U.S. Department of Transportation

Office of the Secretary of Transportation

1200 New Jersey Ave., S.E.
Washington, DC 20590

MEMORANDUM TO: Rachel Milberg
Head of Contracting Activity
National Highway Traffic Safety Administration (NHTSA)

FROM: Dr. Willie H. Smith
Senior Procurement Executive, M-60

WILLIE HERBERT SMITH Digitally signed by WILLIE HERBERT SMITH Date: 2022.04.25 16:53:29 -04'00'

SUBJECT: Category Management Analysis of Alternatives (AoA) for NHTSA's Transportation Research Center (TRC)

Reference is made to the subject document submitted for Senior Procurement Executive approval in accordance with Transportation Acquisition Manual (TAM) 1207.102(d). Based on review by the Office of the Senior Procurement Executive, this memo hereby:

1) Provides approval for a deviation from TAM 1202(d)(4), which requires that General Services Administration (GSA)'s Market Research as a Service (MRAS) be utilized to support market research efforts for all procurements that require Category Management AoAs; and

2) Approve the subject AoA. The following proviso accompanies this approval:

    a. NHTSA shall review the feasibility of establishing a Federally Funded Research Center (FFRDC) as described under the Federal Acquisition Regulation (FAR) 35.017 in the next iteration of this requirement.

Please note that approval of the AoA – a pre-planning document for planned procurements meeting criteria specified in TAM 1207.102(d) – does not presuppose approval by the Department in all areas of the acquisition strategy, which are subject to additional reviews via the Acquisition Strategy Review Board (ASRB) process.

Please retain a copy of this approval memo in the contract file.

If you have any questions, please email DOTAcquisitionPolicy@dot.gov.

Facility Use and Support Services for the Vehicle Research and Test Center (VRTC)
Department of Transportation
Analysis of Alternatives

In accordance with Office of Management and Budget (OMB) memorandum, M-19-13, "Category Management: Making Smarter Use of Common Contract Solutions and Practices and Transportation Acquisition Manual (TAM) 1207.102, this analysis of alternative is submitted for review and approval.

A. Introduction

The Vehicle Research and Testing Center (VRTC) and the Office of Acquisition Management (OAM) has a requirement to plan, coordinate and conduct interactive, long-term research projects and/or short-term/quick reaction research projects, with the purpose of advancing the state-of-the-art understanding of motor vehicle and traffic safety..

B. Background

The National Highway Traffic Safety Administration (NHTSA) is an agency of the U.S. Department of Transportation (DOT). NHTSA's mission is to save lives, prevent injuries, and reduce economic costs due to road traffic crashes. The agency develops, promotes, and implements effective educational, engineering, and enforcement programs with the goal of ending vehicle crash tragedies associated with vehicle use and highway travel.

The Vehicle Research and Test Center (VRTC) is a research and development, test & evaluation, and investigation facility of NHTSA. VRTC is located on property leased by GSA but managed and operated by the Transportation Research Center Inc. (TRC) at East Liberty, OH. TRC is affiliated with The Ohio State University (OSU).

NHTSA has utilized the VRTC facility for more than forty (40) years in the conduct of scientific and technical activities, which support NHTSA's requirements for testing safety-related defects as well as performing applied research to develop objective test procedures and performance criteria, and to evaluate potential safety countermeasures.

As the principal research and testing facility for NHTSA, government researchers at VRTC coordinate projects related to crash avoidance, crashworthiness and biomechanics technologies. NHTSA conducts both static and dynamic testing at the test facility which require, but are not limited to, the following major facilities and equipment:

- 50-acre Vehicle Dynamics Area,
- 7.5-mile High Speed Test Track,
- Crash Test Facility,
- Crash Simulator,
- Vehicle SmartCenter, and
- Skid Pad.

As part of these efforts, VRTC must identify and evaluate alternative approaches for the research and resolve day-to-day technical issues within short timeframes. VRTC also takes on research, where the issues are not fully developed and a mixture of analytical and experimental efforts are required to find the most sensible solutions. VRTC conducts engineering research, investigations, and tests to identify or confirm the existence of safety-related defects that may adversely affect vehicle control, occupant protection, and traffic safety.

C. Description of Requirement

This requirement falls under the North American Industry Classification System (NAICS) code - 541380 – "Testing Laboratories" and Product Service Code (PSC) H923 "Other Qc/test/inspect – Ground effects Vehicles, Motor Vehicles, Trailers, and Cycles." This requirement falls under the "Professional Services" category, sub-category of "Business Administration Services." The planned tier is 1. The planned acquisition strategy is to issue an Indefinite Delivery Indefinite Quantity contract vehicle using (sole source) other than full and open competition procedures. The recommended source is, the Transportation Research Center (TRC) in East Liberty Ohio.

The VRTC requires both short-term and long-term research and testing to perform identified requirements. Requirements may include, but are not limited to, the following activities:

- Calibrate test equipment. Equipment may include component test devices, instrumentation systems, and mechanical hardware.

- Calibration of Anthropomorphic Test Devices (ATD)/ Dummy, per the calibration procedures and specifications in 49 Part 572 CFR, SAE Engineering Aides, or other procedures specified by the government in a task order. ATDs commonly used in the testing of vehicle and vehicle related safety systems are to be used for task order work; however, at award of this contract, VRTC cannot identify all ATD models for which services may be required and the Contractor is to remain capable of providing flexible and adaptive services for the duration of contract performance. The following list is illustrative of the ATDs which may require calibration / qualification. These include, but are not limited to the following:

  - P ¾, 9-month-old child dummy
  - CRABI-12-month-old – CRABI Dummy 12-month-old infant crash test dummy
  - H II 3-year-old, three-year-old child dummy
  - H II six-year-old, six-year-old child dummy
  - H III 3-year-old, hybrid III three-year-old child crash test dummy, alpha version
  - H III six-year-old, hybrid III six-year-old child test dummy, beta version
  - H III six-year-old weighted, hybrid III six-year-old weighted child test dummy
  - H III 10-year-old, hybrid III ten-year-old child crash test dummy
  - H III 5th female, Hybrid III 5th percentile female test dummy, alpha version
  - H III 50th male, Hybrid III test dummy
  - HIII 95th, large male Hybrid III test dummy
  - SID H III, side impact hybrid dummy 50th percentile male
  - SID, side impact dummy 50th percentile male

- SIDIIsRevD, SID-IIsD small female side impact crash test dummy
- ES-2re, Eurosid II with Rib extensions side impact adult male crash test dummy
- Thor-Lx – Instrumented lower dummy leg for Thor-NT dummy
- Thor-Flx – Instrumented lower dummy leg for Thor Female dummy
- THOR 50th male frontal dummy
- THOR 5th female frontal dummy
- WorldSID 50th male side impact dummy
- WorldSID 5th female side impact dummy
- BioRID rear impact dummy
- Q3s three-year-old child side impact dummy

- Facilitate manufacturing of prototype Dummy components. Includes design of new components, part stress analysis using virtual solid models, correspondence/coordination with material suppliers, in-house manufacturing of machined, molded, or assembled parts, testing support, and revisions to existing Dummy parts as needed. In-house rapid prototyping, Computer Numeric Control (CNC) machining, extrusion/injection molding, and three-dimensional printing capabilities may be required, so that Dummy development activities can proceed at an accelerated pace.

- Instrument test articles. Test articles may include anthropomorphic dummies, component test devices, sled (crash simulation) bucks, vehicles and vehicle components. Instrumentation shall enable measurements to be made related to injury severity, driver control inputs, driver behavior (e.g., eye glance location and dwell duration), vehicle location (i.e., precision GPS), structural response, vehicle response, and/or component response to the testing conducted. This may also include on-board and off-board video cameras and lighting.

- Assemble & install test components.

- Maintain and operate Government Furnished Equipment. Government Furnished Equipment may include transducers, data acquisition equipment, photographic and video equipment, dynamometers, vehicle lifts, anthropomorphic test dummies and dummy parts.

- Assist in the design, fabrication, debugging, and operation of new instrumentation and data acquisition systems, components, and test fixtures.

- Assist in the design, fabrication, and debugging of vehicle modifications.

- Perform data entry, process, analyze, and evaluate experimental data results from research and testing efforts conducted by VRTC. Statistical and photographic analysis of test results and test simulations may also be required.

- Design experiments and perform inferential statistical analysis of acquired data using design and analysis methods relevant for application to human behavioral data.

- Analyze crash data (from computer files and examination of hard-copy case files) to identify major aspects of the crash problem.

- Perform surveys and ergonomics testing with human subjects in accordance with government policy.

- Prepare and/or present data presentations or other reports that may require graphs, charts, tables, photographs, video or motion picture filming and other illustrations.

- Use technical writing skills to prepare progress, event, and final reports of projects or phases of projects.

- Develop and construct special test fixtures and equipment.

- Participate in program development of new research and defects investigation activities. Apply knowledge of research/investigative approaches and testing methodologies from previous, similar activities in developing these programs.

- Conduct human factors testing and evaluation, including experimentation using human test participants, using instrumented vehicles on test courses, public roads, and driving simulators.

- Participate in program briefings with NHTSA personnel in Washington DC, the automotive industry, and related automotive research organizations and component manufacturers.

- Conduct testing at TRC facilities. Testing may include driving passenger cars, light trucks, heavy trucks, buses, and heavy combination vehicles. Testing may also include testing highly automated vehicles in a safe, limited-access, driving environment. Driving maneuvers may include limit or near-limit of vehicle capability, requiring expertise and experience in performing such maneuvers. Testing may be required on public roads and highways as well as TRC test surfaces.

- Conduct automotive cybersecurity research including reverse engineering, penetration testing, analyses of vehicle architectures, methods for performing remote attacks, and third-party device issues. Study global positioning system spoofing and denial of service.

- Conduct radio frequency interference and electromagnetic frequency testing. This shall include radiated power measurements of digital short-range communications radios, radar antennas, and other electromagnetic equipment.

- Conduct simulation tests on the HYGE sled and full-scale crash tests in various configurations. These tests may involve collection of electronic data from instrumentation, video data from high-speed cameras and still photography.

- Provide general administrative support in the areas of building maintenance, parts pick-up, switchboard operation and receptionist duties, typing, filing, report preparation and reproduction, and other administrative functions as described in individual task orders.

- Identify, locate, obtain pricing, and purchase test vehicles, vehicle components, equipment, software, and/or other materials.

- Conduct testing using unique and/or prototype test devices.

- Review and research submissions from Vehicle Owners' Questionnaires, manufacturers, and other sources for possible trends and indicators of safety defects.

- Perform testing, analysis, and inspections that will assist in confirming the existence or non-existence of defects in motor vehicles or motor vehicle components/equipment.

- Prepare samples for metallurgical and other material sciences-related analysis. Conduct testing on these samples using Government Furnished Equipment.

- Perform static and dynamic tests of vehicles and vehicular components.

- Develop and conduct tests to evaluate performance and potential safety benefits of advanced crash avoidance technologies.

- Transport test vehicles to and from VRTC to other test facilities or organizations.

- Perform static or dynamic tests involving post-mortem human or animal subjects.

- Perform static and dynamic tests of crash test dummies and/or dummy components.

- Provide space for meetings with up to 250 attendees with ready access to appropriate test facilities.

- Perform fuel economy and emissions testing.

- Provide technical drawing work, using various formats and techniques.

- Generate parts, fixtures, and assembly drawings as required. Conduct component and assembly dimensional evaluation/assessments of materials and parts.

- Develop, modify, and/or use finite element models, kinematics, and whole-body simulation models, Computer Aided Drafting software and databases.

- Conduct literature reviews to research the state-of-the-art and previous work in areas of technical interest.

- Transport post mortem subjects to and from test facilities as required.

- Use advanced word processing skills to integrate graphs, charts, tables, photographs, video clips, and illustrations into technical reports, presentations, and other documents.

ADDITIONAL PROGRAM TRAINING

- In general, the Contractor is required to hire and maintain employees that are skilled in the systems and equipment required to carry out work under this contract. The Government will take reasonable steps to identify the required systems and equipment prior to a task order award. However, for systems and equipment obtained during the course of a task order that were not foreseeable at the time of award, the Contractor may request that the Government provide training for its existing employees.

- In response, the Government may include in a Task Order a training requirement and cover associated costs. Negotiated payment terms for the cost of the training and including the labor hours associated with the training, as well as other terms and conditions will be determined within the task order cost schedule and agreed upon between the parties prior to the start of any training. Any training purchased by the Government is subject to Contracting Officer approval.

- Government funds will be approved for training only where the additional program requirements cover NHTSA-specific programs or newly acquired systems and equipment that are considered state-of-the-art. Funds will not be used to cover basic training (including training in off-the-shelf programs and equipment) that contractor employees within the designated labor categories are required to possess at Contract and/or Task Order award.

- For any training purchased by the Government under this section, the Contractor is required to maintain the level of skill associated with the training throughout the duration of contract performance.

QUALITY ASSURANCE/QUALITY CONTROL (QA/QC) PROGRAM

The Contractor shall provide a quality assurance/quality control (QA/QC) plan at the kick-off meeting and have a QA/QC program in place throughout the life of the contract.

To ensure quality while completing work under the Task Orders, the Contractor shall, at a minimum:

- Establish a committee or internal team that manages performance issues, consisting of the Contractor's internal management and other representatives with relevant technical expertise. The committee shall work to develop solutions for identified problems in a timely manner.

- In its task order proposals, identify the person who will be responsible for Quality Assurance/Quality Control under the task order.

- Include with any required final reports any QA/QC findings and recommendations made during performance and how those recommendations were implemented.

D. Review of Existing Tiered Vehicle

NHTSA conducted a thorough market research including a sources sought posting for this requirement.

NHTSA's market research was conducted using several methods including-

- Reviewing existing and previous contracts;
- Examining industry websites.

Sources Sought Notice (SSN) 693JJ921RQ000044 was posted to Beta.SAM.Gov on November 13, 2020 which stated the agency's intent to award a contract to TRC on a sole source basis, and invited any other interested parties to submit a Statement of Qualifications to NHTSA's Office of Acquisition Management for evaluation and consideration. This notice closed on November 30, 2020 resulting in no Corporate Capability Statements being received in response from any interested parties.

Additionally, a Dynamic Small Business Search was conducted to identify a list of firms Small Businesses, but none emerged that appeared to neither have the relevant experience in performing similar type of work as listed in the SOW, nor appeared to be able to completely satisfy the government' s need.

In addition to NHTSA's market research, the office reviewed all of the DOT Departmentwide and Mandatory Use Vehicles. Currently the DOT does not have any vehicles which provide for Vehicle Research and Testing as part of their scope.

The table below summarizes NHTSA's review of existing tiered vehicles.

Tiered Vehicles	Findings	Additional Notes
Tier 3	DOT reviewed the GSA OASIS BIC vehicle and found no pool offered services consistent with the current scope that included the technical capability to meet the requirement.	
Tier 2	DOT reviewed GSA Ebuy and found no schedules with the specific scope that included the technical	

	capability to meet the requirement.	
Tier 1/1 SB	DOT does not have an existing DOT-wide solution that meets the requirement.	

E. Justification Code

	A	BETTER VALUE
	1	The agency expects to negotiate better pricing for products or specified services.
	2	The agency expects to negotiate better terms and conditions.
	B	UNAVAILABILITY
	1	The agency expects to use contract types not available on existing BICs or other Government-wide contracts.
X	2	The agency's needs cannot be adequately met by existing BICs or other Government- wide contracts (e.g., the agency needs a type of expertise not available on the existing contract).
	3	A portion of the agency's requirements fall outside the scope of the existing BIC or other Government-wide contract (state if the requirements falling outside the existing contract are unique to the agency).
	4	There is an established industrial base for the work that is not adequately reflected on existing BICs or other Government-wide contracts.
	5	There is no BIC or Government-wide contract for the type of product or service the agency is acquiring.
	C	ADMINISTRATIVE COST
	1	The agency believes the cost to spend is significantly lower for agency to acquire itself than to pay the stated fee.
	D	OTHER CONTRACTING CONSIDERATIONS
	1	The agency is at risk of not meeting its small business contracting goals and does not believe its requirement can be adequately met by small businesses on an existing contract or is seeking to grow its small business base. This includes local contracts set aside for small businesses pursuant to a comprehensive, organized agency level strategy, as approved by the agency and OMB pursuant to Attachment 3.
	2	The information in the Acquisition Gateway is insufficient for the agency to make a suitability determination.
	3	Other considerations not captured in the list above – explain.

F. Analysis

Thorough market research did not reveal firms within existing tiered vehicles that have the level of expertise, experience, and facilities capable of handling the scope of work which dictates a unique specificity for the diverse and complex research this requirement demands.

G. Conclusion

This requirement is constantly varied, complex and has a high impact in the overall NHTSA mission as well as the public safety at large. At this time, there are no existing tiered vehicle that can meet the agency's requirement. In future recompetes the agency will work with industry to identify how to develop the technical requirements in the commercial marketplace.

Analysis of Alternatives Summary Table

Complete the Table Below-

	Yes	No
1. Is this requirement a planned Tier 0 over $50 million?	☒ Yes	☐ No
2. Is this requirement a planned Tier 1 over $100 million?	☒ Yes	☐ No
3. Was this requirement captured in the Department's Category Management Annual Plan?	☒ Yes	☐ No
4. If "Yes" to question 3, please provide which category management plan fiscal year (FY) the requirement was captured (e.g. Category Management Annual Plan FY21).	FY23	

If this requirement was not captured in a Category Management Annual Plan (see question 4 from previous table), please complete the table below:

Operating Administration (OA) Name:	NHTSA
Name of Contract or Program	Facility Use and Support Services for the Vehicle Research and Test Center (VRTC)
Brief Contract Description	Research and Testing
Planned FY23 Tier	Tier 0
Spend Category	Professional Services
Spend Sub-Category	Professional Services - Technical & Engineering Services
Planned FY23 Obligation	$35 Million
Estimated Total Value	$190 Million
Why was BIC or Tier 2 not suitable (use the appropriate justification code (e.g. B1, B2.)	B2
Explanation	The agency's needs cannot be adequately met by existing BICs or other government-wide contracts.
Why was a Tier 1 not suitable?	There is no Tier 1 solution available to meet this requirement.
Program/Contract Contact (Name/Email)	Joe.campbell@dot.gov