

The following documentation is an electronicallysubmitted vendor response to an advertised solicitation from the *West Virginia Purchasing Bulletin* within the Vendor Self-Service portal at *wvOASIS.gov*. As part of the State of West Virginia's procurement process, and to maintain the transparency of the bid-opening process, this documentation submitted online is publicly posted by the West Virginia Purchasing Division at *WVPurchasing.gov* with any other vendor responses to this solicitation submitted to the Purchasing Division in hard copy format.

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									itchaner	Last Name:	
									itchaner@ara.com	Email:	
									7-356-4500	Phone:	
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Department of Administration Purchasing Division 2019 Washington Street East Post Office Box 50130 Charleston, WV 25305-0130

## State of West Virginia **Solicitation Response**

Proc Folder:	1637261	637261					
Solicitation Description:	MOBILE RETRO	IOBILE RETROREFELCTIVITY TETING FOR PAVEMENT MARKINGS					
Proc Type:	Central Master A	greement					
Solicitation Closes		Solicitation Response	Version				
2025-04-15 13:30		SR 0803 ESR04142500000006194	1				

VENDOR					
VS0000022162 APPLIED RESEARCH AS	SSOCIATES INC				
Solicitation Number:	CRFQ 0803 DOT2500000047				
Total Bid:	532200	Response Date:	2025-04-14	Response Time:	16:41:05
Comments:					

FOR INFORMATION CONTACT THE BUYER
John W Estep
304-558-2566
john.w.estep@wv.gov

Vendor

Signature X

FEIN#

DATE

All offers subject to all terms and conditions contained in this solicitation

Line	Comm Ln Desc		Qty	Unit Issue	Unit Price	Ln Total Or Contract Amount
1	Mobilization, Per Release	Order	5.00000	EA	4200.000000	21000.00
Comm	Code	Manufacturer		Specificatio	n	Model #
7814160	00					

**Commodity Line Comments:** There really isn't a "deliverable" for this line item, but we entered 60 days because all mobilization will be complete before deliverables are submitted.

#### Extended Description:

Mobilization, Per Release Order

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amour	nt
2	Pavement Marking Mobile Retro Testing Expressway, Line Miles	6000.00	00 MILE	22.500000	135000.00	
-	<b></b>		<b>a</b> 17			

Comm Code	Manufacturer	Specification	Model #
78141600			

# **Commodity Line Comments:** We assume "DELIVERY DAY(S)" are the number of days from when data collection can begin until deliverables must be submitted, per the specifications. However, for this line item, the delivery days are different for even and odd calendar years.

#### Extended Description:

Pavement Marking Mobile Retro Testing Expressway, Line Miles

Line	Comm Ln Desc	Qty	Unit Issue	Unit Price	Ln Total Or Contract Amoun	t
3 Pavement Marking Mobile Retro Testing Secondary, Line Miles		13200.00	0 MILE	28.500000	376200.00	
Comm	Code Manufacturer		Specificat	ion	Model #	
704440	22					

### 78141600

**Commodity Line Comments:** We assume "DELIVERY DAY(S)" are the number of days from when data collection can begin until deliverables must be submitted, per the specifications.

#### **Extended Description:**

Pavement Marking Mobile Retro Testing Secondary, Line Miles



April 14, 2025

State of West Virginia Department of Administration Purchasing Division 2019 Washington Street, East Charleston, West Virginia 25305-0130

## Subject: CRFQ: DOT2500000047 "Mobile Retroreflectivity Testing for Pavement Markings"

To Whom It May Concern,

Applied Research Associates, Inc. (ARA) is pleased to submit this quote to the West Virginia Department of Transportation, Division of Highways (DOH) for the state-wide collection of pavement marking retroreflectivity data. ARA staff are nationally recognized experts in pavement markings, and we have over 20 years of experience in mobile data collection. Ms. Carmine Dwyer will serve as the Contract Manager/Project Manager, and Ms. Leela Chinnakotla will serve as the Deputy Project Manager. Their resumes, the resume of an additional engineer, and the resumes of our two lead technicians are attached to this letter. The mobile retroreflectometer unit that ARA intends to use for this data collection is the Laserlux G7 (LLG7). ARA, our staff and our equipment meet or exceed all qualification requirements stated in the mobile retroreflectivity testing specifications.

We look forward to the opportunity to work with the West Virginia DOH again. If you require any additional information or clarifications, please do not hesitate to contact us.

Sincerely,

Michail

Michael Harrell, P.E. Division Manager and Vice President, TID

## **EXHIBIT A - PRICING PAGES**

Quantities listed are approximations only, based on estimates supplied by the Agency. It is understood and agreed that the Contract shall cover the quantities actually performed and measured during the term of the Contract as defined in the Contract Specifications, whether more or less than the quantities shown.

ITEM NUMBER	ESTIMATED QUANTITY	DESCRIPTION	Commodity Code	UNIT COST	EXTENDED TOTAL AMOUNT
1	6,000	Pavement Marking Mobile Retro Testing-Expressway, Line Miles	78141600	\$22.50	\$135,000
2	13,200	Pavement Marking Mobile Retro Testing-Secondary, Line Miles	78141600	\$28.50	\$376,200
3	5	Mobilization, Per Release Order, Each	78141600	\$4,200	\$21,000



Department of Administration **Purchasing Division** 2019 Washington Street East Post Office Box 50130 Charleston, WV 25305-0130

## State of West Virginia **Centralized Request for Quote Highways**

Proc Folder:	1637261						Reason for Modification:
Doc Description:	MOBILE RET	ROREFELCTI	VITY TE	TING FC	R PAVEMENT MARKIN	NGS	Addendum No_1 To Correct error on the Pricing Page and the Quantity of Comm Line 3
Proc Type:	Central Maste	r Agreement					
Date Issued	Solicitation C	loses	Solicitat	tion No			Version
2025-03-27	2025-04-15	13:30	CRFQ	0803	DOT2500000047		2
BID RECEIVING LO	OCATION						
BID CLERK DEPARTMENT OF PURCHASING DIV 2019 WASHINGTO CHARLESTON US	ADMINISTRA ISION N ST E WV 25305	TION 5					
VENDOR							
Vendor Customer	Code: VS000	0022162					
Vendor Name : A	pplied Researc	ch Associates,	Inc.				
Address :							
Street : 100 Trade City : Champaign	e Centre Dr., St า	te. 200					
State: Illinois			Coun	try: Ur	ited States	Zip :	61820
Principal Contact	: Michael Harr	ell, P.E.					
Vendor Contact P	h <b>one:</b> 217-356	6-4500		E	extension:		
FOR INFORMATIO John W Estep 304-558-2566 john.w.estep@wv.g	N CONTACT 1	THE BUYER					
Vendor Ma Signature X	cha Q.	Jonel	F	EIN# 8F	5-0276434		<b>DATE</b> 04/14/2025

Vendor Signature X

FEIN# 85-0276434

**DATE** 04/14/2025

All offers subject to all terms and conditions contained in this solicitation

### **ADDITIONAL INFORMATION**

ADDENDUM NO\_1

Addendum No\_1 issued to publish and distribute the attached information to the Vendor Community.

#### **REQUEST FOR QUOTATION:**

The West Virginia Purchasing Division is soliciting bids on behalf of the West Virginia Department of Transportation, Division of Highways to establish a contract for mobile testing of the retroreflectivity of pavement markings. Per the Bid Requirements, specifications, Terms and Conditions attached to this solicitation.

INVOICE TO		SHIP TO			
DIVISION OF HIGHWAYS TRAFFIC ENGINEERING DIVISION		DIVISION TRAFFIC DIVISION	OF HIGHWAYS ENGINEERING		
1900 KANAWHA BLVD E, BLDG 5 RM A550		1900 KAN/ BLDG 5 BI	AWHA BLVD E, M A550		
CHARLESTON	WV	CHARLES	TON	WV	
US		US			
Line Comm Ln Desc		Qty	Unit Issue	Unit Price	Total Price
1 Mobilization, Per I	Release Order	5.00000	EA	\$4,200	\$21,000
Comm Code	Manufacturer	Specificatio	on	Model #	
78141600					
Extended Description: Mobilization, Per Release Orc	ler				
INVOICE TO		SHIP TO			
DIVISION OF HIGHWAYS		DIVISION	OF HIGHWAYS		
TRAFFIC ENGINEERING DIVISION		TRAFFIC I DIVISION	ENGINEERING		
1900 KANAWHA BLVD E, BLDG 5 RM A550		1900 KAN/ BLDG 5 RI	AWHA BLVD E, M A550		
CHARLESTON	WV	CHARLES	TON	WV	
US		US			
Line Comm Ln Desc		Qty	Unit Issue	Unit Price	Total Price
2 Pavement Markin Expressway, Line	g Mobile Retro Testing Miles	6000.00000	MILE	\$22.50	\$135,000
Comm Code	Manufacturer	Specificatio	on	Model #	
78141600					

Extended Description:

Pavement Marking Mobile Retro Testing Expressway, Line Miles

INVOIC	E TO		SHIP TO			
DIVISIO	N OF HIGHWAYS		DIVISION OF HIGHWAYS			
TRAFFI DIVISIO	C ENGINEERING		TRAFFIC E DIVISION	NGINEERING		
1900 KA BLDG 5	ANAWHA BLVD E, 5 RM A550		1900 KANA BLDG 5 RM	WHA BLVD E, 1 A550		
CHARLI	ESTON	WV	CHARLEST	ſON	WV	
US			US			
Line	Comm Ln Des	C	Qty	Unit Issue	Unit Price	Total Price
3	Pavement Mar Secondary, Lin	king Mobile Retro Testing e Miles	13200.00000	MILE	\$28.50	\$376,200
Comm	Code	Manufacturer	Specificatio	n	Model #	
7814160	00					
Extende	ed Description:					
Paveme	ent Marking Mobile	Retro Testing Secondary, Line	e Miles			
SCHED	ULE OF EVENTS					

SCHEDULE OF EVENTS				
<u>Line</u>	Event	Event Date		
1	Tech Questions due by 10:00am	2025-04-02		

	Document Phase	Document Description	Page 4
DOT2500000047	Final	MOBILE RETROREFELCTIVITY TETING FOR PAVEMENT MARKINGS	

## ADDITIONAL TERMS AND CONDITIONS

See attached document(s) for additional Terms and Conditions

## ADDENDUM ACKNOWLEDGEMENT FORM SOLICITATION NO.: CRFQ DOT2500000047

**Instructions:** Please acknowledge receipt of all addenda issued with this solicitation by completing this addendum acknowledgment form. Check the box next to each addendum received and sign below. Failure to acknowledge addenda may result in bid disqualification.

Acknowledgment: I hereby acknowledge receipt of the following addenda and have made the necessary revisions to my proposal, plans and/or specification, etc.

## Addendum Numbers Received:

(Check the box next to each addendum received)

{X }	Addendum No. 1	[	]	Addendum No. 6
[]	Addendum No. 2	[	]	Addendum No. 7
[]	Addendum No. 3	[	]	Addendum No. 8
[]	Addendum No. 4	[	]	Addendum No. 9
[]	Addendum No. 5	[	]	Addendum No. 10

I understand that failure to confirm the receipt of addenda may be cause for rejection of this bid. I further understand that that any verbal representation made or assumed to be made during any oral discussion held between Vendor's representatives and any state personnel is not binding. Only the information issued in writing and added to the specifications by an official addendum is binding.

Applied Research Associates, Inc.

Company

Micha D. Hone O

Authorized Signature

04/14/2025

Date

NOTE: This addendum acknowledgement should be submitted with the bid to expedite document processing.

## **10. VENDOR DEFAULT:**

- 10.1. The following shall be considered a vendor default under this Contract.
  - **10.1.1.** Failure to perform Contract Services in accordance with the requirements contained herein.
  - 10.1.2. Failure to comply with other specifications and requirements contained herein.
  - **10.1.3.** Failure to comply with any laws, rules, and ordinances applicable to the Contract Services provided under this Contract.
  - **10.1.4.** Failure to remedy deficient performance upon request.
- 10.2. The following remedies shall be available to the Agency upon default.
  - 10.2.1. Immediate cancellation of the Contract.
  - **10.2.2.** Immediate cancellation of one or more release orders issued under this Contract.
  - **10.2.3.** Any other remedies available in law or equity.

## **11. MISCELLANEOUS:**

11.1. Contract Manager: During its performance of this Contract, Vendor must designate and maintain a primary contract manager responsible for overseeing Vendor's responsibilities under this Contract. The Contract manager must be available during normal business hours to address any customer service or other issues related to this Contract. Vendor should list its Contract manager and his or her contact information below.

Contract Manager:	Carmine Dwyer				
<b>Telephone Number:</b> <u>217-356-4500</u>					
Fax Number: _217-356-3088					
Email Address: cdw	yer@ara.com				

11.2. Non-Applicable Terms and Conditions: Note for clarification purposes, Sections 14, 15A, and 15 of the Instructions to Vendors Submitting Bids document is not applicable to this Contract due to the service being **DESIGNATED CONTACT:** Vendor appoints the individual identified in this Section as the Contract Administrator and the initial point of contact for matters relating to this Contract.

(Printed Name and Title) Michael J. Harrell, Vice President and Division Manager

(Address) 100 Trade Centre Dr., Ste. 200. Champaign, IL. 61820

(Phone Number) / (Fax Number) \_\_\_\_\_217-356-4500 / 217-356-3088

(email address) \_mharrell@ara.com

**CERTIFICATION AND SIGNATURE:** By signing below, or submitting documentation through wvOASIS, I certify that: I have reviewed this Solicitation/Contract in its entirety; that I understand the requirements, terms and conditions, and other information contained herein; that this bid, offer or proposal constitutes an offer to the State that cannot be unilaterally withdrawn; that the product or service proposed meets the mandatory requirements contained in the Solicitation/Contract for that product or service, unless otherwise stated herein; that the Vendor accepts the terms and conditions contained in the Solicitation, unless otherwise stated herein; that I am submitting this bid, offer or proposal for review and consideration; that this bid or offer was made without prior understanding, agreement, or connection with any entity submitting a bid or offer for the same material, supplies, equipment or services; that this bid or offer is in all respects fair and without collusion or fraud; that this Contract is accepted or entered into without any prior understanding, agreement, or connection to any other entity that could be considered a violation of law: that I am authorized by the Vendor to execute and submit this bid, offer, or proposal, or any documents related thereto on Vendor's behalf; that I am authorized to bind the vendor in a contractual relationship; and that to the best of my knowledge, the vendor has properly registered with any State agency that may require registration.

By signing below, I further certify that I understand this Contract is subject to the provisions of West Virginia Code § 5A-3-62, which automatically voids certain contract clauses that violate State law; and that pursuant to W. Va. Code 5A-3-63, the entity entering into this contract is prohibited from engaging in a boycott against Israel.

Applied Research Associates, Inc.

(Company) Micha Danel

(Signature of Authorized Representative) Michael J. Harrell, Vice President and Division Manager

(Printed Name and Title of Authorized Representative) (Date)

217-356-4500 / 217-356-3088

(Phone Number) (Fax Number)

mharrell@ara.com

(Email Address)

## Carmine E. Dwyer, P.E.

Principal Engineer Applied Research Associates, Inc.

## **Professional Summary**

Ms. Dwyer is a Principal Engineer and Group Leader in the Transportation Sector of Applied Research Associates. She joined ARA in 2004 after six years' service as an officer in the U.S. Air Force. She has over 25 years of project management experience and has delivered a diverse project portfolio, including projects in roadway and airfield pavement design and construction, pavement evaluation, transportation asset management, and software development. Also, over the past 18 years, Ms. Dwyer has established an expertise in pavement markings.

## **Key Work Experience**

- West Virginia Department of Highways (2018–2024): In 2018 and 2019, Ms. Dwyer led the mobile retroreflectometer unit (MRU) data collection and analysis of approximately 18,000 total line-miles of long line pavement markings for the West Virginia DOH. Since 2020, she has led the statewide data collection and analysis, approximately 19,000 line-miles of long line pavement markings. The delivered reports indicate which sections failed (fell below a minimum retroreflectivity value) for the DOH to enforce quality control of newly striped roads.
- Florida Department of Transportation (2016–Present): Ms. Dwyer has managed the Florida DOT's pavement marking management services contract since 2016. She leads a team of three full-time staff, an engineer and two technicians, working onsite at the State Materials Office. The team owns, operates, and maintains two MRUs to collect 25,000 line-miles of pavement marking data annually. The data provides the districts with the information needed to determine their annual re-striping needs.
- South Mountain Freeway, Phoenix, AZ (2021, 2023): In 2021 and 2023, Ms. Dwyer led the MRU data collection and analysis for the entire South Mountain Freeway in Phoenix, AZ. The freeway is 22 centerline miles long, has three lanes plus one HOV lane in both directions, and includes 16 interchanges.

## HIGHLIGHTS



- Vast experience with project management.
- Diverse portfolio, supporting a variety of US transportation agencies.
- Expertise in pavement markings.

Firm: Applied Research Associates, Inc.

#### Years of Experience: 26

#### Education:

M.S., Civil Engineering, University of Illinois at Urbana-Champaign, 2005

B.S., Civil Engineering, University of Illinois at Urbana-Champaign, 1997

**Registrations:** 

Professional Engineer – Illinois

**Professional Affiliations:** 

Past chair (2016-2020) of TRB's Signing and Marking Materials Committee (AHD55)

Past co-chair (2020-2022) of TRB's Traffic Control Devices Committee (ACP55)

- *New York State Thruway Authority (2022)*: Ms. Dwyer led NYSTA's 2022 MRU data collection and analysis of the right edge in both directions of every NYSTA route, approximately 1,200 line-miles.
- North Texas Tollway Authority (2022-2024): In 2022, Ms. Dwyer led NTTA's initial inventory and system-wide MRU data collection and analysis. She led the implementation of NTTA's pavement marking management system, and in 2023 and 2024 her team performed annual updates. The scope includes all mainline, frontage road, and Direct Connector long-line markings, approximately 1,700 line-miles.

## Leela Sushitha Chinnakotla, EIT

## Staff Civil Engineer Applied Research Associates, Inc.

## **Professional Summary**

Ms. Chinnakotla is a Staff Civil Engineer in the Transportation Division of Applied Research Associates (ARA) with expertise in roadway markings management. Over the past three and half years at ARA, she has worked with more than eight agencies on pavement marking research projects, pavement marking testing using mobile and handheld retroreflectometers, pavement marking performance analysis, database management, and GIS integration.

## **Key Work Experience**

- North Texas Tollway Authority (10/2022 Present): Conducted system-wide pavement marking data collection across NTTAmanaged corridors for three consecutive years. Performed comprehensive data cleaning, consolidation, and processing to ensure accuracy and consistency. Analyzed pavement marking conditions network-wide, compared results against performance thresholds, and identified areas requiring improvement. Developed degradation curves for each marking material to determine its service life.
- I-77 Mobility Partners LLC (11/2022 Present): Developed an inventory and assessed the retroreflectivity of longitudinal and center-of-lane markings on the I-77 Tollway section using both mobile and handheld retroreflectometers. Analyzed the data with Excel and ArcMap tools, and prepared concise summary reports.



HIGHLIGHTS

- Hands-on experience in pavement markings research, testing, and assessment since 2021
- TTI-certified MRU operator
- Academic background in pavement engineering and materials
- Proficient in data analysis

Firm: Applied Research Associates, Inc.

#### Years of Experience: 3

#### Education:

M.S. Civil Engineering, Texas A&M University at College Station, 2021

Further, identified and documented failed Raised Pavement Markers between skip dashes on the mainline.

- West Virginia Division of Highways (04/2022 10/2024): Contributed to the collection of retroreflectivity data for 13,000+ line miles of longitudinal pavement markings. Conducted quality checks, processed large datasets, and prepared reports in customized formats for interstates, Appalachian Development (APD) routes, district routes, and ramps.
- Blueridge Transportation Group (03/2023 02/2024): Developed a comprehensive routing plan for the complex, interconnected roadways of the SH288 Toll Section. Conducted detailed testing, analysis, and prepared a summary report determining the sections failing to meet the agency set minimum retroreflectivity requirements.
- Illinois Tollway (09/2021 12/2023): Collected retroreflectivity data of mainlines and ramps across IL Tollway Network. Conducted quality checks and data analysis, generated marking condition report and the annual maintenance striping plan using Microsoft Access.
- Michigan Department of Transportation (09/2023 10/2023): Led project execution as Project Manager (PM) while also personally conducting pavement marking testing, analysis, and condition assessment.

## Shrivatsa Ravikumar

## Senior Engineer Applied Research Associates, Inc.

### **Professional Summary**

Mr. Ravikumar is a Senior Engineer with more than a decade of work experience in pavement evaluation, maintenance, markings, and asset management. He has been involved in the collection, processing, and analysis of pavement distress data. He has developed collection protocols for increased efficiency and tools for quality control of data both in the field and in the office to ensure data consistency and quality. He has also developed automated reporting systems that can be used to generate customizable reports that will fit into any required specifications. Mr. Ravikumar is proficient in several pavement and asset management systems (i.e., RoadCare/AssetFox, Cartegraph, and PAVER). He has also worked with various counties, cities, state DOTs, Tollway and the FHWA on development and research for various asset management systems, sustainability tools, as well as risk management software

### **Key Work Experience and Programs Managed**

- North Texas Tollway Authority Annual Pavement Marking data collection [2022 - Present] – Data Collection and Processing: Mr. Ravikumar worked on data collection, processing, and analysis of NTTA's initial inventory and system-wide MRU data. Mr. Ravikumar also developed processes for creating customized reports to showcase all the collected data for the mainline, frontage roads, and direct connect long-line markings of approximately 1,700 linemiles.
- Michigan Department of Transportation Pavement Marking data collection [2019]: Deputy Project Manager: In 2019, Mr. Ravikumar served as deputy project manager to collect MRU data on approximately 3,000 total line-miles of long line pavement markings for MDOT. Mr. Ravikumar was responsible for creating

efficient routing system to optimize data collection and ensuring a minimum of 20% of the roadway markings were collected. Mr. Ravikumar also created automated workflows for data processing and report generation.

- West Virginia Division of Highways Statewide Pavement Marking data collection [2018 Present]

   Data Collection and Processing: Since 2018, Mr. Ravikumar has worked on collection, processing, and analysis of about 47,700 total line-miles of long line pavement markings for the West Virginia DOH. He developed data flow software tools for customized reporting for overall pavement marking conditions as well as failed section information.
- Florida Department of Transportation Pavement Marking Management System [2016] Deputy Project Manager: Mr. Ravikumar served as the deputy project manager and on-site engineer to set up the state's pavement marking management system (PMMS). He oversaw technicians and maintained the operation of two mobile retroreflectometer units (MRU and two handheld units used to collect 25,000 line-miles of pavement marking data annually. He developed customized software tools to upload data into FDOT's website for use by various districts.

## HIGHLIGHTS



- Experienced with pavement marking management systems.
- Experienced with Pavement Management Systems
- Technical Achievement Award, PaVision, 2019

#### Firm: Applied Research Associates, Inc. (ARA)

#### Years of Experience: 11

Education: M.S. in Civil Engineering, Georgia Institute of Technology, 2013 B.S. in Civil Engineering, National Institute of Technology, Trichy, India, 2011 Registration: • Engineer in Training –

California, Certificate No. EIT 161287

## Kimberly L. DeMay

## Senior Engineering Technician Applied Research Associates, Inc.

## **Professional Summary**

Ms. DeMay has over 30 years of experience conducting a variety of data collection. She is responsible for collecting mobile and handheld retroreflectometer data, creating GIS/CADD maps, researching and compiling pavement construction history, developing databases, and preparing reports. She has created individual and overall maps for a variety of airports for use in reports, map linking to MicroPAVER using ArcMap 9.2, and other purposes. Ms. DeMay has participated in projects for statewide retroreflectivity data collection, statewide airport surveys, commercial airports, Air Force bases, cities, and other facilities.

## **Key Work Experience**

## Mobile Retroreflectometer Unit (MRU) Data Collection

- West Virginia DOH Statewide Pavement Marking Data Collection (2019-2024). Ms. DeMay was instrumental in collecting approximately 62,600 total line-miles of long-line pavement marking data for the WVDOH. Her responsibilities included ensuring daily calibration of ARA's LaserLux G7 (LLG7) unit, efficient data collection and equipment operation, and quality control and upload of collected data.
- Loop 202 (South Mountain Freeway) MRU Data Collection Phoenix, AZ (February 2021). Ms. DeMay operated ARA's MRU to collect pavement marking data on Loop 202 in Phoenix, AZ.

A total of 220 line-miles of mainline long-line marking data was collected, as well as every long-line marking on all 16 interchanges. Ms. DeMay's responsibilities included daily set-up of dual mounted MRUs, daily calibrations, data collection and quality control and upload of collected data.

- North Texas Tollway Authority (NTTA) Dallas, TX (2022 Present). Ms. DeMay's responsibilities included daily set-up and calibrations of ARA's LaserLux G7 (LLG7) dual mounted MRUs, data collection, quality control and upload of collected data for all five NTTA toll roads and interchanges.
- Central Florida Tourism Oversight District (CFTOD) Orlando, FL (2024). Ms. DeMay's duties
  included daily set-up and calibrations of ARA's LaserLux G7 (LLG7) dual mounted MRUs and data
  collection for the CFTOD roads located in and around Walt Disney World.

## Handheld Retroreflectometer Unit Data Collection

- Illinois Tollway pavement marking test sections (2007 Present)
- Loop 202 (South Mountain Freeway) pavement marking quality control (2024)

## HIGHLIGHTS



- Vast experience in data collection.
- Knowledgeable in PAVER systems.
- Knowledgeable in Retroreflectometer data collection.

## Firm: Applied Research Associates, Inc.

#### Years of Experience: 30

Education:

A.S. Civil Engineering Technology, Lake Land College, 1987

## **Jacob Bennett**

## Senior Civil Engineering Technician Applied Research Associates, Inc.

## **Professional Summary**

Mr. Jacob Bennet is a Senior Civil Engineering Technician with over 10 years of experience in a variety of transportation topics, including data collection and analysis, friction testing, falling weight deflection testing, and sign management, among others.

## **Key Work Experience**

## Mobile Retroreflectometer Unit (MRU) Testing

- Loop 202 (South Mountain Freeway) Phoenix, AZ (2021, 2023): Mr. Bennet operated ARA's MRU, a Laserlux G7 (LLG7), to collect retroreflectivity data on Loop 202 in Phoenix, AZ in 2021 and 2023. For both projects, a total of 220 line-miles of mainline long-line marking data was collected, as well as every long-line marking on all 16 interchanges. Mr. Bennet's responsibilities included daily set-up of dual mounted MRUs, daily calibrations, data collection and quality control and upload of collected data.
- West Virginia Division of Highways Various Locations, WV (2019 - 2024): Mr. Bennet was instrumental in the MRU data collection of approximately 62,600 total line-miles of long line pavement markings for the West Virginia DOH. His responsibilities included daily calibrations, data collection and quality control and upload of collected data.
- New York State Thruway Authority (2022): Mr. Bennett performed NYSTA's 2022 MRU data collection of the right edge in both directions of every NYSTA route, approximately 1,200 line-miles. His responsibilities included daily calibrations, data collection and quality control and upload of collected data.

## HIGHLIGHTS



- Specializes in:
- Data collection and analysis
- Falling Weight and Rolling Wheel Deflection Testing
- Mobile Retroreflectometer Testing
- Friction Testing
- Pavement Coring
- Pavement Condition Surveys
- Sign Management

## Firm: Applied Research Associates, Inc.

#### Years of Experience: 10+

#### Education:

B.S., Geology: Earth and Environmental Science, University of Illinois at Urbana-Champaign

#### **Registrations:**

- Class A Commercial Driver's License (CDL)
- District of Columbia Department of Transportation Washington, DC (2019): Mr. Bennet operated ARA's MRU, an LLG7, to collect pavement marking retroreflectivty data for the entire city of the District of Columbia. His responsibilities included daily calibrations, equipment operation, and quality control.
- Snowplowable Pavement Marker Study St. Louis, MO (January 2020): Mr. Bennet operated ARA's MRU, an LLG7, to collect retroreflectivty data and pavement marker count data on several routes in the St Louis area. The marker count data was used to assess the performance of a plastic inlaid pavement marker being evaluated by the Missouri DOT.