridge, as a task-order to the IDIQ Master Bridge Contract which includes
01/19 – Present	developing standard and special bridge services, statewide for MDOT. Scope of work includes inspection and rehabilitation of structural,
	mechanical, and electrical components of the bridge, as well as the roadway approaches and development of maintenance and repair
	plans. All designs are in accordance with AASHTO, FHWA and MDOT guidelines and specifications.
	Almonaster Avenue Railroad Bridge over the Industrial Canal Renabilitation, New Orleans, LA – Port of New Orleans
	Principal for the bridge assessment, complete renabilitative engineering design, and construction inspection services required for the
01/20 Dresset	partial replacement of the Almonaster Avenue Bridge, a movable Strauss-neel trunnion bridge. H&H's 2019 assessment of the circa-
01/20 – Present	1920, eligible for the National Register of Historic Places bridge revealed that improvements to the electrical and mechanical systems,
	superstructure, and counterweight were required to return this bridge to its full operating capability. H&H developed necessary design
	plans to replace the span drive and span lock machinery, operating strut, guide assembly, live load bearings, counterweight trunnion
	pin, and bushing. The main indiministration bearings were renabilitated and repositioned.
	Laparco Boulevaru Briuge over Harvey Ganal, westwego, LA – Jenerson Parish Drw Dringing for the pro-design inspection, the rehabilitation and widening of the evicting four lange Langles Device and to provide a facility.
	earning three lanes of traffic in each direction, and the design of a new three lane double bassule bridge crossing of Harvey Canal
01/10 Procont	respect includes rehabilitation to the existing four lane bridge with three lanes of traffic and a new pedestrian/bike lane. The scene of
01/17-1163611	project includes renabilitation to the existing rour-rate bridge with three rates of traffic and a new pedestrial/blice rate. The scope of sorvices 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 bouse. Improvements to bridge and roadway approaches for eastbound and westbound traffic as
	well as the development of a Traffic Control Plan is also included in scope
	Marine Barkway/Gil Hodges Memorial Vertical Lift Bridge Pehabilitation Brooklyn/Queens NV – MTA Bridges & Tunnels
	<b>Drincinal-in-Charge</b> for bridge rehabilitation services which included a deck replacement study and design. Deck widening was
	accomplished by relocating the sidewalk with new brackets. Our emphasis on constructability during design and extensive prefabrication
	strategies facilitated fast-track construction. Work also entailed major electrical upgrades repainting during design and extensive prefabilitation
10/15 – 06/19	abatement. The completed bridge includes a widened modular precast lightweight concrete deck on the deck truss spans, a widened
	open grating deck on the through trusses and lift span, and a lightweight sidewalk located on the new cantilever brackets extending out
	from the existing floor beams. The cellular abutments were also repaired and re-decked. Ancillary work included extensive electrical
	facility design as well as lighting and draining upgrades.
	Warsaw Road Swing Bridge St Petersborough Ontario Canada – Public Works and Government Services Canada
	Princinal-in-Charge responsible for rebabilitation of a swing bridge located on Parkhill Road, in the City of Peterborough. It was
07/14 10/14	constructed in 1956. The Warsaw Road Bridge is approximately 31 1m long, unequal arm, through plate girder swing bridge. The short
07710 - 10710	arm of the bridge is approximately 10 0m, and the long arm is approximately 21 1m. The width of the bridge is approximately 10 3m with
	a roadway of approximately 7.3m. The work involves structural electrical and mechanical rehabilitation of the bridge
	a rodaway or approximately 7.5m. The work involves structural, electrical, and mechanical reliabilitation of the billuge.



	Firm Employed by	Hardesty & Hanover					
Name		Babak Naghavi, PhD, P	PE, PH	Years of relevant experience with this employer	4		
	Title	Regional Manager		Years of relevant experience with other employer(s)	35		
Degree(s) / Years / Specialization			PhD / 1993 / Civil Engineering / Louisiana State University MS / 1982 / Civil Engineering / Louisiana State University BS / 1979 / Civil Engineering / Louisiana State University				
Active registration number / state / expiration date			Professional Engineer: 20745 / LA / 9/30/2022 NEPA Transportation Decision Making Workshop ATSSA Traffic Control Supervisor Refresher – ATSSA Flagger Safety Inspection of In-Service Bridges, NHI # 130055/53 Maintenance & Rehabilitation of Historic Bridges (LADOTD) Underwater Bridge Inspection, NHI 130091 Bridge Inspection Non-Destructive Testing, NHI # 130099 Maintenance and Rehabilitation of Historic Bridges				
Year registered 1983 Discipline		Civil and Environmental Engineering					
Contract role(s) / brief description of responsibilities		f responsibilities	Project Manager	- Meets MPR 2			
Experience da	ates Experience and	qualifications relevant	to the proposed of	contract; <i>i.e.</i> , "designed drainage", "designed girders", "de	esigned		
(mm/yy-mm/	(yy) intersection, et	c. Experience dates sho	build cover the time	specified in the applicable MPR(s).			
06/18 – Pres	ent H.002798.6; Bay Project Manager system for this mo on hold and is no	ou Teche Movable Bridg responsible for design, ca ovable bridge. The new th w currently in the design p	e at Oaklawn Renal alculations, and plan rough girder swing-s hase.	preparation, St. Mary Parish, LA – Louisiana DOTD preparation of the bridge power distribution and relay-based contr pan rotates with hydraulically-actuated slewing cylinders. The proj	ol ect was		
08/20 - prese	ent L H.001498.6; LA Project Manager include daily mon government, and preparing final es	<ul> <li>L H.001498.6; LA 24 and LA 16 Company Canal Vertical Lift Bridge, Bourge, LA – Louisiana DOTD</li> <li>Project Manager 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</li> </ul>					
01/20 - Pres	ent Roads and Bridge improvements to	nue Railroad Bridge over for the bridge assessmen e Almonaster Avenue Brid es and the Louisiana DOT the electrical and mechani	t, rehabilitative engir t, rehabilitative engir lge, a movable Strau D Bridge Design Mai ical systems, supersi	al Rehabilitation, New Orleans, LA – Port of New Orleans neering design, and construction phase services required for the p iss-heel trunnion bridge, using the Louisiana Standard Specification nuals. H&H's 2019 assessment of the circa-1920 bridge revealed tructure, and counterweight were required to return this bridge to it	artial Ins for that ts full		



	operating capability. Although the existing substructure could remain, modifications were deemed necessary to accommodate the rehabilitated superstructure.
	Lapalco Boulevard Movable Bridge over Harvey Canal, Westwego, LA – Jefferson Parish DPW
	<b>Project Manager</b> for the pre-design inspection, the rehabilitation and widening of the existing four-lane Lapalco Boulevard to provide a
	facility carrying three lanes of traffic in each direction, and the design of a new three-lane double bascule movable bridge crossing of
01/19 - Present	Harvey Canal, project includes rehabilitation to the existing four-lane bridge with three lanes of traffic and a new pedestrian/bike lane.
	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. Improvements to bridge and roadway approaches for eastbound and westbound
	traffic as well as the development of a Traffic Control Plan is also included in scope.
	Lake Pontchartrain Causeway Bascule Bridge Evaluation, Jefferson and St. Tammany Parishes, LA – Jefferson Parish DPW
04/18 – 06/18	Project Principal for the inspection and evaluation of structural, electrical, and mechanical components of the Causeway Bascule
	Bridge. Scope included preparation of a final inspection report and developing recommendations to address the identified deficiencies.
	Annual Inspection of Almonaster Railroad Bascule Bridge over the Industrial Canal, New Orleans, LA – Port of New Orleans
10/10 02/20	Project Manager for an annual inspection of the Almonaster Avenue Railroad Bascule, which involved a structural inspection of the fracture
10/19 - 03/20	critical steel, primary and secondary steel members, an electrical inspection of the electrical systems and controls, and a mechanical inspection
	of the machinery.
	SR 609 Bascule Bridge over Old Fort Bayou Rehabilitation, Ocean Springs, Mississippi   Mississippi DOT
	Project Manager responsible for full rehabilitation of SR 609 bascule bridge as a task-order to the IDIQ Master Bridge Contract which
03/18 – Present	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.
	SK 605 Movable Bascule Bridge Renabilitation, Ocean Springs, MS – Mississippi DOI
	<b>Project Manager</b> Tesponsible for the assessment, design, plan review, and quality control of SR 605 double-real bascule bridge, as a task order to the IDIO Master Bridge Contract which includes developing standard and special bridge services, statewide for MDOT
01/19 – Present	Scope of work includes inspection and rehabilitation of structural mechanical, and electrical components of the bridge, as well as the
	readway approaches and dovelopment of maintenance and repair plans. All designs are in accordance to AASHTO, EHWA and MDOT
	quidelines and specifications. The project is currently in the construction phase
	2018 NBIS Inspection of I-110 Bridge over Biloxi Back Bay, Harrison, MS – Mississippi DOT
06/18 - 12/18	<b>Project Manager</b> for routine/fracture critical inspection of I-110 Bridge over Biloxi Back Bay, Electrical mechanical and structural
00/10 12/10	inspection of the bascule and anchor spans and NBIS and element inspection in accordance with AASHTO FHWA requirements.



Firm		Employed by	Hardesty & Hanover	Hardesty & Hanover					
(20)	Name		Timothy Noles, PE		Years of relevant experience with this employer	36			
	Title		Senior Structural Enginee	r	Years of relevant experience with other employer(s)	0			
Degree(s) / Y	Years / S	pecialization		BS / 1984 / Civil E	ngineering				
Active regist	tration n	umber / state / e	xpiration date	Professional Engi	neer: 31675 / LA / 9/30/2023				
Year register	red	1989	Discipline	Civil Engineering					
Contract role	e(s) / bri	ef description of	f responsibilities	Technical Advise	or/Quality Control – Meets MPR 2				
Experience d	lates	Experience and	l qualifications relevant	to the proposed	contract; i.e., "designed drainage", "designed girders", "de	esigned			
(mm/yy-mm	n/yy)	intersection", e	tc. Experience dates sho	uld cover the time	e specified in the applicable MPR(s).				
		Judge Seeber V	ertical Lift Bridge, New O	rleans, LA - Louis	iana DOTD				
		<b>Technical Advis</b>	or/Quality Control Engine	er overseeing the	task order involving the replacement of the vertical life bridge's en	tire			
08/08 – 08/13	3/13	electrical system, counterweight ropes, counterweight guides, and span locks in addition to miscellaneous structural repairs. Design							
		work for this eligible for the National Register of Historic Places bridge was completed within three months to meet the FEMA funding							
	deadline. The electrical system was replaced in-kind using secondary resistance control operated with a drum switch in acLADOTD								
		preference.		at Oaklaum Daka	hilitation Of Many Davish I.A. Laurisians DOTD				
		H.002/98.6; Bayou Teche Movable Bridge at Oaklawn Rehabilitation, St. Mary Parish, LA - Louisiana DOTD							
		<b>Lechnical Advisor</b> responsible for engineering design and post-design services for the new Bayou Leche Bridge at Oaklawn project.							
06/08 – 08	8/18	Built In 1941 to carry LA Route 323 over Bayou Teche, the original historically significant bridge was replaced with a new hydraulically-							
		standard design	details and coordinated close	ely with the other of	tesign disciplines to assure success. All design requirements and	made			
		in accordance wi	th project schedule. Due to	permitting issues	be design use placed on hold for several years extending the sch	edule			
		Almonaster Ave	nue Railroad Bridge over	the Industrial Car	nal Rehabilitation. New Orleans. LA – Port of New Orleans				
		Technical Advis	or/Quality Control Engine	er for the bridge as	ssessment, complete rehabilitative engineering design, and constr	uction			
		inspection services required for the partial replacement of the Almonaster Avenue Bridge, a movable Strauss-heel trunnion bridge.							
01/20 02	2/20	H&H's 2019 assessment of the circa-1920, eligible for the National Register of Historical Places bridge revealed that improvements to							
01/20 - 02	2/20	the electrical and	mechanical systems, supe	rstructure, and cou	nterweight were required to return this bridge to its full operating				
		capability. Althou	gh the existing substructure	e could remain, mo	difications were deemed necessary to accommodate the rehabilita	ited			
		superstructure. H	I&H developed necessary d	esign plans to repl	ace the span drive and span lock machinery, operating strut, guide	Э			
		assembly, live loa	ad bearings, counterweight	trunnion pin, and b	ushing. The main trunnion bearings were rehabilitated and reposit	ioned.			
		Flagler Memoria	al Bridge over ICWW, Palm	n Beach, FL - Flor	ida DOT District 4				
01/12-2/1	17	<b>Technical Advis</b>	or/Lead Designer Engine	er responsible for t	his \$95 million design-build project that included the replacement of	of the			
01/12-2/	. /	entire bridge off-l	ine and parallel to the existi	ng bridge to mainta	ain traffic for this busy causeway that connects West Palm Beach	to Palm			
		Beach. The desig	gn/build request for proposa	I, resulting from a	Type 2 Categorical Exclusion Class of Action NEPA process, had	strict			



	design requirements regarding environmental mitigation, appearance, and maintainability. Completed in 2018, the twin double-leaf rolling lift bascule span bridge design included a 150-foot rolling-lift-span over the navigable channel, twelve 150-foot pre-stressed concrete approach spans, and approach roadway work. This project was recognized by ASCE West Palm beach Branch receiving the award of 2018 Project of the Year.
1/16-3/21	SR-A1A/North Causeway Bridge over ICWW, Fort Pierce, FL - Florida DOT District 4 Senior Technical Specialist for the 4000-foot-long bridge replacement project which replaces a bascule span with a high-level fixed bridge that has 85-foot vertical clearance over the navigable channel. The preferred replacement fixed bridge alternative includes the FIB superstructure and spans over Old Dixie Hwy and the FEC Railway. In addition to the new bridge, the project includes extending Juanita Ave east from US-1 to Old Dixie Hwy and provisions for a new access roadway for the businesses south and north of the new bridge along SR A1A.
04/18 – 03/19	SR 609 Movable Bascule Bridge Rehabilitation, Ocean Springs, MS – Mississippi DOT Technical Advisor/Quality Control Engineer for the 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 components of the bridge, as well as the roadway approaches and development of maintenance and repair plans. All designs are in accordance with AASHTO, FHWA and MDOT guidelines and specifications.
03/19 – 8/20	SR 605 Movable Bascule Bridge Rehabilitation, Ocean Springs, MS - Mississippi DOT Technical Advisor/Quality Control Engineer for the assessment, design, plan review, and quality control of SR 605 double-leaf bascule bridge, as a task-order to the IDIQ Master Bridge Contract which includes developing standard and special bridge services, statewide for MDOT. 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 with AASHTO, FHWA and MDOT guidelines and specs.
04/17-Present	SR 75 (US 231) Reconstruction, SR 30A (US 98) to South Pipeline Road, Panama City, FL – Florida DOT District 3 Principal-in-Charge for the new 840-foot steel bridge on SR77 crossing US 231 and the CSX railroad. H&H is providing design services for the single point urban interchange (SPUI) at SR 77 over US 231 and CSX RR improvement project. Work includes design for roadway and drainage design of the intersection, lighting design for the entire project, and bridge design for new major steel structure.
05/17– Present	US 17 Swing Bridge over the Perquimans River, Perquimans County, NC - North Carolina DOT Project Manager/Quality Control Engineer responsible for preliminary and final engineering analysis and design services to replace the existing swing bridge over the Perquimans River with a new, off-line bridge. H&H's responsibilities include the complete design of the new swing span, including structural, mechanical, electrical, and geotechnical engineering. The swing span structure consists of a center-pivot Warren through truss supporting the concrete deck. Although similar in appearance to the existing swing span, the new span will improve geometrics, increase load carrying capacity and vertical clearance, and include all the conveniences of a modern operational system.



Firm		nployed by	Hardesty & Hanover						
" The s	Name		John Corven, PE		Years of relevant experience with this employer	1			
	Title		Senior Structural Engine	er	Years of relevant experience with other employer(s)	41			
Degree(s) / Y	Years / Sp	ecialization		MS, Engineering /	1979 / University of Florida				
				BSCE / 1978 / Univ	versity of Florida				
Active regist	tration nu	mber / state / e	xpiration date	Professional Engin	eer: 38309 / LA / 3/31/2024 - 11 other states, first registered 198	3 (FL)			
Year register	red 20	013 (LA)	Discipline	Civil Engineering					
Contract role	e(s) / brief	f description of	f responsibilities	Design Develome	nt of Fixed Structues – Meets MPR 3				
Experience d	dates E	Experience and	l qualifications relevant	to the proposed co	ontract; i.e., "designed drainage", "designed girders", "desig	ned			
(mm/yy–mm	n/yy) ii	ntersection", e	tc. Experience dates she	ould cover the tim	e specified in the applicable MPR(s).				
	S	Sunshine Skyw	ay Bridge, Tampa, FL						
		Designer, Lead	Investigator, and Asset	Management Spec	ialist. Multiple assignments have been performed for this concret	e			
06/81-04/	/87 S	segmental approaches and main unit that features a 1,200-foot concrete segmental cable-stayed main span. As a member of the							
06/0401/	/07 d	design team, John worked with the stay cable designs and fatigue testing, performed the transverse analysis of the main cable stayed							
11/17-Ong	oina	girder cross section (width = $95^{-}/7$ ), and worked to develop the design of the main foundations for ship impact (force = 12,000 kips). In							
	t t	the early 2000's, John served as lead investigator for the post-tensioning tendons of the post-tensioned superstructure. The result were							
	r	remediation details to help assure long-term durability. Currently, John oversees the technical review of biennial inspections of all							
	b	oridge elements	in the ongoing asset mana	agement contract.					
	N	Natchez Trace Parkway Arches, Franklinille, TN - National Park Service and FHWA							
01/91-03/	/94 F	Project Manager, Principal Designer, Load Rating. The Natchez Trace Parkway Arches is an award winning concrete arch bridge							
02/20-05/	/20	located to the west of Franklin, Tennessee. The bridge, which includes two arch spans, are the first in the United States to be built							
	U	using precast segmental construction. The arches, with a maximum span length of 582', were built using temporary supporting cable							
	S	stays and the bridge deck was built in balanced cantilever. John managed the design of the bridge and served as the principal							
	0	lesigner. Recen	itly, John oversaw the load	I rating of the precas	st superstructure and precast arches.				
		-395 Segmenta	l Bridges, Miami, FL - Flo	orida DOT					
	C	Chief Engineer	for the design of seven ne	w precast segmenta	I bridges that are a part of the SR 836/I-95/I-395 corridor upgrade.	Ihis			
04/21-Preser	sent d	design-build proj	ect is being constructed by	the Archer Westerr	n-De Moya Joint Venture. The overall construction value of the pro	ject is			
	\$	800 million, and	I the segmental bridges ha	ive a deck area of 70	JU, UUU square feet (approximately \$200 million). John directed the	;			
	C	evelopment of t	ne bridge layouts, cross se	ections and construc	tion methodologiy. The work also inclued oversite of the final des	ign,			
	S	shop drawings, a	and construction engineering	ng.					



07/18-Present	SR 75 (US 231) Reconstruction, SR 30A (US 98) to South Pipeline Road, Panama City, FL – Florida DOT District 3 Lead Designer for the new 840-foot steel bridge on SR77 crossing US 231 and the CSX railroad. H&H is providing design services for the single point urban interchange (SPUI) at SR 77 over US 231 and CSX RR improvement project. Work includes design for roadway and drainage design of the intersection, lighting design for the entire project, and bridge design for new major steel structure.
10/02-06/04 04/12-12/13	FHWA Post-Tensioning Tendon Installation and Grouting Manual – Federal Highway Administration Principal Author. John worked for the FHWA to develop a national manual for installation and grouting of post-tensioning tendons. The manual, now an industry benchmark, provides important insights to those involved in the design, inspection, construction, or maintenance of bridges that contain post-tensioning tendons. John was the principal author for this manual that was first published in 2004. John then produce the second edition of the manual in 2013.
03/13-10/20	I-59/I-20 Central Business District Elevated Interstate, Birmingham, AL. Chief Engineer. Interstates 59 and 20, which combine in downtown Birmingham, form the most heavily traveled roadway in Alabama. John oversaw the design of 1M square feet of new elevated urban viaducts to replace the existing structures built in the 1970's. The project has separate eastbound and westbound mainline structures, each with a length of 6,500'. Each of these bridges is comprised of two precast box girders joined by a longitudinal closure joint. The combined widths vary from 80' to 90'. Span lengths vary from 110' to 165' and will be constructed by the span-by-span method.
02/10-10/12	Foothills Parkway Bridge No. 2, Foothills Parkway, TN Project Manager and Engineer of Record. This \$25 million precast segmental bridge is located on the Foothills Parkway near the Great Smoky Mountain National Park. Complex geometry around the mountainsides and environmental sensitivity constraints required balanced cantilever construction "from the top down" using a unique system of temporary bridge and segment hauler to place segments. Delivered as a design-build project, Corven Engineering was the Engineer of Record and Construction Engineer for this 790' long precast segmental bridge for the Eastern Federal Lands Highway Division of the FHWA. In addition to serving as EOR, John oversaw construction engineering service performed during construction.
08/07-09/13	Dulles Corridor Metrorail Project, Fairfax County, VA Project Manager and Principal Designer. This project provided design and construction engineering services to Dulles Transit Partners for the \$1.6 billion Phase 1 extension of the WMATA transit system to Dulles Airport. The project contains 5.2 miles of single track precast segmental box girder bridge. Construction was principally performed by the span-by-span and balanced cantilever methods.
03/89-12/91	Design And Design Review Of The Clark Bridge, Alton, IL - Illinois DOT Project Task Lead and Designer. The Clark Bridge is a cable-stayed bridge crossing the Mississippi River at Alton, Illinois. The bridge has a main span length of 756' and width of 101'. The steel alternate consisted of steel edge beams and single pylons with two planes of stays. John oversaw the development of both the steel and concrete alternative cable-stay concepts. John also prepared the final design of the concrete alternateive and provided technical support to Hanson Engineers' steel design.



Firm		mployed by	Hardesty & Hanover			
(CE)	Name		Erik Diaz, PE		Years of relevant experience with this employer	2
	Title		Sr. Structural Engineer		Years of relevant experience with other employer(s)	11
Degree(s) / Y	Years / Sp	pecialization		B.S., 2008, Civil Er	ngineering, Louisiana State University	
Active regist	tration nu	umber / state / e	xpiration date	Professional Engin Maintenance & Re	eer: 37712 / LA / 09/30/2023 habilitation of Historic Bridges (LADOTD)	
Year register	red	2013	Discipline	Civil Engineering		
Contract role	e(s) / brie	f description of	responsibilities	Design Developm	ent of Fixed Bridge Structures – Meets MPR 3	
Experience d	dates 1	Experience and	l qualifications relevant	t to the proposed	contract; i.e., "designed drainage", "designed girders", "de	esigned
(mm/yy-mm	n/yy) i	intersection", et	tc. Experience dates sh	ould cover the tim	e specified in the applicable MPR(s).	
07/16–07/	D-07/17 Two US-11 Bascule Bridges over Lake DOTD Senior Movable Bridge Structural Engi bridge over Lake Ponchartrain. Work on t			Ponchartrain Rehab	ilitation, Jefferson and St. Tammany Parishes, LA – Louisian ensive rehabilitation of one bascule and replacement of another base e inspection of old spans, the rehabilitation design development for a new south bascule span	a ascule or the
10/14 – 12	2/15	Bridge Ratings f Movable Bridge performed ratings	for 110 Bridges, Statewig Structural Engineer resp s for bridge superstructure	de – Louisiana DO ponsible for developi es and substructures	D ng spreadsheets and processes for rating bridge substructures. A using AASHTOWare and Excel. Wrote bridge rating reports.	Ilso,
12/12 – 10	)/15	Houma Navigati Movable Bridge providing bridge	on Canal Bridge Rehabi Structural Engineer resp rating to identify areas for	litation, Houma, LA ponsible for performi strengthening. Also,	– Louisiana DOTD ng bridge inspections to identify repairs for rehabilitation as well a designed and detailed various elements for bridge rehabilitation.	S
10/08 – 04	1/13	Huey P. Long Bridge Over The Mississippi River, Bridge City, LA - New Orleans Public Belt Railroad And Louisiana DOTD Movable Bridge Structural Engineer responsible for checking and approving shop drawings as well as performing various construction support calculations. The project was a major widening of the bridge including HPL trusses and approaches.				
08/15 – 02	2/19	Vermillion River Senior Structura over the Vermillio rehabilitated. Even engineers cost est	<b>Vertical Lift Bridges Re</b> al Engineer for the inspect on River. Work on this pro- aluation of various alterna stimate for repairs, and pro-	habilitation, Vermil tion, rating, and fina ject included inspec tives for strengthenin epared final report of	<b>lion Parish, LA – Louisiana DOTD</b> rehabilitation recommendations report for two steel vertical lift bri ion and load rating to identify components of the bridge to be ng the bridge and increasing vehicular vertical clearance. Produce recommendations.	idges ed



	Almonaster Avenue Railroad Bridge of the Industrial Canal Rehabilitation, New Orleans, LA – Port of New Orleans
	Movable Bridge Structural Engineer for the bridge assessment, 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
01/20 Prosont	assessment of the circa-1920, National Register of Historic Places eligible bridge revealed that improvements to the electrical and
01/20 - FTESEII	mechanical systems, superstructure, and counterweight were required to return this bridge to its full operating capability. Although the
	existing substructure could remain, modifications to other bridge elements were deemed necessary to accommodate the rehabilitated
	superstructure. H&H developed necessary design plans to replace the span drive and span lock machinery, operating strut, guide
	assembly, live load bearings, counterweight trunnion pin, and bushing. The main trunnion bearings were rehabilitated and repositioned.
	SR 609 Movable Bascule Bridge Rehabilitation, Ocean Springs, MS – Mississippi DOT
	Movable Bridge Senior Structural Engineer for full rehabilitation of SR 609 bascule bridge, as a task-order to the IDIQ Master Bridge
08/19 – 02/20	Contract which included developing standard and special bridge services, statewide for MDOT. Scope of work included inspection and
	rehabilitation of structural, mechanical, and electrical components of the bridge, as well as the roadway approaches and development of
	maintenance and repair plans. All designs are in accordance with AASHTO, FHWA and MDOT guidelines and specifications.
	Lapalco Boulevard Movable Bridge over Harvey Canal, Jefferson Parish, Louisiana – Jefferson Parish DPW
	Movable Bridge Structural Engineer for the pre-design inspection and design of a new three-lane double bascule movable bridge
08/19 - Present	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. Project includes rehabilitation to the existing four-lane bridge with three lanes of traffic and a new pedestrian/bike
	lane, improvements to bridge and roadway approaches, and development of a Traffic Control Plan.
	Seabrook Bascule Bridge Bearing Repairs, New Orleans, LA – Port of New Orleans
08/19 - 10/19	Movable Bridge Field Engineer for the construction of repairs to the concrete bent cap at the toe of the span. Work on this project
00/17 10/17	included design of bent cap strengthening due to cracking at bridge bearing, tracking contractor progress and construction compliance
	with design plans. Preparation of final acceptance report upon completion of construction.
	Replacement of Swing Bridge with New Vertical Lift, Sweeny, TX – UPRR
	Senior Movable Bridge Structural Engineer for the design and construction of a new through plate girder vertical lift bridge over the
12/15 – 08/19	San Bernard River near Sweeny Texas. The project included design of new steel through plate girder vertical lift, bridge protection cell
	(dolphin), approach spans and construction management. This project also included emergency bridge repairs due to failure of bridge
	pier from scour produced by Hurricane Harvey flooding.
	Comite River Diversion East, Baton Rouge Parish, LA – UPRR & USACE
11/18 – 08/19	Senior Structural Engineer Representative for KCS Railroad bridge portion of the project that provided flood relief for the Comite
	River inrough the construction of a diversion canal connected to the Mississippi River. The project included peer review of plans,
	calculations and constructability, using AREMA requirements, for a new railroad bridge that intersects with the diversion canal.



Firm 1	Employed by	Hardesty & Hanover						
Name		Dennis Gowins, PE		Years of relevant experience with this employer	1			
Title		Structural Engineer		Years of relevant experience with other employer(s)	42			
Active registration	number / state / e	expiration date Pr	rofessional E	Engineer: 0024468 / LA / 09/30/2023				
Year registered	1991	Discipline Ci	ivil Engineeri	ing				
Contract role(s) / b	orief description o	f responsibilities	Design De	velopment of Fixed Structures – Meets MPR 3				
Experience dates	Experience and	qualifications rele	evant to tl	he proposed contract; i.e., "designed drainage", "de	signed			
(mm/yy–mm/yy)	girders", "desigr	ned intersection", en	tc. Experi	ience dates should cover the time specified in the appl	licable			
	MPR(s).							
	SR 75 (US 231) Re	construction, SR 30A	(US 98) to \$	South Pipeline Road, Panama City, FL – Florida DOT District 3	3			
01/22 Dracant	Design Engineer fo	or the new 840-foot stee	el bridge on	SR// crossing US 231 and the CSX railroad. H&H is providing de	sign			
01/22-Present	services for the single point urban interchange (SPUI) at SR // over US 231 and CSX RR improvement project. Work includes							
	maior steel structure	eel structure						
	I-269 Over Coldwa	ter River. Marshall Co	ountv. MS - I	Mississippi DOT				
	Design Engineer re	esponsible for the seisn	nic analysis	and load rating of this 4,054-foot-long, 62 span bridge (17 units) c	arrying			
	1-269 over Coldwater River. The 98-foot-wide bridge carries 6 lanes of traffic with barriers. The 65-foot spans are comprised of 9							
08/14 – 10/15	Type III AASHTO beams on 11-foot, 6-inch spacings with an 8-inch concrete deck. The bridge is supported on precast concrete							
	pile bents with 24-inch prestressed concrete piles. A site-specific response spectrum analysis was performed with an extensive							
	3D finite element model. Nonlinear springs were applied along each pile element to emulate the response of the extremely							
	variable sand / clay	layers.						
	Replacement of the	e US-17A Over I-26, B	erkeley Cour	nty, SC - South Carolina DOT				
	Bridge Engineer for the development of the final design including load rating of the 360-foot, four-span bridge replacement.							
06/03 – 12/04	This structure, which	This structure, which was analyzed for site specific seismic loads and is located on a main arterial between the northern						
	suburbs and the City of Charleston. The 145-foot-wide superstructure is supported by bulb-tee and AASHTO girders, which in							
	turn are supported t	by traditional bents and	drilled shaft	s founded in cooper marl.				
	SR 786/PGA Boule	vard Bascule Bridge	Rehabilitati	on, Palm Beach Gardens, FL - Florida DOT				
01/98 – 08/07	Bridge Structural E	ingineer responsible for	or the design	n, detail of repairs, load rating analysis, and preparation of cost est	limates.			
	I I I IS \$ 15-MIIION MU	u-phase construction p		led in-depin inspection, condition report with load ratings and	ntalana			
	recommendations, p	reparation of structural	<u>i, mechanica</u>	ar, and electrical renabilitation plans, and bascule span replaceme	ni pians			

	for this twin double-leaf bascule span bridge. Project design utilized existing bascule pier foundations and approach span
	structure to minimize costs. The design required multi-phase construction to maintain traffic.
	Woodrow Wilson Bridge, Potomac River, MD/VA - Virginia DOT, Maryland State Highway Administration
	<b>Design Engineer</b> responsible for the design of the independent structural units (V-piers). The \$600 million project includes the
	construction of twin 6,736-foot structures carrying 12 lanes of I-95/I-495 across the Potomac River. The piers consist of precast
06/99 – 01/01	segmental units erected in an arch form that produces zero horizontal thrust forces under dead and live loads, resulting in
	significant savings and longer spans than the traditional arch system, providing greater openness underneath the bridge
	(especially for the bascule piers). The V-pier legs consisted of precast, match-cast hollow concrete box sections that will be
	post-tensioned in place and founded on a footing supported by pipe piles.
	Tampa International Airport Taxiway B Bridge, Tampa, FL - Hillsborough County Aviation Authority
	<b>Design Engineer</b> responsible for independent checks of the longitudinal analyses, principal stresses, load rating, and 3-D finite
	element analyses of the adequacy of the existing bridge. The project included the inspection / peer review of the 227-1001, 6-
09/13 – 06/14	and blocked tendence. The major spans of the bridge are 07 and 04 feet with a small outer span of 24 feet. The bridge is a
	and blocked tendors. The major spars of the bruge are 97 and 94 feet with a small outer spar of so feet. The bruge is a multicall cast in place post tensioned (21K6 tendors) concrete bridge. The bridge is designed to carry the Booing 777 and
	Booing 747 loads in addition to the new Airbus A380 load of 1 361 500 nounds. The bridge is founded on columns supported on
	four-foot drilled shafts
	SR 836 / I-95 / I-395 Interachange, Miami, FL – Florida DOT
	<b>Design Engineer</b> responsible for all substructure and miscellaneous structural designs and load rating for the segmental
	bridges during the successful design-build pursuit. For final design, responsible for review of all substructure bridge designs
08/16 – 06/21	(bridges 4,5,6w,6e,7w,7e and 11 – 12,600 lf) and final design of all abutments and miscellaneous structures. The segmental
	bridges are built in balanced cantilever and are founded on footings supported by auger cast concrete pilings. This \$800m
	project is all about transforming miami by reconnecting communities that were once divided, creating a safer environment for
	pedestrian and vehicular traffic, and solving mobility challenges that have inhibited traffic for many years.
	SR 84 Bridge over South Fork New River, Davie, FL – Florida DOT
06/07 10/01	Bridge Structural Engineer responsible for the design, detail of repairs, and preparation of cost estimates for a \$4-million
00/97 - 12/01	Hopkins inuminion single-lear bascule span brouge renabilitation. The project included in-depin sinuctural, mechanical, and approach spans; and rehabilitation plans for the structural
	mechanical and electrical systems
	SR-5 / IIS-1 Parker Bascule Bridge Rehabilitation Palm Reach FL – Florida DOT
02/08 – 12/10	Bridge Project Engineer responsible for general project coordination for the \$8 million, twin double-leaf Hopkins trunnion
	bascule span bridge rehabilitation project. Scope included in-depth inspection, condition report with load ratings, and
	rehabilitation recommendations as well as the preparation of structural, architectural, mechanical, and electrical plans for the
	hydraulic machinery retrofit, electrical system improvements, control house modifications, bridge widening, roadway, and
	embankment improvements





Firm 1		nployed by	Hardesty & Hanover			
	Name		Rodney Jarrett, PE, DB	IA	Years of relevant experience with this employer	10
	Title		Senior Structural Engine	er	Years of relevant experience with other employer(s)	16
Degree(s) / Y	Years / Sp	ecialization		B.S. / 1995 / Civil E	Engineering	
Active regist	tration nu	mber / state / e	xpiration date	Professional Engin FHWA-NHI-13005 FHWA-NHI-13007	eer: 43868 / LA / 3/31/2024 5 Safety Inspection of In-Service Bridges 3 Fracture Critical Inspection for Steel Bridges	
Year register	red	2019	Discipline	Civil Engineering		
Contract role	e(s) / brief	f description of	responsibilities	Design Developm	ent of Fixed Bridge Structures - Meets MPR 3	
Experience d	dates H	Experience and	l qualifications relevant	t to the proposed	contract; i.e., "designed drainage", "designed girders", "de	esigned
(mm/yy–mm	n/yy) i	ntersection", e	tc. Experience dates sh	ould cover the tim	e specified in the applicable MPR(s).	
05/06 – 06	5/09 F c f	John James Audubon Bridge over the Mississippi River, St, Francisville, LA – Louisiana DOTD Bridge Design Engineer involved in the \$360M design-build contract to build the largest cable-stayed bridge in North America. In addition to the main river crossing, the project included approximately 15 miles of roadway and seven conventional approach bridges Responsibilities included managing and coordinating the approach bridge designs which used precast, prestressed concrete slabs, a AASHTO Type III girders. Work was performed on-site for this design-build project. Served as the liaison between the various design consultants, owner, and contractor. Also wrote special provisions and prepared design drawings, checked shop drawings, addressed field changes, prepared as built drawings, and had project management responsibilities.				
01/18 – 12	2/20 = F P P P P P P P P P P P P P P P P P P P	<b>Replacement of Stevenson Dam Bridge/Route 34 Over Housatonic River, Monroe/Oxford, CT - Connecticut DOT</b> Project Engineer / Structural Team Lead responsible for design of the new Route 34 bridge over the Housatonic River which is to replace the existing Stevenson Dam Bridge. Role requires coordination with highway team subconsultant to develop and evaluate alignment and structure type alternatives. Project involves the replacement of the existing two-lane bridge supported on a historic hydroelectric dam with a new independent bridge structure. H&H's involvement begins with the Environmental Assessment and exten through Final Design and Construction. As part of this project, various alignment and structure type alternatives will be developed and evaluated including bridge crossings downstream of the existing dam load rating the existing structure and taking concrete cores				
06/01 – 04	1/06 ti fr	<b>Noodrow Wilso</b> Project Engineer he \$660 million I steel, and post-te or the owner. Co	n Bridge Over Potomac responsible for performing bascule bridge carrying I-4 ensioned concrete design onstruction services include	<b>River, Washington</b> g many tasks related 195 over the Potoma as well as writing sp ed checking shop dr	<b>, DC - Maryland DOT</b> I to the engineering design, advertisement, and construction servic c River in Washington, DC. Design tasks included reinforced conc ecial provisions and preparing quantities and construction cost est awings, addressing field changes, and project management.	ces for crete, timates



07/09 – 10/10	InterCounty Connector Contract B, Rockville, MD - Maryland DOT Design Engineer on the design-build team for the new \$560 million seven-mile toll facility being constructed near Washington, DC. Performed girder design calculation for a dual 590-foot-long bridge over Good Hope Creek. Prestressed concrete AASHTO BT girders were used and designed to be continuous for live load. Various other bridge design and detailing tasks included bearing design, checking pier, and foundation designs. Also performed construction services, which included shop drawing review, requests for information, field changes, and had project management responsibilities.
11/10 – 06/13	Curtis Creek Bascule Bridges, Baltimore, MD – Maryland Transportation Authority Bridge Design Lead responsible for overseeing the 2012 mechanical and electrical rehabilitation of twin double-leaf bascule bridges. Project responsibilities included coordination of the design and advertisement for the replacement of the span lock machinery and electrical control system as well as installation of counterweights on the trunnion girders. Responsibilities for this on-call project also included on-call facilities and bridge condition inspections; oversight of structural, mechanical, and electrical rehabilitation design plan; development of structural plans for machinery protection; construction support services; and QA/QC reviews.
11/10 – 06/17	<ul> <li>Movable Bridge Condition Inspection, Evaluation and Design Contract Services, Statewide, MD – Maryland State Highway Administration</li> <li>Bridge Design Manager responsible for various design and construction tasks related to the complex and movable bridges throughout Maryland. Responsible for planning and executing the structural, mechanical, and electrical inspections of movable bridges as well as bridge rehabilitation and troubleshooting services. Recent services for this task order contract have included the submarine cable replacement and scoping for the rehabilitation of the Kent Narrows bascule bridge, the replacement of the end lift cylinders at the Weems Creek swing bridge, the structural load rating of the Woodrow Wilson Bridge bascule spans and hands-on inspections of numerous movable bridges. Responsibilities also included project management and scheduling; obtaining permits; coordination with USCG; performance oversight of the multidisciplinary team; updating SI&amp;A and Pontis; and QA/QC of all reports.</li> </ul>
02/13 – 02/16	On-Call Bridge Design Consultant Services, Baltimore, MD – City of Baltimore DOT Bridge Design Engineer providing on-call bridge design services including bridge replacement or rehabilitation designs, geotechnical design services/soil borings, right of way appraisals/documentation, permitting, roadway design, pavement design, and ADA pedestrian facilities. Work also included storm drainage, street lighting, electric duct banks, traffic control, erosion and sediment control, surveys, landscaping, planning, environmental site assessments, NEPA clearance, writing specifications, developing cost estimates, preparing advertisement contract documents, shop drawing reviews, construction phase services and reviews, coordination with utility/owners/outside agencies. Included was Hanover Street Bridge rehabilitation and Phoenix Road Bridge replacement plans.
02/11 – 08/12	Pennington Avenue Bridge over Curtis Creek, Baltimore, MD – City of Baltimore DOT Bridge Design Manager / QA/QC Engineer responsible for QA reviews of project management documents during the construction phase of this rehabilitation project. Project involves inspection, rehabilitation design, and construction support for all substructure and superstructure elements of the twin, double-leaf Hopkins trunnion-type bascule bridge. Involves span lock and tail lock systems, operating machinery on machinery platforms, and electrical systems on all bascule leaves. Responsible for the rehabilitation design of the span drive machinery, trunnion bearings, live load bearings; the complete replacement of the center lock and tail lock machinery; and construction support services.



Firm Employed by		Hardesty & Hanover	Hardesty & Hanover			
( COO	Name	e	Roberto Viciedo, PE		Years of relevant experience with this employer	23
	Title		Structural Engineer		Years of relevant experience with other employer(s)	1
Degree(s) /	Years	/ Specialization		B.S. / 1995 / Civil E	Ingineering	
Active regis	stration	number / state	/ expiration date	Professional Engin	eer: 0036533 / LA / 03/31/2024	
Year registe	ered	2011	Discipline	Civil Engineering		
Contract rol	le(s) / ł	orief description	n of responsibilities	Bridge Load Ratin	ng - Meets MPR 4	
Experience	dates	Experience an	d qualifications relev	ant to the property	osed contract; i.e., "designed drainage", "designed gin	rders",
(mm/yy–mr	n/yy)	"designed inte	rsection", etc. Experi	ience dates shoul	d cover the time specified in the applicable MPR(s).	
03/18 – 06/19 SR 609 Bascule Bridge over Old Fort Ba Structural Engineer for developed structu as a task-order to the IDIQ Master Bridge The scope of work included inspection and			Bridge over Old Fort Ba neer for developed structure the IDIQ Master Bridge C k included inspection and	you Rehabilitation, ral rehabilitation des Contract which includ rehabilitation of stru	<b>Ocean Springs, MS – Mississippi DOT</b> ign and provided construction phase services for SR 609 bascule les developing standard and special bridge services statewide for ctural, mechanical, and electrical bridge components, roadway	bridge MDOT.
1/11-3/1	7	Flagler Memoria Structural Engir support services bridge to maintai 2018, included a foot pre-stressed	Il Bridge over ICWW, Pal neer responsible for the de for the \$95 million design- n traffic for this busy cause twin double-leaf rolling lift concrete approach spans	m Beach, FL - Flor esign of twin double- build project that inc eway connecting We bascule span bridge ; and approach roac	ida DOT District 4 leaf rolling lift bascule span superstructures, load rating, and cons luded replacement of the entire bridge off-line and parallel to the e st Palm Beach to Palm Beach. The replacement bridge, complete with a 150-foot rolling-lift-span over the navigable channel; twelve way work.	truction existing d in e 150-
05/16 -10/	/20	SR-A1A/North Causeway Bridge over ICWW, Fort Pierce, FL - Florida DOT District 4 Structural Engineer for the 4000-foot-long bridge replacement project which replaces a bascule span with a high-level fixed thas 85-foot vertical clearance over the navigable channel. The preferred replacement fixed bridge alternative includes the FIB superstructure and spans over Old Dixie Hwy and the FEC Railway. In addition to the new bridge, the project includes extended Ave east from US-1 to Old Dixie Hwy and provisions for a new access roadway for the businesses south and north of the new along SR A1A.				
02/19-Prese	ent /21	SR 75 (US 231) I Structural Engir services for the s roadway and dra	Reconstruction, SR 30A neer for the new 840-foot s ingle point urban interchar inage design of the interse Auliffe Bridge Over Can	(US 98) to South P steel bridge on SR77 nge at SR 77 over U ection, lighting desig	peline Road, Panama City, FL – Florida DOT District 3 crossing US 231 and the CSX railroad. H&H is providing design S 231 and CSX RR improvement project. Work includes design for n for the entire project, and bridge design for new major steel struct Merritt Island EL - Florida DOT District 5	r sture.



	Project Manager in charge of general project coordination and a task for the design, detail of repairs, load rating analysis using
	AASHTOWare, and preparation of cost estimates during the design phase. Also provided construction support services for this \$3.9
	million span lock replacement project for twin double-leaf bascule bridges. The existing underdeck span locks were removed and
	replaced with new barrier mounted span locks.
	SR 968/SW 1st Street Bridge Over Miami River, Miami, FL - Florida DOT District 6
00/14 10/01	Project Engineer / Structures Task Leader responsible for general project coordination, design, load rating, and managing
02/14 - 12/21	construction support services phase for the replacement of the nationally registered historic bridge crossing the Miami River. The new
	507-1001 bridge included a 315-1001 double-leal bascule span over a widened 125-1001 navigation channel. Two new approach spans
	SP 7/NW 5th Street Peecule Pridre Over Miemi Piver   Miemi El El OPIDA DOT DISTRICT 6
	SR //NW Sui Sueel Dascule Druge Over Midnii River   Midnii, FL - FLORIDA DOT DISTRICT 0
07/04 07/10	project Engineer responsible for design, load railing analysis and construction support services for this \$50-minion bruge replacement
07/04 - 07/10	the appearance of a deck truss Chicago style truppion bascule span to fit in with the historic and aesthetic character of Miami's Little
	Havana community
	SR 786/PGA Boulevard Bridge Over ICWW. Palm Beach Gardens. FL - Florida DOT District 4
	Structural Engineer responsible for the design, detail of repairs, load rating analysis, and preparation of cost estimates. This \$15-
	million multi-phase rehabilitation project included in-depth inspection, condition report with load ratings and recommendations,
04/98 – 08/07	preparation of structural, mechanical, and electrical rehabilitation plans, and bascule span replacement plans for this twin double-leaf
	bascule span bridge. Project design utilized existing bascule pier foundations and approach span structure to minimize costs. The
	design required multi-phase construction to maintain traffic.
	SR-5/US-1 Parker Bascule Bridge Rehabilitation, Palm Beach, FL – Florida DOT
	Bridge Project Engineer responsible for general project coordination for the \$8 million, twin double-leaf Hopkins trunnion bascule span
02/08 – 12/10	bridge rehabilitation project. Scope included in-depth inspection, condition report with load ratings, and rehabilitation recommendations
	as well as the preparation of structural, architectural, mechanical, and electrical plans for the hydraulic machinery retrofit, electrical
	system improvements, control house modifications, bridge widening, roadway, and embankment improvements
	SR 814 / Atlantic Boulevard Bridge Over ICWW, Pompano Beach, FL - Florida DOT District 4
00/07 10/00	Project Engineer responsible for general project coordination for this \$5 million construction management at risk project to rehabilitate
09/07 - 10/09	a Hopkins trunnion double-leaf bascule span bridge. The project included in-depth inspection, condition report with load ratings as well
	as hydraulic machinery retrotit; electrical system improvements, control house modifications, bascule span structural steel rehabilitation,
	Camino Real Bridge over ICWW, Boca Raton, FL – Palm Beach County
12/15 – 01/19	Bridge Structural Engineer responsible for the load rating analysis of the main girders and developing bascule span renabilitation
	plans. The renabilitation of this historic double-lear folling lift span, constructed in 1939, included designs for renabilitated machinery,
	new tender house myac units, plumbing systems, and span locks, plus the development of technical special provisions. Structural repeating floorboam brockets for wider sidewalks, stringers, and bridge railing. Aluminum
	structural components were utilized to minimize weight to counter belance.



Firm Employed by Name		Hardesty & Hanover					
		Donald Marinelli, PE		Years of relevant experience with this employer	15		
Title		Sr. Mechanical Engineer		Years of relevant experience with other employer(s)	0		
Degree(s) / Years	/ Specialization	L	M.E., Mechanical Engineering, 2010, Johns Hopkins University B.S., Mechanical Engineering, 2005, York College of Pennsylvania				
Active registration	n number / state	/ expiration date	Professional Engineer: 43538 / LA / 9/30/2023				
Year registered	2019	Discipline	Mechanical Engine	eering			
Contract role(s) /	brief description	n of responsibilities	Movable Bridge M	Antical Engineer - Meets MPR 5			
Experience dates	Experience an	nd qualifications relev	vant to the propo	osed contract; <i>i.e.</i> , "designed drainage", "designed gin	ders",		
(mm/yy–mm/yy)	"designed inte	ersection", etc. Experi	ience dates shoul	ld cover the time specified in the applicable MPR(s).			
01/20 – Present 05/18 – 06/18	Almonaster Ave Movable Bridge partial replaceme eligible bridge re Although the exis superstructure. H load bearings, co SR 609 Movable Movable Bridge the SR 609 basc standard and spe electrical composition	enue Railroad Bridge over Mechanical Engineer for ent of this Strauss-heel true vealed that improvements sting substructure could re 4&H developed design plan punterweight trunnion pin, Bascule Bridge Rehabil Mechanical Engineer re- ule bridge. Issued as a tas ecial bridge services, state nents of the bridge, as wel	er the Industrial Cat r the bridge assessin nnion bridge. H&H's to the electrical and main, modifications ns to replace the spa and bushing. Main tr litation, Ocean Spri sponsible for conduc sk-order to the IDIQ ewide for MDOT. Wo Il as the roadway app	nal Rehabilitation, New Orleans, LA – Port of New Orleans nent and complete rehabilitative engineering design required for th 2019 assessment of the circa-1920, National Register of Historic I mechanical systems, superstructure, and counterweight were req were deemed necessary to accommodate the rehabilitated an drive and span lock machinery, operating strut, guide assembly runnion bearings were rehabilitated. ings, MS – Mississippi DOT cting strain gage balance testing as part of the full rehabilitation de Master Bridge Contract, the scope of this task order included deve rk included inspection and rehabilitation of structural, mechanical, proaches and development of maintenance and repair plans.	e Places uired. , live sign of loping and		
10/19 – 01/20	Annual Inspection of Almonaster Railroad Bascule Bridge over the Industrial Canal, New Orleans, LA – Port of New Orleans Movable Bridge Mechanical Engineer for an annual a structural inspection of the fracture critical steel, primary and secondary steel members, an electrical inspection of the electrical systems and controls, and a mechanical inspection of the machinery.				<b>ans</b> steel		
08/08 – 08/10	Woodrow Wilso Movable Bridge bascule leaves, of contract. Scope if operation of eigh rooms, lock platfor measurements d	n Memorial Bridge, Was Mechanical Engineer re- developing load rating for to included providing engineer to bascule leaves and all ar orms, and pedestrian walk uring operations and repo	shington, DC - Mary sponsible for prepar bascule spans, and o ering support during ncillary devices from ways during opening rting all deficiencies.	<b>/land DOT/State Highway Administration</b> ing trunnion, span lock and tail lock maintenance manuals for the r operating bridge for one year prior to initiation of the asset manage bridge operations following the construction. Responsibilities inclu- the control house, visual inspection of the machinery rooms, elect gs, troubleshooting during malfunctions and failures, recording elect . The new bridge carries twelve lanes of Interstate I-95/495 traffic.	new ement ded the rical ctrical		



	2012 Pennington Avenue Drawbridge Rehabilitation, Baltimore, MD – City of Baltimore
09/05 – 06/13	Movable Bridge Mechanical Engineer responsible for the rehabilitation design, construction support, and 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.
	I-695 Drawbridges: Comprehensive Engineering Design Services, Statewide, MD – Maryland Transportation Authority
	Project Manager and Lead Movable Bridge Mechanical Engineer involving the structural, mechanical, and electrical rehabilitation of
	the I-695 Drawbridges over Curtis Creek as part of the Construction Management at Risk (CMAR) project. Responsibilities included
07/14 07/10	overall project management during the design and construction phases of the multi-discipline design team, development of the RFP for
0//14 – 0//19	MDTAS first CMAR contract, coordinating design work with subconsultants, coordination with construction manager throughout design,
	and mechanical system replacement and renabilitations, and live load bearing adjustments. Pospensibilities also included
	construction support services included shop drawing review on-site support, and witnessing field testing
	2008 MDOT/SHA Movable Bridge Engineering Services Statewide – Marvland DOT/State Highway Administration
	Lead Movable Bridge Mechanical Engineer for the on-call contract to perform structural mechanical and electrical condition
	inspection evaluation and design for emergency bridge repair and/or rehabilitation services of movable bridges statewide for the State
05/09 – 08/17	Highway Administration's Bridge Inspection and Remedial Engineering Division. Responsibilities included planning AASHTO routine
	inspection of movable bridges statewide, performing the inspection of the mechanical systems at each bridge, inspection report
	preparation, rehabilitation design, and on-call field assignments because of operational issues.
	South Branch Lift Bridge, Design for Ropes Rehabilitation, Chicago, IL – AMTRAK
02/05 08/06	Movable Bridge Mechanical Engineer responsible for providning mechanical engineering design services for developing plans for
02/03 - 00/00	new operating rope linkages and new sheave assembly, as well as developing rope tensioning procedure as part of the replacement
	design of the end connection and tensioning devices for the operating ropes.
	2008 and 2005 Bridge Safety Inspection Services Contracts, Statewide – Delaware DOT
	Movable Bridge Mechanical Engineer providing mechanical inspections evaluations and strain gage balance testing of the bascule
04/06 – 04/15	bridges, creating a mechanical system O&M Manual, developing a mechanical system maintenance program for each bridge, and
	emergency response for operational failures. Serviced eight movable bridges owned by DelDOT. H&H was responsible for AASHTO
	routine and in-depth inspections for eight of Delaware's movable bridges, creation of operations and maintenance manuals for all eight
	movable bridges, documentation of the mechanical and electrical as-built conditions, and emergency response of operational failures.
	Movable Bridge Mechanical Engineer for on-call services to support the State Bridge and Structures Office with special engineering
04/15 – 10/16	expertise and design support services for new movable bridge design and existing movable bridge rebabilitation on a task order on-call
	basis. Provided in-depth mechanical inspections and reports on the Chehalis River Bridge, Hood Canal Bridge and Heron Street Bridge.



Firm Employed by Name		Hardesty & Hanover			
		Stephen Mikucki, PE		Years of relevant experience with this employer	27
Titl	e	Sr. Mechanical Engineer	-	Years of relevant experience with other employer(s)	1
Degree(s) / Year	s / Specialization	1	BE / 1990 / Mecha	nical Engineering	
Active registration	on number / state	/ expiration date	Professional Engineer: 44849 / LA / 3/31/2023		
Year registered	1983	Discipline	Mechanical Engine	eering	
Contract role(s)	brief descriptio	n of responsibilities	Technical Adviso	r/Quality Control – Meets MPR 5	
Experience dates	Experience an	nd qualifications relev	vant to the propo	osed contract; i.e., "designed drainage", "designed gin	rders",
(mm/yy-mm/yy)	"designed inte	ersection", etc. Exper-	ience dates shoul	d cover the time specified in the applicable MPR(s).	
01/13 – 08/13	Movable Bridge repair designs th part of a commis resistance in the end of the bascu plans, cost estim responding to RI provided structu procedure and s limitations. Revie constructed in th	Active Bascule Bri Mechanical Systems Ex- itat included hanger plates isioning task, which include counterweight bearings. T ile leaf, and articulated cou- nate, construction support s FIs submitted by the contra- ral and mechanical suppor pecifications for the projec ewed all structural steel shi e early 1930s and is eligib	and counterweight tr ed strain gaging of e This led to the replac unterweight frame. R services, review of sl actor for a counterwe t in the replacement t. Responsible for co op drawings. The Ou le for the National R	ncy repair to a LADOTD Preservation Priority Bridge. Provided str runnion bearings for this underdeck Straus double-leaf bascule bri- quipment for a contractor, H&H discovered a significant operationa ement of the bearings, structural hanger plate located between the esponsibilities included design, calculations, development of contr hop drawings, project submittals and installation procedures, and eight trunnion replacement and bridge rehabilitation. Hardesty & Ha of the counterweight trunnion and hanger plates, developed a jack bordinating with contractor to determine field conditions and constr Jachita River Bridge, a double-leaf Strauss Bascule bridge, was egister of Historical Places under Criterion C: Design/Engineering.	uctural dge. As al e tail ract anover king ruction
01/20 – Present	Almonaster Avenue Railroad Bridge over the Industrial Canal Rehabilitation, New Orleans, LA – Port of New Orleans Movable Bridge Mechanical Systems Expert contributing to the bridge assessment, complete rehabilitative engineering design, ar construction inspection services required for the partial replacement of the Almonaster Avenue Bridge, a movable Strauss-heel trunn bridge. H&H's 2019 assessment of the circa-1920, National Register of Historic Places eligible bridge revealed that improvements to electrical and mechanical systems, superstructure, and counterweight were required to return this bridge to its full operating capabili Although the existing substructure could remain, modifications were deemed necessary to accommodate the rehabilitated superstructure. H&H developed necessary design plans to replace the span drive and span lock machinery, operating strut, guide assembly, live load bearings, counterweight trunnion pin, and bushing. The main trunnion bearings were rehabilitated and reposition			n, and runnion s to the ability. e tioned.	



	SR 605 Bascule Bridge over Industrial Waterway Rehabilitation, Harrison County, MS – Mississippi DOT
03/19 – Present	Senior Movable Bridge Mechanical Engineer leading the design of the mechanical rehabilitation and providing construction services
	during construction of these twin double-leaf rolling bascules. The full rehabilitation of SR-605 bascule bridge, issued as a task-order to
	the IDIQ Master Bridge Contract, included engineering assessment, mechanical, electrical, and structural design in addition to the
	preparation of Traffic Control Plans. All designs will be completed in accordance with AASHTO, FHWA, and MDOT guidelines and
	specifications. H&H is currently performing construction phase services for the project.
	SR 609 Bascule Bridge Rehabilitation, Ocean Springs, MS – Mississippi DOT
	Senior Movable Bridge Mechanical Engineer responsible for conducting plans review of mechanical rehabilitation plans involving a
	full mechanical rehabilitation of the operating machinery as well as the HVAC and plumbing systems for the control house. Also
11/20 – Present	provided construction support services as part of the full rehabilitation of the SR 609 bascule bridge. Issued as a task-order to the IDIQ
	Master Bridge Contract, the scope of this task order included developing standard and special bridge services, statewide for MDOT.
	Scope of work includes inspection and rehabilitation of structural, mechanical, and electrical components of the bridge, as well as the
	roadway approaches and development of maintenance and repair plans. All designs are in accordance with AASHTO, FHWA, and
	MDOT guidelines and specifications. H&H is currently performing construction phase services for the project.
	Flagler Memorial Bridge over ICWW, Palm Beach, FL - Florida DOT District 4
	Senior Movable Bridge Mechanical Engineer responsible for this \$95 million design-build project that included the replacement of the
	entire bridge off-line and parallel to the existing bridge to maintain traffic for this busy causeway that connects West Palm Beach to Palm
01/12-12/17	Beach. The design/build request for proposal, resulting from a Type 2 Categorical Exclusion Class of Action NEPA process, had strict
	design requirements regarding environmental mitigation, appearance, and maintainability. Completed in 2018, the twin double-leaf
	rolling lift bascule span bridge design included a 150-foot rolling-lift-span over the navigable channel, twelve 150-foot pre-stressed
	concrete approach spans, and approach roadway work.
	Broadway Bridge Rall Wheel and Track Rehabilitation, Multhomah County, OR – Multhomah County
	Movable Bridge Movable Bridge Lead and Mechanical Designer for the design quality review and construction and tabrication
11/15 – 09/17	support services performed by H&H. The 100+ year-old Broadway Bridge, which spans the Willamette River in downtown Portland, is a
	rare double-leaf Rall type bascule bridge. Utilizing the CMGC project delivery method, Hardesty & Hanover led the design engineering
	team for this movable bridge renabilitation project. The main project objective was to replace the severely worn wheels and tracks that
	support the entire weight of this double-leaf bascule structure when the bascule spans are opened.
	Morrison Street Bascule Bridge Rehabilitation, Portland, OR – Multhomah County
04/15 – 07/17	Project Manager for the inspection, analysis, and machinery systems modifications for this existing bascule bridge constructed circa
	1958. To improve ride-ability of the roadway deck, the County selected David Evans and Associates to replace the existing FRP deck
	with a lightweight concrete system. H&H was selected as a sub-consultant to analyze the mechanical systems, strengthen the trunnion
	assembly, modify the span drive machinery and brake systems, and rehabilitate the span toe locks. To accommodate for the significant
	addition of weight to the structure, an innovative trunnion collar strengthening connection was developed, and efficiently balancing the
	bridge by conceptualizing the addition of steel plate to the back wall of the counterweight frame.



Firm Employed by		Hardesty & Hanover			
Name		Travis Kimmins, PE		Years of relevant experience with this employer	2
Title		Senior Mechanical Engir	neer	Years of relevant experience with other employer(s)	15
Degree(s) / Years	/ Specialization	1	M.S., Mechanical E B.E., Mechanical E	Engineering, 2003, University of Tennessee, Knoxville Engineering, 2001, University of Tennessee, Knoxville	
Active registration	n number / state	/ expiration date	Professional Engin	neer: 43676 / LA / 3/31/2024	
Year registered	2019	Discipline	Mechanical Engine	eering	
Contract role(s) /	brief description	n of responsibilities	Movable Bridge M	lechanical Engineer – Meets MPR 5	
Experience dates	Experience an	nd qualifications relevant	vant to the propo	osed contract; i.e., "designed drainage", "designed gin	ders",
(mm/yy–mm/yy)	"designed inte	ersection", etc. Exper	ience dates shoul	ld cover the time specified in the applicable MPR(s).	
01/20 – Present	Almonaster Avenue Railroad Bridge over the Industrial Canal Rehabilitation, New Orleans, LA – Port of New Orleans Senior Movable Bridge Mechanical 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 National Register of Historic Places eligible 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. H&H developed necessary design plans to replace the span drive and span lock machinery, operating strut, guide assembly, live load bearings, counterweight trunnion pin, and bushing. The main trunnion bearings were rehabilitated and repositioned.				
10/19 – 01/20	Annual Inspection of Almonaster Railroad Bascule Bridge over the Industrial Canal, New Orleans, LA – Port of New Orleans Senior Movable Bridge Mechanical Engineer for an annual inspection of the Almonaster Avenue Railroad Bascule, which involved a structural inspection of the fracture critical steel, primary and secondary steel members, an electrical inspection of the electrical systems and controls, and a mechanical inspection of the machinery.				
03/19 – Present	SR 605 Bascule Bridge over Industrial Waterway Rehabilitation, Harrison County, MS – Mississippi DOT Senior Movable Bridge Mechanical Engineer leading the design of the mechanical rehabilitation and providing construction services during construction of these twin double-leaf rolling bascules. The full rehabilitation of SR-605 bascule bridge, issued as a task-order to the IDIQ Master Bridge Contract, included engineering assessment, mechanical, electrical, and structural design in addition to the preparation of Traffic Control Plans. All designs will be completed in accordance with AASHTO, FHWA, and MDOT guidelines and specifications. H&H is currently performing construction phase services for the project.				rvices der to e d



	SR 609 Bascule Bridge Rehabilitation, Ocean Springs, MS – Mississippi DOT
	Senior Movable Bridge Mechanical Engineer responsible for conducting plans review of mechanical rehabilitation plans involving a
	full mechanical rehabilitation of the operating machinery as well as the HVAC and plumbing systems for the control house. Also
11/20 – Present	provided construction support services as part of the full rehabilitation of the SR 609 bascule bridge. Issued as a task-order to the IDIQ
11/20 1103011	Master Bridge Contract, the scope of this task order included developing standard and special bridge services, statewide for MDOT.
	Scope of work includes inspection and rehabilitation of structural, mechanical, and electrical components of the bridge, as well as the
	roadway approaches and development of maintenance and repair plans. All designs are in accordance with AASHTO, FHWA, and
	MDOT guidelines and specifications. H&H is currently performing construction phase services for the project.
	Jupiter Federal Bridge Replacement, Jupiter, FL – Florida DOT District 4
	Senior Movable Bridge Mechanical Engineer responsible for mechanical systems design for this bascule bridge replacement project.
	H&H will serve as Engineer of Record for the project, which addresses the structural and functional deficiencies of the existing US-1/
09/19 – 11/20	SR-5 Jupiter Federal Bridge from CR-ATA (Ocean Boulevard) to Beach Road. Scope includes the development of vertical and norizontal
	alignment for bridge replacement alternatives and study of the resulting impacts. The design incorporates intersection improvements
	and improves trainic functions at both ends of the approximately 2,960-1001 long (0.56 mile) project confider into the bridge replacement design. The project will include ADA access removes to the eight fact eidewalks and a new cover fact buffered bike lane for additional
	sefety. Defermed the quality central reviews on the machinery, HVAC and plumbing systems
	Performed the quality control reviews on the machinery, nVAC and plumbing systems.
	Senior Movable Bridge Mechanical Engineer responsible for OC review of HV/AC and plumbing plans and specifications for
	preliminary and final design of the off-line replacement of a two-track electrified bascule railroad bridge crossing a major tidal river with
	approximately 1500 feet of approach structure and nearly one mile of at-grade approach work. Work included environmental
	permitting, project management of all design disciplines and multiple specialty subconsultants, establishing design criteria for 100-year
03/20 - 04/20	service life; topographic and bathymetric surveys; track design per AREMA guidelines and Amtrak standards; geotechnical
00120 01120	investigations and foundation design: civil design of approaches and approach retaining walls: right-of-way and easement
	determinations; utility investigations and engineering; complete structural design of fixed and movable railroad bridges per AREMA
	guidelines; movable bridge mechanical and electrical design; architectural design of control house; railroad electrification design;
	railroad communications and signals design; hydraulics and waterway design; cost and schedule estimating.
	Jamestown Scotland Ferry Hydraulic System Rehabilitation, Jamestown, VA – Virginia DOT
08/12 - 01/18	Senior Movable Bridge Mechanical Engineer responsible for the design of the hydraulic system to replace the existing hydraulic
00/12 - 04/10	system. Provided construction services responsible including shop drawing reviews, responses to RFI's, witnessing shop testing, and
	field support during key construction events.
	Terengganu Bridge, Kuala Terengganu, Malaysia – PJSI Consultants
03/11 – 06/18	Senior Movable Bridge Mechanical Engineer responsible for leading the hydraulic system design for Malaysia's first movable bridge,
	a double-leaf bascule to connect the peninsulas of Maura North and Maura South. The bridge has become Terengganu's signature
	landmark as it lures tourists to this oil-rich state. The bridge controls included programmable logic controller and relay circuits to control
	a hydraulic span drive system. Provided construction services support



Firm	Employed by	Hardesty & Hanover				
Name		Jason Biddle, PE		Years of relevant experience with this employer	11	
Title		Movable Bridge Mechan	ical Engineer	Years of relevant experience with other employer(s)	0	
Degree(s) / Years	/ Specialization		B.E., Mechanical E	ngineering, 2010		
Active registration	n number / state	/ expiration date	Professional Engineer: 0043431 / LA / 9/30/2023			
Year registered	2019	Discipline	Mechanical Engine	Mechanical Engineering		
Contract role(s) /	brief description	n of responsibilities	Movable Bridge M	Iechanical Engineer - Meets MPR 5		
Experience dates	Experience ar	nd qualifications relevant	vant to the prope	osed contract; i.e., "designed drainage", "designed gin	ders",	
(mm/yy–mm/yy)	"designed inte	ersection", etc. Exper-	ience dates shoul	d cover the time specified in the applicable MPR(s).		
05/16-03/17 05/17 – Present	Flagler Memoria Movable Bridge bridge off-line an Beach. The design design requirement rolling lift bascule concrete approact US-17 Swing Br Movable Bridge replacement proj pivot Warren thro improve geometr system. Respons for construction. and geotechnica	al Bridge over ICWW, Pal Mechanical Engineer re d parallel to the existing bi gn/build request for propose ents regarding environmer e span bridge design inclue ch spans, and approach re idge over the Perquimar Mechanical Engineer pr ect that will replace the ex- bugh truss supporting the or ics, increase load carrying sibilities for project include H&H's responsibilities incl I engineering.	Im Beach, FL - Flor sponsible for this \$9 ridge to maintain tra- sal, resulting from a ntal mitigation, appea ded a 150-foot rolling badway work. Is River Design-Bu oviding preliminary a sisting swing bridge w concrete deck. Altho g capacity and vertic reviewing final deta ude the complete de	ida DOT District 4 5 million design-build project that included the replacement of the fic for this busy causeway that connects West Palm Beach to Palr Type 2 Categorical Exclusion Class of Action NEPA process, had arance, and maintainability. Completed in 2018, the twin double-leag- g-lift-span over the navigable channel, twelve 150-foot pre-stresse ild, Perquimans County, NC – North Carolina DOT and final mechanical engineering designs for this swing bridge with a new, off-line bridge. The swing span structure consists of a c ugh similar in appearance to the existing swing span, the new spa al clearance, and include all the conveniences of a modern operati- il updates for various portions of the mechanical system prior to re- sign of the new swing span, including structural, mechanical, elec	entire n strict af d center- n will ional lease trical,	
06/18 – 09/20	City of Baltimore Bridge Design Services On-Call Contract, Baltimore, MD – City of Baltimore Movable Bridge Mechanical Engineer developed mechanical remedial plans for the Hanover Street Bridge, a double-leaf Rall rolling lift to restore operational capability. Also developed maintenance contract bid documents to cover routine maintenance for the electrical and mechanical systems at the City's two movable bridges. Responsibilities included developing and reviewing special provisions, maintenance checklist, and cost estimates. Design responsibilities included assessing components to determine the required repairs, developing contract documents (repair details, special provisions, and cost estimates) for the tail lock machinery repairs as well as shop drawing review services for the replacement span lock machinery.				olling ectrical s, airs, is shop	



04/15 – Present	Rehoboth Avenue Bascule & Savannah Road Rolling Lift Bridge Rehabilitation, Lewes, DE – Delaware DOT Movable Bridge Mechanical Engineer for the rehabilitation of the Rehoboth Avenue Bridge (single-leaf bascule) and Savannah Road Bridge (double-leaf Scherzer rolling lift bascule). Responsibilities included performing the special rehabilitation inspection of the mechanical systems, report preparation, and preparation of rehabilitation documents for mechanical systems. Also providing construction support services during construction including shop drawing review.
06/12 – 02/20	I-695 Drawbridge over Curtis Creek Rehabilitation, Baltimore, MD – Maryland Transportation Authority Movable Bridge Mechanical Engineer involved with the mechanical rehabilitation of this parallel double-leaf bascule. Responsible for assessing traffic control options with temporary bridge operations options during construction, assessing final machinery configuration options for the replacement of span lock mechanical components and report preparation. Construction support services provided during the rehabilitation included specialized on-site inspection of the machinery during construction, inspection of the machinery during routine and test operations throughout construction, and assessment of the new span drive machinery reducers after shop testing.
03/17 – Present	<b>DelDOT Movable Bridge Maintenance and Repairs Contract, Statewide – Delaware DOT</b> <b>Movable Bridge Mechanical Engineer</b> for the project involving the development of bid documents to perform the cyclical maintenance for DelDOT's eight movable bridges. Repair details were also developed for defects identified in recent inspection reports. Responsibilities for the project include developing bid documents, updating operations and maintenance manuals, developing repair details, and developing maintenance and repair cost estimates. Provided construction support services including shop drawing review.
04/11 – 03/17	<ul> <li>2008 Movable Bridge Engineering Services On-Call Contract, Statewide – Maryland State Highway Administration Movable Bridge Mechanical Engineer for on-call contract to design for emergency bridge repair and rehabilitation services of movable bridges:</li> <li>Maryland Ave Bridge (double-leaf Scherzer rolling lift bascule) – Provided on-site engineering support during replacement of the fractured main pinion.</li> <li>Chester River Bridge (double-leaf Scherzer rolling lift bascule) – Provided construction services including shop drawing review for the new motor and motor brake, and on-site engineering support during motor alignment and testing of the new motors.</li> <li>Tilghman Island Bridge (single-leaf Scherzer rolling lift bascule) – Investigated reported coupling and span operation issues.</li> <li>Pocomoke River Bridge (double-leaf trunnion bascule) – Developed repair details for replacement span drive machinery motors to be performed with the installation of new acceleration contactor system.</li> <li>Weems Creek Bridge (swing) – Provided emergency response at the request of MDOT SHA to assess the condition of a cracked slewing cylinder connection bracket.</li> </ul>
12/12 – 01/14	Front Street & Cedar Creek Bridge Emergency Repairs – Delaware DOT Movable Bridge Mechanical Engineer for the rehabilitation design for emergency repairs. Repairs at the Front Street Bridge (single- leaf bascule) included replacing the motor, brake thrusters, electrical wiring, navigation lights, bascule pier lights, disconnect switches and purging mechanical components of contaminated lubricant. Repairs at the Cedar Creek Bridge (bobtail swing) included replacing electrical wiring, navigation lights, limit switches, flexible lubrication lines, and purging mechanical components of contaminated lubricant. Responsibilities including the development of rehabilitation plans, shop drawing review, and on-site engineering support.

-	Firm En	nployed by	Hardesty & Hanover			
and a	Name	e Andrew Barthle, PE			Years of relevant experience with this employer	17
	Title		Senior Electrical Enginee	er	Years of relevant experience with other employer(s)	1
Degree(s) / Y	Years / Sp	ecialization		BS / 2003 / Electric	cal Engineering	
Active regist	tration nur	mber / state / e	xpiration date	Professional Engin	eer: 0034062 / LA / 3/31/2023	
Year register	red	2008	Discipline	Electrical Engineer	ing	
Contract role	e(s) / brief	description of	responsibilities	Movable Bridge E	lectrical Engineer – Meets MPR 6	
Experience d	dates E	Experience and	l qualifications relevant	to the proposed	contract; i.e., "designed drainage", "designed girders", "de	esigned
(mm/yy–mm	n/yy) ii	ntersection", et	tc. Experience dates sho	ould cover the tim	e specified in the applicable MPR(s).	
08/08 – Pre	esent p e lii s p	Electrical Engineer responsible for providing electrical design calculations, plan preparations and post-design services for the power distribution and relay-based control system for this movable bridge. Built in 1941, the original National Register of Hist eligible bridge was replaced with a new hydraulically-operated swing bridge. H&H provided the electrical design for the based line with LADOTD's design requirements and standard design details and coordinated closely with the other design discipline success. All design deliverables were made in accordance with the project schedule. Due to permitting issues, design activit placed on hold for several years extending the schedule. H&H is currently providing construction phase services for the project schedule.				ridge Places ridge in assure /ere
08/08 – 08	8/13 P d	<b>SP 700-99-0430;</b> Electrical Engin Priority Bridge. S econdary resista lesign services f	eer responsible for overse cope included replacing th ance motor drive with sync or the electrical and machi	Lift Bridge over inn being the replacement re replay-based cont hro-tie skew control inery rehabilitation o	er Harbor Navigational Canal, New Orleans, LA – Louisiana D nt of the vertical lift bridge's entire electrical system for this Preser trol system, and essentially the in-kind replacement of the switcher . Prepared the initial scoping inspection report and coordinated po f a 250-foot tower-drive vertical lift span.	vation d ist
01/20 – Pre	esent c d tr	Almonaster Ave Electrical Engin the partial replace Jational Register uperstructure, a could remain, mo lesign plans to re runnion pin, and	enue Railroad Bridge over eer for the bridge assessing ement of the Almonaster A of Historic Places eligible nd counterweight were recondifications were deemed r eplace the span drive and bushing. The main trunnic	r the Industrial Can nent, complete rehal Avenue Bridge, a mo , circa-1920 bridge r quired to return this h necessary to accomm span lock machiner on bearings were reh	nal, New Orleans, LA – Port of New Orleans bilitative engineering design, and construction phase services requivable Strauss-heel trunnion bridge. H&H's 2019 assessment of the revealed that improvements to the electrical and mechanical system oridge to its full operating capability. Although the existing substruct modate the rehabilitated superstructure. H&H developed necessar y, operating strut, guide assembly, live load bearings, counterweig nabilitated and repositioned.	uired for e ms, cture y ht


04/18 – Present	SR 609 over Old Fort Bayou Bascule Bridge Rehabilitation, Gulfport, MS – Mississippi DOT Electrical Engineer of Record responsible for electrical inspection and design services as part of the 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. H&H's scope of work includes inspection and rehabilitation of structural, mechanical, and electrical components of the bridge, as well as the roadway approaches and development of maintenance and repair plans. All designs are in accordance with AASHTO, FHWA, and MDOT guidelines/specifications. H&H is currently providing construction phase services.
01/19 – 08/20	SR 605 Over Industrial Waterway Canal Bascule Bridge Rehabilitation, Ocean Springs, MS – Mississippi DOT Electrical Quality Control Engineer responsible for the assessment, design, plan review, and quality control of electrical systems for the SR 605 double-leaf bascule bridge, as a task-order to the IDIQ Master Bridge Contract which included providing standard and special bridge services, statewide for MDOT. Scope included the inspection of structural, mechanical, and electrical components of the bridge and roadway approaches and the development of maintenance and rehabilitation/repair plans for elements identified during inspection. All designs were prepared in accordance with AASHTO, FHWA and MDOT guidelines & specs.
8/16-5/21	SR-A1A/North Causeway Bridge over ICWW, Fort Pierce, FL - Florida DOT District 4 Electrical Engineer for the 4000-foot-long bridge replacement project which replaces a bascule span with a high-level fixed bridge that has 85-foot vertical clearance over the navigable channel. The preferred replacement fixed bridge alternative includes the FIB superstructure and spans over Old Dixie Hwy and the FEC Railway. In addition to the new bridge, the project includes extending Juanita Ave east from US-1 to Old Dixie Hwy and provisions for a new access roadway for the businesses south and north of the new bridge along SR A1A.
12/11-4/17	Flagler Memorial Bridge over ICWW, Palm Beach, FL - Florida DOT District 4 Electrical Engineer responsible for this \$95 million design-build project that included the replacement of the entire bridge off-line and parallel to the existing bridge to maintain traffic for this busy causeway that connects West Palm Beach to Palm Beach. The design/build request for proposal, resulting from a Type 2 Categorical Exclusion Class of Action NEPA process, had strict design requirements regarding environmental mitigation, appearance, and maintainability. Completed in 2018, the twin double-leaf rolling lift bascule span bridge design included a 150-foot rolling-lift-span over the navigable channel, twelve 150-foot pre-stressed concrete approach spans, and approach roadway work. This project was recognized by ASCE West Palm beach Branch receiving the award of 2018 Project of the Year.
12/17-5/18	SR 75 (US 231) Reconstruction, SR 30A (US 98) to South Pipeline Road, Panama City, FL – Florida DOT District 3 Principal-in-Charge for the new 840-foot steel bridge on SR77 crossing US 231 and the CSX railroad. H&H is providing design services for the single point urban interchange (SPUI) at SR 77 over US 231 and CSX RR improvement project. Work includes design for roadway and drainage design of the intersection, lighting design for the entire project, and bridge design for new major steel structure.



Firm Em		Employed by	Hardesty & Hanover					
	Name		Marco Lara, PE		Years of relevant experience with this employer	4		
Ser .	Title		Senior Electrical Engine	er	Years of relevant experience with other employer(s)	17		
Degree(s) /	Years	/ Specialization	l	BS / 2004 / Electric	cal Engineering			
Active regis	stration	number / state	/ expiration date	Professional Engin	neer: 0044115 / LA / 3/31/2024			
Year registe	ered	2019	Discipline	Electrical Engineer	ing			
Contract rol	le(s) / ł	orief description	n of responsibilities	Movable Bridge E	Electrical Engineer - Meets MPR 6			
Experience	dates	Experience an	nd qualifications relevant	vant to the propo	osed contract; i.e., "designed drainage", "designed gin	rders",		
(mm/yy–mi	m/yy)	"designed inte	ersection", etc. Exper-	ience dates shoul	ld cover the time specified in the applicable MPR(s).			
		Almonaster Ave	enue Railroad Bridge ove	er the Industrial Ca	nal Rehabilitation, New Orleans, LA – Port of New Orleans			
		Movable Bridge	Electrical Engineer for the	he bridge assessme	nt and complete rehabilitative engineering design and constructior	1		
11/20 Dros	ont	inspection services required for the rehabilitation and roadway replacement of the Strauss-heel trunnion bridge. H&H's 2019						
TT/20-PTeSeni	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.						
		Lapalco Boulevard Movable Bridge over Harvey Canal, Westwego, LA - Jefferson Parish DPW						
		Movable Bridge Electrical Engineer contributing to the pre-design electrical inspection and resulting Bridge Design Report (BDR) for						
08/21 – 01	122	the rehabilitation and widening of the existing four-lane Lapalco Boulevard project includes rehabilitation to the existing four-lane bridge						
00/21 01	122	with three lanes of traffic and a new pedestrian/bike lanes as well as the design of a new three-lane double bascule movable bridge						
		crossing of Harvey Canal to be constructed as an independent structure immediately adjacent and north of the existing bridge with a						
		new operator house. Improvements to bridge and roadway approaches and development of a Traffic Control Plan was also included.						
		SR 75 (US 231)	Reconstruction, SR 30A	(US 98) to South P	ipeline Road, Panama City, FL – Florida DOT District 3			
04/18-03/	21	Project Electrical Engineer responsible for technical review of the 60% constructability roadway lighting design consisting of						
		calculations and plan preparations, including Lighting Design Analysis Report (LDAR) and Lighting Justification Report (LJR). H&H is						
		providing design services for the single-point urban interchange (SPUI) at SR 75 over US 231 and CSX RR improvement project						
	Crescent Beach	Bridge Rehabilitation (S	SR 206), St. Johns (	County, FL – Florida DOT				
		Movable Bridge	Electrical Engineer resp	onsible for rehabilita	tion of existing double-leaf, trunnion bascule bridge. Rehabilitatior	1		
04/09 - 06/13	/13	consisted of repl	acement of electrical powe	er and controls with r	new Motor Control Center (MCC) and programmable logic controlle	er		
0 1107 00	, 10	(PLC) and replace	cement of drum switches a	ind wound rotor moto	ors with flux vector motors, drives, and brakes. Also included repla	cement		
		of traffic gates, n	ew open grid decking, and	tender house impro	ovements. Permit application was created for submarine cable			
	replacement. Du	ties included shop inspect	ions, witness testing	, field inspection, and estimate of completion.				



	Cass Street Bascule Bridge over Hillsborough River, Tampa, FL - Hillsborough County Government
	Movable Bridge Electrical Engineer responsibilities included producing and developing calculations and design plans for the
	rehabilitation of this historic double-leaf bascule bridge. The major rehabilitation involved replacing obsolete and aging electrical
	equipment such as the programmable Logic Controller (PLC), motor control panels and cabinets; conduit and wiring associated with a
03/18 – 07/19	generator, automatic transfer switch, safety interlock, etc.; auxiliary drive bevel gear bushing, span drive motor, span lock & pinion, span
	lock brake & bushings; and emergency Drive bevel gear, shaft bushing, bearing &couplings, live load shoe, and lighting. H&H is
	providing design plans for structural rehabilitation and controller system replacement. Services included inspections of the structural,
	electrical, and mechanical components; a bridge development report; structural, electrical, and mechanical construction plans;
	temporary traffic control plans (TTC); specifications; engineer's estimate of probable construction cost; and post-design services.
	Brorein Street Bascule Bridge over Hillsborough River, Tampa, FL - Hillsborough County Government
	Movable Bridge Electrical Engineer responsibilities included producing and developing calculations and design plans for this double-
	leaf bascule bridge rehabilitation. This rehabilitation involved replacing aging electrical equipment, such as the main drive motors,
03/18 – 07/19	brakes, motor control panels, span drive system and lock motor, limit switches, lighting, and upgrading the electrical service. H&H
	provided designs for the National Register of Historic Places eligible bridge including a structural rehabilitation and controller system
	replacement. Services included inspections of the structural, electrical, and mechanical components; a bridge development report;
	structural, electrical, and mechanical construction plans; TCP; specifications; engineer's estimate of probable construction cost;
	Arthur Kill Vertical Rail Lift Bridge, Elizabethport, NJ / Staten Island, NY – New York City Economic Development Corporation
	Movable Bridge Electrical Engineer responsible for performing in-depth inspections of the existing span drive, limit switches, motor
05/17 - 07/17	control center, termination cabinets, control console, and bridge electrical system on the Arthur Kill Vertical Lift Bridge. With a single-
03/17 - 07/17	track tower drive and a 558-foot-long span, this bridge has the longest lift span of any bridge of its type in the world. Observed bridge
	operations and visually evaluated aerial cables. Performed electrical 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.
	Ocean Avenue Bridge, Lantana, FL - Palm Beach County
	Movable Bridge Electrical Designer responsible for electrical design of power distribution layout and plan sheets of relay-based
1/10-10/15	control system with PLC monitoring and diagnostic alarm system for the replacement of double-leaf bascule bridge. Span motor controls
1/10/10/13	are flux vector drive with encoder feedback. Performed lighting analysis and design of electrical equipment room, control house, and
	bascule piers. Provided standby generator sizing, power flow and voltage drop studies, short circuit analysis, and lighting panel
	calculations. Duties include shop drawing review, shop inspections, witness testing, field inspection, and estimate of completion.
	Sargent Barge Swinging Barge (Platoon) Bridge Rehabilitation, Matagorda County, TX – Texas DOT
	Movable Bridge Electrical Designer. Drafted electrical repair plans for power distribution system, panel schedules, control schematics,
	equipment layouts and conduit & cable schedules. Design includes a programmable logic controller (PLC) control-based system utilizing
07/10 - 01/13	wireless modems to eliminate the submarine cable. Operating system includes two winches on vector controlled variable speed drives,
0//10 01/13	integrated to control back tension on the payout winch in each direction, to maintain absolute control of the barge in tidal currents. The
	center span is a 125-foot cable operated swinging barge with motor operated leveling spans and aprons on each end. Project scope
	included replacement of the timber leveling spans with steel framed open grid decks and the operating machinery, replacement of the
	bridge winch machinery and controls, structural repairs, and replacement of the traffic gates and miscellaneous roadway modifications.



6	Firm	m Employed by Hardesty & Han				
	Name	e	Christopher Svara, PE		Years of relevant experience with this employer	24
JON.	Title		Senior Electrical Enginee	er	Years of relevant experience with other employer(s)	2
Degree(s) /	Years	/ Specialization	L	BS / 1993 / Applied BS / 1993 / Electrid	d Physics cal Engineering	
Active regis	tration	number / state	/ expiration date	Professional Engin	ieer: 0044080 / LA / 3/31/2024	
Year registe	ered	2019	Discipline	Electrical Engineer	ing	
Contract rol	e(s) / t	orief description	n of responsibilities	Movable Bridge E	lectrical Engineer – Meets MPR 6	
Experience	dates	Experience ar	nd qualifications relevant	ant to the property	osed contract; i.e., "designed drainage", "designed gin	ders",
(mm/yy–mr	n/yy)	"designed inte	rsection", etc. Exper-	ience dates shoul	d cover the time specified in the applicable MPR(s).	
08/08 – 08,	/13	Judge Seeber Vertical Lift Bridge over Inner Harbor Navigational Canal (SP 700-99-0430), New Orleans, LA – Lead Movable Bridge Electrical Engineer provided inspection and rehabilitative design services for the electrical response of the electrical response of the electrical lift span. The rehabilitation design of this Preservation Priority Bridge encompassed variate elements including a new control system, new distributed power distribution system, motor controllers, control desk, a Provided the electrical design, including calculations, design drawings, and specifications. During the construction ph construction support services for the construction, including shop drawing review, and responded to various Request				of a I tches. ed ation.
01/19 – Pre:	sent	<b>SR 605 Movable Bascule Bridge Renabilitation, Ocean Springs, MS – Mississippi DOT</b> <b>Movable Bridge Electrical Engineer</b> for the assessment, design, plan review, and quality control of SR 605 double-leaf 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 components of the bridge, as well as the roadway approaches and development of maintenance and repair plans. All designs are in accordance with AASHTO, FHWA and MDOT quidelines and specifications				
08/10 – 07/	/13	Murray Morgan Lead Movable E system on a spar including calcula including shop dr new programmal control desk, new locations, motor	Vertical Lift Bridge Reha Bridge Electrical Enginee In drive lift bridge. Scope for tions, design drawings, an rawing review, Requests for ble logic control system, a v distributed power distributed prives, utility service, and	bilitation, Tacoma, r responsible for dev or this National Regis d specifications as v or Information, meeti radio communicatio ution system consisti power distribution.	WA – City of Tacoma veloping the electrical design required to replace the complete elec- ster of Historic Plans listed bridge included providing the electrical vell as providing construction support services for the construction ings, on-site testing, and start up. This rehabilitation design include in system to reduce cables from the movable span to the fixed pier ing of a movable span, near side, and far side electrical equipment	ctrical design, , ed a s, t



08/17 – 07/19	I-90 Lacey V Murrow Pontoon Bridge Rehabilitation, Seattle, WA – Washington State DOT Bridge Preservation Office Movable Bridge Electrical Engineer for an I-90 Lacey V Murrow Bridge electrical inspection and rehabilitative design project. H&H's electrical inspection of eastbound I-90 revealed that the electrical switchgears and five pairs of transformers needed to be replaced and the neutral and ground conductors needed to be separated. H&H's rehabilitative recommendations also required that submersible fuses in three pontoons be reconfigured and reinstalled, and that a fault current and arc flash hazard analyses be performed on all medium voltage equipment. H&H was responsible for the in-depth inspection, associated inspection report, subsequent electrical system design, and construction support services.
07/10 – 04/16	<b>SR 520 Evergreen Point Floating Bridge and Landings Project, Seattle, WA – Washington State DOT Bridge Preservation Office</b> <b>Movable Bridge Electrical Engineer</b> 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. 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.
06/17 – 04/18	Centerville Swing Bridge over the Chesapeake & Albemarie Canal Rehabilitation, Chesapeake, MA – City of Chesapeake Lead Movable Bridge Electrical Engineer for the rehabilitation of the Centerville Swing Bridge's bascule span. The project consisted of a site inspection to verify the condition of the electrical systems. After the site visit, a detailed scope of work was developed to identify the rehabilitation work that was required. Once the scope was defined and approved by the City, then construction plans, specifications, calculations, and cost estimates were prepared for a complete electrical rehabilitation of the bridge electrical system. The planned scope of work also included construction support services.
12/98 – 12/01	Chehalis River Bascule Bridge Rehabilitation, Aberdeen, WA – Washington State DOT Bridge Preservation Office Movable Bridge Engineer responsible for field inspection and subsequent design of the new electrical system for this Warren deck truss bascule bridge. Electrical designs were prepared for hydraulic center lock rehabilitation, traffic and pedestrian gate replacement, and new bridge electrical control and indication modifications. Project scope also included site inspection to evaluate existing equipment to determine what systems needed replacement versus maintenance. Design work included new control system, power distribution, hydraulic center locks, and gates as well as construction support services. Construction should be completed by Summer 2021.
10/99 – 03/01	Woodrow Wilson Bascule Bridge Replacement Contract, Washington, DC – Maryland State Highway Admin. / Virginia DOT Movable Bridge Electrical Engineer designing the new electrical systems for a new 12-lane bascule bridge to replace the existing I-95 Potomac River crossing. The new bridge is comprised of four side-by-side double-leaf bascule spans, each with a 270-foot center-to- center trunnion spacing and an overall bridge width of 249 feet. Responsibilities include the complete design of the completely new electrical systems. Features of the span include a composite concrete deck, moment-resisting span locks, tail locks, and the option of independent or group leaf operation. The bridge has been designed to accommodate future transit system plans.



Firm E		Employed by	Hardesty & Hanover	lardesty & Hanover					
TET	Nam	e	James Phillips, PE		Years of relevant experience with this employer	6			
S.	Title		Senior Structural Engine	er	Years of relevant experience with other employer(s)	33			
Degree(s) / Y	lears /	Specialization		B.S. / 1982 / Civil E	Engineering				
Active regist	ration	number / state / e	xpiration date	Professional Engin	eer: 0025091 / LA / 03/31/2023				
Year register	red	1986	Discipline	Civil Engineering					
Contract role	e(s) / bi	rief description of	f responsibilities	Movable Bridge C	Constructability – Meets MPR 7				
Experience d	lates	Experience and	l qualifications relevan	t to the proposed	contract; i.e., "designed drainage", "designed girders", "de	esigned			
(mm/yy–mm	/yy)	intersection", e	tc. Experience dates sh	ould cover the tim	e specified in the applicable MPR(s).				
		Lapalco Boulev	ard Movable Bridges over	er Harvey Canal, Je	fferson Parish, LA - Jefferson Parish DPW				
		Technical Lead	for the pre-design inspect	ion and design of a r	new three-lane double bascule movable bridge crossing of Harvey	Canal			
1/18 - present	and the widening	and the widening of the existing four-lane Lapalco Boulevard to provide a facility carrying three lanes of traffic in each direction. In							
	addition to constructing the new bridge immediately adjacent and north of the existing bridge, the existing four-lane bridge with three								
	lanes of traffic and a new pedestrian/bike lane will be rehabilitated. The scope of services also includes improvements to bridge and								
		roadway approaches for eastbound and westbound traffic as well as the development of a Traffic Control Plan. This project is being							
		designed accord	ng to LADOID standards and specifications.						
		SR 609 Movable	SR 609 Movable Bascule Bridge Rehabilitation, Ocean Springs, MS – Mississippi DOT						
0/100 10	10.0	Movable Bridge Senior Structural Engineer for full rehabilitation of SR 609 bascule bridge, as a task-order to the IDIQ Master Bridge							
06/20 - 12	/20	Contract which included developing standard and special bridge services, statewide for MDOT. Scope of work included inspection and							
		rehabilitation of structural, mechanical, and electrical components of the bridge, as well as the roadway approaches and development of							
		maintenance and repair plans. All designs are in accordance with AASHTO, FHWA and MDOT guidelines and specifications.							
		Flagler Memoria	al Bridge over ICVVV, Pa	Im Beach, FL - Flor	ICIA DO I DISTRICT 4 Anidas fasturing turin devidie lesf relling lift beserve sname. The pro-	last			
11/1/ 11/	15	Chief Engineer participated in post design services for a new bridge featuring twin double-leaf rolling-lift bascule spans. The project							
11/14-11/	15	Was constructed	using a design-build appro	Uach. Assisted with f	eview of requests for information (RFIS) and construction procedu	ies ioi			
		shop tablication	tabrication and field alignment, including roll testing. Performed site visits to the steel tabrication shop to observe construction and						
		roll testing and provide guidance on adjustments to obtain alignment tolerances of the rolling tread surfaces.							
		SR-ATA/North C	auseway bridge over it	www, Fort Pierce, F	L - FIORUA DOT DISTRICT 4	with a			
		high lovel fixed b	ridgo that has 95 foot yor	ical clearance over t	he pavigable chapped. The proferred replacement fixed bridge alter	viui a			
05/18-2/2	21	includes the EIR	superstructure and snans	over Old Divie Hwy	and the EEC Pailway. In addition to the new bridge, the project inc				
		extending luanit	a Ave east from LIS-1 to C	Id Divie Hwy and pro	and the recontainway. In addition to the hew binage, the project ind	north of			
		the new bridge a	Inna SR A1A	a bide nivy and pro	susions for a new access roadway for the businesses south and t				



	Laurel Street Bascule Bridge Rehabilitation, Tampa, FL – City of Tampa
08/12 – 02/14	Chief Movable Bridge Engineer for a project that involved emergency repairs and rehabilitation of a historic through truss single-leaf
	bascule bridge. Scope involved emergency repair of the rack pinion support structures and rack frames to correct severe corrosion and
	fatigue cracks. Rehabilitation included reconditioning of the drive machinery and replacement of the drive motors and control system.
	Beckett Bridge Replacement, Tarpon Springs, FL - Pinellas County Government
	Project Manager responsible for replacement of an existing historic bridge with a new 360-foot single-leaf, rolling-lift, bascule bridge
	that carries Riverside Drive over Whitcomb Bayou and features two traffic lanes, shoulders and a sidewalk. The movable span features
	steel plate girder main girders and floorbeam and an Exodermic deck that spans longitudinally between floorbeams. The bascule pier
1/15 - 12/17	footing and approach pier caps feature precast concrete elements to facilitate accelerated bridge construction. Foundations are drilled
	shafts and pipe piles, designed to accommodate challenging site conditions including a relict sink hole under the bridge. A unique crank
	arm system drives the movable span, powered by redundant 20 HP electric motors and vector drives. Auxiliary machinery includes tail
	props and span locks. Project elements included relay-based control system, approximately a quarter mile of roadway, drainage, bridge
	Spokane Street Swing Bridge, Seattle, WA – Seattle DOT
	<b>Lechnical Project Manager</b> for investigation and design of replacement lift/turn cylinders for the world's largest concrete double-swing
02/03 – 03/05	bridge. Project involved design of nine-root diameter bore hydraulic cylinders for lifting and pivoting two 1.5-million-pound concrete
	spans. Replacement involved investigation of the failure mode of the original cylinders, including detailed FEA analysis, and development of a cylinder design that eliminated the stress concentrations found to have contributed to the failure. The span length
	between pivots is 480 feet and each swing span has a length of 418 feet
	Andrews Avenue Bascule Bridge Rebabilitation Fort Lauderdale FL – Broward County
	Chief Movable Bridge Engineer responsible for hydraulic system design and review of structural and mechanical design calculations
06/12 – 06/14	plans and technical special provisions for this single-leaf bascule bridge. Scope included electrical and machinery rebabilitation of a
	single-leaf bascule span. Mechanical work included complete replacement of the hydraulic cylinder drive system and span locks.
	US 92 Hillsborough Avenue Vertical Lift Bridge Rehabilitation, Tampa, FL – Florida DOT
	Chief Movable Bridge Engineer responsible for inspection and design for repair of an historic 1939 vintage vertical lift movable bridge
09/98 – 04/06	over the Hillsborough River. The bridge features a 94-foot lift span. Inspected specific bridge systems and devised repairs to correct
	binding of the lift span guide assemblies. Performed QC reviews of the plans and technical special provisions for replacement of the
	counterweight wire ropes, sheaves and sheave bearings as well as miscellaneous structural repairs to the lift span towers.
	CR 78/Matlacha Bridge Replacement, Matlacha, FL - Lee County Government
	Project Manager/Chief Bridge Engineer for a replacement bridge design featuring a single-leaf bascule span on Pine Island Road in
1/07 - 11/10	the historic town of Matlacha. The bridge provides the only connection between the Greater Pine Islands and mainland Lee County. The
	channel span featured a trunnion type bascule with hydraulic cylinder drive machinery. Approach spans consisted of precast,
	prestressed concrete slabs, transversely post-tensioned and finished with a composite cast-in-place concrete topping.



Firm	Employed by	Hardesty & Hanover						
Nan	Name		SE	Years of relevant experience with this employer	5			
Title	•	Movable Bridge Structur	al Engineer	Years of relevant experience with other employer(s)	11			
Degree(s) / Years	/ Specialization	l	M.S. / 2006 / Civil I B.S. / 2006 / Civil E	Engineering Engineering				
Active registratio	n number / state	/ expiration date	Professional Engin	eer: 45742 / LA / 09/30/2023				
Year registered	2011	Discipline	Civil Engineering					
Contract role(s) /	brief description	n of responsibilities	Movable Bridge S	tructural Engineer – Meets MPR 7				
Experience dates	Experience an	nd qualifications relev	vant to the propo	osed contract; i.e., "designed drainage", "designed gir	ders",			
(mm/yy–mm/yy)	"designed inte	ersection", etc. Exper	ience dates shoul	d cover the time specified in the applicable MPR(s).				
	Hillsborough Ri	ver Vertical Lift Bridge R	Repair, Tampa, FL –	Florida DOT	on			
08/16 - 02/17	drawing reviews, plans revisions, and responding to RFIs from the contractor. The project included preparation of mechanical and							
00/10 - 02/17	electrical plans to	electrical plans to repair/rehabilitate this historical span-driven vertical lift bridge. The rehabilitation included sheave replacement, wire						
	rope replacement, span lock repairs, and electrical system upgrades.							
	Sargent Barge Swinging Barge (Platoon) Bridge Rehabilitation, Matagorda County, TX – Texas DOT							
	Movable Bridge Structural Engineer responsible for design and preparation of repair plans for miscellaneous structural elements							
08/11 – 07/13	including cable a	including cable anchorages for the barge span, abutments (foundations, backwall, and cap), bulkheads, and temporary work platforms.						
	Also responsible	Also responsible for design of repairs to the timber approach span stringers. Project scope included replacement of the timber leveling						
	spans with steel framed open grid decks and the operating machinery, replacement of the bridge winch machinery and controls,							
	Structural repairs	<u>Residue Emergeness Beng</u>	raffic gates and misc					
	Movable Bridge	Structural Designer rest	nonsible for the new	arid dack stringers and sub-stringers to replace the existing mem	hors			
	inovable bridge structural besigner responsible for the new yrid deck, stilligers, and sub-stilligers to replace the existing members on the swing span. Drafted all sheets in the structure plan sets The movable bridge specialty engineering services were performed using							
	a design-build ar	a design huild approach as a subconsultant to a contractor. Performed in denth field review inspection, and measurements of the						
	bridge to assess	bridge to assess the conditions requiring emergency repair clarify scope of work, and verifying the configuration member sizes, and						
09/08 – 04/09	dimensions with	limited or non-existent exist	sting plans of the brid	dge. Repairs to the steel framing included replacement of deteriora	ated			
	floor system and	bracing members over the	e operating machine	ry including a portion of the steel roadway flooring. Repairs to the				
	machinery includ	led replacement of the pive	ot bearing bronze dis	sk, balance wheel lower track, rack, main drive pinion, shaft and be	earings,			
	selected gear se	ts, speed reducer, machin	ery brake, machinery	y support frame, end wedges and end wedge electric linear actuate	ors.			
	Prepared shop d	rawings used to fabricate	the steel and machin	ery to reduce project costs and time. The design, procurement,				



	fabrication, installation, alignment, and testing were performed in a compressed schedule of 120 days. This bridge is eligible for the National Register of Historic Places.
06/05 – 06/09	Anna Maria Island (SR 64) over Gulf IWW Bascule Bridge Rehabilitation, Bradenton, FL – Florida DOT Movable Bridge Structural Designer participated in plan preparations and quantity calculations. The project involved the in-depth inspection, evaluation, and rehabilitation design of a 50-year-old, 3,120-foot-long bridge with a double-leaf trunnion bascule main span. The project included bascule leaf structural steel repairs and modifications; concrete repairs, including hydro-demolition and concrete overlay of the bridge deck; cathodic protection systems; new auxiliary electrical room; replacement of the machinery frame; reconditioning of the operating machinery; replacement of the electrical power and controls; and bridge operator's facilities renovation.
07/07 – 02/08	Wilson Pigott (SR 31) over Okeechobee Waterway Bascule Bridge Rehabilitation, Fort Myers, FL – Florida DOT Movable Bridge Structural Designer performed the span balance calculations, assisted with design calculations of other structural components, reviewed, and analyzed load test data to assist in the assessment of priority repairs. Services called for the in-depth inspection, evaluation, load rating per LRFR methodology, and rehabilitation design of this 50-year-old, 3,120-foot-long bridge with a double-leaf trunnion bascule main span. Responsibilities included performing independent peer review of the machinery repairs and steel grid deck replacement – plus performing peer review of the capacity evaluation of the unique precast, post tensioned concrete beams of the approach spans, which were among the first widespread use of prestressed concrete in the United States.
03/09 – 12/10	LaBelle Drawbridge (SR 29) Repairs & Rehabilitation, Labelle, FL – Florida DOT Movable Bridge Structural Designer produced various designs of structural components for repairs to the approach and bascule spans, including the bascule leaf cantilever bracket, stringers, approach span bearing pads, and mast arms on the approaches. Checked the adequacy of the existing approach span diaphragms for jacking the spans. Provided quality control check of the bascule span balance calculations. Load rated the 40-foot approach span prestressed concrete beams, bascule span stringers and stringers over machinery, main girder, grid deck, and floorbeams. Load rated the flanking span stringers and floorbeams.
01/19 – Present	Beckett Bridge Replacement, Tarpon Springs, FL – Pinellas County Movable Bridge Structural Designer on the bridge replacement project which entails replacing an existing historic bridge with a new 360-foot single-leaf, rolling-lift, bascule bridge. The structure carries Riverside Drive over Whitcomb Bayou and features two traffic lanes, and a sidewalk. The movable span features steel plate girder main girders and floorbeam and an Exodermic deck that spans longitudinally between floorbeams. The bascule pier footing and approach pier caps feature precast concrete elements to facilitate accelerated bridge construction. Foundations are drilled shafts and pipe piles, designed to accommodate challenging site conditions including a relict sinkhole under the bridge. Design responsibilities included quality control for approach span substructure and foundations, and retaining walls, and the final design of bascule span structural steel elements including main girders, floorbeams, counterweight, and span balance.
12/16 – 02/17	Longboat Pass Bridge Bascule Span Condition Assessment Report and Load Rating, Manatee County, FL – Florida DOT Movable Bridge Structural Engineer responsible for drafting report and cost estimate, conducted structural inspection of bascule span and load rated the existing bascule span structural steel elements. The objective of the report, cost estimate, and load rating was to identify deficiencies of the bascule span that required repairs in the next ten years, including structural, mechanical, and electrical items.



Firm	Employed by	Hardesty & Hanover	Hardesty & Hanover			
Name	e	Benjamin Hawthorne, F	PE, SE	Years of relevant experience with this employer	15	
Title		Senior Structural Engine	er	Years of relevant experience with other employer(s)	0	
Degree(s) / Years	/ Specialization	1	B.S. / 2005 / Civil E	Engineering		
Active registration	n number / state	/ expiration date	Professional Engin	eer: 44620 / LA / 09/30/2022		
Year registered	2011	Discipline	Structural Enginee	ring		
Contract role(s) / l	orief description	n of responsibilities	Movable Bridge S	tructural Engineer - Meets MPR 7		
Experience dates	Experience an	nd qualifications relev	vant to the propo	osed contract; i.e., "designed drainage", "designed gin	rders",	
(mm/yy–mm/yy)	"designed inte	ersection", etc. Experi	ience dates shoul	d cover the time specified in the applicable MPR(s).		
03/20 – Present	Project Manage through girder sp details are based repairs target pri upgrades to the torque high-spee	r for the rehabilitation of a ban. The structure is server d on results of an in-depth mary members in poor cor access system and fender ed mechanical equipment a	or the rehabilitation of a 300-foot, single-track swing span, four 200-foot through truss approach spans, and a 60-foot i. The structure is serves Providence & Worcester Railroad customers in Portland, CT. Rehabilitation and repair n results of an in-depth structural, mechanical, and electrical inspection and load rating of the structure. Structural iry members in poor condition and any elements that do not rate for a 286K carload. Additional work includes safety cess system and fender system repairs. Swing span operating system rehabilitation includes replacement of low- mechanical equipment and upgrades to the electrical system.			
07/13 – 05/19	Sarah M. Long Vertical Lift Bridge, Kittery, ME – Maine DOT Movable Bridge Structural Engineer on joint-venture team for a complete vertical lift bridge replacement. Responsible for design of the steel box girder lift span and associated structural elements. Ben was involved in all phases of the project, providing design service: for the preliminary design, final design, and design support during construction, including providing a preliminary design report, plans, design and design check computations, ratings, specifications, and estimates, for the replacement of the Sarah Mildred Long Bridge located on U.S Route 1 Bypass between Kittery and Portsmouth. The bridge carries Pan Am Railway and highway traffic and was designed in accordance with AREMA and AASHTO specifications.					
05/18 – 08/18	Cribari Swing B Movable Bridge Connecticut). Re Assessment. Str Assessed genera	ridge over the Saugatuc Project Engineer for a responsible for developing to ucture type study included al structure dimensions to	k River Rehabilitati ehabilitation Studies he preliminary struct investigation of feas demonstrate visual i	on, Fort Lauderdale, FL – Florida DOT Report of this historic swing bridge (the oldest movable span in ure type study and alignment alternatives in support of the Enviror sible alternatives and preliminary structural analysis of concepts. mpact of the alternatives to the public and other stakeholders.	nmental	



01/17 – Present	East Haddam Swing Bridge over the Connecticut River Rehabilitation, Haddam, CT – Connecticut DOT Movable Bridge Project Engineer responsible for the preparation of load ratings and feasibility study reports in support of a rehabilitation of this 4-span truss swing bridge. The bridge, which opened in 1913 and has been posted on the National Register of Historic Places, carries two lanes of Route 82 traffic over the Connecticut River and includes a deck truss span, through truss span, and a 465-foot-long through truss swing span. Rated elements included gusset plates, pins, tension and compression members, truss chord box members subject to bending, floorbeams, and stringers. The structural feasibility study evaluated the addition of an external sidewalk to allow pedestrian access across the bridge, which has a narrow 24.5-foot roadway. Load rating and feasibility analysis included the use of AASHTOWare Bridge Rating software and the creation of a 3D computer model using Midas Civil finite element analysis software. Ben has remained involved in the rehabilitation project through preliminary and final design as a <b>Senior Structural Engineer</b> providing technical expertise and review of truss strengthening, floor system replacement, and cantilever sidewalk development.
12/11 – 01/13	Saugus Drawbridge Rehabilitation, Saugus, MA – Massachusetts Bay Transportation Authority Movable Bridge Structural Engineer responsible for analysis and design for this project involving comprehensive modeling, ratings analysis of as inspected conditions, real time structural monitoring, and strengthening of an existing pier compromised by extensive structural deterioration. Responsibilities included development of load rating methods to determine existing substructure capacity and design of an interim strengthening concept including a temporary pier to allow the bridge to remain in service at full capacity until a comprehensive replacement project can be undertaken. Temporary pier design included an integrated fender design that incorporated energy absorbing elements to provide adequate protection of the existing pier in a narrow footprint and in an area of poor soil conditions. As a sub-consultant on this project, it required cooperation of multiple parties to balance existing structural capacities, emphasis on rapid construction, and the need to maintain traffic prior to and during construction of the interim strengthening.
02/10 – 12/10	Fairhaven/New Bedford Swing Bridge Rehabilitation, New Bedford, MA – Massachusetts DOT Assistant Team Leader/ Movable Bridge Structural Engineer responsible for field inspection, report preparation, and structural and economic feasibility analysis of preliminary rehabilitation and replacement options for this thru-truss swing bridge. Developed truss chord member strengthening concepts including post-tensioning using high strength rods. This on-call task provided a Preliminary Structures Report for the movable segment of the Fairhaven/New Bedford Swing Bridge that carries Route 6 over the Acushnet River.
10/11 – 03/12	General Edwards Rolling Lift Drawbridge Emergency Inspection and Rehabilitation, Lynn, MA – Massachusetts DOT Assistant Team Leader/Movable Bridge Structural Engineer responsible for in-depth field inspection and report preparation of the two-span, four-leaf, rolling lift bridge and adjacent fixed span approach structures. A subsequent emergency inspection, required after deformation was noted in the rolling lift rack support, resulted in the design of a temporary strengthening system for the rack support columns.
12/09 – 01/10	Grand Avenue Swing Bridge Rehabilitation, New Haven, CT – City of New Haven Inspector/ Movable Bridge Structural Engineer responsible for field inspection, report preparation, and feasibility and economic analysis of preliminary rehabilitation and replacement options for this 220 foot-long, thru-truss swing bridge.



0	Firm E	Employed by	Hardesty & Hanover			
231	Name		Steven Harlacker, PE, S	SE	Years of relevant experience with this employer	25
	Title		Senior Structural Engine	er	Years of relevant experience with other employer(s)	0
Degree(s) / Y	Years / S	pecialization		B.S. / 1996 / Civil E	Engineering	
Active regist	ration nu	umber / state / e	xpiration date	Professional Engin	eer: 0037057 / LA / 09/30/22	
Year register	ed	2012	Discipline	Structural and Civi	Engineering	
Contract role	(s) / brie	ef description of	f responsibilities	Movable Bridge S	tructural Engineer - Meets MPR 7	
Experience d	ates	Experience an	nd qualifications relevan	nt to the proposed	contract; i.e., "designed drainage", "designed girders", "de	esigned
(mm/yy–mm	/yy)	intersection",	etc. Experience dates s	hould cover the tir	ne specified in the applicable MPR(s).	
02/15 – 06	6/18	Norwalk River (Route 136) and Yellow Mill (Route 130) Bascule Bridges Storm Hardening Design Services – Connect Project Manager for the rehabilitation and storm hardening of these bridges, damaged by flooding due to Superstorm Sand responsible for structural, mechanical, & electrical design team management. This project includes provisions to improve th performance during similar storms and provisions to rapidly restore the facility to functionality quickly in the event of a storm exceeds the 100-year design storm.				<b>it DOT</b> irectly cility's t
09/16 – 01	/21	ConnDOT Task Order Bridge Rehabilitation and Replacement Program, Statewide – Connecticut DOT Project Manager responsible for managing the preliminary and final design and load ratings for DOT-issued task orders for previously assessed and listed CTDOT-owned bridges. This multi-year program includes bridge preservation, bridge component rehabilitation, and bridge replacement projects along with adjoining highway, roadway, and safety upgrades as necessary.				
03/11 – 04	1/13	Murray Morgan Vertical Lift Bridge Rehabilitation Design-Build, Tacoma, WA – City of Tacoma Movable Bridge Structural Engineer in Charge/QC Engineer responsible for supervising the structural design aspects complete structural, mechanical, and electrical rehabilitation of this 100-year old, National Register of Historic Places elig The scope included total design services from preliminary engineering through construction support services as part of a team with PCL Constructors. As the Structural Engineer in Charge, this project required oversight of a multi-discipline de included bridge member strengthening and seismic upgrades. As the QC Engineer, reviewed and verified preliminary and documents prepared by multiple collaborators for contract compliance.				
		Fairhaven-New	v Bedford Swing Bridge	Rehabilitation, New	Bedford, MA – Massachusetts DOT	
02/10 – 12	2/10	Movable Bridg chord of the sw investigation ind approximate co remaining in the techniques avai	e Project Engineer during ing span of the Fairhaven/ cluded the development of nstant amplitude fatigue s e structure. The Preliminar ilable to the department to	g the preliminary invo New Bedford Swing a comprehensive co tress range of this 12 y Structures Report minimize the likeliho	estigation of the source and possible remedy of cracks in the botto Bridge that carries Route 6 over the Acushnet River. Preliminary omputer model and subsequent fatigue analysis to determine the 20-year-old bridge and to determine the approximate fatigue life presented the results of the fatigue analysis and focused on rehab bod of future crack development and extend the lifespan of the stru-	m bilitation ucture.



11/09 –12/09	<b>First Lieutenant Derek S. Hines Memorial Swing Bridge Design-Build, Amesbury MA – Massachusetts DOT</b> <b>Lead Movable Bridge Structural Engineer</b> responsible for determining bid phase structural improvements to a preliminary design furnished as part of a Design-Build bid package. Bid phase design consisted of redesign of the swing girders, redesign of the pivot girder system, in-depth evaluation and design of the bridge deck, and determination of superstructure loads using the AASHTO LRFD Movable Bridge Code to allow the design of a new pivot pier. Coordination between structural and geotechnical engineers was essential for the design team to complete the pivot pier computations and allow the contractor to make an accurate bid.
03/09 – 04/10	Craigie Dam Drawbridge Rehabilitation, Cambridge MA – Massachusetts Dept. of Conservation & Recreation Movable Bridge Project Engineer responsible for the field investigation, preliminary engineering analysis, structure type study reports, sketch plans, construction plans, special provisions and estimate for the \$41 million structural, mechanical, and electrical rehabilitation/replacement of this heavily travelled structure. The historic structure had several locks that are no longer utilized. Deteriorated structural framing and concrete decking along each side of the bridge was replaced. The scope also called for the complete replacement of the existing bascule span and operating machinery within a six-month construction timeframe.
07/15 – 03/17	Sarah M. Long Vertical Lift Bridge, Portsmouth, NH & Kittery, ME – Maine DOT Movable Bridge Structural Project Engineer/Quality Assurance Manager responsible for preliminary concept development, preliminary design, and final design services for this complete vertical lift bridge replacement. Responsibilities included the development of preliminary design concepts, cost evaluation and engineering evaluation, development of preliminary and final design documents for the chosen 300-foot long steel box girder lift bridge alternative. QC activities ensure that the lift span design meets the Quality Plan requirements. Preliminary concept development included the evaluation of variable alignments, structure types, and structural materials. The selection of a best-fit structure considered bridge engineering, vessel collision resistance, span operation, aesthetics, and construction.
12/11 – 05/12	Saugus Drawbridge Rehabilitation, Saugus, MA – Massachusetts Bay Transportation Authority Movable Bridge Structural Project Engineer/QC Engineer responsible for the analysis and design supervision for this project involving comprehensive modeling, ratings analysis of as-inspected conditions, real-time structural monitoring, and resultant strengthening of an existing pier compromised by extensive structural deterioration.
02/16 – 11/17	Chapel Street Swing Bridge Rehabilitation & Painting, New Haven, CT – City of New Haven Project Manager for the design of the Phase 1 Rehabilitation and the Phase 2 Painting contracts. Project included mechanical and electrical component replacement, selective superstructure rehabilitation, substructure, and fender work.
05/15 – 03/16	East Washington Avenue Strauss Bascule Bridge, Bridgeport, CT – City of Bridgeport Project Manager for the recommendation report to restore this flood-damaged bridge to service. Responsible for management of the H&H's mechanical and electrical design team needed to identify failed systems and components to restore the bridge to operation.



	Firm	Employed by	Hardesty & Hanover						
	Name		Robert Hideck, PE		Years of relevant experience with this employer	7			
	Title		Senior Roadway Engine	er	Years of relevant experience with other employer(s)	11			
Degree(s) /	Years /	<sup>7</sup> Specialization	l	B.S. / 2002 / Civil E	Engineering / University of Pittsburgh				
Active regis	stration	number / state	/ expiration date	Professional Engin	eer: 41953 / Louisiana / 3/31/2024				
Year registe	ered	2017	Discipline	Roadway Engineer	ing				
Contract rol	e(s) / b	rief description	n of responsibilities	Roadway Design	Engineer – Meets MPR 8				
Experience	dates	Experience an	nd qualifications rele	vant to the prop	osed contract; i.e., "designed drainage", "designed g	girders",			
(mm/yy–mr	n/yy)	"designed inte	ersection", etc. Exper	ience dates shoul	d cover the time specified in the applicable MPR(s).				
		Almonaster Ave	enue Railroad Bridge ove	er the Industrial Ca	nal Rehabilitation, New Orleans, LA – Port of New Orleans				
		Roadway Engir	neer for the bridge assess	ment and complete r	rehabilitative engineering design and construction inspection service	ces			
11/20-Present	ent	required for the r	ehabilitation and roadway	replacement of the S	Strauss-heel trunnion bridge. H&H's 2019 assessment of the circa	-1920			
	on	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							
				ure.	inalina Dood Donoma City El Elarida DOT District 2				
		SK / 3 (US 231) RECONSTRUCTION, SK 30A (US 98) TO SOUTH PIPEILINE ROAD, PANAMA UTY, FL - FIORIDA DUT DISTRICT 3 Readway, Signing and Payement Markings, and Traffic Control Plans/Engineer of Record responsible for design and proparation of							
04/17-05/	21	roadway, signing and ravement marking, and temporary traffic control plans. H&H is providing design services for the single point urban							
		interchange (SPUI) at SR 77 over US 231 and CSX RR improvement project. Work includes design for roadway and drainage design of							
		the intersection. lighting design for the entire project, and bridge design for a new 840-foot steel bridge.							
		SR-A1A/North C	Causeway Bridge over IC	WW, Fort Pierce, F	L - Florida DOT District 4				
		Roadway Engineer for the 4000-foot-long bridge replacement project which replaces a bascule span with a high-level fixed bridge that							
05/17-08/	20	has 85-foot vertical clearance over the navigable channel. The preferred replacement fixed bridge alternative includes the FIB							
00/17 00/2	20	superstructure an	nd spans over Old Dixie H	wy and the FEC Rai	lway. In addition to the new bridge, the project includes extending	Juanita			
		Ave east from US-1 to Old Dixie Hwy and provisions for a new access roadway for the businesses south and north of the new bridge							
		along SR A1A.							
		Sonior Engineer	r rosponsible for the traffic	control dosign and	ernando County, FL - Florida DOT alans for the replacement of twin bridges on 1.75 over SD 50. The	nroiact			
		included the real	acement of I-75 multi-snai	hridnes over SR 50	) which allows for reconstruction to a single point urban interchand	ne The			
07/14 – 06	/19	approximately 12	2-foot superstructure consi	sts of weathering ste	eel plate girder structures supported on end bents. Mechanically st	abilized			
		earth (MSE) wall	s wrap around each bridge	e and continue for hi	indreds of feet before meeting grade. This design-build project inc	luded of			
		a temporary wide	dening of the existing southbound I-75 bridge as part of the maintenance of traffic plan.						



	Fort Hamer Bridge Approaches, Upper Manatee River Road to Fort Hammer Road, Manatee County, FL – Manatee County
03/15 - 03/17	Project Roadway Engineer responsible for roadway and temporary traffic control plans. This project included the design of over a mile of
	approach roadway for a new bridge over the Manatee River, connecting Upper Manatee River Road with Fort Hamer Road. The project
	was designed for stage construction with the two lanes being delivered with initial construction.
	Gateway Express Improvements, Pinellas County, FL – Florida DOT
	Project Manager/TTCP Engineer of Record responsible for managing the tolling, structural engineering, and traffic control services for
	the Gateway Express improvement project. This project will deliver toll facilities and needed limited and controlled access connections
11/16 – 12/21	from the Bayside Bridge on the north, US 19 on the west, and the St. Pete Clearwater International Airport to I-275 via general purpose
	and new express lanes. H&H's scope for this design-build project includes contributing to FDOT's Alternative Technical Concepts (ATC)
	process; developing temporary traffic control plans (TTC) design for Segments 2 and 4; TCP coordination among Segments 1 through 4;
	tolls design for Segments 1, 2, and 4; and structures design for four bridges in Segment 4.
	SR 75 (US 231) from SR 30A (US 98) to Pipeline Road, Panama City, FL – Florida DOT
04/17 – 03/20	Roadway, Signing and Pavement Markings, and TTCP Engineer of Record responsible for design and preparation of roadway,
	signing and pavement marking, and traffic control plans for the single point urban interchange at SR 77 over US 231 and CSX RR
	improvement project. Work includes bridge, roadway, drainage, and lighting design.
	44th Avenue E from 45th Street E to 44th Avenue Plaza E, Braden River Segment, Manatee County, FL – Manatee County
00/15 10/10	<b>Roadway Engineer of Record/Senior Roadway Engineer</b> responsible for roadway and trainic control design and plans preparation.
09/15 - 12/18	Project included the design for the reconstruction and extension of 44th Avenue East from 45th Street East to 44th Avenue Plaza East.
	ross over the Braden Diver, as well as a realignment of Morgan, Johnson Dead and Caruse Dead to provide route continuity
	Longestead Extension of Elorida's Turnnike (SP 821) - S of Killian Darkway to N of Sunsot Drive Miami, EL - Elorida's Turnnike
	<b>Roadway Engineer</b> responsible for roadway and TTC design for Kendall Drive and Sunset Drive and the mainline HEFT. This design-
12/13 - 05/19	build project comprised the widening of the mainline HEFT (SR 821) from south of Killian Parkway to just north of Sunset Drive. The
12/10 00/17	project also included development of express lanes, relocation of ramp tolling, and operational improvements to the Kendall Drive
	interchange as well as resurfacing and other minor improvements.
	I-75 SB Off-Ramp from S of Bypass Canal to EB/WB I-4, Hillsborough County, FL – FDOT
	Project Engineer responsible for the roadway and temporary traffic control (TTC) design and plans preparation for this two-mile roadway
01/16 – 05/18	improvement project that included ramp widening, an extension of the ramp to provide off-line queueing, and an extended auxiliary lane on
	I-75. A unique aspect of the design team's approach was incorporation of operational improvements into a long-term buildout. This project
	was expedited for construction based on no right-of-way acquisition or impact to Florida Gas Transmission lines.
	Central Polk Parkway from Polk Parkway SR 540 to SR 35 (US 17), Polk County, FL – Florida DOT
	Project Roadway Engineer responsible for the roadway design, preparation of plans, and project coordination. This project required the
03/13 – 03/16	use of the Corridor Modeler software to aid in the design of a new six-lane expressway facility. The project included the design of one-mile
	of new alignment, over two-miles of widening, a new interchange at SR 540, and over two miles of new ramp alignments. This segment
	was among several that were under design to complete the northeasterly connection of Central Polk Parkway to I-4.



0	Firm Employed by	Hardesty & Hanover				
(SE)	Name	Raymond Mankbadi, PE		Years of relevant experience with this employer	16	
	Title	Director of Geotechnical	Engineering	Years of relevant experience with other employer(s)	27	
Degree(s) / '	Years / Specialization	1	M.S. / 1985 / Civil B.S. / 1978 / Civil F	Engineering Engineering		
Active regis	tration number / state	/ expiration date	Professional Engin	eer: 41609 / LA / 9/30/2023		
Year registe	red 1989	Discipline	Civil Engineering			
Contract role	e(s) / brief description	n of responsibilities	Geotechnical Eng	ineer – Meets MPR 9		
Experience	dates Experience an	nd qualifications relev	vant to the propo	osed contract; <i>i.e.</i> , "designed drainage", "designed gir	ders",	
(mm/yy–mn	n/yy) "designed inte	ersection", etc. Exper	ience dates shoul	d cover the time specified in the applicable MPR(s).	,	
01/19 – Pres 03/18 – 06/	19 Lapalco Boulev Lead Movable E Lapalco Bouleva bascule movable traffic and a new independent stru roadway approad <b>SR-605 Bascule</b> Lead Movable E to the IDIQ Mast mechanical, and	Lapalco Boulevard Movable Bridge over Harvey Canal, Westwego, LA - Jefferson Parish DPW Lead Movable Bridge Geotechnical Engineer for the pre-design inspection, the rehabilitation and widening of the existing four-lane Lapalco Boulevard to provide a facility carrying three lanes of traffic in each direction, and the design of a new three-lane double bascule movable bridge crossing of Harvey Canal. project includes rehabilitation to the existing four-lane bridge with three lanes of traffic and a new pedestrian/bike lane. 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. Improvements to bridge and roadway approaches for eastbound and westbound traffic as well as the development of a Traffic Control Plan is also included in scope. SR-605 Bascule Bridge Geotechnical Engineer responsible for generator foundation design of SR-609 bascule bridge as a task-order to the IDIQ Master Bridge Contract for bridge services statewide. The scope of work includes inspection and rehabilitation of structural,				
05/18-4/2	0 SR-A1A/North C Movable Bridge level fixed bridge includes the FIB extending Juanit the new bridge a	SR-A1A/North Causeway Bridge over ICWW, Fort Pierce, FL - Florida DOT District 4 Movable Bridge Geotechnical Engineer for the 4000-foot-long bridge replacement project which replaces a bascule span with a high- level fixed bridge that has 85-foot vertical clearance over the navigable channel. The preferred replacement fixed bridge alternative includes the FIB superstructure and spans over Old Dixie Hwy and the FEC Railway. In addition to the new bridge, the project includes extending Juanita Ave east from US-1 to Old Dixie Hwy and provisions for a new access roadway for the businesses south and north of the new bridge along SR A1A.				
08/12 – 08/	13 Gasparilla Islan Geotechnical E design, provide of swing bridge. By FDOT navigation	d Swing Bridge Replace ngineer responsible for re geotechnical recommenda providing comprehensive vessel collision loads to c	ment, Placida, FL - viewing geotechnica tion and Quality Con design services for t develop the substruc	<b>GIBA</b> I work performed by sub-consultant, performing foundation analys trol and Quality Assurance Services for the design of a new highw the replacement of this 220-foot swing span bridge, H&H implement ture. Project consists of 678-ft of new bridge including a 250-foot of	es and ay nted deck	



	girder swing span and approach spans utilizing Florida I-Beams. Embankments are supported by MSE walls and protected by new bulkheads. In addition to the bridge structures and new pile supports, a tender house is part of the scope.
	Des Allemands Swing Bridge Rehabilitation (BNSF Bridge 32.06), Des Allemands, LA – BNSF Railway Company Lead Moyable Bridge Geotechnical Engineer involved in the design, construction support, testing of micropiles for the rehabilitation of
02/14 12/14	a 90-foot single-track swing span bridge which included two jump spans and ten approach spans of prestressed concrete box beam.
02/14 - 12/10	which were reinforced by adding micropiles. Two jump spans were rehabilitated as well. 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.
	US-17 Swing Bridge over the Perquimans River Design-Build, Perquimans County, NC – North Carolina DOT
05/17 – 06/19	Lead Movable Bridge Geotechnical Engineer providing geotechnical and foundation design to replace the existing swing bridge with a new off-line bridge as well as technical special provisions for the control house. H&H's responsibilities include the complete design of the new swing span, including structural, mechanical, electrical, and geotechnical engineering. The swing span structure consists of a center-pivot Warren through truss supporting the concrete deck. The swing bridge foundations consist of 24- inch prestressed concrete piles. All work is being performed in accordance with AASHTO LRFD Bridge Specifications & FHWA Geotechnical Manuals.
	Sarah Mildred Long Bridge Replacement, Portsmouth, NH to Kittery, ME – Maine DOT
03/13 – 12/15	<b>Lead Geotechnical Engineer</b> for the \$159 million replacement design of the movable span of the Sarah Mildred Long Bridge, which carries vehicular traffic between New Hampshire and Maine and serves as a railway link to the Portsmouth Naval Shipyard. The movable bridge foundation design required deep drilled shaft foundations for the movable span. The new bridge will be a single level 300-foot-long lift span, framed with box girders, has separate seating locations for the double-level highway/rail approaches.
	Flagler Memorial Bascule Bridge Replacement Design/Build, West Palm Beach, FL – Florida DOT
12/11 – 05/17	<b>Geotechnical Engineer of Record</b> 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 consists of complete replacement of the existing, National Register of Historic Places eligible 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.
	Bruckner Expressway over Westchester Creek (Unionport Bridge) Replacement, New York, NY – New York City DOT
	Lead Bridge Geotechnical Engineer for the replacement of Unionport Bridge which provides a critical traffic connection between the
03/13 – Present	blucknet and cross bronk expressival and the Hutchinson River Parkway. Responsible for all geotechnical aspects including subsurface exploration drilled shaft foundation design soil improvement sign structures cofferdam retaining walls reinforcement
	embankment on soft soils and instrumentation. Bridge support includes 5-feet-wide drilled shafts socketed on bedrock. Micro piles and controlled modulus columns will be used to support the embankment to minimize impact on adjacent state bridges.



Firm Name		Employed by	Hardesty & Hanover				
		Amy Robards, PE			Years of relevant experience with this employer	2	
A COS	Title		Bridge Inspection Team	Leader	Years of relevant experience with other employer(s)	7	
Degree(s) /	Years /	Specialization		B.S. / 2012 / Civil E	Engineering / University of New Orleans		
Active regis	tration	number / state	/ expiration date	Professional Engineer: 41718 / Louisiana / 9/30/2023 FHWA-NHI 130055/53 Safety Inspection of In-Service Bridges / Refresher 2018 ATSSA Traffic Control Supervisor Refresher – ATSSA Flagger DOTD Certified Structural Concrete Inspector / LADOTD / 12/13/2023			
Year register	red	2017	Discipline	Civil Engineering			
Contract role	e(s) / b	rief descriptior	n of responsibilities	NBIS Bridge Insp	ection Team Leader		
Experience of	dates	Experience ar	nd qualifications relev	vant to the propo	osed contract; <i>i.e.</i> , "designed drainage", "designed gin	rders",	
(mm/yy–mn	n/yy)	"designed inte	ersection", etc. Exper	ience dates shoul	d cover the time specified in the applicable MPR(s).		
08/20 – Pres	sent	L H.001498.6; LA 24 and LA 16 Company Canal Vertical Lift Bridge, Bourge, LA – Louisiana DOTD 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 CE&I, Baton Rouge, LA – Louisiana DOTD 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, Louisiana. Included in the project were assorted repairs as well as the replacement of anchor bolts at concrete footings and other steel approach spans elements.					
04/18 – 05/	/18	19 Complex Bridge Inspections and Load Rating, Statewide, LA – Louisiana DOTD Structural Engineer/Inspector provided inspection and evaluation services for 19 complex bridges at various locations throughout Louisiana.					
10/19 – 01/	/20	Annual Inspecti Structural Engin Register of Histo members, an ele	ion of Almonaster Railro neer/Inspector for an ann ric Places bridge, which in ectrical inspection of the ele	ad Bascule Bridge ual inspection of the wolved a structural in ectrical systems and	over the Industrial Canal, New Orleans, LA – Port of New Orle Almonaster Avenue Railroad Bascule, an eligible for the National nspection of the fracture critical steel, primary and secondary stee controls, and a mechanical inspection of the machinery.	ans	



	Huey P. Long Bridge over the Mississippi River Annual Inspections, Bridge City, LA – New Orleans Public Belt Railroad
	(NOPBRR) and Louisiana DOT
	Structural Engineer/Inspector providing annual inspection services for the main bridge and railroad approaches of the Huey P. Long
12/15 – 05/18	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, coordination, and writing the final inspection reports.
	Seabrook Railroad Bridge Annual / In-Depth Bridge Inspection, Port of New Orleans, LA – Port of New Orleans
03/19 – 10/19	Structural Inspector responsible for conducting annual inspection of the Seabrook Trunnion Bascule Bridge crossing the IHNC in New
	Orleans, LA. This inspection included a structural inspection of the fracture critical steel, primary and secondary steel members, an
	electrical inspection of the electrical systems and controls, and an inspection of the mechanical systems and machinery.
	SR 609 Movable Bascule Bridge over Old Fort Bayou Rehabilitation, Ocean Springs, MS - Mississippi DOT
	Structural Inspector for the inspection of structural elements for full rehabilitation of SR 609 bascule bridge as a task-order to the IDIQ
10/18 - 11/18	Master Bridge Contract which includes developing standard and special bridge services statewide for MDOT. The scope of work
	included inspection and rehabilitation of structural, mechanical, and electrical bridge components, roadway approaches, and
	development of maintenance and repair plans.
	Francis Scott Key Bay Bridge Inspection, Baltimore, MD – Maryland Transportation Authority
	Structural Inspector responsible for the biannual inspection of the Francis Scott Key Bridge. Performed a hands-on inspection of
12/19 – 05/19	fracture critical members and all parts of the deck, superstructure, and substructure. The main span is crossed by way of a three-span
	truss with a cable suspended deck. The structure was accessed using bucket trucks, under-bridge inspection vehicles, manlifts, and
	rigging. Findings and recommendations were input into the owner's asset management system.
	William P. Lane Bridge Inspection, Chesapeake Bay, MD – Maryland Transportation Authority
	Structural Inspector responsible for the biannual inspection of William P. Lane Bridge. This 4.2-mile twin bridge facility carries US 50 /
08/18 - 05/19	301 across the Chesapeake Bay. Scope included the hands-on inspection of the three-span suspension span and nine spans of
00/10 00/17	suspended deck truss on the eastbound bridge. Additionally, performed audit inspection of the three-span through truss. Inspected all
	parts of the deck, substructure, and superstructure including suspension cables, suspender ropes, rocker links and anchorages.
	Findings and recommendations were input into the owner's asset management system.
	Thomas J. Hatem Memorial Bridge, Harford County, MD – Maryland Transportation Authority
	Structural Inspector responsible for the biannual inspection of the Thomas J. Hatem Memorial Bridge. Performed a quality control
12/18 – 05/19	inspection consisting of the hands-on inspection of 10% of this 10,362-foot-long bridge. Structure is comprised of multiple deck and
	through-truss configurations, as well as beam/girder spans and floor beam/stringer systems. Coordinated with multiple inspection
	teams and access vendors simultaneously operating on the bridge. The structure was accessed using bucket trucks, under-bridge
	inspection vehicles, manlifts and rigging.



Firm Employed by		Hardesty & Hanover				
Name	;	Timothy Harrington, PE		Years of relevant experience with this employer	10	
Title		Team Leader		Years of relevant experience with other employer(s)	0	
Degree(s) / Years /	Specialization	1	MS / 2011 / Civil E BS / 2009 / Civil E	ngineering naineering		
Active registration number / state / expiration date		/ expiration date	Professional Engineer: 95068 / NY / 05/31/2021 FHWA-NHI-130055 Safety Inspection of In-Service Bridges / 2017 FHWA-NHI-130053 Bridge Inspection Refresher Training / 2022 FHWA-NHI-130078 Fracture Critical Inspection for Steel Bridges / 2016 OSHA Construction Safety and Health (10-hour) 2014 SPRAT Level L Rope Access Technician			
Year registered	2015	Discipline	Civil Engineering			
Contract role(s) / b	rief description	n of responsibilities	NBIS Bridge Inspection Team Leader			
Experience dates	Experience a	and qualifications rele	evant to the proposed contract; <i>i.e.</i> , "designed drainage", "designed girders",			
(mm/yy–mm/yy)	"designed in	tersection", etc. Expe	rience dates shou	ald cover the time specified in the applicable MPR(s).		
06/19 – 09/19	Annual Inspection of Seabrook Railroad Bridge, New Orleans, LA - Port of New Orleans Team Leader for the annual inspection of the Seabrook Trunnion Bascule Bridge. This inspection included a structural interfacture critical steel and primary and secondary steel members, an electrical inspection of the electrical systems and machinery.				on of ols, and	
05/16 – Present	<b>Biennial Inspection of the Robert F. Kennedy Harlem Lift Bridge, New York, NY – Triborough Bridge and Tunnel Authority</b> Lead Team Leader responsible for the biennial inspection of a vertical lift bridge and its approach spans. Responsible for daily field coordination of field personnel, and coordination of 56 flags and 70 CMRs with the quality control engineer and TBTA flag and CMR managers. Coordinated progress with client project manager and addressed questions from the client in the field. Responsible for implementing Element Level Bridge Inspection (ELBI) quantities, condition state ratings, and developing Biennial Reports for twelve bridges with different due dates. Work included load ratings for certain flagged elements as well as newly constructed members, TBTA Element Database update, and Bridge Inventory updates in BDIS. The Authority's computerized inspection and asset management system was implemented at two bridges, and an updated version of the system for ELBI was used at a third bridge.					
09/18 – 12/18	I-110 Bridge, 2 Team Leader r of all bascule a	018 Biennial Inspection, esponsible for preparing the nd anchor spans and NBIS	IDIQ Master Bridge the routine/fracture cr S and element inspe	e Design, Harrison, MS - Mississippi DOTD itical inspection including electrical, mechanical, and structural ins ction for the entire bridge as well as the inspection report.	pection	



	Biennial Inspection of the Throgs Neck Bridge, New York, NY – Triborough Bridge and Tunnel Authority
5/20 - Present	Lead Team Leader responsible for the biennial inspection of a long span suspension bridge and its approach spans, carrying I-295
	traffic from the Bronx to Queens. The bridge features an 1800-foot main suspension span over the East River, with 555-foot side
3/20 1103011	spans. Responsible for daily field coordination of all inspection team personnel, and the coordination of flag and CMR reporting with
	the quality control engineer and TBTA flag and CMR managers. Responsible for implementing Element Level Bridge Inspection (ELBI)
	quantities, condition state ratings, and developing Biennial Reports.
	Biennial Inspection of the Goethals Bridge, Elizabeth, NJ – New York New Jersey Link, LLC
	<b>Team Leader</b> responsible for the biennial inspection of the new Goethals Bridge replacement connecting I-278 between Staten Island,
02/17 – 02/18	New York to Elizabeth, New Jersey. This cable stay main bridge spans a total length of 1635-foot, including a 900-foot main span over
	the Arthur Kill waterway. Primary structural elements were inspected such as the stay cables, cable anchorage and housing, main
	towers, steel girder and floor trusses, as well as prestressed concrete beams throughout the approach spans. Prepared Biennial
	Inspection reports and Condition Survey Report.
	Biennial Inspection of the Rainbow Bridge and Lewiston-Queenston Bridge; Interim Inspection of Whirlpool Rapids Bridge,
	Niagara Falls, NY – Niagara Falls Bridge Commission
	Lead Leader responsible for the 100% hands-on biennial inspection of a 950-foot steel hingeless spandrel arch span bridge and
01/17 – 12/17	its reinforced concrete barrel arch span approaches, as well as a 1000-foot steel hingeless spandrel arch span bridge and its steel box
	girder approaches. Inspection included primary fracture critical structural elements such as arch ribs, spandrel columns/girders,
	floorbeams, and approach span girders/floorbeams, as well as secondary members. Also performed the interim structural inspection of
	a two-hinged bi-level steel truss arch bridge with eyebar trusses and its plate girder railway approach spans.
	Biennial Inspection and Asset Management System Development of the Henry Hudson Bridge, New York, NY – Triborough
	Bridge and Tunnel Authority
05/15 - 01/17	Team Leader and Project Engineer for the Inspection and Asset Management software system development and full-scale biennial
03/13 - 04/17	inspection implementation at the Henry Hudson Bridge and Queens Midtown Tunnel facilities. The Biennial Inspection included the
	inspection of the two-level steel arch Henry Hudson Bridge, with the main arch spanning 840 feet over the Spuyten Duyvil Creek and
	Metro-North Railway line. In addition to the Upper and Lower Levels of the Henry Hudson Bridge, seven bridges ranging from one to
	four spans were also inspected across the two facilities.
	NBIS Inspection of the Brooklyn Bridge, New York, NY – New York State DOT
	Lead Team Leader responsible for leading the biennial and SILO inspections of the long span fracture critical suspension bridge. The
	2020 Biennial Inspection included the main suspension spans and both Manhattan and Brooklyn approaches, totaling 75 spans.
05/20 – 12/21	Coordinated access and work zone traffic control on a daily basis with NYCDOT and NYSDOT engineers, situation room, maintenance
	crews, as well as with the NYPD, USCG, and on-site contractors. A total of 108 flags were issued during the course of the biennial
	inspection for critical findings. Developed a five-volume comprehensive biennial inspection report. Performed the 2021 SILO inspection
	of critically-rated elements.



Firm Employed by Name		Hardesty & Hanover				
		Elizabeth Barabas, PE		Years of relevant experience with this employer	13	
Title		Bridge Inspection Team	Leader	Years of relevant experience with other employer(s)	0	
Degree(s) / Years /	Specialization	1	BS / 2007 / Civil E	ngineering		
Active registration number / state / expiration date		Professional Engineer: 44535 / NY / 12/31/2024 NHI Safety Inspection of In-Service Bridges, Course #130055, 2014 NHI Bridge Inspection Refresher Training, Course #130053, 2018 NHI Fracture Critical Inspection Techniques for Steel Bridges, Course #130078, 2016 NHI LRFR for Highway Bridges, Course #130092, 2016				
Year registered	2019	Discipline	Civil Engineering			
Contract role(s) / b	rief description	n of responsibilities	NBIS Inspector To	eam Leader		
Experience dates	Experience a	and qualifications rele	evant to the prop	osed contract; i.e., "designed drainage", "designed gin	rders",	
(mm/yy–mm/yy)	"designed in	tersection", etc. Expe	rience dates shou	ald cover the time specified in the applicable MPR(s).		
09/18 – 11/18	I-110 Bridge or Team Leader f Inspection inclu	I-110 Bridge over Biloxi Back Bay, IDIQ Master Bridge Design Contract, Harrison, Mississippi - Mississippi DOT Team Leader 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 action bridge bilded in according with state. AACUTO, and FUMA equipments				
04/15 – 02/16	Biennial Inspection of the Atlantic Beach Bridge, Nassau County, NY – Nassau County Bridge Authority Team Leader responsible for the biennial inspection of a double leaf bascule bridge and approaches. Work included the inspection and examination of the condition of all structural components in accordance with NYSDOT requirements. Responsibilities included inspection scheduling, MPT coordination, field documentation and sketches, updating and verifying Bridge Inventory data, and NYSDOT inspection report.					
05/11 - 09/11, 05/12 - 09/12, 01/13 - 05/13, 06/15 - 07/15	Biennial & Inter Falls, NY – Nia Team Leader ( span bridge and and its steel bo spans. Inspection floorbeams, and as well as other findings, prepar	erim Bridge Inspections of Igara Falls Bridge Comm 2015)/Assistant Team Le d its reinforced concrete ba x girder approaches, and i ons included primary fractu d approach span girders/flur r buildings, plazas, and fac ration of field sketches. up	of Rainbow Bridge, hission eader (2011-2013) re arrel arch span appr inspection of a two-h ure critical structural oorbeams, as well a cilities associated with dating and verifying	Lewiston-Queenston Bridge, and Whirlpool Rapids Bridge, N esponsible for the inspection of a 950-foot steel hingeless spandre baches, as well as a 1,000-foot steel hingeless spandrel arch spar inged bi-level steel truss arch bridge and its plate girder railway ap elements such as eyebar trusses, arch ribs, spandrel columns/gir is secondary members. Inspection also included a steel roof truss h the bridges. Responsibilities included documentation of inspecti Bridge Inventory data, NYSDOT inspection reports, and client reports	iagara I arch h bridge oproach ders, canopy on orts.	

	Biennial and Special Inspection of the Throgs Neck Bridge, Bronx, NY - Triborough Bridge and Tunnel Authority
05/17 – 12/19	Team Leader responsible for the overall management of the structural inspection of the Throgs Neck Bridge and associated ramp
	structures. Project includes National Bridge Element (NBE) Inspection of all structural elements (including fracture critical elements
	such as truss chords and gusset plates), load rating calculations and updates, inventory updates and report submittals. Supplementary
	tasks include design document preparation for structural repairs of elements requiring immediate repair, special interim inspections,
	and scoping studies for future projects related to the facility.
	Biennial Inspection of Robert F. Kennedy Bridge, New York, New York – MTA Bridges and Tunnels
	Team Leader for the biennial inspection of the Harlem River Lift Bridge, approaches, and associated ramp structures. Work included
	the inspection and examination of the condition of all structural components in accordance with NYSDOT requirements. The
05/16 – 11/16	inspections included all elements on the three through truss spans, lift span towers, decks, structural framing, and piers, as well as all
	abutments and retaining walls. Responsible for hands-on inspection and concrete sounding on the structure, documentation of
	inspection findings, creation of field sketches, preparation of Bridge Data sheets, updating and verifying inventory data/database,
	NYSDOT inspection reports, high rocker bearing report, wearing surface report, preparation of bridge flag reports.
	Biennial and Interim Inspections of Robert F. Kennedy Bridge, New York, New York – MTA Bridges and Tunnels
	Team Leader for the biennial & interim inspections of the suspension spans, approaches, and associated ramp structures of the
06/14 – 02/15	Robert F. Kennedy Bridge. Work included the inspection and examination of the condition of all structural components in accordance
	with NYSDOT requirements. Responsible for NYSDOT inspection reports, hollow concrete report, preparation of bridge flag reports,
	documentation of inspection findings, creation of field sketches, preparation of Data sheets, updating and verifying data and database.
	Biennial Inspection of the Henry Hudson Bridge, New York, New York – MTA Bridges and Tunnels
	Team Leader for the biennial inspection of the arch span, upper & lower level, approaches, and associated ramps. Work included the
01/15 02/16	inspection and examination of the condition of all structural components in accordance with NYSDOT requirements for the biennial
04/15 - 02/10	inspection and verification of load ratings. Responsible for load ratings, NYSDOT inspection reports, preparation of bridge flag reports,
	documentation of inspection findings, creation of field sketches, preparation data sheets, and updating data and database. Also
	assisted in development of a computerized asset management system for client element database.
	Biennial Inspection of the Verrazzano-Narrows Bridge, New York, New York – Triborough Bridge and Tunnel Authority
05/18 - 06/19	<b>Team Leader</b> responsible for the inspection of the Verrazzano-Narrows Bridge main cables and suspender ropes. Performing
00/10 00/17	analysis, special fracture critical inspections, load ratings and providing recommendations, repair estimates, and rehabilitation design.
	Fracture critical elements such as truss chords and gusset plates. Load rating calculations and updates.
	Biennial and Interim Inspections of Robert F. Kennedy Bridge, New York, New York – MTA Bridges and Tunnels
06/12 – 11/12	Assistant Team Leader responsible for the biennial & interim inspections of the Harlem River Lift Bridge, approaches, and associated
	ramp structures. The inspections included all elements on the three through truss spans, lift span towers, decks, structural framing,
	and piers, as well as all abutments and retaining walls.
	NYSDOT Biennial & Interim Bridge Inspections, Nassau/Suffolk, NY – New York State DOT
05/13 – 02/15	Assistant Team Leader responsible for the inspection of multiple bridges; documentation of inspection findings, preparation of field
	sketches and flag reports, MPT coordination, updating and verifying Bridge Inventory data, and NYSDOT inspection reports.



Fin		Employed by Hardesty & Hanover					
	Name	e	Paul Marzuillo, PE		Years of relevant experience with this employer	9	
	Title		Team Leader		Years of relevant experience with other employer(s)	0	
Degree(s) /	Years	/ Specialization		MS / 2014 / Civil E	ngineering		
Active regis	tration	number / state	/ expiration date	Professional Engineer: 096567-1 / NY / 11/30/2024 NHI Safety Inspection of In-Service Bridges, Course #130055, 2/2017 NHI Bridge Inspection Refresher Training, Course #130053, 2022			
Year registe	red	2016	Discipline	Civil Engineering			
Contract rol	e(s)/t	orief description	n of responsibilities	NBIS Inspector Te	eam Leader		
Experience	dates	Experience an	nd qualifications relev	ant to the property	osed contract; i.e., "designed drainage", "designed gin	ders",	
(mm/yy–mr	n/yy)	"designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).					
06/16 – 04,	/17	Biennial Inspect Team Leader rea girders, pier caps creating field ske bridge flag report	tion of RFK Vertical Lift I sponsible for the biennial i s, primary members, struct tches, preparing of NYSD is and New York State DO	Bridge, Group B, N nspection of a vertic tural deck, and seco OT Bridge Data she T Biennial inspection	ew York, NY – Triborough Bridge and Tunnel Authority al lift bridge and its approach spans. Led the inspection of fracture ndary members. Was responsible for documenting inspection findi ets, and updating and verifying Bridge Inventory data. Also prepar- n reports.	critical ngs, ed	
07/18 – 03	/19	Biennial Inspection of the Verrazzano-Narrows Bridge, New York, NY – Triborough Bridge and Tunnel Authority Team Leader responsible for the inspection of the Verrazano-Narrows Bridge main cables and suspender ropes. Performed analysis, special fracture critical inspections, and load ratings. He also provided recommendations, repair estimates, and rehabilitation design.					
07/17 – 09	/18	Region 10 Biennial and Interim Bridge Inspection, New York, NY – New York State DOT Team Leader responsible for the biennial and special inspections of a long span suspension bridge and its approach spans, carrying I- 295 traffic from the Bronx to Queens. The bridge features an 1,800-foot main suspension span over the East River with 555-foot side spans. Responsible for the inspection of main cables and suspender ropes, special emphasis/fracture critical elements, load rating analysis, and providing repair recommendations/estimates. Fracture critical elements included truss chords and gusset plates.					
06/17 – 01,	/18	<ul> <li>Biennial Inspection of the Throgs Neck Bridge, Bronx, NY – Triborough Bridge and Tunnel Authority</li> <li>Team Leader responsible for the overall management of the structural inspection of the Throgs Neck Bridge and associated ramp structures. Project includes National Bridge Element (NBE) Inspection of all structural elements (including fracture critical elements success chords and gusset plates). Joad rating calculations and updates inventory updates and report submittals. Supplementary task</li> </ul>					

	include design document preparation for structural repairs of elements requiring immediate repair, special interim inspections, and
	scoping studies for future projects related to the facility.
	Biennial Inspection of the Whirlpool Rapids Bridge and Interim Inspection of the Rainbow and Lewiston-Queenston Bridge,
	Niagara Falls, NY – Niagara Falls Bridge Commission
	Assistant Team Leader responsible for performing hands-on structural inspection, report preparation and repair recommendations for a
	two-hinged bi-level steel truss arch bridge and its plate girder railway approach spans. He also performed interim inspection of a 950-
05/17 – 07/17	foot steel hingeless spandrel arch span bridge and its reinforced concrete barrel arch span approaches as well as a 1,000-foot steel
	hingeless spandrel arch span bridge and its steel box beam approach spans. Inspection included fracture critical elements such as arch
	ribs, spandrel columns and girders, and approach box beams, and floorbeams. Inspection scope included the approach span bridges,
	adjoining plazas, the NFBC Administration Building, and associated roadways of the Niagara Fails Bridge Commission. Work included
	preparation of NYSDOT Biennial and Facility Narrative reports for all three bridges.
	Dienmal inspections of the Goethals Dridge, Elizabeth, NJ – New York/New Jersey Link Team Leader for the initial Diapoial Dridge inspection of the cable staved Coethals Dridge (both eastbound and westbound structures)
05/17 _ 12/20	including the structure approach ramps. Work included a hands on field inspection of the cable-staved main spans primary elements
03/17 - 12/20	including the structure approach ramps. Work included a narios-on field inspection of the cable-stayed main spans primary elements, including the towers, main cable sockets, and span floorsystem in order to develop NVSDOT Reports and a Facility Condition Survey
	The H&H inspection team worked closely with NYN J Link to perform inspections within strict traffic maintenance windows.
	2014 and 2015 Biennial Inspection of the RFK Suspension Bridge, New York, NY – Triborough Bridge and Tunnel Authority
	Assistant Team Leader responsible for performing hands-on inspection of various concrete, steel, and aluminum elements throughout
	the RFK Bridge – Group A bridges. The RFK Group A bridges consist of 142 main-line spans, as well as an exit ramp, two (2)
	pedestrian ramps, and two (2) out-of-service vehicular ramps. The main-line bridge includes a 2,724-foot suspension bridge and seven
	spans of thru-trusses, both with orthotropic decks, as well as steel framed approach spans with a cast-in-place concrete deck. The
04/14 – 03/15	inspection included 100% hands-on inspection of all fracture critical and special emphasis members per the NYSDOT Bridge Inspection
	Manual 2014 Edition. In addition to these elements, Was responsible for inspection of truss elements, main suspension cables and
	cable strands. The cable strand inspection involved wedging several strands to reveal the condition of the interior wires. This procedure
	was completed per NCHRP Report 534: Guidelines for Inspection and Evaluation of Suspension Bridge Parallel Wire Cables, 2004
	Edition. Developed NYSDOT Inspection Reports and for noting all deficiencies observed during inspection, creating field sketches, and
	updating and verifying the Bridge Inventory data. He was responsible for developing NBE elements and quantities.
	2016 Condition Survey of Terminal Bridges at the JFK Airport, Jamaica, NY – Port Authority of New York & New Jersey
	assistant fear Leader/Security information manager for the Bieffinial Inspection of the Venicular Bruges and 7 Peuesthan Bruges
	at John F. Reineuy international Aliport. The structures were comprised of several types including steel multi-stringer, and prestressed
02/16 11/16	coordination with the Facility and Port Authority Police for security reasons. The inspection was performed in compliance with the latest
03/10 - 11/10	NVSDOT/EHWA/NELS requirements including these for element level inspections. The inspection determined the condition of the
	specific structures and identified structural and non-structural deficiencies which may present a potential safety bazard. Was tasked with
	developing quantities and elements within BDIS and for developing the NYSDOT reports through BDIS as well as developing
	recommendations to rectify all observed deficiencies



6	Firm Employed by		Hardesty & Hanover					
	Name		Rima Zahalan, PE		Years of relevant experience with this employer	6		
	Title		Structural Engineer /Tea	m Leader	Years of relevant experience with other employer(s)	6		
Degree(s) / Y	Years / S	Specialization		M.S., Structural En B.S., Civil Enginee B.A., Mathematics,	M.S., Structural Engineering, 2010 B.S., Civil Engineering, 2008 B.A. Mathematics, 2008			
Active registration number / state / expiration date			/ expiration date	Professional Engineer: NY / 095009 / 6/30/2023 FHWA-NHI-130055: Safety Inspection of In-Service Bridges / 2013 FHWA-NHI-130053: Bridge Inspection Refresher / 2018 FHWA-NHI-130078: Fracture Critical Inspection Techniques for Steel Bridges / 2015 FHWA-NHI-135047: Stream Stability & Scour at Highway Bridges FHWA-NHI-130087: Inspection and Maintenance of Ancillary Highway Structures / 2015 OSHA-ANSI: Fall Protection / 2014 OSHA: Construction Safety and Health (10-hour)				
Year register	red	2015	Discipline	Civil Engineering				
Contract role	e(s) / bri	ief description	of responsibilities	NBIS Inspector Te	eam Leader			
Experience of	dates I	Experience an	d qualifications relev	vant to the propo	osed contract; i.e., "designed drainage", "designed gir	ders",		
(mm/yy-mm	n/yy) '	'designed inte	rsection", etc. Experi	ience dates shoul	d cover the time specified in the applicable MPR(s).			
7/20 – 10/2	20 20 20 20 20 20 20 20 20 20 20 20 20 2	Inspection of 3 On-System Bergen County Movable Bridges, Group 02H0, Cycle 1 – New Jersey DOT Team Leader for the NBIS structural evaluation, analysis, and inspection of two movable bridges: Court Street (CR 56) over Hackensack River and Kingsland Avenue Bridge over Passaic River, and one fixed bridge: Union Avenue Bridge over Passaic River. Performed hands-on inspections, update and review of all structure inventory and appraisal items and bridge inspection reports, coding bridge elements, scheduling, MPT/equipment arrangements, field priority repair identification and assessment, repair design and drawings as needed, SI&A/CombIS item and element coding, MPT coordination, and coordinating with County Engineers and supervising teams for on-site Mechanical & Electrical inspections and testing. Bucket trucks, snoopers, and ladders were used, and nondestructive testing was performed.						
05/16 – 05/	/18 r c c	2016 Biennial Inspection of the Robert F. Kennedy Harlem Lift Bridge, New York, NY – Triborough Bridge and Tunnel Author Project Engineer/Team Leader responsible for performing in-depth structural inspections, condition evaluations, reporting, and load ratings of the project bridges. Project includes inspection of mechanical and electrical systems of the Harlem River Lift Bridge and associated ramp structures of the Robert F. Kennedy Bridge. Includes elevator inspection, fathometric surveys, diving inspections, design document preparation for structural repairs of elements requiring immediate repair, auxiliary testing to determine extent of deterioration, special interim inspections, and scoping studies for future projects related to the facility.						



	Biennial Inspection of the Throgs Neck Bridge, Queens/Bronx, New York – Triborough Bridge and Tunnel Authority
	Structural Qualified Team Leader (QTL) responsible for field inspection, inventory and database coding, flag report writing, biennial
05/17 – 12/21	and supplemental report writing, fracture critical element inspection, load ratings, and repair designs (3 BINS) for this complex, long
l	span suspension bridge and its approach spans. The Throgs Neck Bridge carries I-295 traffic between the Bronx and Queens and
	features an 1800-foot main suspension span over the East River, with 555-foot side spans.
	2017 Biennial Inspections of the Goethals Bridge, Elizabeth, NJ – NYNJ Link
	Structural Qualified Team Leader (QTL) responsible for the biennial inspection of the new Goethals Bridge replacement. The 1,635-
04/17 – 01/18	foot eastbound bridge was the first of the twin cable-stayed structures to be constructed. Performed inspection of towers, cables, cable
	sockets, steel girders, floor trusses, and prestressed concrete beams, and prepared inspection reports for NYSDOT, NJDOT, and
	PANYNJ. The new design allows for a future light rail or bus corridor between the roadways.
	2016 Interim Inspection of the Henry Hudson Bridge, New York, New York – Triborough Bridge and Tunnel Authority
01/17 – 03/17	Qualified Team Leader (QTL) for interim inspection of the Henry Hudson Bridge and associated ramp structures of the Queens
	Midtown Tunnel. Work included the sounding and condition assessment of concrete components using inspection software on tablets.
	2018 Biennial Bridge Inspection & Design of Miscellaneous Structural Repairs at the Verrazzano-Narrows Bridge, New York, NY
	<ul> <li>– Triborough Bridge and Tunnel Authority</li> </ul>
	Structural Team Leader responsible for the hands-on NBIS inspection of the Verrazzano-Narrows Bridge including main cables and
06/18 – 02/20	suspender ropes. Responsible for daily field coordination of all inspection team personnel, and the coordination of flag and CMR
	reporting with the quality control engineer and TBTA flag and CMR managers. Performed analyses, special fracture critical inspections
	(truss chords and gusset plates), load rating calculations and updates, and provided recommendations, repair estimates, and
	rehabilitation design.
	Route 1&9 Pulaski Skyway Rehabilitation – New Jersey DOT
	<b>Team Leader</b> who performed an in-depth inspection of the superstructure and substructure elements from Pier 78 to 98, including the
06/14 – 10/14	main truss over the Passaic River, to document and assess existing conditions of all steelwork including trusses, gusset plates, truss
	bracing members, floor beams, and secondary members along with substructure elements necessary for the design of the structure
	renabilitation. Performed load rating analysis for the inspected portion of the truss bridge, using CSI Bridge software to model and
	analyze the structure under the guidelines of the Load and Resistance Factor (LRFR) rating.
	Inspection of 80 Morris County Bridges (14E5 & 43) and On- & 32 Off-System Morris County Bridges, (14A1) – New Jersey DOT
	<b>Leader</b> for the structural evaluation, analysis, and inspection of over 150 Morris County Bridges for NJDOT. Structure types
01/13 – 12/15	Included arcnes, cuiverts, steel/concrete stringer and monoplearn systems, box beams, prestressed girders, trusses, concrete stabs, and
	and appreciate items and bridge increasing reports, and managing field teams for narius-on inspections, QA/QC of all structure inventory
	and appraisal items and brouge inspection reports, county brouge elements, scheduling, agency/consultant negotiations and coordination,
	in the provide the provided business and assessment, repair design and drawings, and SI&A/Combis Item
	j and element couling. Equipment used included bucket trucks, shoopers, ladders, MPT coordination, and nondestructive testing.

	Firm Employed by	Hardesty & Hanover			
	Name	Brianna Kovacs, PE		Years of relevant experience with this employer	4
	Title	Team Leader		Years of relevant experience with other employer(s)	0
Degree(s) /	Years / Specialization	1	B.S. / 2017 / Civil I	Engineering / University of Maryland	
Active regis	tration number / state	/ expiration date	Professional Engin NHI Safety Inspect	eer: 51187 / MD / 12/6/2023 ion of In-Service Bridges, Course #130055, 10/2018	
Year registe	red 2016	Discipline	Civil Engineering		
Contract rol	e(s) / brief description	n of responsibilities	NBIS Inspector T	eam Leader	
Experience	dates Experience an	nd qualifications relevant	vant to the propo	osed contract; i.e., "designed drainage", "designed gin	rders",
(mm/yy–mr	n/yy) "designed inte	ersection", etc. Exper	ience dates shoul	d cover the time specified in the applicable MPR(s).	
09/20-Pres	Annual NBIS Br Team Leader re several Maryland street closures, s recorded SI&A a the client's Asse culverts, multi-be swing span, a ro electrical system	Annual NBIS Bridge Inspection, Evaluation, & Rating Services, Statewide, MD - Maryland DOT/SHA Team Leader responsible for the condition inspection and evaluation of culverts, bridges, and movable bridges in Baltim several Maryland counties. Brianna obtained right of entry permits for MTA, CSX, and AMTRAK railroads access, MOT p street closures, special access requests from private companies, and equipment and MOT vendors. Performed hands-or recorded SI&A and Element Level Condition States following FHWA, AASHTO, and the client and developed inspection the client's Asset Management system, which included clearance and sounding sketches. Inspected structures made of i culverts, multi-beam steel, and concrete spans, through girders and steel through trusses. The three movable structures swing span, a rolling lift span, and a double-leaf bascule each received a full hands-on inspection of the structural, mech electrical systems.			
7/17-10/1	7 Comprehensive Assistant Team Responsible for Bridges over Cur over CSX rail tra bridge was acces by the immediate equipment used.	Engineering Services C Leader for the project inv preliminary and final desig tis Creek. Under this contr cks. To complete the inspe- ssed using an 85' manlift f e proximity of the Penningt	ek, Baltimore, MD - Maryland Transportation Authority inspection of the I-695 drawbridge (parallel double-leaf bascule). I drawings of temporary and permanent structural repairs to the I-6 I the inspection of the I-695 bridges over Curtis Creek, which cross right-of-entry permits and insurance for any work over active tracks osure at a track crossing beneath. This overall inspection was com All inspectors had current rail safety certifications and training for t	95 ses s. The plicated the	



	NBIS Bridge Inspection, Evaluation, & Rating Services, Statewide, MD – Maryland DOT/SHA
	Team Leader responsible for the condition inspection and evaluations of eight multi-girder interstate bridges on I-95 and I-495.
	Performed this work in nighttime lane closures with multiple MOT set-ups and bucket truck access. Coordinated with the client's regional
	TCM before, during, and after each closing. Recorded findings of deterioration, corrosion, and safety concerns as well as condition
07/17-12/19	states for each of the bridge elements following AASHTO and updated SI&A following FHWA and client standards. Used an ultrasonic
	thickness meter to determine the extent of section loss on structural elements. Developed all reports with color photographs, vertical
	clearance sheets, and sounding profiles in the client's web-based asset management and reporting system. Also, responsible for the
	delivery of condition inspection and evaluation reports for bridges and culverts in in several Maryland counties. Performed hands-on
	inspections, and developed reports with updated SI&A and ELI condition states in the client's asset management database.
	Annual NBIS Facilities Inspection Services, Statewide, MD – Maryland Transportation Authority
	Assistant Team Leader responsible for coordinating access and teams for the annual condition inspection and evaluation, including
	documenting all inventory data for MDTA bridges on I-95, I-695, I-895, and US 50 over the Chesapeake Bay. Obtained MOT lane
	closure and detour permits from City and State agencies, and coordinated weekly work schedules with MDTA, subconsultants,
11/18-Present	equipment and MOT vendors. Additional responsibilities include overall facility tracking of inspections and reports for structures
	assigned to the JV team, hands-on and visual inspections of the facility bridges, recording SI&A and element level condition states,
	documenting inspection findings in client's web-based application for asset management, reviewing inspection reports generated by
	other firms to maintain consistency in reporting, processing invoices received from equipment and MOT vendors, preparing progress
	reports, and coordinating the NDT of pins and parapet tie-downs.
	Annual NBIS Facilities inspection, Statewide, MD - Maryland Transportation Authority
	Assistant Leader responsible for the planning, coordination, and execution of annual condition inspections and evaluations of 64
00/17 10/10	MDTA-owned bridges on a 60-mile length of 1-95 for the JV project team. Brianna coordinated with firms and vendors to perform multiple
09/17-12/18	simultaneous inspections and meet the client's FHWA asset anniversally dates. Bhanna personally coordinated obtaining MOT rane
	closure permits, scheduling equipment, and MOT vehdors for 19 bildges. She performed hands-on inspections, including high work, undeted SI&A, and element level data collection and generated inspection reports in the client's web based electronic asset
	upualeu Si&A, and element level data collection and generated inspection reports in the client's web-based electronic asset
	Ridge BWC5505001 Emergency Inspection and Rebabilitation. Statewide, MD – Manyland Transportation Authority
2/20 Dresser	Structural Bridge Inspector and Load Dating Engineer responsible for initial emergency inspection, drawing repair plans and using
3/20-Present	load rating analysis software to perform the load rating based on the renair design
	ioau rauny analysis soluware to perform the load rauny based on the repair design.



	Firm Employ	yed by	Hardesty & Hanover						
	Name		Opio Hunter, PE		Years of relevant experience with this employer	3			
	Title		Structural Engineer/Tear	m Leader	Years of relevant experience with other employer(s)	13			
Degree(s) / Y	Years / Special	ization		MS, Civil/Structura	I Engineering, 2004, University of Maryland	-			
				BS, Civil/Structural Engineering, 2002, Howard University					
Active regist	tration number	/ state / e	expiration date	Professional Engin	eer: 038189 / GA / 12/31/2022				
			1	FHWA-NHI-13005	5 Safety Inspection of In-Service Bridges				
Year register	red 2	013	Discipline	Structural Enginee	ring				
Contract role	e(s) / brief des	cription o	f responsibilities	Design Developm	ent of Fixed Bridge Structures				
Experience of	lates Exper	rience and	d qualifications relevant	to the proposed co	ontract; <i>i.e.</i> , "designed drainage", "designed girders", "desig	gned			
(mm/yy-mm	n/yy) inters	ection", e	etc. Experience dates sh	ould cover the tim	e specified in the applicable MPR(s).				
	Almo	Almonaster Avenue Railroad Bridge over the Industrial Canal Rehabilitation, New Orleans, LA – Port of New Orleans							
	Struc	Structural Engineer for the bridge assessment, complete rehabilitative engineering design, and construction inspection services							
	requir	required for the partial replacement of the Almonaster Avenue Bridge, a movable Strauss-heel trunnion bridge. H&H's 2019 assessment							
09/21-01	/22 of the	of the circa-1920, eligible for the National Register of Historic Places bridge revealed that improvements to the electrical and mechanical							
	syster	systems, superstructure, and counterweight were required to return this bridge to its full operating capability. H&H developed necessary							
	design	design plans to replace the span drive and span lock machinery, operating strut, guide assembly, live load bearings, counterweight							
	trunni	trunnion pin, and bushing. The main trunnion bearings were rehabilitated and repositioned.							
	Tenne	I ennessee River Bridge Inspection and Load Rating – Nortolk Southern Corp.							
	Struc	Strucutral Engineer providing engineering services under the Systemwide Engineering and Design Services contract. The Steel							
09/21-Pres	sent repair	repairs at Gulf Division MP 362.60-A Decatur, AL task was awarded to Hardesty & Hanover through this contract. The task involves the							
0,1211100	perfor	performance of an on-site inspection, the preparation of load rating calculations and the development of repair plans for the structure in							
	accord	accordance with the scope of work. The structure consists of three superstructure types: vertical lift span, deck plate girder span and							
	seven	through tr	russ spans.						
	The C	hio River	Bridges Downtown Cros	ssing, Jefferson, IN	& Louisville, KY - Kentucky Transportation Cabinet				
	Struc	tural Engi	neer for this project that co	onsisted of the recon	struction of the Kentucky approaches and the interchange junction	ns of I-			
05/13-07/17	14 65, 1-6	64 and I-71	, the construction of a new	/ I-65 northbound bri	dge, and the reconfiguration and rehabilitation of the existing I-65	JFK			
	Bridge	e and the li	ndiana approaches. The re	econstructed intercha	anges have a total of 47 girder and slab bridges. Responsible for				
	structu	ural design	is of a three-span prestres	sed I beam bridge su	upported by integral abutments and multi-column piers. Performed	I the			
	structu	ural capaci	ity checks of the girders, pi	iers and piles. Also, i	responsible for structural designs of a three-span steel plate girde	r			



	approach bridge with a cantilever abutment and multi-column piers. Performed the structural capacity checks of the steel plate girders
	and all related superstructure elements.
06/13-09/14	Winston Salem Northern Beltway, Eastern Section, from US-158 to US-42, Winston-Salem, NC – North Carolina DOT Project Engineer responsible for the overall coordination, structural design and the preparation of contract drawings at preliminary and final review stages. This task involved the design of three parallel bridges containing straight girders on curved alignments. All three bridges are comprised of three-span prestressed bulb-T girders. The substructure units consist of integral abutments on a single row of H-piles, multi-column bents with footings on H-piles and concrete columns supported on drilled shafts. Performed the structural design of the girders, multi-column bents and drilled shafts.
04/16-10/16	Pulaski Skyway Rehabilitation Program Contract 5, Essex and Hudson Counties, NJ – New Jersey DOT Structural Engineer for the deck replacement, steel structures and substructure rehabilitation, as well as seismic evaluation and bearing replacements. Responsible for structural design, detailing and preparation of construction plans at the final review stage for the Kearny Ramp structure. Performed the structural calculations for various superstructure elements including the shear lock design, the shear connector design for stringers and floor beams, and the wind tongue design. Also directed the detailing effort for the framing plan, stringers, and floor beam sheets.
05/15 -08/16	Scudders Falls Bridge Replacement Project, Mercer County, NJ and Bucks County PA - Delaware River Joint Toll Bridge Commission Structural Engineer responsible for the structural design of the piers on the main river bridge which carries traffic on I-95 over the Delaware River. The existing four-lane bridge over the Delaware River was functionally obsolete and was replaced with a twin-span structure carrying six lanes of through traffic (three in each direction), two auxiliary northbound lanes for entry/exit travel, and one auxiliary southbound lane for entry/exit travel. The bridge is a seven-span bridge having a total length of 1814-feet. The substructure units consisted of MSE abutments with two rows of H-piles and multi-column piers with footings supported on drilled shafts. Performed the structural modeling and design of the fixed and expansion piers, including the pier caps columns, footings and drilled shafts. Also analyzed the sign structure that is founded on one of the expansion piers.
02/16 – 02/17	Grand Concourse Bridge Over Metro-North Railroad, New York, NY – New York City DOT Structural Engineer for this project involved the superstructure replacement of the existing roadway bridge that is being supported by four New York City Transit trusses over the Metro-North Railroad Hudson Line. Per the project's criteria, the new superstructure will be independent of the subway trusses below. The project also required rehabilitation repairs to the abutments, subway trusses and their bearings, and the replacement of the subway portal beams and columns at both ends of the trusses. Responsible for the preparation of contract drawings and various structural design calculations at multiple design stages.
07/12-07/13	Vermont Railroad Bridge Inspections, Wacr Line M&B Subdivision, Montpelier, VT – Vermont Agency of Transportation Structural Engineer involved in the annual inspections and in-depth Inspections, load rating analysis and repair recommendations and reporting of nine railroad bridges. Performed the in-depth inspections of three thru-truss bridges with structure lengths of 252-feet, 151- feet and 147-feet, respectively. Also performed the annual inspection of a three span thru-girder bridge. An "under-bridge" inspection vehicle (snooper) was used to gain access to hard-to-reach areas of the bridge. Responsible for the preparation and documentation of field notes, photos and sketches.



Firm Employed by Name		Hardesty & Hanover						
		Linh-Thien Kim, El		Years of relevant experience with this employer	1			
	Title	Civil Engineer		Years of relevant experience with other employer(s)	2			
Degree(s) / Y	ears / Specialization	1	BS / 2017 / Civil Ei	ngineering				
Active registr	ration number / state	/ expiration date	Engineer Intern: 00	Engineer Intern: 0033538 / LA / 3/31/2024				
Year registere	ed 2017	Discipline	Civil Engineering					
Contract role(	(s) / brief description	n of responsibilities	Design Developm	ent of Fixed Bridge Structures				
Experience da	ates Experience an	nd qualifications relev	vant to the propo	osed contract; <i>i.e.</i> , "designed drainage", "designed gin	rders",			
(mm/yy-mm/	(yy) "designed inte	ersection", etc. Exper	ience dates shoul	d cover the time specified in the applicable MPR(s).				
	H.009498.5: LA	121: Calcasieu River Bri	dge – Louisiana DC	DTD				
	Civil Engineer I	ntern. Designed and detai	led an LG-36 (I-Bea	m) Concrete Prestressed Girder Bridge using continuous deck spa	ans on			
01/10 _ 04/10	a horizontal curv	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						
01/17 - 04/15	width of 42.5' wid	width of 42.5' wide. The superstructure and girders were designed using Bentley's Conspan software and DOTD's Bridge Design						
	Evaluation Manu	Evaluation Manual. The substructure consists of pile bents that were designed using STAAD Modeling software and Excel						
	postprocessing.							
04/19 - 04/19	9 H.011159.6: Car	H.011159.6: Caroll Street bridge/ Bayou Black Bridge – Louisiana DOTD						
	Civil Engineer In	ern. Completed shop drawing checks for steel bridge railing designed for this project.						
	H.003184.5: I-10	H.003184.5: I-10: Texas State Line - East of Coone Gully – Louisiana DOTD						
05/10 07/1	Civil Engineer l	Civil Engineer Intern. Designed and detailed an LG-36 (I-beam) Concrete Prestressed Girder Bridge using continuous deck spans with						
05/19 – 07/19	9 a 2.5% slope. Th	a 2.5% slope. The continuous deck spans were 240 and 300 feet long using four 60-long and five 60-long deck spans respectively. The						
	bridge width was	bridge width was 72.5-toot-wide. Superstructure and girders were designed using Bentley's Conspan software and DOTD's Bridge						
		n Manual. Substructure pi	le bents were design	ied using STAAD Modeling software/Excel postprocessing.				
0//10 0//1/	H.U12/39.6: I-20	H.012/39.6: I-20 MRB At Vicksburg Overlay and Rehabilitation – Louisiana DOID						
06/19 - 06/19	9 Civil Engineer I	<b>Civil Engineer Intern</b> . Worked closely with the Project Engineer to assist in developing quantities and cost estimates for paint striping						
		and parrier movements through phases of the renabilitation project.						
07/10 00/10	Givil Engineer l	H.000303.6: Danziger Bridge Rehabilitation – Louisiana DOTD						
07/19 - 00/15	<sup>9</sup> Civil Eligineer i	<b>LIVIL Engineer Intern.</b> Assisted Project Engineer in calculating joint thermal movement for the new sliding plate and determine if a new sliding plate for the project.						
		an I ako Ro-Dock & Sofot	v Improvemente –	or sheets for the new joint situling plates for the project.				
03/19 - 01/10	9 Civil Engineer l	ntern Completed shop dr	awings for end dams	Added #7 hars staggering at continuous deck joints to support si	nans at			
03/17 04/1	continuous deck	ioints. Created a change of	order for sheets show	for sheets showing bridge plan views				



	Almonaster Avenue Railroad Bascule Bridge over the Industrial Canal Rehabilitation, New Orleans, LA – Port of New Orleans
07/20 Procept	Engineer Intern contributing to 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, National Register of Historic Places eligible bridge revealed that improvements to the electrical and mechanical
0//20 - 1163611	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. H&H developed
	necessary design plans to replace the span drive and span lock machinery, operating strut, guide assembly, live load bearings,
	counterweight trunnion pin, and bushing. The main trunnion bearings were rehabilitated and repositioned.
	SR 605 Movable Bascule Bridge Rehabilitation, Ocean Springs, MS – Mississippi DOT
	<b>Engineer Intern</b> performed the bridge load rating for movable bridge and fixed bridge approaches. Contributing to the civil design for full
07/20 - 12/20	rehabilitation of SR 605 double-leaf bascule bridge, as a task-order to the IDIQ Master Bridge Contract which includes developing
07720 - 12720	standard and special bridge services, statewide for MDOT. Scope of work includes inspection and rehabilitation of structural,
	mechanical, and electrical components of the bridge, as well as the roadway approaches and development of maintenance and repair
	plans. All designs are in accordance with AASHTO, FHWA and MDOT guidelines and specifications.
	Annual Inspection of Almonaster Railroad Bascule Bridge over the Industrial Canal, New Orleans, LA – Port of New Orleans
11/20 - 02/21	Engineer Intern for the annual inspection of the Almonaster Avenue Railroad Bascule, which involved a structural inspection of the
11/20 02/21	fracture critical steel, primary and secondary steel members, an electrical inspection of the electrical systems and controls, and a
	mechanical inspection of the machinery.
	Annual Inspection of Seabrook Railroad Bascule Bridge, New Orleans, LA – Port of New Orleans
06/10 00/10	Engineer Intern for the annual inspection of the Seabrook Trunnion Bascule Bridge. This inspection included a structural inspection of
00/17 = 07/17	the fracture critical steel and primary and secondary steel members, an electrical inspection of the electrical systems and controls, and
	an inspection of the mechanical systems and machinery.
	Lake Pontchartrain Causeway Safety Bay Improvements CE&I, Jefferson and St. Tammany Parishes, LA – Greater New
	Orleans Expressway Commission
07/20 - 12/20	Engineer Intern providing construction engineering and inspection services required for the fast-paced \$60M Safety Bay Improvement
01120 12/20	Project being designed to LADOTD standards and specifications. The project used the CMAR method. Improvements added emergency
	stopping areas on both causeway bridges and provided six new shoulders in each direction. Responsibilities included attendance at
	progress meetings, final inspections, and construction close-out, etc.
	Various Repairs of the Almonaster Avenue Railroad Bascule Bridge, New Orleans, LA – Port of New Orleans
	Engineer Intern performing a variety of structural repairs on this steel Strauss Trunnion Bascule Bridge. Major work included
	replacement of components of the railroad floorsystem stringers and floorbeams that rated lower than E-60 and replacement of
09/20 – 10/20	deteriorated lateral connection plates. The cracked concrete on the rest pier in the area near 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 of work included necessary bridge design and repair plans, contract specifications, construction
	inspection, construction support services.



	Firm Employed by	Hardesty & Hanover				
25 2	Name	Rafal Wuttrich, PE		Years of relevant experience with this employer	5	
Carlos Carlos	Title	Senior Structural Engine	er	Years of relevant experience with other employer(s)	19	
Degree(s) /	Years / Specialization	1	M.S. / 2001 / Civil B.S. / 1994 / Civil I	Engineering Engineering		
Active regis	tration number / state	e / expiration date	Professional Engin	neer: 63030 / FL / 02/28/2023		
Year registe	red 2005	Discipline	Civil Engineering			
Contract rol	e(s) / brief descriptio	n of responsibilities	Design Development of Fixed and Movable Bridge Structures			
Experience	dates Experience a	nd qualifications relev	vant to the propo	osed contract; i.e., "designed drainage", "designed gin	rders",	
(mm/yy–mn	n/yy) "designed into	ersection", etc. Exper-	ience dates shoul	ld cover the time specified in the applicable MPR(s).		
04/17-Pres	ent a new single-poi steel plate girde Bridge Developr	Reconstruction, SR 30A or responsible for the design nt urban interchange (SPU rs and a concrete deck. Th nent Report (BDR), and lea	A (US 98) to South Pipeline Road, Panama City, FL – Florida DOT District 3 ign of a new 840-foot steel bridge on SR 75, crossing US 231 and the CSX railroad, as part of UI). The design consists of a single three-span continuous unit (215, 355, and 215 feet) with he intermediate pier columns support integral post-tensioned concrete caps. Responsible for eading role for all aspects of the structural design.			
8/15-2/17	Flagler Memori Movable Bridge bridge off-line ar Beach. The desi design requirem rolling lift bascul concrete approa award of 2018 P	al Bridge over ICWW, Pal Structural Engineer resp ad parallel to the existing bi gn/build request for proposents regarding environmer e span bridge design inclue ch spans, and approach re- roject of the Year.	Im Beach, FL - Flor ponsible for this \$95 ridge to maintain trai sal, resulting from a ntal mitigation, appea ded a 150-foot rolling badway work. This pl	ida DOT District 4 million design-build project that included the replacement of the er ffic for this busy causeway that connects West Palm Beach to Palr Type 2 Categorical Exclusion Class of Action NEPA process, had arance, and maintainability. Completed in 2018, the twin double-lea g-lift-span over the navigable channel, twelve 150-foot pre-stresse roject was recognized by ASCE West Palm beach Branch receivin	ntire n strict af d g the	
03/03 – 12/	05 <b>Treasure Islanc</b> <b>Movable Bridge</b> and bascule brid bridges. Particip analysis of new girders, a compo	I Causeway Bridge Repla Structural Engineer resp lge, which encompassed p ated in design of structural fixed approach structure ar posite Exodermic deck syste	ponsible for assisting recast flat slab and l and machinery com nd movable span. Th em featuring a lightw	Island, FL – City of Treasure Island g in the design of east bridge, west bridge, main bridge approach s Florida Bulb-Ts that replaced the existing cast-in-place concrete T- ponents for twin double-leaf bascule bridge. Performed load rating he bascule spans structural system included two main longitudinal eight concrete riding surface.	pans beam J plate	



	Royal Park Bridge Replacement, West Palm Beach, FL – Florida DOT
	Movable Bridge Structural Engineer responsible for performing independent analysis of continuous variable-depth segmental
09/01 – 03/02	concrete approach superstructure as a part of the post-design review of the contractor's redesign. Reviewed Contractor's shop drawing
	of the segmental superstructure and construction methods. Also performed load rating of bascule span and segmental concrete
	approach spans.
	I-75 CD Ramp over Sligh Avenue, Hillsborough County, FL – Florida DOT
0/11/ 10/17	Movable Bridge Structural Engineer responsible for the preliminary design, Bridge Development Report, and conducting bridge load
06/16 - 10/17	rating analysis for the widening of 233-foot three-span interstate ramp bridge over Sligh Avenue. The proposed widening superstructure
	and substructure included prestressed beams on a hammerhead pier substructure.
	SR-80 Southern Boulevard Bascule Bridge Replacement, West Palm Beach, FL – Florida DOT
	Senior Bridge Engineer responsible for design of a new bridge over the Atlantic Intracoastal Waterway (ICWW) to replace an existing
08/11 – 04/13	bridge. The bridge consisted of a 948-foot-long, two-lane bridge with a 228-foot-long bascule main span, and 360-foot-long concrete
	approach spans each side of the bascule span. The approach spans consisted of a post-tensioned concrete slab superstructure,
	designed to be constructed by incremental launching.
	US 441 Wekiva Parkway Flyover Ramp to SR 46 EB, Mount Dora – Florida DOT
00/15 00/17	Bridge Structural Engineer responsible for service stress state analysis (including load rating) of concrete alternative for US 441
08/15 - 02/16	Wekiva Parkway flyover ramp to SR 46 EB. The 471-foot-long superstructure was a pair of three-span continuous curved post-
	tensioned U-beam precast segments with cast-in-place concrete deck.
	I-75 Southbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT
00/00 12/00	I-75 Southbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design calculations and load rating of a 331-foot bridge that replaced an
09/08 – 12/08	I-75 Southbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design calculations and load rating of a 331-foot bridge that replaced an existing southbound structure. The proposed superstructure included a four-span continuous deck prestressed concrete AASHTO Type
09/08 – 12/08	I-75 Southbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design calculations and load rating of a 331-foot bridge that replaced an existing southbound structure. The proposed superstructure included a four-span continuous deck prestressed concrete AASHTO Type III and Type IV girders supported by five bent substructure units.
09/08 – 12/08	<ul> <li>I-75 Southbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT</li> <li>Bridge Structural Engineer responsible for assisting in design calculations and load rating of a 331-foot bridge that replaced an existing southbound structure. The proposed superstructure included a four-span continuous deck prestressed concrete AASHTO Type III and Type IV girders supported by five bent substructure units.</li> <li>I-75 Northbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT</li> </ul>
09/08 – 12/08	<ul> <li>I-75 Southbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT</li> <li>Bridge Structural Engineer responsible for assisting in design calculations and load rating of a 331-foot bridge that replaced an existing southbound structure. The proposed superstructure included a four-span continuous deck prestressed concrete AASHTO Type III and Type IV girders supported by five bent substructure units.</li> <li>I-75 Northbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT</li> <li>Bridge Structural Engineer responsible for assisting in design calculations and load rating calculations. The median portion of the</li> </ul>
09/08 - 12/08	<ul> <li>I-75 Southbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design calculations and load rating of a 331-foot bridge that replaced an existing southbound structure. The proposed superstructure included a four-span continuous deck prestressed concrete AASHTO Type III and Type IV girders supported by five bent substructure units.</li> <li>I-75 Northbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design calculations and load rating calculations. The median portion of the existing two-span bridge was removed and 19-foot by 5-inch-wide and the existing five-span continuous 330-foot bridge was removed, a</li> </ul>
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09/08 – 12/08 09/08 – 12/08	<ul> <li>I-75 Southbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design calculations and load rating of a 331-foot bridge that replaced an existing southbound structure. The proposed superstructure included a four-span continuous deck prestressed concrete AASHTO Type III and Type IV girders supported by five bent substructure units.</li> <li>I-75 Northbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design calculations and load rating calculations. The median portion of the existing two-span bridge was removed and 19-foot by 5-inch-wide and the existing five-span continuous 330-foot bridge was removed, a 19-foot by 5-inch-wide concrete deck was added, which was supported by two prestressed concrete AASHTO Type III girders, and the existing six bent units were lengthened. Performed load rating analysis checks for existing and final configuration of AASHTO precast prestressed concrete girders.</li> </ul>
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09/08 – 12/08 09/08 – 12/08 02/08 – 07/08	<ul> <li>I-75 Southbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design calculations and load rating of a 331-foot bridge that replaced an existing southbound structure. The proposed superstructure included a four-span continuous deck prestressed concrete AASHTO Type III and Type IV girders supported by five bent substructure units.</li> <li>I-75 Northbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design calculations and load rating calculations. The median portion of the existing two-span bridge was removed and 19-foot by 5-inch-wide and the existing five-span continuous 330-foot bridge was removed, a 19-foot by 5-inch-wide concrete deck was added, which was supported by two prestressed concrete AASHTO Type III girders, and the existing six bent units were lengthened. Performed load rating analysis checks for existing and final configuration of AASHTO precast prestressed concrete girders.</li> <li>I-75 SB and NB Bridges over Fox Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design and load rating analysis for a proposed roadway widening. The median portion of the existing two-span continuous 102-foot bridges were removed, a 19-foot by 5-inch-wide concrete deck was added, which</li> </ul>
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09/08 – 12/08 09/08 – 12/08 02/08 – 07/08	<ul> <li>I-75 Southbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT</li> <li>Bridge Structural Engineer responsible for assisting in design calculations and load rating of a 331-foot bridge that replaced an existing southbound structure. The proposed superstructure included a four-span continuous deck prestressed concrete AASHTO Type III and Type IV girders supported by five bent substructure units.</li> <li>I-75 Northbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT</li> <li>Bridge Structural Engineer responsible for assisting in design calculations and load rating calculations. The median portion of the existing two-span bridge was removed and 19-foot by 5-inch-wide and the existing five-span continuous 330-foot bridge was removed, a 19-foot by 5-inch-wide concrete deck was added, which was supported by two prestressed concrete AASHTO Type III girders, and the existing six bent units were lengthened. Performed load rating analysis checks for existing and final configuration of AASHTO precast portion of the existing two-span continuous 102-foot bridges were removed, a 19-foot by 5-inch-wide concrete deck was added, which was supported by two prestressed concrete deck was added, which was supported by two prestressed concrete AASHTO Type III girders.</li> <li>I-75 SB and NB Bridges over Fox Creek, Sarasota County, FL – Florida DOT</li> <li>Bridge Structural Engineer responsible for assisting in design and load rating analysis for a proposed roadway widening. The median portion of the existing two-span continuous 102-foot bridges were removed, a 19-foot by 5-inch-wide concrete deck was added, which was supported by three prestressed concrete AASHTO Type II girders, and the existing bents were lengthened. Performed load rating analysis checks for existing and final configuration of AASHTO precast prestressed concrete girders.</li> </ul>
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09/08 - 12/08 09/08 - 12/08 02/08 - 07/08 07/15 - 05/16	<ul> <li>I-75 Southbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design calculations and load rating of a 331-foot bridge that replaced an existing southbound structure. The proposed superstructure included a four-span continuous deck prestressed concrete AASHTO Type III and Type IV girders supported by five bent substructure units.</li> <li>I-75 Northbound Bridge over Salt Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design calculations and load rating calculations. The median portion of the existing two-span bridge was removed and 19-foot by 5-inch-wide and the existing five-span continuous 330-foot bridge was removed, a 19-foot by 5-inch-wide concrete deck was added, which was supported by two prestressed concrete AASHTO Type III girders, and the existing six bent units were lengthened. Performed load rating analysis checks for existing and final configuration of AASHTO precast prestressed concrete girders.</li> <li>I-75 SB and NB Bridges over Fox Creek, Sarasota County, FL – Florida DOT Bridge Structural Engineer responsible for assisting in design and load rating analysis for a proposed roadway widening. The median portion of the existing two-span continuous 102-foot bridges were removed, a 19-foot by 5-inch-wide concrete deck was added, which was supported by three prestressed concrete AASHTO Type II girders, and the existing bents were lengthened. Performed load rating analysis checks for existing and final configuration of AASHTO Type II girders, and the existing bents were lengthened. Performed load rating analysis checks for existing and final configuration of AASHTO Type II girders, and the existing bents were lengthened. Performed load rating analysis checks for existing and final configuration of AASHTO precast prestressed concrete girders.</li> <li>SR 83/US 331 Bridge over Ramsey Branch, Walton County, FL – Florida DOT Engineer-of-Record responsible for desi</li></ul>



	Firm	Employed by	Hardesty & Hanover					
	Name	e	Kevin Ciampi, PE		Years of relevant experience with this employer	6		
	Title		Senior Mechanical Engir	neer	Years of relevant experience with other employer(s)	7		
Degree(s) /	Years	/ Specialization	1	BE / 2009 / Mecha	nical Engineer			
Active regis	tration	number / state	/ expiration date	Professional Engin	eer: 80702 / FL / 2/28/2023			
Year registe	red	2016	Discipline	Mechanical Engine	ering			
Contract role	e(s)/t	orief description	n of responsibilities	Movable Bridge N	lechanical Engineer			
Experience	dates	Experience ar	nd qualifications relev	vant to the propo	osed contract; i.e., "designed drainage", "designed gir	ders",		
(mm/yy–mn	n/yy)	"designed inte	ersection", etc. Exper	ience dates shoul	d cover the time specified in the applicable MPR(s).			
		SR 605 Bascule	Bridge over the Industri	ial Waterway, Gulfp	ort, MS – Mississippi DOT			
		Movable Bridge	Mechanical Engineer fo	r the full mechanical	and electrical rehabilitation of an existing four-lane split-twin double	e-leaf		
03/19 – 09/19	rolling lift bascule bridge. Responsible for performing the inspection, recording the hydraulic system pressures, analysis of the data, and							
	report with recommendations four bascule leaves. Also responsible for completing strain gage measurements on movable bridge, and							
		preparing span balance reports, and calculating weight changes for balance adjustments.						
		Repair of Five Movable Bascule/Swing Span Bridges, San Joaquin County, CA – San Joaquin County DPW						
		Movable Bridge Lead Mechanical Engineer for the repair and upgrades of four swing spans and one double-leaf bascule bridge						
10/17 – Pres	sent	located in San Joaquin County. The work at part is part of a larger project to ensure long term reliability and to maintain existing bridges						
		within California. The project includes work ranging from replacing hydraulic systems used to actuate the live load shoes, replacing						
		gear-driven systems on more traditional bridges, tield repairs to bearings, and repairing span lock systems.						
		Michigan Street vertical Lift Bridge Renabilitation, Milwaukee, WI – City of Milwaukee Meyerle Bridge Mechanical Engineer for the rehabilitation of the Michigan St. Bridge over the Milwaukee Diver. The Bridge is a 50						
05/17 07/	/17	<b>Movable Bridge Mechanical Engineer</b> for the renabilitation of the Michigan St. Bridge over the Milwaukee River. The Bridge is a 58-						
03/17 - 07/	17	rout-rong rout-rane toweness ventual inturnated internet by rout cylinders and one 40mm open-roup rightaulic power unit per real. The project includes the replacement of the deck, part of the superstructure and all of the machinery. Despensibilities included performing						
		the inspection an	e inspection and design of the replacement hydraulic system.					
		Liberty Bridge Emergency Repairs, Bay City, MI – Bay City DPW						
		Movable Bridge	Movable Bridge Mechanical Engineer provided mechanical engineering assessment and design services on this double-leaf trunnion					
		bascule bridge. E	Bay City dispatched H&H t	o the bridge site bec	ause the bridge machinery was making an unusual grinding noise.	. H&H		
06/19 – 09/19	/19	was on site by 10	) am the next morning to c	determine the cause.	Upon investigation, the gearbox and all machinery around it was t	found		
		to be vibrating se	everely and there was con-	cern this could lead t	o further damage due to the high forces involved. It was also foun	d that		
		one of the reduce	er shafts had excess move	ement which could ca	ause poor engagement of the bevel gearset contributing to the vibr	ation.		
		The bridge was t	was taken out of service while H&H provided engineering/on-site support to allow the owner to restrain the bridge in the open					
	position and disconnect the machinery for repairs by a gearbox specialist. H&H provided designs for counterweight restraint brackets,							
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	temporary members for rigging machinery, and worked with the aging PLC system to allow the machinery to be tested with the bridge							
	restrained open. Investigated the level of effort needed to repair one of the resolvers.							
	Gwynn's Island Swing Bridge, Gwynn's Island, VA – Virginia DOT							
	Movable Bridge Mechanical Engineer for a 200-foot-long through truss center bearing swing span bridge over the Hills Bay. The							
09/15 – 03/16	project included a hands-on inspection of the span drive machinery, wedge machinery, balance wheels, center latch machinery, center							
	bearing to resolve issues with wedge clearances, machinery wear, and loud intermittent noises during operation. Responsible for the							
	bridge inspection, and review of a report summarizing the rehabilitation options.							
	Norwalk River (Route 136) and Yellow Mill (Route 130) Bascule Bridges, HUD Movable, Storm Hardening Design Services,							
	Norwalk & Bridgeport, CT – Canadian National Railway (CNR)							
03/18 - 01/18	Movable Bridge Mechanical Engineer responsible for completing strain gage measurements on movable bridge, and preparing span							
03/10 - 04/10	balance reports, and calculating weight changes for balance adjustments for the rehabilitation and storm hardening of two movable							
	bridges, damaged by flooding due to Superstorm Sandy. The rehabilitation includes structural, mechanical, and electrical upgrades as							
	well as revisions to the Department's Operation and Maintenance procedures before and after major coastal storms.							
	Hopewell Swing Bridge over Appomattox River, Hopewell, VA – CSX Transportation							
	Lead Movable Bridge Mechanical Engineer for a 210-foot-long single-track deck-girder bridge over the Appomattox River owned and							
02/14 – 12/16	operated by the CSX Corp. Railroad. The project included the replacement of the majority of the operating and wedge machinery.							
	Responsible for the condition assessment of the existing equipment, recommendations for repairs and replacements, contract							
	documents for the rehabilitation of the mechanical systems, shop drawing review, and construction support services.							
	Cumberland River Drawbridge, Nashville, TN - CSX Transportation							
	Lead Movable Bridge Mechanical Engineer for a 270-foot-long riveted through truss center bearing swing span bridge over the							
12/15 – 03/16	Cumberland River. The project included replacement of span drive machinery including, three shafts, three gears, four bearings, and the							
	main pinion bearing support. Responsible for the inspection, construction support services, design services including the design of a							
	temporary operating system, and recommendations to prevent future damage to the span drive machinery.							
	Raritan River Vertical Lift Bridge, Perth Amboy/South Amboy, NJ – New Jersey Transit							
	Movable Bridge Mechanical Engineer for the \$425 million replacement of the Raritan River Drawbridge on North Jersey Coast Line.							
	The project includes replacing the half-mile long structure, with a 327-foot-long riveted through truss swing span at the navigational							
03/16 – Present	channel and more than 3,000-foot-long of approaches between the Perth Amboy and South Amboy stations. The replacement will be							
	done off-line while maintaining full rail operations during construction. The new bridge will be a through truss span drive vertical lift							
	bridge with a minimum 110-foot-long vertical clearance and 300-foot navigational channel. Responsible for the design and drawing of							
	the span drive, operating rope, counterweight rope, span lock, and span guide systems.							
	Broadway Bridge Rall Wheel Replacement, Portland, Oregon							
02/14 07/10	Movable Bridge Mechanical Engineer responsible for design, drawing preparation, RFI response, and shop drawing review for the							
02/10 - 07/18	replacement Rall wheels, operating struts, and span drive machinery and line boring of structure; for a rare double-leaf Rall-type bascule							
	structure that is more than 100 years old. The two Rall wheels support the entire weight of each of the bridge's bascule leaves.							



F	irm Employed by	Hardesty & Hanover				
N	lame	Vilius Ruseckas, El		Years of relevant experience with this employer	3	
Т	itle	Mechanical Engineer Int	ern	Years of relevant experience with other employer(s)	0	
Degree(s) / Ye	ars / Specialization	1	B.S., Mechanical E	ngineering, 2018		
Active registra	tion number / state	/ expiration date	Engineer Intern: 17	100022867 / FL / n/a		
Year registered	d 2019	Discipline	Civil Engineering			
Contract role(s	s) / brief description	n of responsibilities	Movable Bridge M	lechanical Designer and Inspector		
Experience dat	tes Experience an	nd qualifications relevant	vant to the prope	osed contract; i.e., "designed drainage", "designed gi	rders",	
(mm/yy-mm/y	y) "designed inte	ersection", etc. Exper	ience dates shoul	d cover the time specified in the applicable MPR(s).		
01/20 – Preser	Almonaster Ave Movable Bridge replacement of the eligible for the N superstructure, a necessary to acc span lock maching	Almonaster Avenue Railroad Bascule Bridge over the Industrial Canal Rehabilitation, New Orleans, LA – Port of New Orleans Movable Bridge Mechanical Engineer Intern participating with the mechanical rehabilitative engineering design 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, eligible for the National Register of Historic Places bridge revealed that improvements to the electrical and mechanical systems, superstructure, and counterweight were required. Although the existing substructure could remain, modifications were deemed necessary to accommodate the rehabilitated superstructure. H&H is developing necessary design plans to replace the span drive and span lock machinery, operating strut, quide assembly, live load bearings, counterweight trunnion pin, and bushing				
03/20 – Preser	t asks include pre operational time Canal and the w	Lapalco Boulevard Movable Bridge over Harvey Canal, Jefferson Parish, LA – Jefferson Parish DPW Movable Bridge Mechanical Engineer Intern assisting with the generation of preliminary machinery equipment floor plans. Additional tasks include preliminary sizing and calculation of operating machinery to meet appropriate span torque, breaking torque, and operational time values. The project scope involves 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.				
01/19 – 06/19	US-17 Swing Br Movable Bridge replacement of the Analysis Program and selection se	idge over the Perquimar Mechanical Engineer In he existing swing bridge w n. HVAC design included rves several varied sensib	ns River Design-Bu tern assisting mech ith a new off-line brid mini-split system in s le heat load zones n	ild, Perquimans County, NC – North Carolina DOT anical plans generation, shop drawing review, RFI response for th dge and control house. Provided HVAC sizing calculations utilizing series with four air handlers and two condensing units. Equipment naintaining desired conditions throughout the two-story control hou	e J Hour Iayout Jse.	
11/19 – Preser	t Three Mile Slou Movable Bridge estimates, as-bu calculations, incl	gh Vertical Lift Bridge E Mechanical Engineer In ilt plans, and subsequent uding designs for new Cyl	mergency Repair, \$ tern assisting with the repair plans for the v indrical Live Load Be	Sacramento County, CA – Golden Gate Bridge / Caltrans ne generation of vertical lift span and counterweight sheave jackin vertical lift bridge over Three Mile Slough (24-0121). Assisted with earing assembly with new bolted and welded stiffeners, end floor b	g beam	



	jacking bolted stiffeners, counterweight sheave jacking and securing assembly, counterweight hanger pin and eye-bar evaluation, wire
	Tope weight and stretch estimates. Performed inventor FEA analysis on the counterweight hanger capacity and shape/size optimization.
	US 1 Main Street Vertical Lift Bridge over the St. Johns River, Jacksonville, FL – Florida DU1 Meyeble Bridge Meebenicel Inepector assisting yearly inspection of the two tower 269 feet vertical lift bridges with span mounted
	movable bridge mechanical inspector assisting yearly inspection of the two lower sole-loot vertical intubidges with span-mounted
10/19 - 05/20	Induminery room and refrigerent lines were sheeled. Mechanical inspection inspected for temperature, numiduty, and all now control.
	condensing unit and reingerant lines were checked. Mechanical inspection included evaluation of operating and counterweight wire repose deflecter checked, and counterweight
	ropes, denector sneaves, operating drunn assemblies with open gearing, live load bearings, centering devices, and counterweight
	auxiliary chain, reducer and main drives, shans, journals and couplings, nyuraulically-driven machinery brakes and assemblies.
	Cass Street Bascule Bridge over Hillsborougn River, Hillsborougn County, FL – City of Tampa
	movable Bridge mechanical Engineer Intern assisting with the generation mechanical renabilitation designs and plans for this Strauss
00/10 00/10	trunnion double-leal bascule bridge. Performed sizing and calculations of new components within open gearing operating machinery to
08/18 - 09/18	correlate to existing capabilities of machinery span torque, breaking torque, and operational time values of the total mechanical span till
	system. The mechanical scope replaced a section of open gearing assembly with new sharts, new parallel shart main reducer coupled to new main and equilibrium drives, and new mater brakes. Included use the replacement and reconditioning of all users machinery.
	to new main and auxiliary drives, and new motor brakes. Included was the replacement and reconditioning of all worn machinery
	Components including main drive motors, reducers, open gear and pinion sets, sharts, couplings, collars, and the auxiliary gear drive.
00/10 01/20	SR 099 (Guil Divu.) John S Pass Dascule Dhuges, Treasure Island, FL – Florida DOT Meyeble Bridge Mechanical Increaster responsible for mechanical scene discovery for these hey girder double leaf bascule truppion
09/19 - 01/20	bridges (150252 and 150254). Inspected resk and pipions, live load bearings, spring equipped by draulically driven span locking
	bildyes (150255 and 150254). Inspected fack and philons, live load bearings, spring equipped figurationally driven span locking material mechanisms, trupping access and feasibility for bringing water
	supply to the far pior. Work included review of existing documents and proparation of inspection reports and recommendations
	Albee Dead Bascule Bridge Denaire, Sarasota County, EL - Sarasota County, EL
•	Abee Road Dascule Druge Repairs, Salasola County, I L – Salasola County, I L Moyable Bridge Mechanical Designer assisting repair plans development for this trunnion bascule bridge over Intracoastal waterway
12/18 _ Present	spanning a total 300 feet and built in 1963 (170057) Assisted generation of mechanical plans including replacement of main rack bolts
	live load bearing assemblies span-lock quide and receiver assemblies. Performed prime mover sizing/span torque and span balance
	calculations. Assisted in writing technical specifications and estimates for repair construction. Field inspection performed in August 2010
	resulted in recommended structural, electrical, and mechanical bridge repairs that will help the bridge extend the service life.
	SR 699 (Gulf Blvd.) John's Pass Bascule Bridges. Treasure Island. FL – Florida DOT
	Mechanical Designer responsible for developing mechanical repair plans and Technical Service Provision documents for these two
04/20 – Present	box girder double-leaf bascule trunnion bridges). Prepared an engineer's estimate and guantities. Assisted with developing plumbing
	designs to bring service water to the far multi-level skewed pier. Sized inside pier piping system and generated pluming schematics,
	riser diagrams, hangers, and fixture layouts per Florida Plumbing Code for domestic cold-water access.
	Brorien Street Bascule Bridge over Hillsborough River, Hillsborough County, FL – City of Tampa
12/18 – Present	Movable Bridge Mechanical Engineer Intern assisting development of the rehabilitation plans of the mechanical components for this
	Hopkins trunnion type, double-leaf bascule bridge (105501). Performed calculations for sizing main and auxiliary drives. Performed leaf
	balance calculations including existing condition and added/removed repair elements condition.



	Firm Employed by	Hardesty & Hanover			
POP I	Name	Sayyid Khan, PE		Years of relevant experience with this employer	9
	Title	Electrical Engineer		Years of relevant experience with other employer(s)	4
Degree(s) / Y	ears / Specialization	l	MS / 2010 / Electri BS / 2011 / Electric	cal Engineering cal Engineering	
Active registr	ration number / state	/ expiration date	Professional Engin	eer: 83249 / FL / 2/28/2023	
Year registered	ed 2017	Discipline	Electrical Engineer	ing	
Contract role	(s) / brief description	n of responsibilities	Movable Bridge E	ectrical Engineer	
Experience da	ates Experience an	nd qualifications relevant	vant to the propo	osed contract; i.e., "designed drainage", "designed gin	rders",
(mm/yy–mm/	/yy) "designed inte	ersection", etc. Exper-	ience dates shoul	d cover the time specified in the applicable MPR(s).	
08/08 – 08/1	3 requirements and several years ex	eer Intern responsible for rol system for this movable ulically-operated swing bri d standard design details a e made in accordance with tending the schedule.	e providing plan prepare e bridge. Built in 194 idge. H&H provided and coordinated clos n the project schedul	arations and post-design services for the bridge power distribution 1, the original, a LADOTD Preservation Significant bridge, was rep the electrical design for the bascule bridge in line with LADOTD's of help with the other design disciplines to assure success. All design the bascule bridge is based on hold to be bas	and blaced design for
08/08 – 08/1	3 <b>Judge Seeber V</b> Movable Bridge 3 rehabilitation pro system for the op repairs to the lift-	Pertical Lift Bridge (SP 70 Electrical Designer provide provid	00-99-0430), New Or rided electrical desig y in 1960, this vertica placement of the cou- nirs.	rleans, Louisiana – Louisiana DOTD n services for this \$7 million LADOTD Preservation Priority Bridge al lift-span bridge project required replacement of the entire electric unterweight rope and lift-span deck grating, and miscellaneous stru	cal Jctural
12/21 – Prese	ent Almonaster Ave Movable Bridge required for the p H&H's 2019 asso electrical and me Although the exis superstructure. H live load bearing	enue Railroad Bridge over Electrical Engineer for the partial replacement of the A essment of the circa-1920, echanical systems, supersi- sting substructure could re 4&H developed necessary s, counterweight trunnion	er the Industrial Can he bridge assessme Almonaster Avenue I eligible for the Natio tructure, and counter main, modifications design plans to repl pin, and bushing. Th	nal Rehabilitation, New Orleans, LA – Port of New Orleans nt, rehabilitative engineering design, and construction inspection s Bridge, a movable Strauss-heel trunnion bridge's electrical system onal Register of Historic Places bridge revealed that improvements rweight were required to return this bridge to its full operating capa were deemed necessary to accommodate the rehabilitated ace the span drive/span lock machinery, operating strut, guide ass e main trunnion bearings were rehabilitated and repositioned.	ervices s. s to the ibility. sembly,



	SR 609 Movable Bascule Bridge Rehabilitation, Ocean Springs, MS – Mississippi DOT
	Movable Bridge Electrical Engineer responsible for providing plans review and quality control service for the design of electrical
01/18 - 03/10	systems for the SR 605 double-leaf bascule bridge, as a task-order to the IDIQ Master Bridge Contract which includes developing
04/10 - 03/19	standard and special bridge services, statewide for MDOT. H&H's scope of work includes inspection and rehabilitation of structural,
	mechanical, and electrical components of the bridge, as well as the roadway approaches and development of maintenance and repair
	plans. All designs are in accordance with AASHTO, FHWA, and MDOT guidelines and specifications.
	SR-A1A/North Causeway Bridge over ICWW, Fort Pierce, FL - Florida DOT District 4
	Movable Electrical Engineer participated in in strain gage operations during construction to weld strain gages to the pinion shafts,
	recorded measurements with a digital data-acquisition system, performed data analysis and balance calculations, and delivered
	recommendations for counterweight adjustment to verify the balance condition of the bridge, and assisted the contractor with installing
01/12-2/17	and relocating balance blocks. Also assisted with the design, calculations, plan preparation of bridge electrical systems. Work included
	the design of interior lighting, CCTV, a relay-based control system with PLC-based condition monitoring of machinery, a two-generator
	emergency power system, and flux vector motor drives as part of the \$95 million design-build project. The new twin double-leaf bascule
	bridge with a 150-foot rolling-lift-span included twelve 150-foot pre-stressed concrete approach spans and approach roadway work.
	Scope included maintenance of traffic on existing bridge during construction of the new bridge.
	SR /5 (US 231) Reconstruction, SR 30A (US 98) to South Pipeline Road, Panama City, FL – Florida DOT District 3
02/10 0/20	<b>Novable Electrical Engineer</b> for the new 840-root steel bridge on SR77 crossing US 231 and the USX railroad. H&H is providing
03/18-8/20	design services for the single point urban interchange (SPUI) at SR 77 over US 231 and CSX RR improvement project. Work includes
	design for roadway and drainage design of the intersection, lighting design for the entire project, and bridge design for new major steer
	Causeway Bascule Bridge over Lake Pontchartrain Evaluation, Metairie, LA – Greater New Orleans Expressway Commission
03/18 - 06/18	Movable Bridge Electrical Engineer responsible for the inspection and evaluation of electrical mechanical and structural components
00/10 00/10	of the Causeway Bascule Bridge over Lake Pontchartrain and preparation of a final inspection plan and recommendations
	US 17 Swing Bridge over the Perguimans River. Perguimans County, NC – North Carolina DOT
	Movable Bridge Electrical Engineer for the power distribution, control, and lighting design. The new bridge includes a state-of-the-art,
02/18 – 10/20	remotely controlled electrical system, including security and redundancy features such as CCTV, computerized monitoring, remote
	public address, intercoms, and additional electronic innovations. H&H's responsibilities include the complete design of the new swing
	span, including structural, mechanical, electrical, and geotechnical engineering. The swing span structure consists of a center-pivot
	Warren through truss supporting the concrete deck. Although similar in appearance to the existing swing span, the new span will
	improve geometrics, increase load carrying capacity and vertical clearance, and include conveniences of a modern operational system.
	Gasparilla Island Swing Bridge over ICWW, Placida, FL – Gasparilla Island Bridge Authority
	Movable Bridge Electrical Engineer Intern assisting with bridge inspection and contributing to the bridge condition report containing
05/12 - 08/16	rehabilitation/replacement alternatives, preliminary and final design, calculations, plan preparation of bridge electrical systems including
03/12 - 00/10	interior lighting, CCTV, relay-based controls with PLC monitoring, and flux vector drive implementation for the replacement of a 248-foot
	swing-span bridge with a new 678-foot swing-span bridge including a 250-foot deck girder swing span, a new pile-supported tender
	house, and approach spans with Florida I-Beams. Embankments are supported by MSE walls; protected by new bulkheads/revetment.



Firm Name		Employed by	Hardesty & Hanover			
		2	Kenneth Pecquet, El		Years of relevant experience with this employer	3
XEX	Title		Electrical Designer		Years of relevant experience with other employer(s)	10
Degree(s) /	Years /	/ Specialization		BS / 2012 / Electric	cal Engineering / University of New Orleans	
Active regis	stration	number / state	/ expiration date	Engineer Intern: 37	1342 / LA / 9/30/2023	
Year registe	ered	2013	Discipline	Electrical Engineer	ing	
Contract rol	le(s) / b	orief description	n of responsibilities	Electrical Design	er	
Experience	dates	Experience ar	nd qualifications relev	ant to the property	osed contract; i.e., "designed drainage", "designed gi	rders",
(mm/yy–mr	n/yy)	"designed inte	ersection", etc. Experi	ience dates shoul	ld cover the time specified in the applicable MPR(s).	
12/19 – 01	2/19 – 01/21 Abyou reche owing Bridge at Oaklawn (nico Movable Bridge Electrical Engineer Intern res the bridge power distribution and relay-based co bridge was replaced with a new hydraulically-op LADOTD's design requirements and standard do success. All design deliverables adhered to the extending the schedule			rn responsible for pr ed control system fo ly-operated swing b ard design details ar b the schedule. Due	roviding post-design electrical design calculations and plan revision or this movable bridge. Built in 1941, the original historically signific ridge. H&H provided the electrical design for the bridge in line with nd coordinated closely with the other design disciplines to assure to permitting issues, design was were placed on hold for several y	ns for :ant 1 /ears
01/20 – Pre	sent	Almonaster Ave Movable Bridge services required systems. H&H's improvements to operating capabi rehabilitated sup guide assembly, repositioned.	<b>Electrical Engineer Inter</b> <b>Electrical Engineer Inter</b> I for the partial replacemer 2019 assessment of the ci the electrical and mechan lity. Although the existing s erstructure. H&H develope live load bearings, counter	er the Industrial Car rn for the bridge ass at of the Almonaster rca-1920, eligible fo ical systems, supers substructure could re ed necessary design rweight trunnion pin,	nal Rehabilitation, New Orleans, LA – Port of New Orleans essment, rehabilitative engineering design, and construction inspe- Avenue Bridge, a movable Strauss-heel trunnion bridge's electrica r the National Register of Historic Places bridge revealed that structure, and counterweight were required to return this bridge to emain, modifications were deemed necessary to accommodate the plans to replace the span drive/span lock machinery, operating st , and bushing. The main trunnion bearings were rehabilitated and	ection al its full e trut,
10/19 – 12	/20	SR 609 Movable Movable Bridge bridge, as a task for MDOT. Scope well as the roadw	e Bascule Bridge over OI Electrical Engineer Inter- order to the IDIQ Master I e of work includes inspecti vay approaches and devel	d Fort Bayou Reha rn contributing to the Bridge Contract whic on and rehabilitatior opment of maintena	bilitation, Ocean Springs, MS - Mississippi DOT e electrical design services for the full rehabilitation of SR 609 base ch includes developing standard and special bridge services, state of structural, mechanical, and electrical components of the bridge nce and repair plans.	cule wide e, as



	SR 605 Movable Bascule Bridge Rehabilitation, Harrison County, MS - Mississippi DOT
	Movable Bridge Electrical Engineer Intern contributing to the electrical design for the full rehabilitation of SR-605 bascule bridge as a
03/19 – 01/20	task-order to the IDIQ Master Bridge Contract which includes engineering assessment, mechanical, electrical, and structural design in
	addition to the Traffic Control Plans. All designs were completed in accordance with AASHTO, FHWA, and MDOT guidelines and
	specifications.
	Annual Inspection of Almonaster Railroad Bascule Bridge over the Industrial Canal, New Orleans, LA – Port of New Orleans
10/19 – 01/20	Movable Bridge Electrical Engineer Intern for an annual inspection of the Almonaster Avenue Railroad Bascule, which involved a
	structural inspection of the fracture critical steel, primary and secondary steel members, an electrical inspection of the electrical systems
	Annual Inspection of Sachrack Bailroad Baseula Bridge, New Orleans, I.A., Bort of New Orleans
	Annual Inspection of Sedbrook Rainoau Dascule Druge, New Orieans, LA - Fort of New Orieans Movable Bridge Electrical Engineer Intern for the annual inspection of the Seabrook Trunnion Rescule Bridge. This inspection
06/19 – 09/19	included a structural inspection of the fracture critical steel and primary and secondary steel members, an electrical inspection of the
	electrical systems and controls, and an inspection of the mechanical systems and machinery.
	Districtwide State In-denth Bridge Inspections Contract District 2 / Jacksonville Area, EL) – Elorida DOT
	Movable Bridge Electrical Engineer Intern for the on-call inspection of movable bridge structures located throughout District 2 under
07/18 – Present	the Master Work Order Agreement. Services included the mechanical and electrical system routine and interim inspections of nine
	assigned movable bridges in accordance with federal and state regulations. Inspection reports outlining detailed inspection findings and
	prioritized repair recommendations were provided to the prime consultant.
	US-1 over Snake Creek Canal Bascule Bridge Post-Irma Inspection – Monroe County, FL
	Movable Bridge Electrical Engineer Intern responsible for conducting inspection and preparing rehabilitative designs for Bridge
04/17 05/17	Number 900077 after damage was inflicted by Hurricane Irma. Scope called for detailed mechanical, electrical, and structural field
04/17 - 03/17	reviews to collect and compare current data with previous project data to verify any existing deficiencies which occurred prior to the
	storm. Inspection focused on control house, signage and associated assemblies, gate lights, generator, lighting, clearance gauges. An
	Inspection Report was submitted summarizing the findings. Repair plans, design details and associated cost estimates were performed.
	Jupiter Federal Bascule Bridge Replacement, Jupiter, FL – Florida DOT
	Movable Bridge Electrical Engineer Intern contributing to the design of this bascule bridge replacement project. The SWAT process
	of overlapping the design phase with the PD&E phase requires that the preliminary design phase includes coordination and support of
04/19 – Present	the NEPA process in developing the Type 2 Categorical Exclusion documentation. H&H will serve as Engineer of Record for the project
	which addresses the structural and functional deficiencies of the existing US-17 SR-5 Jupiter Federal Bridge from CR-A1A (Ocean
	Boulevard) to Beach Road. Work includes the development of vertical and horizontal alignment for bridge replacement alternatives and
	ine study of the resulting impacts. The design incorporates intersection improvements and improves traffic functions at both ends of the
	approximately 2,400-1001 long (0.56 mile) project control into the bridge replacement design. The project will include ADA access ramps
	I to the 8-root sidewarks and a new 7-root duffered dike lane for additional safety.



Firm Name		Employed by	Hardesty & Hanover					
		;	Alexander Noble, PE		Years of relevant experience with this employer	26		
ACA	Title		Chief Engineer		Years of relevant experience with other employer(s)	10		
Degree(s) /	Years /	Specialization	l	B.E. / 1989 / Electr	ical Engineering			
Active regis	tration	number / state	/ expiration date	Professional Engin	eer: 081079-1 / NY / 8/31/2023			
Year registe	red	2003	Discipline	Electrical Engineer	ing			
Contract role	e(s) / b:	rief descriptior	n of responsibilities	Technical Adviso	r – Movable Electrical Engineering			
Experience	dates	Experience an	nd qualifications relev	ant to the property	osed contract; i.e., "designed drainage", "designed gin	ders",		
(mm/yy–mn	n/yy)	"designed inte	ersection", etc. Experi	ience dates shoul	d cover the time specified in the applicable MPR(s).			
		Almonaster Ave	enue Railroad Bridge ove	er the Industrial Ca	nal Rehabilitation, New Orleans, LA – Port of New Orleans			
		Movable Bridge	Electrical Engineer for the	he bridge assessme	nt, complete rehabilitative engineering design, and construction			
		inspection servic	es required for the partial i	replacement of the A	Almonaster Avenue Bridge, a movable Strauss-heel trunnion bridge	Э.		
1/20 - 02/	22	H&H's 2019 assessment of the circa-1920, eligible for the National Register of Historical Places bridge revealed that improvements to						
1/20 02/	22	the electrical and	I mechanical systems, sup	erstructure, and cou	erstructure, 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. H&H developed necessary design plans to replace the span drive and span lock machinery, operating strut, guide						
		assembly, live loa	ad bearings, counterweigh	t trunnion pin, and b	ushing. The main trunnion bearings were rehabilitated and reposit	ioned.		
		SR 609 Bascule Bridge Rehabilitation, Ocean Springs, MS – Mississippi DOT						
		QA/QC Advisor responsible for reviewing plans for the full rehabilitation of SR 609 bascule bridge, as a task-order to the IDIQ Master						
06/18 - 03/	/19	Bridge Contract which includes developing standard and special bridge services, statewide for MDOT. Scope of work includes						
00/10 03/	17	inspection and rehabilitation of structural, mechanical, and electrical components of the bridge, as well as the roadway approaches and						
		development of maintenance and repair plans. All designs were in accordance to AASHTO, FHWA and MDOT guidelines and						
		specifications.						
		Flagler Memoria	al Bridge over ICWW, Pal	m Beach, FL - Flor	ida DOT District 4			
10/16-4/17		Movable Bridge Electrical Engineer responsible for this \$95 million design-build project that included the replacement of the entire						
		bridge off-line and parallel to the existing bridge to maintain traffic for this busy causeway that connects West Palm Beach to Palm						
	7	Beach. The desig	gn/build request for propos	sal, resulting from a	Type 2 Categorical Exclusion Class of Action NEPA process, had	STRICT		
		design requireme	ents regarding environmen	ital mitigation, appea	arance, and maintainability. Completed in 2018, the twin double-lea	ar		
		rolling lift bascule	e span bridge design includ	aed a 150-foot rolling	g-lift-span over the navigable channel, twelve 150-foot pre-stresse			
		concrete approac	cn spans, and approach ro	adway work. This pi	roject was recognized by ASCE west Palm beach Branch receivin	gine		
		award of 2018 Pr	roject of the Year.					



09/15 – 11/15	BNSF Des Allemands Swing Bridge (BNSF Bridge 32.06) Rehabilitation, Des Allemands, LA - BNSF Railway Company QA/QC Advisor for the rehabilitation of the BNSF's Des Allemands Swing Railroad Bridge which included structural condition assessment, engineering report, the development of final bridge and track designs and construction contract documents, load rating analysis, permitting, construction management and on-site construction support. Responsible for all aspect of construction of the new thru plate swing span. Scope included rehabilitation of the foundations, design of the new rest pier caps, rehabilitation of the swing span pivot pier. Swing span pivot pier designed with internal steel framing to transfer live loads to the existing foundation while placing the dead load of the new heavier swing span on micropile foundations, part of the pivot pier rehabilitation. Design also included mechanical equipment, new electrical system capable of operated remotely, electrical design included use of a PLC controls with manual operation available on the swing span.
03/16 – Present	Sault Ste. Marie Mechanical and Electrical Upgrades to Three Movable Bridges, Sault Ste. Marie, MI/Sault Ste. Marie, Ontario – Canadian Pacific Railway QC Oversight for detailed mechanical and electrical inspections and rehabilitation of three side-by-side movable spans, two in Michigan, one in Canada. The bridges include a double-leaf Strauss bascule span, a swing span, and a vertical lift span. The swing span and vertical lift span consisted of full electrical rehabilitations that includes new PLC-based control systems, flux vector drives, conduit systems, and off-site remote control operations. Prepared design drawings, calculations for equipment sizing, bill of materials and cost estimates for the project.
06/09 – Present	Madison Avenue Swing Bridge, New York, NY -New York City DOT Movable Bridge Electrical Engineer for the construction inspection of the major mechanical and electrical rehabilitation of a 307-foot, four-lane swing bridge over the Harlem River between Manhattan and the Bronx.
04/19 – Present	Welland Canal Bascule Bridge #6 Major Rehabilitation Design, St. Catherines, Ontario – St. Lawrence Seaway Corporation Electrical Engineer for major rehabilitation of Bridge #6. Work includes complete drive machinery rehabilitation, span brake replacement, span lock replacement (per the SLSMCs Bridge Lock Strategy Report), toe bearing de-icing system, replacement of power distribution and electrical equipment, replacement of interior and exterior lighting, replacement of movable span festoon cable systems that provide power to the moving span, replacement of bridge span lock starters and brake timing delay to wind up machinery, rebalance of the spans using dynamic strain gaging, and all span brake testing work.
01/16 – Present	Warsaw Road Swing Bridge, Peterborough, Ontario, Canada - Public Works and Government Services Canada Movable Bridge Electrical Engineer responsible for inspection of movable span electrical systems. This swing bridge is located on Parkhill Road, in the City of Peterborough. It was constructed in 1956. The Warsaw Road Bridge is approximately 31.1m long, unequal arm, through-plate girder swing bridge. The short arm of the bridge is approximately 10.0m, and the long arm is approximately 21.1m. The width of the bridge is approximately 10.3m with a roadway of approximately 7.3m. Comprehensive investigation report was created utilizing the latest versions of the CSA and AASHTO movable bridge design requirements to develop multi-leveled repair options for each electrical subsystem. A cost estimate was created to supplement each rehabilitation level option. Recommendations were outlined within report taking into account the proposed structural and mechanical recommendations to ensure proper reliable service for the increased roadway and waterway traffic.



Firm	n Employed by	Hardesty & Hanover				
Nan	ne	Frederick Wetekamm, I	PE	Years of relevant experience with this employer	3	
Title	e	Senior Bridge Engineer		Years of relevant experience with other employer(s)	30	
Degree(s) / Years	s / Specialization	1	ME / 2018 / Constr BS / 1984 / Civil Ei	uction Engineering Management / University of Alabama - Birming ngineering / Louisiana State University	jham	
Active registration number / state / expiration da		e / expiration date	Professional Engineer: 25369 / LA / 3/31/2024 Maintenance & Rehabilitation of Historic Bridges (LADOTD) FHWA NHI Course #130055 Safety Inspection of In-Service Bridges FHWA NHI Course #130078 Fracture Critical Inspection Techniques for Steel Bridges FHWA Stream /Stability and Scour at Highway Bridges for Bridge Inspectors FHWA NHI Course #139005, Driven Pile Foundations – Construction Monitoring			
Year registered	1993	Discipline	Civil Engineering			
Contract role(s) / brief description of responsibilities			Movable Bridge C	Constructability		
Experience dates	Experience an	nd qualifications relev	vant to the prope	osed contract; i.e., "designed drainage", "designed gin	rders",	
(mm/yy–mm/yy)	"designed inte	ersection", etc. Exper	ience dates shoul	d cover the time specified in the applicable MPR(s).		
8/20 - Present	L H.001498.6; LA 24 and LA 16 Company Canal Vertical Lift Bridge, Bourge, LA – Louisiana DOTD 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.				and	
1/96 - 5/07	LADOTD Bridge Maintenance Engineer, LADOTD District 2, LA – Louisiana DOTD Bridge Maintenance Engineer responsible for managing the program for Bridge Inspection, Operations and Maintenance Program, bridge operators, bridge repair crews, and bridge inspectors. The New Orleans Area has over 950 bridges (32 movable bridges), three tunnels, two navigation locks, and three drainage pumping stations. Responsible for creating and distributing repair work orders and coordinating the repairs, materials, equipment, labor, media information, and/or traffic control. Wrote major repair requests and generated project plans and specifications for repair projects and accident damages to the bridges for marine, vehicular, and environmental damages. Lead Coordinator for the projects with LADOTD District/statewide forces, contractors, consultants, public officials, media, property owners, and bridge maintenance supervisors. Provided construction inspection and damage assessments (DIR) for federally-reimbursed repairs from hurricanes and tropical storms. Experienced with specialized traffic requirements for the bridge/tunnel couplets, District traffic and marine requirements for temporary bridge closures, and permit load crossings.				am, three and blic nts he	



	Almonaster Avenue Railroad Bridge over the Industrial Canal Rehabilitation, New Orleans, LA – Port of New Orleans
	Senior Bridge 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
01/20 - present	of the circa-1920, eligible for the National Register of Historic Places bridge revealed that improvements to the electrical and mechanical
0 1/20 present	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. H&H developed
	necessary design plans to replace the span drive and span lock machinery, operating strut, guide assembly, live load bearings,
	counterweight trunnion pin, and bushing. The main trunnion bearings were rehabilitated and repositioned.
	SR 609 Movable Bascule Bridge Rehabilitation, Ocean Springs, MS – Mississippi DOT
02/10 Dresset	Senior Bridge Structural Engineer / Structural inspector responsible for full renabilitation of SR 609 bascule bridge, a task-order to
03/18 - Present	the IDIQ Master Bridge Contract which includes developing standard and special bridge services, statewide for MDUT. Scope includes
	Inspection and renabilitation of structural, mechanical, and electrical components of the bruge, as well as the roadway approaches and development of maintenance and repair plane. All decigns are in according with AASUTO, FUWA and MDOT guidelings and choose
	SP 605 Movable Rescule Bridge Rebabilitation. Ocean Springer MS - Mississippi DOT
	Structural Engineer responsible for the assessment design plan review, and quality control of SP 605 double leaf bascule bridge, as
	a task-order to the IDIO Master Bridge Contract which includes developing standard and special bridge services statewide for MDOT
01/19 - Present	Scope of work includes inspection and rehabilitation of structural mechanical and electrical components of the bridge as well as the
	roadway approaches and development of maintenance and repair plans. All designs are in accordance with AASHTO, EHWA and
	MDOT guidelines and specifications.
	Lapalco Boulevard Movable Bridge over Harvey Canal, Westwego, LA – Jefferson Parish DPW
	Senior Bridge Engineer for the pre-design inspection, the rehabilitation and widening of the existing four-lane Lapalco Boulevard to
	provide a facility carrying three lanes of traffic in each direction, and the design of a new three-lane double bascule movable bridge
01/19 - Present	crossing of Harvey Canal. project includes rehabilitation to the existing four-lane bridge with three lanes of traffic and a new
	pedestrian/bike lane. 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. Improvements to bridge and roadway approaches for
	eastbound and westbound traffic as well as the development of a Traffic Control Plan is also included in scope.
	Annual Inspection of Almonaster Railroad Bascule Bridge over the Industrial Canal, New Orleans, LA – Port of New Orleans
10/19 - 01/20	Structural Inspection Team Leader for an annual inspection of the Almonaster Avenue Railroad Bascule, which involved a structural
	inspection of the fracture critical steel, primary and secondary steel members, an electrical inspection of the electrical systems and
	controls, and a mechanical inspection of the machinery.
06/19 - 09/19	Annual Inspection of Seabrook Railroad Bridge, New Orleans, LA – Port of New Orleans
	Structural Inspection Team Leader for the annual inspection of the Seabrook Trunnion Bascule Bridge. This inspection included a
	structural inspection of the fracture critical steel and primary and secondary steel members, an electrical inspection of the electrical
	systems and controls, and an inspection of the mechanical systems and machinery.



Name         Daniel Tarantino, RA, AIA         Years of relevant experience with this employer         4           Title         Senior Architect         Years of relevant experience with other employer(s)         9           Degree(s) / Years         Senior Architect         B.A. / 2008 / Architecture         Senior Architecture	0	Firm Employed by		Hardesty & Hanover					
Title         Senior Architect         Years of relevant experience with other employer(s)         9           Degree(s) / Years / Specialization         B.A. / 2008 / Architecture         EA. / 2008 / Architecture         EA. / 2008 / Architecture         EA. / 2008 / Architecture         EXercence         Architecture         EXercence         Architecture         EXercence         Architecture         EXercence         Architecture         EXercence         Architecture         EXercence         Intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).         "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).         Intersection", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).         Intersection Intersection", "designed or the Bridge Control House.         Intersection Intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).         Intersection Intersection", "designed or the Bridge Control House.         Intersection Intersection", "designed for the Bridge Control House. This 2,500 square-foot wo-story house included an electrical and generator room and main control room for the bridge control House. This 2,500 square-foot wo-story house included an electrical and generator room and main control room for the bridge construction contract documents, and will be providing engineering support services when construction begins in summer 2021 to replace the deteriorating double leaf bascule span bridge with a rew double leaf bascule bridge. Daniel's responsibilities included for consign. This included fremains span's pertreatments as they related to the ov	A B	Name		Daniel Tarantino, RA, A	AIA	Years of relevant experience with this employer	4		
Degree(s) / Years / Specializatio         B.A. / 2008 / Architecture           Active registration         number / stat / expiration date         Registered Architect: 9255 / LA / 12/31/2022           Year registered         2019         Discipline         Architecture           Contract role(s) / brief         description of responsibilities         Architecture           Experience dates (mm/yy-mm/yy)         Experience and qualifications relevant to the proposed contract; <i>i.e.</i> , "designed drainage", "designed girders", "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).           06/18 - 02/19         Senior Architectural Designer for this bridge replacement project. The existing swing bridge over the Perquimans River / Design/Build, Perquimans County, NC - North Carolina DOT senior Architectural, mechanical, electrical, and geotechnical engineering. In addition, as Lead Architect, was responsible for the design of the Bridge Control House. This 2,500 square-foot two-story house included an electrical and generator room and main control room for the Bridge operators. Design included the exterior treatment and fenestration along with the roof, stair, and railing work.           3/19 - Present         Replacement of Rumson - Seabright Bridge (S-32) over Shrewsburg River, Monmouth County, NJ - County of Monmouth Senior Architect for completing the local concept development (LCD), developed the preliminary engineering and final design, prepared the construction contract documents, and will be providing engineering support services when construction begins in summer 2021 to replace the deteriorating double leaf bascue brotide pounols responsibilities included leading the overal bridge	E MA	Title		Senior Architect		Years of relevant experience with other employer(s)	9		
Active registratio         Image: Number / state / expiration date         Registered Architect: 9255 / LA / 12/31/2022           Year registered         2019         Discipline         Architecture           Contract role(s)         Image: Telescription         of responsibilities         Architecture           Experience dates         Experience and qualifications relevant to the proposed contract; <i>i.e.</i> , "designed drainage", "designed girders", (mm/yy)         "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).           06/18 - 02/19         US 17 Swing Bridge over the Perquimans River · Design/Build, Perquimans County, NC - North Carolina DOT Senior Architectural Designer for this bridge replacement project. The existing swing bridge over the Perquimans River will be replaced with a new, off-line bridge. H&H's responsibilities include the complete design of the new swing span, including structural, architectural, mechanical, electrical, and geotechnical engineering. In addition, as Lead Architect, was responsible for the design of the bridge operators. Design included the exterior treatment and fenestration along with the roof, stair, and railing work.           3/19 - Present         Replacement of Rumson - Seabright Bridge (S-32) over Shrewsburg River, Monmouth County, NJ - County of Monmouth Senior Architect in completing the local concept developement (LCD), developed the preliminary engineering and final design, prepared the construction contract documents, and will be providing engineering support services when construction begins in summer 2021 to replace the deteriorating double leaf bascue span bridge with a new double leaf bascue bridge. Daniel's responsibilities included the main span's	Degree(s) /	Years /	Specialization	l	B.A. / 2008 / Archi	lecture			
Year registered       2019       Discipline       Architecture         Contract role(s) / biscription       Fesperine	Active regis	tration	number / state	/ expiration date	Registered Archite	ct: 9255 / LA / 12/31/2022			
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historic Jupiter Inlet US Navy Married Men's Quarters (1942) and the Jupiter Inlet Lighthouse (1860)			historic Jupiter	Inlet US Navy Married Mei	n's Quarters (1942)	and the Jupiter Inlet Lighthouse (1860)			



07/17 – Present	Shore Road Bridge over the Hutchinson River, Bronx, NY – New York City DOT Senior Architect leading the overall aesthetic design of the rolling lift bridge, coordinating the architectural and the engineering design, and leading the 3D visualizations and VR production for the project. The 108-year-old bridge was eligible for inclusion on both the New York State and National Registers of Historic Places. The unique architectural towers, or pylons, on the bridge were described in contemporary documents from 1910 as a means of emphasizing the gateway to vessels.
07/18 – Present	Raritan River Bascule Drawbridge, Perth Amboy and South Amboy, NJ – NJ Transit Senior Architect for a \$500 million replacement of the Raritan River Drawbridge. Responsibilities include design coordination and development for all architectural components of the project. These components included the control house, machinery house, and access to the structure. Provided material and aesthetic considerations for the main span, house, and approach structures. The project includes a half-mile-long structure with a movable swing span at the navigational channel and more than 3,000 linear feet of approaches.
09/19 – Present	Amtrak Connecticut River Bascule Bridge, Old Saybrook, CT – AMTRAK Project Architect for the in-depth condition inspection of the structural, mechanical, and electrical systems and performed a feasibility and conceptual design study for rehabilitation or replacement of the bridge. Various alignment and profile layouts for various rail gradient options were developed and studied. Rehabilitation or replacement alternatives were analyzed for estimated costs and for comparative benefits. Cost analysis and impacts to right-of-way, utilities, tidal marshlands, and navigation were investigated. A set of highly ranked alternatives was selected, termed "Best Solution Study Alternatives," each providing Amtrak combined advantages of cost and technical benefits. Estimated construction costs for the best solution study alternatives exceeded \$100 million. Daniel's responsibilities on the project include the design of a new control 360 degree viewing tower with access to and from the east landing. These access paths will also be equipped with windscreen protection allowing ease of access along the pathway.
11/12 – 08/16	Government Center Station, Boston, MA – Massachusetts Bay Transportation Authority Architect responsible for preparing preliminary through final design and construction documents for this two-line, two-levels-below- ground station (Copley Square Station) that lies under the heart of Boston's Government Center Plaza, City Hall. The Government Center Plaza Station was to receive a new head house at grade with redundant ADA elevators, new stairs, and escalators. Responsibilities included all subway station architecture, structural engineering, and coordination of all disciplines.
06/13 – 11/18	Nostrand Avenue Station, Brooklyn, NY – Long Island Rail Road Senior Architectural Designer for this rail station rehabilitation project, which involved restoring the platforms to a state-of-good- repair to ensure ADA compliance and an overall improved facility. Design items included replacement of the station platforms, railings, and canopy roofing system, replacement of the four stairs and overpasses with ADA-compliant prefabricated stairs and overpasses, installation of two new elevators, and upgrades to station signage, lighting, electrical, and communications systems. Designs were developed in compliance with LIRR Station Design Guidelines, NYS Building Code, applicable requirements of ADA, and passenger safety features. Nostrand Avenue Station is found along the Atlantic Branch of the LIRR.



Firm		Employed by	Hardesty & Hanover				
(00)	Name	e	Kevin Meehan		Years of relevant experience with this employer	1	
	Title		Principal Estimator		Years of relevant experience with other employer(s)	29	
Degree(s) /	Years /	/ Specialization	l	B.S. / Civil Enginee	ering / 1999 / Rutgers University		
Active regis	stration	number / state	/ expiration date	N/A			
Year registe	ered	N/A	Discipline	N/A			
Contract rol	le(s) / b	orief description	n of responsibilities	Cost Estimator			
Experience	dates	Experience ar	nd qualifications relev	ant to the property	osed contract; i.e., "designed drainage", "designed gin	rders",	
(mm/yy–mr	m/yy)	"designed inte	ersection", etc. Experi	ience dates shoul	d cover the time specified in the applicable MPR(s).		
02/21-12/2 02/17 – Pre	21	East Haddam So Principal Estima rehabilitating stru The bridge rehat construction of th emphasis on con Raritan River Li Principal Estima half-mile long stru	wing Bridge over the Con ator for the rehabilitation of uctural, mechanical, and el pilitation included structura ne sidewalk. The bridge rel astructability and reduced of ft Bridge, Perth Amboy, ator for a \$500 million repl ucture with a movable swi	nnecticut River, Ea of the East Haddam s ectrical systems and I strengthening of th habilitation also incluve ight and prelimina NJ – NJ TRANSIT acement of the Rari ng span at the navig	st Haddam, CT – Connecticut DOT Swing Bridge (CTDOT Bridge 1138). Design efforts were focused a upgrading components to improve reliability and decrease mainte e trusses and floor system to support all Connecticut Legal Loads uded the replacement of the approach span bridge decks with an ry and final design development of the sidewalk. tan River Drawbridge on North Jersey Coast Line. The project incl ational channel and more than 3.000 square feet of approaches b	on enance. after udes a etween	
		the Perth Amboy and South Amboy stations in New Jersey. Responsibilities included preparation of the construction costs for the project, including repackaging of the estimate when this major project was split up into three smaller construction contracts.					
10/20 – Pre	sent	Replacement of State DOT Principal Estima topographical su prone details; lev modifications, se prestressed cond tree survey and d	Four Bridges on the Broat ator for this replacement prvey; ROW mapping; haza rel I load ratings; repair de ismic evaluation; developr crete beams and concrete development of Section 4(1)	onx River Parkway roject of four bridge: ardous waste/contan tails for flag conditio nent of rehabilitation segmental box girde f) documents.	Over NYCT, Metro-North, Amtrak, and CSX, Bronx, NY - New S s. H&H is working on preliminary design (Phases I-IV) which includ inated materials screening; in-depth inspection, evaluation of fations; interim repairs to expansion joints; existing median barrier /replacement alternatives utilizing steel trapezoidal box girders, ers; evaluation of environmental, wetland, and land use impacts, in	York de gue icluding	



10/20 – Present	<ul> <li>Replacement of Three Culverts and the Bronx River Parkway Bridge, Westchester County, NY - Westchester County DPW</li> <li>Principal Estimator for this project providing design and construction support of the complete replacement of three culverts and a bridge on the historic Bronx River Parkway, including scour protection and roadway resurfacing of the existing roadway. The project will consist of land survey, utility identification, traffic analysis, hazardous material testing, soil testing, archeological study, cost estimating, load rating and structural, civil, geotechnical and architectural design.</li> <li>Long Slip Fill and Rail Enhancement Phase II. Hudson County, NJ – NJ TRANSIT</li> </ul>
12/20 -4/22	Lead Cost Estimator during design of Phase II of this project which will allow for longer train service operations and enable NJ TRANSIT to recover more quickly from storm events. Developed capital construction cost estimates for early and final design submissions, supported alternatives analysis, bid item sorting and tracked changes in scope and cost. The project will construct six new tracks, undergrade bridge, viaduct, special trackwork, OCS, three new platforms and a crew quarters facility.
10/11 – 09/20	Transportation Infrastructure in the Public Sector, Mercerville, NJ - JCMS, Inc.Lead Estimator for a team of cost estimators coordinating multiple concurrent projects with an emphasis on infrastructure, transportation and the public sector. Developed and coordinated engineer's cost estimates for public projects, from conceptual design through bid phase. Projects range from \$3 million to \$300 million. Over \$1 billion brought to contract. Developed cost modeling, alternative analysis, Lifecycle Cost Analysis, and Value Engineering. Developed and coordinated independent cost analyses for change orders. Developed fee proposals, attended sales presentations and coordinated with marketing department in pursuit of new or additional work. Enlarged department from 1.5 full time equivalents to a staff of eight by developing relationships, confidence and trust with partners and clients.
12/20-2/22	Northeast Corridor Mid Line Loop, Middlesex County, NJ – NJ TRANSIT Project Estimator during the Concept Development phase to improve commuter rails service on the NEC by eliminating a grade crossing conflict that exists at approximately MP32 @ Jersey Avenue Station/County Yard Facility. The project involves the addition of a new electrified loop track several miles long adjacent to and over the NEC. Developed direct and indirect costs for construction and developed contingencies and soft costs according to FTA guidelines
01/17-05/18	Repairs, Remediation, Flood Mitigation and Resiliency at Hoboken Terminal and Yard, Hudson County, NJ – NJ TRANSIT Cost Estimator during the early and final design phases of multiple packages for repairs and improvements to the terminal and yard that suffered significant flooding damage as a result of Superstorm Sandy in 2012. The project is to restore the terminal and yard operations, while at the same time increasing the system's resiliency - its ability to withstand and recover quickly from future storms. Estimates were created for each submission from concept to final design and bid packaging.
02/09 – 10/11	<ul> <li>National September 11th Memorial And Museum, New York, NY - URS</li> <li>Senior Estimator for the National September 11th Memorial and Museum. Project estimator developing bid package estimates, change order estimates, allocating costs. Provided detailed takeoff and pricing for sitework, sitework utilities, foundations, superstructure and architectural building elements. Analyzed and tracked cost impact of revisions, changes, addenda, etc. Negotiated contract pricing and change orders with subcontractors and general contractors.</li> </ul>



	Firm Employed by		Hardesty & Hanover					
COC)	Name	) 	Joseph Lee Adams, PE		Years of relevant experience with this employer	12		
	Title		Senior Highway Enginee	r	Years of relevant experience with other employer(s)	12		
Degree(s) /	Years /	Specialization	1	BS / 1995/ Highwa	y Engineer			
Active regis	stration	number / state	/ expiration date	Professional Engin	eer: 41739 / LA / 9/30/2023			
Year registe	ered	2017	Discipline	Civil Engineering				
Contract rol	le(s) / b	rief description	n of responsibilities	Bridge Hydraulic	Engineer			
Experience	dates	Experience an	nd qualifications relev	ant to the proper	osed contract; i.e., "designed drainage", "designed gi	rders",		
(mm/yy–mr	m/yy)	"designed inte	ersection", etc. Experi	ience dates shoul	d cover the time specified in the applicable MPR(s).			
		Bruckner Expre	ssway over Westchester	r Creek (Unionport	Bridge) Replacement, Bronx NY – New York City DOT			
02/13 - 12/15	Hydraulic Engir	neer for the design of new	\$250 million twin sin	gle-leaf bascule spans and approaches. Responsible for preparin	g			
	bridge scour vulnerability analysis and report as part of the replacement for this major New York bridge. Developed models to analyze							
	the Westchester Creek drainage basin for fluvial peak flows using TR-55 Urban Hydrology methodology and software, in addition to							
		modeling and analyzing the tidal response of Newtown Creek per HEC-18 guidance and HEC-25 tidal prism methodology. Also,						
		modeled peak discharge design flows through the creek at the bridge using HEC-RAS river modeling software to determine design						
		stream velocities	. Designed shoreline prote	ection measures for v	wave attack per USACE and FHWA design guidance.			
		Rumson – Seab	oright Bridge Over Shrew	Sbury River, Monm	outh County, NJ – North Jersey Transportation Planning Aut	nority		
		Hydraulics & Hy	arology Engineer respon	Isible for evaluating	scour vulnerability for the existing Rumson Road Bridge 5-32 and			
		several replacement alternatives during the Local Concept Development Phase. Prepared cost estimates for scour countermeasure						
12/12 0/	12	alternatives and performed field condition inspection of pridges and cuiverts. Performed hydraulic vulnerability analysis per NJDU I automation and developed bydraulic medaling per ELIWA/c LEC. 25 autoence - During Decliminary Decign, responsible for accessing						
12/12 - 0/	15	guidance and developed hydraulic modeling per FHWA's HEC-25 guidance. During Preliminary Design, responsible for assessing						
		South water management in NUDER regulatory requirements, evaluating existing system tapacity, and designing stormwater system improvements and propaged						
		the final bridge by draulics analysis, including modeling tidal by draulic conditions during the stages of construction, and supported the						
		engineering effort necessary for NIDEP Waterfront Development TISCG and TISACE permitting						
		Route 25A Bride	ge Over Brackett Brook.	Grafton County, NI	H – New Hampshire DOT			
		Supervising Hy	draulic Engineer for the r	ehabilitation or repla	cement of this NHDOT Red Listed bridge. Responsible for superv	isina		
05/17 10	100	the hydrologic ar	nd hydraulic analysis neces	ssarv to define the fl	oodplain, floodway, and existing conditions; determine design load	ds.		
05/17 – 12	/20	scour depths; an	d provide quality control. T	he two-span concre	te deck bridge was in poor condition and was considered scour cr	itical		
		during floods. Sc	ope of work included an el	ngineering feasibility	study and report detailing type, span, and location (TS&L); prelim	ninary		
		and final design;	permitting; and construction	on support services.		5		



	Rehabilitation of Route 202 Bridge over Housatonic River, Litchfield County, CT – Connecticut DOT
	Lead Hydraulic Engineer for the rehabilitation of the Connecticut DOT Route 202 over Housatonic River. The bridge (#00901) is a
	single span simply supported Pratt through truss variant carrying two lanes of traffic over the Housatonic River. This steel truss bridge
10/17-10/18	was constructed in 1953 and is comprised of a combination rolled and built up truss members framed into riveted gusset plates. The
	site is subject to flood flows that carry woody debris and inundate the span. Mr. Adams assessed the debris loading risk, modeled
	design flows and estimated lateral hydraulic forces on the superstructure to assist the structural design team with bridge seat structural
	rehabilitation design.
	Jersey Avenue over Mill Creek, Jersey City, NJ – NJ Turnpike Authority
	Hydraulic Engineer responsible for evaluating scour conditions, determining wave height and wave force on superstructure, designing
	stormwater management improvements for environmental compliance, and design standards. Project involves design of a new single
02/14 – 08/16	span structure over a tidally influenced tributary of the Upper Hudson Bay, subject to extreme coastal storm conditions. Coastal
	conditions were evaluated according to FHWA's HEC-25 and HEC-18. Stream stability evaluation performed per HEC-20 guidance.
	Scour countermeasures designed for wave attack using HEC-23. Hydrologic modeling using TR-55 procedures in HEC-HIVIS, water
	Surface profiles modeled in HEC-RAS for both design purposes and NJDEP Flood Hazard Area permitting.
	Route 31 over Peter's Brook, Hunterdon County, NJ – New Jersey DOI Hudraulia Engineer responsible for the hydraulia analysis related to final design angineering convises for the superstructure
	<b>Explacement</b> of a 42 feet single span bridge on Doute 21 in East Amwell, Hunterden County, N.L. The bridge crossing is located along a
07/16 00/10	rural but heavily travelled two land highway over a small steep, houlder strown out. Extreme event design flows inupdate low chord and
07/10-00/10	therefore require hydraulic force estimation for bridge lateral force restraint design. Construction utilized accelerated bridge construction
	techniques over three to four weekend closures. Mr. Adams was also responsible for soil erosion and sediment control design and
	nermitting which included stream diversions and dewatering operations
	Biennial Inspection of the Bronx-Whitestone Bridge, New York, NY – MTA Bridges & Tunnels
	<b>Hydraulic Engineer</b> responsible for preparing bridge scour susceptibility analysis and report in support of the biennial inspection of the
10/08 – 11/08	Bronx-Whitestone Bridge, a long span suspension bridge over the East River. Generated models to analyze the tidal response of the
	East River per HEC-18 and HEC-25 guidance. Route and model peak discharge design flows through the crossing at the bridge using
	HEC-RAS river modeling software to determine design stream velocities and compute scour estimates.
	Bridge Street Bridge over Passaic River, Newark & Harrison, NJ – North Jersey Transportation Planning & Authority
	Hydraulics & Hydrology Team Leader responsible for evaluating stream stability and coastal site conditions for the existing bridge and
05/16 – 06/20	replacement alternatives for the federally funded Local Concept Development (LCD) phase for major rehabilitation or replacement of this
	deteriorating swing span bridge. Mr. Adams also evaluated stormwater management system operation, capacity impacts, and
	environmental permitting implications for same.
	Saugus Drawbridge Replacement, Saugus, Essex County, MA – Massachusetts Bay Transportation Authority
11/16 – 7/20	Supervising Hydraulic Engineer responsible for analyzing tidal and hydrologic fluvial conditions for existing and proposed bridge,
11/10 - 7/20	estimated time dependent scour in cohesive materials. H&H is leading the rehabilitation of this railroad draw bridge after a rehabilitation
	or replacement study. Project involves extensive coordination between Massachusetts DOT and MBTA.

	Firm	Employed by	Hardesty & Hanover					
	Name	2	John Witthohn, PE, CM	IE, CFM	Years of relevant experience with this employer	5		
	Title		Highway Engineer		Years of relevant experience with other employer(s)	13		
Degree(s) /	Years ,	/ Specialization		BS / 2003 / Civil Ei	ngineer			
Active regis	stration	number / state	/ expiration date	Professional Engin	eer: 41739 / LA / 9/30/2023			
Year registe	ered	2017	Discipline	Civil Engineering				
Contract rol	le(s) / t	orief description	n of responsibilities	Bridge Hydraulics	s Engineer			
Experience	dates	Experience an	nd qualifications relev	ant to the propo	osed contract; i.e., "designed drainage", "designed gin	rders",		
(mm/yy–mr	n/yy)	"designed inte	ersection", etc. Experi	ience dates shoul	d cover the time specified in the applicable MPR(s).			
		Shore Road Bas	scule Bridge over the Hu	tchinson River, Bro	onx, NY – New York City DOT			
		Hydraulic Engin	eer for preliminary engine	ering for performing	preliminary design, studying alternatives, and developing environ	mental		
07/17 – Pre	sent	documentation for the reconstruction or replacement of 108-year-old rolling lift bridge. The bridge, eligible for inclusion on both the New						
0//1/ 110	3011	York State and National Registers of Historic Places, is reaching the end of its service life. Major structural and roadway issues						
		addressed in H&H's scope of work includes needs assessment; bridge type selection; developing an alignment that minimizes park and						
		environmental im	acts; profile improvements to increase channel clearances; developing stage construction plans that will minimize					
		impacts on vehic	ular, bicycle, pedestrian, a	and vessel traffic.				
		Route 25A Bridge Over Brackett Brook, Gratton County, NH – New Hampshire DOI						
		Hydraulic Engineer for the preliminary design of the replacement of Rt 25A Bridge over Brackett Brook. Responsible for hydrologic and						
05/17 – 12	/20	Injuraulic analysis of existing 45 skewed bridge and two proposed bridge sparts alternatives in accordance with NHDOT Bridge Design Manual, the design of a wider bridge apopting in compliance with NHDES Stream Crossing Cuidelines for wildlife continuity and						
		manual; the design of a wider bridge opening in compliance with NHDES Stream Crossing Guidelines for Wildlife Continuity and tecreatrial species passage; and scent analysis and countermeasure design on the selected alternative. Also proposed the hydraulic						
		soctions of the Dehabilitation Study Deport (DSD) and the Type Size & Legation (TSL) Study Deport, currently under review by NUDOT						
		Poute 179 Bride	enabilitation Study Report	K Brook Hunterdo	n County NI – New Jersey DOT	IIDOT.		
		Hudraulia Engineer for the Concentual Design of the replacement of Doute 170 Bridge over Back Brook. Despensible for hydrologic						
12/18 – Pre	sent	and hydraulic analysis of ovisting and proposed bridge hydraulies, and the design of a wider bridge opening to provide natural stream						
12/10 - 1163	3011	banks and terres	trial species passage in co	ompliance with N IDF	P Flood Hazard Area rules on threatened and endangered specie	-s in		
fragmented habit		at in accordance with NIAC. 7.13			<i>/</i> 0 III			
		NJ Route 17. Sp	orout Brook Culvert Repl	acement, Paramus	, NJ – New Jersey DOT			
07/15 – 07	/18	Hydraulic Engin	eer responsible for Prelim	inary Engineering P	hase and Final Design Phase of hydrologic and hydraulic analysis	s of		
		existing and prop	osed drainage conditions	of this bridge replac	ement and highway widening project, and the design of the propos	sed		

	stormwater management system. The project involves replacing a pair of three-span, fixed bridges conveying the NB and SB freeways over the former railroad ROW, with a single tunnel structure, in accordance with NJDOT and NJDEP requirements.
02/14 – 08/16	NJ Route 42 Bridges over Blackwood Railroad Trail, Camden County – New Jersey DOT Hydraulic Engineer responsible for evaluating scour conditions, determining wave height and wave force on superstructure, designing stormwater management improvements for environmental compliance, and design standards. Project involves design of a new single span structure over a tidally influenced tributary of the Upper Hudson Bay, subject to extreme coastal storm conditions. Coastal conditions evaluated according to FHWA's HEC-25 and HEC-18. Stormwater management system and water quality structure improvements designed according to State, local and Turnpike Authority design standards. Two hydrodynamic separator style MTDs were proposed to achieve water quality compliance. Coastal conditions were evaluated according to FHWA's HEC-25 and HEC-18. Stream stability evaluation performed per HEC-20 guidance. Scour countermeasures designed for wave attack using HEC-23. Riverine design flows estimated using TR-55 procedures in HEC-HMS (replaces HEC-1), water surface profiles modeled in HEC-RAS (current HEC-2) for both design purposes and NJDEP Flood Hazard control compliance. Design process included highway storm water drainage spread calculations to determine proper inlet spacing. As part of the Storm Water Management Plan & Report, a low impact development checklist documented alternate Best Management Practices (BMPs).
01/11-12/11	Route 540 Houses Mill Pond Bridge, Alloway Township, NJ – New Jersey DOT Hydraulic Engineer responsible for H&H analysis and design of proposed bridge replacement using multi-profile HEC-RAS model, HEC-18, HEC-20 & HEC-23 scour analysis and design of scour counter measures, NJDEP permitting.
02/10-10/11	Route 540 Bridge, Deerfield/Hopewell Township, NJ – New Jersey DOT Hydraulic Engineer responsible for H&H analysis and design of proposed bridge replacement using multi-profile HEC-RAS model, HEC-18, HEC-20 & HEC-23 scour analysis and design of scour counter measures, NJDEP permitting.
	CR 537 Corridor Improvement, Freehold, NJ – New Jersey DOT Hydraulic Engineer for preliminary engineering for improvements to County Route 537 Corridor between Sentinel Road and US Route
05/16 – Present	9. The project includes widening of CR 537 roadway and upgrades to the existing storm sever systems to provide added capacity and eliminate existing gutter drainage issues. Existing and proposed conditions stormwater runoff analysis was performed for six existing pipe networks in the 2.4 miles of roadway improvements, including 230 acres of offsite urban land draining directly to the county-owned pipe networks. New storm sewer pipes, inlets, and stormwater management BMPs were designed throughout the project corridor to meet NJDOT and County requirements, and the NJ Stormwater Rules found in N.J.A.C. 7:8. Final Design Phase is anticipated to begin in early 2019.



	Firm I	Employed by	Hardesty & Hanover					
25	Name		Jason W. Dunn, PE CFM AP	1, ENV SP, LEED	Years of relevant experience with this employer	4		
	Title		Senior Drainage Enginee	er	Years of relevant experience with other employer(s)	16		
Degree(s) /	Years /	Specialization		B.S. / 2006 / Civil E	ngineering / University of Florida			
Active regis	stration	number / state	/ expiration date	Professional Engin	eer: 65309 / Florida / 2/28/2023			
Year registe	ered	2006	Discipline	Civil Engineering				
Contract rol	le(s) / b	rief description	n of responsibilities	Drainage Enginee	r			
Experience	dates	Experience an	nd qualifications rele	vant to the prop	osed contract; i.e., "designed drainage", "designed g	girders",		
(mm/yy–mr	n/yy)	"designed inte	ersection", etc. Experi	ience dates shoul	d cover the time specified in the applicable MPR(s).			
		SR 75 (US 231)	Reconstruction, SR 30A	(US 98) to South Pi	peline Road, Panama City, FL – Florida DOT District 3			
0/10 02/2	00	Drainage Engine	eer for the new 840-foot st	teel bridge on SR77	crossing US 231 and the CSX railroad. H&H is providing design se	ervices		
0/19-02/2	22	for the single point urban interchange (SPUI) at SR 77 over US 231 and CSX RR improvement project. Work includes design for roadway						
		and drainage design of the intersection, lighting design for the entire project, and bridge design for new major steel structure.						
		Beckett Bridge	Replacement, Tarpon Sp	rings, FL – Pinellas	s County Government			
		Drainage Engineer responsible for drainage design, utility coordination, and permitting for this project. The project involved the historic						
12/18 – Pre	sent	bridge replacement with a new 360-foot single-leaf, rolling-lift, bascule bridge that carries Riverside Drive over Whitcomb Bayou and						
		features two traffic lanes, shoulders, and a sidewalk. Project elements included relay-based control system, approximately a quarter mile						
		of roadway, drain	hage, bridge architecture, a	and public involveme	ent.			
		5K 9 (I-95) Overland Bridge Design-Build Replacement, Jacksonville, FL – Florida DOT District 2						
07/14 – 06	/19	<b>Drainage Engineer</b> responsible for design, environmental permitting, coordination and quality control. The primary focus was the design of five determination and quality control. The primary focus was the design of $2.5$ miles of						
		or live stormwater management facilities and urban stormwater collection systems. This project included the reconstruction of 2.5 miles of						
		Cateway, unuges, and interchanges in Jacksonvine, Fionida.						
		Dateway improvements Design-Dullu, Fillelias County, FL - Fionua DOT District / Drainage Engineer responsible for temporary drainage design. This project will deliver limited and controlled access connections from the						
06/18 – 07	/20	Bayside Bridge on the north US 19 on the west and the St. Pete Clearwater International Airport to L275 general purpose and new						
	.20	express lanes. H&H's scope on this design-build project includes developing temporary traffic control (TTC) plans design for Segments 2						
		and 4: project tolls design (four sites) for Segments 1, 2 and 4: and structures design for four bridges in Segment 4						
		46 <sup>th</sup> Avenue N S	idewalk Design, Pinellas	County, FL - Pine	Ilas County			
10/10 Dro	cont	<b>Project Manage</b>	r/Senior Engineer respon	sible for project mar	agement, roadway design, sidewalk alignment, and utility coordinate	ation.		
12/18 - PIE	Selli	This project cons	ists of reconstruction of th	e existing roadway,	extension of the existing box culvert in both directions, construction	n of		
		Americans with E	Disabilities Act (ADA) com	pliant sidewalks, curl	p ramps, and driveways on both sides of the road. The project also	involves		



	incidental work along 46th Avenue North, from west of drainage outfall along 55th Street North right-of-way corridor to 49th Street North (a
	length of approximately 0.5 miles). H&H is responsible for roadway and sidewalk design, structural design, traffic control, and signing and
	pavement marking.
	Orlando South Ultimate Interchange at SR 91 (Florida's Turnpike) and SR 528 (Beachline Expressway), Orange County, FL –
	Florida's Turnpike Enterprise
08/20 – Present	Drainage Engineer of Record responsible for the drainage design and environmental permitting. This interchange reconfiguration project
00/20 1103011	includes the construction of direct connection ramps between freeways, an ultimate 10-lane typical section of the mainline turnpike,
	implementation of AET, consideration of express direct connections, and improvement of surface street operations. The drainage design
	includes 16 stormwater management facilities, floodplain analysis, cross drain extensions and storm sewer design.
	Districtwide Miscellaneous Design Contract, Brevard and Lake Counties, FL – Florida DOT District 5
	Drainage Engineer responsible for miscellaneous drainage engineering services driven by task orders generated from this contract.
	These services included hydraulic design of highway drainage and water management systems, obtaining environmental and water
05/15 - 06/17	management district permits, performing hydraulic studies and various survey, geotechnical and video inspection services, preparing
	plans and compiling contract documents for the rehabilitation, and repairing the existing storm drainage structures and facilities, as well as
	verifying field conditions. Projects performed under this contract include Town of Melbourne Beach Flooding Evaluations, US 1 and
	Riverside Drive Stormwater Pond Evaluation, SR 44 and US 27 Drainage Restoration, and the Lake Harris Regional Pond Study.
	I-95 at Viera Boulevard, Diverging Diamond Interchange, Brevard County, FL – Florida DOT District 5
00/17 11/10	Drainage Engineer responsible for temporary drainage design. This project will deliver limited and controlled access connections from the
03/17-11/19	Bayside Bridge on the north, US 19 on the west, and the St. Pete Clearwater International Airport to 1-275 general purpose and new
	express lanes. H&H's scope on this design-build project includes developing temporary traffic control (11C) plans design for Segments 2
	and 4; project tolls design (four sites) for Segments 1, 2 and 4; and structures design for four bridges in Segment 4.
	watersned management Program Peer Review, Districtwide, FL – Southwest Florida water management District
01/10 07/10	brainage Engineer of Record responsible for reviewing the complex interconnected point routing models, using a hydrology and hyd
01/10-07/10	figurations modeling program. The software involved was ArcGrs and ArcHydro used to review Green-Ampt figuration of the software for the softw
	redures. Additional tasks rocused on developing preliminary noouplains, review or documentation, and public involvement concerns. Peer
	CD 20 (US 09) Widening from CD 457 (Maak Davey Deed) to CD 200 West Welter County EL Elevide DOT District 2
	SR 50 (US 96) Widening from CR 457 (Mack Bayou Road) to CR 50A West, Walton County, FL – Florida DOT District 5
05/16 00/17	improvement project involved widening SD 20 from a feur lane readway to a six lane readway. The project also included resurfacing
05/10-06/17	improvement project involved widening SR 50 from a rour-lane roadway to a six-lane roadway. The project also included resultacing,
	signalized intersection redesign, stornwater management capacity evaluation, landscaping, and Americans with Disabilities Act upgrades to nodostrian features. The addition of sidewalk and/or multi-use path was analyzed throughout the project limits on both sides of SP 30.
	SP 500/US 4/1 from SP 437 (Orange County) to North of Junction/Wesley Road, Orange County, EL – Elorida DOT District 5
	Drainage Engineer for this project providing rigid payement rehabilitation along the southbound lanes of SR 500 (US 441) north of
9/15-10/16	Anonka for approximately 2.8 miles. Bicycle keyhole lanes were added at the right-turn lanes to Wesley Road. Orange Circle, Eudge
7/15-10/10	Road Hermit Smith Road and Kitt Avenue. In addition, existing southhound left-turn lanes, right-turn lanes, and median crossovers were
	milled and resurfaced
	minou unu rosunuoou.



Firm		Employed by	Hardesty & Hanover	Hardesty & Hanover				
1050	Name	e	Zachary Gross, PE, CFN	Λ	Years of relevant experience with this employer	2		
	Title		Drainage Engineer		Years of relevant experience with other employer(s)	12		
Degree(s) /	Years	/ Specialization	l	B.S. / 2009 / Civil I	Engineering / University of South Florida			
Active regis	tration	number / state	/ expiration date	Professional Engir	neer: 77005 / Florida / 2/28/2023			
Year registe	ered	2014	Discipline	Civil Engineering				
Contract rol	e(s) / t	orief description	n of responsibilities	Drainage Enginee	er			
Experience	dates	Experience an	nd qualifications rele	vant to the prop	oosed contract; i.e., "designed drainage", "designed g	girders",		
(mm/yy–mr	n/yy)	"designed inte	ersection", etc. Exper	ience dates shoul	ld cover the time specified in the applicable MPR(s).			
		Turnpike Spur (	SR 91) I-95 to Golden Gl	ades Toll Plaza, Mi	ami-Dade County, FL - Florida's Turnpike Enterprise and Florid	da DOT		
		District 6						
		Drainage Engin	Drainage Engineer of Record responsible for drainage design and permitting, including updating the FTE portion of the global ICPR4					
00/10 02	120	model for the GGI-North ERP. This project involved modifications to the Golden Glades Interchange (GGI) in Miami-Dade County. The						
09/18 – 03/20	over-all interchange has been divided into multiple roadway improvement projects. This project is identified as Segment 5. The scope							
		Includes the addition of normoving and southbound express lanes from the Fumpike mainline to the project limits of the 1-95 ramps at the SP 826 overpass. The addition of the express lanes requires reconstruction of the ramp bridge carrying traffic to the Tyrppike from L 05						
		Additionally the northbound ramps from NW 167th St and SR 826 and the southbound ramp to NW 167th Street will require						
		reconstruction.						
		SR 821 (Heft) W	idening from West of 57	th Avenue to East o	f 27th Avenue (Miramar) , Various Counties, FL – Florida's Turr	npike		
		Enterprise	•			•		
		Lead Drainage responsible for drainage design documentation and drainage plans. Prepared documents and attended meetings and field						
		reviews and Engineer of Record for 47th Avenue Bridge Hydraulics Report. The project involved design services for the widening of a						
08/16 – 12	/19	four-mile segment of HEFT. This unique project uses the forward-thinking concept of adding managed lanes within an existing tolled						
		facility. The project will provide eight lanes, three general use lanes, one express lane in each direction west of NW 27th Avenue, and six						
		Ianes east to the end of the project at the SR 821/SR 91 interchange. The design also calls for the provision of a planned direct-connect						
		express-bus stop along the northbound SW 27th Avenue exit ramp for the future Miami-Dade Transit Park and Ride lot being developed in the southwest quadrant of the interchange.						
		I-75 Widening fr	rom South of North Jone	s I oon to North of	US 17 Punta Gorda EL – Florida DOT District 1			
		Drainage Engin	eer responsible for draina	be design and permi	tting pond siting report modeling nutrient removal calculations flo	oodolain		
07/13 – 03	/15	analysis, cross d	rain analysis, spread, stor	m sewer design, and	d drainage plans production. This project involves the widening of	oouplain		
		approximately fo	ur miles of I-75 from south	of North Jones Loo	p Road to the Peace River Bridge. The project involved milling and			
		resurfacing the e	acing the existing four-lane interstate and adding two new lanes to the median. The existing bridges over North Jones Loop Road					



	and the Seminole Gulf Railway were widened. Services included traffic analysis, roadway design, drainage design, traffic control plans, signing and pavement marking analysis, lighting design, bridge design, environmental permitting, ITS, and noise analysis.
06/18 – 03/20	70th Street South over Delaney Creek, Hillsborough County, FL – Hillsborough County Government Drainage Engineer of Record. Hillsborough County is proposing to replace the existing 70th Street South Bridge over Delaney Creek with a bridge culvert (concrete box culvert) on the current horizontal alignment. The project included approximately 500-feet of incidental roadway and drainage reconstruction along 70th Street, south of Causeway Boulevard. The project required a Federal Emergency Management Administration (FEMA) No-Rise Certification and updates to the Hillsborough County SWMM Model of Delaney Creek.
03/15 – 07/19	I-75/SR 951 interchange Reconstruction, Naples, FL – Florida DOT District 1 Drainage Engineer of Record of Pond Siting Report. Responsible for permitting, design documentation and drainage plans as well as preparing documents and attending meetings and field reviews. This project involved providing design services for reconstruction of the existing diamond interchange to a partial cloverleaf interchange with two flyover connection ramps, from and to CR 951 (Collier Boulevard), to provide for the ultimate configuration. New bridges to accommodate ramp traffic will be constructed adjacent to the existing mainline bridges, as well as new bridges on SR 951 to go over Davis Boulevard will be constructed for direct interstate access. Services included roadway, drainage, bridge, signing and pavement marking, signalization, lighting, and ITS design; environmental permitting; and noise analysis.
05/15 – 09/19	<b>59th Avenue North Drainage Improvements, Pinellas County, FL – Pinellas County Government</b> <b>Project Manager/Drainage Engineer of Record</b> responsible for project management tasks, drainage design documentation and permitting. Under this General Engineering Consultant for Pinellas County, work consisted of roadway, structural, traffic, and drainage safety improvement projects, as well as drainage flooding studies and permitting. The 59th Avenue North drainage improvements alleviated residential flooding in Pinellas Park, Florida by proposing a shallow swale with DBI collection system along 58th Avenue North as well as ditch grading along 59th Avenue North. The project required a major permit modification of the jointly owned Molex pond, where runoff from the study area drains into.
01/12 – 07/18	US 17 Extension, Various, FL – Florida DOT District 1 Drainage Engineer responsible for drainage design and permitting, including pond design and modeling, floodplain compensation, ditch design, storm sewer design, cross drains, and plans production. This project involved design services for the new construction of approximately five miles of US 17 from the DeSoto/Hardee County Line to CR 634 (Sweetwater Road). The project involved expanding the existing two-lane facility to a four-lane divided facility with a 64-foot median. The existing bridge over Charlie Creek will be widened and used for the northbound lanes; a new southbound bridge over Charlie Creek will be constructed. The existing bridge over Charlie Creek Overflow was reconstructed and used for the northbound lanes; a new southbound bridge, and signing and pavement marking design; environmental permitting; and noise analysis.



Firm		Employed by	Hardesty & Hanover					
250	Name	e	J. Webb Jones, III, PE		Years of relevant experience with this employer	8		
	Title		Senior Highway Enginee	Pr	Years of relevant experience with other employer(s)	24		
Degree(s) /	Years /	/ Specialization	l	B.S. / 2001 / Civil E	Engineering / University of South Florida			
Active regis	stration	number / state	/ expiration date	Professional Engin	eer: 56950 / Florida / 2/28/2023			
Year registe	ered	2001	Discipline	Civil Engineering				
Contract rol	le(s) / t	orief description	n of responsibilities	Roadway Design				
Experience	dates	Experience an	nd qualifications rele	vant to the prop	osed contract; i.e., "designed drainage", "designed g	girders",		
(mm/yy–mr	n/yy)	"designed inte	ersection", etc. Exper	ience dates shoul	d cover the time specified in the applicable MPR(s).			
		SR 75 (US 231)	from SR 30A (US 98) to F	Pipeline Road, Pana	ama City, FL – Florida DOT District 3			
04/17 - 03	/20	Senior Enginee	r responsible for preparation	on of roadway and te	emporary traffic control plans. The project consists of providing des	ign		
03	120	services for the s	for the single point urban interchange (SPUI) at SR 77 over US 231 and CSX RR improvement project. Work includes roadway					
		and drainage des	sign of the intersection, lig	hting design for the e	entire project, and design for new 840-foot steel bridge.			
		SR-A1A/North C	auseway Bridge over IC	WW, Fort Pierce, F	L - Florida DOT District 4			
02/17 04/	01	<b>Roadway Design</b> or the 4000-root-long bridge replacement project which replaces a bascule span with a high-level fixed bridge that has						
03/17-00/2	21	and spans over Old Divic Hwy and the EEC Pailway. In addition to the new bridge, the project includes overding, lugarite Ave east from						
		IIS-1 to Old Divie Hwy and provisions for a new access roadway for the businesses south and north of the new bridge along SP A1A						
		SR 826/Sunny la	sle Twin Bridge Improve	ments. Sunny Isle.	FL – Florida DOT District 6	(17).		
		Roadway Desig	n Lead/Signing and Pave	ement Marking Eng	ineer of Record responsible for signing and pavement marking ar	nd		
01/15 10/	17	roadway design,	as well as temporary traffi	ic control (TTC) plan	s. The project included a vibration study of the bridge control house	e; design		
01/15-10/	17	recommendation	s for improvements, public	c involvement, permi	tting, TTC plans, roadway, drainage, signing and pavement markin	igs		
		analysis and plans, and construction cost estimates. Both four-lane bridges have 16 spans with pre-stressed American Association of						
		State Highway and Transportation Officials (AASHTO) concrete and steel beams and a double-leaf trunnion bascule span.						
		Gateway Expres	ss Improvements, Pinella	as County, FL – Flo	rida DOT District 7			
		Project Enginee	r responsible for technical	l oversight of tempor	ary traffic control plans. This project will deliver limited and controll	ed		
11/16 - 02	/19	access connection	ons from the Bayside Bridg	ge on the north, US 1	9 on the west, and the St. Pete Clearwater International Airport to	I-275		
11/10 02	/17	general purpose	and new express lanes. H	I&H's scope on this o	lesign build project includes contributing to FDOT's Alternative Tec	chnical		
		Concepts (AIC)	process; developing temp	orary trattic control (	ITC) plans design for Segments 2 and 4; project tolls design (four	sites) for		
		Segments 1, 2 a	nu 4; and structures desig	n for four bridges in S	Segment 4.			



05/02-10/04	I-75/SR 50 Interchange Widening & Bridge Replacement, Hernando County, FL - Florida DOT District 7 Senior Engineer responsible for QA/QC for the traffic control plans for the replacement of twin bridges on I-75 over SR 50. This project widened I-75 from a four- to six-lane facility, including complete interchange reconstruction at SR 50 to a single point urban interchange. The project also included the widening and reconstruction of SR 50 to a six-lane urban typical section constructed using concrete pavement.
01/14-10/17	Gandy Boulevard Bridge Approaches, Pinellas Count, FL - Florida DOT District 7 Senior Engineer responsible for QA/QC for the traffic control plans for the construction of a 2.5-mile-long segment of improved grade- separated lanes to increase capacity on the Gandy Bridge approach using design-build delivery. The project is 2.5 miles long, includes three grade separations and is being delivered substantially under budget with design-build delivery.
09/02-11/04	Thomas B. Manuel Bridge Replacement, Martin County, FL – Florida's Turnpike Enterprise Project Engineer responsible for design and preparation of traffic control and roadway plans for new bridge construction over the Okeechobee Waterway. This Florida Turnpike project was delivered as a design-build project.
03/02-09/03	CR 545 Bridge Replacement at I-4, Osceola County, FI – Florida DOT District 5 Project Engineer responsible for the design and preparation of temporary traffic control plans. This project included design services for a bridge replacement over I-4. Design included the removal of the existing two-lane bridge and the installation of a new bridge.
07/14 – 06/19	Orlando South Ultimate Interchange, Orange County, FL - Florida's Turnpike Enterprise Deputy Project Manager responsible for concept development of alternatives. This project includes an evaluation of a complex interchange that provides both direct and indirect ramping between Orange Blossom Trail and the adjacent two limited access highways. Project goal included: construction of direct connection ramps between freeways, an ultimate 10-lane typical section of the turnpike, implementation of AET, consideration of express direct connections, and improvement of surface street operations with two new reliever interchanges. The recommended configuration included improvements to the systems interchange, modification to two adjoining interchanges, and new proposed service interchanges.
01/16-12/17	I-75 (SR 93A) SB Off-Ramp form S of Bypass Canal to EB/WB I-4, Hillsborough County, FL - Florida DOT District 7 Project Manager/Engineer of Record responsible for project coordination and oversight. This two-mile roadway improvement project included the addition of a new auxiliary lane for southbound I-75 from south of the Bypass Canal to the southbound off-ramp and widening the I-75 southbound off-ramp from one to two lanes. A unique aspect of the design approach was the incorporation of this design into a long-term buildout of the interchange. This project was expedited for construction based on no right-of-way acquisition or impacts to Florida Gas Transmission lines.
08/15-08/20	<b>Districtwide All Electronic Tolling (AET) Design Services, Districtwide, FL - Florida's Turnpike Enterprise</b> <b>Senior Engineer</b> assisting with concept development and providing a range of services, including toll siting alternative analysis and preparation of final design plans for AET conversion of Florida's Turnpike facilities throughout Florida. This project provided for a range of services including concept development, alternatives analysis, and final design for AET conversion of FTE facilities statewide. Tasks included studies for the conversion of 148 miles of the ticket system and the portion of the northern coin system through the Orlando area, both included segments of tolled express lanes. Other tasks included studies of SR 429, SR 417, and SR 528, as well as the final design for the conversion of the Northern Coin System.



Firm Employed by Name		Hardesty & Hanover								
		e	Zineb Bennouna, PE		Years of relevant experience with this employer	5				
	Title		Roadway Engineer		Years of relevant experience with other employer(s)	0				
Degree(s) /	Years /	<sup>7</sup> Specialization	l	B.S. / 2015 / Civil I	Engineering / University of Central Florida					
Active regis	stration	number / state	/ expiration date	Professional Engin	neer: 90952 / Florida / 2/28/2023					
Year registe	ered	2021	Discipline	Civil Engineering						
Contract rol	e(s) / b	rief description	n of responsibilities	Roadway Design						
Experience	dates	Experience an	nd qualifications rele	vant to the prop	oosed contract; <i>i.e.</i> , "designed drainage", "designed g	girders",				
(mm/yy-mr	n/yy)	"designed inte	ersection", etc. Exper	ience dates shoul	ld cover the time specified in the applicable MPR(s).					
		SR 789 (Ringlin	g Bridge) Bird Key Drive	to Sarasota Harbo	r West PD&E and Design – Florida DOT District 1					
		Engineering Inter	rn responsible for assisting	g with roadway desig	gn and plans preparation. H&H is providing concurrent PD&E and f	inal				
		design services f	or the Little Ringling Bridg	e Replacement Proj	ect for FDOT D1. The project involves a PD&E study to evaluate the	ne				
11/10 Drose	ont	potential reconstruction or rehabilitation of the SR 789 (Little Ringling) bridges in Sarasota County to address structural and operational								
11/17 - FICSC	5110	deficiencies. The bridges cross the Coon Key Waterway and provides the only connection from downtown Sarasota to St. Armand's Key								
		and Lido Key. The current prestressed stringer bridge is the second bridge that has existed at this location, with the original replaced in								
		1958. Several sections of the deck were replaced on the northbound bridge in 2016 along with other repair-type work throughout the								
		years.								
		Beckett Bridge Replacement, Tarpon Springs, FL – Pinellas County Government								
		Engineering Intern responsible for assisting in the design and plan preparations for roadway approaches for this project. This project								
11/16-0//	18	involved the historic bridge replacement with a new 360-foot single-leaf, rolling-lift, bascule bridge that carries Riverside Drive over								
		Whitcomb Bayou and features two traffic lanes, shoulders, and a sidewalk. Project elements included relay-based control system,								
		approximately a quarter mile or roadway, drainage, bridge architecture, and public involvement.								
		I-/ 5/SR 50 Inter	change Bridge Replacen	ient and widening,	Hernando County, FL - Florida DOT District /	four to				
7/14 – 12/	19	Engineering Intern provided traffic control support for the design and plan preparation services. This project widened I-75 from a four- to								
		SIX-lane facility, i	ix-iane facility, including complete interchange reconstruction at SR 50 to a single point urban interchange. The project also included the							
			rom 45th Street E to 44th	h Avonuo <b>Plazo Pr</b>	al section constructed using concrete pavement.					
		44 <sup>th</sup> Avenue E. I	orn responsible for assisti	ma with roadway dos	sign and plans proparation. This project includes the design for the					
09/15 – 12/1	/10	roconstruction ar	ad ovtonsion of 1/1th Avon	ing with roadway des	ing and plans preparation. This project includes the design for the troot East to 1/1th Avonuo Diaza East. The design plans include with	loning				
	10	from a two-lane	radway to a four-lang divi	ded urban roadway	As part of this project a new bridge will be designed to cross over	tho				
		Braden River and	d the realignment of Mora	an Johnson Road an	d Caruso Road will provide route continuity. Alternative intersection	n				



	designs, including a roundabout and stage construction were considered. Alternative intersection designs, including a roundabout and stage construction were considered as part of the design package.
2/14 -2/17	SR 968/SW Street Bridge Replacement, Miami, FL - Florida DOT District 6 Engineering Intern responsible for assisting with roadway approaches and temporary traffic control (TTC) design. SR 968 is a Urban Minor Arterial. This bridge replacement project is along the SW 1st Street corridor from SW 6th Avenue to SW 2nd Avenue. The existing four-lane, one-way bridge was replaced with a new three-lane, one-way bridge, and included roadway improvements east and west of the bridge, bike lanes, sidewalks, and signing and pavement markings. The roadway east and west of the bridge was reconstructed to provide an urban roadway section with a revised profile using new curb, three through lanes, an eight-foot parking lane along both sides, and variable width sidewalks against the back of curb on both sides of the road. This project was located in constrained right-of-way conditions where there could not be impacts to adjacent properties.
8/17-8/20	Sand Lake Road Interchange, Orange County, FL - Florida's Turnpike Enterprise Engineering Intern responsible for plan sheet preparations and revising corrections made by project engineers. As a subconsultant, H&H is currently preparing the temporary traffic control plans design for the construction a new interchange located on the Florida Turnpike and Sand Lake Road (SR 482) in Orange County, Florida. As part of H&H's innovative design, ramp construction will take place early to allow mainline traffic to be diverted during off peak hours while bridge reconstruction over the Turnpike is ongoing. This project also includes coordination with FDOT District 5 for the reconstruction of Sand Lake Road.
4/17-10/21	SR 75 (US 231) from SR 30A to Pipeline Road, Bay County, FL - Florida DOT District 6 Engineering Intern providing support for the roadway, drainage, and TTC design and plan preparation. This project involved the improvement design for a 840-foot steel bridge, including a single point urban interchange (SPUI) at SR 75 crossing US 231 and the CSX railroad and roadway approached. H&H also assisted with the development of a 3D model.
12/16-6/20	Orlando South Ultimate Interchange, Orange County, FL – Florida's Turnpike Enterprise Engineering Intern responsible for documenting project alternatives as well as the TOC evaluation for this complex interchange. This project includes an evaluation of a complex interchange that provides both direct and indirect ramping between Orange Blossom Trail and the adjacent two limited access highways. Project goal included: construction of direct connection ramps between freeways, an ultimate 10-lane typical section of the turnpike, implementation of AET, consideration of express direct connections, and improvement of surface street operations with two new reliever interchanges. The recommended configuration included improvements to the systems interchange, modification to two adjoining interchanges, and new proposed service interchanges.
1/16-12/17	I-75 (SR 93A) SB Off-Ramp from S of Bypass Canal to EB/WB I-4, Hillsborough County, FL - Florida DOT District 7 Engineering Intern responsible for preparation of roadway design plan sheets. This two-mile roadway improvement project included the addition of a new auxiliary lane for southbound I-75 from south of the Bypass Canal to the southbound off-ramp and widening the I-75 southbound off-ramp from one to two lanes. A unique aspect of the design approach was the incorporation of this design into a long-term buildout of the interchange. This project was expedited for construction based on no right-of-way acquisition or impacts to Florida Gas Transmission lines.



Firm employed by	Firm employed by: A P S Engineering and Testing, LLC					
Name	Sergio Aviles, P.E.		Years of experience with this firm/employer	9		
Title	PRESIDENT		Years of experience with other firm(s)/employer(s)	10		
Degree(s) / Years /	Specialization BS	S Civil Eng	ineering/2001/Geotechnical			
Active registration	number / state / expiration date 00	)33571/ LA	/ 03-31-2022			
Year registered	2007 Discipline Civ	vil				
Contract role(s) / bi	rief description of responsibilities <b>Pr</b>	oject Man	ager/Design guidance/Field Crew and lab management – Meets MPR 9	3		
Experience dates	Experience and qualifications rel	levant to	the proposed contract; i.e., "designed drainage", "designed g	girders",		
(mm/yy–mm/yy)	"designed intersection", etc. Exp	perience	dates should cover the time specified in the applicable MPR(s)	).		
09/19-06/20	Project No. H.004100: I-10 Widening LA a sample a total of 52 deep borings starting a will also test for strength and engineering ch with approximate 1000 Triaxial Compression project manager to the Geotechnical Invest	415 to Ess at the Wash haracteristi on, Uncons tigations. C	sen LN- A P S was tasked thru our DOTD geotechnical retainer to drill a nington Exit and ending at the LSU lakes. Along with this drillingand samplir ics of the soils with. A total of eight (8) over the waterborings and 44 land b solidated Drained Or Undrained (UU) and Atterberg Limits. Mr. Aviles was CMAR project	ind ng APS iorings the		
08/16-10/19	Project No. H.012422: I-10/I-110 Interchat to drill and sample a total of six (6) deep bo characteristics of the soils with approximate by A P S Laboratory. Mr. Aviles was the pro-	n <b>ge Modif</b> prings for th e 100 Triax oject mana	fication at Terrace Ave- A P S was tasked thru our DOTD geotechnical re- ne design of the Terrace Ave exit. APS tested for strength and engineering tial Compression, Unconsolidated Drained Or Undrained (UU) and Atterber oger to the Geotechnical Investigations.	etainer rg Limits		
11/17-2/18	Project No. H.013193 US 61 Thompson C and sample a total of eight (8) deep borings engineering characteristics of the soils.	Creek Brid s for the re Mr. Aviles	<b>ge Replacement-</b> A P S was tasked thru our DOTD geotechnical retainer placement bridge at US 61 over Thompson Creek. APS tested for strengt was the project manager to the Geotechnical Investigations.	to drill h and		
11/19-Present	<b>Project No. H.001352 and H.002273 Cor</b> <b>19-</b> A P S was selected with the winning te for the project. Mr. Aviles is the project mana	mite River eam for the ager for the	<b>Diversion Bridge at LA 67, LA 19 and LA 19 Railroad Bridge LA 67 and</b> e design of the diversion CMAR project. A P S will be theGeotechnical design e project design team. CMAR project	<b>d LA</b> gners		
03/19-05/19	<b>Project No. H.001344 US 190 over Bogue</b> and Design of the proposed new bridge. A Aviles is the project manager for the project	<b>e Falaya R</b> total of 19 t design tea	<b>tiver-</b> A P S was selected with the winning team for the Geotechnical Inves deep borings were drilled and tested for the foundation recommendation. Nam.	tigation ∕Ir.		
12/19-3/20	<b>Project No. H.010155 US 90 Railroad Ove</b> GeotechnicalInvestigation and Design for the Geotechnical recommendation. Mr. Aviles in	erpass SE he propose is the proje	<b>c of LA 85-</b> A P S was selected with the winning team for the ed new overpass. A total of six (6) deep borings were drilled and tested for ect manager for the project design team.			



02/17-10/17	<b>Project No. H.002861 Earhart Expressway/Causeway Boulevard:</b> APS was tasked with developing the LRFD factors for both existing structures and the new elevated sections to connect to Causeway Blvd. Per the task order APS drill and tested 85 borings to 120 feet near the proposed and existing structures. APS engineering staff provides designer with pile tip elevations for five elevated ramps to connect Earhart to Causeway Blvd. Provided boring logs, information on site conditions, site preparation recommendations, and load- length curves. Mr. Aviles is the project manager to the Geotechnical investigations and analysis assigned to help calculating the resistance factors.
07/14-08/14	<b>Project No. 700-51-0110: US 90 elevated portion for the future I-49 corridor.</b> APS performed all the preliminary drilling, testing, and CPT for US 90 and Highway 318 Intersection. A total of 46 boring and 11 CPT along with all the testing required by LADOTD. Mr. Aviles was the project manager to the Geotechnical investigations and analysis as assigned for roads and bridges design.
2001-2005	<ul> <li>The following lists consist 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).</li> <li><b>ONSYSTEM PROJECTS LIST:</b> Mr. Aviles served as the staff geotechnical engineer while at the Pavement and Geotechnical Section for the following projects below: Below projects varies from Embank Design, Pile Design, Drilled Shaft design, MSE wall design, and construction supervision. Major projects cost 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 CrossOvers, 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.</li></ul>



Firm en	Firm employed by A P S Engineering and Testing, LLC					
Name	Sairam E	ddanapudi, M.E., P.E.			Years of relevant experience with this employer	9
Title	CHIEF EN	IGINEER			Years of relevant experience with other employer(s)	8
Degree(	(s) / Years	/ Specialization		ME, C BE, C	Civil Engineering, Lamar University, Dec. 2002 Civil Engineering, Sri Venkateswara University, India Aug. 1999	
Active 1	registratio	n number / state / exp	iration date	0035	129/ LA / 03-31-2022	
Year reg	gistered	2008	Discipline	Civil		
Contrac	t role(s) /	brief description of re	sponsibilities	Labo Engir	ratory QA Manager- Will be in charge all daily operation of the project/ neer	'QA/Design
Experie dates (n mm/yy)	nce nm/yy–	Experience and qua "designed intersecti	alifications rele on", etc. Expe	evant t rience	to the proposed contract; <i>i.e.</i> , "designed drainage", "designed dates should cover the time specified in the applicable MPR(	d girders", s).
09/19-	Present	Project No. H.004100: I-10 Widening LA 4 total of 52 deep borings starting at the Wash strength and engineering characteristics of th 1000 Triaxial Compression, Unconsolidated Geotechnical Investigations, CMAR project			<b>Essen LN-</b> A P S was tasked thru our DOTD geotechnical retainer to drill ar Exit and ending at the LSU lakes. Along with this drillingand sampling APS will with. A total of eight (8) over the waterborings and 44 land borings with appred Or Undrained (UU) and Atterberg Limits. Mr. Sai was the project QA to the	Id sample a also test for roximate
08/16	5-10/19	Project No. H.012422: I-110 Interchange Modification at Terrace Ave- 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. APS tested for strength and engineering characteristics of the sol with approximate 100 Triaxial Compression, Unconsolidated Drained Or Undrained (UU) and Atterberg Limits by A P S Laboratory. Mr. Sai wa QA to the Geotechnical Investigations.				
11/1	7-2/18	Project No. H.013193: US 61 Thompson Creek Bridge Replacement- 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. APS tested for strength and engineering characteristics of the soils. Mr. Sai was QA to the Geotechnical Investigations.				
11/19-	Present	<b>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-</b> A P S was selected with the winning team for the design of the diversion CMAR project. A P S will be theGeotechnical designers for the project. Mr. Sai is the Senior Design Engineer for the project design team.				
03/19	9-05/19	<b>Project No. H.001344: US 190 over Bogue Falaya River-</b> A P S was selected with the winning team for the Geotechnical Investigation and Design of the proposed new bridge. A total of 19 deep borings were drilled and tested for the foundationrecommendation. Mr. Sai is the Senior Design Engineer for the project design.				

Firm en	nployed b	y A P S Engineering ar	d Testing, LLC					
Name	Mr. Suren	dra Raj Pathak, M.S., P.E			Years of relevant experience with this employer	5		
Title	STAFF EN	IGINEER			Years of relevant experience with other employer(s)	10		
Degree(s) / Years / Specialization				MSCE Missis Scien Malav	MSCE (Master of Science in Civil Engineering), Mississippi StateUniversity, Starkville, Mississippi, 2013 M. Sc. Master of Science in Civil Engineering, Norwegian University of Science and Technology, Trondheim, Norway, 2007 B.E. (Civil Engineering), Madan Mohan Malaviya University of Technology, India, 1998			
Active r	registratio	n number / state / exp	iration date	00434	487/ LA / 09-31-2021			
Year reg	gistered	2019	Discipline	Civil				
Contrac	t role(s) /	brief description of re	sponsibilities	Staff	Engineer-Review field logs, lab data, and Design Engineer			
Experies dates (m mm/yy)	nce nm/yy–	Experience and qualifications relevant to "designed intersection", etc. Experience			to the proposed contract; <i>i.e.</i> , "designed drainage", "designed dates should cover the time specified in the applicable MPR(s	l girders", s).		
09/19-	Present	<b>Project No. H.004100: I-10 Widening LA 415 to Essen LN-</b> 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. Along with this drillingand sampling APS will also test for strength and engineering characteristics of the soils with. A total of eight (8) over the waterborings and 44 land borings with approximate 1000 Triaxial Compression, Unconsolidated Drained Or Undrained (UU) and Atterberg Limits. Mr. Surendra was the project OC to the Geotechnical Investigations.				rill and npling APS and borings ndra was		
08/16	b-10/19	<b>Project No. H.012422: I-110 Interchange Modification at Terrace Ave-</b> 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. APS tested for strength and engineering characteristics of the soils with approximate 100 Triaxial Compression, Unconsolidated Drained Or Undrained (UU) and Atterberg Limits by A P S Laboratory. Mr. Surendra was QC to the Geotechnical Investigations.				alretainer to ering erg Limits by		
11/1	7-2/18	<b>Project No. H.013193: US 61 Thompson Creek Bridge Replacement-</b> A P S was tasked thru our DOTD geotechnicalretainer to drill and sample a total of eight (8) deep borings for the replacement bridge at US 61 over Thompson Creek. APS tested for strength and engineering characteristics of the soils. Mr. Surendra was QC to the Geotechnical Investigations.						
11/1	7-2/18	Project No. H.002273, and LA 19: A P S was to replacement bridges at P QC to the Geotechnical	<b>H.000710, and H.</b> asked thru our DC Highway 19, 67, ar Investigations.	001352 )TD geo nd 964.	<b>2 Comite River Diversion Bridge at LA 67, LA 19 and LA 19 Railroad Br</b> otechnical retainer to drill and sample a total of 12 deep borings for the new APS tested for strength and engineering characteristics of the soils. Mr. Sur	idge LA 67 and endra was		



11/19-Present	<ul> <li>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 will be theGeotechnical designers for the project. Mr. Surendra is a design Engineer for the project design team.</li> </ul>
03/19-05/19	<b>Project No. H.001344: US 190 over Bogue Falaya River-</b> A P S was selected with the winning team for the Geotechnical Investigation and Design of the proposed new bridge. A total of 19 deep borings were drilled and tested for the foundation recommendation. Mr. Surendra is a design Engineer for the project design team.
12/19-3/20	<b>Project No. H.010155: US 90 Railroad Overpass SE of LA 85-</b> A P S was selected with the winning team for the Geotechnical Investigation and Design for the proposed new overpass. A total of six (6) deep borings were drilled and tested for Geotechnical recommendation. Mr. Surendra is a design Engineer for the project design team.



Firm en	Firm employed by Bridge Diagnostics, Inc. (BDI)					
Name	ne Shane Boone, PHD				Years of relevant experience with this employer	7
Title	Vice Pres	ident – Nondestructive Eva	luation		Years of relevant experience with other employer(s)	13
Degree(s) / Years / Specialization				PHD MS / BS / 2	/ 2008 / Civil Engineering / Utah State University 2005 / Structural Engineering / University of Tennessee 2002 / Civil Engineering / University of Tennessee	
Active r	registratio	on number / state / exp	iration date	N/A		
Year reg	gistered	N/A	Discipline	N/A		
Contrac	t role(s) /	brief description of re	sponsibilities	Nond	lestructive Evaluation, QA/QC and Subject Matter Expert	
Experie dates (n mm/yy)	nce nm/yy–	/y– Experience and qualifications rele "designed intersection", etc. Exper			to the proposed contract; <i>i.e.</i> , "designed drainage", "designed dates should cover the time specified in the applicable MPR(s	1 girders", ).
07/16-	Present	Dr. Boone has spent more than 20 years ir monitoring. He specializes in the research, monitoring for civil infrastructure. Previousl Oak Ridge National Laboratory. He serves Technology Conference, chair of the ASN Structures committee. He is a certified ASI			overnment, academic, and private sectors of specialized infrastructure insp opment and application of nondestructive testing & evaluation technologies Boone managed NDE programs at the Federal Highway Administration (FF e chair of the American Society for Nondestructive Testing's Structural Mate structure Committee, and sits on TRB's Field Testing and NDE of Transport yel II inspector.	ection and and IWA) and erials tation
01/17 - Present Retainer Contract for Testing of Unknown Foundations Statewide (DOTD Cor Matter Expert (SME) for the NDE to determine the unknown foundations of up to 1 methods of NDE including ultraseismic testing, parallel seismic survey, sonic echor thousands of piles have been tested to determine the embedded depth for subsequinas assisted DOTD in FHWA reporting of these items by uploading all reports into			undations Statewide (DOTD Contract No. 4400009224) – Dr. Boone is the unknown foundations of up to 1,900 bridges in Louisiana. The project util arallel seismic survey, sonic echo/impulse response, and guided wave. To e the embedded depth for subsequent NBIS 113 scour evaluation and repotems by uploading all reports into AssetWise.	e Subject izes multiple date, rting. BDI		
01/19 -	Present	IDIQ Contract for None for statewide NDE of str elements such as welds infrastructure. Dr. Boon of findings into DOTD's	destructive Evalue ructures for DOTD and pin and hang e assists DOTD wi AssetWise.	under ger asse ith iden	of Structures Statewide (DOTD Contract No. 4400015262) – Dr. Boone is this contract. Scope items include testing of bridge decks, concrete substruemblies, unknown foundations, tunnels, culverts, and other highway transportifying proper technologies for application and best methods for analysis an	s the SME ictures, steel ortation id reporting



11/19 – Present	<b>NDE and Remote Inspection of I-10 over the Bonnet Carre Spillway, LA</b> – BDI is performing NDE of the bridge deck utilizing ground penetrating radar (GPR), deck acoustic response (SounDAR), infrared thermography (IR), and high-resolution imaging (HRI) to determine the deck integrity and NBIS/NBE reporting quantities. In addition, BDI is performing the NBIS inspection of the substructure utilizing remote inspection techniques with drones and other technology to report to FHWA. Dr. Boone is the SME for this inspection.
08/19 – 07/20	<b>NDE of City Park Lake Bridge LA</b> – Dr. Boone was the principal investigator for NDE of the City Park Lake Bridge in Baton Rouge, LA. NDE technologies included ground penetrating radar (GPR), deck acoustic response (DAR), infrared thermography (IR), high-resolution video (HRV). Remote inspection was performed on the substructure utilizing visual inspection and IR.
08/19 – 12/19	<b>NDE of Vicksburg Bridge, LA –</b> Dr. Boone was the principal investigator for NDE of the Vicksburg Bridge carrying I-20 over the Mississippi River near Vicksburg, MS. NDE technologies included ground penetrating radar (GPR), deck acoustic response (DAR), infrared thermography (IR), high-resolution video (HRV).
11/19 – 02/20	<b>Ultrasonic Testing of the US1 Simmesport Bridge, LA –</b> BDI performed inspection of 4 pins of the US1 bridge that carries US1 over the Atchafalaya River near Simmesport, LA. BDI utilized ASNT certified inspectors to perform ultrasonic testing (UT) and magnetic particle testing (MT) to determine their integrity. Dr. Boone was the SME for this inspection.
08/19 – 12/21	<b>US Army Corps Evaluation of Advanced Weld Inspection Methods</b> – As USACE's ongoing want to improve inspection techniques, BDI was awarded a Task Order under its IDIQ to identify and determine best practices for steel weld inspection utilizing advanced ultrasonic testing (UT) methods such as phased array ultrasonic testing (PAUT) and total focus method / full matrix capture (TFM/FMC). These advanced methods improve the reliability and repeatability of weld inspection and flaw sizing for fitness for service level analysis. Dr. Boone was the subject matter expert for this project and helped develop the testing means and methods that were performed on eight lab samples and four comprehensive in-field bridge weld inspections. Based on these findings, USACE expanded the scope to scan further areas of concern on one of the bridges.



Firm en	nployed b	y Bridge Diagnostics, Ir	nc. (BDI)			
Name	Brett Con	nmander, PE			Years of relevant experience with this employer	32
Title	Vice Presi	ident / Principal Engineer			Years of relevant experience with other employer(s)	1
Degree(	(s) / Years	/ Specialization		MS / BS / 1	1989 / Structural Engineering / University of Colorado 1986 / Civil Engineering / University of Colorado	
Active 1	registratio	n number / state / exp	iration date	Profe	ssional Engineer: 35864 / LA / 3/31/2023	
Year reg	gistered	2010	Discipline	Civil I	Engineer	
Contrac	t role(s) /	brief description of re	sponsibilities	QA/Q	C, Principal Engineer	
Experie dates (n mm/yy)	nce nm/yy–	Experience and qualifications relevant "designed intersection", etc. Experience			to the proposed contract; <i>i.e.</i> , "designed drainage", "designed dates should cover the time specified in the applicable MPR(s	1 girders", s).
10/89-	Present	Mr. Commander has more than 30 years of e 1,000 structures. He has performed/oversaw using a variety of design codes such as AASI Commander also has designed/oversaw capa as implemented hundreds of structural monit			rience with testing, monitoring, and evaluating measured structural response toplete structural analyses and load ratings on over 500 highway and railway and AREMA, and many state-specific codes including Louisiana specifica testing projects of concrete and steel structures using various NDE techni g systems.	ses on over y bridges tions. Mr. ques as well
11/12 -	- Present	<b>US-90 Bayou Ramos Bridge Load Testing and Monitoring, LA</b> – Due to unexpected cracking in PS concrete AASHTO beams, BI performed load tests and load ratings to determine cause and effect of cracks in continuous multi-span PS/C girders. Load ratings we completed according to DOTD specifications. After the completion of the initial evaluation, monitoring systems were installed on the structure to monitor the state of two sections of structure. Structural Health Monitoring is still ongoing. As technical advisor/principal engineer, Mr. Commander oversaw live-load and thermal load monitoring that was performed during and after repairs to evaluate the performance of retrofit.				eams, BDI atings were d on the principal aluate the
11/04 11/11 -	– 12/04 - Present	<b>Bonnet Carre Spillway Load Testing, Rating, and Monitoring, LA</b> –BDI used its Integrated Approach to determine if a 500-ton load could cross the bridge safely. BDI then installed an event-based monitoring system that helps DOTD capture weigh-in-motion data, strains induced by heavy loads, and photos of heavy load. Health Monitoring is still ongoing. Over multiple contracts, Mr. Commander was the principal-in-charge on this project in its many phases which included responsibilities such as testing program oversight, structural analysis, load rating of structure for atypical load configurations, on-site data interpretation, report creation and submittal, and providing recommendations for future crossings.				)0-ton load on data, ommander ight, bmittal, and



07/21 – Present	<b>NDE of the Whiskey Bay and Piot Channel Bridge Decks, LA</b> – NDE of 3.5M sf of bridge deck on the structure carrying I-10 over the Atchafalaya Basin between Baton Rouge and Lafayette, LA. Testing included IR/HRI, CWSF GPR and SounDAR from BDI's mobile NDE testing van. IR/HRI bridge deck data was also collected via drone. BDI also performed substructure inspection to satisfy LADOTD's NBI requirements of the structure with IR/HRI via drone. The data will be used to quantify and locate areas for repair and preservation, and to report NBE and NBI data to FHWA. Mr. Commander is providing QA/QC and PE Review.
07/19 – 01/20	<b>St. Claude Lift Bridge Balance and Operation Testing, LA –</b> Mr. Commander was project principal engineer responsible for counterweight/span balance and friction calculations as well as structural performance evaluation on a double heal trunnion Strauss Bascule Bridge. Strain gauge testing and various instrumentation tasks were performed during investigation of a bearing failure on the span to counterweight link including strain gage testing on the link frame as well as on counterweight balance procedures.
06/14 – Present	Phinney Avenue Bridge Load Testing, Rating and NDE, WA – As part of BDI's SDOT On-Call, BDI was contracted by Seattle DOT to perform diagnostic load tests and structural reinforcement investigation on the Phinney Ave bridge in Seattle, WA. Instrumentation, load tests, and reinforcement investigation were performed with the overall goal of these tests was to better understand the structures' load distribution, reinforcement details, and in turn provide refined load ratings. Mr. Commander acted as the principal engineer and oversaw testing plan development, field-verified model calibration, load ratings performed according to SDOT/WSDOT specifications, and reporting.
08/18 – 12/20	Live Load Testing and Field-Verified Load Rating of 16 Bridges, VA – As part of BDI's VDOT On-Call, BDI provided load testing and field-verified load rating of 16 structures in the Fredericksburg and Richmond districts of VDOT. BDI was responsible for the design of load testing requirements, development of instrumentation plans, execution of field work and load testing, data analysis, finite element (FE) model creation and calibration, and eventual load rating per VDOT and AASHTO requirements. Mr. Commander acted as principal engineer and subject matter expert for this project and responsibilities included overseeing testing program development.


Firm employed by	Bridge Diagnostics, Inc. (BDI)							
Name Jesse Sipp	ole, PHD, PE		Years of relevant experience with this employer	8				
Title Testing, Mo	onitoring, and Engineering Program	n Manager	Years of relevant experience with other employer(s)	9				
Degree(s) / Years	/ Specialization	PHD,	Civil Engineering, Tufts University, 2013					
		MS, (	Civil Engineering, University of New Hampshire, 2008					
		BS, C	Civil Engineering, University of New Hampshire, 2007					
Active registration	number / state / expiration	date #410	28 / Louisiana / 03/31/2023					
Year registered	2016 Discip	oline Civil	Engineer					
Contract role(s) / b	prief description of responsit	oilities <b>Test</b> i	ng, Monitoring, and Engineering Manager					
Experience dates	Experience and qualificati	ons relevant	to the proposed contract; i.e., "designed drainage", "designe	d girders",				
(mm/yy–mm/yy)	"designed intersection", etc	c. Experience	dates should cover the time specified in the applicable MPR(s	5).				
	Dr. Sipple oversees the testing,	monitoring, engi	neering, and on-going monitoring groups of BDI's Services. The projects pe	erformed by				
01/14-Present	these groups range from large S	HM systems on	signature structures, complex testing and analysis of constructed systems,	, and				
	maintenance and support of in-service systems. In addition to managerial oversight, Dr. Sipple also oversees the quality control aspects							
	of these projects.							
	Off-System Bridge Ratings and Evaluation, LA (Contract 4400010099) – BDI is preforming live-load testing of ten bridges							
11/01 Drecont	Infoughout the state of Louisiana	throughout the state of Louisiana, including seven culvert and three reinforced concrete bridges of varying types to provide realistic load						
T 1/21-Present	rating results for those structures. The process includes developing instrumentation plans, instrumenting, load testing, and load rating							
	each bhuge. Load rating reports will be provided for each of the load tested structures. Dr. Sipple is an analysis engineer and reviewer							
	Collier County Bridge Load Te	sting FI _ BDI	performed diagnostic load tests on the FDOT Bridge 03/190 which spans	over a small				
	drainage ditch in a residential area in Immokalee. Florida. The overall goal of these tests was to better understand the structure's							
07/18-09/18	transverse distribution provide refined load ratings and reevaluate the current posting levels. Load tests were performed, and the							
	collected structural responses were used to generate a field-verified finite-element model (FFM). This field-verified FFM was then used							
	to compute refined load ratings. Dr. Sipple acted as project manager for this project.							
	Phinney Avenue Bridge Load Rating and NDE, WA – BDI was contracted by SDOT to perform diagnostic load tests and structural							
06/10 02/10	reinforcement investigation on the Phinney Ave bridge that spans over North 57th St in Seattle, WA. Instrumentation, load tests, and							
00/18-03/19	reinforcement investigation were performed with the overall goal of these tests was to better understand the structures' load distribution,							
	reinforcement details, and in turr	reinforcement details, and in turn provide refined load ratings. Dr. Sipple acted as the project manager for this project.						
	St. Claude Lift Bridge Balance	and Operation	Testing, LA – Dr. Sipple was the quality control manager for counterweigh	nt/span				
07/19_12/19	balance and friction calculations	as well as struct	tural performance evaluation on a double heal trunnion Strauss Bascule Br	idge. Strain				
	gauge testing and various instru	mentation tasks	were performed during investigation of a bearing failure on the span to cou	nterweight				
	link.							



08/18–12/20	<b>Live Load Testing and Field-Verified Load Rating of 16 Bridges, VA</b> – BDI provided load testing and field-verified load rating of 16 structures in the Fredericksburg and Richmond districts of VDOT. BDI was responsible for the design of load testing requirements, development of instrumentation plans, execution of field work and load testing, data analysis, finite element (FE) model creation and calibration, and eventual load rating per VDOT and AASHTO requirements. Dr. Sipple acted as quality control manager for this project.
04/18-10/19	Sunshine Truss Emergency Monitoring, LA - In 2018, the Sunshine Truss Bridge was struck by a crane barge, significantly damaging a bottom chord member. As part of the Modjeski and Masters response team, BDI installed a laser displacement sensor within 48 hours of the event to monitor the behavior of the damage member. Once a monitoring plan was developed and approved by the team, BDI installed strain gages along nearby chord members that were used to evaluate the state of the structure before, during and after the replacement of the damaged bottom chord member. Dr. Sipple acted as project manager responsible for monitoring plan development and project oversight.
02/20-12/20	<b>LA507 Over I-20 ABC Span Move Monitoring, LA</b> - During the replacement of this bridge, accelerated bridge construction was utilized where spans were cast nearby and moved into place during short outages. Dr. Sipple was a field/analysis engineer responsible for monitoring plan implementation, instrumentation, monitoring during span moves, on-site data interpretation, and data processing and reporting.
01/22-Present	Varina-Enon Bridge Structural Health Monitoring, VA – Virginia Department of Transportation contracted BDI to provide a comprehensive structural health monitoring (SHM) system on the Varina-Enon bridge. The project includes the design, installation, and operation of the SHM system. Dr. Sipple is a senior engineer contributing to system design, architecture, and installation support in his current capacity on this project.



Firm en	Firm employed by Bridge Diagnostics, Inc. (BDI)					
Name	Charles Y	Charles Young, PE			Years of relevant experience with this employer	4
Title	Nondestru	ctive Evaluation Program	Manager		Years of relevant experience with other employer(s)	7
Degree(	(s) / Years	/ Specialization		MS/2 BS/2	2017 / Structural Engineering / Drexel University 2012 / Architectural Engineering / Drexel University	
Active r	registratio	n number / state / exp	iration date	Profe	ssional Engineer: 42773 / LA / 3/31/2023	
Year reg	gistered	2018	Discipline	Civil E	Engineer	
Contrac	t role(s) /	brief description of re	sponsibilities	Nond	lestructive Evaluation Project Manager and Engineer	
Experies dates (m mm/yy)	nce 1m/yy–	Experience and qua "designed intersecti	alifications rele on", etc. Exper	evant t ience	to the proposed contract; <i>i.e.</i> , "designed drainage", "designed dates should cover the time specified in the applicable MPR(s	l girders", ).
05/18-	05/18-Present Mr. Young has 11 years of experience in r Mr. Young is responsible for project mana with a multifaceted group of engineers and infrastructures. Mr. Young is heavily involv ultrasonic, electromagnetic, and electroch finite element modelling of complex struct		nondesi igemen d techn ved in te iemical) ures.	tructive evaluation and testing (NDE/NDT), and structural monitoring and te t, analysis, and field services related to NDT of civil infrastructure. He works icians to perform NDE on bridges, dams, culverts, pavements, and other ci esting and instrumentation of existing structures using NDE methods (acou ), performing dynamic and digital signal processing and analysis, and nume	sting. BDI, s closely vil stic, prical and	
05/18	- 12/21	Nondestructive Evaluation of Unknown Bridge Foundations, LA – This project aims at performing NDE of more than 500 bridge the state of Louisiana to determine the unknown or undocumented depths of bridge foundation piles. A proofing step was performed six bridges to estimate the depth of timber, concrete, and steel piles. Multiple BDI testing and analysis methods including Sonic Echo/Impulse Response (SE/IR), Ultraseismic (US), and Parallel Seismic Survey (PSS) were utilized. Mr. Young was the project manager.				i0 bridges in erformed on onic oject
10/18	- 08/19	Sunshine Truss Emergency Monitoring, LA – In 2018, the Sunshine Truss Bridge was struck by a crane barge, significantly damaging a bottom chord member. As part of the M&M response team, BDI quickly deployed a laser displacement sensor to monitor the behavior of the damage member. Once a monitoring plan was developed and approved by the team, BDI installed strain gages nearby chord members that were used to evaluate the state of the structure before, during and after the replacement of the damage bottom chord member. Mr. Young acted as an installation technician, and site supervisor for this project.				
01/19 -	Present	Bonnet Carre Spillway Inspection and Nondestructive Evaluation, LA – This project involves an NHI routine inspection of the Bonnet Carre Spillway Bridge and targeted nondestructive evaluation techniques at various critical portions of the structure. This w				of the This work



	was performed under an IDIQ Contract for Non-destructive Evaluation of Structures for DOTD. Also included were supplemental inspection access techniques including unmanned aerial systems (UAS). Nondestructive evaluation includes a multi-technology bridge deck assessment including Deck Acoustic Response, Ground Penetrating Radar, Infrared Thermography, and High-Resolution Imagery. Mr. Young is the project engineer and lead bridge inspector for this project.
08/19 – 07/20	<b>City Park Lake Bridge Inspection and Nondestructive Evaluation, LA</b> –NHI routine inspection of the City Park Lake Bridge and targeted nondestructive evaluation. This work was performed under an IDIQ Contract for Non-destructive Evaluation of Structures for DOTD. Nondestructive evaluation included a multi-technology bridge deck assessment including Deck Acoustic Response, Ground Penetrating Radar, Infrared Thermography, and High-Resolution Imagery. Also included in the nondestructive evaluation is Infrared Thermography of the superstructure and substructure of the bridge. Mr. Young was the project manager.
08/19-12-21	<b>US Army Corps Evaluation of Advanced Weld Inspection Methods</b> – As USACE's ongoing want to improve inspection techniques, BDI was awarded a Task Order under its IDIQ to identify and determine best practices for steel weld inspection utilizing advanced ultrasonic testing (UT) methods such as phased array ultrasonic testing (PAUT) and total focus method / full matrix capture (TFM/FMC). These advanced methods improve the reliability and repeatability of weld inspection and flaw sizing for fitness for service level analysis. Mr. Young helped develop the testing means and methods that were performed on eight lab samples and four comprehensive in-field bridge weld inspections. Based on these findings, USACE expanded the scope to scan further areas of concern on one of the bridges.
06/20-09/20	West Seattle High Bridge, WA – BDI was contracted by Seattle DOT to provide a nondestructive testing and structural health monitoring program to help evaluate performance of the structure during first phase of retrofitted internal post-tensioning. The monitoring program helped the Seattle DOT make decisions and resulted in the next phase of strengthening to open the bridge by 2022. Mr. Young acted as the Task Order Manager and Lead Field Engineer for this project.



Firm en	Firm employed by Bridge Diagnostics, Inc. (BDI)					
Name	e Brice Carpenter, PE				Years of relevant experience with this employer	13
Title	Senior En	gineer / Engineering Depa	rtment Lead		Years of relevant experience with other employer(s)	2
Degree(	(s) / Years	/ Specialization		MS/2 BS/2	2009 / Civil Engineering / New Mexico State University 2007 / Structural Engineering / New Mexico State University	
Active 1	registratio	n number / state / exp	iration date	Profe	ssional Engineer: 39341 / LA / 3/31/2023	
Year rea	gistered	2014	Discipline	Civil E	Engineer	
Contrac	t role(s) /	brief description of re	sponsibilities	Senio	or Engineer / Engineering Department Lead	
Experie dates (n mm/yy)	nce nm/yy–	Experience and qua "designed intersecti	alifications rele on", etc. Exper	evant t rience	to the proposed contract; <i>i.e.</i> , "designed drainage", "designed dates should cover the time specified in the applicable MPR(s)	l girders", ).
07/09-Pre	07/09-Present During his tenure and more than 250 bridg Engineering Lead responsible for testing p reporting. Mr. Carpenter has been involved reinforced concrete, prestressed concrete, AASHTO, AREMA, and many state-specif		ges test plan ove ed with t e, in sim fic code ictures t	ted and load rated using advanced techniques, Mr. Carpenter has become ersight, data processing and investigation, structural analysis, load rating, a the testing, monitoring, and evaluation of hundreds of structures of various to ple to complex geometry and configurations) using a variety of design code as including Louisiana specifications. Mr. Carpenter also has years of exper using various NDE techniques.	BDI's ind types (steel, es such as ience in	
11/12-Pre	esent	US-90 Bayou Ramos Bridge Load Testing & Monitoring, LA – Due to unexpected cracking in PS concrete beams, BDI perform load tests and load ratings to determine cause and effect of cracks in continuous PS/C girders. After the initial evaluation, monitor systems were installed on the structure to monitor two sections of structure. Health Monitoring is still ongoing. As lead analysis engineer, Mr. Carpenter performed field-verified load ratings and acts as the project engineer for monitoring system maintenance troubleshooting.				erformed onitoring sis nance and
11/11-Pre	esent	Bonnet Carre Spillway Load Testing and Monitoring, LA – In 2004, BDI used its Integrated Approach to determine if a 500-ton could cross the bridge safely. Based on provided configurations, BDI determined the "superload" could cross with stresses below is serviceability limit. In 2011, BDI installed an event-based monitoring system that helps DOTD capture weigh-in-motion data, strain induced by heavy loads, and photos of heavy load. Mr. Carpenter performed superload load ratings and reporting for DOTD and currently acts as the project engineer for monitoring support to DOTD.				00-ton load below its strains and
07/19–12	/19	9 St. Claude Lift Bridge Balance and Operation Testing, LA – Project engineer and field/analysis engineer respons counterweight/span balance and friction calculations, and structural performance evaluation on a double heal trunnic				iss Bascule



	Bridge. Strain gauge testing and various instrumentation tasks were performed during investigation of a bearing failure on the span to counterweight link.
08/16-05/17	Live Load Testing of Eight Culverts and Testing, LA – BDI worked in coordination with LSU, LTRC, and DOTD to perform comprehensive diagnostic live-load tests that allowed these structures to be better evaluated based on induced live-load effects, observed distribution, and general fixity at the culvert walls. BDI manufactured the structural testing system used for this testing based on LSU's specifications and needs. Mr. Carpenter acted as a project and testing engineer on this project.
07/09-11/12	<b>Load Testing and Rating of 35 Rhode Island Bridges, RI –</b> BDI performed field testing on 35 bridges located throughout the state of Rhode Island. For all of the structures, BDI collected and reviewed the strain, displacement, and NDE (GPR) data and provided it directly to AECOM for evaluation. For select bridges, BDI also used the field data to calibrate finite element models and develop accurate load ratings using the AASHTO Manual of Bridge Evaluation. Mr. Carpenter acted as analysis and rating engineer responsible for data processing and review, structural analysis, load rating, and reporting.
11/20-06/21	<b>Terminal 5 Bridge Load Testing and Rating, WA</b> –Terminal 5 bridge is used by heavy truck traffic to and from the Port of Seattle, WA. As part of BDI's SDOT On-call, instrumentation and load tests were performed on PSC beam and steel girder spans (curved and straight) with the overall goal of to better understand the structures' load distribution and behavior and in turn provide refined load ratings. Mr. Carpenter acted as the lead analysis/rating engineer responsible for data processing, model calibration, and load ratings and reporting according to SDOT/WSDOT specifications.
05/15 – 10/15 02/18 – 08/18	<b>Truss Monitoring on US 84 Over the Mississippi River, MS</b> – During the pin replacements on the Natchez cantilever truss over the Mississippi River, BDI performed Structural Health Monitoring (SHM) on the critical truss members and temporary load path systems during pre, during, and post construction. Mr. Carpenter acted as project field and analysis engineer in charge field prep, field installation, data analysis and reporting.



Firm employed by Chustz Surveying, LLC						
Name	J. Alex Ch	Chustz, PLS			Years of relevant experience with this employer	14
Title	Data Supe	ervisor			Years of relevant experience with other employer(s)	0
Degree(	(s) / Years	/ Specialization		Bach	elor of Science - NSU/2012 / Geomatics	
Active r	egistratio	n number / state / exp	iration date	Profe	ssional Land Surveyor: 5251 / LA / 9/30/2023	
Year reg	gistered	2021	Discipline	Surve	ey (Professional Land Surveyor)	
Contrac	t role(s) /	brief description of re	sponsibilities	Profe	essional Land Surveyor	
Experie dates (m mm/yy)	nce nm/yy–	Experience and qua "designed intersecti	llifications rele on", etc. Expe	evant t rience	to the proposed contract; <i>i.e.</i> , "designed drainage", "designed e dates should cover the time specified in the applicable MPR(s	l girders", s).
11/21-02/22 LA 73 Bayou Manchac Bridge, LADOTD, I and deliverables. The types of surveys that ( included Microstation InRoads DGN, DTM, a		<b>TD, H.(</b> hat Ch ⁻M, anc	012563.5. Data Supervisor – Mr. Chustz was responsible for data coord ustz provided were Topographic, Aerial LiDAR, Static GPS, and RTK. D d ALG files, Utility Forms, GPS Photos, and ASCII Files.	dination eliverables		
10/20	)-11/20	20 <b>Emergency Grand Isle Post Hurricane Zeta</b> <b>W912P8-20-D-0001. Data Supervisor</b> – Mr. ( that Chustz provided were Topographic, Aeria File and an ASCII Coordinate File.			LiDAR/Photogrammetry Surveys, New Orleans District, MVN Contra Chustz was responsible for data coordination and deliverables. The types LiDAR and Photogrammetry, Static GPS, and RTK. Deliverables includ	act s of surveys ed a DTM
09/16	o-01/17	<ul> <li>I-10 Cable Barrier, Lafayette to Jennings, DOTD, H.010962. Data Supervisor – Mr. Chustz was responsible for data coordination and deliverables. The types of surveys that Chustz provided were Aerial LiDAR, RTK Control and Ground Truthing and Static GPS. Deliverables included ASCII and LAS Files.</li> </ul>				a Truthing,
09/16	o-01/17	Impala Burnside Terminal Survey, Ascension Parish, Project No. 16-514. Data Supervisor – Mr. Chustz was responsible for multibeam and aerial LiDAR data coordination and deliverables. The type of surveys that Chustz provided were RTK and Digital Level control surveys, Aerial 3D Laser Scan, Multibeam Hydrographic Underwater Imaging and Topographic surveys. Deliverables included LAS Files and gridded Multibeam Data.				oonsible for nd Digital
08/16	o-09/16	Jimmie Davis Bridge Hydro Survey, DOTD Contract 4400006382, Task Order 06. Data Supervisor – Mr. Chustz was responsible for Multibeam Processing and QA/QC of the hydrographic data. Chustz provided High Resolution Multibeam Underwater Imaging surveys of the Jimmie Davis Bridge in Shreveport, LA. Deliverables included a gridded XYZ file of the Multibeam survey data and a Detailed Survey Report.				vas m the



Firm en	mployed by Chustz Surveying, LLC						
Name	James H. (	nes H. Chustz, Jr, PLS				Years of relevant experience with this employer	27
Title	Project Ma	nager				Years of relevant experience with other employer(s)	20
Degree(	s) / Years	/ Spe	cialization		1983	/ Boundary Surveying Classes - LSU	
Active r	registration	n num	lber / state / exp	iration date	PLS #	<sup>#</sup> 4657 / Louisiana / 03-31-2024   1992	
Year reg	gistered		30	Discipline	Surve	y (Professional Land Surveyor)	
Contrac	t role(s) / t	orief o	description of re	sponsibilities	Contr	ract Project Manager / Supervisory Professional Land Surveyor	
Experied dates (m mm/yy)	Experience and qualifications relevant to the proposed contract; <i>i.e.</i> , "designed drainage", "designed intersection", etc. Experience dates should cover the time specified in the applicable			to the proposed contract; <i>i.e.</i> , "designed drainage", "designed dates should cover the time specified in the applicable MPR(s	l girders",		
11/21	/21-02/22 LA 73 Bayou Manchac Bridge, LADOTD, H.012563. /21-02/22 this job. The types of surveys that Chustz provided we Microstation InRoads DGN, DTM, and ALG files, Utility			Bridge, LADOTE rveys that Chustz GN, DTM, and AL	<b>), H.012</b> provide G files,	<b>2563.5. Project Manager</b> – Mr. Chustz was responsible for the overall man ed were Topographic, Aerial LiDAR, Static GPS, and RTK. Deliverables incl Utility Forms, GPS Photos, and ASCII Files.	agement of uded
08/21	-02/21	Post Ida Emergency Services for Multibeam and LiDAR, USACE, New Orleans District, MVN Contract W912P8-20-D-0001. Project Manager – Mr. Chustz was responsible for the overall management of this job. Chustz provided Multibeam Hydrographic Underwater Imaging, Aerial LiDAR, and Aerial Imagery surveys of the Mississippi River, locating obstructions after hurricane Ida. Deliverables included Static Obstruction Forms, an Orthomosaic, XYZ ASCII Files, and a Final Survey Report			<b>0001.</b> aphic Ida.		
11/21	-12/21	Post Ida Grand Isle Surveys, USACE, New Orleans District, MVN Contract W912P8-20-D-0001. Project Manager – Mr. Chustz was responsible for the overall management of this job. Chustz provided Static GPS, Single Beam and Multibeam Hydrographic Underwater Imaging, Aerial LiDAR, and Aerial Imagery surveys of the Grand Isle jetty system. Deliverables included Static GPS Network Reports, an Orthomosaic, XYZ ASCII Files, and a Final Survey Report.				Chustz phic GPS	
07/21	-10/21	LA 29 Bayou Cocodrie Bridge Scour Repair, LADOTD, H.014633.5. Project Manager – Mr. Chustz was responsible for the overall management of this job. The types of surveys that Chustz provided were Topographic, Aerial LiDAR and Photogrammetry, Static GPS, and RTK. Deliverables included Microstation InRoads DGN, DTM, and ALG files, Utility Forms, GPS Photos, and ASCII Files.					he overall Static GPS, s.
05/17	-09/17	I-10 proje and S	I-10 Cable Barrier, Lafayette to Jennings, LADOTD, H.010962. Project Manager – Mr. Chustz was responsible for the overall project management of this contract. The types of surveys that Chustz provided were Aerial LiDAR, RTK Control and Ground Truthing, and Static GPS.				



Firm employed by Chustz Surveying, LLC						
Name	me Mark W. Huber, CH				Years of relevant experience with this employer	2
Title	QA/QC Ma	nager			Years of relevant experience with other employer(s)	40
Degree(	(s) / Years	/ Specialization				
Active 1	registration	n number / state / exp	iration date	Certif	ied Hydrographer #181 / National / 12/31/2022	
Year reg	gistered	1995	Discipline	Surve	ey (Certified Hydrographer)	
Contrac	t role(s) /	orief description of re	sponsibilities	Certi	fied Hydrographer	
Experie dates (n mm/yy)	nce nm/yy–	Experience and qualifications relevan "designed intersection", etc. Experier			to the proposed contract; <i>i.e.</i> , "designed drainage", "designed dates should cover the time specified in the applicable MPR(s	l girders", ;).
11/21	1-02/22	LA 73 Bayou Manchac Bridge, LADOTD, H deliverables. The types of surveys that Chust. Microstation InRoads DGN, DTM, and ALG fil			<b>2563.5. QA/QC Manager</b> – Mr. Huber was responsible for the QA/QC of fin rovided were Topographic, Aerial LiDAR, Static GPS, and RTK. Deliverable: Utility Forms, GPS Photos, and ASCII Files.	al s included
08/21	1-02/21	Post Ida Emergency Services for Multibeam and LiDAR, USACE, New Orleans District, MVN Con QA/QC Manager – Mr. Huber was responsible for the QA/QC of final deliverables. Chustz provided Mu Underwater Imaging, Aerial LiDAR, and Aerial Imagery surveys of the Mississippi River, locating obstru- Deliverables included Static Obstruction Forms, an Orthomosaic, XYZ ASCII Files, and a Final Survey			and LiDAR, USACE, New Orleans District, MVN Contract W912P8-20-D- or the QA/QC of final deliverables. Chustz provided Multibeam Hydrographic nagery surveys of the Mississippi River, locating obstructions after hurricane an Orthomosaic, XYZ ASCII Files, and a Final Survey Report.	<b>0001.</b> ≎ ⊎Ida.
07/21	1-10/21	LA 29 Bayou Cocodrie Bridge Scour Repair, LADOTD, H.014633.5. QA/QC Manager – Mr. Huber was responsible for the QA/QC final deliverables. The types of surveys that Chustz provided were Topographic, Aerial LiDAR and Photogrammetry, Static GPS, and RTK. Deliverables included Microstation InRoads DGN, DTM, and ALG files, Utility Forms, GPS Photos, and ASCII Files.				ie QA/QC of SPS, and
10/20	)-05/21	Automated Revetment Contract W912P8-20-C Automated Multibeam L Automated River Gauge	t Surveys on the C-0057. QA/QC Ma Inderwater Imagin es were used for c	<b>Mississ anager</b> g surve ontrol. I	sippi, Atchafalaya, and Red Rivers, USACE, New Orleans District, LA, I – Mr. Huber was responsible for the QA/QC of final deliverables. Chustz pr eys for 456 miles on the Mississippi, Atchafalaya and Red Rivers. DGPS an Deliverables included ASCII XYZ Files and QA/QC Reports.	MVN ovided d
03/20	)-04/20	NOV NFL Mitigation P – Mr. Huber was respor and a Temporary Staff ( Description Forms, KM2	roject Fritchie Ma nsible for the QA/C Gauge, and Topog Z Files, a Fully Co	arsh (El 2C of fir graphic nstraine	<b>D-20-030), New Orleans District, Slidell, LA, W912P8-15-D-0009. QA/QC</b> nal deliverables. Chustz provided Hydrographic Single Beam Surveys utilizin Surveys utilizing RTK GPS. Deliverables included a Detailed Survey Repor ed GPS Network Report, and GIS Shape Files.	<b>; Manager</b> ng DGPS t,



10/18/-10/18	Engineering Surveys for Military Construction, Fort Wainwright, Fairbanks AK, Alaska District USACE Q/C Manager – Mr. Huber conducted Topographic and Terrestrial High-Resolution LiDAR Surveys of proposed Combat Readiness Training Facility at Fort Wainwright, Fairbanks AK. Surveys included topographic data collection, stakeout of several boring locations, and LiDAR surveys to produce a detailed point cloud.
08/18-09/18	Geodetic Control Surveys, North Dakota National Guard Training Center, Camp Grafton, North Dakota Project Manager – Planned, conducted, processed, and published a network of Project Control using a GPS network for the Army Surveyor's schoolhouse at Camp Grafton, ND. The surveying campaign was processed and submitted to NGS utilizing the beta version of the NGS OPUS Projects Utility.
06/18-07/18	<b>Headstone Location Surveys, Corozal American Cemetery, Panama City, Panama. GPS Survey Manager</b> – Mr. Huber was responsible for the planning and execution of GPS RTK Surveys to collect the location of 5000+ headstones for the American Battle Monuments Commission (ABMC). All data was processed and correlated for inclusion into the ABMC Enterprise GIS Geospatial System.
08/17-08/17	<b>EDR-OD-02, MLG to MLLW Vertical Datum Conversion, Calcasieu River and Pass, Louisiana, New Orleans District. Datums</b> <b>SME</b> – Mr. Huber conducted an Independent Technical Review (ITR) of document EDR-OD-02. The ITR validated compliance with established policy, procedures, and federal law. This included review of the assumptions, methods, and procedures used to determine the datum differences between MLG and MLLW for the Calcasieu River.



Firm emplo	Firm employed by Gaea Consultants, LLC					
Name To CF	Name Tonja Koob Marking, PhD, PE, D.WRE, DFE, MBA, PMP, CFM, LEED AP, F.ASCE				Years of relevant experience with this employer	23
Title Pre	esident				Years of relevant experience with other employer(s)	7
Degree(s) / Years / Specialization				PhD/e MA/2 MBA/ PhD/2 ME/1 MSPI BA/19	est'd 2028/History 020/History 2010/Finance 2002/Civil and Hydraulic Engineering 996/Environmental Engineering H/1993/Environmental Toxicology and Risk Assessment 990/Biology	
Active regi	istratior	n number / state / expi	ration date	PE #3	30749/LA/2023 add'l licensure in IN, TX, AL, MS	
Year regist	tered	2003	Discipline	Envir	onmental	
Contract ro	ole(s) / l	orief description of re	sponsibilities	Environmental Professional/Engineer; environmental services, permitting		
Additional Certifications				Certif LEED Diploi Diploi Proje	ied Floodplain Manager since 2010 ) Accredited Professional since 2009 mate, Water Resources Engineer #000766 since 2020 mate, Forensic Engineer #1152S since 2020 ct Management Professional since 2020	
Experience dates (mm/ mm/yy)	e /yy–	y- Experience and qualifications relevant to the proposed contract; <i>i.e.</i> , "designed drainage", "designed girders" "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).				d girders", s).
12/20-pres	resent Almonaster Bridge Rehabilitation—directed and wrote Categorical Exclusion NEPA document, coordinated with state and federal agencies for USACE Section 10/404, LDNR for CUP, USGS for bridge, Levee Board permits			d federal		
09/21-pres	sent	ent Orpheum Levee Pave—directed drainage study; coordinated with federal and state agencies for DNR CUP, USACE 10/404, and Levee Board permits				4, and
06/12-01/	/15	Belle Chasse Tunnel-E Environmental Assessm	Belle Chasse Tunnel-Bridge—directed and wrote Phase I Environmental Site Assessment; directed Traffic Count field work for Environmental Assessment			



07/14-12/16	<b>MSY Airport Environmental Assessment</b> —directed and wrote multiple sections of Environmental Assessment including Threatened and Endangered Species Survey, wetlands determination, floodplain encroachment
02/14-09-19	Livingston and Schwartz Schools—designed demolition plans for RSD schools; secured permits for demolition and debris removal; managed demolition contractor
02/17-08/17	NDRC Grant—performed preliminary environmental review for 20 project for grant application including historic preservation, floodplain management, coastal zone management, wild and scenic rivers
01/17-09/17	Children's Museum 404 Permit—successfully obtained USACE 404/10 permit for new Children's Museum in City Park
06/17-06/19	Non-Rock Alternative Shoreline Protection—prepared Environmental Consideration Report; secured Coastal Use Permit
04/20-09/20	<b>USACE Barge Debris Removal</b> —investigated channel debris for hazardous substances; coordinated with USACE and solid waste contractor for proper disposal; coordinated with DOTD for debris manifests



Firm emplo	oyed by	y Gaea Consultants, LL	.C					
Name La	auren Pe	eytavin, El			Years of relevant experience with this employer	5		
Title En	nvironme	ental Professional			Years of relevant experience with other employer(s)	5		
Degree(s) /	/ Years	/ Specialization		Maste BS/20 BA/19	er's Certificate/2021/Coastal Engineering 018/Civil Engineering 990/Biomedical Science			
Active regi	istratio	n number / state / expi	ration date	EI#00	03372/Louisiana/2022			
Year regist	tered	2018	Discipline	Civil				
Contract ro	ole(s) /	brief description of re	sponsibilities	Envir	ronmental Professional; environmental services, permitting			
Experience dates (mm/ mm/yy)	ence Experience and qualifications relevant to the proposed contract; <i>i.e.</i> , "designed drainage", "designed girder "designed intersection", etc. Experience dates should cover the time specified in the applicable MPR(s).				l girders", s).			
09/21-presen	nt	Orpheum Levee Pave- CUP, USACE 10/404, a	-conducted draina nd Levee Board p	age stu ermits	dy; designed levee pavement; coordinated with federal and state agencies	for DNR		
12/20-presen	nt	Almonaster Bridge Rehabilitation—conducted field investigations for the Categorical Exclusion NEPA document and Phase I Environmental Site Assessment; coordinated with state and federal agencies for USACE Section 10/404, LDNR for CUP, USGS for bridge, Levee Board permits						
01/18-12/18	-12/18 Environmental Record Review and Phase I Environmental Site Assessment—conducted the peer review of the Environmental Record Review and Phase I documents for multiple projects for the New Orleans Redevelopment Authority, including reporting standards, practices, as well as technical content							
01/19-01/20		Permit Analyses for Privately-Owned Properties—researched current and historic permits from state and federal agencies in support of litigation; reviewed LPDES, well, storage tank, CUP, and USACE 404/10 permits for consistency with current activities; advised clients of non-compliant activities						
03/21-presen	nt	<b>RR020 Bywater-Marigny Recovery Roads</b> —coordinated with New Orleans Public Belt Railroad and Southeast Louisiana Flood Protection Authority East to obtain permits for the City of New Orleans and its contractor to perform street repairs; ensured contractor maintained compliance with permitted activities, particularly during high water events on the Mississippi River						



Firm en	nployed b	y KTA-Tator, Inc.						
Name	Robert S.	Lanterman			Years of relevant experience with this employer	15		
Title	Coatings	Consultant			Years of relevant experience with other employer(s)	7		
Degree	(s) / Years	s / Specialization		B.E./	1999/Chemical Engineering/Youngstown (OH) State University			
Active	registratio	n number / state / exp	iration date	SSP0 NACI	C Certified Protective Coatings Specialist (#2015-820-1360, expiration 12/3 E Certified Coatings Inspector Level 3 (#135050, expiration 05/23/2025	1/2023		
Year re	gistered		Discipline					
Contrac	ct role(s) /	brief description of re	sponsibilities	Coat	ings Consultant – coating condition assessment and sampling service	es		
Experie dates (n mm/yy)	ence nm/yy– )	Experience and qua "designed intersecti	alifications rele on", etc. Expe	evant ( rience	to the proposed contract; <i>i.e.</i> , "designed drainage", "designed dates should cover the time specified in the applicable MPR(	d girders", s).		
09/21 – Present IWGO Bridge, Baton Rouge, LA – Louisia substrate examination and coating sample and environmental/worker protection and co subconsultant to another engineering firm			couge, LA – Louis erforming a coatir ind coating sample er protection and er engineering firm	siana D ng cond e procu contain	<b>DOTD</b> lition assessment (visual examination, coating thickness and adhesion mean rement), and assisting with the development surface preparation, coating a ment specifications/drawing notes for the rehabilitation of this bridge. KTA	isurements, ipplication, is a		
07/20	- 08/20	Denison Harvard Bridge, Cleveland, OH - Cuyahoga County (OH) Department of Public Works         Coatings Consultant for the coating condition assessment supervision of coatings laboratory testing, development of a maintenance painting strategy and recommendations, and development of an opinion of probable costs for the maintenance painting of this bridge.         KTA was a subconsultant to another engineering firm						
02/20	- 05/20	Jackson Street (Red River) Lift Bridge, Alexandria, LA – Louisiana DOTD Coatings Consultant for the coating condition assessment, supervision of coatings laboratory testing, and report preparation for the rehabilitation of the coating system on this bridge. KTA was a subconsultant to another engineering firm.						
02/18	- 06/19	Walt Whitman Bridge NJ Approach Spans, Gloucester, NJ – Delaware River Port Authority Coatings Consultant/Project Engineer for this project involving a coating condition assessment of the approach spans to develop future maintenance painting strategies for the structures. KTA also conducted a Relative Risk Characterization that focused on the impacts to the environment, the public, and adjacent workers resulting from the proposed surface preparation activities (removal of lead-based paint). KTA was a subconsultant to another engineering firm.						
10/18	- 03/19	Kootenay River Bridge, Creston, BC, Canada – British Columbia Ministry of Transportation						



	<b>Coatings Consultant</b> for the coating condition assessment, supervision of coatings laboratory testing, and preparation of a report with recommendations for the rehabilitation of the coating system on this bridge. KTA was a subconsultant to another engineering firm.
09/18 – 12/18	Argentia Newfoundland Ferry Dock Transfer Bridge, Newfoundland, Canada – Port of Argentia DOT Coatings Consultant for the coating condition assessment, supervision of coatings laboratory testing, and developmment of recommendations for future maintenance painting of the structural steel end span of this bridge. KTA was a subconsultant to another engineering firm.
07/17 – Present	Benjamin Franklin Bridge, Philadelphia, PA – Delaware River Port Authority Coatings Consultant/Project Engineer for the coating condition assessment of the bridge to develop a future maintenance painting strategy. Additional services include providing contractor containment and paint submittal review services for the maintenance painting and steel repair work on this bridge. KTA is/was a subconsultant to another engineering firm.
03/17 – 05/17	US 90 Morgan City Bridge and Nearby Structures, Morgan City, LA – Louisiana DOTD Coatings Consultant for the coating condition assessment, supervision of coatings laboratory testing, and report preparation with recommendations for the rehabilitation of the coating system on this bridge. KTA was a subconsultant to another engineering firm.
02/17 – 03/17	I-310 Luling Bridge, Luling, LA – Louisiana DOTD Coatings Consultant for the coating condition assessment of the weathering steel towers and girders, and preparation of a report detailing the conditions found and providing recommendations for the remediation of the corrosion problems on this bridge. KTA was a subconsultant to another engineering firm.



Firm en	nployed b	y KTA-Tator, Inc.					
Name	Greg R. R	ichards			Years of relevant experience with this employer	24	
Title	Coatings (	Consultant			Years of relevant experience with other employer(s)	20	
Degree	(s) / Years	/ Specialization					
Active	registratio	n number / state / exp	iration date	SSPC NACE	C Certified Protective Coatings Specialist (#2019-809-300), expiration 12/37 E Certified Coatings Inspector Level 3 (#6092), expiration 6/30/2023	1/2023	
Year re	gistered		Discipline				
Contrac	ct role(s) /	brief description of re	sponsibilities	Coati	ings Consultant – coating condition assessment and sampling service	es	
Experie dates (n mm/yy)	ence nm/yy– )	Experience and qua "designed intersecti	lifications rele on", etc. Expe	evant t rience	to the proposed contract; <i>i.e.</i> , "designed drainage", "designed dates should cover the time specified in the applicable MPR(s	1 girders", s).	
01/22 – 03/22 SR105 at Haulover Creek (Bridge No. 72 Coatings Consultant for project managen measurements, substrate examination, and the report detailing the results of the field a coating system on various areas of this bri			eek (Bridge No. 7 or project manage te examination, ar esults of the field us areas of this br	20063) ement, c and coati and lab ridge. k	– Florida Department of Transportation coating condition assessment (visual examination, coating thickness and ac ing sample procurement), supervision of coatings laboratory testing, and pr poratory investigations and providing recommendations for the rehabilitation (TA was a subconsultant to another engineering firm.	Ihesion eparation of i of the	
07/21	- 10/21	US 98 over St. Andrews Bay, Bay County, FL – Florida DOT Coatings Consultant for project management, coating condition assessment, supervision of coatings laboratory testing, and preparation of the report detailing the results of the field and laboratory investigations and providing recommendations for the rebabilitation of the coating system on various areas of this bridge. KTA was a subconsultant to another engineering firm					
01/20	- 05/20	Johns Pass Bridges NB and SB on SR 699, Pinellas County, FL – Florida DOT Coatings Consultant for project management, coating condition assessment, supervision of coatings laboratory testing, and preparation of the report detailing the results of the field and laboratory investigations and providing recommendations for the rehabilitation of the coating system on these dual leaf bascule bridges over Boca Ciega Bay. KTA was a subconsultant to another engineering firm.					
02/19	- 05/19	Ramp from I-4 EB to I-75 NB over I-4, Hillsborough County, FL – Florida DOT Coatings Consultant for project management, coating condition assessment, supervision of coatings laboratory testing, and assistance with report preparation for the rehabilitation of the coating system on this structure. KTA was a subconsultant to another engineering firm.					



03/18 – 06/18	Plant Avenue Bridge, Tampa, FL – City of Tampa, FL Coatings Consultant for project management, coating condition assessment, supervision of coatings laboratory testing, and assistance with report preparation for the rehabilitation of the coating system on this bridge. KTA was a subconsultant to another engineering firm.
03/18 – 06/18	Brorein Street Bascule Bridge, Tampa, FL – City of Tampa, FL Coatings Consultant for project management, coating condition assessment, supervision of coatings laboratory testing, assistance with report preparation, and development of the technical (paint) specifications for the rehabilitation of the coating system on this bridge. KTA was a subconsultant to another engineering firm.
06/17 – 07/17	Longboat Key Pass Bridge, Manatee County, FL – Florida DOT Coatings Consultant for project management, coating condition assessment, supervision of coatings laboratory testing, assistance with report preparation, and development of the Plan Notes for the rehabilitation of the coating system on this bascule bridge. KTA was a subconsultant to another engineering firm.
03/17 – 03/17	Dale Earnhardt Memorial Pedestrian Bridge, Daytona Beach, FL – Daytona International Speedway Coatings Consultant for project management, supervision of coatings laboratory testing, and preparation of Plan Notes for the spot painting of this bridge. KTA was a subconsultant to another engineering firm.
02/17 – 05/17	Six Bridges in Pensacola FL – Florida DOT Coatings Consultant for project management, attendance at the pre-construction meeting, and review/ comments on the painting contractor's QC plan and other coatings-related submittals as required by the FDOT specification for the rehabilitation of the coating system on these bridges. KTA was a subconsultant to another engineering firm.
02/16 – 06/16	Circus Bascule Bridges, Sarasota County, FL – Florida DOT Coatings Consultant for project management, coating condition assessment, supervision of coatings laboratory testing, assistance with report preparation, and development of the Plan Notes for the rehabilitation of the coating system on these bridges. KTA was a subconsultant to another engineering firm.



Firm en	nployed b	y KTA-Tator, Inc.					
Name	Pedro M.	Sanchez		Years of relevant experience with this employer	3		
Title	Coatings	Consultant		Years of relevant experience with other employer(s)	9		
Degree	(s) / Years	s / Specialization	B.S./	1991/Civil Engineering/University of Zulia, Maracaibo, Venezuela			
Active	registratic	on number / state / expiration date	SSP( NACI	C Certified Protective Coatings Specialist (#2020-320-303), expiration 12/31 E Coatings Inspector CIP Level 2 (#19657), expiration 5/31/2022	1/2024		
Year re	gistered	Discipline					
Contrac	ct role(s) /	brief description of responsibilities	Coat	ings Consultant – coating condition assessment and sampling service	es		
Experie dates (n mm/yy)	ence nm/yy– )	Experience and qualifications rele "designed intersection", etc. Expe	evant 1 rience	to the proposed contract; <i>i.e.</i> , "designed drainage", "designed e dates should cover the time specified in the applicable MPR(s	d girders", s).		
09/18 – Present Coatings Consultant/Project Engineer – Va Mr. Sanchez conducts coating condition asse analyzes data and develops maintenance stra (CAPP®) computer software program; develo strategies, performs independent investigatio preparation of technical papers, and delivery				pus Clients nents on various structures (bridges, storage tanks, pipelines, tank farms, e gies based on information from the KTA Coating Assessment and Painting I opinions of probable costs based on one or more coating system maintena of coating failures; enhances KTA's industry presence through committee p presentations at conferences and symposia.	etc.); Priority nce articipation,		
01/22 – 0	)3/22	SR105 at Haulover Creek (Bridge No. 720063) – Florida Department of Transportation         Coatings Consultant for a coating condition assessment on this bridge located in Duval County, FL. Mr. Sanchez assisted with the assessment and with the preparation of the client report which provided a discussion of the field and laboratory investigations along with recommendations of the rehabilitation of the coating systems present on these structures. KTA was a subconsultant to another engineering firm					
03/21 – 0	)5/21	Channel Islands ANG Base, Oxnard, CA and Randolph Air Force Base, TX Coatings Consultant for coating condition assessments on various structures at these military bases. KTA was a subconsultant to another engineering firm.					
02/21 – 0	)3/21	Canal Lock Gates, Panama Canal Coatings Consultant providing assistance with a full coating survey/condition assessment related to the 2016 expansion project of the Panama Canal. The survey/assessment involved evaluating the amount of corrosion and condition of the coating systems on 16 canal lock gates across the length of the Canal. KTA was a subconsultant to another engineering firm.					



10/20 – 02/21	Joint Base Pearl Harbor-Hickman, Oahu, HI Coatings Consultant for coating condition/corrosion assessment on the exterior surfaces of pipelines and other items in various locations at this military base and provided recommendations for appropriate maintenance painting strategies. KTA was a subconsultant to another engineering firm.
10/19 – 03/20	Andrews Avenue Bascule Bridge, Ft. Lauderdale, FL – Broward County, FL Coatings Inspector for full-time QA inspection services during the surface preparation and coating application operations for the repainting project on this bridge. KTA was a subconsultant to another engineering firm.
03/19 – 08/19	Hard Rock Stadium, Miami Gardens, FL Coatings Inspector for full-time QA inspection services during the surface preparation and coating application operations for the repainting project on this stadium. KTA was a subconsultant to another engineering firm
07/07 – 12/16	<ul> <li>Employee of Belzona, Inc., Miami, FL</li> <li>Regional Manager for Latin America – Technical Service and Business Development</li> <li>Developed strategic framework for the operating businesses and oversaw implementation of business objectives. Conducted extensive market research: industry per country, competitive analysis, and income potential</li> <li>Investigated coating failures: deionized tank coatings in a brewery (Venezuela) and discoloration of an airplane hangar concrete floor coating (Columbia)</li> <li>Wrote various specifications, including Latin American water/waste water plants and various oil/gas clients in Brazil, Mexico, and Venezuela</li> <li>Developed and instructed various training courses (in Spanish and English) for coating inspection and coating product selection, both in-person and via webinars</li> <li>Promoted and created new markets with product offerings across the North and South American distribution network. Industrial markets include transportation oil/gas, power generation, potable water, and wastewater facilities.</li> </ul>



Firm		mployed by	Moffatt & Nichol					
1250	Name		Chace Hulon, PE, ADC		Years of relevant experience with this employer	8		
	Title		Program Manager and N	BIS Team Leader	Years of relevant experience with other employer(s)	9		
Degree(s) / Y	Years / Sp	ecialization		BS / 2005 / Civil Er	ngineering / Norwich University, Vermont			
Active regist	tration nu	mber / state / e	xpiration date	Professional Engin	eer: 39701 / LA / Exp. 09/30/23			
Year register	red 20	009	Discipline	Civil Engineering				
Contract role	e(s) / brief	f description of	f responsibilities	NBIS Team Leade	er/ ADCI-certified Dive Supervisor / SPRAT Rope Access Tech	nician		
Experience d	lates E	Experience and	l qualifications relevant	to the proposed co	ontract; i.e., "designed drainage", "designed girders", "desig	ned		
(mm/yy–mm	n/yy) i	ntersection", e	tc. Experience dates sho	ould cover the time	e specified in the applicable MPR(s).			
11/19 – Pre	ssent rsent r f t a p	<b>LADOID DID TO TO Peptin Inspection of Complex Bridges, Statewide, Louisiana.</b> With Project Manager and Team Leader for one of the current five-year retainer contracts as a major subconsultant to HNTB, contracted to perform in-depth bridge inspections on complex, signature, long-span bridges throughout Louisiana. Performed the inspections of both cable-stayed bridges in Louisiana (Audubon and Luling) with rope access techniques to inspect a total of 208 cables between the two bridges, their Gensui Dampers, and anchorages. Performed the inspection of the I-10 Horace Wilkinson Bridge completely utilizing rope access techniques and rolling lane closures to greatly minimize traffic impacts. Performed a supplemental inspection of the GNO Cantilever Truss Bridges in New Orleans utilizing rope access and UAS access techniques. Performed the inspection of the I-10 Bridge over the Calcasieu River in Lake Charles utilizing rope access on FCM's and UAS access techniques on columns. Hands-on management and implementation of the QC review plan is vital to the continued success of this project.						
1/20 – Pres	sent o sent s	LADOTD IDIQ for Statewide In-Depth Bridge Inspection of Complex Structures, Louisiana. MN Project Manager and Team Leader for one of the current five-year retainer contracts as a major subconsultant to Gresham Smith, contracted to perform in-depth bridge inspections on complex, movable, long-span, and precast segmental box girder bridges throughout Louisiana. Performed and lead the structural, mechanical, and electrical inspections of six (6) movable bridges utilizing detailed, nondestructive and laboratory testing methods with hand sketches. Hands-on management and implementation of the QC review plan is vital to the continued success of this project.						
09/14 – Pre	esent v	<b>LADOTD IDIQ for Underwater Bridge Inspection, Statewide, Louisiana.</b> Project Director and Team Leader for the third cycle of contracts in which we have performed 1,375 underwater NBIS bridge inspections statewide. Bridge types included movable bridges, long-span bridges with caissons and deep foundations, timber bridges with multiple bents in the water, culverts and multi-span bridges up to 14 miles in length. Assisted DOTD with several emergency response requests within hours utilizing local team members.						
02/21-Pres	sent a	Assisted DOTD with several emergency response requests within hours utilizing local team members. LADOTD Underwater Bridge Inspections (2020-2025) - Task 1, Statewide, Lousiana. Project Principal for routine underwater inspections of 75 bridges including major bridges over large waterways with deep foundations and dynamic channel conditions. All diving inspections were augmented with acoustic imaging technology for bridges over large waterways with high-risk environmental conditions. Hydrographic surveys were performed using the HydroLite-TM and MatLab for accurate and repeatable channel soundings at these bridge sites						



Firm Employed by		Moffatt & Nichol				
Nam	e	Mike Russell, EIT		Years of relevant experience with this employer	1<	
Title		NBIS Team Leader and Supervisor	Rope Access	Years of relevant experience with other employer(s)	11	
Degree(s) / Years /	Specialization		BS / 2015 / Civil Er	ngineering, Central Connecticut University		
Active registration	number / state / e	xpiration date	Engineer-in-Trainir	g: #35255 / TN		
Year registered	N/A	Discipline	Civil and Structural			
Contract role(s) / br	ief description of	f responsibilities	NBIS Team Leade	r / SPRAT Rope Access Supervisor-Level III / FAA Remote Dro	one	
Experience detec	Experience and	auglifications relevant	to the proposed of	ntroot: i.a. "designed drainage" "designed girders" "design	nod	
(mm/yy_mm/yy)	intersection" e	te Experience dates she	build cover the time	specified in the applicable MPR(s)	leu	
08/21 - Present		or In-Depth Inspection of	Complex Bridges.	Statewide, Louisiana, Team Member, Drone Operator, and Rope		
00,21 110001	Access Supervis	or for one of the current five	/e-vear retainer cont	racts (2019-2024) as a major subconsultant to HNTB. contracted to	0	
	perform in-depth	bridge inspections on con	nplex, signature, long	g-span bridges throughout Louisiana. Performed the inspection of t	the I-	
	10 Bridge over th	ne Calcasieu River in Lake	Charles utilizing rope access on fracture critical members and UAS drone access techniques			
	on columns, seco	ondary members and conr	nections. Responsible for inspecting the steel substructure units utilizing fall protection			
	techniques and a	a work boat platform with a	rope access safety	management plan. Responsible for inspecting the lower chord of the	he	
	main span steel	arched through truss utilizi	ing fall protection and	d rope access techniques. Responsible for working together with o	ther	
	supervisors and	team leaders on site to co	mmunicate the hazards and mitigation techniques for safe operations and rescue pre-plans.			
	Documented field	d notes and sketches utiliz	ing traditional metho	ds amenable to the project team leader for standardized report		
	processing. Orga	anized electronic files per t	he quality managem	ent plan and reviewed the draft report for consistency and accurac	у.	
04/19 – Present	LADOTD IDIQ fo	or Statewide Ancillary Si	gn Inventory and In	spection, Louisiana. Team Leader and Rope Access Supervisor	for	
	both five-year rel	tainer contract to perform (	over 1700 sign truss	inspections throughout Louisiana, including the Orleans District ale	ong	
	this corridor. Lea	d the development of the	new Sign Truss Insp	ection Program by implementing policies and standard operating		
	procedures. Man	haged and utilized the fall p	protection safety proc	gram with rope access techniques and rescue plans. Lead the		
	development of a	an application for an intern	al tablet-based inver	tory management system. Non-destructive testing was performed	on all	
	anchor rods at a	Il cantilever structures, bas	se plates with excess	ive standoff distances, and where deficiencies were observed at s	teel	
	and aluminum w	elds. Managed the QC rep	ort review process a	nd the QA field and office review process. Managed and planned t	the	
	Temporary Traffi	c Control plans and setup	s for lane closures th	roughout the state along with all of the District traffic engineers. Ar	nalyzed	
	altered load path	S.				
1/22 – Present	LADOT In-Dept	h Inspections of Comple	x Bridges - Audubo	n Bridge, LA. Rope Access supervisor and NBIS Inspector Plann	ing for	
	the in-depth NBI	S routine and fracture critic	cal inspection of the	Audubon Bridge.		



Firm I	Employed by	Moffatt & Nichol					
Name		Steven Armstrong, PE,	ADCI	Years of relevant experience with this employer	8		
Title		NBIS Team Leader		Years of relevant experience with other employer(s)	2		
Degree(s) / Years / S	pecialization		MS / 2021 / Civil E	ngineering / University of New Orleans			
			BS / 2015 / Civil ar	BS / 2015 / Civil and Environmental Engineering / University of New Orleans			
Active registration n	umber / state / e	xpiration date	Professional Engin	eer: 44405 / LA / Exp. 09/30/22			
Year registered 2	2020	Discipline	Civil				
Contract role(s) / brid	ef description of	f responsibilities	NBIS Team Leade	r / FAA Remote Drone Pilot / SPRAT Rope Access Technician	1		
			ADCI-certified Div	er			
Experience dates	Experience and	qualifications relevant	to the proposed co	ntract; <i>i.e.</i> , "designed drainage", "designed girders", "desig	ned		
(mm/yy–mm/yy)	intersection", et	tc. Experience dates sho	ould cover the time	specified in the applicable MPR(s).			
11/19 – Present	LADOTD IDIQ fo	or Statewide In-Depth Bri	idge Inspection, Lo	uisiana. Team Member for one of the current five-year retainer co	ntracts		
	as a major subco	Insultant to HNTB, contract	ted to perform in-de	oth bridge inspections on complex, signature, long-span bridges			
	throughout Louis	iana. Performed the inspe	ctions of the Audubo	n cable-stayed bridge with rope access techniques to inspect a to	tal of		
	136 cables, the H	IDPE protection, and anch	norages. Performed	he inspection of the I-10 Horace Wilkinson Bridge (New Bridge)			
	completely utilizir	ng rope access techniques	s and rolling lane clo	sures to greatly minimize traffic impacts. Performed draft inputs ar	ıd		
	consolidated note	es from multiple teams to p	present proper data	consistently throughout the report.			
1/20 – Present	LADOTD IDIQ fo	or Statewide In-Depth Bri	idge Inspection of (	Complex Structures, Louisiana. Team Member for one of the cu	rrent		
	five-year retainer	contracts as a major subc	consultant to Gresha	m Smith, contracted to perform in-depth bridge inspections on con	nplex,		
	movable, long-sp	oan, and precast segmenta	al box girder bridges	throughout Louisiana. Performed the structural inspections of six (	(6)		
	movable bridges	along with the M&E team.	Utilized nondestruc	tive UT methods to accurately document section loss in fracture cr	itical		
	members. Perfor	med draft inputs and cons	olidated notes from	multiple teams to present proper data consistently throughout the i	report.		
09/14 – Present	LADOTD IDIQ fo	or Underwater Bridge Ins	pection, Statewide	, Louisiana. NBIS Team Leader for the current five-year retainer			
	contract to perfor	m Levels I, II, and III unde	erwater bridge inspec	tions in accordance with NBIS and AASHTO Manual for Bridge El	ement		
	Inspection. Resp	onsible for leading underw	ater inspection team	ns to complete field work, inspection reports, and quality control re-	views.		
	Bridge types insp	pected consisted of movab	le bridges, truss brid	lges, timber stringer bridges, cable-stayed bridges, and single and	multi-		
	span girder bridg	es up to fourteen miles in	length. Site condition	ns included salt and fresh waters, with varying levels of current, ha	iving		
	low to no visibility	y. UAI techniques were uti	lized to locate structu	aral deficiencies and identify bottom conditions.			



Firm	Employed by	Moffatt & Nichol						
Name		Jeffrey Gazarek, ADCI		Years of relevant experience with this employer	6			
Title		NBIS Team Leader and	Safety Officer	Years of relevant experience with other employer(s)	10			
Degree(s) / Years /	Specialization		Commercial Diving	with Concentration in Subsea Inspection / 2005 / Divers Institute	of			
Active registration	number / state / e	expiration date	N/A					
Year registered	N/A	Discipline	N/A					
Contract role(s) / br	rief description of	f responsibilities	NBIS Team Leade	er / Safety Officer / Equipment Manager / SPRAT Rope Access				
			Technician / ADC	I-certified Diver				
Experience dates	Experience and	l qualifications relevant	to the proposed co	ontract; <i>i.e.</i> , "designed drainage", "designed girders", "desig	ned			
(mm/yy-mm/yy)	intersection", e	tc. Experience dates she	ould cover the time	e specified in the applicable MPR(s).				
09/14 – Present		or Underwater Bridge Ins	spection, Statewide	, Louisiana. INBIS Team Leader for the third cycle of contracts in	which			
	we have periorn	ted 1,375 Underwäler bridg	ge inspections states	e inspections statewide. Responsible for leading dive operations for underwater inspection				
	teams to comple	truce bridges, timber stri	ction reports, and performing quality control reviews. Bridge types inspected consisted of					
	movable bridges	, ITUSS DHUYES, IIMDEL SITI Site conditions included on	Iger bridges, cable-stayed bridges, and single and multi-span grider bridges up to foundeen					
	miles in length. S	one conunions included sa	and identify bottor	mili valying levels of current, naving low to no visibility. OAI technik n conditions	ques			
0/1/16 - Present		or Statewide Ancillary Si	ian Inventory and Ir	in conditions.	for			
04/10 - 1103011	both five-year re	tainer contracts. Performe	$\sim 40\%$ of 1700 sign truss inspections throughout Louisiana. Utilized fall protection and rope					
	access technique	es with rescue plan develo	nment Performed n	on-destructive testing on all anchor rods at all cantilever structures	s hase			
	nlates with exce	sive standoff distances a	and where deficiencie	so or impacts were observed at steel and aluminum welds. Drafted	and			
	reviewed inspect	tion reports per the quality	management plan	Monitored the TTC lane closures and reviewed the TTC plans for c	wer 10			
	lane closures thr	oughout the state.	management plan.					
11/14 – Present	MDOT 2014 & 2	021 Underwater Bridge I	nspection Contract	, Districts 1 & 2, Mississippi. NBIS Bridge Inspector performed				
	underwater inspe	ections of 12 bridges in ac	cordance with NBIS	and MDOT PONTIS Inspection Manual. Bridges inspected were				
	constructed of concrete, steel, and timber, and high-resolution scanning sonar was used on selected bridge elements. Responsible for							
	pre-inspection planning, scheduling, field work, performing NDT and soundings, diving operations, drafting reports, sketches, and repair							
	recommendations.							
11/19 – Present	LADOTD IDIQ fo	or Statewide In-Depth Br	idge Inspection, Lo	uisiana. Team Member for one of the current five-year retainer co	ontracts			
	as a major subco	onsultant to HNTB, contra	cted to perform in-de	pth bridge inspections on complex, signature, long-span bridges				
	throughout Louis	iana. Performed the inspe	ection of the I-10 Hor	ace Wilkinson Bridge (New Bridge) completely utilizing rope acces	SS			
	techniques and r	olling lane closures to gre	eatly minimize traffic	impacts.				



	Firm Employed by		Moffatt & Nichol						
E.	Name		Joshua Martinez, PE, A	DCI	Years of relevant experience with this employer	7			
MARK BALL	Title		NBIS Team Leader and	Diver	Years of relevant experience with other employer(s)	5			
Degree(s) / Y	ears / Sp	ecialization		MCE / 2013 / Struc	tural Engineering, North Carolina State University				
				BCE / 2009 / Struc	tural Engineering, United States Air Force Academy				
Active regist	ration nur	mber / state / e	xpiration date	Professional Engin	eer: 42085 / LA / 3/31/22				
Year register	red 20	)13	Discipline	Civil					
Contract role	(s) / brief	description of	Fresponsibilities	NBIS Team Leade	r / SPRAT Rope Access Technician / ADCI-certified Diver				
Experience d	lates E	Experience and	qualifications relevant	to the proposed co	ntract; i.e., "designed drainage", "designed girders", "desig	ned			
(mm/yy–mm	/yy) ii	ntersection", et	tc. Experience dates sho	ould cover the time	e specified in the applicable MPR(s).				
	L	LADOTD IDIQ for NBIS Underwater Bridge Inspection Retainer Contract, Statewide. NBIS Team Leader for the current five-year							
	re	retainer contract to perform Levels I, II, and III underwater bridge inspections in accordance with NBIS and AASHTO Manual for Bridge							
06/17 – Pres	sent E	Element Inspection. Site conditions included salt and fresh waters, with varying levels of current, having low to no visibility. UAI							
	te	techniques were utilized to locate structural deficiencies and identify bottom conditions. Responsible for leading underwater inspection							
	te	teams to complete field work, inspection reports, and quality control reviews.							
	L	LADOTD 2013 NBIS Underwater Bridge Inspection Retainer Contract, Statewide. NBIS Inspector for the previous five-year retainer							
	C	contract to perform Levels I, II, and III underwater bridge inspections in accordance with NBIS and AASHTO Manual for Bridge Element							
09/13 - 06/	/17 Ir	Inspection. Responsible for underwater inspection field work, inspection reports, and quality control reviews. UAI techniques were							
	u	utilized to locate structural deficiencies, identify potential undermining, observe the limits of scour, and document the limits of riprap							
	ir	installations.							
	S	Statewide Topside Inspection of Bridges for the North Carolina Department of Transportation, North Carolina. NBIS Team							
	L	eader responsib	ble for topside inspection o	of bridges under two,	consecutive, multi-year, on-call contracts. Inspected single and m	nulti-			
00/17 0	S	pan bridges as v	well as concrete, steel, and	d timber. Mr. Martine	ez was responsible for rating the overall bridge condition and deter	rmining			
03/17 – Cur	rent	ritical maintenar	nce items per state require	ements. He also deve	eloped and generated reports rating to the element base level. Mr.	. 0			
	Ν	Aartinez familiari	zed himself with several ir	nspection vehicles in	cluding a bucket truck, snooper, and under-bridge platform. He se	erved as			
	е	ngineer reviewe	er for reports to ensure acc	uracy and proper ra	ting per National Highway Institute (NHI) guidance.	-			



Firm Employed by		Moffatt & Nichol								
Name	e	Charles Balzarini, PE		Years of relevant experience with this employer <sup>9</sup>						
Title		NBIS Team Leader and Diver		Years of relevant experience with other employer(s)						
Degree(s) / Years / S	Specialization		BS / 2008 / Civil Er	ngineering, University of Alaska, Anchorage	-					
Active registration r	number / state / e	xpiration date	Professional Engin	eer: 13854 / AK / Exp. 12/31/2023						
Year registered	2013	Discipline	Civil							
Contract role(s) / br	ief description of	f responsibilities	NBIS Team Leade	er / SPRAT Rope Access Technician / ADCI-certified Diver						
Experience dates	Experience and	l qualifications relevant	to the proposed co	ontract; i.e., "designed drainage", "designed girders", "desig	ned					
(mm/yy–mm/yy)	intersection", e	tc. Experience dates sho	ould cover the time	e specified in the applicable MPR(s).						
	LADOTD IDIQ fo	or NBIS Underwater Bridg	ge Inspection Retain	iner Contract, Statewide. NBIS Team Leader for the current five-	year					
	retainer contract	to perform Levels I, II, and	d III underwater bridg	je inspections in accordance with NBIS and AASHTO Manual for E	3ridge					
06/17 – Present	Element Inspecti	on. Site conditions include	ed salt and fresh wate	ers, with varying levels of current, having low to no visibility. UAI						
	techniques were	utilized to locate structural	I deficiencies and ide	entify bottom conditions. Responsible for leading underwater inspe	ection					
	teams to comple	te field work, inspection re	ports, and quality co	ntrol reviews.						
	LADOTD IDIQ for Statewide In-Depth Bridge Inspection, Louisiana. NBIS Team Leader for one of the current five-year retainer									
	contracts as a major subconsultant to HNTB, contracted to perform in-depth bridge inspections on complex, signature, long-span									
	bridges througho	out Louisiana. Performed th	ne inspections of the	Luling cable-stayed bridge in New Orleans with rope access tech	niques					
11/19 – Present	to inspect a total	of 72 cables between the	two bridges, their Ge	ensui Dampers, and anchorages. Performed the inspection of the	I-10					
	Horace Wilkinson	n Bridge completely utilizin	ng rope access techr	niques and rolling lane closures to greatly minimize traffic impacts.						
	Performed a sup	plemental inspection of the	e GNO Cantilever Tr	uss Bridges in New Orleans utilizing rope access techniques. Perf	ormed					
	a fracture critical	inspection of the Green Bi	ridge, a steel tied are	ch in New Orleans utilizing rope access and UAS access techniqu	es.					
	LADOTD IDIQ fo	or Statewide Ancillary Sig	gn Inventory and In	spection, Louisiana. Team Leader for both five-year retainer cor	ntracts					
	to perform appro	ximately 40% 1700 sign tru	uss inspections throu	ughout Louisiana. Utilized the fall protection and rope access tech	niques					
	with rescue plan	development. Performed r	non-destructive testi	ng on all anchor rods at all cantilever structures, base plates with						
04/16 – Present	excessive stando	off distances, and where de	eficiencies or impact	s were observed at steel and aluminum welds. Hands-on inspection	on work					
	was performed o	verhead by bucket truck a	nd climbing on active	e highways. Aluminum and steel sign truss members were inspect	ed for					
	inventory and for	structural defects in accor	rdance with FHWA g	uidelines. Drafted and reviewed inspection reports per the quality						
	management pla	n. Monitored the TTC lane	e closures and review	ved the TTC plans for over 10 lane closures throughout the state.						

Firm Employed by		Moffatt & Nichol								
Nam	e	Matthew Balzarini, PE		Years of relevant experience with this employer	5					
Title		NBIS Team Leader and	Diver	Years of relevant experience with other employer(s)	4					
Degree(s) / Years /	Specialization		BS / 2011 / Civil Er	ngineering, University of New Orleans						
Active registration	number / state / e	xpiration date	Professional Engin	eer: 118893 / AK / Exp. 12/31/23						
Year registered	2017	Discipline	Civil							
Contract role(s) / br	ief description of	f responsibilities	NBIS Team Leade	er / SPRAT Rope Access Technician / ADCI-certified Diver						
Experience dates	Experience and	qualifications relevant	to the proposed co	ontract; i.e., "designed drainage", "designed girders", "desig	ned					
(mm/yy-mm/yy)	intersection", e	tc. Experience dates sho	ould cover the time	e specified in the applicable MPR(s).						
	LADOTD IDIQ fo	or Statewide In-Depth Bri	idge Inspection, Lo	uisiana. NBIS Team Leader Member for one of the current five-ye	ear					
	retainer contracts as a major subconsultant to HNTB, contracted to perform in-depth bridge inspections on complex, signature, long-									
	span bridges thro	oughout Louisiana. Perforr	med the inspections	of both cable-stayed bridges in Louisiana (Audubon and Luling) w	ith rope					
	access technique	es to inspect a total of 208	cables between the	two bridges, their Gensui Dampers, and anchorages. Performed t	the					
11/19 – Present i	inspection of the	inspection of the I-TU Horace Wilkinson Bridge completely utilizing rope access techniques and rolling lane closures to greatly minimize								
	traffic impacts. Performed a supplemental inspection of the GNO Cantilever Truss Bridges in New Orleans utilizing rope access									
	techniques. Performed a fracture critical inspection of the Green Bridge, a steel tied arch in New Orleans utilizing rope access and UAS									
	access technique	es. Performed the inspection	on of the I-10 Bridge	over the Calcasieu River in Lake Charles utilizing rope access on	i FCM's					
	and UAS access	techniques on columns.								
	LADOTD IDIQ fo	or NBIS Underwater Bridg	ge Inspection Retai	iner Contract, Statewide. NBIS Team Leader and Team Member	r for the					
	current five-year	retainer contract to perform	m Levels I, II, and III	underwater bridge inspections in accordance with NBIS and AAS	hto					
06/18 – Present	Manual for Bridg	e Element Inspection. Site	conditions included	salt and fresh waters, with varying levels of current, having low to	no					
	visibility. UAI tecl	visibility. UAI techniques were utilized to locate structural deficiencies and identify bottom conditions. Responsible for leading								
	underwater inspe	ection teams to complete fi	ield work, inspection	reports, and quality control reviews.						
	LADOTD IDIQ for Statewide Ancillary Sign Inventory and Inspection, Louisiana. Team Leader for both five-year retainer contracts									
	to perform appro	ximately 10% 1700 sign tr	uss inspections throu	ughout Louisiana. Utilized the fall protection and rope access tech	niques					
07/10 Dresent	with rescue plan	development. Performed r	non-destructive testi	ng on all anchor rods at all cantilever structures, base plates with	-					
07/18 – Pleselli	excessive stando	off distances, and where de	eficiencies or impact	s were observed at steel and aluminum welds. Drafted and review	ved					
	inspection report	s per the quality managem	nent plan. Monitored	the TTC lane closures and reviewed the TTC plans for over 10 land	ne					
	closures through	out the state.	-							



Fi	rm Employed by	Moffatt & Nichol								
N	ame	Laura Miller, EIT		Years of relevant experience with this employer	4					
Ti	tle	Assistant Inspector and	Diver Years of relevant experience with other employer(s)							
Degree(s) / Year	s / Specialization		MBA / 2017 / Business Administration, Tulane University MS / 2017 / Global Management, Tulane University MS / 2012 / Civil & Environmental Engineering, San Jose State University BS / 2002 / Human/Regional Geography and Spanish, United States Military Academy							
Active registrati	on number / state / e	expiration date	Engineer-in-Train	<b>ing:</b> EI.0034949 / Lousiana						
Year registered	2021	Discipline	Civil							
Contract role(s)	/ brief description o	f responsibilities	Assistant Inspector / SPRAT Rope Access Technician / ADCI-certified Diver							
Experience date	Experience and	l qualifications relevant	to the proposed co	ontract; <i>i.e.</i> , "designed drainage", "designed girders", "desig	gned					
(mm/yy–mm/yy	) intersection", e	tc. Experience dates sho	ould cover the time	e specified in the applicable MPR(s).						
09/19 – 03/20	contract to perfo Inspection. Com techniques were limits of riprap in	NBIS Underwater Bridge rm Levels I, II, and III under pleted underwater inspecti utilized to locate structura stallations.	Inspection Retaine erwater bridge inspection field work, inspection field work, inspection field work, inspection field work, identified the second s	ctions in accordance with NBIS Inspector for the current five-year re- ctions in accordance with NBIS and AASHTO Manual for Bridge E ction reports, and quality control reviews. Underwater acoustic ima by potential undermining, observe the limits of scour, and documer 9840.00 & 21	tainer Iement iging nt the 1288.00					
09/19 – 03/20	LADOTD Statew contract to perfo based inventory prone details on stress moment of	LADOTD Statewide Ancillary Sign Inventory and Inspection, Louisiana. Assistant Inspector for the current five-year retainer         contract to perform approximately 30% of the 1700 sign truss inspections (routine and interim) throughout Louisiana. Utilized a tablet-         based inventory management system with a custom designed application. Utilized fall protection techniques for inspections of fatigue         prone details on steel and aluminum box trusses members. Non-destructive testing was performed on steel and aluminum welds, high         stress moment connections and anchor rods. Performed QC report reviews in accordance with FHWA guidelines.								
06/18 – 08/18	Battery Park Cir Park. The project was to ensure the uninspected pile	ty Authority, Phase 6 Pile t included underwater insp at completed repairs were s, caps and beams and re	e Remediation, New bection of piles, caps intact and upheld th port back any details	Y York, New York. Inspector-Diver for underwater inspection of B , and beams along with the seawall inspection. The first phase of eir integrity. The second phase of the assignment was to look all that will need to be addressed and repaired.	attery work 9328					



Name       Alison C. Michel, PE, PTOE, PTP, RSP1       Years of relevant experience with this employer       20         Title       President / Transportation Engineer       Years of relevant experience with other employer(s)       3         Degree(s) / Years / Specialization       BS / 1997 / Civil Engineering       3         Active registration number / state / expiration date       30261 / Louisiana / 03/31/2023       4         Year registered       2002       Discipline       Professional Engineer: Civil Engineering	)								
Title       President / Transportation Engineer       Years of relevant experience with other employer(s)       3         Degree(s) / Years / Specialization       BS / 1997 / Civil Engineering       3         Active registration number / state / expiration date       30261 / Louisiana / 03/31/2023       4         Year registered       2002       Discipline       Professional Engineer: Civil Engineering									
Degree(s) / Years / Specialization       BS / 1997 / Civil Engineering         Active registration number / state / expiration date       30261 / Louisiana / 03/31/2023         Year registered       2002       Discipline         Professional Engineer: Civil Engineering									
Active registration number / state / expiration date       30261 / Louisiana / 03/31/2023         Year registered       2002       Discipline         Professional Engineer: Civil Engineering									
Year registered         2002         Discipline         Professional Engineer: Civil Engineering									
Active registration number / state / expiration date 1023 / Louisiana / 11/06/2023	1								
Year registered         2002         Discipline         Professional Traffic Operations Engineer									
Active registration number / state / expiration date 626 / Louisiana / 11/20/2023									
Year registered         2017         Discipline         Professional Transportation Planner									
Active registration number / state / expiration date 115/ Louisiana/ 12/21/2024									
Year registered         2018         Discipline         Road Safety Professional									
Contract role(s) / brief description of responsibilities Traffic Engineering / TMP									
Experience dates Ms. Michel has over 23 years of experience in Traffic Engineering and Transportation Planning. Ms. Michel has extensive	Ms. Michel has over 23 years of experience in Traffic Engineering and Transportation Planning. Ms. Michel has extensive design								
(mm/yy-mm/yy) experience that includes permanent and temporary traffic signals, traffic control devices for work zones, intelligent transpo	experience that includes permanent and temporary traffic signals, traffic control devices for work zones, intelligent transportation								
systems, signage and striping. She has a wide array of experience with transportation studies including traffic impact,	systems, signage and striping. She has a wide array of experience with transportation studies including traffic impact, safety,								
corridor, feasibility/Stage 0, environmental/Stage 1, multi-modal and transit facilities. She has experience in the tim	ing of								
coordinated systems and analyses. She is proficient in microscopic simulation modeling using VISSIM and CORSIM and	also in								
analysis programs such as Highway Capacity Software (HCS), Tru-Traffic and SIDRA. She is familiar with preparing Transpo	rtation								
Management Plans for all levels. Mis. Michel has designed Traffic Control Devices Plans for many different types of pl	ojects								
Including interstates, urban downtown grid systems, small town rural roads and everything in between.									
LPV 16.2 Bonnabel Boulevard Floodgate. Ms. Michel designed the traffic control devices plans for construction of the LP	V								
16.2 Bonnabel Bivd. Floodgate in Jenerson Parisn, LA. Plans included: naul routes, bypass for the ramp tie in to Bonnabel	, ua al								
02/10.07/10 travel lanes. Dian changes due to unforescent conditions included details for floodwall construction diverting Rennabel	na								
02/10-07/10 II avertalles. Plan changes due to uniforeseen conductors included details for hoodwall construction diverting bonnabel	rnc of								
Find the plans met of Army Co	ips ui								
and/or at thirty (30) day intervals	111								
LIS 90 (I-49 South) Albertson's Parkway to Ambassador Caffery Design-Build Project (Lafavette Parish I A) As the	traffic								
engineer. Ms. Michel undated the US 90 to a controlled access facility by converting at-grade intersections to an interchang	латте P								
01/14 - 08/19 The bridge structure bad to span the intersection and a railroad. She supervised the design and analysis and performed O	0. A-OC								
for temporary and permanent signal plans, permanent signage plans, temporary traffic control plans and the transportation									
management plan. Traffic signal plans were prepared using the DOTDs latest TSI format. Analysis included developing des	ian								



	hour volumes for the design year and modeling signals in Synchro. Phasing and timing were developed for both permanent and temporary signal operation.
03/11 – 05/13	Huey P. Long Bridge Widening - (Westbank and Eastbank Approaches and Main Bridge Deck Widening), Jefferson Parish, LA. The contractor for the Huey P. Long Widening in Jefferson Parish, LA brought-on USI about half-way into construction to improve the flow of traffic during required closures. Ms. Michel prepared traffic control devices plans (TCDP) for
	multiple phases of construction. The TCDPs also included the design of a traffic signal plan for the installation of temporary signal heads to control lane shifts.
04/09 – 08/12	<b><u>City of D'Iberville Sangani Boulevard Widening.</u></b> Ms. Michel prepared traffic signal design/modification plans, striping and signage plans, traffic control devices plan for the sequence of construction and prepared a construction cost estimate for the Sangani Boulevard Widening project in D'Iberville, MS. Ms. Michel assisted with coordination between multiple stakeholders which included the city, MDOT and the business owners. Special attention was given to maintain access to businesses during the various phases of construction.
01/17 - 06/19	France Road - North Widening. Over time, France Rd between Gentilly Blvd and Hayne Blvd had deteriorated pavement and was in need of widening and drainage repairs. Adjacent to the west side of the roadway was a concrete floodwall that limited Right Of Way and the ability to maintain two-way traffic throughout construction. Ms. Michel was the Principal In Charge for the project to develop site specific traffic control plans implementing a one-way system and detouring traffic that would normally traverse in the opposite direction of the allowed movement. The plans were designed in accordance with the latest version of the MUTCD and the City of New Orleans traffic control standards.
04/10 - 07/11	Lakefront Airport T-Walls Reach LPV 105.01. Following Hurricane Katrina, USACE let a series of projects to reconstruct the T- walls and to strengthen and raise the levee system adjacent to the Lakefront Airport in Eastern New Orleans. Ms. Michel was the Principal In Charge for the traffic control devices plans to ensure that the contractor could safely work adjacent to motorists while maintaining twenty-four-hour daily access to the Lakefront Airport. The traffic control devices were inspected monthly and the contractor notified of any deficiencies requiring a corrective action.



Firm employed by Urban Systems										
Name Nicole H.	Stewart, PE, PTOE			Years of relevant experience with this employer	15					
Title Vice Presi	dent / Transportation Engine	er		Years of relevant experience with other employer(s)	1.5					
Degree(s) / Years / S	Specialization		BS / 2	S / 2004 / Civil Engineering						
			BS / 2	S / 2004 / Physics						
Active registration nu	imber / state / expiration date	,	34750	4750 / Louisiana / 09/30/2023						
Year registered	2009 E	Discipline	Profes	ssional Engineer: Civil Engineering						
Active registration nu	imber / state / expiration date	;	2923	/ Louisiana / 08/2023						
Year registered	2009 [	Discipline	Profes	ssional Traffic Operations Engineer						
Contract role(s) / brie	ef description of responsibilitie	es	Traffi	c Engineering / TMP						
Experience dates	In addition to the P.E. and	PTOE, Ms. Stewa	art is a	certified Traffic Control Specialist and Traffic Control Technician by ATSS	A. Ms.					
(mm/yy–mm/yy)	Stewart has experience in	Transportation/Tr	raffic E	ngineering including transportation studies, safety studies and the prepara	tion of traffic					
	control devices plans. She	also has experie	nce in	signal design and timing of coordinated systems, traffic impact analysis, m	icroscopic					
	modeling using CORSIM s	oftware, geometr	ic desi	gn, pavement design, and drainage. She has experience using Highway C	apacity					
00/15 0//1/	Software (HCS), Synchro, a	and TS/PP Draft	in the t	timing and coordinating of traffic signals.						
02/15 - 06/16	Bridge Preventative Main	tenance District	t 61 an	d Port Allen. Ms. Stewart was the principal in charge for Traffic Managem	ient Plans					
	(TMP) for bridge replaceme	ent and repairs to	or vario	us locations in Louisiana. The level of each TMP was based on LADUTD I	EDSIVI					
	yulueillies. A Level 3 TiviP	was prepareu iur	une re	construction of the LA T bridge over the initiacoastal waterway. For this the	viP, detalled					
10/17 Current	US 00 Pridao Maintonana	nent strategies w	vere de	eveloped to help minimize the project's impact on mobility.						
	components of the traffic m	anagement plan	(TMD)	for proposed bridge repairs on US 90 from DDC Rd to the L10 entrance r	zy amn in Lako					
	Charles I & Tasks include	the preparation	of collig	sion diagrams, conducting safety analysis, detour analysis and developing	nronosed					
	mitigations where applicable	le		sion diagrams, conducting safety analysis, actour analysis and developing	proposed					
09/11 - 02/12	Williams Boulevard Floor	dgate. Jefferson	Paris	h. LA. The design of Traffic Control Devices Plans and associated haul rou	utes were					
	prepared for the two (2) ph	ased closure of V	Nilliam	s Boulevard at the Lake Pontchartrain Levee Floodgate by Ms. Stewart. Th	ne plans					
	were prepared in accordan	ce with Jefferson	n Parisł	n and MUTCD Standards. Once the plan was implemented MS. Stewart c	onducted					
	inspections.									
10/17 – 05/19	TMP for I-10: West of 108	to I-210 Interch	ange:	Rubblize and Overlay. As the lead engineer for this Traffic Management	Plan, Ms.					
	Stewart was responsible fo	r the preparation	of the	safety analysis. She conducted queue analysis to identify when lane closu	ires would					
	be permitted, identified the	construction imp	act are	ea and reviewed crash data for more than 350 collisions. She conducted th	e safety					
	analysis per the guidelines	set forth by LAD	OTD ir	n Guidelines for Crash Data Analysis. Ms. Stewart identified trends and cal	culated					
	crash rates and determined	d that the section	of I-10	) that was going to be rubblized had a crash rate that was higher than the s	statewide					
	average.									



02/18 – 03/20	Severn Ave: Veterans to W. Esplanade. Ms. Stewart was the traffic engineering project manager of this Jefferson Parish roadway
	reconstruction project. Severn Ave is a heavily travelled multi-lane boulevard requiring complex construction sequencing. Design plans
	were developed for temporary signals during construction and the permanent signal configurations with pedestrian accommodations. Signal
	plans were developed using the latest LADOTD TSI format. Ms. Stewart also managed the temporary traffic control plan development for
	multiple phases of construction, and she performed QA-QC. Another element of this project was coordination with Jefferson Parish and
	LADOTD to obtain approval of the Parish's equipment and specifications for use in the LADOTD bidding process.
10/15 – Current	MacArthur Interchange Completion Phase II TMP. The design team was led by Ms. Stewart for the preliminary traffic signal design
	and the Traffic Management Plan (TMP) for proposed interchange modifications on US 90 (Westbank Expressway). Tasks for this work
	include conducting capacity analysis, safety analysis, detour analysis and developing proposed mitigations where applicable. Ms.
	Stewart was responsible for the QA/QC for this stage of the project. Final design for this project began in September 2019.
06/11-03/12	Southeast Louisiana Urban Flood Control Project Improvements to Two-Mile Canal (Patriot Street Canal),
	Phase I, Barataria Blvd to First Avenue Canal, Jefferson Parish, LA. Ms. Stewart designed the Traffic Control Devices Plans for the
	improvements to the Two Mile Canal. These plans included traffic closure details, signage, flagmen, and haul routes. MS. Stewart
	conducted inspections throughout construction to confirm compliance with the plans that been approved by Jefferson Parish.
05/06 – 11/10	Clearview Parkway at West Esplanade. For the Clearview Parkway and West Esplanade Avenue Intersection Improvement project,
	Ms. Stewart prepared permanent traffic signal plans including locations for controller, mast arms, signal heads, power source, signs and
	vehicle detection and interconnect. She also prepared the Traffic Control Devices and Detour Plans to facilitate traffic through the
	phases of construction.



Firm name	Η	Hardesty & Hanover, LLC				Past Performance Evaluation Discipline(s)* B			Bridge		
Project name	SI Re	SR 75 (US 231) Reconstruction, SR 30A (US 98) to South Pipel Road					h Pipeline	Firm responsibility (prime or sub?)			Sub
Project number	r Owner's name Florida DOT District 3										
Project location		Panama City,	FL			Owner's Project Manager DJ Barber, PE					
Owner's address	s, j	phone, email	1074 High	way 90, Chij	pley, F	L 32428	850.330.146	54   Lonnie.barbe	r@do	t.state.fl.us	
Services commenced by this firm (mm/yy) 04/2017 To					Total	Total consultant contract cost (\$1,000's)				Unknown	
Services completed by this firm (mm/yy) On-going Cost of consultant services provided by this firm (\$1,000's)							\$1,671				

Hardesty & Hanover provided transportation engineering design services for the new single-point urban interchange (SPUI) and a new 840-foot steel bridge. Services included the design of roadway, drainage, and lighting systems, as well as the design of a new 840-foot steel bridge on SR 77, crossing over SR-75/US 231 and the CSX railroad, as part of a new single-point urban interchange (SPUI).

H&H was responsible for preparing a Bridge Development Report (BDR) and played a leading role in all aspects of the structural design of a single three-span continuous bridge (215 ft - 355 ft - 215 ft) with steel plate girders and concrete deck. The intermediate pier columns support integral post-tensioned concrete caps.

Roadway design work included integrated milling and resurfacing project with the addition of vehicular lanes added to the outside of the roadway in each direction. A new baseline of construction and profile along SR 77 was established as well as four ramp baselines and profiles. A Temporary Traffic Control Plan was designed in correspondence with the roadway design to minimize necessary construction phasing.

The drainage design included three ponds: one existing, the expansion and deepening of a second, and the new design and construction of a third pond. Additionally, the supporting drainage structures were designed all along SR 77 to best convey the flow from the project.



#### Scopes of Work Relevant to the contract:

- CONCRETE AND STEEL GIRDER BRIDGE
- ROADWAY AND DRAINAGE DESIGN
- ROADWAY LIGHTING
- TRAFFIC CONTROL PLAN

This SPUI and bridge design project were completed under our prime's District 3's overall capacity multi-lane reconstruction contract which consists of widening SR 75 from four-to six-lanes from SR 30A to South of Pipeline Road.

**Key Members**: Andrew Barthle, PE; Jason Dunn, PE; Dennis Gowins, PE; Robert Hideck, PE; Sayyid Khan, PE; Marco Lara, PE; Tim Noles, PE; John Corven, PE; Roberto Viciedo, PE; and Rafal Wuttrich, PE



Firm name	Hardesty & Hanover, LLC		Past Performance Evaluation Discipline(s)* Bridge				
Project name	Almonaster Avenue Bridge o	ver the Industria	rial Canal Rehabilitation Firm responsibility (prime or			oility (prime or	Prime
	sub?)						
Project number	03828.00-0 Owner's name Port of New Orleans						
Project location	cation New Orleans, LA Owner's Project Manager Anthony Evett,						P.E.
Owner's address	s, phone, email Port of New	v Orleans   504.	528.3309   ai	nthony.evett@	portnola.com		
Services commenced by this firm (mm/yy) 06/18 Tot				Cotal consultant contract cost (\$1,000's)			\$2,500
Services comple	eted by this firm (mm/yy)	ost of consult	ant services p	rovided by this f	firm (\$1,000's)	\$2,162	

Hardesty & Hanover (H&H) is performing bridge assessment and engineering design services for complete rehabilitation of the bridge and roadway for Almonaster Avenue Bridge, a Strauss Trunnion Bascule Bridge crossing the Inner Harbor Navigation Canal, for the Port of New Orleans. Eligible for the National Register of Historic Places, the Almonaster Bridge provides two vehicular lanes, one lane on the exterior of each of the trusses. The bridge also provides two E-60 railroad track crossings between the trusses. In 2005 Hurricane Katrina's notorious devastation damaged the roadways leaving them closed to vehicular traffic to this day.

H&H's 2019 assessment of the circa-1920 bascule 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 and repairs were deemed necessary to accommodate the rehabilitated superstructure.

#### Scope of Work Relevant to the Contract:

- REHABILITATION OF A HISTORICAL BRIDGE
- STRUCTURAL STEEL AND CONCRETE REPAIRS AND/OR REPLACEMENT
- FULL CONTAINMENT CLEANING AND PAINTING ALL METALWORK
- BEARINGS RESETTING, REPAIRS AND/OR REPLACEMENT
- REPLACEMENT OF ROADWAY SUPERSTRUCTURE
- INSTALLATION OF NEW NAVIGATION VERTICAL CLEARANCE GAUGES, NAVIGATION LIGHTS AND INSPECTION CABLES
- GEOTECHNICAL, ENVIRONMENTAL, AND SURVEY SERVICES
- LOAD RATING
- AGENCY COORDINATION WITH LADOTD, USCG, CITY OF NOLA, AND CSX
- CONSTRUCTION SUPPORT SERVICES

H&H is developing the necessary bridge design plans and contract specifications, and construction support services during construction. Major structural work includes replacement of the main trunnions and vehicular roadway, complete cleaning and painting of the existing bridge with an innovative movable paint containment system due to the proximity to the waterway, and complete replacement of the bearings. The project also includes addition of a new connector road.

#### Key Members:

Andrew Barthle, PE; Drew Delle Donne, RA; Erik Diaz, PE; Robert Hidecki, PE; Opio Hunter, PE; Sayyid Khan, PE; Linh Thien Kim, EI; Travis Kimmins, PE; Marco Lara, PE; Don Marinelli, PE; Steve Mikucki, PE; Babak Naghavi, PE; Alec Noble, PE; Tim Noles, PE; Ken Pecquet; Amy Robards, PE; Vilius Ruseckas, EI; Amy Robards, PE; Fred Wetekamm, PE; and Jim Phillips, PE



Firm name	Hardesty & Hanover, LLC					Past Performance Evaluation Discipline(s)*Bridge			Bridge			
Project name	Fl	agler Memoria	ler Memorial Bridge				Firm responsibility (prime or sub?)			prime or		Prime
Project number		Owner's nar				Florida	DOT, Distric	t 4				
Project location	Palm Beach, FL						Owner's Project Manager James Hughes			es Hughes,	PE	
Owner's address, phone, email       3400 West Commercial Boulevard, Fort Lauderdale, FL 33309   954.777.4419   james.hughes@dot.state.fl.us												
Services commenced by this firm (mm/yy) 01/11 To					Total	Total consultant contract cost (\$1,000's)				\$9,0	000	
Services comple	ete	d by this firm	(mm/yy)	10/17	Cost	Cost of consultant services provided by this firm (\$1,000's)			\$5,5	500		

Hardesty & Hanover is the bridge designer and engineer of record for this Flagler Memorial Bridge design/build project which requires the replacement of the entire bridge off line and parallel to the existing bridge so that traffic along this busy causeway to Palm Beach would be maintained.

The new design provides a rolling-lift span over the widened 125-foot channel and prestressed concrete approach spans of 150 feet, 8-foot ADA sidewalks, a 7-foot buffered bike lane, and ADA access to Lake Trail beneath bridge on Palm Beach side.

The bridge superstructure has haunched girders to provide a continuous arch look. The lift span roadway deck utilized an Exodermic concrete deck to minimize the dead load of the structure on the existing pivot pier. The operation of the lift span is a rack and pinion drive with variable frequency drive motor control and relay logic.

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#### BRIDGE REPLACEMENT

**Scope of Work Relevant to the Contract:** 

- MOVABLE BRIDGE STRUCTURAL, MECHANICAL, AND ELECTRICAL EXPERIENCE
- ROADWAY AND DRAINAGE DESIGN
- LOAD RATING
- ADA SIDEWALK AND BIKE LANE
- TRAFFIC MANAGEMENT PLAN
- ROADWAY LIGHTING
- CONSTRUCTION SUPPORT SERVICES

appearance. The requested proposal scope had strict design requirements in regard to environmental mitigation, appearance and maintainability.

**Key Members**: Andrew Barthle, PE; Jason Biddle, PE; Sayyid Khan, PE; Steve Mikucki, PE; Alec Noble, PE; Tim Noles, PE; James Phillips, PE; Roberto Vicedo, PE; and Rafal Wuttrich, PE



Firm name	Η	Hardesty & Hanover, LLC				Past Performance Evaluation Discipline(s)* Bridge			Bridge & H	Road	l	
Project name	S	R A1A North Causeway Bridge over ICWW					Firm responsibility (prime or sub?)			Prime		
Project number			Owner's name Florida DOT									
Project location	1	St. Lucie Cou	St. Lucie County, FL Owner's Project Mar					oject Manager	Don	ovan Pessoa		
Owner's address, phone, email       3400 West Commercial Blvd., Ft. Lauderdale, FL   phone: 941.777.4442   donovan.pessoa@dot.state.fl.us												
Services commenced by this firm (mm/yy) 01/16 Tota					Total c	Total consultant contract cost (\$1,000's)				\$4,9	05	
Services completed by this firm (mm/yy) 10/21 Cost					Cost of	ost of consultant services provided by this firm (\$1,000's)			,000's)	\$2,9	70	

H&H is provided comprehensive engineering planning and design services for the replacement of SR A1A North Causeway Bridge, which carries SR A1A and the East Coast Greenway over the ICWW, FEC RR, and Old Dixie Highway. This project required the design of a new high-level fixed bridge and associated approaches, a new observation deck bridge emerging beneath SR A1A from the west shoreline, as well as the design of new roadway alignments and additional civil design services to address adjacent state, frontage and access roads and railway crossings located within the project's tight footprint.

Challenges met by the H&H team included extensive utility/railroad/marine coordination, significant right-of-way coordination required by FEC and adjacent business owners, and permitting coordination. Other scopes of services included geotechnical engineering,



#### Scopes of Work Relevant to the contract:

- FIXED BRIDGE DESIGN
- ROADWAY DESIGN
- HYDRAULICS AND DRAINAGE DESIGN
- GEOTECHNICAL DESIGN
- ROADWAY LIGHTING AND SIGNALIZATION
- RIGHT-OF-WAY AND UTILITY COORDINATION
- TRAFFIC CONTROL PLAN
- PUBLIC INVOLVEMENT

drainage, lighting, signalization, signage, pavement marking, public involvement, maintenance, control and protection of vehicular and marine traffic.

The new fixed bridge is 65-foot-wide and consists of FIB-84 beams spanning 158 feet in simple spans and 184 feet in continuous spans. The new observation deck structure is CFRP prestressed slabs, bent caps and piles.

**Key Members**: Paul Skelton, PE; Tim Noles, PE; Robert Viciedo, PE; Robert Hideck, PE; Ray Mankbadi, PE; Andrew Barthle, PE; Webb Jones, PE; and Jim Phillips, PE



Firm name	Hardesty & Hanover, LLC				Past	Past Performance Evaluation Discipline(s)*Bridge				
Project name	SR-605 and SR 609 Bascule Bridges - Rehabilitation Desig				tion Design	18	Firm responsibility (	Prime		
		sub?)								
Project number	n/a Owner's name				ame	Mississi	ppi DOT			
Project location	Ocean Springs, MS					Owner'	s Project Manager	Richard	Withers, PE	
Owner's address	, pl	hone, email	401 Not	th West Stre	eet, Jackson	n, MS 3921	15   601.3	359.7200   rwithers@m	ndot.ms.go	V
Services commenced by this firm (mm/yy) 03/18 Tota					Total con	Total consultant contract cost (\$1,000's)				\$3,100
Services completed by this firm (mm/yy) Ongoing Cost of consulta						onsultant s	ervices pr	ovided by this firm (\$1	1,000's)	\$3,000

Hardesty & Hanover (H&H) conducted bridge inspections and developed the bridge rehabilitation design plans and specifications for the rehabilitation of the SR 609 and SR 605 bridges under our Mississppi DOT Master Bridge Contract. Rehabilitation plans included structural, mechanical, and electrical bridge components, roadway approaches, improvements to the operator house including HVAC; development of maintenance and repair plans; and preparation of traffic control plans. Other scope items included construction support services during construction, project submittals review, and managing RFIs.



#### Scope of Work Relevant to the Contract:

- STRUCTURAL STEEL AND CONCRETE REPAIRS AND/OR REPLACEMENT
- REHAB OF MECHANICAL AND ELECTRICAL SYSTEMS
- FULL CONTAINMENT CLEANING AND PAINTING ALL METALWORK
- DECK JOINTS AND SEALS REPAIRS AND/OR REPLACEMENT
- BEARINGS RESETTING, REPAIRS AND/OR REPLACEMENT
- APPROACH SLABS REPAIRS AND/OR REPLACEMENT
- INSTALLATION OF NEW NAVIGATION LIGHTS, VERTICAL CLEARANCE GAUGES, AND CONDUITS
- REPLACEMENT OF MISSING REFLECTIVE PAVEMENT MARKERS
- GUARDRAIL REPAIRS AND/OR REPLACEMENT
- MAINTENANCE OF TRAFFIC
- OPERATOR HOUSE AND HVAC IMPROVEMENTS
- LOAD RATING

Major structural work included removal of the existing paint system (lead abatement) and repainting all structural steel, replacing the existing grid deck, structural strengthening of the bascule leaves, replacing all high



strength connection bolts exhibiting corrosion with mechanically-galvanized high strength bolts (A325), repairing cracks in structural steel, and repairing deck joints.

Major mechanical work included removing and replacing machinery with AASHTO compliant machinery, polishing and re-machining trunnion journals, realigning trunnion bearing, and replacing span locks.

Major electrical work included replacing the emergency generator, motor

control center, motor drives, span motors, and brakes. Also, replacing all conduits and wiring, submarine cable and cabinets, and bascule pier navigation lighting.

**Key Members:** Andrew Barthle, PE; Kevin Ciampi, PE; Erik Diaz, PE; Sayyid Khan, PE; Linh Kim; Travis Kimmins, PE; Raymond Mankbadi, PE; Donald Marinelli, PE; Steve Mikucki, PE; Babak Naghavi, PE; Alec Noble, PE; Tim Noles, PE; Kenneth Pecquet; James Phillips, PE; Amy Robards, PE; Christopher Svara, PE; Rob Vicedo, PE; and Fred Wetekamm, PE


Firm name	A P S Engine	eering and T	esting, LLC			Past F Disci	Performance Evaluation pline(s)*	GEOTECH
Project name	I-10 Widenir	ng LA 415 to	Essen LN			Firm sub?)	responsibility (prime or	Sub
Project number	H.004100		Owner's nam	e LADOT	D			
Project location	Baton Rouge	•			Owner's Project Manag	er	Kristy Smith, P.E.	
Owner's address, p	ohone, email	1201Capito	ol Access Rd.,	Baton Roug	e, LA 70802  443.825.379	9 X101	6   Kristy.Smith2@la.gov	
Services commence	ed by this firm	(mm/yy)	ultant contract cost (\$1,00	0's)		N/A		
Services completed	d by this firm (	(mm/yy)	nsultant services provided	by this	firm (\$1,000's)	\$400		

Geotechnical investigation to provide client with the necessary information for planning and design I-10 widening. APS was tasked through 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. Along with this drilling and sampling, APS will also test for strength and engineering characteristics of the soils. A total of eight over the water borings and 44 land borings with approximate 1000 triaxial compression, unconsolidated drained or undrained (UU) and Atterberg limits.

#### Key Members:

Sergio Aviles, PE; Sai Eddanapudi, PE; Surendra Raj Pathak, PE; Melvin Vasquez, Van George; Eric Bateaste

#### **Scopes of Work Relevant to the contract:**

- GEOTECHNICAL EXPLORATIONS
- GEOTECHNICAL DESIGN
- GEOTECHNICAL CONSTRUCTION
- TOPOGRAPHIC SURVEY
- CMAR
- CONTRACT MANAGEMENT







Firm name	A P S Engineering and Te	esting, LLC		Past Performance Evaluation Discipline(s)*	GEOTECH
Project name	Comite River Diversion E	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 Parish		Owner's Project Manag	er Thomas M. Gattle, III, F	Р.Е.
Owner's address	, phone, email 922 West	Pont Des Mout	on RoadLafayette, LA 70507   337.2	234.3798   tgattle@huvalassoc.co	m
Services commen	nced by this firm (mm/yy)	05/20	Total consultant contract cost (\$1,00	0's)	N/A
Services complet	ed by this firm (mm/yy)	On-going	Cost of consultant services provided	by this firm (\$1,000's)	\$115k

Geotechnical Engineering to provide the necess information for planning and building of LA 19 RR Bridge slope stability (embankment), LA 19 RR RR Bridge Embankments/MSE Wall settlement/retaining wall, LA 19 twin bridges – PPC Piles, LA 67 Bridge – Drilled Shafts. APS also drilled and sampled all the borings for DOTD through the geotechnical retainer and tested in-house by APA laboratory.

#### Key Members:

Sergio Aviles, PE; Sai Eddanapudi, PE; Surendra Raj Pathak, PE; Donna Easterly; Cindy Falks; Melvin Vasquez; Eric Bateaste; Oscar Johnson; and Trenton Anderson

#### **Scopes of Work Relevant to the contract:**

- GEOTECHNICAL EXPLORATIONS
- GEOTECHNICAL DESIGN
- GEOTECHNICAL CONSTRUCTION
- TOPOGRAPHIC SURVEY
- CMAR
- CONTRACT MANAGEMENT





Firm name	B	ridge Diagnosti	ics, Inc. (BDI	)		Past Perfo	ormance Ev	aluation Discipline	(s)*	Bridge		
Project name	A	dvanced Inspec	ction of City I	Park Lake	Bridge	es		Firm responsibilit	y (pri	ime or sub?	)	Prime
Project number	• ]	H.009730.5 Owner'				Louisia	na Departm	ent of Transportati	on an	d Developr	nent	
Project location	ı	Baton Rouge, Louisiana				Owner's Project Manager Wei Peng						
Owner's address	address, phone, email 1201 Capitol Access R				Road, E	Baton Roug	ge, LA 7080	02   225.379.1486	wei.p	eng@la.gov	/	
Services comm	Services commenced by this firm (mm/yy) 08/19			Total consultant contract cost (\$1,000's)				\$86	5			
Services completed by this firm (mm/yy) 07/20				Cost	of consult	ant services	provided by this fi	rm (\$	51,000's)	\$61	_	

BDI performed a NHI visual inspection of bridges 052690 and 052680 carrying I-10 over City Park Lake, which was supplemented by a comprehensive multi-technology nondestructive evaluation (NDE). 052690 and 052680 are a set of sister bridges that each carry 7 spans of I-10. The superstructure is a continuous steel multi-girder design with pin and hanger details and built-up members. Both the EB and WB structures consists of three built-up continuous girders spaced at 20' with WF diaphragms and ST Lateral Wind Bracing. The substructure of the bridge consists of cast in place reinforced concrete bents on round cast-in-place concrete piles and precast concrete piles. NHI visual inspection encompassed the entirety of the structure, while NDE was focused on the reinforced concrete bridge deck and substructure units. The NDE of the substructure included infrared thermography to locate and quantify square footages of delaminations of the piers and pier caps. The NDE of the bridge deck included Infrared Thermography (IR), High-Resolution Imagery (HRI), Deck Acoustic Response (DAR), and GRP, all at highway speeds, to locate and quantify square footages of shallow delaminations and rebar cover of the bridge deck. The visual inspection was conducted using a 360 camera and remote imaging techniques. Footage was collected of the entirety of the substructure and superstructure and reviewed per NHI procedures for any notable deficiencies or maintenance items. The final deliverables of the NDE and visual inspection included the following:



# Scopes of Work Relevant to the contract:

- LADOTD PROJECT
- INSTRUMENTATION
- NONDESTRUCTIVE TESTING
- Stitched High-Resolution images of the entirety of the bridge decks, with overlaid IR, GPR, DAR, and GPR results
- Total quantities of patching, spalling, and delaminations of the bridge decks
- Findings of the visual inspection with all photos, descriptions, and locations of any notable deficiencies and/or maintenance items.
- Synthesis of the visual inspection and NDE to obtain AASHTO Element Level Condition states quantities for the deck and superstructure, which were then uploaded into the owner's asset management program.

Key Members: Shane Boone; Charlie Young



Firm name	B	ridge Diagnosti	ics, Inc. (BDI	)	]	Past Perfo	rmance Eva	aluation Discipline	(s)*	Bridge		
Project name	Π	DIQ Contract fo	or Complex B	ridge Load	l Rating	g Services		Firm responsibilit	y (pri	me or sub?	)	Sub
	T	ask 5 – Off-Sys	stem Bridge R	latings and	l Evalua	ation State	ewide					
Project number	4	4400010099 Owner'				Louisia	na Departm	ent of Transportation	on an	d Developr	nent	
Project location	l	Various, Louisiana					Owner's H	Project Manager	Wei	Peng		
Owner's addres	ess, phone, email 1201 Capitol Access R				Road, B	aton Roug	ge, LA 7080	02, (225) 379-1486,	, wei.j	peng@la.go	OV	
Services commo	ervices commenced by this firm (mm/yy) 10/21				Total	Fotal consultant contract cost (\$1,000's)				Unk	cnown	
Services completed by this firm (mm/yy) Present				Cost o	ost of consultant services provided by this firm (\$1,000's)			1,000's)	\$45	6		

As part of the scope of Task Order 5 of this contract, BDI performed live-load testing and field-verified load ratings on ten (10) off-system structures. These structures were selected from a list of structures that were determined to require load posting based on load ratings previously performed in this contract and included three (3) reinforced concrete slab bridges and seven (7) metal culverts of various types/configurations. These selected structures are intended to be representative of a larger sample set of similar structures that the results are intended to make broader assumptions about the group of bridges as a whole.



#### Scopes of Work Relevant to the contract:

- LADOTD PROJECT
- ASSESSMENT OF INSTRUMENTATION NEEDS
- INSTRUMENTATION PLAN PREPARATION
- FIELD INSTRUMENTATION INSTALLATION
- DATA ACQUISITION AND COMMUNICATION
- INSTRUMENTATION MAINTENANCE AND PROBLEM RESOLUTION
- LOAD TESTING, DATA ANALYSIS, AND LOAD RATING

Live load tests were performed to aid in evaluating the structures in their current condition. The overall goal of these

tests was to better understand the structure's behavior and in

turn provide field-verified load ratings for each structure. To achieve this goal, the collected structural responses were used to generate a field-verified finite-element model (FEM) of the structure.

This field-verified FEM was then used to compute field-verifed load ratings according to the AASHTO Manual for Bridge Evaluation (MBE) and the LADOTD Bridge Design and Evaluation Manual (BDEM).

Key Members: Brett Commander, Principal Engineer; Brice Carpenter, Lead Analysis/Rating Engineer; Jesse Sipple, QC Engineer/Project Manager



Firm name	С	hustz Surveying,	LLC			Past Perfo	rmance Ev	valuation Discipline	(s)*	Survey		
Project name	L	A 29 Bayou Coc	odrie Bridge S	cour Repa	ir			Firm responsibility	y (prii	ne or sub?)		Prime
Project number		H.014633.5		Owner'	s name	Louisian	a Departme	ent of Transportation a	and D	evelopment		
Project location Ville Platte, LA							Owner's	Project Manager	Eric	Lanier		
Owner's address, phone, email 1201 Capitol Acce				Access R	d., Baton	Rouge, LA	A   225.3	379.1101   eric.la	nier@	la.gov		
Services commenced by this firm (mm/yy) 07/21				07/21	Total consultant contract cost (\$1,000's)					\$75		
Services completed by this firm (mm/yy) 10/21				10/21	Cost of consultant services provided by this firm (\$1,000's)					,000's)	\$75	

Chustz Surveying was tasked to conduct a bridge scour repair survey at Bayou Cocodrie. The survey along Bayou Cocodrie extended 124 feet upstream and 75 feet downstream from the faces of the bridge and extended to 200 feet in each direction along the roadway beyond the limits of the existing bridge. A complete topographic survey including all utilities with depths and all drainage was surveyed as well. Bridge features surveyed included top of roadway deck elevations along centerline and right/left gutterlines, top of barrier rail elevations, and centerline of bridge pier locations.

To accomplish this, Chustz deployed multiple crews to the site to begin the static GPS survey utilizing Trimble GPS/GNSS receivers. The topographic data was collected using RTK and conventional survey methods with total stations.

Chustz also collected aerial LiDAR of the entire project area from our Reigl Ricopter sUAS equipped with a Reigl VUX-1uav laser scanner. The LiDAR data was used to suppliment the topographic data and verify alignments. All data was processed utilizing

Scope of Work Relevant to the Contract: • TOPOGRAPHIC SURVEYS Trimble Business Center where it was adjusted and constrained to the static GPS. The data was then mapped in Microstation InRoads and final deliverables included DGN, DTM, ALG, and ASCII files.

*Members Utilized in this Project Submittal:* James H. Chustz, Jr., PLS; J. Alex Chustz, PLS; Mark Huber, CH.



Firm name	Cl	hustz Surveying,	LLC			Past Perfo	rmance Evalu	uation Discipline(s)*	:	Survey		
Project name	In	npala Burnside T	erminal Surve	у				Firm responsibility	v (prim	e or sub?)		Prime
Project number		16-514 Owner's name Impala Terminals Burnside, LL										
Project location		Ascension Parish, LA Owner						roject Manager	Jona	than Shull		
Owner's address, phone, email5050 HWY 44,				4, Darrow	v, LA	225.289	.5228   jo	onathan.shull@impal	aterm	inals.com		
Services commenced by this firm (mm/yy) 09/16				09/16	Total consultant contract cost (\$1,000's)					\$48		
Services completed by this firm (mm/yy) 0				01/17	Cost of consultant services provided by this firm (\$1,000's)				's)	\$48		

Chustz Surveying was requested to perform high resolution multibeam and LiDAR surveys of the Impala Terminals Burnside facility in Darrow, Louisiana at Mississippi River mile 170. The topographic survey encompassed the entire facility and the hydrographic survey covered from water's edge to approximately 1200 feet into the Mississippi River.

Chustz deployed a two person multibeam hydrographic survey crew with a 28 foot survey vessel equipped with a Reason Seabat 7101 Multibeam Surveying System to the site to collect the required hydrographic data. A four person crew was deployed to the site to establish control utilizing RTK and GPS surveying methods. A two person Aerial LiDAR crew was also deployed conduct the aerial survey with our RIEGL RICOPTER.

The Aerial LiDAR data was processed using RIEGL's RiProcess software while the RTK and Conventional data was processed utilizing Trimble TBC software. The hydrographic data was processed using the latest

#### Scopes of Work Relevant to the Contract:

- HYDROGRAPHIC AND TOPOGRAPHIC SURVEYS
- UNDERWATER IMAGING

version of HYPACK and the data sets were merged and underwent our QC/QA procedures. Final deliverables were then prepared and submittal on time.

*Members Utilized in this Project Submittal:* James H. Chustz, Jr., PLS; J. Alex Chustz, PLS.



Merged LiDAR and Multibeam Data of



Firm name	G	aea Consultant	s, LLC			Past Perfo	rmance Evalu	ation Discipline	(s)*	Environmental		l
Project name	A	lmonaster Aver	nue Bridge	Rehabilitatio	on & N	ew Conne	ctor Road	Firm responsibi sub?)	i <b>lity (</b> ]	prime or		Sub
Project number		20-003 Owner's name Port of New Orleans										
Project location	1	New Orleans, LA Owner's Project Man							Ada	m Gulino		
Owner's addres	Dwner's address, phone, email 1350 Port of New Orlean adam.gulino@portnola.co					ace; New	Orleans, LA 7	20130; 504.528.2	551			
Services comm	vices commenced by this firm (mm/yy) 12/20					Total consultant contract cost (\$1,000's)					unk	nown
Services completed by this firm (mm/yy) Ongoing					Cost	ost of consultant services provided by this firm (\$1,000's)				72.3	3	

The Almonaster Avenue Bridge is a historic rail and vehicular bridge over the Inner Harbor Navigation Canal. Rehabilitation of the bridge requires a Categorical Exclusion and permitting services. Gaea is performing all environmental services required under NEPA for a Categorical Exclusion and obtaining permits from the Louisiana Department of Natural Resources and Department of Environmental Quality, US Army Corps of Engineers, US Coast Guard, and Southeast Louisiana Flood Protection Authority-East.



Key Members: Tonja Marking, Peyton McGaga, Lauren Peytavin

#### **Scopes of Work Relevant to the contract:**

- COASTAL USE PERMIT
- SECTION 10/404 PERMIT
- LEVEE PERMIT
- BRIDGE PERMIT

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NEPA/CATEGORICAL EXCLUSION



Firm name	G	aea Consultant	s, LLC			Past Perfo	rmance Evalu	ation Discipline	(s)*	Environm	ental	l
Project name	0	rpheum Levee	Slope Pave					Firm responsibi sub?)	ility (	prime or		Sub
Project number		21-003 Owner's				Southea	st Louisiana l	Flood Protection	Auth	ority - East		
Project location	L	New Orleans,	LA				Owner's Pro	oject Manager	Don	ald Jerollen	nan,	Jr
Owner's address, phone, email   6920 Franklin Avenue, I     djerolleman@floodautho					, New hority.	Orleans, L .org	A 70122   504	4.286.3118				
Services commenced by this firm (mm/yy) 09/21					Total	otal consultant contract cost (\$1,000's)					unk	nown
Services completed by this firm (mm/yy) Ongoing					Cost	st of consultant services provided by this firm (\$1,000's)			1,000's)	52.6	5	

The Southeast Louisiana Flood Protection Authority East recognized the need for additional levee protection along Orpheum Avenue to eliminate ongoing damage from large vehicles exceeding paved turning radii. Gaea Consultants is providing conceptual and final design drawings, permitting assistance, and drainage impacts analyses. Gaea performed drainage analysis along the length of the project area to understand how the new impervious surfaces would alter drainage conditions and adjusted the pavement design to address additionally

Scopes of Work Relevant to the contract:

- COASTAL USE PERMIT
- SECTION 10/404 PERMIT
- LEVEE PERMIT
- SECTION 408 PERMIT

created stormwater runoff. Gaea has initiated the USACE 408 permit application process, coordinating with USACE and the Levee Authority. We will apply through the Join Permit Application for CUP and



Section 10 permits, and process the application for a levee permit once final design has been accepted by the Levee Authority.

Key Members: Tonja Marking, Peyton McGaga, Lauren Peytavin



PRIME CONSULTANT: HARDESTY & HANOVER

Firm name	KTA-T	'ator, Inc.			-	Past Perfo	rmance Evalu	ation Discipline	(s)*	Bridge	
Project name	SR105	at Haulov	ver Creek (Bri	dge No. '	720063)			Firm responsibi sub?)	ility (j	orime or	Sub
Project number	N/A			Owner'	s name	ame Florida DOT – WSP (Prime Consultant)					
Project location	Duv	Duval County, FL				Owner's Project Manager Ziwei Yang, PE				(WSP)	
Owner's address	s, phone	e, email	5411 Sky Ce	enter Driv	ve, Suite	650, Tam	pa, FL 33607	813-520-4408	8 ziv	vei.yang@v	vsp.com
Services comm	nmenced by this firm (mm/yy) $01/22$				Total c	tal consultant contract cost (\$1,000's)				\$500	
Services completed by this firm (mm/yy) 03/22 0				Cost of	of consultant services provided by this firm (\$1,000's)			\$5			

Bridge No. 720063 carries SR105 over Haulover Creek in Duval County Florida. The bridge was built in 1948 and is 222 feet long with one steel main span at 44 feet. It has 5 rolled girders and concrete diaphragms beneath the roadway.

In 2022, KTA completed a coating condition assessment of this bridge. The purpose of this assessment was to determine the condition of the existing coatings on the structure in order to develop a maintenance painting strategy for the bridge.



A visual assessment of the coated surfaces was conducted to determine the type, extent, and location of coating breakdown and corrosion on the structure. Coating thickness, number of coats, and adhesion were determined using appropriate instrumentation. Samples were removed for further laboratory examination to determine if toxic

metal concentrations were present in the existing coatings and to generically identify the coating type. The results of the field and laboratory testing, a discussion of those results, and photographs were included in a report prepared and submitted to WSP. A discussion of various maintenance painting options was presented along with recommendations and Plan Notes for the maintenance painting on this structure.

#### **Scopes of Work Relevant to the contract:**

- COATING CONDITION ASSESSMENT
- COATING SAMPLE REMOVAL/ANALYSIS
- DEVELOPMENT OF A MAINTENANCE PAINTING STRATEGY AND RECOATING RECOMMENDATIONS

Key Members: Greg Richards, Pedro Sanchez



Firm name	K	TA-Tator, Inc.				Past Perfo	rmance Evalu	ation Discipline(s	5)*	Bridge		
Project name	Ja	ckson Avenue	(Red River) I	.ift Bridg	e			Firm responsibili sub?)	ity (p	orime or		Sub
Project number	4	4400013322, T	01	Owner's	s name	LADOTD (Gresham, Smith Partners – GSP – Prime Cons					onsu	ltant
Project location	ı	Alexandria, L	А				Owner's Pro	ject Manager	John	Weres, GS	SP	
Owner's addres	er's address, phone, email 10000 Perkins Rowe, S john.weres@greshams					iite 280, Baton Rouge, LA 70810   225-960-5480   iith.com						
Services comm	es commenced by this firm (mm/yy) 02/20				Total	otal consultant contract cost (\$1,000's)					\$5,0	000
Services completed by this firm (mm/yy) 05/20					Cost o	st of consultant services provided by this firm (\$1,000's) \$1				\$11		

The Jackson Avenue (Red River) Lift Bridge in Alexandria, Louisiana carries two lanes of traffic over the Red River. The main span is a through truss design with a 300' vertical lift span.

Under Gresham Smith's task order agreement with LADOTD, KTA completed a coating condition assessment of this bridge. The purpose of this assessment was to determine the condition of the existing coatings on the structure in order to develop a maintenance painting strategy for the bridge.

A visual assessment of the coated surfaces was conducted to determine the type, extent, and location of coating breakdown and corrosion on the structure. Coating thickness, number of coats, and adhesion were determined using appropriate instrumentation. Samples were removed for further laboratory examination to determine if toxic metal concentrations were present in the existing coatings and to generically identify the coating type. The results of the field and laboratory testing, a discussion of those results, and photographs were included in a report prepared



and submitted to Gresham Smith. A discussion of various maintenance painting options was presented along with recommendations for the maintenance painting on this structure.

Key Member: Robert S. Lanterman

**Scopes of Work Relevant to the contract:** 

- COATING CONDITION ASSESSMENT
- COATING SAMPLE REMOVAL/ANALYSIS
- DEVELOPMENT OF A MAINTENANCE PAINTING STRATEGY AND RECOATING
  - RECOMMENDATIONS





Firm name	Μ	loffatt & Nichol				Past Perfor	mance Evaluat	ion Discipline(s)*		Bridge		
Project name	IL	DIQ for In-Depth	Inspection of	f Complex B	ridges,	Statewide,	Louisiana.	Firm responsibil	ity (pr	ime or sub?)	)	Sub
Project number	4400009104 Owner's name Louisiana Department of Trans					of Transportation	and De	evelopment				
Project location		Louisiana Owner's Project Manager Stephanie Doolittle, PE					Έ					
Owner's address	, pł	none, email	1212 East H	ighway Driv	ve, Bato	on Rouge, L	ouisiana 70802	2   225.379.1329	stepha	nie.doolittle	@la.	gov
Services commen	enced by this firm (mm/yy) 03/20 Total consultant contract cost (\$1,000's)					\$5,0	)00					
Services complet	Services completed by this firm (mm/yy) Ongoing Cost of consultant ser					t services prov	ided by this firm (	(\$1,00	0's)	\$600	0	

As part of the current five-year retainer contract, M&N has and is performing the in- depth bridge inspections on complex and movable bridges throughout Louisiana. As a major subconsultant, M&N is performing complete in-depth inspections (fulfilling both routine & fracture critical inspection types). Level III inspections of submerged elements in accordance with the FHWA, BIRM, AASHTO MBE, AASHTO BEIM, and the LADOTD Bridge Inspection Manual (BIM) are being provided as needed. Bridge types include cantilever trusses, cable-stayed bridges, movable swing span bridges, and bascule bridges. Management, communication, and implementation of the QC plan is an instrumental component to this project.



- M&N performed the routine in-depth inspection of the Audubon Bridge, specifically to inspect 136 main cables and four 450-ft-high concrete towers. Professional rope access techniques were used to safely access each cable within arm's reach. Element quantities were recalculated, and additional defects were added with repair recommendations, but no serious deficiencies or critical findings were present.
- M&N performed the in-depth, routine, and fracture critical NBIS inspection of the Horace Wilkinson Bridge, specifically to inspect the main truss spans above the guardrail. Professional rope access techniques were used to safely access each non-redundant steel tension member. Element quantities were recalculated, and additional defects were added, but no serious deficiencies or critical findings were present. This is the first inspection to be completed without requiring lane closure; its success will afford consultant use for all biennial inspections.
- M&N performed the in-depth, routine, and fracture critical inspections of the Greater New Orleans Bridges and the Green Bridge, specifically to inspect the main truss spans. Professional rope access techniques were used to safely access each non-redundant steel tension member. Element quantities were updated, and additional defects were added with repair recommendations.
- M&N performed the in-depth and routine inspection of the Luling Bridge, specifically to inspect all bladders at the upper Gensui Dampers and at the lower friction dampers at 72 cables. Professional rope access techniques were used to safely access each cable within arm's reach.

Firm members involved: Chace Hulon, PE; Steven Armstrong, PE; Jeffrey Gazarek; Joshua Martinez, PE



Firm name	Μ	loffatt & Nichol			]	Past Perfor	mance Evaluat	ion Discipline(s)*		Bridge		
Project name	20	)17 Retainer Cor	ntract for Und	erwater Brid	lge Insp	ections, Sta	atewide	Firm responsibili	ity (pr	ime or sub?)		Prime
Project number		4400009104		Owner's	name	Louisian	a Department	of Transportation	and D	evelopment		
Project location	Louisiana Owner's Project Manager Haylye Br						ye Brown, P	Е				
Owner's address	, pł	none, email	1212 East H	ighway Driv	ve, Bato	n Rouge, L	ouisiana 70802	2   225.379.1500	hayly	e.brown@la.	gov	
Services commen	ommenced by this firm (mm/yy) 06/17				Total o	Total consultant contract cost (\$1,000's)				\$1,3	346	
Services completed by this firm (mm/yy) 12/21				Cost o	of consultar	t services prov	vided by this firm (	(\$1,00	0's)	\$98	0	

In June 2017, Moffatt & Nichol (M&N) began a four-year statewide retainer contract with LADOTD to provide Levels I, II, and III NBIS underwater bridge inspections throughout Louisiana. All inspections were completed in accordance with current FHWA, CFR, AASHTO, and LADOTD standards and guidelines. M&N has performed over 215 underwater bridge inspections under this contract and over 900 inspections total. For each inspection, M&N provided a detailed inspection report within 30 days and entered inspection data into LADOTD's asset management tool (AssetWise). As part of M&N's quality control process, each inspection report was reviewed a minimum of three times, with subsequent reviews performed by team members with increasing levels of experience/ qualifications.



Of particular note, Moffatt & Nichol was tasked with the development of the first comprehensive Bridge Inspection Manual (BIM) for LADOTD Bridge Program. Chace Hulon, PE, was Chief Editor. The BIM is designed as a

single, centralized reference manual and aligns the goals of the Bridge Inspection Office Headquarters with all nine DOTD districts. It also allows for better communication and quality management between the DOTD project managers, their local bridge owners, and their consultants.

The BIM was designed to be used electronically on tablets as a reference file accessible to all DOTD bridge inspection team leaders. It includes nine chapters intuitively ordered in a systemic fashion with hyperlinks throughout for quick referencing to vital documents. It also allows for documented annual revisions or critical updates following federal policy changes.

Moffatt & Nichol compiled all DOTD reference material, outlined the BIM, held routine (weekly) progress meetings with DOTD PM, FHWA representative, & subject matter experts on the committee, provided statewide programmatic guidance with a national perspective, verified compliance with FHWA's 23 National Bridge Inspection Program Metrics, & presented BIM at a DOTD statewide conference.

Firm members involved: Chace Hulon, PE; Steven Armstrong, PE; Joshua Martinez, PE; Jeffrey Gazarek

Firm name	Μ	loffatt & Nichol				Past Perfor	mance Evaluat	ion Discipline(s)*		Bridge		
Project name	R	etainer Contract	for Underwat	er Bridge In	spection	ns, Statewic	le	Firm responsibil	ity (pr	ime or sub?)		Prime
Project number		4400003533		Owner's	name	Louisian	a Department	of Transportation	and D	evelopment		
Project location		Louisiana					Owner's Proj	ect Manager	Hayl	ye Brown, H	Έ	
Owner's address	, pł	none, email	1212 East H	ighway Driv	ve, Bato	on Rouge, L	ouisiana 70802	2   225.379.1500	hayly	e.brown@la	.gov	
Services comme	nce	d by this firm (m	nm/yy)	03/14	Total	consultant	contract cost (\$	61,000's)			\$3,2	243
Services complet	ted	by this firm (n	nm/yy)	12/17	Cost o	of consultar	nt services prov	vided by this firm (	(\$1,00	0's)	\$2,8	322

As part of the previous five-year retainer contract, Moffatt & Nichol has performed 10 task orders related to underwater bridge inspections throughout Louisiana. Teams of ADCI-certified engineer- divers provided Level I, II, & III underwater inspections in accordance with the National Bridge Inspection Standards and LADOTD PONTIS Inspection Manual. 687 bridges were inspected statewide. Bridge types inspected consisted of movable swing span bridges, bascule bridges, truss bridges, timber stringer bridges, cable-stayed bridges, single and multi-span girder bridges up to 8 miles in length, constructed of concrete, steel and timber materials. Site conditions included salt, brackish, and freshwater and riverine conditions with varying levels of current having low to no visibility.

Underwater Acoustic Imaging (UAI) was performed in response to emergency investigations following major flood events to inspect scour around the substructure units.

Report submittals included a description of each structure and elements inspected and existing conditions, shoreline conditions, presence of debris in the waterway, with NBIS ratings for Item 60 - Substructure and Item 61 – Channel condition, element level condition states for all elements inspected, and recommendations for repair and maintenance. Three Quality Control reviews were performed for each bridge report by the inspection team and Quality Assurance reviews were performed on 5% of the reports by an independent NBIS team leader.

Firm members involved: Chace Hulon, PE; Steven Armstrong, EI; Josh Martinez, PE; Jeffrey Gazarek



Firm name	U	rban Systems				Past Perfor	mance Evalua	ation Discipline(s)*		Traffic		
Project name	B	ridge Preventativ	ve Maintenance	e Port Alle	en Bridge	e		Firm responsibility	y (prin	ne or sub?)		Sub
Project number		H.001234.4		Owner's	name	LADOT	D					
Project location		Port Allen, LA					Owner's Pro	oject Manager	Bria	n Delatte		
Owner's address	, pł	hone, email	1201 Capitol	Access R	oad, Bat	on Rouge, I	LA 70804, (22	25) 379.1823, Brian	.Dela	tte@LA.GO	V	
Services commen	nce	d by this firm (m	nm/yy)	11/12	Total c	onsultant co	ontract cost (\$	\$1,000's)			Unk	known
Services complet	ted	by this firm (m	nm/yy)	06/16	Cost of	consultant	services prov	vided by this firm (\$	51,000	's)	\$62.	.6

The objective was to conduct a Level 3 Transportation Management Plan (TMP) based on LADOTD EDSM VI.1.1.8 for reconstruction of two (2) bridge structures over the Intracoastal Waterway (ICWW) in Port Allen, Louisiana. A TMP was critical for this location as the LA 1 bridges serves as the major crossing of the ICWW and serves up to 45,000 vehicles per day. An important aspect of this project was how to minimize construction impacts on an already congested roadway section. Peak intersection turning movements and seven-day hourly volume counts with classification were collected within the study area. Peak intersection capacity analysis was conducted using Synchro software to determine the impact the different phases on construction would have on the subject intersections. A unique part of the capacity analysis was to analyze a non-typical stop-controlled intersection with different gap acceptance values to match field conditions.

A safety analysis was conducted based on the LADOTD's *Guidelines for Crash Data Analysis, June 2014*. Crash rates were calculated for each location and compared to LADOTD's statewide averages and to LADOTD's High Potential for Safety Improvements (formerly the Abnormally High Crash) List. Charts were developed at each location based on collisions by type, injury severity, time and pavement conditions.

An important strategy to minimize work zone impacts was an evacuation plan as LA 1 is a critical artery during a hurricane evacuation.

A list of potential stakeholders was developed for a future stakeholder's meeting. The list was crucial for this project as many port related and industrial business are located in the project area and should be informed about the project.

Members Utilized in this Project Submittal: A. Michel, A. Cooper, N. Stewart





Firm name	U	rban Systems				Past Perfor	mance Evaluat	ion Discipline(s)*	:	Traffic		
Project name	T	MP for I-10 Wes	at of LA 108 an	d I-210 In	nterchang	ge		Firm responsibil	ity (pr	rime or sub?)	)	Sub
Project number		H.009620.5-1		Owner's	name	LADOT	D					
Project location		Calcasieu Paris	sh, LA				Owner's Proj	ect Manager	Hadi	i Shirazi		
Owner's address	, pł	none, email	1201 Capitol	Access R	oad, Bato	on Rouge, l	LA 70804, (225	5)379.1929, Hadi.	Shiraz	ai@la.gov		
Services commen	nce	d by this firm (m	nm/yy)	05/18	Total co	onsultant c	ontract cost (\$1	,000's)			Unk	cnown
Services complet	ted	by this firm (n	nm/yy)	04/19	Cost of	consultant	services provid	ded by this firm (\$	\$1,000	's)	\$70	

The objective of this project was to assist with conducting a Level 4 Transportation Management Plan (TMP) based on LADOTD EDSM VI.1.1.8 for rubblize and overlay work on US 90 over I-10 in Calcasieu Parish, Louisiana. The objective of the TMP was to identify the challenges and to address strategies to minimize the traffic delays associated with the lane closures, demand volumes and incidents within the construction limits and primary detour roadways on I-10 and I-210 within the Lake Charles Metropolitan Area. This project also updated a TMP performed for the I-210 Prien Lake Bridge Re-Decking and Safety Improvement Project (H.010916.5) dated January 2016.



Traffic data was reviewed within the study area and a field visit was conducted to verify information on roadway geometrics and traffic conditions. A traffic data was report was developed and submitted for inclusion in the TMP document.

A safety analysis was conducted based on LADOTD guidelines. Crash rates were calculated for each location and compared to LADOTD's statewide averages and to LADOTD's High Potential for Safety Improvements (formerly the Abnormally High Crash) List. Charts were developed at each location and compared to statewide averages based on various categories. Crash diagrams were also developed to document the number, location and type of crashes. Each crash report was reviewed for accuracy.

An alternative route analysis was conducted for an assessment of the proposed detour routes. The analysis also included a safety and mobility plan to gather and address concerns for the detour routes.

Members Utilized in this Project Submittal: N. Stewart , A. Coooper, C. Darrah



#### **18. Approach and Methodology:**

Project Management: This contract involves providing bridge engineering services for various fixed concrete or steel girder bridges, and movable bridges. Bridge project types may include, but are not limited to, new bridges, bridge replacements, bridge rehabilitation, bridge preventive maintenance and repair, and roadway lighting. Bridge engineering services include, but are not limited to, structural, mechanical, electrical, and architectural feasibility, design, and plan development including the following:

- Inspection and evaluation of existing fixed and movable bridges or other structures (sign trusses, fender systems, etc.) and preparation of the report.
- As-designed, as-built, and condition bridge ratings.
- Design peer review of developed plans or conceptual designs to verify concept constructability, and accuracy of designs along with associated reports, conclusions, calculations, and recommendations as needed.
- Construction engineering support including construction drawing review, shop drawing review, request for information support, contractor proposals, etc.

H&H will implement a proven approach to address the multidisciplined aspect and challenges of movable bridge projects. Our PM will be supported by highly qualified staff of engineers experienced in fixed and movable bridge inspection and design. Each bridge

project will be assigned a Project Engineer (designated for that bridge) and a team of Discipline Leads experienced in fixed concrete or steel girder bridges or movable bridge structural, mechanical, electrical, and architectural design. Each team will be supported by project Technical Advisors and a team of QA/QC Leads. This senior group will work with the PM to assign production and QC staff experienced with the specific bridge type and anticipated corrective action. Assigning dedicated project staff with the relevant expertise and experience to each bridge project is effective in ensuring each bridge receives the focus needed to achieve project success. Our movable bridge staff experience is derived from delivering more than 30 new movable bridge projects and more than 100 rehabilitative movable bridge projects in the past 10 years. H&H has the largest movable bridge staff in the U.S, including a full staff of structural, mechanical, and electrical engineers located in our New Orleans Office.

As the first order of business, our PM will prepare a Project Management Plan (PMP), including project schedule and QA/QC Plan (refer to our QMP included in this submittal) addressing work through delivery for each task. The PMP will be updated following agreement on the scope of work and prior to initiating the design phase. An example of a typical bridge rehabilitation schedule is shown below:

						Ту	pic	al N	νlo	vab	ole	Bri	dg	e Ro	eha	abi	lita	atic	on S	Sch	edı	ıle															
Task	Duration																	ſ	Ио	nths	5																
Task	(Wks)		1	2	3	4	4	5	5	6		7		8		9		1	0	11	L	12		13		14	1	.5	1	6	17	,	18	1	19	20	
1. Document Review	4																																				
2. LRFR Load Rating	8																																				
3. NBIS Inspection/Report*	8																																				
4. Scope of Work Proposal	2																																				
5. Scope of Work Meeting	2																																		$\square$		
6. Design, Documentation	44																																		$\square$		
7. Permitting*	30																																		$\square$		
8. SHPO Coordination*	10																																		$\square$		
9. Pre-Bid	12																																				
Decument Deview (Dro. In	anastian I	l ati		110	 	work		ЬD	ΛTI	D to	0.01	lloot		the	ot n	0.011	imr	200t	the		200	of w	orle	Ma	will	ma	at un	ith I		- D -	toff t	o d	otorn	aina	rocil	liono	

available information on the bridges. The information will be reviewed and summarized for inclusion in the assessments. Desktop surveys and/or coordination with agencies such as the USCG, USACE, utility owners, emergency services, and other identified stakeholders, will be performed to determine the site or operational constraints that may affect rehabilitation scope or cost. The Project Engineer and Discipline Leads will prepare an NBIS in-depth inspection plan with a focus on safety and identification of conditions

Document Review (Pre-Inspection Activities) H&H will work with DOTD to collect all | that may impact the scope of work. We will meet with DOTD staff to determine resiliency goals related to hurricane/flood and vessel impacts, such as criteria for design event, flood elevations, and design vessel(s). This approach will enable effective evaluation while in the field. We will coordinate with DOTD to obtain the operation and maintenance manuals from each bridge. This information will be used to assess the current movable bridge equipment and to determine areas to focus on and verify during the inspections.



Load Rating H&H will perform LRFR load ratings, as amended by DOTD BDEM. We will perform the initial load rating prior to inspection to assess strengthening needs and allow a field review of those needs during the inspection. Our team has current experience with AASHTOWare Bridge Rating (BrR), and Bridge Design (BrD) and we have applied our load rating expertise to more than 2000 bridges in 10 years. For more complex bridges, we will develop 3D models using CONSPAN, MIDAS, CSI Bridge, and other software as required to accurately determine load rating. To avoid load posting, refined analyses will be performed as needed and we will update load ratings following inspection if required due to newly identified conditions.

**NBIS In-Depth Bridge Inspections Fixed Bridges:** H&H qualified inspectors with FHWA training will perform the required NBIS inspections. Our team's extensive experience and certifications in bridge inspections will be used to determine the root cause of deficiencies which will lead to the development of effective repair details. Existing conditions often vary from as-built plans - detailed field reviews are an H&H standard protocol. As needed, we will utilize 3D laser scanning to determine conditions and confirm fit-up of proposed modifications. The team will typically consist of a certified TL and Inspectors. Occasionally, the inspection team may be supplemented with an additional TL and/or Inspector due to time constraints for inspection access or to expedite the inspection whereby the additional team member will assist with field notes, concrete sounding, or areas requiring thorough hands-on inspection. Scheduling multiple teams within a lane closure will minimize the number of closures required for inspection and reduce the inconvenience to the traveling public. QC Engineer will be on-site periodically to provide additional direction to teams and answer questions about inspection procedures, documentation, and other logistics issues that may arise.

The H&H team will meet on-site with District Bridge Maintenance personnel at the beginning and at the end of the fieldwork. Our engineers will interview maintenance personnel to gather operational history and recent bridge maintenance issues. These meetings will supplement the "snapshot" of conditions evident in an inspection and provide an awareness of ongoing or intermittent bridge issues. Our engineers will inspect the bridge systems with extra attention on those issues noted from the interviews and on typical failures that fall outside applicable AASHTO, DOTD, and FHWA inspection and evaluation manuals. Follow-up meetings will take place and provide an opportunity to review critical issues and discuss root causes and potential solutions to notable conditions. Inspections and documentation will comply with DOTD requirements. Inspection methods will include traditional hands-on inspection or drone inspection of structures followed by hands-on inspection where appropriate. Climbing will be performed by SPRAT-certified inspectors when applicable. Key systems and bridge elements will be reviewed for vulnerabilities to hurricane/flood damage and vessel impact. Inspection will follow fall protection and confined space access safety precautions. Our Field notes will be explicit and unambiguous as to the condition of the

elements and include quantitative measurements of deficiencies (i.e., concrete hollowsounding areas and spall sizes, crack lengths and widths, section losses, etc.). Field sketches will include, at a minimum, bearing conditions; spalls, damp areas, hollowsounding areas; cracks on structural concrete decks and substructures; visible deformation damage on structural elements; deficiencies due to deterioration; and other deficient conditions affecting the structural integrity of the bridge. For steel bridges with any areas of severe corrosion, the extent of the section loss may be hidden beneath layers of exfoliation or lamellar corrosion. Our inspectors will use a chipping hammer, scraper or screwdriver, and wire brush to remove any exfoliation and expose the remaining bare steel, consistent with the physical inspection. Our subconsultant, Moffat and Nichol, will assist during the inspection of bridges, sign trusses, fenders, and underwater inspections when needed.

**Structural Inspections (Movable Bridges):** Particular attention will be paid to fatigue sensitive details and corrosion susceptible connections on the movable span such as internal open steel grid deck welds and welded connections to the steel framing, welded flange splices in tension zones, bolted or riveted girder splices, stringer copes, live load-bearing stiffeners, concrete/steel interfaces at counterweights, steel railing post connections, and lateral bracing horizontal connection plates. Structural interfaces with machinery, whether steel or concrete, will be examined to determine if there are any signs of relative movement, such as crevice corrosion or failing grout – often an early sign of a developing problem. Structural supports for movable span support systems such as span locks, end wedges, trunnion bearings, center wedges, live load shoes will be a point of emphasis as these are subject to cyclic impact loading. Movable span joints and associated structural supports will be inspected for indications of interference or excessive opening widths.

<u>Bascule bridge</u>: Inspection will include a field assessment of the span balance and support system. This will include a drift test and span motor power readings to confirm the nature of the balance condition as well as an evaluation of seating conditions. Live load bearings and locking mechanisms will be inspected and measured for uniformity of contact under seating and traffic loading conditions. Support conditions will be observed during lock engagement to determine if the contact at live load bearings is affected by lock system alignment. Main girders on trunnion bascules will be examined at the trunnion hubs to determine if there are any signs of misalignment or relative movement between the hub and web. Rolling lift bridges will be examined for abnormal wear of the track and tread assemblies that may indicate misalignment. In addition, the condition and integrity of the tracks, treads, and rolling flanges will be examined for potential crack development and fastener deterioration or failure. Swing bridge: Inspection will include field assessment of the span balance and support system machinery. The operating sequence will be observed to confirm that each component of the system is properly aligned and results in secure positioning of the swing span under all operating conditions.



Interfaces of the pivot girders and balance wheel support girders will be inspected for signs of deformation, corrosion, or misalignment that may hinder proper alignment and load distribution. Lift Bridge: Particular attention to fatigue sensitive details and corrosion susceptible connections on the lift span such as internal open steel grid deck welds and welded connections to the steel framing, welded flange splices in tension zones, bolted or riveted girder splices, stringer copes, live load-bearing stiffeners, concrete/steel interfaces at counterweights, steel railing post connections, and lateral bracing horizontal connection plates. Structural interfaces with machinery, whether steel or concrete, will be examined to determine if there are any signs of relative movements, such as crevice corrosion or failing grout – often an early sign of a developing problem. Lift span joints and associated structural supports will be inspected for indications of interference or excessive opening widths. Lift bridge items of inspection emphasis include:

- Rocker bearing / load shoe assemblies span seating and thermal movement
- Gusset plates corrosion, fasteners
- Span guides & guide rails clearances, wear, binding

**Machinery Systems Inspections (Movable Bridges):** In addition to standard machinery inspection processes outlined in the AASHTO Manual, our movable bridge engineers will inspect the systems bringing the knowledge of items that fall outside the standard manual. Our inspections will include assessing the vulnerability of movable bridges to flood damages with machinery located close to the flood elevation. Our inspectors are also designers allowing focus on improvements that can be made within existing spatial confines to improve durability, performance, and maintainability.

Bascule bridge: Inspection will focus on trunnion assembly condition, machinery alignment, lubricant distribution and corrosion, and critical components that might be susceptible to flooding and water contamination. Deficiencies are often slow to develop, and early detection is key to avoiding a costly repair. Joint seals, water deflectors, or bearing shields will be considered to better protect trunnion bearings. For double-leaf bascule bridges, special attention will be given to center lock machinery during the inspection as center span locks are susceptible to wear due to large vehicular impact loads. Swing bridge: The center and end support machinery (end lifts or wedge arrangement) are sometimes affected by long-term wear at the pivot bearing. Wear at the bearing will lower the swing span elevation and increase loading at the span ends to raise ends flush with the approaches. Swing bridge slewing cylinder systems will be inspected and tested to confirm the span decelerates smoothly in an E-stop or loss of power condition as many common valve configurations produce sudden stops resulting in high loads on the equipment and structure. Cylinder pins, bearings, and connections will be inspected for lubrication, seal condition, wear, and corrosion. Lift Bridge: Special attention to trunnion shaft fatigue cracks. We start with an analysis of the shaft, particularly at the fillet transition area where cracks are most likely to begin. This analysis determines whether the shaft is designed with an infinite life. If it is estimated to have a

finite life, we can estimate the number of cycles to failure. Once the area is thoroughly cleaned, we prefer to use liquid mag-particle type of non-destructive testing (NDT) to identify crack indications. For bridges where it's challenging to obtain and coordinate a partial closure of work, we have also inspected using another type of applicable NDT referred as center bore ultrasonic testing. This method checks for crack indications from the center and does not require cap removal or operation of the span. Wire rope inspection and mating sheave groove condition is another critical item for vertical lift bridges and typically wear and eventually form breaks at the tangent point of the main sheaves. This location is susceptible to crack formation due to wind pressure on the ropes with the bridge seated.

Electrical Systems Inspections (Movable Bridges): The electrical inspections will consist of a visual, aural, and operational testing of the bridge electrical equipment outlined in the DOTD Bridge Inspection and AASHTO Manuals. Particular attention will be given to the condition of existing selsyn transmitters and receiver systems utilized for span position on the control desk, electrical equipment survivability from hurricanes/flooding events, motor loading and insulation condition, and control system interlocks. Bascule bridge: Additional focus will be given to the condition of existing submarine cables. Conductors shall be insulation resistance (megger) tested to ascertain the remaining service life of electrical components and wiring. All limit switches will be inspected. Limit switches at the toe of the bascule spans used to control span locks are susceptible to high vibration and may fail or provide a false indication of the span lock position. Limit switches in the bascule pit make maintenance of this equipment difficult to maintain and susceptible to flooding events. Verifying that these switches are in good condition is critical to preventing collision of the counterweight and bascule pit. Swing bridge: Drag cables will be inspected for any damage to the jacket insulation. If cable jackets are damaged or exposed to flooding, the cables could fail and require replacement. The location and condition of all span position limit switches shall also be inspected. Limit switches, critical for control and indicating span position, are typically located in the center pivot area and susceptible to flood damage. Lift Bridge: Additional emphasis will be given to the condition of aerial or droop cables. Special attention will be provided to these selsyn-based position indication systems because they are critical to the operation and indication of the vertical lift span and skew control of tower drive vertical lift bridges. These selsyn-based skew controllers are critical to maintaining a level span as the bridge operates. Aerial and droop cables are critical in providing power and control to any electrical equipment located on the lift span or opposing tower. To determine the state of these cables, conductors will be insulation resistance (megger) tested to ascertain the remaining service life of electrical components and wiring.

Sampling, Instrumentation, and Non-Destructive Testing (where required) Our subconsultant, BDI, will provide sampling, instrumentation, and NDT services for this contract. These services may include, but are not limited to, collection of samples of



materials from existing structures for evaluation, diagnostic and/or proof testing to determine specific structure response characteristics and/or to determine the causation of observed distresses, including magnetic particle and UT discussed above. Instrumentation will include design of the instrumentation plans, installation, data acquisition, analysis, and evaluation of structure based on the instrumentation plan. Our subconsultant KTA will provide assessment and evaluation of protective coating material samples for determination of compatibility with proposed coatings, analysis for heavy metals, proper procedures for treatment and handling and disposal of waste.

**Scope of Work Proposal and Meeting** A baseline data set documenting current and potential future problems with the bridge systems will be developed along with repair options to mitigate the identified problems. Assessment will include options to improve flood and vessel impact vulnerability. The report will include a written description of each repair with photos of the current condition. Repairs will be designated as high, medium, or low priority. Proposed repairs will consider the cost of the repair/improvement and value-added to the bridge including better maintenance access, improved reliability, easier maintenance, better survivability of systems during storm events, the safety of vehicular traffic, marine traffic, pedestrians, and Department employees, permanence of repair, and marine/vehicular closure time during construction. We will estimate the remaining service life of each repair option. From this exercise, we will develop a preliminary corrective action matrix for short-term (10-15 years) and long-term (e.g., 40 years) repairs with cost estimates and probable impacts to navigation and/or vehicular traffic. Movable repair/rehab issues include:

- Understand the source of problems and fix the root cause vs. "patch" the defect
- Establish rational cost estimates and schedules
- Multi-disciplined approach for interface of structural/mech/electric/architectural work
- Owner preferences for systems and equipment
- Address preservation where required
- Develop and implement strategies to strengthen bridges that require load posting

**Construction Plans and Documents** H&H will follow the DOTD Bridge Design and Evaluation Manual (BDEM) and AASHTO criteria for developing construction plans and documents. Design and construction contract documents will adequately address constructability and phasing of the work. Design peer review of developed plans or conceptual designs will be conducted to verify concept, constructability, and accuracy of designs along with associated reports, conclusions, calculations, and recommendations as needed.

**Environmental and Permitting Services** Our subconsultant GAEA will provide all environmental and permitting services necessary to obtain project permits. Required permits may include, but are not limited to, the following:

• Coastal use permits (CUP) from the LA Department of Natural Resources

- USACE wetland permits (404 and Nationwide) and Section 10 permits
- Water Quality Certification from the LA Department of Environmental Quality
- Scenic Stream permits from the LA Department of Wildlife and Fisheries
- Bridge permits from the US Coast Guard
- Levee permits from various levee boards

**Historic Bridge/Preservation** For bridges that are historic (Preservation Priority, Preservation Candidate or Preservation Non-Priority) work will be performed in accordance with the Secretary of the Interior's Standards for the Treatment of Historic Properties (Secretary's Standards), the Management Plan for Historic Bridges Statewide (Statewide Historic Bridge Plan), and the Programmatic Agreement among the Federal Highway Administration, the Louisiana Department of Transportation and Development, the Advisory Council on Historic Preservation, and the Louisiana State Historic Preservation Officer Regarding Management of Historic Bridges in Louisiana.

**Geotechnical Engineering Services** Our subconsultant APS will provide all field exploration services necessary to perform geotechnical investigations, analysis, and design. H&H also has a Geotechnical Design Group that would be available for geotechnical design when needed. Geotechnical services may include but are not limited to geotechnical field investigations including both shallow and deep soil borings; geotechnical laboratory testing and analysis; preparation of soil boring logs; geotechnical analysis/design based on data obtained; and construction related engineering services.

**Road Design and Traffic Services** Our team will provide all services necessary to perform hydraulic and road design services with the assistance of our subconsultant Urban Systems for traffic investigation, analysis, and design. These services may include but are not limited to preliminary and final roadway design and plan development; hydraulic analysis and design; traffic engineering, traffic control design, and data collection; and development of Transportation Management Plan (TMP).

**Surveying and Title Work Services** Our subconsultant Chustz will provide all surveying and title work services necessary to perform topographic, and boundary surveying, develop right-of-way maps, and provide other existing site data. These services may include, but are not limited to, the following:

- Topographic surveying, 3D laser scanning, and underwater acoustical imaging including both multi-beam and side scan hydrographic surveys
- Property and boundary surveying
- Property title work including title research and reports
- Construction related surveying services

**Construction Engineering Support Services** Our team will provide construction engineering support during construction including construction drawing review, shop drawing review, request for information support, contractor proposals, etc.



## 19. Workload:

Firm(s)	Past Performance Evaluation Discipline(s) *	State Project Number	Project Name	Remaining Unpaid Balance**
Hardesty &	Bridge	H.002798.6	Bayou Teche Bridge at Oaklawn	\$70,305
Hanover	Road	H.014363.5	Sidewalk Improvements to Conform to ADA – Task Order 1 St. Tammany Parish	\$92,782
	CE&I/OV	H.001498.6	LA 24 and LA 316: Company Canal Bridge (CE&I), Terrebonne Parish	\$2,521,735
APS	Geotech	H.013127	Retainer Contract for Geotechnical Services	\$53,996
Engineering & Testing	Geotech	H.013144	Retainer Contract for Geotechnical Services	\$45,457
Bridge Diagnostics	Bridge	H.009730.5 44 17163	IDIQ Non Destructive Evaluation of Structures via SounDAR Whiskey Bay and Pilot Channel – Task Order 10	\$47,870
	Bridge	H.014703.5 44- 17163	IDIQ for Non-Destructive Evaluation of Structures Calcasieu Parish – Task Order 9	\$25
	Bridge	H.009730.5 44- 17163	IDIQ I-10 for Non Destructive Evaluation of Structures Atchafalaya Floodway and I-10 over Whiskey Bay Pilot Channel Bridge decks – Task Order 8	\$69,198
	Bridge	H.012280.1 44- 09224	IDIQ for testing of Unknown Foundations, Statewide – Task Order 3 – 1802005	0.00
	Bridge	H.009730.5 44- 17163	Retainer for Non Destructive Evaluation of Structures Task Order 1 General Services BDI1904004	\$3,679
	Bridge	H.009730.5 44- 17163	Retainer for Non Destructive Evaluation of Structures Task Order 7 Bonnet Carre Spillway 2006002	\$94,864
	Bridge	H.009859.5 44- 02791	Bonnet Carre & Bayou Ramos Monitoring System Maintenance	0.00
	Bridge	H.010603.6 44- 02538	Mississippi Bridge at Vicksburg GPS Monitoring – 150901	\$2,934
	Bridge	H.012485.1 44- 10099	IDIQ for Bridge Load Rating Services Statewide	0.00



Firm(s)	Past Performance Evaluation Discipline(s) *	State Project Number	Project Name	Remaining Unpaid Balance**
Chustz Surveying, LLC	Survey	H014728.5	LA 20: LA 304 – LA 307	\$40,501
Gaea Consultants				0.00
KTA - Tator	Bridge	4400013321	IDIQ Contract for In-Depth Bridge Inspection Statewide (sub to HNTB) – KTA has not received any task order assignments on this contract to date.	0.00
	Bridge	4400013322	IDIQ Contract for In-Depth Bridge Inspection Statewide (sub to Gresham, Smith & Partners) Task Order #4 – In-Depth Inspection of Complex Structures	\$59,234
	Bridge	4400020156	State Project No. H.011965.5, LA 47, IWGO Bridge Rehabilitation (sub to TRC)	\$11,294
Moffatt &	Bridge	H.009730.5	In-Depth Inspection of Complex Bridges, Task Order 4	\$252,121
Nichol	Bridge	H.009730.5	In-Depth Inspection of Complex Bridges, Task Order 5	\$654,279
	Bridge	H.009730.5	IDIQ Contract for Underwater Bridge Inspection, Statewide	\$726,212
	Bridge	H.011331.5	LADOTD Inventory and Inspection of Sign Trusses	\$420,203
	Bridge	H.009730.5	LADOTD In-Depth Bridge Inspection, Task Order 3	\$473,944
	Data Collection	H.971294.1	LADOTD RIMS	\$79,996
Urban Systems	CE &I/OV	H.004791	Belle Chasse Bridge and Tunnel	\$116,574
	Traffic	H.011309.5	Mac Arthur Final Design	\$30,687
	Traffic	H.012812	US 190: Northshore and Camp Villere	\$11,014
	Traffic	H.004891	Reserve to I-20 Connector	\$51,641
	Traffic	H.010571	Williams Traffic Signal Design	\$22,750
	Traffic	H.011965.5	IWGO Bridge Rehabilitation	\$4,411



## 20. Certifications/Licenses:

Provided on following pages.





National Highway Institute Certificate of Training

has participated in

FHWA-NHI-130055/TxDOT DES804 Safety Inspection of In-Service Bridges

hosted by

Texas Department of Transportation

Hours of Instruction: 67

12010

Richard Barnaby, Director National Highway Institute





### National Highway Institute Certificate of Training



## Elizabeth Barabas, P.E.

has participated in FHWA-NHI-130053 Bridge Inspection Refresher Training

> hosted by Texas Department of Transportation

Date: December 11-13, 2018 Location: Austin, TX

Hours of Instruction: 18

Local Coordinator Value Burgo

Valerie Briggs, Director National Highway Institute



Date.

March 7, 2014

Location: Austin, Texas

### National Highway Institute Certificate of Training

**Elizabeth Barabas** has participated in

FHWA-NHI-130078 Fracture Critical Inspection

hosted by Texas Department of Transportation

Date: April 19-22, 2016 Location: Austin, TX

Hours of Instruction: 24

Termall, Bis Instructor

Stung mill Instructor

Local Coordinator

Value Bugor Valerie Briggs, Director

National Highway Institute





Acknowledges that

**ELIZABETH BARABAS** 

has demonstrated through practical and written examinations, attainment of SPRAT's Certification Requirements for Rope Access Work, and is therefore

CERTIFIED

#### Level I Rope Access Technician

SPRAT #140659 AWARDED: September 27, 2017 Expires: September 27, 2020

1 Por WILLIAM MCCOOK (URDELL SPRAT PRESIDENT





## 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 Location: Rosedale, MD

Manate Holon

Hours of Instruction: 67

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James a Sundy

Value Buero Valerie Briggs, Director National Highway Institute U.S. Department of Transportation Federal Highway Administration

NH

National Highway Institute Certificate of Training



#### Jason Biddle

has participated in NHI Course No. 130078 Fracture Critical Inspection Techniques for Steel Bridges



Date: June 25-28, 2018 Location: Baltimore, Maryland

Instructor

Instructor

Hours of Instruction: 25

- Kaulin Thurphy Local Coordinator

Value Burger Valerie Briggs, Director National Highway Institute











REMOTE PILOT

Certificates Description

Certificate: REMOTE PILOT Date of Issue: 7/14/2021

Ratings:

SMALL UNMANNED AIRCRAFT SYSTEM





of Transportation Federal Highway

Administration

National Highway Institute



Certificate of Training

Opio K. Hunter, P.E.

hasparticipated in

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by

Whitman, Requardt & Associates, LLP

*Date:* September 14 - 16, 2021

Location: Virtual Delivery, MD

Digitally signed by Cailein A. MacDougall, P.E. Date: 2021 09 25 13:18:36 -04'00

Instructor

Earl E. Dubin Digitally signed by Earl E. Dubin Date: 2021.09.24 12:22:46

Instructor

Hours of Instruction: 18

Debra Rizzieri

Local Coordinator

Thomas Harman

Thomas Harman, Director National Highway Institute

PRIME CONSULTANT: HARDESTY & HANOVER

#### Jarrett, R. (Hardesty & Hanover)



National Highway Institute



## Certificate of Training Rodney Jarrett

has participated in

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

American Council of Engineering Companies of Metropolitan Washington ACEC/MW

Date: February 7-18, 2011 Location: Fairfax, Virginia Hours of Instruction: 60

Read 24

f. 00

ans Richard Barnaby, Director National Highway Institute



National Highway Institute Certificate of Training



riment ortation Ce

Rodney Jarrett

has participated in

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

Whitman, Requardt and Associates, LLP

Date: Location:

August 16 - 19, 2016 Baltimore, Maryland Hours of Instruction: 25

Which Instructo

Local Coordinato Valence Russ

Instructor

Valerie Briggs, Director National Highway Institute





Federal Highway Administration 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: Location:

*October 01-12, 2018 Baltimore, MD 21231*  *Hours of Instruction:* 67

Instructor

Instructor

Hung Local Coordinator

Valerie Briggs, Director National Highway Institute

PRIME CONSULTANT: HARDESTY & HANOVER



Date: August 20, 2010 Location: Baltimore, MD

#### National Highway Institute

Certificate of Training



has participated in

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

hosted by AECOM Technical Services, Inc.

Hours of Instruction: 80 CEU's: 60

Mars

Richard Barnaby, Director National Highway Institute





### National Highway Institute Certificate of Training **Donald Marinelli**

FHWA-NHI-130053 Bridge Inspection Refresher Training

hosted by Whitman, Requardt & Associates, LLP

October 6-8, 2020 Location: Virtual Delivery, MD

Daisty service Calan A MarXinal PF Date 3020-10-16-15-48-68-0250

Instructo Finn K. Hubbard Instructor

Date:

John A M. myt. M.

Hours of Instruction: 18

Debra E. Rizzieri Local Coordinator Thomas Harman

Thomas Harman, Director National Highway Institute

U.S. Department of Transportation Federal Highway

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

August 14-17, 2018 Location: Baltimore, MD

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Hours of Instruction: 25

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Date:

Value Bur, Valerie Briggs, Director National Highway Institu







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Paul Marzuillo

has participated in

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

MP Engineers, P.C.

Date: May 7-10, 2018 Location: Kingston, NJ

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Hours of Instruction: 25

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Valerie Briggs, Director National Highway Institute



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### Naghavi, B. (Hardesty & Hanover)



**PRIME CONSULTANT: HARDESTY & HANOVER** 



### Robards, A. (Hardesty & Hanover)







To verify the validity of this card, contact

**Technology Transfer and Training** 

Section - LTRC 4101 Gourrier Avenue Baton Rouge, LA 70808 (225)767-9125 www.ltrc.lsu.edu/certification.html

Updates may be necessary to maintain certification



## Wetekamm, F. (Hardesty & Hanover)

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LOUISIANA PROFESSIONAL ENGINEERING AND LAND SURVEYING BOARD

As of 12/06/2018, the Louisiana Professional Engineering and Land Surveying Board (LAPELS) has

the following information on file:

Mr. Brett Cameron Comm 740 South Pierce Avenue, Louisville, CO 80027

	ENGINEERING 9643	LOUISIANA PROFI s & LAND SURVEYIN Brookline Avenue, Baton Rouge, Phone (225) www.la	ESSIONAL (GBOARD (LAPELS) Suite 121 LA 70809 925-6291 epels.com	C. CULHERE
Mr. Bret	t Cameron	Commande	er i	
PE.0035864 Status: Active	pe - Number	Expiration Dat 03/31/2	2023	
Please be advised that for you to (a) provide services in Louislana of there of in your name in Louislana. Licenses "Engined" status are g described above in to LAR 5, 37.659 requir anginearing of land u by the Board prior to	your litence must or offer to provide r (b) use the words (b) use the words (surveying or any or in connection with s whose licenses and (b) to the litence of (b) the litence of (b) the litence offering such service offering such service	be in "åctsve" statu srignesring or land "engineer", "engin modification or den th your blanness or re in "Bettred", "Inac aging in the activitie ar offering to practice or of colusions to be i Poc	is in order surveyling eering vative activities cdvef or ss c licensed	

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LOUISIANA PROFESSIONAL ENGINEERING AND LAND SURVEYING BOARD

As of 12/06/2018, the Louisiana Professional Engineering and Land Surveying Board (LAPELS) has the following information on file:

Mr. Jesse David Sipple 740 South Pierce Avenue, Louisville, CO 80027-3058

	LOUISIANA PROFESSIONAL ENGINEERING & LAND SURVEYING BOARD (LAPELS) 9643 Brookline Avenue, Suite 121 Baton Rouge, LA 70809 Phone (225) 925-6291 www.lapels.com
M	r. Jesse David Sipple
License/Certificate PE.004102	Type - Number Expiration Date 8 03/31/2023
Please be advised th for you to (a) provid services in Louisiana "land surveyor", "la thereof in your nam in Louisiana. Licens "Expired" status are	at your license must be in "Active" status in order e or offer to provide engineering or land surveying or (b) use the words "engineer", "engineering", nd surveying" or any modification or derivative e or in connection with your business or activities ees whose licenses are in "Retired", "Inactive", or prohibited from engaging in the activities tems (a) and (b).

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HH Hardesty &Hanover





LAR. S. 37:689 requires firms practicing or offering to practice engineering or land surveying in the state of Louisiana to be licensed by the Board prior to offering such services.



Last updated: 5/18/2020 Mark W. Huber Hydrographer mark w.huber@att.net

Professional Information

Chustz Surveying Inc 2910 Angela Ct. Gastonia North Carolina 28056 United States [ Map ]

Hydrographer Type #1: InShore

#### Hydrographer Number

#1: 181

Hydrographer Expire Date: 12/31/2022

Hydro Status: Active







800 Tromball Drive Pittsburgh, PA 15205 P: 412.281.2331 T: 877.281.7772 F: 412.444.3591

January 9, 2020

Mr. Robert Lanterman, PCS KTA-Tator, Inc. 115 Technology Drive Pittsburgh PA 15275

#### SSPC Protective Coating Specialist (PCS) Recertification Subject:

Encl: Wallet ID Card, Certificate

Dear Mr. Lanterman,

This letter is to inform you that you have successfully completed your SSPC Protective Coatings Specialist (PCS) recertification.

This certification is awarded for a new term of four years and will expire on 12/31/2023.

At your four (4) year renewal date, you must submit documentation of 32 points of continuing education (CEU) to renew your certification.

Certification #: 2015-820-136

Information on your next recertification will be mailed to you 6 months prior to expiration. In order to receive the information, you must notify SSPC of any change of address or employment. It is the responsibility of each certification individual to keep SSPC current on his or her contact information. SSPC will not be responsible for certifications that lapse because a reminder letter was sent to an incorrect address.

If you have any questions about your certification, please contact Silvia Palmieri at 412-281-2331 Ext. 2201 or by e-mail at palmieri@spc.org at your convenience.

You may also contact me directly at Ext. 2221 if you have any comments or concerns that you would like me to address. We appreciate your participation and are here to serve you

Sincerely.

Quilt Hat

Jennifer Merck Director of Training & Certification



has fulfilled the examination and experience of Protective Coatings Socialist Program (PCB)

PCS

Certified: 8/20/2015 Expires: 12/31/2023 Certification IDI/: 2015-820-138 SSPC Presedent

SSPC Protective Contings Specialist



April 22, 2019

Roberi Lanterman KTA-Tator Inc 115 Technology Dr. Pittsburgh, PA 15275-1005

#### Your New Certification Card

Thank you for renewing your NACE International Institute certification. You are part of an elite group of certified professionals dedicated to protecting people, assets, and the environment from the effects of corrosion.

It is with great pleasure that we enclose your new NACE International Institute certification It is with great pleasure that we enclose your new NACE international institute certification card. This important card includes your certification number and expiration date. If you ordered an embosser, plaque, or an update tag, it will be shipped separately. Please note that certification cards have recently been updated to better align with NACE branding. If you have any questions or need additional information regarding your certification, please call the First Service Department at 1-800-797-6223 (U.S. & Canada) or +1-281-228-6223 (Worldwide). Alternatively, you can e-mail as at <u>FirstService@nace.org</u>.

Thank you for choosing The NACE International Institute as your trusted source for corrosion information and expertise.









131775





www.sspc.org 800 Trumbull Drive Pittsburgh, PA 15205 P: 412.281.2331 T: 877.281.7772 F: 412.444.3591

March 31, 2020

Mr. Pedro Sanchez, PCS KTA-Tator Inc 115 Technology Drive Pittsburgh PA 15275

Dear Pedro,

Congratulations on your successful completion of SSPC's PCS Certification.

PCS certification is awarded for a period of four years, through 12/31/2024. Information on recertification will be forwarded to you six months prior to the expiration of your certification. Certification#: 2020-320-303.

A renewal notice will be mailed to you, 6 months prior to your 4th year expiration date reminding you to renew your Protective Coatings Specialist Certification.

At that time, you will be required to submit full documentation that you've accumulated 32 hours of continuing education credits (CEU) during your 4-year term. During your certification term, track and log your accumulated units, and save the information until you need to renew your certification.

We now offer a Track 2 for certification renewal. If a PCS is not able to obtain the required education/experience units to qualify for recertification according to Track 1, that individual may retake the closed book PCS exam and pass to carn 24 education units. The remaining 8 education units for re-certification must be completed by one of the methods referenced in the Recertification Units worksheet.

It is important that you notify SSPC of any address, phone or email changes in order that we can maintain contact with you. Remember to renew your membership with SSPC annually so that you will save and be charged the member rate for your PCS renewal.

Again, congratulations on your certification. If you have any questions, please contact Silvia Palmieri at 412/281-2331, extension 2201 or email palmieri@sspr

SSPC

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PCS

Pedro Sanchez

SSPC President Certification ID#: 2020-320-303
 SSPC Protective Coatings Specialist

Expires: 12/31/2024

¥.

has fulfilled the examination and experience requi

the SSPC Protective Coatings Specialist Program (PCS)

Sincerely,

Jennifer Merck Director of Training & Certification





Podro Miguel Sanchez 10885 Northwest 89 Terrace APT 224 Doral, FL 33178

#### Your New Certification Card

Thank you for renewing your NACE International Institute certification. You are part of an elite group of certified professionals dedicated to protecting people, assets, and the environment from the effects of corrosion.

It is with great pleasure that we enclose your new NACE International Institute certification card. This important card includes your certification number and expiration date. Please note that certification cards have recently been updated to better align with NACE branding. If you have any questions or need additional information regarding your certification, please call the First Service Department at 1-800-797-6223 (U.S. & Canada) or +1-281-228-6223 (Worldwide). Alternatively, you can e-mail us at <u>FirstService\_nace.org</u>.

Thank you for choosing The NACE International Institute as your trusted source for corrosion information and expertise.



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Date:

Location:

### National Highway Institute Certificate of Training

Charles Balzarini

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

Ohio Department of Transportation

Hours of Instruction: 67

Kaymond Z Brush

hosted by



National Highway Institute



### Certificate of Training CHARLES BALZARINI

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

### kosted by

 Date:
 February 26 – March 1, 2019
 Hours of Instruction:
 25

 Location:
 Baton Rouge, LA

Br

Instructor

Hellison H. Landry

Michael Afarris Michael Davis Director National Highway Institute



9/26/16 - 10/7/16

Columbus, OH

Buy Rolang PE



Expires 06/19/2022



### ENTRY LEVEL TENDER/DIVER

CHARLES G. BALZARINI I.D. 9858

**Commercial Diver Certification Card** 





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PRIME CONSULTANT: HARDESTY & HANOVER

Hardesty &Hanover







### SOCIETY OF PROFESSIONAL ROPE ACCESS TECHNICIANS



Acknowledges that

JEFFREY GAZAREK

has demonstrated through practical and written examinations, attainment of SPRAT's Certification Requirements for Rope Access Work,

and is therefore

CERTIFIED

Level I Rope Access Technician

SPRAT #171868

AWARDED: October 27, 2017 Expires: October 27, 2020



Cert. # 47951

Expires 08/21/2023

Association of Diving Contractors

International



MIXED GAS DIVING SUPERVISOR JEFFREY M. GAZAREK I.D. 3224

Commercial Diver Certification Card

di2012 - Present, S., very of Professional Stope Access Techniciem



TROLL WILLIAM MECKER TROLL SPACE

National Highway Institute Certificate of Training



**Jeffrey Gazarek** 

has participated in NIII Course No. FHWA-NIII-130101 Introduction to Safety Inspection of In-Service Bridges - WEB-BASED

inspection of in-service brit

hosted by

National Highway Institute

Location: Web-Based Course Hours of Instruction: 14 hours
Date: 11/22/2015

11:22:2015

Valerie Buggs Valcrie Briggs, Director National Highway Institute





Page 190 of 272



#### **Association of Diving Contractors** International



Cert. # 62022

Expires 11/18/2025

#### SURFACE-SUPPLIED AIR DIVER

JOSHUA MARTINEZ I.D. 0713 **Commercial Diver Certification Card** 



National Highway Institute Certificate of Training



ADC

Joshua Martinez

has participated in

FHWA-NHI-130053 Bridge Inspection Refresher Training

#### hours by Arizona Department of Transportation

Hours of Instruction: 18 October 22-24, 2019

Date Phoenix, AZ

Jack









Certificate of Training Laura Miller Laura



















	N PROGRAM	ogram (DBE) E)	lations P)	LLC. BE) in the following specialties:	4C541620, NC541690	olete list of approved codes.	<b>er 2022</b> <i>brogrammatic standard</i> <i>ortification is subject to</i> <i>that the firm is ineligible.</i>	ager pment
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susiness & Contact Information	
BUSINESS NAME	GAEA Consultants, LLC
OWNER	Dr. Tenja L. Koob
LCORESS	356 Washington Avenue New Orleans, LA 70130 (mani
PHONE	504-962-5360
E45	304-902-5562
ENAL	gestall geoscientul lants.com
WEBSITE	hise//www.gessconsultania.ssm
CERTIPHING AGENCY CERTIFICATION TYPE CERTIFICATION DATE CERTIFIED BUSINESS DESCRIPTION	City of New Orleans SLOBE - State-Local Disadvantaged Business Enterprise 13/23/2020 Environmental Engineering: Civil Engineering: Hydraulics and Water Resources Management; Environmental Assessment Counseling: Construction Management; Construction Material Tests
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NAICS 541330	Differential recommendation

#### NALCS 541320 Environmental engineering services NALCS 54152 Environmental Consulting Services

#### Unified Certification PROGRAM

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541330-Engineering Services 518210-Data Processing, Hosting, and Related Services

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Office of the Secretary PO Box 94245 | Baton Rouge, LA 70804-9245 PH: 225-379-1200 | FX: 225-379-1851

John Bel Edwards, Governor Shawn D. Wilson, Ph.D., Secretary

March 16, 2021

Urban Systems Associates, Inc. Alison Catarella-Michel, President 2000 Tulane Avenue, Suite 200 New Orleans, LA 70112

Dear Alison Catarella-Michel:

We have received your firm's Disadvantaged Business Enterprise (DBE) and Small Business Element (SBE) annual affidavit. Based on the information which you provided we have concluded that your firm continues to meet the eligibility requirements of our program and remains certified for <u>only</u> the following <u>specific</u> work categories <u>that fall under the listed NAICS codes</u>:

NC541330 – Engineering Services NC541340 – Drafting Services NC541990 – All Other Professional, Scientific and Technical Services C03 – Drafting C09 – Civil Engineering C11 – Planning C14 – Transportation Planning C21 – Construction Inspections C33 – Traffic Counting and Data Collection C43 – Computer Assisted Drafting C74 – Construction Management C96 – Traffic and Transportation Engineering

Please note that per the federal regulations, suppliers only receive 60% goal credit towards the materials they provide. Also note that A Louisiana Contractor's License is required by any contractor performing work in excess of \$50,000 with the exception of electrical, mechanical and plumbing which are required to have a license if work is in excess of \$10,000. You may contact the State Licensing Board for Contractors at (225) 765-2301 for more information. Your firm's certification will be recognized by all participants of the Louisiana Unified Certification Program. This includes all entities receiving federal transportation funding within the boundaries of our state.

You will be required to submit an annual affidavit with all supporting documents (Business taxes with all attachments, such as 1098, 1099, K-1's and/or W-2's) stating your firm continues to meet the eligibility requirements of the program. An email informing you to submit the necessary documentation will be forwarded to you approximately six (6) weeks prior to your anniversary date of February 28, 2022. However, should you not receive notification from this office for your annual affidavit, it is your responsibility to contact us. Additionally, you must notify our office immediately regarding any changes which affect the social and economic disadvantage, size, ownership or control of your firm.

Louisiana Department of Transportation and Development | 1201 Capitol Access Road | Baton Rouge, LA 70802 | 225-379-1200 An Equal Opportunity Employer | A Drug-Free Workplace | Agency of Louisiana.gov | dotd.la.gov Page 198 of 272 PRIME CONSULTANT: HARDESTY & HANOVER Urban Systems Associates, Inc. March 16, 2021 Page 2

The Department has contracted with Urban League of Louisiana Center for Entrepreneurship & Innovation to provide DBE Supportive Services to all certified DBEs. This consultant can offer your firm assistance and guidance on areas such as marketing, estimating, bidding, financial preparations, etc. Please feel free to contact Klassi Duncan with Urban League of Louisiana Center for Entrepreneurship and Innovation at (504) 620-9647 for any assistance needed to grow your organization.

We reserve the right to withdraw this certification, if at any time, it is determined that **DBE and SBE** certifications was knowingly obtained by the submission of false, misleading or incorrect data. We further reserve the right to request additional information and/or conduct an on-site visit at any time during your certification period.

If further assistance is needed, please don't hesitate to contact the Shirley Ard at (504) 376-0233

Respectfully,

Rhonda Wallace

Rhonda Wallace DBE/SBE Programs Manager

Louisiana Department of Transportation and Development | 1201 Capitol Access Road | Baton Rouge, LA 70802 | 225-379-1200 An Equal Opportunity Employer | A Drug-Free Workplace | Agency of Louisiana.gov | dotd.la.gov Page 199 of 272 PRIME CONSULTANT: HARDESTY & HANOVER

## **<u>21. QA/QC Plan and/or Work Plan:</u>**

Provided on following pages.





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## **Quality Management Plan Authorization**

The Hardesty & Hanover Quality Management Plan consists of procedures that have been developed to assure that the various elements of the project are carried out in a planned and controlled manner and in accordance with the industry standards.

The herein described Quality Management Plan is an accurate and consistent reflection of Hardesty & Hanover policies and procedures. Hardesty & Hanover acknowledges that H&H and their subconsultants are fully responsible for QC/QA of their own work and the LADOTD bears no responsibility for performing QC/QA of the work of Hardesty & Hanover or their subconsultants.

alleen Seathy

05/02/2022

Date

Signature Colleen Leahy, PE H&H Quality Manager

Prepared By Bobby Naghavi	Approved By C. Leahy	Consultant Quality Management Plan	REV.0 - Original Issue: 5/02/2022	Page 1
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## 1.0 Introduction

Hardesty & Hanover (H&H) has committed to fostering the improvement of quality by generating, for every project, a project specific Quality Management Plan (QMP) for providing guidance to the project team. The objective of the QMP is to provide tools to the project team so that our professional services are performed and delivered in accordance with applicable industry standards of care and to the satisfaction of project scope requirements while remaining within the allocated schedule and budget.

The Quality Management Plan includes the H&H firm standard Quality Assurance and Quality Control Plans. Together these plans form our Quality Management System (QMS). The intent of the QMS is to define procedures for Quality Control and Quality Assurance which minimize errors, discrepancies, and omissions in H&H's work products.

Hardesty & Hanover acknowledges that H&H and their subconsultants are fully responsible for QC/QA of their own work and the LADOTD bears no responsibility for performing QC/QA of the work of Hardesty & Hanover or their subconsultants.

## 1.1. Quality Control & Quality Assurance Concepts

### 1.1.1 Definitions

- a) Contract Requirements: Established by LADOTD for each project, these requirements take precedence over any other practices established by H&H. Notwithstanding specific contract requirements, minimum H&H quality practices and industry standard of care are applicable to all projects. Contract Requirements are identified in the sections below.
- b) Project Specific Engineering Oversight Practices: These practices are established by H&H during project initiation and will vary depending on the classification of the project as determined by the firm. Engineering Oversight activities are a supplement to, and not a replacement of, project quality activities. Project Specific Engineering Oversight Practices are identified in the sections below.
- c) **Quality Control (QC)**: Procedures of checking the accuracy and consistency of the calculations and the drawings, detecting and correcting design omissions and errors before the design plans are finalized, and verifying the specifications for the load-carrying members are adequate for the service and operation loads.
- d) **Quality Assurance (QA):** Procedures of reviewing the work to ensure the quality control procedures are in place and effective in preventing mistakes, and consistency in the development of bridge design plans and specifications.
- e) Quality Assurance Plan: This document defines the intent and practices for overall Quality Assurance and Engineering Oversight with an emphasis on the activities of project management, specifically the process for identifying project practices for Audits, Witness Points, Hold Points, and Internal Technical Reviews. Modifications to the Quality Assurance Plan are identified in the sections below.
- f) Quality Control Plan: This document defines the intent and practices for overall Quality Control with an emphasis on the activities of the project technical staff. The design and document review process and practices are defined in this document. Modifications to the Quality Control Plan are identified in the sections below.
- g) Design Policies: These are supplemental documents that are exclusively for internal use. These are not submitted to LADOTD. Portions of Design Policies may be used in the development of a Project Quality Control Process, for example if a specific Design Practice is recommended for use to address a particular project design element.

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### 1.1.2 Quality Management System

#### **Customer Satisfaction and Quality Management System Improvement**

H&H is continually striving to improve customer satisfaction. Our Quality Management System is a living document that will be continually assessed and revised to reflect best practices and lessons learned. This process includes clarification of design information to support construction or production, correction and prevention of errors and omissions, and response to client comments, complaints, and feedback.

#### **Quality Control Program Objectives**

Quality Control is a series of activities, actions and procedures routinely undertaken to ensure that our services and their representative work products are produced to the requisite standard of care and in accordance with the defined technical philosophy of the firm.

Our Quality Control process ensures that each work product is thoroughly reviewed in detail by someone in addition to the review by the Designer/Originator/Producer who prepared that work product for conformity with generally accepted standards of design and engineering practice.

Unless otherwise approved by the engineer in responsible charge, at least one of the primary individuals involved in preparing (Designer) or checking (Checker) a document shall be a Professional Engineer, experienced and qualified in the appropriate engineering discipline and project jurisdiction. Comments generated by the quality control process are to be resolved to the satisfaction of both the Designer and the Checker. The process of Quality Control (QC) is documented and recorded in a manner which allows for management of the process and review of the process through Quality Assurance (QA). The full detailed QC process can be found in our QC Plan attached in Appendix C.

#### **Quality Assurance Program Objectives**

The Quality Assurance Program encompasses the systematic review of our design and development processes and our Quality Control activities to confirm that the desired level of quality has been attained and will continue to be obtained. Quality Assurance identifies procedural shortfalls and recommends changes to improve our processes. Quality Assurance is a company-wide process that confirms that the proper processes are in place to assure that our services and products meet the requisite standard of care. A brief summary of our Quality Assurance process follows. The full detailed QA process can be found in our QA Plan attached in Appendix B.

#### **Quality Assurance**

Quality Assurance reviews will be performed to confirm conformance with the Quality Management Plan of a given project. The review shall verify that each project has sufficiently accomplished all quality goals set forth in the Quality Management Plan.

Documentation is kept which provides a record that the design development and review process was performed as required. This documentation is to include records of the important steps which led to the development of final planning documents as well as the final design, such as preliminary concepts, model validation, design calculations, computer code input and any communications, instructions, and directives which have a direct bearing on the project.

Types of documentation to be reviewed for compliance with the procedures set out in the Quality Control Plan:

- a) Design Criteria
- b) Reports All reports prepared for the project, irrespective of type.
- c) Interdisciplinary Coordination Minutes of meetings and signed attendance lists.
- d) Calculations/Computer Solutions
- e) Drawings
- f) Specifications
- g) External Comment Responses

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h) Prior Audit Documents – All documentation provided by the Quality Auditor including recommendations for improvement, nonconformance reports, and any other check lists.

Additionally, the Quality Assurance Review is used to identify areas of weakness in the Quality Control process and develop preventive actions that focus on areas of potential nonconformance to reduce the risk associated with these areas.

If the QA Review identifies potential nonconformities, the review shall also include determination of their probable cause, determination of preventive action needed, implementation of preventive action and determining if preventive action was implemented and effective in preventing nonconformity. The Project Manager is responsible for developing and implementing preventive actions that address the potential areas of nonconformance identified in the QA Review and working to reduce or eliminate the risk in these areas.

#### **QA Information Package**

Upon completion of the QC process, which shall be no later than the 95% Final Plans stage, the designer is responsible for preparing a QA information package and providing it to the Reviewer for QA review.

The QA package shall include:

- LADOTD QA information package check list (see Appendix E)
- Calculation book prepared in accordance with the requirements of the LADOTD Final Calculation Book Checklist contained in Appendix E
- Plans
- Special provisions including Non-Standard items
- Cost estimate
- Any relevant documents, such as checklists, review comments, etc., utilized by the designer, design checker, detailer, and detail checker.

If design revisions are required after the QA information package has been submitted, the Reviewer must be notified of such revisions and supplied with the revised information.

After completion of the QA process for Final Design, and no later than 98% final plans stage, the LADOTD QC/QA Certification Form (see Appendix E) shall be completed and signed by the designer, design checker, detailer, detail checker, and reviewer.

#### **Control of Nonconforming Product**

Corrective action will be appropriate to the severity of the nonconformance identified. The Project Manager shall develop and implement any corrective action procedure taken. The corrective action procedure shall be approved by the Chief Technical Officer. The procedure shall identify the nonconformance root cause and the necessary actions required to resolve the nonconformance to the satisfaction of the client. The procedure shall address nonconformity identification (including client complaints), cause determination, action to prevent recurrence, identifying and implementing the corrective action, recording results, and determining if the corrective action was implemented and effective in resolving the nonconformance.

## 2.0 Effective Date and Revisions

As the QMP is a living document that reflects the currently accepted standards of care and lessons learned on H&H projects, the contents of the H&H QMP will be updated as needed. Updates will be issued as controlled documents (i.e., with versions and revision dates).

The project management team is responsible for providing the project staff with relevant portions of the QMP.

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Quality Management Plans, once approved by the firm and the client, are unique to the project. Such a plan may not be modified or re-used for another project without approval of the Quality Manager.

## 3.0 Quality Management Plan Development

H&H will continually develop and implement measures that assure the various elements of this project are performed in a planned and controlled manner according to, at a minimum, the prevailing standard of care for professional practice applicable to the service being provided.

H&H quality control and assurance activities are dictated by this Quality Management Plan. The plan establishes policy, sets procedures, and controls those which may be specifically assigned to a project.

The plan describes the program, responsibilities and actions required by all project participants to ensure that quality control procedures are performed and documented. As a result, all interested parties can be assured that an appropriate level of engineering quality will be provided, and that the technical staff members will recognize their role in the quality process.

The H&H Quality Manager is responsible for annual review of this QMP. The review shall include all aspects of the plan including but not limited to review of comments by clients, audits by clients and corrective action costs, if any. The QM will recommend improvements to the plan upon completion of the review.

## 3.1 QA/QC Responsibilities

### 3.1.1 Project Staff

There are several responsible parties involved in the Quality Assurance and Quality Control of a project from inception to completion. Their project and quality specific roles and responsibilities are described in the Quality Assurance Plan Section 2.0 contained in Appendix B of this document. The H&H Project Quality Assurance Lead (PQAL)/Reviewer will be responsible for the plan execution. For this project, the following persons will be responsible for the various roles:

H&H Project Principal In Charge: Paul Skelton, PE

• The Principal in Charge (PIC) is responsible for the overall project, delivery of our services to the client and is responsible for overall client satisfaction. The PIC is to be aware of the project performance, both technical and financial, and ensure the Project Manager is performing his/her duties in accordance with the firm requirements.

H&H Chief Technical Officer: Keith Griesing, PE

• The Chief Technical Officer (CTO) is responsible for the technical quality of the services of the firm. The CTO is responsible for review of the Project Management Plan including the technical approach and risk assessment.

H&H Quality Manager: Colleen Leahy, PE

• The Quality Manager (QM) is responsible for review and approval of all project-specific Quality Management Plans, including but not limited to, review of comments by clients, audits by clients and corrective action, if any. The Quality Manager (QM) has firm wide responsibility for confirming that Project Managers develop and adhere to Quality Management Plans for individual projects.

H&H Project Manager/Supervisor: Bobby Naghavi, PE

 Responsible for all activities necessary to deliver H&H services in accordance with the contract requirements, including financial performance as well as oversight of the technical sufficiency of the services.

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- Licensed by the State of Louisiana as a professional engineer
- Experienced in the design of similar structures.
- Acts as primary point of contact and project communications for H&H
- Develops a comprehensive Project Management Plan as a requirement for Project Initiation which includes the Project Technical Approach Plan.
- Establishes and monitors the project budget, schedule, and staffing requirements.
- Establishes design criteria and design parameters, working with the technical discipline leads. Design criteria shall meet all the requirements of the LADOTD Design Criteria Checklist contained in Appendix E.
- Coordinates with subconsultants
- Chairs project meetings, produces and distributes minutes as needed
- Reviews the H&H Quality Assurance Review Form prepared by the Project Quality Lead/Reviewer and certifies the deliverable is ready for submission.
- Completes and signs the LADOTD Consultant Submittal QC/QA Certification Form contained in Appendix E

H&H Project Engineer: Erik Diaz, PE

- Responsible for project development and delivery according to the requirements communicated by the Project Manager (PM)
- Leads the project delivery efforts and works closely with the project Technical Leads in defining the technical direction of the project
- Provides communication and direction to technical staff

H&H Reviewer/Project Quality Lead: Erik Diaz, PE

- Responsible for ensuring that the QC process has met the requirements of this QMP; is complete and the design calculations, drawings, special provisions, and cost estimate are in accordance with LADOTD Bridge Design practices, policies, and procedures.
- Licensed by the State of Louisiana as a professional engineer
- Experienced in the design of similar structures.
- Responsible for oversight of project specific quality activities including the collection and appropriate filing of all Quality Control and Quality Assurance documentation. Maintains an auditable record of all QC reporting forms generated during design reviews.
- Communicates with Project Manager on a regular basis to maintain the QC review schedule for projects.
- Verifies that the QC activities have been performed and that qualified and competent personnel have undertaken the QC activities.
- Performs Quality Assurance Reviews documented with the H&H Quality Assurance Review and Certification Form. The Reviewer/PQL shall review the project Quality Control documentation in advance of submission to confirm that design QC activities are complete, comply with the Quality Management Plan and meet the requirements of the LADOTD Consultant Submittal Review Checklist contained in Appendix E

The following roles will be designated upon Task Assignment from the personnel listed on the Organization Chart included in Appendix A.

H&H Discipline Leads/EORs:

- Engineers in responsible charge of a specific design segment in their area of expertise
- Required to sign/seal as Engineer of Record (EOR) unless client or other requirements exist.
- Licensed by the State of Louisiana as a professional engineer
- Experienced in the design of similar structures.
- Ensure the QC/QA certification is signed by all responsible parties.

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- Assemble design calculations from all designers, finalize the calculation book, and seal the cover sheet of the calculation book for their discipline.
- Ensure the names of the designer, design checker, and reviewer are correctly shown on the title block of each plan sheet. Stamp all plan sheets or designate a designer, design checker, or reviewer who shall be licensed by the State of Louisiana as a professional engineer to stamp the sheets developed under their supervision.
- The EOR must stamp the general notes sheets for their discipline.

H&H Designers:

- Engineers directly responsible for the development of design calculations, drawings, special provisions including Non-Standard items, and cost estimate.
- Licensed by the State of Louisiana as a professional engineer or certified as an engineer intern.
- Prepare the QA information package upon completion of the QC process.

H&H Design Checkers:

- Engineer responsible for performing a full technical review of the design calculations, drawings, special provisions including Non-Standard items, and cost estimate.
- Licensed by the State of Louisiana a professional engineer or certified as an engineer intern; however, if the designer is an engineer intern, the design checker must be a professional engineer.

### 3.1.1.1 Training

H&H will only employ qualified personnel to execute the scope of work.

The Project Manager is responsible to review the record of each employee and determine if the background and experience of the employee is acceptable for the assigned scope of work.

The Project Manager is responsible to ensure staff assigned to the Project is properly trained in the QMP, Procedures/Instructions, any project-unique technical requirements, availability of technical resources, etc. within the consultant organization as they relate to the Scope of Work, and has valid evidence of fitness (certification, license, etc.) for executing the work for this Project.

Training will consist of in-house education and field experience. H&H staff found deficient will not be assigned work in their area of deficiency until requirements for the position are met.

### 3.1.2 Project Description

To provide engineering and related services under an Indefinite Delivery / Indefinite Quantity (IDIQ) contract for Bridge Preservation statewide.

## 3.2 Scope of Work

Hardesty & Hanover will perform all engineering and related services required in accordance with the requirements of the LADOTD Bridge Design and Evaluation Manual (BDEM) and Bridge Design Technical Memoranda (BDTMs). As specified in the IDIQ Contract, Hardesty & Hanover will provide the following general scope of engineering services. The specific services will be detailed in individual Task Orders (TOs) which will specify TO-specific scope of Services, contract time, and compensation.

### 3.2.1 Bridge Design Services

#### 3.2.1.1 General Bridge Engineering Services

Hardesty & Hanover will provide bridge engineering services for both fixed and movable bridges as required by the specific Task Order. Types of services provided include, but are not limited to, new bridges, bridge replacements, bridge rehabilitation, bridge preventive maintenance and repair, and roadway lighting. Bridge engineering services

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shall also include, but are not limited to, structural, mechanical, electrical, and architectural feasibility, design, and plan development as well as the following:

- Bridge/structural inspection and evaluation of existing bridges or other structures (sign trusses, fender systems, etc.) along with associated report as required
- As-designed, as-built, and condition bridge ratings
- Design peer review of developed plans or conceptual designs to verify concept, constructability, and accuracy of designs along with associated reports, conclusions, calculations, and recommendations as needed
- Construction engineering support including construction drawing review, shop drawing review, request for information support, contractor proposals, etc.

#### 3.2.1.2 Sampling, Instrumentation, and Non-destructive Testing

Hardesty & Hanover will provide sampling, instrumentation, and non-destructive testing services as required by the specific Task Order. These services include, but are not limited to, collection of samples of materials from existing structures for evaluation, diagnostic and/or proof testing to determine specific structure response characteristics and/or to determine the causation of observed distresses, and instrumentation, as well as the following:

#### Sampling

- Collection of samples
- Evaluation of protective coating material samples for determination of compatibility with proposed coatings, analysis for heavy metals, proper procedures for treatment, handling, disposal of waste, etc.

#### Instrumentation

- Design of instrumentation plans. Installation of instrumentation, data acquisition, analysis, and evaluation of structure based on instrumentation plan
- Provision and installation of instrumentation, including all materials required to mount the instrumentation
- Provision of data acquisition systems, software updates, power supplies, communication to data servers, data hosting services, maintenance, and data access to DOTD
- Calibration services for instrumentation systems and sensors
- Maintenance services to repair and/or replace sensors, data acquisition systems, and power supplies
- Analysis and evaluation of accumulated data and final assessments and development of corresponding reports based on data and associated calculations

#### Non-destructive Testing

- Proof loading
- Estimation of concrete strength
- Assessment of reinforcement condition, cover, location, and diameter
- Detection of cracks, voids, and delamination in concrete
- Assessment of steel member condition

### 3.2.2 Geotechnical Services

Hardesty & Hanover will provide all geotechnical services necessary to perform geotechnical investigations, analysis, and design. These services include, but are not limited to, the following:

- Geotechnical field investigations including both shallow and deep soil borings
- Geotechnical laboratory testing and analysis
- Preparation of soil boring logs
- Geotechnical analysis and design based on obtained data or data furnished by the DOTD

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• Construction related engineering service

### 3.2.3 Road Design and Traffic Services

Hardesty & Hanover will provide all services necessary to perform hydraulic, road, and traffic investigation, analysis, and design. These services include, but are not limited to, the following:

- Preliminary and final roadway design and plan development
- Hydraulic analysis and design
- Traffic engineering, traffic control design, and data collection
- Transportation Management Plan (TMP) development

### 3.2.4 Surveying and Title Work Services

Hardesty & Hanover will provide all surveying and title work services necessary to perform topographic, and boundary surveying, develop right-of-way maps, and provide other existing site data. These services include, but are not limited to, the following:

- Topographic surveying, 3D laser scanning, and underwater acoustical imaging including both multi-beam and side scan hydrographic surveys
- Property and boundary surveying
- Property title work including title research and reports
- Construction related surveying services

### 3.2.5 Bridge Inspection Services

Hardesty & Hanover will provide all services required to perform Statewide NBIS In-Depth Inspections of complex structures. These services include, but are not limited to, the following:

- Detailed in-depth field inspection on all bridge components, including an element level inspection. As well as an NBIS underwater bridge inspection where required for submerged elements.
- Assessment of the coating system, conducted by a certified SSPC Protective Coating Specialist or a certified NACE Bridge Coating Inspector
- In-depth inspection report outlining recommended repairs, rehabilitation, and corrections.

### 3.2.6 Environmental and Permitting Services

Hardesty & Hanover will provide all environmental and permitting services necessary to obtain project permits. Including, but not limited to, the following permit types:

- Coastal Use permits (CUP) from the LA Department of Natural Resources
- Wetland permits (404 and Nationwide) and Section 10 permits from the US Army Corps of Engineers
- Water Quality Certification from the LA Department of Environmental Quality
- Scenic Stream permits from the LA Department of Wildlife and Fisheries
- Bridge permits from the US Coast Guard
- Levee permits from various levee boards

### 3.2.7 Services to be Performed / Items to be Provided by LADOTD

If available, the DOTD will provide the following information as applicable:

- Existing survey, plans, details, and design information
- Pavement design
- Hydraulic data

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- Traffic data
- Standard Plans and Special Details
- As-built plans
- Access to General Files for viewing available plans, details, and records
- Access to Virtis input tables for On-System Bridges
- DOTD design and rating manuals, policies, and guidelines

## 3.3 Deliverables

All work will be performed in accordance with all applicable DOTD policies, procedures, and manuals. All deliverables will meet the requirements of Attachment A of the *LADOTD Advertisement for Engineering and Related Services, Contract Nos.* 4400023921, 4400023922, 4400023923, 4400024185, 4400024186, 4400024187, 4400024188, AND 4400024189, IDIQ Contracts For Bridge Preservation Statewide.

Design criteria for each Task Order will be developed and submitted to the Bridge Task Manger for review and approval prior to proceeding with design.

Required submittals, associated schedule, and format will be as established in each Task Order and agreed upon by Hardesty & Hanover and the Bridge Design Task Manager. All bridge plan submittals will be submitted in pdf format and the 100% signed final plans will be submitted both in full size paper and in pdf format. Plans will be delivered electronically using ProjectWise for all pdf submittals. Design and rating calculations will be submitted in pdf format no later than 30 days after the 100% final plan submittal.

### 3.3.1 Electronic Deliverables

Hardesty & Hanover will adhere to the DOTD Software and Deliverable Standards for Electronic Plans document and DOTD CAD Standards available via links on the DOTD web site. Hardesty & Hanover hereby agrees to produce electronic deliverables in conformance with the DOTD Software and Deliverable Standards for Electronic Plans document in effect as of the effective date of the most recent contract action or modification, unless exempted in writing by the Project Manager. Hardesty & Hanover is also responsible for ensuring that sub-consultants submit their electronic deliverables in conformance with the same standards.

Hardesty & Hanover will apply patches to CAD Standard Resources and install incremental updates of software as needed or required. Hardesty & Hanover hereby agrees to install major updates to software versions and CAD Standard Resources in a timely manner. Major updates of CAD standards and software versions will be applied per directive or approval of the DOTD Design Automation Manager. Such updates will not have a significant impact on the plan development time or project delivery date, nor will they require Hardesty & Hanover to purchase additional software. Prior to proceeding with plan development, Hardesty & Hanover will contact the Project Manager for any special instructions regarding project-specific requirements.

In the event that any Digital Plan Delivery Standard conflicts with written documentation, including DOTD plandevelopment Manuals, the Digital Plan Delivery Standard governs. Hardesty & Hanover is responsible for contacting the Project Manager should questions arise.

Hardesty & Hanover will upload (or check in) electronic deliverables directly into the DOTD ProjectWise repository at each plan delivery milestone. Hardesty & Hanover is responsible for performing certain operations at each milestone including, but not limited to, the following:

- Upload (or check in) CAD plan deliverables to the discipline "Plans" folder
- Apply and maintain indexing attributes to CAD plans (and other deliverables as needed)
- Publish PDF format plan submittals in ProjectWise using automated publishing tools

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• Digitally sign PDF format plan submittals in ProjectWise according to DOTD standards and procedures (Final Plans, Revisions and Change Orders). Signatures will be applied in signature blocks provided with electronic seals and Title Sheets.

Additionally, after reviewing deliverables for each submittal milestone, the Project Manager will notify Hardesty & Hanover regarding the availability of two automatically-generated informational reports in ProjectWise. These reports document the completion status and other information regarding indexing attributes and CAD standards. Hardesty & Hanover will take these reports into account and make any necessary adjustments to plans before the next submittal milestone; or sooner, if directed by the Project Manager.

### 3.3.2 Specific Software And / Or Equipment Desired

Hardesty & Hanover will use software that is on the list of pre-approved commercially available software posted on the bridge design website.

If any other software is required for unique applications for which pre-approved software cannot be used, Hardesty & Hanover will submit a synopsis of the software to the Bridge Design Engineer Administrator for approval prior to use. The synopsis will include the name of the software and the developer, a general description of the functions, a certification from the software developer stating that it is maintained in accordance with the latest AASHTO LRFD Bridge Design Specifications, and an account of the requester's experience and the experience of other organizations or agencies that use the software.

### 3.3.3 Audit Schedule

In accordance with Section 6.3 of the Quality Assurance Plan, Quality Audits shall be determined and scheduled by the Chief Technical Officer or Quality Manager.

## 3.4 Project Specific Procedures

The H&H Quality Control Plan and Quality Assurance Plan shall be followed in their entirety as enclosed and as amended below.

### 3.4.1 Quality Control Plan Modifications

The H&H firm standard QC Plan attached in Appendix C shall be supplemented by the requirements of the LADOTD Bridge Design Section Policy for QC/QA as stated in Part I, Chapter 3 of the *LADOTD Bridge Design and Evaluation Manual (BDEM)*, and as set forth in this project specific Quality Management Plan. The requirements of the LADOTD Bridge Design Section Policy for QC/QA as stated in Part I, Chapter 3 of the *LADOTD Bridge Design and Evaluation Manual (BDEM)*, shall take precedence over the H&H firm standard QC Plan.

### 3.4.2 Quality Assurance Plan Modifications

The H&H firm standard QA Plan attached in Appendix B shall be supplemented by the requirements of the LADOTD Bridge Design Section Policy for QC/QA as stated in Part I, Chapter 3 of the *LADOTD Bridge Design and Evaluation Manual (BDEM)*, and as set forth in this project specific Quality Management Plan. The requirements of the LADOTD Bridge Design Section Policy for QC/QA as stated in Part I, Chapter 3 of the *LADOTD Bridge Design and Evaluation Manual (BDEM)*, shall take precedence over the H&H firm standard QA Plan.

## 4.0 Sub-Consultants

Subconsultants are responsible for performing their own Quality Control in accordance with the requirements of this Quality Management Plan. In accordance with Section 7.0 of the H&H Quality Assurance Plan, subconsultants that choose not to provide their own QA/QC plans must adopt the H&H QA/QC plans. All subconsultant submittals shall be accompanied by the signed H&H Subconsultant Certification Form and QA checklist, contained in Appendix D.

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# Appendix A

# **H&H Project Organization Chart**



#### **BRIDGE INSPECTION**

Elizabeth Barrabas, PE (H&H) Timothy Harrington, PE (H&H) Briana Kovacs, PE (H&H) Paul Marzuillo, PE (H&H) Amy Robards, PE (H&H) Rima Zahlan, PE (H&H) Mike Russell, El (M&N)

#### **U/W INSPECTION**

Steven Armstrong, PE, ADCI (M&N) Charles Balzarini, PE, ADCI (M&N) Matthew Balzarini, PE, ADCI (M&N) Jeffrey Gazarek, ADCI (M&N) Chace Hulon, PE, ADCI (M&N) Joshua Martinez, PE, ADCI (M&N) Laura Miller, EI, ADCI (M&N)

#### STRUCTURAL/ FIXED BRIDGES

John Corven, PE (H&H)<sup>3</sup> Dennis Gowins, PE (H&H)<sup>3</sup> Rodney Jarrett, PE (H&H)<sup>3</sup> Opio Hunter, PE (H&H) Linh Kim, EI (H&H) Rafal Wuttrich, PE (H&H)

#### LOAD RATING

Erik Diaz, PE (H&H)<sup>4</sup> Roberto Viciedo, PE (H&H)<sup>4</sup>

### **BRIDGE ENGINEERING**

#### STRUCTURAL/MOVABLE BRIDGES

Steve Harlacker, PE (H&H)<sup>7</sup> Benjamin Hawthorne, PE (H&H)<sup>7</sup> James Newberry, PE (H&H)<sup>7</sup> Rafal Wuttrich, PE (H&H)

#### PROTECTIVE COATING ASSESSMENT

Robert Lanterman (KTA) Greg Richards (KTA)) Pedro Sanchez (KTA)

#### MECHANICAL/MOVABLE BRIDGES

Jason Biddle, PE (H&H)<sup>5</sup> Travis Kimmins, PE (H&H)<sup>5</sup> Donald Marinelli, PE (H&H)<sup>5</sup> Kevin Ciampi, PE (H&H) Vilius Ruseckas (H&H)

#### **NON-DESTRUCTIVE TESTING**

Brett Commander, PE (BDI) Jesse Sipple, PhD, PE (BDI) Shane Boone, PhD (BDI) Charles Young, PE (BDI)

#### ELECTRICAL/MOVABLE BRIDGES

Andrew Barthle, PE (H&H)<sup>6</sup> Marco Lara, PE (H&H)<sup>6</sup>

Christopher Svara, PE (H&H)<sup>6</sup> Sayyid Khan, PE (H&H) Kenneth Pecquet, EI (H&H)

#### **CONSTRUCTABILITY**

James Phillips, PE (H&H)<sup>7</sup> Fred Wetekamm, PE (H&H)

### GEOTECHNICAL ENGINEERING

Raymond Mankbadi, PE (H&H)<sup>9</sup>

#### SUBSURFACE EXPLORATION & GEOTECHNICAL DESIGN

Sergio Aviles, PE (APS)<sup>9</sup> Sairam Eddanapudi, ME, PE (APS) Surendra Raj Pathak, PE (APS)

### **ROADWAY DESIGN**

Robert Hideck, PE (H&H)<sup>8</sup>

Zineb Bennouna, PE (H&H) Webb Jones, PE (H&H)

#### **DRAINAGE DESIGN**

Jason Dunn, PE (H&H) Zachary Gross, PE (H&H)

#### <u>SURVEY</u>

Land: J. Alex Chustz, PLS (CS) Hydrographic: James Chustz, Jr., PLS (CS) Underwater: Mark Huber, CH (CS)

#### **TRAFFIC ENGINEERING**

Alison Michel, PE, PTOE, PTP, RSP (US) Nicole Stewart, PE PTOE (US) Page 214 of 272

### **SUPPORT SERVICES**

BRIDGE HYDRAULICS Lee Adams, PE (H&H) John Withohn, PE (H&H)

### ARCHITECTURE

Daniel Tarantino, AIA (H&H)

#### **ENVIRONMENTAL ENGINEERING & PERMITTING**

Tonya Koob Marking, PhD, PE, CFM, LEED AP (GC) Lauren Peytavin, El (GC)

**CONSTRUCTION COST ESTIMATING** 

Kevin Meehan (H&H)
# Appendix B

# H&H Quality Assurance Plan





# Hardesty & Hanover, LLC Quality Assurance Plan

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# 1.0 Introduction

Quality Assurance is the systematic review of our design and development processes and our Quality Control activities to confirm that the desired level of quality has been attained and will continue to be obtained. Quality Assurance identifies procedural shortfalls and recommends changes to improve our processes.

Quality Assurance is a company-wide process that confirms that the proper processes are in place to assure that our services and products meet the requisite standard of care.

# 2.0 Key Definitions and Roles

# 2.1 Key Definitions

- a) **Back Checker:** The individual who reviews the Checker's comments. The Originator / Producer functions as the Back Checker unless another qualified individual is assigned by the PM.
- b) Checker: The individual who through education and/or experience is knowledgeable within an area of technical subject matter, who has been assigned by project leadership to perform an accuracy and correctness check of technical content.
- c) Check Print: The copy of the work product to be used in the quality control process. The Check Print may be a hard (paper) copy or a digital file such as a Portable Document File (PDF) that is capable of recording review markups. A Check Print is required at each Hold Point and may be requested by the Client, PM, or HQ at a Witness Point. Refer to the appropriate process by document type / class in section 4 for Check Print contents.
- d) Director of Engineering: The Director of Engineering is responsible for overall allocation of staff to projects directly or through coordination with the Office Managers and/or other Staffing Managers, depending on the business unit. For the purposes of this document, the title "Staffing Manager" is used to represent the role of the Office Manager, New York Staffing Manager, or Director of Engineering with respect to assignment of resources.
- e) **Engineer of Record:** A licensed Professional Engineer responsible for signing and sealing design reports, plans, and specifications which they prepared, or which were prepared under their direct supervision.
- f) Fundamental Project: Projects that represent core services for existing clients that do not represent significant or unusual risk to the firm or substantial revenue relative to a specific business unit. Refer to Operating Policy OP-06 for further information.
- g) Hold Point: A level of design where specific aspects of the project such as design objectives, design criteria, and principal geometry are typically locked in. At a minimum, Concept level plans (10-15% design), Final plans (100% design), and Issued For Construction (IFC) or Released For Construction (RFC) plans are mandatory Hold Points.
- h) HQ: Also referred to as Headquarters Engineering. This specifically refers to the authority of the technical directors such as but not limited to the Chief Technical Officer, Director of Engineering, Risk Management Officer, Quality Manager, or respective Practice Leaders and Chief Engineers.
- i) **Independent Check**: Verification of a calculation by performing a separate standalone calculation to confirm results in lieu of performing a detailed check.
- j) **Internal Technical Reviewer**: Reviewer for a project or portion thereof that has not been a principal participant in the development of a work product.

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- k) **Key Project:** Any project that does not meet the definition of a Fundamental Project. Refer to Operating Policy OP-06 for further information.
- I) **Originator / Producer**: The individual, qualified by experience in the applicable discipline, who is assigned to prepare documents and/or generate work product.
- m) **Phase Submittal**: A milestone submittal of a preliminary work product to a client (i.e. concept plans, 60% plans, or similar prior to final.)
- n) **Plans**: Drawings and/or CADD files created by H&H for use by the Client as part of the contract or bid documents or, in the case of alternative delivery such as design/build, to construct the project.
- o) Preliminary: A document, including reports, plans, specifications, or similar documents, prepared by H&H and submitted to the client prior to the anticipated final submittal of such document. Preliminary documents are 100% complete and validated by QC but represent a lesser level of development than the final work product.
- p) Principal In Charge: The Principal in Charge (PIC) is responsible for the overall project and delivery of our services to the client. The PIC leads negotiations for contractual agreements with the client and is responsible for overall client satisfaction. The PIC is to be aware of the project performance, both technical and financial, and ensure the Project Manager is performing his/her duties in accordance with the firm requirements.
- q) Project Management Plan (PMP): The plan developed by the Project Manager prior to project initiation to describe "how" and "by whom" a specific project will be performed, including detailed budget, schedule, resources, responsibilities, communications and quality. The Project Management Plan includes the Operations Plan, Technical Plan and Quality Management Plan.
- r) Quality Management Plan (QMP): The plan developed by the Project Manager to describe specific quality requirements for a given project. The QMP typically includes variances or enhancements to the firm standard QMP.
- s) **Quality Assurance (QA):** The systematic review of design and development processes, specifically Quality Control activities, to confirm that processes are implemented per policy and the desired level of quality has been attained and will continue to be obtained. Quality Assurance identifies procedural shortfalls and recommends changes to improve processes where appropriate.
- t) **Quality Auditor:** A person who is an Engineer or Manager that is assigned by HQ to perform a Quality Assurance Audit for a project.
- Quality Control (QC): Systematic activities undertaken to minimize errors, discrepancies, and omissions in a work product, to ensure adherence to industry standards and to deliver an exceptional product to our clients.
- QC Stamp: A physical or digital stamp applied to work product to signify that it is the check copy (aka Check Print) and for recording the initials and dates of the individuals who performed the quality control process.
- w) Verifier: The individual assigned to verify that the Checker's and Originator / Producer's comments have been implemented. The Verifier may be any individual assigned by the PM but will preferably be the Checker.

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# 2.2 Key Roles

There are several responsible parties involved in the Quality Assurance of a project from inception to completion. Their project and quality specific roles and responsibilities are described below.

Based on the project staffing needs identified, in terms of skill set and level of experience, and the basic project organization structure, the staff related to the key roles of Project Manager, Project Engineer, Project Quality Assurance Lead, and Discipline or Task Lead should be identified. An org chart or responsibility matrix showing these positions should be included in the project files and updated to reflect any staff changes as the project progresses.

# 2.2.1 Discipline or Task Lead

- a) Project Responsibilities
  - 1) Typically, the engineer in responsible charge of a specific design segment and required to sign/seal as Engineer of Record (EOR) unless client or other requirements exist.
- b) Quality Responsibilities
  - 1) Responsible for ensuring that QC has been completed and that the documents have been provided to the Project Quality Assurance Lead, or the Project Manager if no Project Quality Assurance Lead has been assigned for their specific design segment or portion of a project.
  - 2) Responsible for coordination with the Project Engineer if a Project Submission Report is to be prepared, as described in Section 5

# 2.2.2 Project Engineer

A project may have more than one Project Engineer (PE) on large multi-disciplinary projects where work is divided into segments or disciplines. The Project Engineer shall be a licensed Professional Engineer in the jurisdiction of the project.

- a) Project Responsibilities
  - 1) The Project Engineer is responsible for project development and delivery according to the requirements communicated by the Project Manager (PM).
  - 2) Based on the organization of the project as determined by the Chief Technical Officer and the PM, the Project Engineer may be the technical lead for key decisions during the project development process. Alternatively, the Project Engineer may lead the project delivery efforts and work closely with the project Technical Lead in defining the technical direction of the project.
  - 3) Provides communication and direction to technical staff.
  - 4) In coordination with each design lead, the Project Engineer is encouraged to prepare a Project Submission Report as described in Section 5
- b) Quality Responsibilities
  - 1) Serves as an intermediary between the Project Quality Assurance Lead and project development activities.
  - 2) In instances where the Project Engineer is the technical lead for the project, the Project Engineer is responsible to document the key decisions including code interpretations, contract nonconformances, and deviations made and document acceptance of these decisions by the PM. Documentation of such instances must be made available to the Project Quality Assurance Lead and Quality Manager.

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- 3) In instances where the Project Engineer is the Project Quality Assurance Lead, the Project Engineer is responsible for all responsibilities listed in Section 2.2.3 below including but not limited to:
  - a) Scheduling Quality Assurance Reviews as required in Section 3.1 below.
  - b) Providing necessary information to the Quality Auditor. Necessary information includes writeups for complex or complicated design documents or computations to facilitate review.

### 2.2.3 Project Quality Assurance Lead

The Project Quality Assurance Lead (PQAL) is assigned by the Project Manager and may be a third party not involved in project development but is typically the Project Engineer. The PQAL is responsible for the collection and appropriate filing of all Quality Control and Quality Assurance documentation. If separate from the Project Engineer, the PQAL should be a licensed professional engineer, and responsible for oversight of project specific quality activities.

The PQAL shall report to the Project Manager and the Quality Manager as outlined below.

The PQAL must be familiar with Client Requirements.

- a) Project Responsibilities
  - 1) Communicates with Project Manager and Project Engineer on a regular basis to maintain the QC review schedule for projects.
  - 2) Maintains an auditable record of all QC reporting forms generated during design reviews.
- b) Quality Responsibilities
  - 1) Has 'halt work' authority for nonconformance.
  - 2) Responsible for management of the Quality Control and Quality Assurance process either directly or through delegation.
  - 3) Shall direct QC efforts and verify that the QC activities have been performed and that qualified and competent personnel have undertaken the QC activities in coordination with the Project Engineer. Quality Control shall be done by project level staff directly involved with design activities.
  - 4) Responsible for performing Quality Assurance Reviews. The PQAL shall review the project Quality Control documentation in advance of submission to confirm that design QC activities are complete and comply with the Quality Management Plan.
    - a. Quality Control Documents that are not accompanied by appropriate information or explanation may be rejected by the PQAL and returned to the Project Engineer for completion.
    - b. Documents the results of the QA review activities, verifies incorporation of comments made during QA reviews, and resolves outstanding comments through communication with the Project Manager and Project Engineer.
      - i. Identifies and records nonconformance on the Quality Assurance Report Form.
      - ii. Tracks, monitors, and reports to the Project Manager and Quality Manager on the status of outstanding design-related nonconformance reports as requested.
  - 5) Generates Quality Assurance reports using the Quality Assurance Report Form when requested by the Quality Manager. The report is submitted to HQ and a copy is placed in the project files.

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# 2.2.4 Project Manager

The Project Manager (PM) is responsible for all activities necessary to deliver H&H services in accordance with the contract requirements.

- a) Project Responsibilities:
  - 1) The Project Manager is responsible for the project financial performance as well as oversight of the technical sufficiency of the services.
  - 2) The PM is responsible for developing the Project Technical Approach Plan in accordance with Operating Policy OP-06 and for meeting all project specific goals set forth in the Plan.
  - 3) The PM directs the development and delivery process. The PM also directs all communication with the Client.
  - 4) The PM coordinates with the Staffing Manager on project staff needs.
  - 5) The PM's activities shall include, as a minimum, assessment and evaluation of the following as they are applicable to a given project:
    - a. Design reports
    - b. Analytical approach
    - c. Drawing details for conformity to Contract requirements
    - d. Project Specifications for conformity to Contract requirements
    - e. Design and Work Plans
    - f. Major temporary components' effect on permanent components
    - g. Field design changes
    - h. Design approvals for Materials and procedures
    - i. As-Built Plans for conformity with final design and Contract requirements.
  - 6) The PM, and/or staff working under the direct supervision of the PM, shall conduct an assessment and evaluation of design such that the PM can certify to the Chief Technical Officer, the Quality Manager, and to the Client, if required, that the design satisfies the Contract requirements, including the following requirements:
    - a. Accuracy
    - b. Adequacy
    - c. Conformance to standards of practice
    - d. Compliance with codes and standards
    - e. Quality
    - f. Fitness for purpose and/or function as specified and/or implied in the Contract
    - g. Conformance with the standard practices and specifications of the Client.
  - 7) Sign the Quality Assurance Report Form.

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- a. The Project Manager, certifies that the noted submittal for the referenced project has completed and met the requirements of the Project Quality Management Plan, is complete for the level of development and meets the requirements of Hardesty & Hanover.
- b) Quality Responsibilities
  - 1) The Project Manager develops a Quality Management Plan to meet the specific project goals and requirements. The QMP is submitted to the Quality Manager for review.

### 2.2.5 Discipline Chief Engineer

- a) Project Responsibilities
  - 1) Does not typically have direct project development responsibilities unless assigned to the project.
- b) Quality Responsibilities
  - Upon request of the Project Manager, resolves and documents the resolution of any differences of opinion between the Checker and Back Checker during Quality Control and provides this information to the Project Quality Assurance Lead (PQAL) or the Project Manager if no PQAL has been assigned.
  - 2) Attends both the Project Initiation Technical Meeting and the Project Staff Kick-off Meeting. Based on the scope and discussions at the Project Initiation Technical Meeting, the CTO and Chief Engineers decide the level of HQ Oversight and Chief Engineer (or delegate) involvement appropriate for the project.

### 2.2.6 Quality Manager

The Quality Manager (QM) has firm wide responsibility for confirming that Project Managers have developed and adhered to Quality Management Plans for individual projects. The QM is responsible for meeting the quality goals and objectives set by the Chief Technical Officer.

The QM provides oversight of the review and audit process through coordination with the Project Managers and Project Quality Assurance Leads.

- a) Project Responsibilities:
  - 1) Reviews and approves Quality Management Plans in support of firm goals.
- b) Quality Responsibilities:
  - 1) Develops a framework for the H&H Quality Control and Assurance Plans. Manages and implements these policy documents.
  - 2) Evaluates existing plans to determine if plans are effective.
  - 3) Recommends improvements to existing plans.
  - 4) Directs the performance of internal audits of the quality process on a project-by-project basis. Prepares nonconformance reports if required.
  - 5) Has 'halt work' authority for nonconformance.
  - 6) Prepares periodic reports to the Chief Technical Officer identifying:
    - a. QC activities performed by project as directed by the QM
    - b. Submissions-prior completed and future planned
    - c. Projects that may require additional technical oversight



- d. Contract nonconformance reports
- e. QC Plan nonconformance reports.

### 2.2.7 Chief Technical Officer

The Chief Technical Officer (CTO) is responsible for the technical quality of the services of the firm. In this capacity, the CTO defines policies and directives that establish the minimum performance criteria for the technical services of the firm.

- a) Quality Responsibilities:
  - 1) Establishes quality goals and objectives
  - 2) Monitors the performance of the Quality Manager and supporting quality staff
  - 3) Performs independent review of Key Projects
  - 4) Has 'Halt work' authority for project technical services.

# 3.0 General Intent

All projects require a Quality Management Plan (QMP) as part of the Project Management Plan. Planning for Quality Assurance is an integral part of the QMP to be developed by the Project Manager prior to project inception. The Quality Management Plan shall follow the H&H Quality Management Plan Template, modified as necessary for project and client requirements, to ensure the quality of our services meets the requirements of the client within the requisite standard of care. All Quality Management Plans are subject to the approval of the Quality Manager.

The intent of this Quality Assurance Plan is to provide procedural controls for maintaining the quality of work delivered to the Client through communication and verification. Quality Assurance is not a substitute for appropriate project quality control activities.

Quality Assurance is validation that our services and products meet the requisite standard of care and communication of those standards. It is a company-wide process that confirms that the proper processes are in place and being followed.

Examples of Quality Assurance activities include:

- a) Quality Assurance Review Review, by the Project Quality Assurance Lead, of documented internal and external comments generated during the internal QC process or external milestone review and confirmation that all comments were addressed, or the reviewer agrees to non-incorporation on the basis of sufficient explanation.
- b) Quality Assurance Audit Audits consist of a review, by HQ or their designee in conjunction with the Project Manager and the Project Quality Assurance Lead, of Quality Control functions and documentation for conformance with applicable procedures. Quality Assurance Audits are covered in Section 6 of this document.
- c) Project Initiation Meetings Project Initiation Meetings consist of two meetings held prior to the initiation of services and are discussed further in Section 5.
- d) Project Submission Reports Optional report, prepared prior to phase or final submission of design plans and calculations and provided with the submission. Further discussion provided in Section 5.

# 3.1 Schedule & Frequency of QA Activities

QC processes are performed as work products are developed and/or at various stages of project development and need to be accounted for in the project development schedule. Quality Assurance must consider that the work may

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proceed through several major stages and that at completion of each milestone in the development of a project, major interdisciplinary coordination, or Internal Technical Review, the Quality Control documentation will be developed.

The key to assurance of quality is verification that the quality control procedures and supplementary activities have been implemented and, if not, the Project Manager is informed of the discrepancies. The PM is responsible to plan and execute corrective actions. These actions require documentation by the Quality Manager and review of this documentation by the firm's Chief Technical Officer.

# 4.0 Documentation Requirements

# 4.1 Control of Documents

The Project Manager is directly or through delegation responsible for the handling and storage of all project documents. The Project Manager should identify and communicate to all project staff the location of all project documentation. Access to project documentation - including but not limited to filing, letters, memos, records, reports, calculations, computer output, drawings, specifications, and QA/QC documentation - shall be in accordance with the Hardesty & Hanover "Document Control and Retention Guidelines" and the requirements of the Project Information Control System (PICS). Files may be accessed by authorized personnel only.

The Project Quality Assurance Lead is responsible for the proper use, distribution, and approval of quality related documents. The Project Quality Assurance Lead, in implementing these duties, will prepare and distribute a written procedure for use on the project, as well as any checklists of quality related documents considered to be necessary.

Documentation must be kept in order to provide a record that the development and review process was performed as required. This documentation must include records of the important steps which led to the development of final planning documents as well as the final design, such as preliminary concepts, model validation, design calculations, computer code input and any communications, instructions and directives which have a direct bearing on the project.

# 4.2 Change Control of Design Documents

# 4.2.1 Change Control of Design Documents during Design

Once a Quality Assurance review has been initiated on a milestone submittal, work shall not continue to be progressed until after the submission has been made. Revisions to Project Design Documents shall not be permitted prior to a milestone submittal after the Verifier has signed off on the Check Print.

# 4.2.2 Change Control of Documents during Construction

The Project Manager is responsible to provide the interface with the client during the pre-bid, bid, and award stages of the Construction Contract. Supplements or addenda developed during this period shall receive the same level of review as the original document and be reviewed by the Discipline or Task Lead Engineer prior to issue.

As-Built Drawings and Specifications shall be developed per Contract/Agreement requirements. As-Builts shall be independently reviewed to assure field marked prints and other sources of as-built information have been correctly translated onto the original document.

Revisions to Project Design Documents shall be controlled. Methods are established with the project Construction Management Team on a project-specific basis to assure revisions are reviewed to the same level as the original documents for the area of change and previous versions of the documents undergoing change have been appropriately controlled to prevent inadvertent use. Prior to submission, the Project Manager and Discipline or Task Lead Engineer shall review the Project Design Documents. Records of these activities shall be maintained by the Discipline or Task Lead Engineer.

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# 4.3 Control of Records

Sufficient documentation and records will be accumulated to provide objective evidence that the design development and review process has been performed in accordance with accepted engineering practice, as well as in conformance to contractual requirements and client directions, including pertinent quality records of subconsultants, if any.

The documentation will include not only final design documents, such as drawings and specifications, but records of important steps which led to the final design, such as design calculations, communications, instructions and directives which have a direct bearing on the project.

Control of records shall be in accordance with the Hardesty & Hanover "Document Control and Retention Guidelines" and the requirements of the Project Information Control System (PICS). Records will be filed by subject, date, file category, etc. Quality Assurance reviews and audits and corrective action will be stored electronically and filed in the 200-PM\QA folder in the electronic project files along with the approved Project Quality Management Plan.

An Index of Project Records will be part of the File. Responsibility for the accuracy and completeness of the records is assigned to the Project Manager or their designee.

Access to records will be under control of the Project Manager or their designee.

Removal of records to a location other than the immediate area where the file is located will be restricted to authorized persons (Principal and Project Manager). Measures to identify removed files and their current location shall be maintained. Security measures as determined by the Project Manager will be applied to those records dealing with Construction Cost Estimates.

The Project Manager, in accordance with the provisions of the contract, will identify those records to be transmitted to the Client upon completion of the Project and transmit the appropriate records.

# 5.0 Communication Protocols

Quality should be advocated from the top down and the bottom up through communication between all levels of the project. Quality is achieved through adequate planning, scoping, communications and coordination, supervision, and technical direction; by providing adequate time in the schedule for thorough reviews; by proper definition of job requirements and procedures; by the use of appropriately skilled personnel; and by individuals performing their work functions carefully.

The Project Manager is responsible to ensure the project team understands the necessary steps and has the proper time to execute the necessary activities.

This section sets the minimum requirements for communication during project development.

# 5.1 Pre-Project

During the period before the initiation of the project, the Project Manager is responsible to develop the QMP as required by Operating Policy OP-06. During this phase, the Project Manager must communicate with the Client, HQ, the Quality Manager, and the Staffing Managers for the various disciplines required by the scope of services to identify resources for delivery and quality activities. Information from the QMP shall be entered into the Vision database, including but not limited to, designation of project category as Key or Fundamental per Operating Policy OP-06, project stage and proposed submission schedule.

In some circumstances the Quality Management Plan may be part of the project pursuit process and proposal. This is particularly true with Design-Build pursuits. For all projects, the QMP is subject to approval of the Quality Manager and/or Chief Technical Officer for use during project execution.

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# 5.2 Project Start-up

Assuring the quality of our services requires each project to begin with the ultimate goals in mind. To this end, the quality process will have several specific and required steps as part of the project start-up procedure. The following identifies the minimum recommended steps to be taken and documented prior to the initiation of any project.

# 5.2.1 Project Initiation Technical Meeting

Subsequent to review of the Project Technical Plan, the CTO will determine if the project requires a Project Initiation Technical Meeting. If required, a Project Initiation Technical Meeting will be scheduled with the firm technical managers. The purpose of this meeting is to discuss the following:

- a) Scope of services
- b) Client expectations
- c) Project schedule
- d) Anticipated work plan and staffing needs
- e) Specific technical requirements or complexities
- f) Risks associated with the project and the intended mitigation measures
- g) Quality Management Plan

The following individuals, or their appointed representative, should participate in the Project Initiation Technical Meeting:

- a) Chief Technical Officer
- b) Chief Operating Officer/Director of Project Management
- c) Quality Manager
- d) Principal-in-Charge (At their discretion)
- e) Project Manager
- f) Project Engineer

The Project Manager shall be responsible for taking minutes of the meeting and distributing the minutes to all attendees. Approved minutes shall be filed in the Project folder.

Subsequent to the Project Initiation Technical Meeting, the Staffing Manager will assign specific resources for the project based on the needs identified at the meeting. These specific resources should be utilized by the project management team to fulfill the key roles in the project work plan.

The Project Initiation Technical Meeting may serve as the formal initiation of the project.

# 5.2.2 Project Staff Kick-off Meeting

Once the specific resources are assigned and their roles identified, the Project Management team should schedule a Project Staff Kick-off meeting. The Project Staff Kick-off meeting serves to inform the assigned staff of the following:

- a) Scope of services
- b) Project schedule including document submittals, number, and degree of completion
- c) Key staff roles and associated responsibilities
- d) Quality Management Plan including key staff assigned for Quality Control and Assurance activities

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e) Quality activities shall occur and be documented throughout the project development process.

The following individuals, or their appointed representative, should participate in the Staff Kick-off Meeting:

- a) Project Manager
- b) Project Engineer
- c) Project Quality Assurance Lead
- d) Project Discipline or Task Leads

The Project Manager shall prepare and submit the minutes of the meeting to the attendees of the Project Staff Kickoff meeting and the Project Initiation Technical Meeting.

# 5.3 Project Development

Phase submissions to the client, and other preliminary document reviews, such as technical policy or constructability, should be identified in the Quality Management Plan. At project inception, the Project Manager will assign dates to each phase submission and provide the schedule in Vision for incorporation into a companywide schedule for quality management activities. The Project Manager shall inform the Quality Manager or a member of the quality management support staff, as appropriate, of changes to the project schedule that impact the milestone dates.

Communication processes during project development at a minimum should include the following:

- a) Providing all information covered during the Project Staff Kick-off Meeting and the minutes from that meeting to any new staff joining the project.
- b) Coordination with the Project Quality Assurance Lead, Discipline or Task Leads, and the Project Engineer to ensure that all documentation is being filed according to the QMP.
- c) Coordination with the Project Quality Assurance Lead, Discipline or Task Leads, and the Project Engineer in advance of phase and/or final submittals for Quality Assurance Verification Processes.

Progress beyond set milestones shall not be permitted without the authority of the Project Manager and communication to the Project Quality Assurance Lead. The PM is responsible for confirming that Quality Control processes have been completed and documented, that the Reviewer has verified that all comments have been correctly incorporated, and that the document review is complete, with any outstanding issues resolved in accordance with the procedures in the Quality Control Plan. The PM shall sign and seal the Quality Assurance Review & Certification Form (Form QAR) for all external submittals or as directed by the QM.

### 5.3.1 Project Submission Report

To facilitate the Quality Assurance process, Project Managers are strongly encouraged to include a Project Submission Report (PSR) with phase and final submissions where the submission deliverable is not a report. A PSR covers one distinct discipline or task associated with the project but several disciplines or tasks may be combined in to one report at the discretion of the Project Manager. The PSR is developed in coordination with the Discipline or Task Leads and the Project Engineer.

A PSR typically consists of the following sections:

- a) Introduction This section contains a brief summary of the project, a description of the design elements covered in the PSR, a statement of purpose for the submission, and a list of any reference documents.
- b) Design and Performance Criteria
- c) Design Approach
- d) Design Changes from Prior Submission (if appropriate)
- e) Detailed Discussion of the PSR Design Elements

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- f) Responses to Comments on Prior Submission (if appropriate)
- g) Summary of Design Variations.

# 6.0 Quality Assurance Verification

Documentation is to be kept which provides a record that the design development and review process was performed as required. This documentation is to include records of the important steps which led to the development of final planning documents as well as the final design, such as preliminary concepts, model validation, design calculations, computer code input and any communications, instructions, and directives which have a direct bearing on the project.

Types of documentation to be reviewed for compliance with the procedures set out in the Quality Control Plan:

- a) Design Criteria
- b) Reports All reports prepared for the project irrespective of type.
- c) Interdisciplinary Coordination Minutes of meetings and signed attendance lists.
- d) Calculations/Computer Solutions
- e) Drawings
- f) Specifications
- g) External Comment Responses
- h) Prior Audit Documents All documentation provided by the Quality Auditor including recommendations for improvement, nonconformance reports, and any other check lists.

# 6.1 Quality Assurance Reviews

Quality Assurance reviews should be implemented in advance of all external submittals for a project. A Quality Assurance Review documents compliance with the QC Plan and identifies areas of nonconformance.

A Quality Assurance Review consists of review, by the Project Quality Assurance Lead, of documented internal and external comments generated during the internal QC process or external milestone review and confirmation that all comments were addressed, or the reviewer agrees to non-incorporation on the basis of sufficient explanation.

The goal of the Quality Assurance Review is to identify areas of weakness in the Quality Control process and develop preventive actions that focus on areas of potential nonconformance to reduce the risk associated with these areas.

The QA Review should identify potential nonconformities, their probable cause, determination of preventive action needed, implementation of preventive action and determining if preventive action was implemented and effective in preventing nonconformity.

The Project Manager is responsible for developing and implementing preventive actions that address the potential areas of nonconformance identified in the Quality Assurance Review and works to reduce or eliminate the risk in these areas. The Project Quality Assurance Lead shall document the preventive action procedures and lead the discussion with the Project Manager, Project Engineer, and HQ.

Any preventive action procedure shall identify the necessary steps required to reduce the risk of nonconformance. The steps should include, but not be limited to, quality review of the proposed work prior to submission and "lessons learned" from previous or similar types of projects.

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# 6.1.1 Phase Submittals

Phase submittals are required to be checked, back checked, corrected and verified prior to submittal in accordance with the Quality Control Plan. The level of detail of the review may be varied at the discretion of the PM provided that all critical information, either specifically required by the contract or considered fundamental to the development of the design, is verified to have received a full check and back check as detailed in the Quality Control Plan for the classification of document and as appropriate for the level of development.

At a minimum, the following items shall be verified:

- a) Presence of a completed Quality Control Stamp on a check print of all submittal documents.
- b) Completion of any Internal Technical Reviews
- c) Incorporation and/or response to all comments from both internal reviewers and external milestone reviewers (if applicable). All comments should be responded to on a Comment Response Form (CRF). CRF format to be determined by the PM in consideration of any Client requirements

### 6.1.2 Design Build Submittals

In general, specific requirements for design build submittals will be addressed in the contract and/or the Project Management Plan. Design Build submittals shall be subject to the same Quality Assurance process as defined herein for design projects. All final design build submittals (i.e., 90% submittals or those marked for construction such as "Issued For Construction" (IFC) or "Released For Construction" (RFC)), whether submitted as a phase submittal or as part of a complete set of final documents, will be subject to a Quality Assurance Review.

# 6.2 Quality Assurance Audits

Quality Assurance Audits will be performed to confirm conformance with the Quality Management Plan of a given project. The focus of the audit is to verify that each project has sufficiently accomplished all quality goals set forth in the Quality Management Plan, to identify any areas of nonconformance, and determine any corrective actions. Quality Assurance Audits will be scheduled by the Quality Manager and Chief Technical Officer.

The minimum number of Quality Audits shall be once during the life of the Contract/Agreement or a minimum of once a year on multi-year Contracts/Agreements and once per year during post design (CSS) activities. Additional Quality Assurance Audits may be scheduled by HQ during extended periods of project development, after a period of interruption in work, during post design services (construction support services), or during or immediately after inspection operations.

### 6.2.1 Quality Assurance Audit Process

Audits will be administered and documented by a Quality Auditor assigned by HQ. The Principal-in-Charge, Project Manager, and Project Quality Assurance Lead shall participate in the QA Audit if requested by the Quality Auditor. The Project Quality Assurance Lead is responsible to provide all necessary information for the audit.

Personnel conducting audits are required to be objective and impartial in conducting the audit. Self-audits shall not be allowed.

The evaluation will consist of review of documents, site visits (if applicable), discussions with staff, and nonconformance evaluations. The purpose of the evaluation is to confirm adherence to the QMP.

Results of Quality Audits shall be documented in the Quality Audit Log. If issues of nonconformance are identified, recommended corrective and preventative actions shall be generated as a portion of the Nonconformance Report. Where applicable, systemic corrective and preventative actions are communicated companywide to affect a companywide change.

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Follow-up Quality Audits are performed as necessary, to ensure implementation of corrective action with the results reported to the Project Engineer, Project Manager, Quality Manager, and Chief Technical Officer.

# 6.3 Control of Nonconforming Product

A nonconformance in work output occurs when non-trivial errors are discovered in output documents issued as final documents. Final documents are signed and dated documents ready to be issued for construction, bid, or procurement.

Reports of nonconformances discovered by outside sources shall be processed by the Project Manager and Quality Manager.

# 6.3.1 Corrective Action

If required, any Corrective Action is monitored to ensure closure.

Corrective action will be appropriate to the severity of the nonconformance identified. The Project Manager shall develop and implement any corrective action procedure taken. The corrective action procedure shall be approved by the Chief Technical Officer. The procedure shall identify the nonconformance root cause and the necessary actions required to resolve the nonconformance to the satisfaction of the client. The procedure addresses nonconformity identification (including client complaints), cause determination, action to prevent recurrence, identifying and implementing the corrective action, recording results and determining if the corrective action was implemented and effective in resolving the nonconformance.

# 7.0 Sub-Consultants

Subconsultants are responsible for performing their own Quality Control. H&H Project Managers shall require QA/QC Plans from all sub-consultants. Subconsultants that choose not to provide their own QA/QC plans must adopt the H&H QA/QC plans. H&H Project Managers are responsible for the following:

- a) Review of sub-consultant's internal QA/QC Plan for adequacy in meeting client and project requirements. If inadequate, H&H will require further provisions be incorporated into the sub-consultant's QA /QC Plan as necessary to meet project requirements.
- b) If the subconsultant has adopted the H&H QA/QC plan, H&H Project Managers shall provide copies of the plans and review the requirements with the subconsultant's Project Manager at project initiation.
- c) Meet with sub-consultant's Project Manager periodically to ensure that the sub-consultant is adhering to their QA/QC Plan. The H&H Project Manager is responsible for auditing subconsultants in accordance with the subconsultant audit schedule provided in the Project Management Plan.

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Appendix C

**H&H Quality Control Plan** 





# Hardesty & Hanover, LLC Quality Control Plan

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# 1.0 Introduction

Quality Control is a series of activities, actions and procedures routinely undertaken to ensure that our services and their representative work products are produced to the requisite standard of care and in accordance with the defined technical philosophy of the firm. This manual defines specific procedures for executing quality control functions in the preparation of engineering studies and designs, including reports, plans, specifications, and other similar documents. This Quality Control Plan (QCP) shall be implemented as an element of the overall project Quality Management Plan (QMP) where either specifically called for in the Contract, Project Management Plan (PMP), or where implied by project or industry standards.

# 2.0 Key Definitions and Roles

The following definitions are used throughout this manual:

- a) **Back Checker:** The individual who reviews the Checker's comments. The Originator/Producer functions as the Back Checker unless another qualified individual is assigned by the Project Manager (PM).
- b) **Checker**: The individual who through education and/or experience is knowledgeable within an area of technical subject matter, who has been assigned by project leadership to perform an accuracy and correctness check of technical content.
- c) Check Print: The copy of the work product to be used in the quality control (QC) process. The Check Print may be a hard (paper) copy or a digital file such as a Portable Document File (PDF) that is capable of recording review markups. A Check Print is required at each Hold Point and may be requested by the Client, PM, or Headquarters Engineering (HQ) at a Witness Point. Refer to the appropriate process by document type/class in Section 4 for Check Print contents.
- d) Hold Point: A level of design where specific aspects of the project such as design objectives, design criteria, and principal geometry are typically locked in. Hold Points require completion of all Quality Control procedures and Quality Assurance Review and Certification before a submittal can be made. The project Hold Points shall be established by the PM in compliance with Client and HQ requirements at the beginning of the project. At a minimum, Concept level plans (10-15% design), Final plans (100% design), and Issued For Construction (IFC) or Released For Construction (RFC) plans are mandatory Hold Points.
- e) HQ: Also referred to as Headquarters Engineering. This specifically refers to the authority of the technical directors such as but not limited to the Chief Technical Officer, Director of Engineering, Risk Management Officer, Quality Manager, or respective Practice Leaders and Chief Engineers.
- f) **Independent Check**: Verification of a calculation by performing a separate standalone calculation to confirm results in lieu of performing a detailed check.
- g) **Internal Technical Reviewer**: Reviewer for a project or portion thereof that has not been a principal participant in the development of a work product.
- h) **Originator/Producer**: The individual, qualified by experience in the applicable discipline, who is assigned to prepare documents and/or generate work product.
- i) **Phase Submittal**: A milestone submittal of a preliminary work product to a client (i.e. Concept plans, 60% plans, or similar prior to final.)

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- j) **Plans**: Drawings and/or CADD files created by H&H for use by the Client as part of the contract or bid documents or, in the case of alternative delivery such as Design/Build, to construct the project.
- k) **PE**: Project Engineer.
- I) **PM**: Project Manager.
- m) Preliminary: A document, including reports, plans, specifications, or similar documents, prepared by H&H and submitted to the client prior to the anticipated final submittal of such document. Preliminary documents are 100% complete and validated by QC but represent a lesser level of development than the final work product.
- n) Quality Management Plan (QMP): The plan developed by the Project Manager to describe specific quality requirements for a given project. The QMP typically includes variances or enhancements to the current edition of the H&H Quality Management Plan.
- o) **QC Stamp**: A physical or digital stamp applied to work product to signify that it is the Check Copy (aka Check Print) and for recording the initials and dates of the individuals who performed the quality control process.
- p) Quality Assurance: The systematic review of design and development processes, specifically Quality Control activities, to confirm that processes are implemented per policy and the desired level of quality has been attained and will continue to be obtained. Quality Assurance identifies procedural shortfalls and recommends changes to improve our processes.
- q) Report: Any document (letter, report, inspection report, etc.) prepared under the terms of a Contract and intended for distribution outside of H&H, which includes statements of professional opinion, condition assessment, calculation, evaluation, design, engineering judgment, cost estimates, etc.
- r) **Specifications**: Custom technical specifications or special provisions prepared by H&H to amend, supplement, or modify the project's standard construction or material specifications.
- s) **Stet**: Let it stand (used as an instruction on a printed proof to indicate that a correction or alteration should be ignored).
- t) **Technician**: The individual(s) assigned to create and/or edit documents on behalf of the Originator/Producer (e.g. a drafter, CADD Technician, clerk or the Originator/Producer themselves).
- u) **Verifier**: The individual assigned to verify that the Checker's and Originator/Producer's comments have been implemented. The Verifier may be any individual assigned by the PM but will preferably be the Checker.
- v) Witness Point: A level of design that has not been identified as a Hold Point by the Client, the PM, or HQ but for which QA activities may be required. Witness Points may include items such as the Quality Management Plan, project schedule, interim phase submittals (30%,60%,90%), field inspection MOT plans, field inspection verification plans, and internal progress sets. All external milestone submittals, whether Witness or Hold Points require Quality Assurance Review and Certification prior to submittal.
- Work Product: A document or other product produced by H&H for a client under the terms of a contract. Work products may be hard copies, electronic deliverables, or electronic files (e.g. CADD files, spreadsheets or similar.)

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# 3.0 General Intent

It is the general intent of this plan to define procedures for quality control which minimize errors, discrepancies, and omissions in H&H's work products. Furthermore, such procedures are intended to produce concise, delineated records of the in-house quality control process.

Although the physical process may vary for detailed checking of the various types of work products prepared under the requirements of this plan, the intent is for each work product to be thoroughly reviewed in detail by someone in addition to the review by the Originator/Producer who prepared that work product for conformity with generally accepted standards of design and engineering practice.

Unless otherwise approved by the engineer in responsible charge, at least one of the primary individuals involved in preparing (Originator/Producer) or checking (Checker) a document shall be a Professional Engineer<sup>1</sup>, experienced and qualified in the appropriate engineering discipline. Comments generated by the quality control process are to be resolved to the satisfaction of both the Originator/Producer and the Checker. The process of Quality Control (QC) is to be documented and recorded in a manner which allows for management of the process and review of the process through Quality Assurance (QA).

Some work products and services may require the use of third-party information and/or materials provided by the client or the use of data, documents or services provided by subcontractors, subconsultants, and suppliers. As required in their subcontract and approved Quality Management Plan, if one exists, subcontractors, subconsultants, and suppliers are ultimately responsible for the quality of the goods, work products and services they provide. Where H&H has a prime contractual relationship, H&H will review subcontractor, subconsultant, and supplier work products, supplied materials, and services only to verify compliance with contractual requirements and to coordinate the work. This does not preclude project specific reviews of subcontractor, subconsultant, and supplier work product if such reviews are required by contract.

# 4.0 Process by Document Type / Class

Each type of work product produced will be subjected to a detailed quality control process as defined herein. Prior to initiation of the quality control process the PM/PE shall review and coordinate with the Originator/Producer the appropriate level of detail and information for a given document type or class and level of development. Work products of a type not specifically noted shall be processed by the most appropriate process, as determined by the PM. Except as noted for preliminary documents in Article 6.1, all documents submitted to someone outside the design team (or design build team in the case of a Design/Build project) shall be checked in accordance with the requirements of this section. Specific colors are assigned to each role in the checking process; however, alternate color schemes may be used as long as the role and associated color are clearly identified. The Project Manager or Project Engineer shall modify permissions to the project submittal folders to prevent editing of documents that have completed the QC process.

# 4.1 Design Plans

All drawings shall be checked for technical content, clarity, style, and conformance with design criteria and Client/H&H standards by someone other than the Originator/Producer. This process shall be executed and documented as noted below and in the flow chart of Figure 1.

<sup>1</sup> or similar credentials in the event the work product is other than an engineering work product

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# **Design Plan Development**

Figure 1

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# 4.1.1 Preparing a Check Print of a Drawing

Once the Originator/Producer and PM have agreed that a drawing contains the appropriate level of detail and information required at the phase submission, or is substantially complete and ready for checking, a Check Print will be prepared, and the PM will assign it to the Checker. Each Check Print shall bear a red Quality Control Stamp as shown in Figure 2 with the Originator/Producer's initials and date in the "Ready for Checking" boxes. The Check Print shall be designated as final or for a specific phase submittal.

H&H QC DOCUMENT	PHASE	or FINAL	
PROCESS	INITIALS DATE		
READY FOR CHECKING			
CHECKED CORRECT (YELLOW) CHANGE (RED)			
BACK CHECKED (GREEN)			
CORRECTED (BLUE HIGHLIGHTER)			
VERIFIED (ORANGE HIGHLIGHTER)			

Figure 2

# 4.1.2 Checking Drawings

#### The Checker's colors are YELLOW and RED

The Checker will ascertain that the drawing is consistent with the corresponding checked calculations, design reports, and other related project documents. The Checker is required to perform the following:

- a) Ascertain that the document conforms with reliable engineering judgment and practice and is suitable and sufficient to accomplish the required function; the Checker shall review the Check Print in detail for:
  - Technical sufficiency appropriate for the level of design development
  - Conformance with design calculations
  - Conformance to applicable standards and design criteria
  - Coordination with specifications and other design documents
  - Conformance with established CADD formats and styles. The project CADD Standards and project drawing templates are established by the CADD Manager under direction of the PM. Any questions about conformance with the project CADD Standards should be referred to the CADD Manager.
- b) Highlight in YELLOW each element or section checked that is found to be correct, and/or with which the Checker agrees on the Check Print. If no corrections are needed, a yellow slash through a sheet or detail or a large yellow check over a sheet or detail signifies that the Checker has reviewed that sheet or detail.
- c) Mark in RED on the Check Print any corrections, additions, and/or deletions, mark any questions directed to the Originator/Producer in RED.

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- d) The Checker initials and dates the Check Print in the appropriate box ("Checked") of the Quality Control Stamp on the Check Print(s) and forwards the document for back checking, unless no changes are required in which case the QC process is complete.
- e) If the check is limited to a particular discipline, or component, of the drawing this shall be noted on the Check Print or first sheet of a set of Check Prints.

### 4.1.3 Back Checking Drawings

#### The Back Checker's color is GREEN

After the Checker has completed review of the Check Print, the Back Checker (either the Originator/Producer or their appropriate designee), reviews the Checker's marks and agrees to or resolves the Checker's proposed corrections. The Back Checker is required to perform the following:

- a) Verifies that the complete drawing has been checked in accordance with the above requirements (i.e., all applicable contents of the drawing are marked in either yellow or red), checkmarks in GREEN each of the Checker's red marked changes to signify agreement with the Checker that the marked changes are to be made, or adds in GREEN any additional changes not identified by the Checker. Answers Checker's questions in GREEN and marks up any changes needed to implement the response, also in GREEN.
- b) Resolves significant differences of opinion with the Checker. If an understanding or agreement cannot be reached, the Checker refers the issue to the Project Engineer, Discipline Chief Engineer, or Project Manager before continuing with the checking process. Upon agreement of the solution:
  - 1) The Checker marks their concurrence (YELLOW).
  - 2) Cross out in GREEN each of the Checker's red marked changes that the Originator/Producer and Checker agree should not be changed. The Back Checker rewrites next to the crossed out red marks the original information that is to remain unchanged or indicates "stet".
- c) Confirms that every red marked change made by the Checker now has a GREEN check next to it and that every modification or additional change made by the Back Checker in GREEN has been highlighted in YELLOW by the Checker to signify agreement.
- d) The Back Checker initials and dates the Check Print stamp ("Back Checked") and forwards the reconciled Check Print to the Originator/Producer (if different from the Back Checker) for correction.
- e) Note: If the Back Checker is also the person correcting the drawing, the Back Checker should still apply the Green check or highlight to show agreement with the change. Documenting that a change was corrected does not eliminate the need for also documenting agreement with the change. This step should not be omitted.

### 4.1.4 Correcting Drawings

- a) The Originator/Producer corrects, or supervises the correction of, the original document to implement the changes agreed to by the Checker and Back Checker. As corrections are made the changed item is highlighted in BLUE on the Check Print to document the action.
- b) Upon completion of the corrections, the Originator/Producer or Technician makes a new print, initials and dates the Check Print stamp ("Corrected") on the original Check Print and forwards the original Check Print and corrected new print to the Checker for verification.

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c) If the changes are so extensive as to make the first Check Print illegible for use by the Checker, the Originator/Producer makes a new Check Print upon completion of the corrections, labels it Check Print #2, places a new QC Stamp on the print, and places it on top of Check Print #1, which is then stamped or marked "revised". The Originator/Producer initials and dates Check Print #2 in the appropriate box of the Quality Control Stamp ("Ready for Checking") and forwards the document to the Checker to repeat the process.

# 4.1.5 Verification of Original Check Print

#### The Verifier's color is ORANGE HIGHLIGHTER

The Verifier compares each of the Back Checker's marked changes on the previous version of the Check Print(s) (Original or Check Print #2), with the revised part of the updated document. If the Verifier concurs that the changes have been properly implemented, the Verifier marks over the changes with an ORANGE HIGHLIGHTER on the Check Print. The Verifier will also make certain that no inadvertent changes, not noted on the Check Print, have been made.

### 4.1.6 Verification of New Check Print

When the Verifier is processing a new Check Print (#2, #3, etc.), the Verifier must compare each part of the new Check Print with the corresponding part of the previous Check Print. If the changes have been made accurately on the updated Check Print, the Verifier:

- a) Checks that each correction, addition, and/or deletion as well as each new section that has been redrawn, rewritten, retyped, or recalculated has been correctly transferred to the original from the Check Print(s).
- b) On the most recent Check Print of the corrected document, marks over all the corrections that were made with an ORANGE HIGHLIGHTER.
- c) Verifies that no inadvertent changes, not noted on the Check Print, have been made to any parts of the drawing and signifies so by striking a YELLOW mark across the drawing.
- d) Marks in RED on the new Check Print any corrections, additions, and/or deletions that were overlooked on the backchecked Check Print.
- e) Returns the Check Prints to the Back Checker, who checks in GREEN the red marks, if found to be correct, on the new print marked by the Verifier, and sends the Check Prints for correction. When all changes in the most recent Check Print have been marked over with an ORANGE HIGHLIGHTER, the checking process is complete.
- f) The Verifier initials and dates the Check Print stamp on the line designated for the Verifier and signs off in the drawing or calculation sheets as specified and forwards the Check Print to the Originator of the document.

# 4.1.7 Checking Process for Additional Changes to Drawings

If additional changes or revisions become necessary, following review by the client, for example, they are processed on a new Check Print in the same manner as described previously. Although only the new changes need to be checked, the Originator/Producer and Checker are still responsible for assuring that correct interfacing with the affected changes is checked completely. The Originator/Producer and Checker must verify that any changes or revisions are coordinated throughout the project documents, including calculations, plans, and specifications. They must also ensure changes or revisions are made on CADD files, computer printouts, and contract reports.

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### 4.1.8 Checking Process for Multiple Phase Reviews

Phase Reviews, where required (refer to Section 6.1 Phase Submittals), are processed in the same manner as described previously except as noted herein. Although only the changes, updates and new content not verified on previous Check Prints need to be checked, the Originator/Producer and Checker are still responsible for assuring that the document is checked completely. A yellow slash through a sheet should be used if previously checked and no changes were made since the prior phase submission. If there have been no changes to the entire set or to a discipline specific set, a copy of the prior check set should be placed in the folder for this phase. The Originator/Producer and Checker must verify that any changes or revisions, including changes implemented in prior checking, are coordinated throughout the project documents, including calculations, plans, and specifications. Unless prior Check Prints are affixed to the current Check Print, the Checker shall note the source (e.g. prior phase Check Print) for items that are accepted based on a previously checked set.

# 4.2 Calculations

Calculations that support final work product shall be checked for technical content, clarity, style, and conformance with design criteria and standards by someone other than the Originator. This process shall be executed and documented as noted below and in the flow chart of Figure 3.

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# **Design Calculation Development**

Figure 3

# 4.2.1 Preparing Check Copies of Calculations

Once the Originator/Producer and PM or PE have agreed that a calculation is substantially complete and ready for checking, a Check Copy will be prepared, and the PM or PE will assign it to the Checker. The Checker will be provided with the design criteria. It is strongly encouraged that a brief narrative for the design element be included as part of the design criteria write up. The first sheet of the calculation must be a Calculation Cover Sheet. Each Check Copy shall bear a red Quality Control Stamp as shown in Figure 2 on the cover sheet with the Originator/Producer's initials and date in the "Ready for Checking" boxes. In lieu of placing the QC stamp on the cover sheet, a standalone sheet with the QC stamp may follow the cover sheet. The Check Copy shall be designated as final or for a specific phase submittal. Each sheet of the calculation or each cover page of computer analysis output will include the initials of the Originator/Producer and all pages will be numbered.

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# 4.2.2 Checking Calculations<sup>2</sup>

#### The Checker's colors are YELLOW and RED

The Checker will ascertain that the calculation is consistent with the design reports, design criteria, and other related project documents. The Checker is required to perform the following:

- a) Ascertain that the calculation conforms with reliable engineering judgment and practice and is suitable and sufficient to accomplish the required function; the Checker shall review the calculation in detail for:
  - Technical sufficiency appropriate for the level of design development
  - Conformance with related design calculations
  - Mathematical accuracy
  - Conformance to applicable standards and design criteria
  - Coordination with specifications and other design documents.
- b) Highlight in YELLOW each element, or section checked, that is found to be correct and/or with which the Checker agrees, on the Check Copy. For software programs which use a color highlighting scheme to designate different types of input, a yellow checkmark or yellow slash down left side of the page may be used in lieu of highlighting each element.
- c) Mark in RED on the Check Copy any corrections, additions, and/or deletions.
- d) Prepare and attach any independent calculations made by the Checker.
- e) Resolve significant differences of opinion with the Originator. If an understanding or agreement cannot be reached, the Checker refers the issue to the Project Engineer, Discipline Chief Engineer, or Project Manager before continuing with the checking process.
- f) The Checker initials and dates the cover sheet in the appropriate box of the Quality Control Stamp on the Check Copy and forwards the document for back checking.

# 4.2.3 Back Checking Calculations

The Back Checker's color is GREEN

After the Checker has completed review of the Check Copy, the Originator/Producer, acting as Back Checker, reviews the Checker's marks and supervises or personally makes the changes required. The Back Checker is required to perform the following:

a) Verifies that the complete calculation has been checked in accordance with the above requirements (i.e., all appropriate contents of the calculation are marked in either yellow or red), checkmarks in GREEN each of the

<sup>&</sup>lt;sup>2</sup> The process outlined in this section is intended for calculations that can be checked without generating significant paper waste such as hand calculations, simple Mathcad output, simple Spreadsheets, etc. For computer programs generating voluminous output files the output should not be printed hard copy. The process should be followed electronically on a PDF. Alternately, a summary sheet of the output from the computer program can be prepared and a list of files checked can be appended to the summary sheet with the following information included: file directory / name, timestamp, and list of inputs checked. If the appropriate checked information can be summarized on one screen or input box, screen shots may be appended as appropriate.

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Checker's red marked changes to signify agreement with the Checker that the changes marked are to be made, or adds in GREEN any additional changes not identified by the Checker.

- b) Resolves significant differences of opinion with the Checker, if an understanding or agreement cannot be reached, the Checker refers the issue to the Project Engineer, Discipline Chief Engineer, or Project Manager, for resolution.
- c) Confirms that every red marked change made by the Checker now has a GREEN check next to it and that every additional change made in GREEN has been highlighted in YELLOW by the Checker to signify agreement. For software programs which use a color highlighting scheme to designate different types of input, a yellow checkmark may be used in lieu of highlighting.
- d) Crosses out in GREEN each of the Checker's red marked changes that the Back Checker and the Checker agree should not be changed. The Back Checker rewrites next to the crossed out red marks the original information that is to remain unchanged or indicates "stet". The Checker must mark all such green marks in YELLOW.
- e) The Back Checker initials and dates the Check Copy cover sheet in the appropriate box ("Back Checked") of the Quality Control Stamp and forwards the document for correction.
- f) Note: If the Back Checker is also the person correcting the calculation, the Back Checker should still apply the Green check or highlight to show agreement with the change. Documenting that a change was corrected does not eliminate the need for also documenting agreement with the change. This step should not be omitted.

# 4.2.4 Correcting Calculations

- a) The Originator/Producer corrects the original document, or supervises correction of the calculation, to implement the reconciled changes.
- b) The Originator/Producer initials and dates the cover sheet in the appropriate box of the Quality Control Stamp ("Corrected") and forwards the Check Copy and corrected original (or copy) to the Checker for verification.

### 4.2.5 Verification of Original Check Copy of a Calculation

The Verifier's color is ORANGE HIGHLIGHTER

a) The Verifier compares each of the Back Checker's marked changes on the Check Copy, with the revised part of the corrected calculation. If the Verifier concurs that the changes have been properly implemented, the Verifier marks over the changes with an ORANGE HIGHLIGHTER on the Check Copy. The Verifier will also make certain that no inadvertent changes, not noted on the Check Copy, have been made. For software programs which use a color highlighting scheme to designate different types of input, an orange checkmark may be used in lieu of highlighting.

# 4.2.6 Checking Process for Additional Changes to Calculations

If additional changes or revisions become necessary, following review by the Client or significant changes during detailing, for example, they are processed on a new Check Copy in the same manner as described previously. Although only the new changes or revisions need to be checked, the Originator/Producer and Checker are still responsible for assuring that correct interfacing with the affected changes is checked completely. The Originator/Producer and Checker must verify that any changes or revisions are coordinated throughout the project documents, including calculations, plans, and specifications.

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### 4.2.7 Independent Check in Lieu of Detailed Checking

With approval of the PM, or if required by the Contract, the Checker may perform an Independent Check in lieu of following the detailed checking procedure outlined above. The Independent Check shall consist of a standalone set of calculations that produce results similar enough to the original calculation to confirm its accuracy and adequacy. An Independent Check is most commonly used to check the results of analysis produced using proprietary software or inhouse computer applications. An Independent Check may be done by hand calculations or using a software application other than the original calculation.

To implement an Independent Check, apply the QC Stamp to the cover sheet of the calculations and write "Independent Check" across the Checked box in GREEN pen.

As part of an Independent Check, the Checker is required to perform the following:

- a) Ascertain that the calculation conforms with reliable engineering judgment and practice and is suitable and sufficient to accomplish the required function.
- b) Review the original calculation for:
  - Technical sufficiency
  - Conformance to applicable standards and design criteria
  - Conformance with related design calculations
  - Coordination with specifications and other design documents.
- c) Prepare independent check calculations to confirm the results of the original calculation.
- d) Mark any review comments regarding the original calculations and/or the independent verification on the cover sheet of the original calculations, initial and date the QC stamp.
- e) Provide the original and independent calculations to the Originator/Producer for Back Checking.

As part of an Independent Check, the Back Checker is required to perform the following:

- a) Respond to all comments made by the Checker, either agreeing to or resolving the comments.
- b) If corrections are necessary, correct the original calculation and provide to the Checker for additional review.
- c) Once all review comments are reconciled, or if no corrections are necessary initial and date the QC stamp.
- d) Forward to the Checker for verification.

# 4.3 Reports & Specifications

Similar to drawings and calculations, all reports and specifications will pass through a quality control process prior to submittal. This process will verify that the document's technical contents are accurate, that the spelling and grammar contained in the document are correct, that the format and style of the document are in conformance with project standards, and that the appropriate disclaimers and assumptions are conspicuously defined.

### 4.3.1 Preparing Check Copies of Reports & Specifications

Once the Originator/Producer and PM have agreed that a report or specification is substantially complete and ready for checking, a Check Copy will be prepared, and the PM will assign it to the Checker. The first sheet of the Check Copy shall bear a red Quality Control Stamp as shown in Figure 2 with the Originator/Producer's initials and date in

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the "Ready for Checking" boxes. The Check Copy shall be designated as final or for a specific phase submittal. If not included on the first sheet, the Originator/Producer will write "prepared by" and sign his/her initials on the sheet.

# 4.3.2 Checking Reports & Specifications

### The Checker's colors are YELLOW and RED

The Checker will ascertain that the report or specification is consistent with the supporting calculations, plans, and related project documents. The Checker's colors are RED and YELLOW. The Checker is required to perform the following:

- a) Ascertain that the report or specification contents are technically and grammatically correct; the Checker shall review the Check Copy in detail for:
  - Technical sufficiency
  - Conformance to applicable standards and design criteria
  - Correct grammar
  - Correct spelling
  - Appropriate disclaimers and assumptions
  - Conformance with supporting design calculations
  - Coordination with other design documents
- b) For specifications, the Checker shall ascertain that the format of the specification is consistent with the format of the remaining project documents and project standards for specifications, including the following:
  - Proper titles, headers, footers, date formats, etc.
  - Correct article, section, and paragraph identification and sequence
  - Proper format and sequence of contents (i.e., materials, construction, submittals, payment, etc.)
- c) Highlight in YELLOW each paragraph or section checked that is found to be correct and/or with which the Checker agrees, on the Check Copy. All numerical values including referenced specification numbers, e.g. ASTM, shall be verified and fully marked in YELLOW if correct.
- d) Mark in RED on the Check Copy, any corrections, additions, and/or deletions, mark any questions directed to the Originator/Producer in RED.
- e) Resolve significant differences of opinion with the Originator. If an understanding or agreement cannot be reached, the Checker refers the issue to the Project Engineer, Discipline Chief Engineer, or Project Manager before continuing with the checking process.
- f) The Checker initials and dates the first sheet of the copy in the appropriate box of the Quality Control Stamp and forwards the document for back checking and correction unless no changes are required in which case the QC process is complete.
- g) If a check is limited to a particular discipline, or component of the report or specification, this shall be noted on the first sheet of the Check Copy.

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# 4.3.3 Back Checking Reports & Specifications

#### The Back Checker's color is GREEN

After the Checker has completed review of the Check Copy, the Originator/Producer, acting as Back Checker, reviews the Checker's marks and supervises or personally makes the changes required. In addition, the Back Checker:

- a) Verifies that the complete report or specification has been checked in accordance with the above requirements (i.e., all contents of the report or specification are marked in either yellow or red), checkmarks in GREEN each of the Checker's red marked changes to signify agreement with the Checker that the changes marked are to be made, and adds in GREEN any additional changes not identified by the Checker.
- b) Resolves significant differences of opinion with the Checker, if an understanding or agreement cannot be reached, the Checker refers the issue to the Project Engineer, Discipline Chief Engineer, or Project Manager, for resolution.
- c) Crosses out in GREEN each of the Checker's red marked changes that the Back Checker and the Checker agree should not be changed. The Back Checker rewrites next to the crossed out red marks the original information that is to remain unchanged or indicates "stet". The Checker must mark all such green marks in YELLOW.
- d) The Back Checker supervises or personally corrects the original document. If the Back Checker is also the person correcting the document, the Back Checker should still apply the Green check or highlight to show agreement with the change. Documenting that a change was corrected does not eliminate the need for also documenting agreement with the change. This step should not be omitted.
- e) The Originator/Producer initials and dates the cover sheet in the appropriate box of the Quality Control Stamp and forwards the Check Copy (preferably a redlined print) and a new clean copy of the revised document to the Checker for verification.

### 4.3.4 Verification of Corrections to Reports & Specifications

#### The Verifier's color is ORANGE HIGHLIGHTER

The Verifier compares each of the Back Checker's marked changes on the Check Copy, with the revised part of the corrected report or specification. If the Verifier concurs that the changes have been properly implemented, the Verifier marks over the changes with an ORANGE HIGHLIGHTER on the Check Copy. The Verifier will also make certain that no inadvertent changes, not noted on the Check Copy, have been made.

# 4.3.5 Checking Process for Additional Changes to Reports or Specifications

If additional changes or revisions become necessary, following review by the client or significant changes to content, for example, they are processed on a new Check Copy in the same manner as described previously. Although only the new changes need to be checked, the Originator/Producer and Checker are still responsible for assuring that correct interfacing with the affected changes is checked completely. The Originator/Producer and Checker must verify that any changes or revisions are coordinated throughout the project documents, including calculations, plans, and specifications.

### 4.3.6 Checking Reports or Specifications Electronically

Checking / Back Checking / Verifying reports or specifications electronically can be accomplished using the Track Changes feature within Microsoft Word (unique colors will be assigned by Word). Each reviewer should have their

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name set in the program options so that they are shown as the reviewer. The Originator shall also function as Back Checker and Corrector. Electronic checking using Track Changes shall follow this procedure:

- a) Checker uses Track Changes to make corrections and saves file as both a Word Doc and as a PDF file which becomes the QC check set
- b) The QC Stamp is applied to the PDF QC check set which contains the tracked changes as red markups. The QC stamp is initialed and dated by Originator as Ready for Checking and by the Checker as checked.
- c) Originator/Back Checker first agrees with the changes in the QC PDF check set and applies a green check or highlight mark to the QC PDF check set to show agreement
- d) Originator/Corrector accepts agreed upon changes with Track Changes in the original Word document and applies blue check or highlight mark to the QC PDF check set to confirm changes were made
- e) Checker compares revised Word document, in which tracked changes were accepted, to the QC PDF check set and applies orange check or highlight to the QC PDF check set to verify that all corrections were made
- f) QC PDF check set shall be locked to restrict editing and saved in the 400-Delivery\QC folder for that submittal
- g) One copy of the Final Word doc shall be saved to the 400-Delivery\Deliverables folder for that submission

# 4.4 Internal Technical Reviews

Internal Technical Reviews (ITR) are specific purpose reviews of work product performed by an individual that was not involved in the production of the work product. Unlike quality control reviews, ITRs are not a detailed check, but rather a general review of work product for applicability of criteria, assumptions, methodology, concept, compliance with project requirements, constructability, biddability or other specific objectives. ITRs are performed by staff with technical experience related to the specific purpose.

ITRs may be performed at any stage or phase of a project, from design criteria to final biddability. However, ITRs are not a substitute for the quality control review process. Instead, ITRs are intended to supplement the quality control process through additional review of project elements deemed by HQ (or in some cases contractual requirements) worthy of supplementary scrutiny. The exception, in which an ITR may be used in lieu of the quality control process, is the review of phase submittals for which the contract does not specifically require a full quality control review. In such cases a "phase review" ITR, specifically intended to confirm the completeness and accuracy of the pertinent preliminary information included in a phase submittal, may be used.

# 4.4.1 Preparing Work Product for ITR

Once the Originator/Producer and PM have agreed that a work product is ready for ITR, a review copy will be prepared. The PM will prepare an ITR Form and submit the request to HQ. The ITR Form will designate the work product to be reviewed and the detailed scope of the ITR. Upon receiving notification from HQ that a reviewer has been assigned, the PM will attach the ITR form to the review copy and pass it to the Internal Technical Reviewer assigned by HQ.

# 4.4.2 Performing Internal Technical Reviews

The Internal Technical Reviewer's color is RED

The Internal Technical Reviewer is required to perform the following:

- a) Review the work product for the specific objective requested.
- b) Indicate on the ITR Form if review comments are noted on the ITR Form, marked on the work product, or a combination.

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- c) Mark in RED any comments that are to be indicated on the work product; and/or type onto the ITR Form any comments.
- d) Sign and date the ITR Form and provide it to the PM and PE for review and distribution to the Back Checker.

#### 4.4.3 Reconciliation of Internal Technical Review Comments

The Back Checker is required to perform the following:

- a) Respond to all comments made by the Internal Technical Reviewer on the ITR Form, either agreeing to or resolving the comments.
- b) If corrections are necessary, correct the work product and provide to the Internal Technical Reviewer for additional review.
- c) Once all review comments are reconciled, or if no corrections are necessary, the PM shall sign and date the ITR Form.
- d) Return the ITR Form to the Internal Technical Reviewer to sign and date acknowledging that all responses are accepted.

# 5.0 Checklists

Use of checklists is encouraged in the quality control process. Checklists, containing typical items expected to be included in designs, reports, drawings, specifications, or other documents, may be standard in-house checklists, checklists prepared by the client, checklists included in standard plans preparation manuals, or checklists developed specifically for a project.

Checklists which are used in the quality control process shall be completed and initialed by the Checker and attached to the Check Print or copy. The Checker is responsible for verifying that the checklist used is appropriate for the application.

# 6.0 Submittals

Document submittals, number, degree of development, and schedule, will be defined for each project either by the client or within the client's standards. The following procedures for checking of various submittals will be implemented for ALL submittals irrespective of their quantity, degree of completion, and schedule.

## 6.1 Phase Submittals

Phase submittals are required to be checked, back checked, corrected, and verified prior to submittal. The level of detail of the process may be varied at the discretion of the PM for Witness Points provided that all critical information, either specifically required by the contract or considered fundamental to the development of the design, receives the full check and back check detailed above for the classification of document and as appropriate for the level of development. Information presented in preliminary documents which is clearly under development, not completed, or subject to change must be reviewed by the Checker but need not be checked as required for final documents or at Hold Points, provided that the document is clearly marked as preliminary and subject to change. For example, in checking of concrete detail drawings to be submitted at the 60% level and required to define the general dimensions of the concrete, the concrete outlines and dimensions must be completely checked, but any rebar details need only be reviewed at this Witness Point.

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## 6.2 Final Submittals

Final submittals are required to be completely checked, back checked, corrected, and verified in accordance with the appropriate procedure defined herein for the type of document. Final submittals are mandatory Hold Points.

## 6.3 Design Build Submittals

In general, specific requirements for design build submittals will be addressed in the contract and/or the Project Management Plan. Design Build submittals shall be subject the same quality control process as defined herein for design projects. All Issued For Construction (IFC) or Released For Construction (RFC) submittals are mandatory Hold Points and subject to Quality Assurance Review and Certification prior to submittal.

# 7.0 Post Design Submittal Reviews<sup>3</sup>

Post design submittals include documents prepared by or for the contractor and submitted to the Engineer for review. Typical documents included in the classification are shop drawings, working drawings, falsework drawings, falsework calculations, erection, etc.

In many cases the processing of submittals is defined in the contract or prescribed in the owner's standard procedures. In such cases those procedures will be followed. If procedures are not so prescribed, the procedures below shall be followed or used as a guide in implementing the owner's procedures.

All submittals from the contractor must be numbered and logged prior to review. The numbering and logging process will be established and coordinated by the PM or their designee.

Prior to return of the Contractor Submittal, the PM or PE should review the comments and disposition of the submission with the reviewer(s). Upon concurrence between reviewers and the PM or PE, the PM or PE shall return the submittal in accordance with the owner's standard procedures.

## 7.1 Shop drawings

All shop drawing submittals from the contractor, including drawings and catalog cut sheets, must bear the contractor's stamp of approval and "Received On" stamp prior to being reviewed. This is necessary to assure that the contractor has noted his or her responsibility to coordinate the submittal with the project requirements and other submittals. Any submittals containing details of construction methods and/or procedures will not be processed as a shop drawing. Such submittals will be reviewed as noted in Article 7.2 below. Once the shop drawings are logged, one copy shall be designated and stamped as the "Office Copy" and forwarded to a designated Reviewer.

The Reviewer shall apply a shop drawing review stamp to each drawing, catalog cut, or table of contents of packaged submittals. The stamp will indicate that the Reviewer has "reviewed the contents of the submittal in accordance with appropriate industry standards for general conformance with the design concept of the project and general compliance with the information given in the contract documents." The Reviewer will mark in YELLOW information which is acceptable and in RED information which is not acceptable. Once the review is complete the Reviewer will determine

<sup>&</sup>lt;sup>3</sup> Electronic review of submissions is encouraged and may be required by the Client. Electronic review shall conform to the appropriate document controls specified in the proceeding sections. All comments shall be made in RED, all checked details shall either be highlighted or boxed over with YELLOW (use transparency so that the details are not obscured). All comments shall be tabulated as required by the appropriate document controls.

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a disposition and mark the appropriate box on the shop drawing review stamp. Dispositions will be selected from the following unless Client specific dispositions are required:

Approved	This signifies that the Reviewer has determined that the submittal meets the stated requirements as is and that revision and resubmission is not required
Approved as Noted	This signifies that the Reviewer has determined that the submittal meets the stated requirements if minor corrections are made as noted on the submittal in red and that revision and resubmission is not required
Revise and Resubmit	This signifies that the Reviewer has determined that the submittal is lacking on one or more areas and must be revised and resubmitted for further review
Not Approved	This signifies that the Reviewer has determined that the submittal is not in general conformance with the design concept and that a different concept must be prepared and submitted for review

The Reviewer's comments will be checked for conformance to design criteria and standards by the PM or their designee. Approved comments shall be transcribed in RED onto all copies of the submittal by either by the Reviewer or their designee. The Reviewer will verify the transcribing, mark the disposition, initial, and date all copies prior to return of the submittal to the contractor.

### 7.2 Review of Construction Methods and/or Procedures

Submittals containing details of construction methods and/or procedures will be reviewed as noted herein. Any submittals requiring design calculations performed by the Contractor's engineer shall be rejected if they do not contain the signature and seal of such registered professional engineer in the appropriate jurisdiction. If submitted in multiple copies as a shop drawing, the submittal will be logged as such, one copy shall be designated and stamped as the "Office Copy" and forwarded to a designated Reviewer. If submitted in singular as a procedure, a copy will be made and stamped as the "Office Copy" and forwarded to a designated Reviewer.

The Reviewer will review the construction methods and/or procedures submittal and note in RED on the Office Copy any exceptions taken to the information provided. The Reviewer's comments will be checked for conformance to design criteria and standards by the PM or their designee. The Reviewer will transcribe his or her approved comments onto all copies of the submittal and apply a "Reviewed" stamp containing the following notation to each:

"This submittal contains information regarding construction methods and/or procedures which are solely the responsibility of the Contractor. Review is only for the general conformance with the design concept of the project and general compliance with the information given in the contract documents. The Contractor retains sole responsibility for dimensions which shall be confirmed and corrected at the job site; fabrication means, methods, techniques, processes, procedures, and sequences of construction; coordination of his work with that of all other trades; and the satisfactory performance of his work.

If the exceptions taken require extensive description, a letter containing the comments shall be prepared by the Reviewer, and the submittal shall be marked with a note to see the transmittal letter for additional comments.

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# 8.0 Owner's Engineer or Peer Review Role

Review of design documents prepared by a firm other than Hardesty & Hanover, when acting in the role of Owner's Engineer or providing Peer Review, shall closely follow the Quality Control procedures outlined in this document for checking and verification. Check Prints shall be initialed and dated by the reviewer. For digital files, each reviewer shall save an independent copy of the file in the project working directory with their initials and the date in the file name. This series of files becomes the check set. All comments shall be recorded on a Comment Response Form which shall be submitted to the PM for quality assurance review prior to submittal. The reviewer shall verify incorporation of all comments from prior Comment Response Forms for each submittal.

Appendix D

# H&H QA/QC Forms



## QUALITY ASSURANCE REVIEW & CERTIFICATION FORM

Project N	lame			Project Manager		
Project L	ocation			Client Name		
H&H Pro	ject Number			Client Project Number		
	(TO BE FILLED OUT BY	THE PROJECT MANAGER)				
OCUMENT	Level of Deve Concept Release F	lopment (Check all	that apply)  Preliminary  Other:	Phase:	Final	
1 - I INFI	Documentatic De: Inte Oth	on reviewed (attach o sign Criteria Do erdisciplinary Coordi ner, Specify:	complete list of all items / file esign Plans	s reviewed): ions / Computer Solutions ] Prior Audit Documentation	Reports     S     External Comment	pecifications Responses
2 – SUMMARY OF FINDINGS	I have review as follows (if r	ed the above docum nore space required	nentation for conformance wi I attach additional sheet, indi	th Hardesty & Hanover Quali cate format and location of a	ity Control Standards. My ( iny additional comments):	Conclusions are
3-RECOMMENDED ACTIONS	In considerati the Hardesty comments):	on of the findings at & Hanover Standard	oove I recommend the followi	ng actions be taken for the c ttach additional sheet, indicat	continued conformance of f te format and location of a	uture work with ny additional
	Developed by	y:				
			Project Quality Assu	rance Lead	Date	
4 APPROVED FOR SUBMISSION	The recommen undersigned, a Management I	nded actions as noted as Project Manager, c Plan, is complete for t	d above are in conformance w certifies that the noted submitte the level of development, mee <b>Project Manager</b>	ith Hardesty & Hanover Stand al for the referenced project me ts the requirements of Hardesi	ards and have been comple eets the requirements of the ty & Hanover and is ready fo	ted. The project Quality or submittal
Prenared By	/		REV.0 - Original Issue Date: 2	2/7/2017		
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## INTERNAL TECHNICAL REVIEW FORM

Project N	Project Name Project Manager				
H&H Pro	ject Number		Client Name		
□1 - DOCUMENT INFORMATION	<ul> <li>(TO BE FILLED OUT BY 1</li> <li>Level of Deve</li> <li>Concept</li> <li>Phase:</li> <li>Final</li> <li>Document typ</li> <li>Prepared by:</li> </ul>	Interproject MANAGER)	Discipline Reviewed (Che Discipline Reviewed (Che Mechanical Constructability Constructability Document Date	eck all that apply)   Structural  Electrical  Other, Specify:  Specification	☐ Geotechnical ☐ Highway/Civil
QC STAMP	<ul> <li>Document</li> <li>Document</li> </ul>	t contains Incomplete QC stamp, specify complet t contains Completed QC stamp	eted steps:		
- DETAILED ITR SCOPE					
2	Submitted by:	Project Manager			
3 – REVIEWER COMMENTS	(TO BE FILLED OUT BY T I have reviewe are as follows	THE INDEPENDENT REVIEWER) ed the above referenced document in accordance (if more space required attach additional sheet,	ce with Hardesty & Hanover , indicate format and locatio	r and Industry Standard: n of any comments):	s. My Conclusions
	Reviewed by:	Internal Reviewer	Date		
4 – VERIFIED	All Reviewer c complete. Submitted by:	comments have been addressed, either satisfac	torily resolved or incorporat	ed into the document. T	his document is
APPROVAL	This review is Submitted by:	complete.		  Date	

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#### Hardesty & Hanover [Project] [Type of Review] Comment / Response Form (CRF)

	DOCUM	IENT NAME:								
		REVIEWER:			RECEIVED DATE:					
	RE	VIEW DATE:			REVIEW STATUS:					
RESPO	ONSE CODES: A	- Team Membe	er agrees and will take action; <b>D</b> - Team Member does not agree and will pursu	e resolution, cor	mment has not been resolved; F - Follow up required					
No	Page	Section	Comment	Comment By	Response	Response By	Response Code	Comment	Comment By	Change Incorporated
1										
2										
3										
4										
5										
6										
7										
8										
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10										
11										
12										
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15										
16										
17										

Distribution:



## SUBCONSULTANT DESIGN QUALITY CERTIFICATION

PROJECT INFORM	IATION	
Project Name:		H&H Project No.:
Client:		
PROJECT SUBMIT	TAL LEVEL OF DEVELOPMENT	
Concept	Preliminary	Development Final
PROJECT LEADER	SHIP CERTIFICATION	
Project Manager		Project Engineer
The undersigned, as the noted submittal been completed and project-specific qual complete for the lev requirements of LAD	Project Manager, certifies that for the referenced project has a met the requirements of the lity management plan, is rel of development and meets the DOTD, and Hardesty & Hanover.	The undersigned, as Project Engineer under the direction of the Project Manager, certifies that the noted submittal for the referenced project has been completed and met the requirements of the project- specific quality management plan, is complete for the level of development and meets the requirements of LADOTD and Hardesty & Hanover.
Name		Name
Date		Date

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#### PRIME CONSULTANT: HARDESTY & HANOVER



Subconsultant Quality Assurance Checklist Design Projects

Project Name: Sub-consultant Name: Project Status/Phase:

Date:

		N1/A *	
YES	NO.	N/A <sup>*</sup>	
			1. Design calculations have been checked and back checked
			2. Geometry calculations have been checked and back checked
			3. Computer program input has been checked and results have been determined to be reasonable
			4. Quantity estimates have been checked
			5. Engineer's estimate has been checked
			6. Pay items have been reviewed to ensure that all work is included
			7. Specifications have been reviewed
			8. Designers have checked plan sheets
			9. Plan details and specifications have been checked for conformance with client standard details and specifications
			10. Plan details and specifications have been coordinated with design calculations
			11. Drawing layout, preparation, and CADD standards meet current client specifications
			12. Designers have checked interdisciplinary interfaces
			13. Discipline Leaders, Project Engineer, and Project Manager have verified design coordination
			14. Utility coordination is complete and details comply with standards
			15. Constructability review has been made
			16. Design has been coordinated with adjacent construction or abutting facilities
			17. Technical Policy review has been made
			18. Permit and Agency Sign offs have been obtained (as applicable)
			19. Client's comments have been addressed
			20. Client and H&H QA/QC requirements have been satisfied

Project Manager

Signature

Date

Project Quality Lead/QA Reviewer

Signature

Date



# Appendix E

# LADOTD QA/QC Forms & Checklists



## LADOTD BDEM Chapter 3, Part I, Appendix D QC/QA Certification

Project No.:

Project Name:

We, the undersigned designers, detailers, checkers and reviewers for this project, have reviewed and accepted the calculations, plans, quantities, special provisions, and cost estimate prepared for the project. We certify that the work for which we are responsible has been completed in accordance with the LADOTD Bridge Design Section policy on QC/QA.

Team Members	Name	PE Registration No.	Responsible Plan Sheets	Responsible Special Provisions	Construction Cost Estimate	Signature
Designers						
Design Checkers						
Detailers						
Detail Checkers						
Reviewers						
Peer Reviewer						
Geotechnical Engineer						
Hydraulic Engineer						
EOR						



## BDEM Chapter 3, Part I, Appendix I Consultant Submittal QC/QA Certification

Project No.:

Project Name:

I, the undersigned Supervisor or Team Leader for this project, certify that the information included in this submittal has been prepared in accordance with the QC/QA plan documents and LADOTD Bridge Design Section policy on QC/QA and the information presented is accurate and meets the requirements of this submittal. All CAD drawings meet LADOTD CAD standards.

Submittal Description

Supervisor or Team Leader Name

Signature

Date



#### BDEM Chapter 3, Part I, Appendix A

#### **Design Criteria Checklist**

Design criteria for each project shall include, but not limited to, the following sections:

#### \_\_\_ Cover sheet

The following information must be included on the cover sheet:

- LADOTD project number
- Project name
- Revision date
- The Supervisor or Team Leader's signature and date

#### \_\_\_\_ Governing Design and Construction Specifications and Other References

A list of governing design and construction specifications and other references used for the project shall be included in this section. The edition number, interim revisions, and/or publication date must be specified for each reference.

```
____ Design Assumptions and Design Exceptions
```

All design assumptions and design exceptions received must be included in this section along with supporting documents.

#### General Information

The general information as listed below should be included in this section:

- Bridge information (no. of bridges, bridge clear width, length, no. of lanes, lane width, shoulder width, etc.)
- Road information (roadway classifications, design speed, traffic data, etc.)
- Vertical datum
- Vertical and horizontal clearances
- Other relevant information

#### Hydraulic Design Criteria

All hydraulic design criteria (design year, design water elevations, scour depth and scour elevation, etc.) shall be included in this section and the information shall be provided by the Hydraulic Engineer.

#### \_\_\_\_ Design Factors

The ductility factor  $I_D$ , redundancy factor  $I_R$ , and operational importance factor  $I_I$  shall be listed in this section.

#### \_\_\_ Design Loads



All design loads (dead load, live load, wind load, thermal loads, vessel collision loads, seismic load, wave loads, etc.) used for the project shall be included in this section.

#### \_\_\_\_ Limit States

All applicable limit states for this project shall be listed in this section.

#### Bridge Barrier

The design criteria, types, and test levels for bridge barriers shall be listed in this section. Standard plans and special details should be listed if they are utilized.

#### \_\_\_\_ Guardrail

The design criteria, types, and test levels for guardrails shall be listed in this section. Standard plans and special details should be listed if they are utilized.

#### \_\_\_\_ Approach Slab

Design criteria for approach slab shall be included in this section. Standard plans and special details should be listed if they are utilized.

#### \_\_\_\_ Deck and Deck Drainage

All design criteria for deck and deck drainage design shall be included in this section. Standard plans and special details should be listed if they are utilized.

#### \_\_\_ Bearing

All bearing types and design criteria for each bearing type shall be included in this section. Standard plans and special details should be listed if they are utilized.

#### \_\_\_ Joint

All joint types and design criteria for each type shall be included in this section. Standard plans and special details should be listed if they are utilized.

#### \_\_\_\_ Superstructure

All superstructure types and design criteria for each type shall be included in this section. Standard plans and special details should be listed if they are utilized.

#### \_\_\_\_ Substructure

All substructure types and design criteria for each type shall be included in this section. Standard plans and special details should be listed if they are utilized.

#### Piles and Drilled Shafts

All pile types, sizes, and structural design criteria shall be included in this section. Standard plans and special details should be listed if they are utilized.

#### \_\_\_\_ Geotechnical Design

All geotechnical design criteria shall be included in this section and the information shall be provided by the Geotechnical Engineer. Standard plans and special details should be listed if they are utilized.

#### \_\_\_\_ Mechanical Design

All mechanical design criteria shall be included in this section if applicable. Standard plans and special details should be listed if they are utilized.

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#### \_\_\_\_ Electrical/Lighting Design

All electrical design criteria shall be included in this section if applicable. Standard plans and special details should be listed if they are utilized.

#### As-Designed Bridge Rating Criteria

All as-designed bridge rating criteria shall be included in this section.

#### \_\_\_ Software

All software used for design and check shall be included in this section.



## BDEM Chapter 3, Part I, Appendix B Final Calculation Book Checklist

The final calculation book for each project shall include, but not limited to, the following sections:

#### \_ Cover Sheet

The following information must be included on the cover sheet:

- LADOTD project number
- Project name
- The title of "Final Calculation Book"
- The EOR's seal with signature and date
- \_\_\_ Final Calculation Book Check List
- \_\_\_\_ QC/QA Certifications
- Peer Review Resolution Agreement (if peer review is performed)
- \_\_\_ Design Criteria
- \_\_\_\_ Final Hydraulic Analysis Report from Hydraulic Engineer
- \_\_\_\_ Final Geotechnical Analysis Report from Geotechnical Engineer
- \_\_\_ Superstructure Design Calculations
- \_\_\_\_ Substructure Design Calculations
- \_\_\_ Quantity Calculations
- \_\_\_\_ Special Provisions/NS-Items
- Construction Cost Estimate
- \_\_\_ As-Designed Rating Report
- \_\_\_\_ List of All Final Electronic Design Files and File Locations (ProjectWise directory name)

Consultants shall submit the final calculation book to LADOTD bridge task managers; the submittal shall be on a CD or Flash Drive or placed to a designated ProjectWise folder including the following information:

- \_\_\_\_ A PDF File of the Calculation Book
- \_\_\_ All Electronic Design Files
- \_\_\_\_ A PDF File of the As-Designed Rating Report Only

The final calculation book for in-house projects shall include the same files listed above for consultant projects. The final calculation book and other final design documents for all projects including in-house and consultant projects shall be uploaded to the archiving location designated in the record retention policy within 30 calendar days after the stamped final plans are delivered.



## BDEM Chapter 3, Part I, Appendix C QA Information Package Checklist

Project No.: Project Description:

 Calculation Book
 Plans
 Special Provisions
 Cost Estimate
 Other Documents



## BDEM Chapter 3, Part I, Appendix K CONSULTANT SUBMITTAL REVIEW CHECKLIST

	Submittals												
Items	Design Criteria	TS& L	30'7r PP	60'7r PP	90'7c PP	100'7c PP	30'7r FP	60'7c FP	90'7c FP	100'7c FP	Final Calculation Book	Plan Revisions	Change Orders
Consultant Submittal QC/QA Certification			R	R	R	R	R	R	R	R	R	R	R
Design Criteria	С												
TS&L		С											
Bridge Index			D	D	D	D	D	D	С	S			
General Notes			D	D	D	D	D	D	С	S			
Summary of Estimated Quantities			D	D	С	С	D	D	С	S			
General Plans			D	D	С	С	С	С	С	S			
Typical Sections			D	D	С	С							
Superelevation Diagram				D	D	С	С	С	С	S			
Construction Phasing Details				D	D	С	С	С	С	S			
Traffic Controls Details				D	D	С	С	С	С	S			
Foundation/Pile Layout				D	D	С	С	С	С	S			
Pile Loads/Details					D	D	D	С	С	S			
Pile Data Tables							D	D	С	S			
Bent Details							D	D	С	S			
Fender Details							D	D	С	S			
Girder Details							D	D	С	S			
Span Details							D	D	С	S			
Joint Details								D	С	S			
Bearing Details								D	С	S			
Approach Slab								D	С	S			
Guardrail Details								D	С	S			

Bridge Design Section QC/QA Policy (October 2012)



Bridge							a				
Barrier/Mailing						D	Ċ	S			
Details											
Bridge Drainage		İ				D	С	S			
Details											
Detour Bridge						D	С	S			
Details											
Revetment Details						D	С	S			
Signing/Lighting Details						D	С	S			
Year Plate						D	С	S			
Rebar Support						D	С	S			
Mise. Details				-		D	С	S			
Project Specific Standard Plans and Special Details						D	С	S			
Electrical/Lighting						р	C	S			
Dețails						2	0	5			
Mechanical Details						D	С	S			
As-Built Plans						D	С	С			
Special Provisions/NS- Items					D	D	С	С			
Cost Estimate			D	D	D	D	С	С			
Final Calculations									S		
Revised		İ								s	
Plans/Calculations										<u> </u>	5

Legends:

"R" = The item is required and shall be included in the submittal.

"C" = The item shall be complete and shall be included in the submittal.

"D" = The item shall be indevelopment and shall be included in the submittal. "S" = The item is stamped by the EOR and shall be included in the submittal.

## 22. Sub-consultant information:

Firm Name (as registered with Louisiana's Secretary of State)	Address	Point of Contact and Email Address	Phone Number
A P S Engineering and Testing, LLC	1645 Nicholson Drive Baton Rouge, LA 70802	Sergio Aviles sergio@aps-testing.com	225.456.5714
Bridge Diagnostics, Inc.	740 S. Pierce Ave, Unit 15 Louisville, CO 80027	Scott Aschermann scotta@bditest.com	303.494.3230
Chustz Survey, LLC	211 Richey Street New Roads, LA 0760	James Chustz, Jr. jchustz@chustz.com	225.638.5949
Gaea Consultants, LLC	536 Washington Avenue; New Orleans, LA 70130	Tonja Marking <u>tonja.k.marking@gaeaconsultants.com</u>	504.962.5360
KTA-Tator, Inc.	4001 7 <sup>th</sup> Street North St. Petersburg, FL 33703	Greg R. Richards grichards@kta.com	727.453.9007
Moffatt & Nichol, Inc.	301 Main Street, Suite 800 Baton Rouge, LA 70801	Chase Hulon <u>chulon@moffattnichol.com</u>	225.610.1932
Urban Systems Inc.	2000 Tulane Avenue, Suite 200 New Orleans, LA 70112	Alison Michel <u>Acmichel@urbansystems.com</u>	504.569.3958



23. Location:

Not Applicable

