



Memorandum

Date: September 28, 2018
To: Treasure Island Mobility Management Agency Committee
From: Eric Cordoba – Deputy Director for Capital Projects
Subject: 10/02/18 Committee Meeting: Recommend Award of a Three-Year Professional Services Contract with HNTB Corporation in an Amount Not to Exceed \$250,000 for Conceptual System Design, Operations Oversight, and Evaluation Services for the Treasure Island Autonomous Vehicle Shuttle Pilot Project

<p>RECOMMENDATION <input type="checkbox"/> Information <input checked="" type="checkbox"/> Action</p> <ul style="list-style-type: none"> • Recommend award of a three-year professional services contract with HNTB Corporation (HNTB) in an amount not to exceed \$250,000 for conceptual system design, operations oversight, and evaluation services for the Treasure Island Autonomous Vehicle (AV) Shuttle Pilot Project • Authorize the Executive Director to negotiate contract payment terms and non-material terms and conditions <p>SUMMARY</p> <p>We are seeking consultant services to provide conceptual system design, operations oversight, and evaluation services, or system manager services, for the Treasure Island AV Shuttle Pilot (Pilot) project. The Pilot project will result in a multi-passenger, shared use shuttle with automated capabilities to conduct testing on Treasure Island. The selected consultant will provide conceptual system design and evaluation of the Pilot and oversight during the Pilot deployment. We issued a Request for Proposals (RFP) in July. By the proposal due date, we received six proposals. Following interviews with five firms, the review panel recommended HNTB to provide the requested services.</p>	<ul style="list-style-type: none"> <input type="checkbox"/> Fund Allocation <input type="checkbox"/> Fund Programming <input type="checkbox"/> Policy/Legislation <input type="checkbox"/> Plan/Study <input type="checkbox"/> Capital Project Oversight/Delivery <input type="checkbox"/> Budget/Finance <input checked="" type="checkbox"/> Contract/Agreement <input type="checkbox"/> Other: <hr/>
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DISCUSSION

Background.

In late 2016, we supported the San Francisco Municipal Transportation Agency’s (SFMTA’s) application for federal Advanced Transportation and Congestion Management Technologies Deployment (ATCMTD) funding. The ATCMTD program’s goals are to showcase innovative ways that cities can apply new technology to address mobility and environmental challenges such as congestion reduction and traffic safety through partnerships with the federal government and private sector. The U.S. Department of Transportation awarded \$10.99 million in funding, which included \$5 million for the Treasure Island Mobility Management (TIMM) Program toll system and \$300,000 to

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design and test an electric autonomous shuttle to provide first-last mile circulation on Treasure and Yerba Buena Islands.

The Pilot project is intended to provide travel service; to learn about public attitudes towards transportation automation; to educate and involve stakeholders in the deployment of AV technology in San Francisco; and to identify the requirements and potential benefits of automated transportation services. The Pilot service should be fulfilled by a multi-passenger, shared use shuttle with automated capabilities. The shuttle will traverse public roads within the area of the demonstration Pilot. The consultant scope of services is included as Attachment 1.

Procurement Process.

We issued a RFP for the system manager services on July 3, 2018. We hosted a pre-proposal conference at the Transportation Authority's offices on July 16, which provided opportunities for small businesses and larger firms to meet and form partnerships. Sixteen firms attended the conference. We took steps to encourage participation from small and disadvantaged business enterprises, including advertising in six local newspapers: the San Francisco Chronicle, the San Francisco Examiner, the San Francisco Bay View, Nichi Bei, the Small Business Exchange, and the Western Edition. We also distributed the RFP and questions and answers to certified small, disadvantaged and local businesses, Bay Area and cultural chambers of commerce, and small business councils.

By the due date of August 8, 2018, we received six proposals in response to the RFP. A selection panel comprised of Transportation Authority, Treasure Island Development Authority, and SFMTA staff evaluated the proposals based on qualifications and other criteria identified in the RFP, including the proposer's understanding of project objectives, technical and management approach, and capabilities and experience. The panel selected five firms to interview on September 7. Based on the competitive process defined in the RFP, the panel recommends that the Board award the contract to the highest-ranked firm: HNTB.

The panel unanimously agreed that HNTB distinguished itself through a number of criteria. The assembled team include recognized subject matter experts that have strong understanding of emerging connected and autonomous vehicles (CAV) technologies and their impact on transportation networks, urban planning, transit ridership, safety, and quality of life. The HNTB team has worked together on multiple similar projects in different parts of the country, including City of Columbus SmartColumbus Shuttle Project. Team members will bring these experiences and lessons learned to the Treasure Island AV Shuttle Pilot Project. HNTB has also built connections to multiple organizations involved in advancing CAV technology.

HNTB understands the Treasure Island Transportation Implementation Plan and the need to deliver transportation solutions. They are keenly aware that both Treasure Island and Yerba Buena Island are undergoing large-scale transformation and they understand the challenges of this AV shuttle project at each stage, especially in an area under construction and an emerging field with rapid changes.

We established a Disadvantaged Business Enterprise (DBE) goal of 12% for this contract. Proposals from all five firms that were interviewed met or exceeded the goal. HNTB proposes 12% DBE utilization from three subconsultants: Tollpoint LLC and Virginkar & Associates, Inc., which are both Asian Subcontinent-owned firms, and KL Bartlett Consulting, a Women-owned firm. The Subcontinent Asian American category includes these race groups: Asian Indian (Hindu), Bangladeshi,

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Pakistani, and Sri Lankan. Any individuals identified as “Asian,” but not clearly categorized as Asian-Pacific versus Subcontinent Asian, are put into the Asian-Pacific group.

FINANCIAL IMPACT

We have budgeted \$250,000 for the requested services, funded by the federal ATCMTD grant through a Subrecipient Grant and Cooperative Agreement with the SFMTA. The adopted Fiscal Year 2018/19 budget includes this year’s activities, and future fiscal year budgets will include sufficient funds for the remaining activities.

SUPPLEMENTAL MATERIALS

Attachment 1 – Scope of Services

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The System Manager consultant that will provide conceptual system design and evaluation of the Treasure Island Automated Shuttle Pilot (Pilot) as well as oversight during the Pilot deployment. The System Manager scope of services includes:

- Identify goals, objectives, and a Pilot evaluation framework, including performance metrics;
- Screen Pilot design concepts (Concept Exploration);
- Identify a high-level Pilot design concept (Concept of Operations or ConOps) and business model;
- Develop high level Pilot operational/technical requirements based on the ConOps and goals and evaluation framework;
- Prepare systems engineering documentation per Federal Highway Administration (FHWA) requirements;
- Prepare procurement documents for a vehicle and operator vendor;
- Provide oversight of the Autonomous Vehicle (AV) Shuttle operator during the Pilot deployment phase; and
- Evaluate the deployed system by collecting data and conducting studies to identify whether and how the Pilot goals are achieved.

Task 1. Project Management

- a. Monthly invoices and progress reports.
- b. Conduct periodic internal progress meetings. Participation on Technical Advisory Committee (TAC).
- c. Establish a Pilot deployment-stage scope of services and schedule.
- d. Establish an organization chart to delineate the responsibilities of all parties involved in the Pilot and define project reporting arrangements.

Deliverables:

1. *Scope of services, schedule, invoices and progress reports*
2. *Meeting agendas and action items*
3. *Supportive meeting materials for TAC*

Task 2. Goals, Objectives, and Pilot Evaluation Framework

Define Pilot goals and objectives, based on guiding documents and on input from the TAC and the TIMMA and Treasure Island Development Authority Committees and Boards. Key guiding documents include the Treasure Island Transportation Improvement Program (TITIP)¹; San Francisco's Guiding Principles for Emerging Mobility Services and Technologies;² and the Transportation Authority's Emerging Mobility Evaluation Report.³ Goals and objectives should

¹ https://www.sfcta.org/TIMMA_documents

² <https://www.sfcta.org/emerging-mobility/studies>

³ <https://www.sfcta.org/emerging-mobility/studies>

Attachment 1 – Scope of Services

identify desired outcomes, outputs, and Pilot test questions/hypotheses. Develop a Pilot evaluation framework to test the goals and Pilot hypotheses; identify data needs and data sources/responsibilities.

Pilot goals or testing hypotheses may include:

- a. Technology Improvement and Validation: Improvement of autonomous technologies, e.g., on steep grades, limited sight distances, in fog, variable weather conditions, for people with disabilities, and/or under communications constraints.
- b. Service Insight: Understand service model requirements and potential benefits.
- c. Stakeholder Engagement and Insight: Educate and involve the public in the deployment of autonomous technologies.
- d. Community Building: Identify and establish relationships between institutions (e.g., labor, educational) and emerging technology industries; identify and establish mechanisms for communities of concern and emerging technology industries to mutually benefit.
- e. Deployment Insight: Understanding the complexities of operating and maintaining an autonomous fleet.
- f. Market Insight: Uncovering applications for autonomous technologies.

Deliverables:

1. *Goals, objectives, and Pilot evaluation framework*
2. *Data needs and sources memorandum*

Task 3. Concept Exploration, Concept Design, Concept of Operations, and High Level Operational Requirements

Sketch alternative Pilot operational concepts based on goals, objectives, and Pilot evaluation framework. Identify use cases and travel markets; the Pilot operational scenarios should describe the Pilot operation from each stakeholder's viewpoint and expectations. With TAC support, identify high-level Pilot operational requirements. Screen the list of alternative Pilot operational concepts (concept exploration).

Following screening, prepare a ConOps that includes a high-level Pilot test plan and system and procurement requirements; and a high-level operations approach. Identify a likely vehicle type, alignment, and stop locations as applicable. Prepare conceptual system requirements that document user needs and requirements and operational scenarios and needs. These conceptual design documents should address:

- a. Routing and right-of-way requirements.
- b. Quantity and spacing of stops or stations, and stop requirements and locations. Include consideration of local land use connectivity and accessibility to existing and future transit services.
- c. Span and frequency of service.
- d. Traveler demand and capacity.
- e. Accessibility for people with disabilities.
- f. Traveler information and communication requirements
- g. Operational modes (e.g., fixed routes on demand) and supervision requirements.
- h. Physical requirements and signage.

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- i. Data and vehicle communications requirements.
- j. Storage and charging requirements.
- k. Maintenance and cleaning of vehicles
- l. Ongoing software requirements and cybersecurity

These conceptual design documents should reflect stakeholder input from outreach and engagement that will be conducted under a separate Transportation Authority/TIMMA contract.

Deliverables:

1. *Concept exploration memorandum*
2. *Draft and final concept of operations document*
3. *Draft and final conceptual system requirements*

Task 4. Business Plan

Develop a business plan concept that includes a Pilot cost estimate by task to inform the vehicle vendor/operator RFP Scope of Work. The business plan will focus on financial concept of operations and identify estimated capital, operating, and maintenance costs, funding, and cash flow. The business plan should include cost estimates for procurement, implementation, and other services necessary for testing, deployment and operation of the Pilot. Identify owners, operators, and maintainers of the system. The business plan should seek to connect the Pilot to permanent operations.

Deliverables:

1. *Draft and final business plan*

Task 5. AV Shuttle System Procurement

Develop procurement strategy. Identify vendor needs; legal and insurance requirements; potential partnering options; and recommend a procurement strategy. Identify program elements for potential cost sharing or in-kind contribution with other partners. Identify contracting needs. Develop scope of work, cost and schedule for procurements.

Procurement of the Pilot vehicle, equipment and operators for testing, development, and operation. Prepare the RFP for the procurement of vehicle vendor/operator team, software, charging equipment, hardware and communication items. Identify data needs and support negotiation of data requirements. Prepare contract terms. This task includes providing support during the procurement, overseeing delivery of the items and inspecting upon delivery for testing and acceptance.

Deliverables:

1. *Procurement strategy description*
2. *Draft and final RFP and contract*

Task 6. Oversight during Shuttle System Detailed Design and Testing

Review final test plans and other deliverables prepared by vehicle vendor and operator including vehicle specifications, test plan, functional and performance requirements. Manage the testing activities associated with the testing and initial deployment of Pilot service. Ensure pilot compliance with vehicle test plan, data requirements, and functional requirements.

Deliverables:

1. *Quality Assurance/Quality Control (QA/QC) Report format*

Attachment 1 – Scope of Services

2. *Quarterly QA/QC Reports*

Task 7. Oversight during Shuttle Operations/Pilot Deployment

Conduct day-to-day oversight of shuttle operator during pilot operations period. Obtain and review monthly QA/QC Reports provided by vehicle vendor.

Deliverables:

1. *QA/QC Report format*

Task 8. Pilot Evaluation

Design and conduct studies to assess the Pilot against goals, objectives and evaluation framework, including collection and analysis of needed quantitative and qualitative data. The evaluation could encompass:

- a. User Experience: Information related to the user experience of the Pilot including feedback from specialized user groups such as those who are elderly or disabled.
- b. System Performance Data: Information related to the validation and improvement of the automated system and associated infrastructure.
- c. Experimentation with New Technologies: Information related to learnings from the deployment of new technologies.
- d. Stakeholder Attitudes.
- e. Mobile app to enable passenger to keep track of AV location and schedule.
- f. AV implementation in a highly populated urban environment on Treasure Island.

Evaluation will incorporate input from the TAC and the results of stakeholder outreach and engagement activities that will be conducted by the Transportation Authority/TIMMA.

Deliverables:

1. *Summarized data*
2. *Draft and final Pilot evaluation results memorandum*