

RFP Attachment D

Detailed Scope of Work

Project Management Oversight for the Tide Light Rail Transit Extension to Virginia Beach Town Center



Source: HRT Website 2015



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SECTION I. OVERVIEW

Introduction

The Virginia Department of Rail and Public Transportation (DRPT) has determined the need for Consultant support services to provide Project Management Oversight (PMO) for the Tide Light Rail Transit Extension to Virginia Beach Town Center (Project).

The Project includes an approximate three mile extension of existing light rail transit service from Norfolk to Virginia Beach Town Center. The Project scope includes design, construction, and testing activities for track work and associated new stations, as well as procurement of light rail vehicles.

The City of Virginia Beach (City) and Hampton Roads Transit (HRT) are jointly responsible for developing and implementing the Project under the terms of a Memorandum of Understanding (MOU). The City is the responsible party for final design and construction and HRT is the responsible party for procurement of the light rail vehicles. The City will be the direct recipient of DRPT funds for the Project except for those funds specifically allocated to, and disbursed to, HRT for:

- The procurement of the Project's light rail vehicles,
- HRT's safety and security review and activities,
- Pre-revenue testing and other startup costs

The term "Grantee" in this solicitation and subsequent contract shall refer to the City for overall project management, real estate acquisition, design and construction; and shall refer to HRT for procurement of the light rail vehicles, and pre-revenue operations and testing.

DRPT is the state agency responsible for conducting oversight of public transportation agencies in the Commonwealth of Virginia (Commonwealth) who receive capital and operating assistance funding from the Commonwealth. It is anticipated that the Federal Transit Administration (FTA) will not have a project management oversight role because the Project is being advanced without the use of Federal funds. DRPT's oversight of the Project is being modeled after the FTA PMO program.

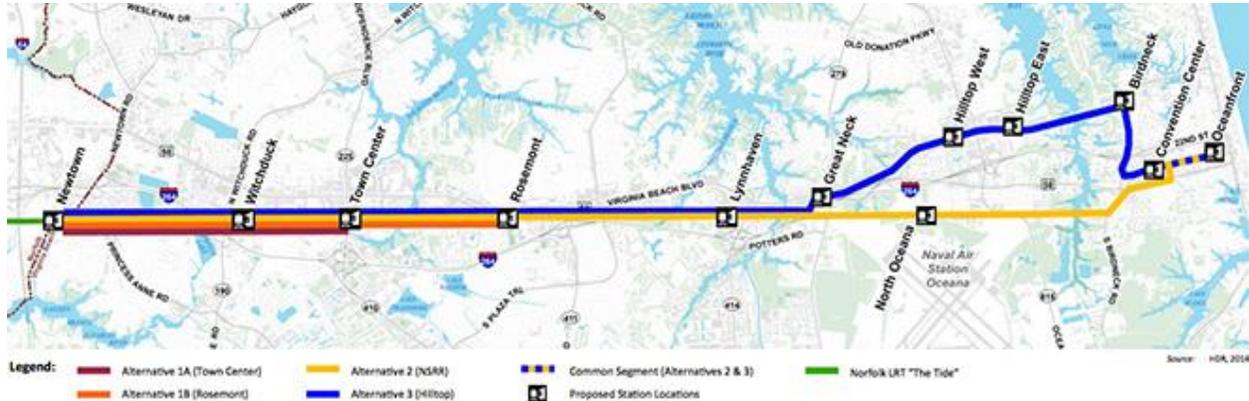
DRPT also has State Safety Oversight responsibilities in accordance with requirements, policies, rules and procedures established by the FTA. DRPT authority originates from 49 C.F.R. pt. 659 (Rail Fixed Guideway Systems; State Safety Oversight) and Va. Code Ann. § 33.1-391.5.16. The regulatory authority provided through 49 C.F.R. pt. 659 sanctions DRPT's participation in the safety and security activities of the Tide light rail extension.

Background

HRT provides extensive bus service throughout the Hampton Roads area including a Light Rail Transit (LRT) service known as "The Tide" in Norfolk, Virginia. The Tide is a 7.4-mile route beginning at Eastern Virginia Medical Center (western terminus), traveling through downtown

Norfolk, and ending at Newtown Road (eastern terminus) along the City of Virginia Beach's border.

HRT, in partnership with the FTA, is conducting a planning effort, known as the Virginia Beach Transit Extension Study (VBTES), in accordance with the National Environmental Policy Act (NEPA). The study examined the best transit options utilizing a former freight railroad right-of-way to extend transit service to the City of Virginia Beach. The overall study area extended from Newtown Road to the Oceanfront area on 19th Street (see Figure 1).



(Figure 1; Source HRT Website 2015)

HRT developed a Draft Environmental Impact Statement (DEIS), which was signed by FTA on March 10, 2015. In summary, this study identified Light Rail Transit and Bus Rapid Transit as two different technology modes leading to a total of eight build alternatives. In May 2015, the City adopted a Locally Preferred Alternative for the 3.2-mile service light rail transit extension from the Tide's existing eastern terminus at Newtown Road to the Virginia Beach Town Center along with three new stations.

The following is a tentative schedule for completing this effort:

- Winter 2015/2016: Authorize purchase of light rail vehicles
- Summer 2016 to Fall 2017: Final environmental documents and 30 percent preliminary engineering design plans
- Summer 2017 to Summer 2019: Construction
- Summer 2019 to Fall 2019: Testing
- Winter 2019/2020: Light rail service to Virginia Beach Town Center begins

Objective

The objective of this contract is to provide DRPT with Consultant support capable of rendering critical project oversight and programmatic expertise for the Project. Specifically, the Consultant will *provide project management oversight as well as technical and compliance oversight services to compliment DRPT staff during the design, construction and startup phases*

of the Project. In the role of project management oversight, the Consultant shall provide services including, but not limited to, the following:

1. Overseeing development and implementation of a Project Management Plan (PMP) by the Grantee and/or designee, comparable to FTA guidelines; and assuring the Grantee's PMP defines Project requirements, allocation of appropriate resources, provides Project activities, monitors progress and assures prompt decision-making at Project milestones.
2. Overseeing development of Project agreements between Project stakeholders, including the City and HRT and DRPT.
3. Assuring the Grantee's PMP and any Project agreement(s) between HRT and the City are in agreement.
4. Providing technical assistance to correct deficiencies in the Grantee's project management processes.
5. Assuring the Grantee demonstrates the legal, financial and technical capabilities to successfully complete the Project.
6. Assuring the Grantee addresses the safety and security aspects of the Project in accordance with FTA and DRPT requirements.
7. Assuring HRT plans for and has the capability to maintain and operate the proposed system, in addition to existing systems.
8. Collecting relevant and reliable data to assist in project management oversight decision-making.
9. Providing professional opinions and technical expertise relevant to critical Project issues.
10. Providing technical assistant to enhance the efficiency and effectiveness of the Grantee's Project development and implementation.
11. Assuring the Grantee's successful delivery of the Project scope within budget and schedule, and meeting the safety and security criteria that are required by HRT, DRPT and FTA.
12. Assuring the Grantee develops and follows a structured risk management process for identifying and mitigating Project risk.
13. Assuring the Grantee develops and executes the necessary agreements and effectively manages utility relocations.
14. Assuring the Grantee develops and follows a structured process to manage Project betterments so as to minimize effects on Project scope, budget and schedule.
15. Assuring the Grantee provides adequate inspection and supervision of work in conformance with approved plans and specifications, using qualified professionals.
16. Assuring compliance of the Project with state and applicable federal requirements.
17. Assuring conformity to grant agreements, applicable statutes, codes, ordinances, regulations, policy requirements, sound engineering, safety and project management practices.
18. Monitoring the execution of the Project in a professional, efficient and safe manner.
19. Attending Project meetings and providing prompt meeting notes/summary.

The Consultant will report to DRPT through the Director of Engineering and Project Oversight or another designated representative. The Consultant will be required to establish and maintain a

cooperative working relationship with DRPT, the City of Virginia Beach (City), and Hampton Roads Transit (HRT), as well as with other Project stakeholders.

- Consultant services should not convey any perception to the Grantee that the Grantee has been relieved of any component of its responsibilities and liabilities, as the responsible party related to the grant. Similarly, the Consultant shall not assume any responsibility for dictating the specific means and methods by which the Project is developed and implemented.

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SECTION II. REQUIREMENTS

Contract Management and Administration

The Consultant shall provide all management, administration, staffing, planning, scheduling, procuring, and other management and administration for all items of service required by the contract. These activities include, but are not limited to:

1. All activities associated with preparing and submitting proposals to DRPT.
2. All activities associated with recruiting and hiring staff to complete contract tasks/project elements.
3. Maintaining “in-house” skills and team/subcontract arrangements to ensure that staff with the requisite experience, skills and knowledge are available on short notice.
4. Screening and processing prospective contract staff to ensure all Consultant employees used under this contract meet personnel hiring and security clearance requirements.
5. All activities associated with management of the Consultant’s facilities that may be utilized, including obtaining space, equipment, furniture, supplies, maintenance, etc.
6. Utilizing electronic means to conduct business transactions under this contract to the maximum extent feasible.
7. Planning, scheduling and procuring all approved travel arrangements by Consultant personnel. Ensuring that invoiced travel costs are itemized in accordance with the Government travel guidelines in effect at the time of travel.
8. Ensuring that Consultant personnel performing field work have all necessary supplies and equipment by the time they arrive at the site.
9. Assembling billing data and billing back-up materials, including all time and materials needed for justification of charges. Promptly generating, distributing, and tracking invoices, including generating monthly reports of activities and progress to accompany billing.
10. Tracking, care and safekeeping of Government furnished materials. The Consultant shall reimburse the government for any government furnished materials damaged, lost or stolen while in the Consultant's safekeeping.
11. All activities associated with managing subcontractors/team members, such as identifying and qualifying personnel, negotiating subcontracts, reviewing invoices, ensuring compliance with the security and other requirements of this Contract, etc.

General Requirements

In support of all tasks/project elements, the Consultant shall review Project documents, conduct on-site visits, and perform interviews in sufficient detail to become familiar with the aspects of the Project pertaining to the specific contract requirements. Typical documents to be reviewed may include, but are not limited to the following: project management plans, design criteria, plans, specifications, environmental reports, cost estimates, third party agreements, contract packages, organizational charts, rolling stock fleet management plans, real estate acquisition plans, operations plans, maintenance plans, start-up and testing plans, safety and security plans, Project performance, and forecasting analysis. Personnel to be interviewed shall

typically include, but are not limited to, the following: Project personnel, Project design and construction staff, consultants, suppliers, and DRPT personnel.

DRPT requires the Consultant to manage the activities and related costs and hours spent in the course of oversight, and to report on projected and actual time and cost expenditures. Such reporting allows DRPT to monitor oversight efforts by task order. Status Reports serve to update DRPT on the Consultant's oversight activities and are for DRPT staff use only.

The Consultant shall submit Status Reports which set forth monthly and cumulative: (1) direct labor hours by categories for each task/project element, including subcontract hours; and (2) elements of cost by direct loaded dollars, subcontracts, and other direct costs, etc. that have been incurred and/or committed. The Status Reports shall be provided by the 15th of each month. Proprietary rate information should not be discussed in the status reports. The costs that have been committed, but are unpaid to date, will be noted in the status reports.

Consultant Status Reports should include the following:

- 1) Introduction
 - a. Period covered (one month)
 - b. Percent expended of authorized/obligated amount (dollars and hours) on Task Order
 - c. 75 percent expenditure level occurred on X date or is anticipated on X date
 - d. Time remaining until end date of Task Order
- 2) Brief Narrative of the Project's status, itemizing:
 - a. Major completed Consultant tasks
 - b. Significant issues encountered in Project or by Consultant
 - c. Significant events in the next 90 days
 - d. Any variances between planned and actuals for Consultant hours and costs

Costs and Labor Hours - in a table, record task order planned per month, planned to date, actual per month, and actual to date for cost and hours. Cost and hours utilization information is to be consistent with the monthly invoices.

Reports

All reports should be written simply, concisely and clearly. They should use all available tools to convey meaning, such as narrative, photos, tables, etc. The Consultant should refer back to paragraphs if necessary and should not repeat text within a report. The reports should include the Consultant's professional opinions regarding Project status, as well as suggested alternative solutions and recommended courses of action.

DRPT may assign a special task in addition to what is specifically outlined in the Tasks/Project Elements section of the Statement of Work. This may involve a study of factors leading to Project cost increases and/or schedule delays along with cost/schedule recovery recommendations; or it may involve the Consultant providing technical assistance to the

Grantee. Findings, conclusions, and recommendations may be required by the Consultant in written documents to inform DRPT and designated third parties. The Consultant may be required to present papers and studies in meetings, represent DRPT, and lead or participate in meetings with Grantees.

Consultant Personnel and Expertise

The Consultant shall utilize personnel with the expertise identified and defined below in the performance of all tasks/project elements within this contract. Key personnel include the following:

Project Management

Expertise in leading the overall Project for the consultant, ensuring timely and high quality services are provided and all terms and conditions of this contract are met. Substantial and applicable experience including: organizing and managing workloads within established budgets and schedules, managing overall Project activities and staff, and establishing budgets, forecasts, manpower, equipment and supply needs for the overall Project. Strong communication skills are required. A Project Manager who is an employee of the prime consultant shall be identified and will be the designated primary point of contact for the consultant team.

Minimum qualifications for the Project Manager include:

- Minimum 15 years of management experience in planning, engineering and construction of major transit projects including at least five years of project management oversight in passenger rail or related modes
- Must have a Bachelor of Science (B.S.) Degree in Engineering or related field
- Licensure as a Professional Engineer (P.E.) is required
- Project Management Professional (PMP) certification is desirable but not required
- Required to be an employee of the prime contractor(s)
- The resume should highlight experience in passenger rail or related transportation modes for the management elements shown below:
 - 1) Engineering design
 - 2) Project planning
 - 3) Construction
 - 4) Public outreach
 - 5) Funding and Cost Monitoring
 - 6) Regulatory and compliance experience
 - 7) Project oversight services

Systems Integration

Technical and subject matter expertise in the systems integration oversight of major light rail transit projects. Substantial and applicable experience providing reviews of system integration plans and supporting documentation to ensure projects are built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines.

Minimum qualifications for a Systems Integration Manager are:

- Minimum five years of experience in systems engineering and integration on major transit projects, including at least two years as Systems Integration Manager in passenger rail or related transportation modes
- Must have a Bachelor of Science (B.S.) Degree in Engineering or related field
- Experience with design and integration of signals and control center engineering

Risk Assessment

Technical and subject matter expertise in the risk assessment oversight of major light rail transit projects. Substantial and applicable experience providing reviews of risk management plans, processes and supporting documentation to ensure projects are built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines. Expertise in evaluating contingencies and mitigations associated with project risks.

Minimum qualifications for a Risk Assessment Manager are:

- Minimum 5 years of project risk assessment experience in engineering, design and construction of major transit projects including at least 2 years in passenger rail or related transportation modes
- Must have a Bachelor of Science (B.S.) Degree in Engineering or related field
- Licensure as a Professional Engineer (P.E.) and/or Project Management Professional
- Project Management Professional (PMP) certification is desirable but not required

Civil Engineering

Technical and subject matter expertise in the civil engineering oversight of major light rail transit projects. Substantial and applicable experience providing reviews of plans for civil works and supporting documentation to ensure projects are built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines. Civil engineering lead personnel shall be a licensed Professional Engineer.

Minimum qualifications for a Civil Engineer are:

- Minimum 10 years of experience in planning, engineering, design and construction of major transit projects, including at least five years in passenger rail or related transportation modes
- Must have a Bachelor of Science (B.S.) Degree in Civil Engineering or related field
- Licensure as a Professional Engineer (P.E.) is required
- Experience with the Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities (ADAAG) guidelines and level boarding is desirable but not required
- Experience with Fire Life Safety and Ventilation requirements is desirable but not required
- Experience with station design and architecture is desirable but not required

Quality Assurance/Quality Control

Technical and subject matter expertise in the independent quality assurance and quality control (QA/QC) oversight of major light rail transit projects. Substantial and applicable experience providing reviews of quality management plans and supporting documentation to ensure

projects are built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines.

Minimum qualifications for QA/QC Manager are:

- Minimum five years of quality management experience on major transit projects, including at least two years as Quality Assurance/Quality Control (QA/QC) manager in design, engineering and construction of passenger rail or related transportation modes
- Must have a Bachelor of Science (B.S.) Degree in Engineering, Business or related field
- Experience in setting up quality management plans or systems
- Certified Manager of Quality/Organizational Excellence (CMQ/OE) Certification or similar credential is required

Systems Safety

Technical and subject matter expertise in the systems safety oversight of major light rail transit projects. Substantial and applicable experience providing reviews of safety plans and supporting documentation to ensure projects are built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines.

Minimum qualifications for a Systems Safety Manager are:

- Minimum five years of safety systems experience on major transit projects including at least two years as Safety Systems Manager in design, engineering and construction of passenger rail or related transportation modes
- Must have a Bachelor Degree in Engineering or related field
- Experience with Fire Life Safety and Ventilation requirements is desirable but not required
- Must have thorough understanding of the FTA State Safety Oversight program.
- Professional Registration/Certification is desirable but not required
- Must have direct work experience in performing Safety Certification of a major rail transit project in the United States that involved various hazard analysis, certification during design, construction, testing and system integration testing

Cost Estimation

Technical and subject matter expertise in providing cost estimation oversight of major light rail transit projects. Substantial and applicable experience providing reviews of project cost estimates and supporting documentation to ensure projects are being built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines. Expertise identifying appropriate project cost saving strategies.

Minimum qualifications for a Cost Estimator are:

- Minimum five years of cost estimating experience on major transit projects, including at least two years as Cost Estimating Manager in passenger rail or related transportation modes
- Must have a Bachelor of Science (B.S.) Degree in Engineering, Construction Management, Business or related field

- Must have experience in analysis of engineering systems
- Registration as Certified Cost Consultant (CCC)/Certified Cost Engineer (CCE) is desirable but not required

Project Scheduling

Technical and subject matter expertise in providing scheduling oversight of major light rail transit projects. Substantial and applicable experience providing reviews of project schedules and supporting documentation to ensure projects are built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines.

Minimum qualifications for a Project Scheduler are:

- Minimum five years of scheduling experience in the development and maintenance of Critical Path Method (CPM) schedules on major transit projects, including at least two years as a Scheduling Manager in passenger rail or related transportation modes
- Must have a Bachelor of Science (B.S.) Degree in Engineering, Construction Management, Business, or related field
- Must have experience in planning, scheduling, project monitoring and project management.
- Proficiency in Microsoft Project and/or Primavera is desirable but not required

Vehicle Engineering

Technical and subject matter expertise in providing professional engineering oversight of major light rail transit projects. Substantial and applicable experience providing reviews of plans pertaining to vehicle acquisition and vehicle types as well as fleet management plans and other supporting documentation to ensure projects are built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines.

Minimum qualifications for a Vehicle Engineer are:

- Minimum five years of experience with rail vehicles and expertise in the vehicle design, including preparation of design criteria, vehicle analysis and vehicle specifications, vehicle testing and acceptance. Must have a Bachelor of Science (B.S.) Degree in Engineering or related field
- Demonstrated experience with Americans with Disability Act (ADA) requirements for transit vehicles

Real Estate Management

Technical and subject matter expertise in providing real estate management oversight of major light rail transit projects. Substantial and applicable experience providing reviews of plans for real estate acquisition and management and other supporting documentation to ensure that projects are being built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines, specifically with the Uniform Act. Expertise includes the areas of appraisal, acquisition, relocation and real estate management.

Minimum qualifications for Real Estate Specialist are:

- Minimum five years of real estate acquisition and relocation activities, with respect to Uniform Act compliance (appraisal, acquisition, relocation and property management), including two years in the area of providing project real estate oversight services
- Must have a Bachelor's Degree in business, public administration or related field
- Experience with developing scope, scheduling and budget/cost estimating, evaluating tracking documents related to real estate
- Professional designation, right of way certification, or license related to real estate is desirable but not required

Contract/Procurement Management

Technical and subject matter expertise in providing contract/procurement oversight of major light rail transit projects, including experience with the design-build contracting method of project delivery. Substantial and applicable experience providing reviews contracting/procurement plans and supporting documentation to ensure that projects are being built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines.

Minimum qualifications for Contract/Procurement Specialist are:

- Minimum of five years of experience in procurement planning and management on major transit projects with at least two years in passenger rail or related transportation modes
- Must have a Bachelor of Science (B.S.) Degree in engineering, business or related field
- Knowledge of legal (contracts), claims, negotiation of contracts and project delivery methods
- Knowledge of state and federal procurement requirements and required procurement clauses.

Construction Management

Technical and subject matter expertise in providing construction oversight of major light rail transit projects. Substantial and applicable experience providing reviews of construction plans and supporting documentation to ensure projects are built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines.

Minimum qualifications for Construction Manager are:

- Minimum of 10 years of construction management experience on major transit projects, including at least three years as a Construction Manager in passenger rail or related transportation modes
- Must have a Bachelor of Science (B.S.) Degree in engineering or related field
- Experience with project scope, cost, schedule, quality, safety and risk management required

Transit Operations Management

Technical and subject matter expertise in providing transit operations oversight of major light rail transit projects. Substantial and applicable experience providing reviews of transit systems

operations plans and supporting documentation to ensure that projects are being built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines.

Minimum qualifications for a Transit Operations Specialist are:

- Minimum five years of experience in planning and operation of transit systems, including two years as a Transit Operations Manager
- Must have a Bachelor Degree in engineering, business, or related field
- Must have a comprehensive knowledge of fleet management plan development, transit capacity and operational analysis and scheduling of transit operations

Communications Engineering

Technical and subject matter expertise in providing communications engineering oversight of major light rail transit projects. Substantial and applicable experience providing review of project plans related to implementing electronic and communication facilities as well as other supporting documentation to ensure projects are built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines.

Minimum qualifications for a Communications Engineer are:

- Minimum five years of experience in designing and implementing electronic and related communications systems, including at least two years in passenger rail or related transportation modes
- Must have a Bachelor of Science (B.S.) Degree in engineering or related field
- Knowledge of structured cabling, fiber optic networks, LAN/WAN systems and Intrusion Detection
- Professional Registration/Certification is desirable but not required

Bridge/Structural Engineering

Technical and subject matter expertise in providing bridge/structural engineering oversight of major light rail transit projects. Substantial and applicable experience providing reviews of bridge/structural plans and supporting documentation to ensure projects are built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines. Bridge/structural engineering lead personnel shall be a licensed Professional Engineer.

Minimum qualifications for a Bridge/Structural Engineer are:

- Minimum five years of structural design experience
- Must have Bachelor of Science (B.S.) Degree in engineering, construction or related field
- Licensure as a Professional Engineer (P.E.) is required

Geotechnical Engineering

Technical and subject matter expertise in providing geotechnical engineering oversight of major light rail transit projects. Substantial and applicable experience providing reviews of geotechnical plans and supporting documentation to ensure projects are built safely, on

budget, on schedule, within scope, and in conformance with applicable regulations and guidelines. Geotechnical engineering lead personnel shall be a licensed Professional Engineer.

Minimum qualifications for a Geotechnical Engineer are:

- Minimum five years of geotechnical engineering industry experience (e.g. subsurface soil investigation, foundation and earthworks design and construction)
- Must have Bachelor of Science (B.S.) Degree in civil engineering/geotechnical, engineering, geology or related field
- Experience with geotechnical analysis for planning, design and construction
- Licensure as a Professional Engineer (P.E.) is required

Buy America (Optional)

Technical and subject matter expertise in providing Buy America oversight of major light rail transit projects. Substantial and applicable experience providing reviews of Buy America plans/documentation to ensure projects are built safely, on budget, on schedule, within scope, and in conformance with applicable regulations and guidelines.

Minimum qualifications for a Buy America Specialist are:

- Must have Bachelor of Science (B.S.) Degree in engineering, business or related field
- Minimum five years of transit experience, including three years of demonstrated Buy America experience with Buy America audits and certifications for Grantees, vehicle builders, the Federal Transit Administration (FTA) or a consulting firm
- Demonstrated knowledge of transit industry manufacturing and supply chain

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SECTION III. TASKS AND PROJECT ELEMENTS

The following are tasks/project elements that DRPT may assign as part of the Virginia Beach LRT Extension oversight contract.

Project Management Plan Review

The Consultant shall evaluate the Grantee's Project Management Plan (PMP) to assure that it is comparable to FTA's guidelines. The Consultant shall provide DRPT with a written, factually-based analysis, and an assessment of the Grantee's project management capabilities, inclusive of identifying Grantee risk areas. These documents shall support an initial determination of whether: (1) the Grantee possesses the technical capacity and capability to carry out the proposed Project in conformance with the requirements for grant administration and management, and (2) there is a reasonable likelihood that the Grantee organization will continue to meet such requirements. The Consultant shall also assist DRPT in providing potential solutions addressing identified capacity, capability and risk issues. Additional information can be found in Appendix A, which typically follows FTA guidance.

Management Capacity and Capability Review

The Consultant shall review and evaluate the Grantee's management, organization, and project definition data to assist DRPT in determining the technical capacity and capability of the Grantee to efficiently and effectively implement proposed and current Federal projects.

The assessment shall include, but not be limited to key Grantee personnel and Grantee consultant personnel interviews, review of the Grantee's organization, policies, procedures and line of authority (including succession planning), as well as a review of Grantee's consultants and contractors, and how these consultants are being integrated into the Grantee's organization without conflict of interest.

If, in the opinion of the Consultant, the Grantee does not possess the technical capacity and/or capability to carry out the proposed Project, the Consultant may be required to make written recommendations so that the Grantee can correct the deficiencies identified. Additional information can be found in Appendix B, which typically follows FTA guidance.

Safety and Security Management Plan Review

The Consultant shall review the Safety and Security Management Plan (SSMP) for its initial submittal to DRPT and throughout the life of the Project to determine if the Grantee is adequately performing required safety and security management activities for the Project. The SSMP must meet current FTA guidelines. Additional information can be found in Appendix C, which typically follows FTA guidance.

Recurring Oversight and Related Reports

During the design, construction, start-up and operational phases of the Project, the Consultant shall monitor and report on the Project development and implementation for conformance with the Grantee's approved PMP, including accepted engineering and project management practices.

The Consultant shall perform routine project management oversight monitoring through on-site reviews and off-site document reviews and shall prepare periodic reports documenting Project status, activities, and open issues. Other project elements such as project management, quality control and assurance, system operations, and staffing shall also be addressed. The Consultant shall provide technical consultation for periodic review meetings, in addition to preparing documentation for all progress/status meetings, trips and reviews.

The Consultant shall coordinate its oversight activities with DRPT's State Safety Oversight (SSO) program and consultants performing SSO activities on DRPT's behalf. Additional information can be found in Appendix D, which typically follows FTA guidance.

Capital Cost Estimate Review

The Consultant shall perform cost reviews to assess the consistency of data provided by the Grantee, understand its characteristics and descriptions as well as the correlation between the quantity data in the estimates and the data established in the design, and review whether the cost data is truly reflective of the scope indicated in the drawings. The Consultant shall also assess the integration and traceability of that estimate into the defined scope of the project for purposes of "base-lining" the Project estimate as the costs, scope issues, and Project as a whole, becomes more fully defined and developed. Additional information can be found in Appendix E, which typically follows FTA guidance.

Project Schedule Review

The Consultant shall perform schedule reviews and analyses to assist DRPT in determining whether the Grantee's Project schedule is sufficiently developed. The reviews and analyses will help determine whether critical areas such as right-of-way acquisition, utility relocation, wetland mitigation, and construction are sufficiently detailed, to confirm whether the schedule is reasonable. The Consultant shall validate the usefulness of the schedule as a project management tool, identify problems and provide recommendations for resolution. Additional information can be found in Appendix F, which typically follows FTA guidance.

Americans with Disabilities Act

The Consultant shall perform reviews of the Project design and construction to verify compliance with Americans with Disabilities Act requirements. This review may include review of plans early in Project development or detailed designs and specifications as the Project progresses.

For station design, this review may include pedestrian access, multi-modal connectivity, public areas, platforms, stairways, elevators, etc. Particular attention should be given to dimensional and clearance requirements. Additional information can be found in Appendix G, which typically follows FTA guidance.

Rail Vehicle Technical Reviews

The Consultant shall assist DRPT in overseeing the Grantee's procurement of rail vehicles. The Consultant shall evaluate and report on the completeness and accuracy of key deliverables related to the vehicles, including but not limited to the following:

- Contract Data Requirements List (CDRL)
- Design documentation
- Quality management system
- Testing program plan
- Safety certification of these rail vehicles performed by the manufacturer of these vehicles

Additionally, the Consultant shall identify when the Grantee's actual and stated needs are in conflict and assure timely intervention when there are indications that the vehicle will not satisfy the Grantee's actual needs. Additional information can be found in Appendix H1 and H2, which typically follows FTA guidance.

Risk and Contingency Review

The Consultant shall assist DRPT in implementing and maintaining a continuous risk planning and monitoring process within the framework of the Grantee's approved Project Management Plan.

The review requires an evaluation of the reliability of the Grantee's Project scope, cost estimate, and schedule, with special focus on the elements of uncertainty associated with the effectiveness and efficiency of the Grantee's Project implementation and within the context of the surrounding Project conditions. It requires the Consultant to synthesize available Project information; explore and analyze uncertainties and risks; provide a qualitative and quantitative assessment of ranges of forecasted cost and schedule; describe the analytical methods used; and consider risk mitigation options and alternatives including use of cost and schedule contingencies. Based on the analysis, the Consultant shall draw conclusions and provide recommendations for adjustment to scope, cost, schedule, project delivery method, construction methodology, and project management planning in response to Project risks.

The Consultant will be required to participate in risk and contingency review workshops with the Grantee to achieve a better understanding of Project issues that will inform recommendations they provide. The Consultant shall work with the Grantee to ensure the detail of the risk and contingency review is appropriate with the complexity and investment of the Project. The risk assessment will be a living document and will require monitoring/updating at regular intervals throughout the Project. Additional information can be found in Appendix I, which typically follows FTA guidance.

Readiness to Procure a Design-Build Contractor

The Consultant may be required to assess and to report on Grantee's readiness to undertake other specific tasks such as the Grantee's Readiness to Bid. The readiness to procure a design-build contractor review will focus on the Grantee's preparedness to successfully manage the procurement process including completeness of the bid package, plans, specifications and contract provisions. Additional information can be found in Appendix J, which typically follows FTA guidance.

Readiness for Revenue Operations

This review will focus on verifying that the entire transit system, with all interfaces, operates as an integrated whole and is capable of functioning safely and effectively to provide safe dependable service in compliance with the contract documents.

The Consultant shall assess the following:

- All systems, subsystems, components, equipment, and materials furnished and installed conform to the requirements of the contract documents and safety certification is performed on these vehicles
- The entire transit system, with all interfaces, operates as an integrated whole and is capable of functioning effectively to provide dependable service
- The system is safe for use by patrons to the extent possible in conformance to industry standards, standard of care, and conformance with contractual requirements;
- The system will operate safely through the host communities and
- The Operator has demonstrated the Management Capacity and Capability (MCC) to safely operate and maintain the system to the extent possible through hiring sufficient numbers of experienced staff to operate and maintain the new system, and that all employees have been adequately trained and protected.

Additional information can be found in Appendix K, which typically follows FTA guidance.

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SECTION IV. OPTIONAL TASKS/PROJECT ELEMENTS

The following are tasks/project elements that DRPT may assign as part of the Virginia Beach LRT Extension oversight contract.

Technical Assistance and Special Tasks

DRPT may require the Consultant to provide technical assistance, conduct special oversight, and special studies such as emergency support and other work, as directed. This work may entail site visits and interviews; assisting Grantees with the development of their Project plans, schedules and procedures, Project investigations; preparation of professional papers based on research and development of concepts. Findings, conclusions, and recommendations may be required to be developed by the Consultant in written documents to inform DRPT and other stakeholders. The Consultant may be required to present papers and studies in meetings and contribute and participate in meetings with parties such as Grantees and their representatives. Additional information can be found in Appendix L, which typically follows FTA guidance.

Real Estate Acquisition and Management Plan Review

The Consultant shall review the Project real estate schedule and cost estimates at specific Project development milestones, as directed by DRPT. Early in Project development, the consultant shall identify potential real estate problems and determine probable solutions. The Consultant shall review detailed schedules as the Project progresses to ensure problems identified are addressed and solutions are implemented appropriately. Some of the key documents to be reviewed include: the Real Estate Acquisition Management Plan (RAMP), latest schedules produced, supporting scope and cost information. The RAMP should contain information demonstrating an adequate staff organization, complete with well-defined reporting relationships, responsibilities, job descriptions, and job qualifications. The Consultant will provide real estate oversight to the extent needed to ensure compliance with statutory and regulatory requirements. Additional information can be found in Appendix M, which typically follows FTA guidance.

Quality Assurance/Quality Control Review

The Consultant shall assess and evaluate the adequacy and soundness of the Grantee's implementation of a Quality Assurance/Quality Control (QA/QC) program over the course of the Project. The focus will be to ensure that the Grantee has adequately established the following:

- Quality management program
- Document control
- Design control
- Procurement/construction/inspection plans
- Operations, startup, and training

Additional information can be found in Appendix N, which typically follows FTA guidance.

Value Engineering Review

The Consultant shall determine the effectiveness of the Grantee's Value Engineering (VE) program. This may include participating in pre-value engineering workshop activities, attending

and contributing to value engineering workshops, and/or performing a technical review of the results of the Grantee's value engineering activities. Additional information can be found in Appendix O, which typically follows FTA guidance.

Buy America Review

The Consultant shall perform reviews to ensure Project compliance with Buy America requirements. The scope of these reviews will focus on, but are not limited to, the pre-award and post-delivery audit requirements for vehicle procurements and certifications for manufactured products and construction projects. This review may include reviewing the Grantee's Buy America documentations, the Grantee's Buy America contract language, and/or site visits to manufacturing and construction locations. Additional information can be found in Appendix P, which typically follows FTA guidance.

Lessons Learned

The Consultant shall perform the following:

- To define a simple process for capturing potential lessons as they are encountered during the Project execution without a major expenditure of time and resources (“mini-lessons”)
- To provide a cumulative list of mini-lessons at the end of the Project as a tool for the selection, full development, and formal issuance of those mini-lessons that are sufficiently robust to be developed into Project lessons to be shared
- To share lessons learned on major capital transit projects with the transit industry and other interested parties
- To increase awareness within the transit industry of pitfalls and impediments to the achievement of Project goals
- To recommend changes in DRPT policies and practices when lessons learned on projects suggest that such changes may be advisable

Additional information can be found in Appendix Q, which typically follows FTA guidance.

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SECTION V. MISCELLANEOUS

Small, Women, and Minority Owned Business Participation

This contract requires a minimum of 10 percent participation from SWAM owned businesses. Additional information can be found in Appendix R.

Invoicing and Payment

The Consultant is limited to one invoice every 30 calendar days for reimbursement of eligible Project costs. SWAM owned business usage will be shown both for the month and the cumulative to date within the respective billing. The Consultant shall submit their invoice format for DRPT approval prior to submitting the first invoice.

Invoices approved by DRPT will be paid within 30 calendar days.

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Appendix A - Project Management Plan Review

Purpose

The PMP is the overarching Project implementation plan that spans the entire Project period. It should be a guide for action. It should describe approved policies, practices, and procedures related to the management, design, and construction of the Project. The PMP elements should be tailored to set forth the specific action plan for implementing the Project, and managing the cost, schedule, quality, and associated risks. It should identify how the City and HRT will interact with one another to successfully deliver the Project.

DRPT expects Grantee's PMP to be reviewed by the Consultant based on a thorough understanding of risk-informed and sound project management strategies and plans; and that the Grantee will develop their PMP with consideration given to FTA's *Project and Construction Management Guidelines, 2011 Update* (PCMG). The PCMG provides guidance on project management principles and practices, best practices, and research results in the management of transit capital project development. The PCMG recommends a phased project management approach that starts with inputs, establishes a baseline, refines Project definition, and generates outputs that become the inputs and baseline for the subsequent phase.

Background

The Consultant's review of the PMP will enable DRPT to determine the adequacy of the legal and administrative capabilities as well as its MCC to effectively and efficiently execute the Project in all of its aspects, including planning, design, construction, testing, and revenue operations. At a minimum, the Grantee's PMP shall include:

- 1) A description of adequate Grantee staff organization complete with well-defined reporting relationships, statements of functional responsibilities, job descriptions, and job qualifications;
- 2) A budget covering the project management organization, appropriate Consultants, property acquisition, utility relocation, systems demonstration staff, audits, and such miscellaneous costs as the Grantee may be prepared to justify;
- 3) A construction schedule;
- 4) A document control procedure and recordkeeping system;
- 5) A change order procedure, which includes a documented, systematic approach to the handling of construction change orders;
- 6) A description of organizational structures, management skills, and staffing levels required throughout the construction phase;
- 7) Quality control and quality assurance programs, which define functions, procedures, and responsibilities for construction and for system installation and integration of system components;
- 8) Material testing policies and procedures;
- 9) Plan for internal reporting requirements including cost and schedule control procedures;
- 10) Criteria and procedures to be used for testing the operational system or its major components;

- 11) Safety and security management; and
- 12) Procedures to periodically update the plan as needed.

Objectives

It is essential that the Consultant understand that the preparation of a PMP is the responsibility of the Grantee, as is the resultant execution of the total Project. DRPT and its Consultant are responsible for overseeing the work, providing suggestions for improvement, and confirming compliance with applicable federal and state laws, regulations, and policies.

The Consultant's review of the PMP provides a major input to DRPT to facilitate determination of the adequacy of the Grantee's legal and administrative capabilities as well as the management capacity and capability to effectively and efficiently execute the planning, design, and implementation of the Project. The Consultant shall (1) validate the usefulness of the PMP as an overarching project implementation plan based on the Grantee's chosen project delivery method, (2) assess the adequacy and soundness of the elements and sub plans contained within the PMP at required points during the Project, ensuring such elements are complete to the level necessary for effective and efficient execution of the Project given the Project phase, and (3) document its findings, professional opinions, and recommendations in reports to the DRPT. Additionally, the Consultant shall monitor the Grantee's adherence to what is outlined in the PMP and advise DRPT if there are gaps between what is presented in the PMP and how the Project is being managed and delivered.

Scope

The Consultant shall become familiar with FTA's guidance on PMP development, which can be found in the *Project & Construction - Management Guidelines* and *Circular 5010.1 Grant Management Requirements*. The Consultant should understand that the Grantee is required to develop and implement a PMP that demonstrates its MCC to:

- Effectively and efficiently manage the implementation of the proposed Project
- Provide, directly or by contract, adequate professional, managerial, and technical expertise for the Project's design, construction, and start-up, as well as qualified services for inspection and supervision of construction, testing, and start up work
- Assure conformance with grant agreements, applicable statutes, regulations, codes, ordinances, and safety standards
- Recognize DRPT's role and the Consultant's role in performing oversight of the Project
- Establish and maintain adequate internal controls regarding system operations, service schedules, and financial reporting for capital assets and operations

Cursory Review

Upon receipt of the PMP, the Consultant shall quickly scrutinize it for its adequacy and completeness. If the PMP outline appears unsatisfactory, the Consultant shall recommend to DRPT that it be returned to the Grantee for revision and resubmittal.

Full Review

In its full review, the Consultant shall assess, evaluate, and characterize the PMP; shall consider the extent, nature, level of detail, and quality of the Grantee's approach as portrayed by the entire PMP and in each PMP element. The Consultant's review report should provide DRPT with findings, analyses, professional opinions, and recommendations in a clear and understandable format. Each element of the PMP appropriate and required for this phase in the Project's development shall be addressed. If an element is recommended for acceptance, revision, or rejection, this recommendation shall be clearly noted in the PMP report.

DRPT may recommend that the Consultant hold a workshop to help establish roles and responsibilities and define baseline standards of performance related to the management of the Project. Few, if any, Grantees have all the capabilities or authorities to plan, design, and implement a major capital project by themselves. Bringing the Grantee's staff, consultants, the Consultant team (including appropriate sub-contractors), and relevant third parties together in a workshop early in the development of the Project can help to shape the project management approach. Through workshop discussions, all parties can gain a better understanding of each other's requirements, responsibilities, and authorities as related to the Project. Workshop discussions can lay the foundation for the project management approach that is documented in the PMP. DRPT can participate as well to explain DRPT's oversight process and expectations. In the workshop, a partnering-type process should be established that can help to weather future political shifts and agency leadership changes.

The Consultant shall assess and evaluate the degree to which the PMP elements 1) mirror and complement the Grantee's overall management strategy and 2) are effective in minimizing scope changes, cost increases, and schedule extensions. The PMP covers all material Project activities over the entire Project life and the PMP constitutes evidence of the Grantee's capacity and capability to manage the Project. The review should assess the establishment of plans and procedures regarding testing/commissioning, closeout of construction contracts, and training of staff

The Consultant shall review and summarize its findings and opinions, and present recommendations with respect to the adequacy and soundness of the plans and procedures for:

- **Design Control.** The review should confirm the Grantee's establishment and implementation of appropriate plans and procedures for design control including reviews for design, value engineering, life-cycle cost considerations, constructability, and safety. The review should confirm the ridership forecast is supported by the Project operations plan and transit capacity. Procedures for the resolution of drawing and specification review comments should be in place; these procedures should be in use by all design team members. The Consultant should check that Change Control procedures are established to ensure that changes are adequately carried through all drawings.
- **Property Acquisitions and Relocation.** The Consultant should review and assess the

Grantee's property acquisition and relocations policies and procedures.

- Project Controls. The Consultant should review the Grantee's document control, cost, schedule and control procedures with the Project team and third parties, and assess whether these procedures are in place and well followed. The Consultant should review the baselines for capital cost estimate and schedule, and assess the approach and plans for risk identification, assessment and mitigation, and the development of adequate contingencies. The risk management plan shall incorporate mitigation measures including maintenance of contingency amounts for cost and schedule at Project hold points. It is important to note that this PMP review is not a risk review. Procedures for performing risk and contingency reviews are contained elsewhere in this document. In addition, the Consultant should review procedures for cost sharing agreements with outside funding partners, and check that the schedule for receipt of funds is consistent with the requirements of the Project schedule.
- Project Cost Separation from a Proposed Shared Use Path. The Grantee proposes to add onto the Project's design-build contract a separate project to develop and construct a Shared Use Path that is adjacent to the Project. The Consultant should review the Grantee's proposed methodology for properly separating, tracking, recording, and reporting on costs between the Project and the Shared Use Path.
- Project Delivery and Procurement. The Consultant shall review the Grantee's plan for Project delivery and procurement. The Consultant shall evaluate the soundness and adequacy of the Grantee's approach to the design-build procurement for the Project as well as the acquisition of the light rail vehicles.
- PMP Subplans. The Consultant shall review for adequacy and soundness the Grantee's PMP subplans, and make suggestions for improvement to the Grantee along with recommendations for resolving issues surrounding the development and implementation of these plans, which include:
 - Management capacity and capability documents
 - Safety and Security Management Plan (SSMP)
 - QA/QC
 - Risk and Contingency Management Plan (RCMP)

The Consultant should provide a comprehensive report on the Grantee's PMP. The report should identify insufficiencies and areas of non-conformance, document other findings and conclusions, support findings with evidence, support conclusions with sound analysis, and include suggestions for improving the Grantee's plan.

Additional Reviews

The Consultant may be tasked with performing subsequent reviews of the Grantee's PMP during Project development and delivery. Such reviews may encompass the entire PMP including one or more PMP sub-plans or it may be specific to a particular section or sub-plan of the PMP. The exact scope of additional PMP reviews will be delineated by DRPT.

Deliverables

For each PMP review conducted, the Consultant shall provide DRPT with a concise written report of its findings, analysis, recommendations, professional opinions, and a description of the review activities undertaken. The report should be written succinctly and not include extraneous information not pertinent to the review. After DRPT approval, the Consultant should share the report with the Grantee. In the event that differences of opinion exist between the Consultant and the Grantee regarding the Consultant's findings, DRPT may direct the Consultant to reconcile with the Grantee and provide DRPT with a report addendum covering the agreed modifications by the Grantee and Consultant. Further, in the event that the Consultant determines that any element of the Grantee's PMP is inadequate or weak, the Consultant shall make recommendations for corrective action along with a time frame for these actions, and reconcile such findings with the Grantee.

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Appendix B - Management Capacity and Capability Review

Background

The Consultant shall review and evaluate the Grantee's management capability and capacity to successfully deliver the Project by evaluating the organizational structure of the Grantee, qualifications of personnel, as well as the policies, procedures, and implementation methods. Such a review includes the Grantee's abilities, resources, staff organization and third-party Consultants since these are essential to develop and manage Project cost and schedule risks, real estate acquisition, safety and security, quality assurance and quality control, and other activities of federal concern.

Objectives

The Consultant shall perform evaluations and render professional opinions regarding the Grantee's capacity and capability to successfully implement, manage, and complete the Project, and to recognize and manage Project risk factors and implement mitigation measures. The evaluations shall cover the Grantee's organization, personnel qualifications and experience. Specifically:

- 1) Grantee's approach to the work, ability to perform the work including its methods, policies, and procedures for developing and updating reasonable and realistic Project cost estimates and schedules and the ability to identify, analyze, manage and mitigate Project risks; and
- 2) Grantee's ability to collect costs and measure performance against line items in a robust Work Breakdown Structure (WBS), forecast cost to complete through an industry-accepted cost analysis technique, and identify variances and report on Project status and recovery action plans on a monthly basis.

Scope

An important aspect is the Grantee's staff qualifications and experience and their ability to implement methods, policies, and procedures for developing and updating reasonable and realistic Project cost estimates and schedules along with the ability to identify, analyze, manage and mitigate Project risk from scope, schedule and cost. Another important aspect is each staff understanding their role on the Project and the Project's critical issues.

The Consultant's review of the Grantee's management capability and capacity will typically be performed in conjunction with review of the Grantee's PMP. DRPT may direct the Consultant to perform a supplemental management capability and capacity review at other times as needed.

At a minimum, the following items are reviewed by the Consultant to reach a determination of a Grantee's capability and capacity to successfully manage and complete a major Federally-assisted capital project:

- 1) Organization, personnel qualifications and experience:

- a. Review the complete organization of the Grantee to determine the likelihood of the Project management team successfully implementing the Project. Determine whether the Grantee has an effective and efficient organizational structure.
 - b. Review the assigned and supporting staff qualifications, including but not limited to the review of resumes and conducting personal interviews of key agency and Project leadership, based on Consultant generated questionnaires. The purpose of the questionnaire is to gain insight into the interviewees' background and experience, to understand their concept of their Project role, and to obtain their input as to the critical issues that must be managed and/or resolved to successfully complete the Project. The Consultant can use FTA's sample questionnaires as a guide, but should also use judgment about the right approach to achieve the objective of the review.
 - c. Review the Grantee's staffing plan. The staffing plan should be adjusted to the Project. Assess the reasonableness of the hours for each Project team component over the life of the Project and whether the costs for professional services in the cost estimate accurately reflect the labor required. (Note: staffing plans can be shown in hours per month or full time equivalents (FTE) per month. If FTEs are used, the industry standard is one FTE equals 160 hours per month.
 - d. Analyze whether the Grantee has the physical resources, such as sufficient office space, equipment, and furnishings to effectively and efficiently advance the Project.
- 2) Grantee's approach to the work, understanding of the work, and ability to perform the work:
- a. Review the adequacy of the Grantee's methods, policies, and procedures for developing, and its ability to develop and update, reasonable and realistic Project budgets, cost estimates, and schedules and the control mechanisms in place to monitor and ensure adherence with said budgets, estimates, and schedules. Evaluate the Grantee's methods, policies, and procedures for identifying, analyzing, managing, and mitigating Project risks and disputes.
 - b. Evaluate the Grantee's approach to:
 - i. Satisfying DRPT grant reporting requirements and responding in a timely manner to specific requests of DRPT for Project-related information;
 - ii. Packaging, procuring, and managing third-party contracts in compliance with applicable State and Federal requirements;
 - iii. Developing and implementing a sound community relations program;
 - iv. Developing and implementing a land acquisition and relocation program;
 - v. accounting for Project property and maintenance of Project property inventory;
 - vi. Developing and implementing a force account plan;
 - vii. Developing and implementing safety and security measures and a SSMP; and
 - viii. Entering into clearly defined intergovernmental and other local agreements (e.g. agreements with utilities or railroads) in a timely

- manner to secure sources of local funding and cooperation.
- c. Evaluate the Grantee's understanding of its obligations to comply with agreed upon and applicable State and Federal requirements.

If the Consultant determines that the Grantee's management capacity and capability is inadequate or weak in terms of (1) organization, personnel qualifications and experience, and/or (2) approach to the work, understanding of the work, or ability to perform the work, then the Consultant should make recommendations for corrective action along with a time frame for these actions.

Deliverables

The Consultant shall provide DRPT with a written report of its findings, analysis, recommendations, professional opinions, and a description of the review activities undertaken. The report should be written succinctly and not include extraneous information not pertinent to the review. After DRPT approval, the Consultant may share the report with the Grantee. In the event that differences of opinion exist between the Consultant and the Grantee regarding the Consultant's findings, DRPT may direct the Consultant to reconcile with the Grantee and provide DRPT with a report addendum covering the modifications agreed to by the Grantee and Consultant.

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Appendix C - Safety and Security Management Plan Review

Background

Chapter II, Paragraph 2 of FTA's Circular 5800.1 identifies the minimum, specific activities required as part of the safety and security management program developed for capital projects. The safety and security management activities shall be documented in a separate SSMP that is submitted as part of the PMP and conforms to Chapter IV of FTA's Circular 5800.1. The PMP shall contain a section that references and summarizes the separate SSMP.

It is expected that the Grantee will prepare a SSMP which demonstrates assurance that the Project will be developed and implemented in accordance with all requirements found under Rail Fixed Guideway Systems; State Safety Oversight, 49 C.F.R. pt. 659 and will follow FTA Circular 5800.1, Safety and Security Management Guidance for Major Capital Projects.

References

The Consultant shall be thoroughly familiar with these regulations and documents as well as:

- FTA Safety and Security Management in Rail Transit Projects Guidebook, March 2009
- FTA's Handbook for Transit Safety and Security Certification, November 2002
- FTA's Implementation Guidelines for 49 C.F.R. pt. 659, March 2006
- FTA's Frequently asked Safety and Security Management Plan Questions
- FTA's Resource Toolkit for States Implementing 49 C.F.R. pt. 659, March 2006
- Hazard Analysis Guidelines for Transit Projects, 2000
- FRA, Collision Hazard Analysis Guide: Commuter and Intercity Passenger Rail Service, October 2007
- Federal Emergency Management Agency, Lessons Learned Information Sharing Network
- FTA Project and Construction Management Guidelines
- FTA Quality Assurance / Quality Control Guidelines, 2012 update

Project Grantee Submittals

From FTA guidance, Critical Safety and Security Management Program Interfaces and Documentation, identifies typical interfaces between the safety and security management program and other Project activities that DRPT would expect to see referenced in documentation.

Rail Fixed Guideway Projects, not subject to regulation by the Federal Railroad Administration (FRA), shall be subject to State Safety Oversight Agency (SSOA) jurisdiction as specified in the Rail Transit Agency Safety Plan.

The reviews conducted by the Consultant may be performed in conjunction with DRPT personnel and/or other consultant support and will require submittals from the Grantee

appropriate to the stage of Project development and in keeping with the requirements and recommendations applicable to the Project and HRT's safety and security management program.

Scope

The Consultant will review the adequacy and soundness of the Grantee's safety and security management program in conjunction with the express review authority by the DRPT SSO. As directed by DRPT, the Consultant personnel will perform the following activities:

- **Initial Review:** Conduct an initial review of the safety and security management program prior to completion of 30 percent design.
- **Follow-Up Reviews:** Review the SSMP each time it changes substantially and provide formal comments. At a minimum, the SSMP is reviewed with every PMP update.
- **Adherence Reviews:** Conduct a safety and security management program Adherence Review at 90 percent design and at 50 percent construction to determine how well the Grantee is implementing its program. This on-site activity requires document reviews, interviews and field verifications regarding the implementation of the Grantee's safety and security management program.
- **Coordination:** Coordinate and support, as directed, the implementation of other oversight activities and reviews. The Consultant must coordinate the safety and security management program reviews with PMP reviews. Since the safety and security management program is part of the PMP, DRPT's evaluation of the PMP cannot be completed until the safety and security management program is reviewed.
- **Updates:** Provide updates on the development and implementation of the safety and security management program in monthly reports or as directed.

Initial Review

As a critical component of the PMP approval process, the Consultant must conduct an initial review of the safety and security management program submittal in coordination with DRPT SSO personnel.

The Consultant must use a FTA approved checklist attached to the end of this Appendix to complete its review. For each section in the checklist, the Consultant should assess if the SSMP meets the requirements. The checklist also requires the Consultant to identify and review any documents referenced in the SSMP describing the approach to performing specific safety and security management activities.

An SSMP must follow the sections and sub-sections in Chapter IV of Circular 5800.1 and shall not include material that is not specified (such as project description, agency history, etc.). The Consultant must follow the process outlined in Chapter III of Circular 5800.1 for identifying and documenting activities that are "not applicable" to the SSMP. All "not applicable" items must be marked as such in the SSMP and in the checklist.

When completing the initial review checklist, if the Consultant determines additional information is needed to evaluate the submission, then the Consultant must identify that

information and provide a time-frame for its submission and for the Consultant's review of the information.

During the initial review, the Consultant shall consult the SSOA in its assessment of the Grantee's safety and security management program implementation.

Review of Safety and Security Organization

Beginning with its initial PMP, the Grantee must establish a specific organization to manage safety and security for the Project. The Grantee must identify, by name, title, and department or affiliation, all staff and contractors assigned to this organization. In addition, the Grantee must identify supporting committees.

The Grantee must also identify who among the Project team leadership has ultimate decision-making responsibilities for safety and security issues and their interface with the organization and committees. Any Project agreements must fully support adherence to all Federal Safety and Security requirements, if applicable.

Review of Activities to be Completed by Project Phase

FTA guidance identifies the activities that may be performed by Project phase for safety and security management. The Consultant should review this listing against the Grantee's initial safety and security management submission. Depending on the size and type of project the Consultant should ensure that the Grantee's initial submission indicates adequate planning for safety and security management activities to occur in subsequent phases.

Follow-up Reviews

At intervals, the Grantee will update its SSMP and re-submit it to DRPT for review and approval. The Consultant must review these submittals, updating assessments made in the checklist.

Generally, as specified in Paragraph 3 in Chapter II of FTA's Circular 5800.1, the Consultant should focus on the following throughout the lifecycle of the Project:

- The Grantee's assignment of responsibility for safety and security, including the process for maintaining responsibility over safety and security tasks it delegates to outside Consultants and/or contractors.
- The effectiveness of the Grantee's process to identify and communicate safety hazards and security vulnerabilities during each Project phase.
- The Grantee's capacity to support and maintain the levels of duties and responsibilities it identified for safety and security activities in the SSMP.
- Project agreement(s) between the Grantee and HRT as the ultimate owner/operator of the completed LRT system.
- The Grantee's safety and security budget and schedule, including the determination regarding the resources it requires for the safety and security activities in the SSMP.
- The extent to which the Grantee incorporates safety and security requirements into the Project's technical specifications and contract documents.

- The extent to which the Grantee incorporates the safety and security management program activities and requirements into the technical direction provided to contractors and Grantee personnel.
- The effectiveness of the Grantee's approach in managing the safety and security activities of contractors.
- The extent to which the Grantee takes documented action to address safety and security concerns in a timely and appropriate manner.
- The effectiveness of the Grantee's approach for verifying that contractors, staff, and committees built, installed, inspected, and tested all facilities, systems, and equipment in accordance with the adopted safety and security requirements, as reflected in the Project's technical specifications, drawings, and contracts.
- The effectiveness of the Grantee's QA/QC program and personnel in oversight and audit of safety and security requirements across the Project phases, as described in the DRPT approved quality management plan(s).
- The readiness of operations and maintenance personnel for revenue service.
- The effectiveness of the Grantee's process for providing safety and security certification, issuing the Final Verification Report, and managing any identified restrictions or work-arounds to full safety and security certification.
- The effectiveness of the Grantee's process for ensuring compliance with requirements specified by State oversight agencies, FRA, and Department of Homeland Security (DHS) agencies, including Transportation Security Administration (TSA) and Office of Grants and Training (OGT).

Consultants should use FTA guidance as a general guide to support evaluation of the Grantee's progress and to identify when additional verification activities may be needed. Issues, needs and concerns identified by the Consultant should be communicated to DRPT in a timely and clear manner.

Adherence Review

To assess the implementation of the safety and security management program, whether documented in an SSMP for specific Project phases, the Consultant must conduct Adherence Reviews. The goal of the Adherence Reviews is to determine the degree of the Grantee's adherence to its safety and security management program as well as required activities identified in Chapter II of Circular 5800.1. This degree of adherence will be determined by evaluation in the field regarding the level of compliance with the safety and security management program requirements.

The Adherence Reviews will be performed as determined by DRPT.

This review can be divided into five activities:

1. Planning the review – based on activities, documentation, committees, and responsibilities identified in the SSMP or PMP, prepare a list of documents and materials to review, individuals to interview, and sites to visit; materials not in possession of the

Consultant should be requested and a delivery schedule and a schedule for the interviews and site visits should be developed.

2. Reviewing plans, policies, and procedures to determine whether they are consistent with the SSMP or PMP section and with the FTA's intent for management of safety and security programs.
3. Reviewing documentation, including memoranda, reports, records, and minutes of safety and security-related committees to verify that the program has been implemented and plans and procedures are being followed.
4. Interviewing Grantee and Consultant staff (senior and middle managers and Consultant personnel identified in the SSMP, PMP or others with safety and security responsibilities in the agency and throughout the Project) to verify that personnel charged with carrying out the safety and security programs are aware of their responsibilities and are capable of meeting them. SSOA participation and interviews are also encouraged.
5. Inspecting selected sites to view evidence that safety and security programs are being implemented throughout the Project area.

Planning the Review

The Grantee will be asked to supply a considerable amount of material and to schedule interviews and site visits over a relatively short time span. Based on the volume of documents and the number of people to be interviewed, the Consultant may perform the review using a small team of safety and security experts.

To orient themselves to the Grantee's safety and security management program for the Project, the Consultant team may be directed to attend the Grantee's recurring meeting where safety and security management issues are discussed, such as a safety and security certification working group or a fire/life safety committee meeting. The Consultant should participate in an alignment tour led by the senior Project staff members, including safety and security personnel. Such a tour will assist the Consultant in finalizing the list of documents to be submitted by the Grantee to support the review and also in identifying the staff members to be interviewed. The requested document submittals and the schedule of interviews should be discussed with the Grantee and the logistics of document review and interviews resolved. It is a good practice to document this step with an informal progress report to DRPT.

A number of documents to be reviewed may be labeled Sensitive Security Information (SSI) in conformance with 49 C.F.R. pts. 15 and 1520. Since the Consultant's work will not authorize access to SSI materials, the Consultant must obtain necessary clearances. For more information on handling SSI, refer to the document, "Sensitive Security Information (SSI): Designation, Markings and Control, Resource Document for Transit Agencies" at: <http://transit-safety.volpe.dot.gov/Publications/order/singledoc.asp?docid=968>.

Review of Plans, Policies, Procedures and Project Documents

Upon receipt, the Consultant should review in-depth all plans, policies, and procedures that make up the safety and security programs referenced in the SSMP. The Consultant must determine whether the SSMP and its supporting documents describe consistent,

comprehensive, and effective safety and security programs. Supporting documents should be identified and should be consistent with sound safety and security practice and principles. The checklist also can be used to support this activity.

The Consultant should assess whether the safety and security programs described in the plans, policies, and procedures are being implemented. The review may include reports of committees with safety or security oversight responsibilities, especially to determine membership, meeting schedules, document control policies, and mechanisms for tracking open issues and bringing unresolved issues to the Grantee's senior managers.

The Consultant should pay particular attention to changes in scope that may reduce the safety and security controls designed into the Project. The Consultant should determine if change documents such as Value Engineering lists, risk assessment mitigation action lists, and construction contract modifications are being appropriately reviewed by the Grantee for their safety and security implications.

Consultant should review to assess the QA personnel role in oversight and audit of safety and security requirements across the Project phases.

Interviews

Interviews are crucial for determining that those assigned responsibilities in the SSMP are aware of and understand their roles. The interviews aid both the Grantee and the Consultant. The Grantee's senior staff gains a better understanding of the importance of safety and security planning and management and the Consultant comes away assured that the SSMP reflects the roles of those overseeing the Project.

The Consultant must identify individuals and work with the Grantee to prepare an interview schedule. The SSMP will identify those with safety or security responsibilities (by title and responsibilities). The Grantee's Project organization charts may also identify additional interview candidates. The Consultant should include consultant or contractor personnel who are assigned full-time to the Project.

The interview process may take several days, depending on the number and availability of interviewees. It should begin with a meeting (an hour or less) with those who will be interviewed, the Grantee's executive staff, SSOA staff and a SSOA representative of DRPT. This establishes the authority for the interviews, provides for introductions, and allows the Consultant to explain the purpose and importance of the review.

Interviews should be conducted in a 30 to 60 minute time frame and questions should be prepared that are specific to each individual's role. The questionnaires should be used for recording answers and making notes. Interviews are not to be tape-recorded because this may inhibit interviewees from speaking openly.

Field Inspections

Site inspections should include the proposed right-of-way, locations of proposed terminals, existing terminals, and major stations that will be part of the new system, parking lots, and rail vehicle storage, repair, and maintenance facilities. A senior Project staff member or Project safety officer should lead the visits and all Consultant team members should participate in the field tour.

During the construction, testing and pre-revenue phases, many contractual and integrated tests are being conducted for the purpose of validating proper operation of equipment being furnished and constructed for the Project, such as: sprinkler systems, alarms, emergency management panels, fire management panels, ticket vending machines, and CCTV systems. As directed, the Consultant should participate in various system integration and pre-revenue testing activities.

The SSMP should identify the Grantee's process and plans for verifying that integrated tests, acceptance tests, and other inspections will be conducted to ensure that safety and security requirements have been effectively addressed. Integrated test plans and procedures should be reviewed by the Consultant as part of the inspection.

During inspections, the Consultant should examine project elements that were identified in Preliminary Hazard Analyses (PHAs) or Threat and Vulnerability Analyses (TVAs) and should determine whether appropriate mitigations are in place or planned. The Consultant should also be prepared to identify other potential hazards and vulnerabilities. Observations should be recorded, and, if appropriate, photographs taken. The SSMP Adherence Review Worksheet from FTA guidance provides space to identify the elements to be reviewed in the field and a place to record the Consultant's determinations.

The Consultant should also attend and observe safety and security related committee meetings as described in the procedures to assess Grantee's implementation and compliance of the Project's safety and security management requirements.

Exit Conference

At the end of the Adherence Review, conduct an exit conference with the Grantee's representatives. The SSOA representative for HRT should also be present. The draft findings from the Adherence Review will be presented by the Consultant at the exit conference for discussion and clarification by the Grantee.

Deliverables

After the exit conference, the Consultant shall provide DRPT with a draft written report of its findings, analysis, recommendations, professional opinions, and a description of the review activities undertaken. The report should be written succinctly and not include extraneous information not pertinent to the review. After DRPT acceptance of the draft report, the Consultant and DRPT may share the draft report with the Grantee and the SSOA.

The Consultant should prepare a Final Report reflecting the resolution of all open issues and correction of all deficiencies. DRPT at its discretion will transmit the Final Report to the Grantee and the SSOA.

In the event the Grantee does not resolve the concerns identified in the Final Report within the time-frame specified, DRPT may request Consultant support in drafting and managing correspondence and communication with the Grantee related to outstanding findings documented in the Final Report.

The Consultant shall always keep DRPT and the SSOA informed regarding any non-compliance items or concerns that may require DRPT grant withholding action.

The SSMP report shall specifically include the following:

1. Executive Summary (approximately two pages)
 - a. Provide a simply written summary of the Consultant's most important findings regarding the compliance of the Project's SSMP to DRPT requirements and the adequacy of safety and security programs, as documented in the SSMP and supporting materials, and as implemented based on reviews of operating documents, interviews, and site inspections.
 - b. Provide professional opinions, conclusions, and recommendations for improvement.
2. Table of Contents
3. Project Background / Description (approximately three pages)
 - a. Describe the objectives of the SSMP review
 - b. Introduction to the Project
 - c. Discussion of the Project's objectives and benefits
 - d. Current Project status
 - e. Describe the documents reviewed, the individuals interviewed, and the sites visited in the course of performing this review (include supporting tables in an appendix to the report)
4. Body of Report – For each section or topic area provide findings, analysis, and summary statement:
 - a. Findings (include photos of site conditions to aid in understanding)
 - b. Analysis, opinions, and recommendations (specify time for performing recommended actions)
 - i. SSMP Compliance Assessment
 - 1) Provide a general assessment of the quality and compliance level of the SSMP to the applicable DRPT requirements
 - 2) Provide an in-order specific assessment of how well each of the specific DRPT requirements are complied with, including clear description of areas of deficiency and suggestions or recommendations for resolving deficiencies. Either at the start or end of each item assessment, the letter C, M, or N should be shown in bold type to indicate that the Item is compliant, marginally compliant, or noncompliant with DRPT requirements.
 - ii. SSMP Adherence Assessment: this section should present the results and

conclusions from the review of support documentation, interviews, and site visits and indicate whether or not the SSMP requirements and safety and security programs are adequate for the current stage of the Project, as planned, documented, and implemented. Findings that support the conclusion and any recommendations for improving or resolving program deficiencies should be presented in descending order of importance. Detailed support for the findings, if required, should be placed in an appendix to the Report.

- 1) Examples of the discussion of some findings and resultant recommendations are:
 - (a) The Grantee does not have a functioning Safety and Security Working Group (SSWG). The SSMP identifies a SSWG that will be established prior to start of PE to assure that safety and security requirements, including police and fire regulations, are incorporated into all phases of the design. The project is requesting entrance into PE and the Consultant has found no evidence that a SSWG exists. The Director of Safety, who would normally be either chair or co-chair of a SSWG, was unable to state when a SSWG would become functional. The Consultant recommends that the Grantee create a SSWG, as identified in the SSMP, and set a regular schedule for meetings. The SSWG should include participation from city, transit agency, and county agencies that the right of way traverses.
 - (b) The Grantee has not addressed egress and overcrowding on platforms during periods of heavy system use. Overcrowding and lack of adequate egress is hazardous and introduces security vulnerabilities; neither the PHA nor TVA has addressed this issue at the stations serving the college and the high school and the design criteria are silent on maximum platform loads. These issues must be resolved with the local academic institutions, which generate increased ridership during those months that classes are in session. The Consultant recommends assessments of maximum passenger loads on these platforms, and the rate of flow through egress points, through formal hazard analyses and TVAs.
 - (c) Issues and Analysis (1) In the course of the review, the Consultant may encounter safety and security issues that can affect or be affected by the project but do not constitute findings. These should be presented. Example: The Consultant identified three schedule changes that relate to project safety and security: (a) The tunnel TVA originally planned for September 2006 is now forecast to be completed in January 2007. This will delay review of the TVA by the city, delay issuance of tunnel bid package, and reduce schedule float by at least two months
- 2) Changes in personnel in local police/fire departments have delayed formation of the Fire Life Safety and Security Committee (FLSSC) originally planned for April 2010. It is currently planned that the new police and fire commissioners, named in December 2010, will select their candidates for the committee so that it can be formed and made operational in the following

quarter.

- 3) Late changes in establishing the alignment have resulted in design delays. The TVA and Emergency Evacuation Plan (EEP) cannot be formally completed until the right of way is finalized. In the opinion of the Consultant, this delay should not affect commencement of revenue operations because the safety and security departments are participating in the design revisions on a real-time basis.

5. Summary statements by section or topic area. (Note that the Executive Summary requires further summarization of these section summary statements.)
 - a. Present the major conclusions reached from the assessment as to the compliance of the SSMP with DRPT Circular requirements and the adequacy of Grantee adherence to the SSMP, as well as the overall Project safety and security program.
 - b. Present a numbered compilation of recommendations contained in other sections of the report. (Each recommendation should include a parenthetical reference to the section or subsection where the recommendation was made.)
6. Appendix
 - a. Acronyms used
 - b. Supporting checklists, tables, spreadsheets, photos, etc.
 - c. Consultant team – list personnel and their qualifications for performing the review (short blurb on each; altogether one or two pages max)

The subsequent pages of this Appendix show the FTA Safety and Security Management Initial Review Checklists:

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APPENDIX C

Safety and Security Management Initial Review Checklist

No.	Checklist Item	Plan Requirements	Document Reference	Comments
1.1	Safety and Security Policy Statement	<ul style="list-style-type: none"> A <i>Safety and Security Policy Statement</i> is developed for the Safety and Security Management Plan (SSMP). The policy statement endorses the SSMP and confirms the project's commitment to safety and security throughout all project phases. The policy statement is signed by the Sponsor's executive leadership. 		
1.2	Purpose of SSMP	<ul style="list-style-type: none"> The SSMP implements the <i>Safety and Security Policy Statement</i>. The SSMP identifies the Sponsor's management structure and activities to be performed to integrate safety and security into all project phases. 		
1.3	Applicability and Scope	<ul style="list-style-type: none"> The SSMP applies to all project development activities through project development, engineering, construction, integrated testing, demonstration, and the initiation of operations. Depending on the nature of the project, this scope may encompass the following: <ul style="list-style-type: none"> System-wide Elements, Fixed Facilities, Safety, Security, System Assurance, Operational, and Maintenance Plans and Procedures, and Personnel Qualifications, Training and Drills/Exercises. As applicable, the SSMP also includes activities to ensure compliance with requirements specified by the State Safety Oversight Agency (49 CFR Part 659) and/or the Federal Railroad Administration (FRA), and/or the Department of Homeland Security, including the Transportation 		

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Safety and Security Management Initial Review Checklist

No.	Checklist Item	Plan Requirements	Document Reference	Comments
		Security Administration (TSA) and the Office of Program Management.		
1.4	SSMP Goal	<ul style="list-style-type: none"> • Ensures that the final project initiated into revenue service is safe and secure for passengers, employees, public safety personnel, and the general public through a formal program of safety and security certification. • Describes how the Sponsor's executive leadership has designated personnel and committees with the responsibility: <ul style="list-style-type: none"> ○ to establish safety and security requirements for the project; ○ to ensure that the design, acquisition, construction, fabrication, installation, and testing of all critical elements of the project will be evaluated for conformance with the established safety and security requirements; ○ to verify operational readiness; and ○ to ensure that a mechanism is provided to follow to completion the resolution of any restrictions to full safety and security certification. 		
2.1	Safety and Security Activities	<ul style="list-style-type: none"> • Identifies the specific safety and security tasks that must be performed for the project through all phases. • Includes both a text description of the activities and a matrix listing these activities and the project phases during which they will be performed. <ul style="list-style-type: none"> ○ One matrix may be prepared that combines safety and security activities by project phase, or separate matrices may be developed. 		

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Safety and Security Management Initial Review Checklist

No.	Checklist Item	Plan Requirements	Document Reference	Comments
2.2	Procedures and Resources	<ul style="list-style-type: none"> • Identifies the procedures and resources that will support performance of safety and security activities throughout the project phases. • Includes procedures for the management of sensitive security information (SSI). 		
2.3	Interface with Management	<ul style="list-style-type: none"> • Identifies the process and lines of communication by which safety and security issues will be communicated to senior management and used by senior management in decision-making. • An organization chart showing the Sponsor's project management team and key points of interface regarding safety and security issues must also be provided. • The organization chart shall identify the relationships from the safety and security staff and organizations to construction management, project management, and executive management. 		
3.1	<i>Responsibility and Authority</i>	<ul style="list-style-type: none"> • Identifies, by title and department, all staff, contractors, and committees assigned to manage the safety and security activities specified in Section 2 of the SSMP. <ul style="list-style-type: none"> ○ Each individual staff member must be identified by title and affiliation. ○ Each committee must be identified by name and acronym, with membership provided by title and affiliation. ○ For each authority delegated to a contractor, the Sponsor individual or committee responsible for oversight must be shown. 		

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Safety and Security Management Initial Review Checklist

No.	Checklist Item	Plan Requirements	Document Reference	Comments
		<ul style="list-style-type: none"> o An organization chart must be provided. 		
3.2	Committee Structure	<ul style="list-style-type: none"> • Describes the organization and responsibilities of the different safety and security committees , including <ul style="list-style-type: none"> o Safety and Security Review Committee; o Fire/Life Safety Committee; o Safety and Security Change Review Board; o Safety and Security Operations Review Committee; o Other comparable committees. 		
3.3	Safety and Security Responsibilities Matrix	<ul style="list-style-type: none"> • Presents the responsibility and reporting relationships for safety and security in the form of a matrix. <ul style="list-style-type: none"> o Separate matrices may be used for safety and security authorities and responsibilities, or a single matrix may be used. o Individuals having authority for safety or security functions who are not part of the Sponsor staff must report to a member of that staff who is responsible for that safety or security function. 		
4.1	Approach to Safety and Security Analysis	<ul style="list-style-type: none"> • Describes the Sponsor's approach to the analysis of safety hazards and security vulnerabilities. • Known hazards and vulnerabilities must be: <ul style="list-style-type: none"> o Identified and categorized for their potential severity and probability of 		

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Safety and Security Management Initial Review Checklist

No.	Checklist Item	Plan Requirements	Document Reference	Comments
		<p>occurrence,</p> <ul style="list-style-type: none"> o analyzed for potential impact, and o resolved by design, engineered features, warning devices, procedures and training, or other methods. 		
4.2	Requirements for Safety and Security Analysis	<ul style="list-style-type: none"> • Specifies the distinct types of safety and security analysis to be performed during the specific phases of the project. • Describes the mechanism for communicating analysis results throughout the project team. • Describes the process for assuring the resolution of identified hazards and vulnerabilities. 		
5.1	<i>Approach to Development of Safety and Security Design Criteria</i>	<ul style="list-style-type: none"> • Describes the project's approach to creating suitable safety and security design criteria. • Identifies the resources, including standards prepared by such organizations as the American Public Transportation Association (APTA), the National Fire Protection Association (NFPA), Underwriters Laboratories (UL) and others that the Sponsor will use to develop safety and security requirements. • Explains how the Sponsor will identify safety and security certifiable elements and how identification of these elements will guide the development of safety and security design criteria. • Ensures that the final specifications and contract documents for the project will result 		

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Safety and Security Management Initial Review Checklist

No.	Checklist Item	Plan Requirements	Document Reference	Comments
		in design that meets the Sponsor's requirements for safety and security and addresses the certifiable elements.		
5.2	<i>Design Reviews</i>	<ul style="list-style-type: none"> Identifies how safety and security activities will be addressed during design reviews to ensure incorporation of safety and security requirements into the final project design. 		
5.3	<i>Deviations and Changes</i>	<ul style="list-style-type: none"> Identifies procedures for ensuring that changes to safety and security design criteria are appropriately reviewed and approved prior to adoption. 		
6.1	<i>Operations and Maintenance Personnel Requirements</i>	<ul style="list-style-type: none"> Identifies the number of personnel and their specific job classifications required to operate and maintain the project in revenue service. Specifies the qualifications and core competencies, required by job classification, for these personnel to ensure their abilities to provide safe and secure service and to respond to emergencies. Emphasizes special needs of front-line personnel (i.e., operators, supervisors, station attendants, and mechanics). 		
6.2	<i>Plans, Rules and Procedures</i>	<ul style="list-style-type: none"> Identifies by name the specific safety, security and emergency plans, rules, procedures, and manuals to be developed for operations and maintenance personnel, and also provides a schedule for their development. 		
6.3	<i>Training Program</i>	<ul style="list-style-type: none"> Lists the elements of training to be provided to employees, by job classification, to ensure their capabilities to provide safe and secure service and to respond effectively to 		

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Safety and Security Management Initial Review Checklist

No.	Checklist Item	Plan Requirements	Document Reference	Comments
		<p>emergencies.</p> <ul style="list-style-type: none"> Provides a schedule for the development and offering of this training, and for completion of any qualifications or certifications required by employees. Ensures the availability of documented evidence of personnel training and qualifications/certifications. 		
6.4	<i>Emergency Preparedness</i>	<ul style="list-style-type: none"> Identifies any exercises, drills, tabletops or other activities that will be performed to ensure the readiness of the project placed in revenue service to respond to emergencies, and how the results of these activities will be assessed (i.e., after action report or equivalent document). 		
6.5	Public Awareness	<ul style="list-style-type: none"> Identifies programs that support a commitment to on-going comprehensive public awareness, for both security awareness (such as the Transit Watch "eyes and ears" program) and emergency preparedness (such as emergency evacuation instructions to riders). 		
7.1	Design Criteria Verification Process	<ul style="list-style-type: none"> Describes the process used by the Sponsor to verify that safety and security design criteria have been addressed in project specifications and contract requirements and that all required inspections and tests have been incorporated into project test plans. 		
7.2	Construction Specification Conformance Process	<ul style="list-style-type: none"> Describes the process used to ensure that elements of the system provided under construction, procurement and installation contracts conform to the specifications. 		

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Safety and Security Management Initial Review Checklist

No.	Checklist Item	Plan Requirements	Document Reference	Comments
7.3	Testing / Inspection Verification	<ul style="list-style-type: none"> Describes the process used to ensure that the as-built (or delivered) configuration contains the safety- and security-related requirements identified in the specifications and other contract documents. 		
7.4	Hazard and Vulnerability Resolution Verification	<ul style="list-style-type: none"> Describes the process used to ensure that safety and security design criteria and safety and security analysis have effectively identified, categorized and resolved hazard and vulnerabilities to a level acceptable by management. 		
7.5	Operational Readiness Verification	<ul style="list-style-type: none"> Describes the process used to ensure that rules and procedures are developed to effectively incorporate all safety and security requirements specified during design and identified through safety and security analysis. This includes the process to ensure that the project has provided training to personnel and is using qualified and capable operations and maintenance personnel to initiate revenue service. 		
7.6	Safety and Security Certification Requirements	<ul style="list-style-type: none"> Describes the requirements that must be met to deliver final certification that the project is safe and secure for passengers, employees, public safety personnel, and the general public, including individual certificates issued for specific elements to be verified. 		
8.1	Construction safety and Security Program Elements	<ul style="list-style-type: none"> Describes the requirements to be implemented by contractors and reports to be received by the Sponsor's management for implementing and tracking construction safety and security programs and plans. 		

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Safety and Security Management Initial Review Checklist

No.	Checklist Item	Plan Requirements	Document Reference	Comments
8.2	Construction Phase Hazard and Vulnerability Analysis	<ul style="list-style-type: none"> Describes the analyses that must be done to identify and resolve or mitigate hazards or threats and vulnerabilities that may be unique to the construction phase. 		
8.3	Safety and Security Incentives	<ul style="list-style-type: none"> Describes any incentives that may be in place to support implementation of the construction safety and security program. 		
9.1	Activities	<ul style="list-style-type: none"> Identifies the activities that must be performed by the Sponsor to comply with State Safety Oversight Agency (SSOA) requirements implementing 49 CFR Part 659. If the SSOA has authorities that exceed 49 CFR Part 659 minimum requirements, this section must also explain the Sponsor's approach for addressing these additional authorities. 		
9.2	Implementation Schedule	<ul style="list-style-type: none"> Provides an implementation schedule regarding the performance of activities required to meet SSOA requirements. 		
9.3	Coordination Process	<ul style="list-style-type: none"> Describes the processes to be used to communicate and coordinate with the SSOA. Identifies by title and name the Sponsor's primary point of contact working with the SSOA. 		
10.1	Activities	<ul style="list-style-type: none"> Identifies the activities to be performed by Sponsors with projects that propose to share track with one or more FRA-regulated railroads or that will operate on, connected 		

APPENDIX C
Safety and Security Management Initial Review Checklist

No.	Checklist Item	Plan Requirements	Document Reference	Comments
		<p>with, or share a corridor with, the general railroad system.</p> <ul style="list-style-type: none"> • Identifies whether the Sponsor will be requesting waivers from FRA regulations or if they will be complying with them. <ul style="list-style-type: none"> ○ Each FRA regulation must be identified and the Sponsor's activity regarding that regulation must be specified. 		
10.2	Implementation Schedule	<ul style="list-style-type: none"> • Provides a schedule regarding the Sponsor's activities to comply with FRA regulations or to meet requirements for FRA waivers. 		
10.3	Coordination Process	<ul style="list-style-type: none"> • Describes the processes to be used to communicate and coordinate with FRA. • Identifies by title and name the Sponsor's primary point of contact working with FRA. 		
11.1	Activities	<ul style="list-style-type: none"> • Identifies the activities to be performed by Sponsors to meet requirements and programs managed by DHS agencies, including the applicable Security Directives issued by TSA. 		
11.2	Implementation Schedule	<ul style="list-style-type: none"> • Provides a schedule regarding the Sponsor's activities to comply with DHS requirements and programs. 		
11.3	Coordination Process	<ul style="list-style-type: none"> • Describes the processes to be used to communicate and coordinate with DHS. • Identifies the Sponsor's primary point of contact working with DHS. 		

Appendix D - Recurring Oversight and Related Reports

Background

Ongoing and recurring oversight by the Consultant helps DRPT to accomplish its fundamental stewardship role, and provides the Grantee with technical oversight to identify and avoid problems, capture opportunities, and mitigate risks. The Consultant obtains important information in the course of overseeing the Project related to the design, and construction of the Project, as well as the Grantee's ability to implement the Project. As part of ongoing monitoring, the Consultant is expected to proactively work with the Grantee and offer alternative approaches and suggestions to problems. The Consultant shall remain mindful that the Grantee retains full responsibility for the means/methods for delivery of the Project. The Consultant is expected to transmit information to DRPT and keep DRPT informed of findings, Project status, issues of concern, and recommendations for action. The reporting function of the Consultant allows DRPT to make proper and timely decisions regarding Project advancement and funding.

Scope

Meetings

Consultant will be required to hold meetings with the Grantee based on the Project's activity level, which are typically monthly and/or quarterly. The Consultant is encouraged to recommend adjustments to the meeting's frequency as the activity level changes.

The Consultant should assess the status of the Project, including challenges, upcoming events, milestones passed, etc. and should be proactive in its oversight role. Through investigation and dialogue with the Grantee, the Consultant should provide suggestions and recommendations to assist DRPT in solving any issues, as well as offer professional opinions based on its observations, knowledge, experience, etc.

The information collected, findings, Consultant's analysis, recommendations, and professional opinions should be reflected in the Consultant's report so the report supports and assists in the oversight activity. The Consultant's report allows DRPT to take actions and make decisions in a timely manner.

Within 24 hours after the Consultant's meeting with the Grantee, the Consultant shall provide a brief email to DRPT with its assessment of the Project, as well as Project update and any issues in bullet format.

Quarterly Comprehensive Report

Draft Quarterly Comprehensive Reports are due no later than the 15th of the month following the reporting period end date and Final Quarterly Comprehensive Reports are due no later than the 25th of the month following the reporting period end date. The length of the Quarterly Comprehensive Report shall be a maximum of 20 pages, excluding the appendices. The Quarterly Comprehensive Report shall contain the following items:

1. Cover Page
2. Executive Summary: The Executive Summary shall be succinct and contain information that is of interest to DRPT executive staff/upper management. It should brief the reader in a clear, concise manner on the status of the Project for the subject month, including any major issues impacting the Project's scope, schedule, budget, safety, and quality. This section shall not be more than three pages long and should include the following information:
 - a. Project description (one paragraph)
 - b. Project status: In bullet format, provide a status update on significant Project activities and/or key milestones for the subject month. These activities shall be updated on a monthly basis and removed upon completion or resolution. Only highlight the critical Project aspects and most important current information from the body of the report.
 - c. Core accountability information
 - 1) Cost
 - a) Original (baseline) total Project cost (if FFGA or SSGA, cost indicated in agreement)
 - b) Current total Project cost
 - c) Percent complete in terms of expenditures to date
 - d) Percent complete in terms of earned value based on cost
 - 2) Schedule
 - a) Original Project revenue service date (if FFGA or SSGA, date indicated in agreement)
 - b) Forecast (current) Project revenue service date
 - c) Percent complete in terms of time expended to date
 - d) Percent complete in terms of earned value based on schedule
 - 3) Contingency - Original unallocated contingency
 - a) Current (remaining) unallocated contingency
 - b) Original total contingency
 - c) Current (remaining) total contingency
 - d. Major problems and/or issues: Discuss any major issues impacting the Project's scope, schedule, budget, safety, and/or quality. If there are no major issues, then state this in the report. Issues raised here should be significant issues of concern having an impact on the Project's implementation that should be brought to the DRPT's attention, with the Consultant providing its opinion and any recommendations. In addition, address whether or not the Grantee is taking action to resolve the issues in an appropriate manner and if the Grantee's actions are in conformance with the approved PMP.
3. Table of Contents
4. Body of Report: The report should not include, or at least should minimize, historical Project information. If there is no change on a particular item from the previous month's report, then indicate this in the report.
 - a. Project Status – For each item below, provide a status update, observations, issues/concerns, and recommendations. One or two photos may also be

included to better convey an issue or key milestone activity.

- 1) Design (by contract, if multiple contracts)
 - 2) Construction (by contract, if multiple contracts)
 - 3) Vehicles (if applicable)
 - 4) Real estate acquisition (if applicable)
 - 5) Third party agreements and coordination (i.e., railroad, utilities, other agencies, etc.)
 - 6) Environmental mitigation measures
- b. PMP and Sub-Plans – Include discussion on the status of the Grantee’s PMP and sub-plans (i.e., under development, under review, or approved/accepted). In addition, verify that the Grantee is following the procedures and practices established in the PMP and sub-plans.
- c. Project MCC – Through the Consultant’s observations and discussions with the Grantee, as well as its review of the PMP and sub-plans, the Consultant shall determine if the Grantee has the MCC to sufficiently complete the Project and compliance with all applicable statutes, regulations, circulars, and technical standards.
- d. Project Cost
- 1) Table showing original budget, current budget, expenditures to date, earned value, and estimate to complete by Standard Cost Codes (SCC) for the subject month
 - 2) Explanation of variances between planned and actual costs to date
 - 3) Discussion of funding sources
- e. Project Schedule
- 1) Table showing key milestone dates – planned and actual
 - 2) Explanation of variances between baseline schedule and current schedule
 - 3) 90-day look ahead of important activities by the Grantee, DRPT, and the Consultant
 - 4) Critical and near critical paths, as well as provide explanation for changes in critical path from previous month and recommended Grantee actions to recover time
- f. QA/QC – This section shall discuss the Consultant’s observations, issues/concerns, and recommendations with regard to QA/QC, as well as any scheduled audits, audit results, non-compliances, etc.
- g. Safety and Security – This section shall discuss the Consultant’s observations, issues/concerns and recommendations with regard to safety and security activities.
- 1) Hazard Analysis and Threat and Vulnerability Analysis results
 - 2) Development of Safety and Security Design Criteria
 - 3) Certifiable Elements and Items List (CEs and CILs)
 - 4) Design Criteria Conformance
 - 5) Construction Specification Conformance
 - 6) Construction Safety and Security Plan
 - 7) Safety and Security Review Committees

- 8) Safety and Security Involvement in Change Order Process
 - 9) Testing and Start Up
 - 10) Operational readiness SSOA coordination
 - 11) Federal Railroad Administration (FRA) coordination, if applicable.
5. Project Risk: Discuss Grantee’s status of risk management, including treatment of risks and related mitigation actions, as well as contingencies.
 6. Action Item Table
 7. Appendices
 - a. List of Acronyms – This list should reference basic acronyms found in the report. Each acronym should be fully spelled out the first time it is used in the report.
 - b. Safety and Security Checklist – Include on a quarterly basis, or more frequently if updated prior to scheduled quarterly submission, or at the request of DRPT.
 - c. Project Map – This is a one-time submission. Thereafter, only include in monthly report if the map has changed, or at the request of DRPT.
 - d. Top 10 Project Risks – Include on a quarterly basis, or more frequently if updated prior to scheduled quarterly submission, or at the request of DRPT.

Mini-Monthly Report

The Mini Monthly Report provides a streamlined process of reporting updates in a more timely way. This report will be developed for the first two months of every calendar quarter. The third month requires a “Quarterly Comprehensive Report” as described above. The “Mini” report should follow the outline for the Comprehensive Monthly described above; however, with the exception of the Executive Summary and the Project Overview, the Consultant should include only those sections in the body of the report necessary to inform DRPT of the most critical Project occurrences, issues, and next steps, as well as professional opinions and recommendations. Draft Mini-Monthly reports are due no later than 10 days following the end of the month and Final Mini-Monthly reports are due no later than 15 days following the end of the month. Mini-Monthly reports should be no more than ten pages long.

Quarterly Meetings and Supporting Meeting Notes

DRPT, the Consultant, and Grantee will typically meet on a quarterly basis to conduct a thorough review of Project scope, schedule, budget and risks. The Quarterly Meeting also allows DRPT and Grantee executive management the means to accelerate the resolution of Project issues and support the Project moving forward.

Prior to the meeting, the Consultant coordinates with DRPT to set the meeting date. In addition, the Consultant will assist in preparing the meeting’s agenda and conducting the meeting. The agenda should be tailored to the specific needs of the Project, and include issues that require executive management direction. Prior to the Quarterly Meeting, Consultant will meet with DRPT staff to brief them on the agenda items and major issues of concern.

The Consultant shall take meeting notes that will serve as the official record of the meeting. The notes should completely capture the discussion. It should also include prior and current action items with the responsible party identified, as well as the sign-in sheet of meeting

attendees. Draft Quarterly Meeting notes are due 10 calendar days from the date of the meeting and the final notes 15 calendar days from meeting.

Special Meetings

When conducting or attending special meetings or site visits (i.e., visits to vehicle manufacturing facilities, etc.), the Consultant shall prepare a separate report which summarizes the items discussed and should be no more than seven pages long. Reports for special meetings are due no later than 10 days following the special meeting or site visit.

Deliverables

The Consultant shall provide DRPT with written reports of its findings, analysis, recommendations, professional opinions, and a description of the review activities undertaken. The report should be written succinctly and not include extraneous information not pertinent to the review.

Distribution of Reports

The following is the sequence for distribution of the Consultant's reports and meeting notes:

1. Draft report or meeting notes - one copy to the following individuals:
 - DRPT Project Manager
 - Grantee (at discretion of the DRPT)

2. Final report or meeting notes - upon the incorporation of the DRPT's comments (and, if applicable, the Grantee's), the Consultant shall submit one copy to the following individuals:
 - DRPT Project Manager

Note that at the discretion of DRPT, the Consultant may provide the draft monthly report or meeting notes to the Grantee for review at the same time it is submitted to DRPT. This review by the Grantee is only to review the facts presented in the Consultant's report for accuracy, not the Consultant's assessment of the Project.

Upon DRPT's submission of the Consultant's final version of the monthly report or meeting notes to the Grantee, if differences of opinion exist between the Consultant and Grantee regarding the Consultant's findings, DRPT may direct the Consultant to reconcile with the Grantee. The Consultant should then submit to DRPT an amended report that highlights the modifications within 15 calendar days of such reconciliation.

Report Submission Due Dates

Below are the typical due dates for the various Consultant's reports discussed in this Appendix. Note that these due dates may be modified by DRPT.

1. Monthly reports
 - Draft trip reports are due 10 calendar days from the meeting and the final trip report 15 calendar days from meeting. Within 24 hours after the Consultant's meeting with the

Grantee, via a brief email, the Consultant shall provide to DRPT its assessment of the Project, as well as Project update and any issues in bullet format.

2. Quarterly meeting notes

Draft Quarterly Meeting notes are due 10 calendar days from the date of the meeting and the final notes are due 15 calendar days from the date of the meeting.

3. Trip reports

Draft trip reports are due seven calendar days from the meeting and final trip reports are due 10 calendar days from the meeting.

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Appendix E - Capital Cost Estimate Review

Objectives

DRPT's objective is to assess the consistency of cost estimating information, understand its characteristics, evaluate the methodologies, and confirm that the estimate adequately reflects the overall Project scope, the estimated quantities shown on the design documents, the anticipated market conditions, the risk elements associated with the Project, and the Project schedule. A cost or cost range is established as a base from which future estimates are measured. Later, when contract packages are conceived, the Consultant will evaluate the estimates in the packages. The review results should help the Grantee with decisions regarding the level of cost control measures, appropriateness and reasonableness of contingency provisions, and mitigations required.

Grantee Submittals

The Consultant shall obtain and study the Grantee's current cost information and provide the following:

- Summary of O&M Cost Assumptions/Productivities
- Capital cost estimate in original and SCC format, as applicable
- Capital cost estimate backup data (take-offs, cut sheets, work breakdown structure, calculations, and recapitulation) for the purpose of traceability or mapping
- Capital cost estimating methodology memo
- Assumptions used for all escalation and contingency (allocated, unallocated, and hidden or latent) provisions

In addition, the Consultant shall obtain and study the Project environmental documents, Project drawings, specifications, narratives, design criteria reports, Project schedule, information on land acquisitions and relocations, and procurement of vehicles, material, and equipment.

Scope

The Consultant shall assess and evaluate the Grantee's estimate and its plan for cost control. Consider the adequacy of the Grantee's Project control staff, systems and software for the size and complexity of the Project. Validate the usefulness of the estimate as a Project management tool, consider the level of definition of the estimate and elements within the schedule for appropriateness to the Project phase; identify cost uncertainties, and issues with the Project estimate mechanical soundness, and fundamental and reasonable soundness.

The Consultant shall review the Grantee's cost control including internal procedures and estimate reviews. The Consultant shall consider the timing and adequacy of such reviews to determine if the schedule is sufficiently developed, properly maintained, and consistent with the progress of the Project. The Consultant shall review the Grantee's processes and procedures for developing, monitoring and changing the estimate, including approvals if a significant change in the Revenue Service Date is required. The Consultant should additionally

determine if the Grantee has a formalized Configuration Management process that controls baseline budget and any re-baselining controls for cost revisions.

The Consultant shall provide recommendations to improve the development and implementation of cost management and proactively help the Grantee solve cost problems. In a report, the Consultant shall document its findings, professional opinions and recommendations.

The Consultant shall:

1. Evaluate the Grantee's development and implementation of the following cost management components:
 - a. Project control organizational structure – includes the Grantee's staff combined with the potential blending of other Consultant Project controls staff for all Project phases
 - b. Project control systems, tools and software used
 - c. Review of Project control plans, procedures, and cost management contractual requirements
2. Conduct a technical estimate review including:
 - a. Mechanical Soundness check
 - b. Fundamental and Reasonable Soundness check

The Consultant shall provide a written comparison of the proposed estimate with similar project(s) and analyze the differences. To the extent possible, in the Project's early stages, the Consultant shall use the cost data base for comparison purposes. The Consultant should then draw conclusions and provide recommendations based on this comparison, if applicable.

The Grantee should have a review process for its own cost estimate and be continually monitoring and updating its estimate using said process. The Consultant should review the Grantee's approach to this task for adequacy and timing. Checks may be in the form of peer reviews and/or independent cost estimates or internal reviews that ensure the estimate provided to the Consultant for DRPT's review is, at a minimum, internally consistent, coordinated, and reflects current assumptions and Project status.

The Consultant should perform any or all of the following after discussing the selection with DRPT staff:

- A full Project level cost characterization
- A limited cost element review
- Development of a cost estimate baseline
- Specialized quantitative cost modeling or assessments, surveillance reporting or trends analysis
- Reevaluation of Project cost information on a periodic or event driven basis
- Coordination of the cost estimate with the Project scope and schedule
- Coordination of the cost estimate with any known risk elements worthy of forecast adjustments
- Presentation to the Grantee of findings, analysis, recommendations, and opinions

- Participation in a workshop with the Grantee to discuss the Project

After briefly evaluating the Grantee's submittals associated with their current Cost Estimate (and discussing it with them), the Consultant shall propose to DRPT an approach to reviewing the Grantee's cost estimate that, regardless of the level of development of the estimate, will provide DRPT will reliable findings and recommendations. The Consultant's proposed approach should be commensurate with the level of development of the Grantee's Cost Estimate, which typically becomes more detailed as design progresses. In addition, depending on the Grantee's chosen Project Delivery method(s), the Consultant may need to structure the proposed approach for reviewing the Grantee's cost estimate to be appropriate for the planned delivery method(s) (i.e. Design-Build, Construction Manager-General Contractor (GM-GC), or other hybrid approaches might necessitate different and refined techniques for evaluating the Grantee's cost estimate). Further, the Grantee's cost estimating techniques and methodologies are often different based on the size of the Project (from an overall projected cost standpoint), complexities, number of anticipated contract packages, and other factors. As such, in proposing an appropriate and reasonable approach to reviewing the Grantee's Cost Estimate, the Consultant should consciously consider the stage of Project development, the methodology and degree of development of the Grantee's cost estimate, and the size, complexities, and circumstances surrounding the Project being evaluated. The proposal should include a description of the level of sampling of the estimate line items, and, if possible, examples of a sampling approach taken from a previous project(s). The plan shall also identify the sources of comparable data to be reviewed including third parties, market indices, other projects or databases, schedule options, etc.

The Consultant should check that the cost estimate is:

- Mechanically correct and complete and free of any material inaccuracies or incomplete data
- Consistent with relevant, identifiable industry or engineering practices
- Consistent and reasonable approach taken and format used by the Grantee's cost estimators
- Consistent and reasonable methods of calculation/application of multipliers for escalation, inflation, general conditions, contingencies, cost of money, and taxes.
- Consistent with the Project scope described in design documents
- Organized into SCC cost accounts categories, as applicable.
- Consistent with the current Project schedule

Deliverables

The Consultant shall provide DRPT with a written report of its findings, analysis, recommendations, professional opinions, and a description of the review activities undertaken. The report should be written succinctly and not include extraneous information not pertinent to the review. After DRPT review and approval, the Consultant should share the report with the Grantee. In the event that differences of opinion exist between the Consultant and the Grantee regarding the Consultant's findings, the DRPT may direct the Consultant to reconcile with the

Grantee and provide DRPT with a report addendum covering the agreed modifications by the Grantee and Consultant.

Appendix F - Project Schedule Review

Objectives

DRPT's objective is to determine whether the Grantee's schedule management and Project schedule are sufficient to plan and control the Project time at the programmatic and contract level and complement the management of scope, cost and risk. Design-Bid-Build, Design-Build and other delivery methods are applicable to the Project.

Grantee Submittals

In advance of performing the review, the Consultant shall meet with the Grantee and its staff and consultants, discuss the purpose of the review, and obtain information as required, including but not limited to:

- Basis of Schedule
- Description of the Project control organization, schedule development, and control process and procedures
- CPM specifications or contractual requirements (if available)
- Latest schedules in electronic format – both PDF and native scheduling software
- Supporting scope and cost information

Scope

DRPT may request that the Consultant monitor the Grantee's compliance with schedule elements of the PMP and its sub plans during construction, monitor for risks to the schedule, including float levels, and monitor the Grantee's organization for appropriate scheduling capacity and capability.

The Consultant shall (1) assess and evaluate the Grantee's schedule and its plan for schedule control; (2) consider the adequacy of the Grantee's Project control staff, systems and software for the size and complexity of the Project; (3) validate the usefulness of the schedule as a Project management tool; (4) consider the level of definition of the schedule and elements within the schedule for appropriateness to the Project phase; (5) identify schedule uncertainties, and issues with the Project schedule mechanical soundness, and fundamental and reasonable soundness.

The Consultant shall review the Grantee's schedule control including internal procedures and schedule reviews. Consider the timing and adequacy of such reviews to determine if the schedule is sufficiently developed, properly maintained, and consistent with the progress of the Project. Review the Grantee's processes and procedures for developing, monitoring and changing the schedule, including approvals if a significant change in the Revenue Service Date is required. The Consultant should additionally determine if the Grantee has a formalized Configuration Management process that controls baseline schedule and any re-baselining controls for schedule revisions.

The Consultant shall provide recommendations to improve the development and implementation of schedule management and proactively help the Grantee solve schedule

problems. In a report, the Consultant shall document its findings, professional opinions and recommendations.

The Consultant shall:

1. Evaluate the Grantee's development and implementation of the following schedule management components:
 - a. Project Control Organizational Structure (Capacity and Capability) – Includes the Grantee's staff combined with the potential blending of other Consultant Project controls staff for all Project phases
 - b. Project control systems, tools and software used
 - c. Review of Project control plans, procedures, and schedule management contractual requirements
 - d. Review of the work breakdown structure (WBS) to assure all critical Project scope components are included in the WBS
2. Conduct a Technical Schedule Review
 - a. Assure consistency with scope and WBS
 - b. Soundness Check: Mechanically correct and fundamentally and reasonably sound
 - i. WBS properly structured and consistent with scope and cost
 - ii. Proper calendars are incorporated into the schedule
 - iii. Complete list of activities which captures the scope
 - iv. Proper durations applied to activities, along with their proper calendars
 - v. Complete logic network developed, including proper logic ties, minimal use of lags,
 - vi. Float values and late start and finish dates are reasonable and make intuitive sense
 - vii. Critical path is identifiable, logical and reasonable
 - viii. Secondary critical paths are identifiable, logical and reasonable
 - ix. Costs are applied to the schedule, incorporating the SCC cost accounts, as applicable

The Consultant shall provide a written comparison of the proposed schedule with similar project(s) and analyze the differences. The Consultant shall draw conclusions and provide recommendations based on this comparison.

The schedule shall be developed in sufficient detail to determine the validity of the Project critical path to revenue service. The Project schedule level of detail should be commensurate with the level of detail depicted in the current Project phase scoping documents and drawings. Likewise the Schedule Review effort should also be commensurate with the current Project phase and schedule level of detail. Project schedules developed during the Project development and engineering may contain summary level representation for long lead procurement items, bid and award, construction and systems integration, startup and testing, and contract closeout tasks and therefore some of the Schedule Review topics below may not be applicable as noted.

The Consultant shall perform a review of the schedule contingency to ensure that appropriate hold points are included and sufficient contingency time is in the schedule commensurate with the stage of Project development.

Deliverables

The Consultant shall provide DRPT with a written report of its findings, analysis, recommendations, and professional opinions, including a description of the review activities undertaken, as well as supporting diagrams, calculations, etc. The report should be written succinctly and not include extraneous information not pertinent to the review. After DRPT approval, the Consultant may share the report with the Grantee. In the event that differences of opinion exist between the Consultant and the Grantee regarding the Consultant’s findings, DRPT may direct the Consultant to reconcile with the Grantee and provide DRPT with a report addendum covering the agreed modifications by the Grantee and Consultant.

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Appendix G - Americans with Disabilities Act Review

Purpose

The Consultant will review the Grantee's documents for ADA compliance according to federal and state laws.

Scope

ADA Standards for Accessible Design

The U.S. Department of Justice's revised regulations for Title II (28 C.F.R. pt. 35) and Title III (28 C.F.R. pt. 36) of the Americans with Disabilities Act of 1990 (ADA) adopted revised, enforceable accessibility standards called the **2010 ADA Standards for Accessible Design**, "2010 Standards." On March 15, 2012, compliance with the 2010 Standards was required for new construction and alterations under Titles II and III, while also including program accessibility and barrier removal. The 2010 Standards provide the scoping and technical requirements.

The U.S. Department of Justice has also compiled **Guidance on the 2010 Standards**. This explanatory information from the regulations addresses the scoping and technical provisions of the 2010 Standards.

The ADA Standards can be found at the following website link:

http://www.ada.gov/2010ADASTandards_index.htm

Deliverables

The Consultant shall provide DRPT with written materials fulfilling the requirements above. The report should be written succinctly and not include extraneous information not pertinent to the review. When applicable, the report formatting requirements of the FTA oversight procedures apply. When necessary, perform data analysis and develop data models that meet DRPT requirements using Microsoft Office products such as Excel and Word and use FTA-templates when provided. The Consultant may add other software as required but documentation and report data shall be made available to DRPT.

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Appendix H1 - Rail Vehicle Technical Review (If add-on to other Transit Agency's Vehicle Order)

Purpose

The purpose is to describe the review, analysis, and recommended procedures and reporting requirements that DRPT expects from the Consultant as regards the Grantees' procurements of rail vehicles. The review should ensure that the vehicles being procured follow a process that ensure it will:

- Undergo safety certification
- Meet the specified requirements
- Include the most appropriate technologies
- Conform to applicable State and Federal requirements

For all but the smallest procurements, reviews should be performed of 1) design, manufacturing and testing, and 2) acceptance, commissioning, and readiness for Revenue Service processes.

Scope

In performance of the reviews below, the Consultant should report discrepancies and make suggestions for correction as appropriate. The Consultant should then follow up and report on the corrective actions taken by the Grantee. The Consultant should pay particular attention to those issues which may be identified in each stage of the procurement process, including:

- Schedule, issues potentially impacting schedule, and issues actually impacting schedule
- Vehicle quality and safety issues
- Vehicle reliability, availability and maintainability
- Issues impacting vehicle operability
- Faulty or unreliable vehicle designs or systems
- Known component or material deficiencies and availability of replacement parts
- Other, such as payments to vendors (slow or no payments), commonality / compatibility with the existing vehicles, interface issues with other elements of the transit system

Design, Manufacturing and Testing

As part of the review of the design, manufacturing and testing process, the Consultant should review the Grantee's management of and processes for review and approval of the vehicle manufacturer's design, production schedule, materials, subsystems, vendors, QA/QC plans and inspection forms, hold points for Grantee inspections/approvals, First Article Inspection (FAI) procedures and schedule, vehicle history book development, Contract Document Requirements List (CDRL) submission and approval, and the verification of adherence to safety, security, Buy America Audit (if applicable), and ADA requirements. In addition, for rail vehicles, the Consultant should conduct periodic reviews and oversight of the interface coordination between vehicle design and train control, traction power, communication, track, wayside and related systems design. The Consultant should also review and provide oversight of the Grantee's management of, and processes for review and approval of the vehicle manufacturer's

qualification and production conformance test plans (including static and dynamic testing), execution of those plans, handling of non-compliant test results, retesting, and acceptance of the vehicle structure, interior, propulsion and braking systems, doors, and all other vehicle systems.

The Consultant shall review the CDRLs to determine whether they address all of the characteristics to be demonstrated through analysis and testing including proof of design, maintainability, operability, safety, serviceability, and reliability. The Consultant must closely monitor the configuration controls and management to enable ongoing and timely procurement updates and schedule performance.

The Consultant shall review the test program plan and supporting analysis and testing information to ensure the vehicle and its systems are integrated per specifications, including with the vehicle operating environment elements. The Consultant must assure that, between test and analysis, the supplier will demonstrate full compliance with the Grantee's design specification.

The Consultant shall review and monitor the Grantee's final Buy America Audit, if applicable.

The Consultant shall review the Grantee's QA plan to ensure the vehicle manufacturer and suppliers' QA/QC will be performed under adequate surveillance.

Acceptance, Commissioning and Readiness for Revenue Service

At this final stage of the vehicle procurement process, the Consultant should review acceptance and commissioning activities and provide oversight related to Grantee's planned management of and processes for receipt of vehicles, static and dynamic (on site) qualification/acceptance testing plans and procedures, identification process for needed modifications and modification management process, systems integration and interface compatibility testing (integrated testing) with civil infrastructure and wayside systems, commissioning and start-up operations testing (including pre-revenue), acceptance and stocking of spare parts, vehicle manufacturer and vendor manuals and training delivery, conditional and final acceptance requirements, warranty management, delivery of Vehicle History Books, and safety and security certification of each vehicle.

The Consultant shall review the qualification and production conformance test plans to determine whether they address all of the characteristics to be demonstrated through analysis and testing including proof of design, maintainability, operability, safety, serviceability, and reliability. The Consultant must closely monitor the integrated testing process to ensure delivery of a fully functioning transit system within the scope of the Project definition.

The Consultant shall review the vehicle manuals and training programs to ensure the Grantee's preparedness to place vehicles into revenue service.

The Consultant shall review the safety and security certification process for all vehicles to ensure compliance with the Safety and Security Implementation Plan and the addressing of all identified items on the CIL.

Deliverables

The Consultant shall provide DRPT with written reports of findings, analysis, recommendations, professional opinions, and a description of the review activities undertaken. The report should be written succinctly and not include extraneous information not pertinent to the review. After DRPT approval, the Consultant should share reports with the Grantee. In the event that differences of opinion exist between the Consultant and the Grantee regarding the Consultant’s findings, DRPT may direct the Consultant to reconcile with the Grantee and provide DRPT with a report addendum covering the agreed modifications by the Grantee and Consultant.

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Appendix H2 - Rail Vehicle Technical Review (If independent Vehicle Order solely by HRT)

Purpose

The purpose is to describe the review, analysis, and recommended procedures and reporting requirements that DRPT expects from the Consultant as regards the Grantee's procurements of rail vehicles. The review should ensure that the vehicles being procured:

- Are a good fit for the intended use
- Represent good value for the product selected
- Undergo safety certification
- Meet the specified requirements
- Include the most appropriate technologies
- Conform to applicable State and Federal Requirements

For all but the smallest procurements, reviews should be performed at definitive stages of the procurement: 1) planning and solicitation, 2) vendor selection, 3) design, manufacturing and testing, 4) acceptance, commissioning, and readiness for revenue service processes. It is important to evaluate the Grantee's MCC to be able to successfully manage these processes within stated cost and schedule constraints while meeting the intent of the Project scope.

Scope

In performance of the reviews below, the Consultant should report discrepancies and make suggestions for correction as appropriate. The Consultant should then follow up and report on the corrective actions taken by the Grantee. The Consultant should pay particular attention to those issues which may be identified in each stage of the procurement process.

- Cost - issues impacting cost as related to the use of technology, deviation from industry accepted designs, contract packaging, and specification enforcement
- Schedule, issues potentially impacting schedule, and issues actually impacting schedule;
- Vehicle quality and safety issues
- Vehicle reliability, availability and maintainability
- Issues impacting vehicle operability
- Faulty or unreliable vehicle designs or systems
- Known component or material deficiencies and availability of replacement parts
- Other, such as payments to vendors (slow or no payments), commonality/compatibility with existing vehicles, and interface issues with other elements of the transit system

Planning and Solicitation

At this stage of the process, the Consultant should review concerns resulting from the NEPA process and the Engineering phase. The Consultant must also review the portions of the procurement process leading up to vendor selection using Invitation for Bid (IFB) or two-step procurement or Best Value procurement using competitive negotiations. The review would include environmental documents, Project description – grant application, technical specifications, any proposed Contract Document Requirement Lists (CDRL), test program plans,

design drawings and design criteria, quality assurance requirements, technology assessments, Requests for Expressions of Interest (RFEI), related Environmental Impact Statements (EIS), contract terms and conditions (general conditions, special provisions, compensation provisions, sample contracts, bid forms, Contractor questionnaires), Requests for Proposals (RFP), source selection procedure, Invitation for Bid (IFB), instructions to proposers, minutes of pre-proposal conferences, or any other documentation that ensures appropriate technological and financially responsible procurement of rolling stock.

The Consultant should evaluate the above documentation and process for impacts as identified above. In this effort, the Consultant shall:

- Confirm that the intended vehicle does not potentially conflict with statements in the environmental documents.
- Review the design documents.
- Consider how well the proposed vehicle fulfills the Grantee's stated purpose of the Project and complies with applicable statutes and regulations.
- Consider operational requirements, cost to procure vehicles, maintenance intentions, and prospects for follow-on procurements.
- Review the RFP or Bid package and solicitation and evaluation process including vehicle specification and terms and conditions.

Vendor Selection

At this stage of the process, the Consultant should review the vendor selection process including review of Contractor Proposals, completed Contractor questionnaires, any best and final offers, proposal evaluations process, completed price proposal (or bid) forms, proposal questions and responses, pre-award site survey(s), pre-award Buy America audit or any other documentation that ensures appropriate technologically and financially responsible procurement of rolling stock.

The Consultant should evaluate the above documentation and process for impacts as identified above and to:

- a) determine that the selected vendor meets the qualification requirements
- b) ensure the integrity of the proposal evaluation criteria and process
- c) monitor the contract negotiation process and agreed terms
- d) assure that the contract vehicle options meet the Grantee's needs
- e) verify that a Pre-Award Buy America audit is compliant
- f) monitor any Post-award, Pre-initial Notice to Proceed (NTP) Conference

Design, Manufacturing and Testing

As part of the review of the Design, Manufacturing and Testing process, the Consultant shall review the Grantee's management of, and processes for, review and approval of the vehicle manufacturer's design, production schedule, materials, subsystems, vendors, QA/QC plans and inspection forms, hold points for the Grantee inspections/approvals, FAI procedures and schedule, vehicle history book development, CDRL submission and approval, and the verification of adherence to safety, security, Buy America audit if applicable, and ADA

requirements. In addition, for rail vehicles, the Consultant should conduct periodic reviews and oversight of the interface coordination between vehicle design and train control, traction power, communication, track, wayside and related systems design. The Consultant should also review and provide oversight of the Grantee's management of, and processes for, review and approval of the vehicle manufacturer's qualification and production conformance test plans (including static and dynamic testing), execution of those plans, handling of non-compliant test results, retesting, and acceptance of the vehicle structure, interior, propulsion and braking systems, doors, and all other vehicle systems.

The Consultant shall review the CDRLs to determine whether they address all of the characteristics to be demonstrated through analysis and testing including proof of design, maintainability, operability, safety, serviceability, and reliability. The Consultant must closely monitor the configuration controls and management to enable ongoing and timely procurement updates and schedule performance.

The Consultant shall review the Test Program Plan and supporting analysis and testing information to ensure the vehicle and its systems are integrated per specifications, including with the vehicle operating environment elements. The Consultant must assure that, between test and analysis, the supplier will demonstrate full compliance with the Grantee's design specification.

The Consultant shall review and monitor the Grantee's final Buy America Audit, if applicable.

The Consultant shall review the Grantee's QA plan to ensure the vehicle manufacturer and suppliers' QA/QC will be performed under adequate surveillance.

Acceptance, Commissioning and Readiness for Revenue Service

At this final stage of the vehicle procurement process, the Consultant should review acceptance and commissioning activities and provide oversight related to the Grantee's planned management of, and processes for, receipt of vehicles, static and dynamic (on site) qualification/acceptance testing plans and procedures, identification process for needed modifications and modification management process, systems integration and interface compatibility testing (integrated testing) with civil infrastructure and wayside systems, commissioning and start-up operations testing (including pre-revenue), acceptance and stocking of spare parts, vehicle manufacturer and vendor manuals and training delivery, conditional and final acceptance requirements, warranty management, delivery of Vehicle History Books, and safety and security certification of each vehicle.

The Consultant shall review the qualification and production conformance test plans to determine whether they address all of the characteristics to be demonstrated through analysis and testing including proof of design, maintainability, operability, safety, serviceability, and reliability. The Consultant must closely monitor the integrated testing process to ensure delivery of a fully functioning transit system within the scope of the Project definition.

The Consultant shall review the vehicle manuals and training programs to ensure the Grantee's preparedness to place vehicles into revenue service.

The Consultant shall review the Safety and Security Certification process for all vehicles to ensure compliance to the Safety and Security Implementation Plan and the addressing of all identified items on the CIL.

Deliverables

The Consultant shall provide DRPT with written reports of findings, analysis, recommendations, professional opinions, and a description of the review activities undertaken. The report should be written succinctly and not include extraneous information not pertinent to the review. After DRPT approval, the Consultant should share reports with the Grantee. In the event that differences of opinion exist between the Consultant and the Grantee regarding the Consultant's findings, DRPT may direct the Consultant to reconcile with the Grantee and provide DRPT with a report addendum covering the agreed modifications by the Grantee and Consultant.

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Appendix I - Risk and Contingency Review

Background

The reliability of the Grantee's Project scope, cost estimate, and schedule over the course of the Project life is extremely important. Professional risk management provides the basis for improving the reliability of Project delivery.

Objectives

This review requires an evaluation of the Grantee's process for development of its Risk and Contingency Management Plan (RCMP), including its identification of uncertainties and risks, assessment of Project risk, and consideration of risk response options and alternatives including the use of cost and schedule contingencies.

Under this review, heavy reliance is placed upon the Grantee's development of its risk and contingency processes, including its own risk assessment and other elements required to fully develop its risk and contingency management plan. To best achieve confidence in these Grantee-led plans, the Consultant is highly encouraged to participate in the Grantee's internal risk workshops, or other workshops that demonstrate the Grantee's planning and methods for dealing with risk.

Scope

The scope of this review includes evaluation and recommendations regarding the Grantee's Project risk identification and assessment, mitigation recommendations, and contingency assessment, as reflected in its RCMP, where available. If necessary and upon significant findings of concern, DRPT may require the Consultant to independently develop other review products to provide a thorough analysis of the Project.

This risk management review builds upon any review of scope, schedule, cost, and Grantee MCC that may have been previously performed.

Consultant interface with the Grantee during its risk review facilitates and expedites the process and provides the Consultant with the background necessary to recommend revisions, if any, to the Grantee's PMP and Risk and Contingency Management subplan. Where possible, and subject to DRPT approval, the Consultant should encourage the Grantee to involve the Consultant in the processes for development of its risk identification, risk assessment, and risk mitigation.

While the basic goal of the risk review is to identify and quantify uncertainties and their potential impacts on a Project's estimate and schedule, the necessary first step of the risk review is to understand the status and soundness of the Project's basic—and known—elements. These elements (such as scope, design quality, cost estimates, and schedule) serve as the starting points for identifying risks and opportunities. It is, therefore, crucial that these known Project elements be validated or, if necessary, adjusted before attempting to address

the Project's uncertain elements. The Consultant should review and comment upon the Grantee's efforts at such validation of the basic Project elements.

Risk identification plays a significant role in the overall risk management process. Sufficient efforts should be made by the Grantee to ensure that adequate resources and processes have been used to develop a thorough listing of risk events, appropriate to the current Project phase. This "Risk Register" shall include at a minimum a description of the potential risk event; its qualitatively-evaluated potential consequences and likelihood of occurrence; its SCC category (if applicable) and risk category; the contract package in which it falls (where appropriate); a method for prioritizing among risks; and potential actions to mitigate the risk.

Where a Grantee has independently developed a cost-risk assessment, the Consultant shall review the risk assessment submittal and comment as to whether the Grantee has:

- Sufficiently described the individual risks for adequate assessment of the likelihood of occurrence and magnitude of outcome
- Established appropriate risk range and distribution functions for any given individual risk event;
- Adequately modeled Project risk using stochastic (Monte Carlo), risk range, or expected value methods
- Applied appropriate methods to characterize total Project risk if not sufficiently modeled through individual risk eventsd
- Provided a reasonable analysis of model results, sufficient for evaluating sufficiency of budget, contingencies, and secondary mitigations

Where a Grantee has independently developed a schedule risk assessment, the Consultant shall review the assessment submittal and comment whether the Grantee has:

- Sufficiently described the individual risks for adequate assessment of the likelihood of occurrence and magnitude of outcome
- Established appropriate risk distribution functions and duration ranges for the modeled schedule activities
- Adequately modeled schedule risk using stochastic (Monte Carlo), risk range, or expected value methods
- Applied appropriate methods to characterize total Project risk; and
- Provided a reasonable analysis of model results for evaluating sufficiency of schedule and schedule contingencies

The Consultant shall review and make recommendations regarding Grantee risk mitigation plans, as documented in its Risk and Contingency Management Plan - a part of the Project Management Plan. Areas of review and comment shall include the development and management of:

- Primary mitigation
- Secondary mitigation
- Contingencies and contingency draw-down curves

The review and recommendations shall be organized appropriately by mitigation structure (defined below), SCC (if applicable), and risk type. Each mitigation recommendation shall include an indication of the Mitigation Type(s) (defined below) that best describe the mitigation recommendation.

Mitigation structure refers to varying levels by which the Grantee and its consultants and contractors may respond to the risk events identified through the review processes described above. This structure consists of three parts: primary mitigation, secondary mitigation, and contingencies.

Primary mitigation occurs throughout the various Project phases and is the result of the planned actions of the Grantee and its consultants and contractors as described in the Risk Management Plan portion of the PMP, as supplemented with the Consultant's recommendations resulting from this review. Such activities are scheduled at the earliest phase during which the mitigation activity may occur, and are expected to be completed on a timely basis to achieve the cost- and schedule-risk parameter targets at the end of that phase. Examples of mitigation might be completing design, a geotechnical survey, etc.

Secondary mitigation consists of pre-planned, potential scope or process changes that may be triggered when risk events occur that cause overuse of Project contingencies. Example events that may incur secondary mitigation include construction bids that are significantly over the estimate, unexpected geotechnical hazards that are encountered, etc., such that the change is likely to cause a significant over-budget condition. Such "triggered" mitigation enables the Grantee to make cost reductions in a planned and orderly process and preserves contingencies for use later in the Project. Secondary Mitigation is fundamentally different than value engineering, which is a formal, systematic, multi-disciplined process designed to optimize the value of each dollar spent.

Contingencies are set-aside estimated amounts (monetary set-asides for cost and time set-asides for schedule) that are included within the overall cost or schedule targets for the Project. The amounts are to be used to overcome increases in cost or schedule that are due to potential risks, and for which no other mitigation measure is available. These contingency amounts may be associated with a particular activity or category of cost, or may be set aside in a general fund. In most cases, the amount of risk a project experiences reduces as the project progresses toward completion; similarly, it is expected that the amount of contingencies required for a project also decreases over time; however, at no time should the contingency be totally consumed until all project risk is removed - usually only at project completion or beyond.

The Consultant shall ensure that the Grantee's RCMP considers all aspects of potential risk, including MCC, Project performance, cost and schedule risk.

Upon DRPT approval, the Consultant shall make available to the Grantee the assessments and recommendations developed for inclusion in the Grantee's RCMP, a section of the PMP. The

Consultant shall work collaboratively with the Grantee, as the Grantee prepares and/or revises the RCMP section of its PMP to reflect the recommendations and considerations provided by the Consultant.

Post-assessment monitoring by the Consultant is intended to assess the Grantee's performance in risk management and ensure that the Grantee's Project implementation achieves its risk management objectives and targets. The Consultant shall use the Grantee's RCMP, which has been collaboratively amended with the Consultant's recommendations, as its guide for post-risk review monitoring.

Monitoring shall consist of evaluation and reporting of:

- The Grantee's prosecution of the Primary Mitigation action items, including the effectiveness of the action to mitigate the potential risk event and the timeliness of the completion of the action item
- The occurrence of risk events on the Project, whether or not previously identified, and their estimated effect on the Project's cost and schedule goals
- The use of cost and/or schedule contingencies and whether such use threatens minimum levels of contingency required for future phases
- Successful implementation of other major initiatives noted in the RCMP; and
- The effectiveness of the Grantee's organization to fully manage its Risk and Contingency Management Plan

Deliverables

The Consultant shall provide DRPT with a written report of its findings, analysis, recommendations, professional opinions, and a description of the review activities undertaken. The report should be written succinctly and not include extraneous information not pertinent to the review. After DRPT approval, the Consultant should share the report with the Grantee. In the event that differences of opinion exist between the Consultant and the Grantee regarding the Consultant's findings, DRPT may direct the Consultant to reconcile with the Grantee and provide DRPT with a report addendum covering the agreed modifications by the Grantee and Consultant.

The Consultant shall prepare a written report and attach the Grantee's most current cost estimate, schedule, and other related documents. Embed references to, or exhibits from, Grantee's estimate, schedule or other documents to explain the analysis, findings, and recommendations.

Integrate and summarize available information and data for the Project, providing professional opinion, analysis, information, data and descriptive text in an accessible and understandable format. Opinions shall be supported by data tables prepared in a professional manner.

Appendix J - Readiness to Procure a Design-Build Contractor

Purpose

The purpose of this review is to ensure the Grantee has properly planned for a design-build procurement and has all the necessary plans, and specifications to conduct a successful procurement, in accordance with all applicable State and Federal requirements.

Objectives

DRPT review of the Project Grantee's readiness to conduct a design-build procurement helps to ensure:

- The Grantee has developed the design documents to an appropriate level of completion
- The procurement package and supporting documents are complete, accurate, and consistent with the Project scope
- The procurement package is consistent with applicable State and Federal requirements
- The Grantee's cost estimates accurately reflect contractual requirements
- The Grantee has addressed the Project risks identified by implementing mitigation measures to the greatest extent possible
- The Grantee has established a plan for qualification, bid and award that follows accepted best industry practices
- The Grantee has established procedures in place to deal with unexpected procurement issues(e.g., no bids, single bid, unacceptably high bids and protests)
- The Grantee's organization is prepared to successfully manage the contract through procurement, design, construction and start-up

References

The following are the principal, but by no means only, references to applicable legislation, regulation and guidance that the Consultant should review and develop a solid understanding as related to the Grantee's Project being reviewed:

Regulations

- Virginia Public Procurement Act

Guidance

- Pricing Guide for FTA project sponsors,
http://www.fta.dot.gov/documents/Hotline_Price_Guide.doc
- Project and Construction Management Guidelines, 2011 Update

Grantee's Submittals

In advance of performing the review, typically three to six months prior to advertising major bid packages, the Consultant should obtain and study the following Project documents, if not already reviewed. The Consultant should notify DRPT of important discrepancies in the Project information, including incomplete or unavailable information that would hinder the review. An example would be a mismatch between drawings and cost estimate in which the drawings are current and the cost estimate is two years old.

- Scope/Project Definition
 - Design documents
 - Geotechnical report(s)
 - Value Engineering reports
 - Constructability reviews
 - General and supplementary conditions
 - Request for bid or instructions to proposers
- PMP and sub-plans completed, including but not limited to:
 - Signed agreements with railroads, utilities, other third parties
 - Risk assessment, risk and contingency management plan
 - Safety and security management plan (for application to construction)
 - Project delivery plan, contract packaging plan, procurement policies and procedures
 - Grantee MCC
 - Quality assurance/quality control plan and records
- Schedule
 - Project schedule narrative describing critical path, expected durations, and logic
- Cost
 - Capital cost estimate , including basis of the estimate

Scope

Consultant Reviewers:

The quality and usefulness of the review relies in large part on the perception and judgment of the reviewers. Ideally, they should be senior technical managers qualified to actually perform the work being reviewed. Because transit projects are complex and interdisciplinary in nature, the reviewers should have a broad range of knowledge, experience and capabilities. Structural plans should be reviewed by structural engineers; signaling plans should be reviewed by signaling engineers, etc.

Tasks:

This review consists of:

- 1) Confirmation of the readiness for procurement of a complete bid package, including plans, specifications, and contract provisions, and that applicable State and Federal procurement requirements are addressed; and
- 2) Confirmation that the procurement package is consistent with the scope, schedule, and budget established for the Project; confirmation of the readiness of the Grantee's organization with respect to having in place the necessary qualified Project staff; consistent PMPs, procurement and construction management procedures, including project controls procedures; needed interagency, third party, and real estate agreements; and required financial resources. Additionally, that the Grantee has sufficiently addressed the Project risks identified during the risk assessment and mitigated them to the extent possible;

The Consultant readiness report shall include:

- 1) Executive summary in three pages or less that includes the following:
 - a) Summary of findings of the procurement documents related to the Project's scope, schedule, and cost;
 - b) Listing of any significant omissions or uncertainties and characterization of them in terms of likelihood (probable, remote, improbable) and their consequence (catastrophic, critical, serious, moderate, marginal);
 - c) Professional opinion regarding the consistency of the Project scope, schedule and cost and the ability of the Grantee to manage the Project; and
 - d) Recommendation to DRPT (if Consultant considers a recommendation appropriate) of the readiness of the Project (or procurement package) to proceed with bidding (or advertisement).

- 2) Review procedures and personnel (including capsule of reviewer's qualifications. To the extent possible, the reviewers should be the same individuals that performed the prior review of the Project documents, and should be regular participants in Project reviews).

- 3) Readiness of plans and specifications for a design-build procurement, including:
 - a) Design completeness;
 - b) Contract terms and conditions are consistent with applicable state and federal requirements;
 - c) Procurement bid and award process consistent with best industry practices; and

- 4) Cost estimate accurately reflects contractual requirements. Consistency with Project plans:
 - a) Consistent with Project development plans;
 - b) Consistent with PMP;
 - c) Consistent with risk assessment and RCMP;
 - d) Consistent with Project master schedule; and
 - e) Consistency with Project budget.

- 5) Grantee readiness:
 - a) Organization and staffing;
 - b) Third party agreements and Grantee furnished permits; and
 - c) Funding availability.

- 6) Conclusions and recommendations (detailed)

- 7) Provide appropriate back-up information in appendices

Deliverables

The Consultant shall provide DRPT with a written report of its findings, analysis, recommendations, professional opinions, and a description of the review activities undertaken. The report should be written succinctly and not include extraneous information not pertinent

to the review. The report shall identify any and all omissions, discrepancies, shortcomings or fatal flaws. After DRPT approval, the Consultant should share the report with the Grantee. In the event that differences of opinion exist between the Consultant and the Grantee regarding the Consultant's findings, DRPT may direct the Consultant to reconcile its findings with the Grantee and provide DRPT with a report addendum covering the agreed modifications by the Grantee and Consultant.

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Appendix K - Readiness for Revenue Operations

Purpose

The purpose of this review is to evaluate the Grantee's readiness for revenue operations. Readiness to enter revenue operations is the completion of system integration testing (SIT) of Project components, equipment, subassemblies, assemblies, subsystems, and systems; fulfillment of safety and security certification requirements; completion of pre-revenue operations (PRO); and confirmation that the Grantee (or Operator, if different) has the MCC to operate the new transit facility (collectively, this evaluation is referred to as a "Readiness Review").

The Consultant can help the Grantee to avoid "11th hour" testing, untimely surfacing of operational, maintenance and safety problems, and related delays of the revenue service date. Planning for SIT and PRO should start at least 12 months prior to substantial completion of Project construction. These planning activities should include the development of an Operation Hazard Analysis, System Integration Test Plan, PRO Plan, Rail Activation Plan (by committee), availability of all as-built drawing and system documentation and work-arounds. Further, the PMP and referenced sub-plans should be reviewed prior to revenue operations to ensure the processes are sufficient for operations.

Background

Early planning for SIT and PRO training and testing is essential. This avoids public safety concerns associated with conforming to industry standards, standard of care, conformance with contractual requirements, impacts to construction and delays to the revenue service date. All involved stakeholders including safety personnel, operations, maintenance, engineering, construction manager, and the construction contractors should be aware of the testing and PRO processes. Further, the Grantee is responsible for informing the affected community and public of the safety and security concerns associated with the operation of the new transit system. This is essential prior to and during the testing and PRO phase when the facilities represent new and unknown risks to the community, as well as to the workers.

It is important for the Grantee to continually refer to hazard analyses and provide evidence that the hazard resolution process has been implemented, tracked and monitored throughout the Project life cycle. Safety devices, warning devices, updated procedures and rules should all be in place before any train movement is allowed. If such items are outstanding prior to testing, the Grantee must review the hazards and provide detailed workarounds to mitigate these hazards until final resolution. Safety certification should not be left for final approval until just days before a project opens for revenue service.

Testing verifies that all systems, subsystems, components, equipment, and materials conform to the requirements of the contract documents. Successful completion of the PRO testing, certifying, and permitting helps to assure that the transit project will operate and can be maintained as an integrated whole at acceptable levels of safety and security, to the extent

possible in conformance to industry standards, standard of care, and conformance with contractual requirements, for the public at large as well as the work force.

Objectives

The objectives are to generally assess the following:

- All systems, subsystems, components, equipment, and materials furnished and installed conform to the requirements of the contract documents
- The entire transit system, with all interfaces, operates as an integrated whole and is capable of functioning effectively to provide dependable service
- The system is safe for use by patrons to the extent possible in conformance to industry standards, standard of care, and conformance with contractual requirements demonstrated through safety certification
- The system will operate safely through the host communities
- The Operator has demonstrated the MCC to safely operate and maintain the system to the extent possible through hiring sufficient numbers of experienced staff to operate and maintain the new system, and that all employees have been adequately trained and protected

References

The following are the principal, but by no means the only, references to Federal legislation, regulation and guidance that the Consultant should review and develop a solid understanding as related to the Grantee's Project work being reviewed under this contract:

Legislative

- The Moving Ahead for Progress in the 21st Century Act, or MAP-21, Pub. L. No. 112-141, July 6, 2012 or its successor

Regulations

- State Safety Oversight, 49 C.F.R. pt. 659

Guidance

- Project and Construction Management Guidelines, 2011 Update
- Handbook for Transit Safety and Security Certification; Final Report November 2002

Grantee's Submittals

In advance of performing the Readiness Review, the Consultant should obtain and study the following Project documents, if not already reviewed. The Consultant should notify DRPT of important discrepancies in the Project information that would hinder the review. An example would be a mismatch between drawings and actual construction in which the drawings do not reflect field conditions.

Project Documents:

- Scope/Project Definition

- Contract documents (plans and specifications)
- Documentation of changes to scope that have occurred since last milestone
- Operating plan; operating rules
- Applicable standards, codes and regulations
- Project design criteria
- Quality control procedures
- System Integration Testing (SIT)
 - Agency policies related to testing, operations
 - Systems/facilities integration and coordination plan
 - SIT plan
 - Schedule for SIT activities
 - Test procedures signed test reports
- Safety and Security
 - System Safety Program Plan (SSPP)
 - System Emergency Management Plan (SEMP) if not included in SSPP
 - Security and Emergency Preparedness Plan(s) and/or System Security Plan (SPP)
 - Safety and Security Management Plan (SSMP)
 - Safety and Security Certification Plan (SSCP)
 - CIL
 - Preliminary Hazard Analysis (PHA), including updates
 - Threat and Vulnerability Analysis (TVA), including updates
 - Operation Hazard Analysis (OHA)
 - Safety and security related design criteria
- Pre-Revenue Operations
 - Rail Activation Plan (RAP)/ PRO plan
 - Schedule for PRO activities training program
 - Rule book
 - Standard Operating Procedures (SOPs)
 - Public awareness/outreach plan
 - Work-arounds
- MCC
 - PMP and sub-plans
 - Signed agreements with railroads, utilities, other third parties
 - QA/QC plan

Timing of the Process

Ideally, the processes are complementary with the intent of completing the work comfortably in time for revenue operations. Prior to any trains operating on the alignment for PRO, all system safety and security elements or effective work-arounds should be in place.

Depending on the Project's scope and schedule, DRPT and the Consultant may consider conducting the Readiness Review as (1) a single complete review, (2) multiple complete reviews, or (3) multiple partial reviews, as described below:

- a. When conducting a single review that completely addresses the Readiness Review scope, DRPT and the Consultant should schedule the review prior to the start of PRO, typically three to six months prior to the start of revenue operations.
- b. When conducting multiple readiness reviews, with each review completely addressing the Readiness Review scope, these reviews shall be conducted as the SIT and PRO phases progress, and the Project documents and activities are advanced. The Consultant Readiness Review Report shall be revised or updated to reflect the subsequent review findings.
- c. When conducting multiple readiness reviews, with each review partially addressing the Readiness Review scope, the Consultant shall review a limited scope of the Project documents and activities. An example may include conducting the partial Readiness Review to address the SIT activities, then scheduling another review to address the PRO activities, etc., as the Project schedule advances.

The Consultant's exact scope of work for these reviews will compliment and support DRPT's SSO conducted review and activities. This will be further defined when this item is tasked.

Scope

The Consultant shall assess and evaluate the adequacy, soundness, and timeliness of the Grantee's:

- SIT
- Project system safety and security validation
- PRO plan and work-arounds
- MCC

DRPT expects that review activities will be coordinated with other ongoing reviews by the DRPT Office of Safety and Oversight or the SSOA.

The Consultant will continue to provide updates on the Grantee's activities to address the Readiness Review findings and recommendations in monthly reports or as directed.

The Consultant will reference the following FTA guidance documents in completing the Readiness Review:

- Acceptable quality level
- Sample pre-revenue activity flow chart
- Sample rail activation plan table of contents
- Readiness review worksheet

System Integration Testing

SIT validates that all fixed facilities, systems, and equipment perform as intended, both individually and as an overall system when integrated. The process also confirms that all personnel have the MCC to provide safe and dependable service, and that emergency drills have been completed prior to revenue operations.

For a well-managed project, SIT is integrated into the project master schedule with time-phased activities showing the inter-dependencies between various activities and project milestones.

The tests should conform to the following sequence:

- Design Completions. All design affecting the respective equipment or work must have been approved prior to the start of any test. Exceptions determined by design conformance reviews should be documented and mitigated as applicable.
- Inspection. All equipment, devices, and materials must be inspected for compliance to contractual requirements before commencement of any test. Exceptions determined by construction conformance reviews should be documented and mitigated as applicable.
- Test Plans, Procedures and Reports. All requirements in the contract documents regarding test plans, test procedures, and test reports must be completed prior to the commencement of the next phase of the test for each respective equipment, device, subsystem, or system.
- Design/Component Tests. All design tests affecting the respective equipment, devices, and materials must be satisfactorily completed prior to proceeding to production tests.
- Production/Factory Acceptance Tests (FAT). All production tests affecting the respective equipment and devices must be satisfactorily completed prior to shipment of equipment from the factories.
- Field Tests. Field tests will be performed after installation of equipment, devices, and materials at the Project site. It will be verified that all equipment is properly installed, connected, and in operable condition. No equipment will be energized or placed in the operating mode until approved;
- Startup Tests. Startup tests will be performed after satisfactory completion of all field tests to verify that all equipment, devices, and materials installed will function as an integrated system in accordance with the contractual requirements.

In its review the Consultant will complete the following subtasks:

Systems to be tested:

The Consultant shall assure all of the systems below (as applicable) are tested:

- Tracks
- Stations
- Yards and shops
- Vehicles
- Traction power system (substations, contact rails and overhead catenary)
- Train control system
- Signaling system
- Traffic signaling
- Communications system
- Supervisory control and data acquisition (SCADA)
- Operations control center
- Fare collection system equipment

- Grade crossings
- Procedures pertaining to operations, train control, emergency preparedness fire detection, alarming and suppression, emergency preparedness
- Other items, as deemed necessary

The Consultant shall evaluate the Grantee's systems/facilities integration and coordination plan. This plan must coordinate stakeholders; take into account time constraints and access for testing; and incorporate supporting information as necessary. Check for areas in which early coordination and testing may be critical to avoiding delays to the balance of the testing. As an example, railroads often require early coordination and testing, including:

- Clearance testing for shared transit/railroad track along the transit corridor
- Pedestrian crossing warning system testing at stations
- Grade crossing warning system control testing at intersections with both transit and railroad tracks

Plan for Systems/Facilities Integration and Coordination for Testing

The Consultant shall evaluate the Grantee's Systems/Facilities Integration and Coordination Plan. This plan must coordinate stakeholders and take into account time constraints and access for testing; and incorporate supporting information as necessary. Check for areas in which early coordination and testing may be critical to avoiding delays to the balance of the testing. As an example, railroads often require early coordination and testing, including:

- Clearance testing for shared transit/railroad track along the transit corridor
- Pedestrian crossing warning system testing at stations
- Grade crossing warning system control testing at intersections with both transit and railroad tracks

Systems Integration Test Plan (SITP)

The Consultant shall evaluate the Grantee's SITP as an effective work plan for coordination of stakeholders, integration with the master schedule, procedures for public safety,; protocols for document control, and other elements as necessary. The Consultant shall evaluate activities where coordination and testing may be critical to avoiding delays.

The Consultant shall evaluate the test plan, to confirm the following have been included:

- Title of each test with reference to the respective article or section number in the contract documents
- Organization performing each test
- Coordination with other stakeholders
- Test location
- Submittal date of each test procedure, test report, and certified test document;
- Schedule – starting and completion date for each test
- Document control procedures

Schedule for Testing

The Consultant shall evaluate the Project's schedule for integrated testing.

Test Procedures

Each test procedure shall contain detailed step-by-step procedures for performing the test and shall include the following information:

- Title of test
- Test objectives
- Test location and date of test
- Equipment and instrumentation with accuracy and calibration data
- Test criteria including test setup with circuit diagrams and test sequence
- Test criteria including data evaluation procedures
- Test data requirements including forms and format for recording data
- Primary and supporting test agency

Test Reports

The Consultant shall evaluate the Project's test reports and ensure they include the following information:

- Title of test
- Test objectives
- Summary and conclusions
- Location and date of test
- Results including tables, curves, photographs, and any additional test data required to support the test results
- Descriptions of all failures and modifications including reasons for such failures and modifications and names of individuals approving such modifications
- Abbreviations and references
- Signatures of test witnesses

Completion and Recording

The Consultant shall confirm the successful completion and recording of the tests:

- Design tests
- Production tests
- Field tests
- Individual systems
- Integrated tests - static and dynamic

Project System Safety and Security Validation

The Consultant shall review the Grantee's safety and security planning process for general conformance that the recommendations developed through the hazard management program and other planning processes have been carried through design, and implemented during construction. The Consultant will also confirm that the host communities affected by the Project have been well informed on safety and security issues associated with the Project. Safety and Security validation should begin prior to any train movements being allowed on the new system, and hazards that have not been fully mitigated should be reviewed and

appropriate work-arounds developed. The following subtasks will be completed, as described below.

Safety and Security Organization

As part of its review, the Consultant will assess the general effectiveness of the safety and security organization within the Grantee's organization at large. For example:

- Does the safety and security organization have the appropriate MCC to assure a safe Project, and is the organization effectively configured?
- Has the safety and security organization participated in design reviews, configuration control, the change control board and/or other review capacities?
- Has the safety and security organization participated in the proceedings of the Fire/Life Safety Committee established for the new system?
- Has the safety and security organization been party to the completion of the PHA and TVA workshops and resulting mitigations?
- Has the safety and security organization participated in development of work-arounds for outstanding construction punch-list items affecting safe operation and interface with the general public prior to testing trains on the system?
- Has an OHA been prepared or, as an alternative, has the PHA been refreshed to address readiness to first test trains safely; and to safely open for revenue operations?

Review of Safety and Security Planning

The Consultant shall review the following plans and documents to assure that safety and security concerns have been addressed prior to testing trains and all intermediate steps leading up to revenue operations:

- a. SSPP
- b. SSMP
- c. PHA
- d. TVA
- e. OHA
- f. Grade crossing analysis/reports
- g. SSCP
- h. CIL
- i. Workarounds/construction punch-lists*

* Construction punch-lists should be reviewed to ensure all safety critical items, public warning devices, and safety-related signage are installed and tested prior to testing trains.

Review of Risks and Mitigation

The Consultant will confirm that the findings and mitigations from the TVA and PHA are reviewed and addressed by the Grantee. The Consultant will confirm that an OHA containing, at a minimum, an assessment of the PHA, and typically involving additional hazard analysis, was conducted with operation and maintenance experts. The Consultant shall review the disposition of all unacceptable and undesirable risks (sometimes color coded "Red" and

“Yellow” in hazard tables) and the associated mitigation measures recommended in the PHA or the OHA, as applicable. The intent is to confirm which high risks have been mitigated, whether the mitigation has been included in the completed Project or appropriate workarounds have been developed, or if the high risk has been considered acceptable and documented with the justification for this conclusion.

Pre-Revenue Operation

PRO planning involves the Grantee’s work plan for preparing the system for revenue service. This work plan referred to as the PRO Plan/RAP, defines the staffing requirements, personnel, and the training, testing and documentation necessary to prepare the Project for revenue operations.

The Consultant shall evaluate satisfactory completion of the following:

- PRO Planning
- Completed Rule Book and SOPs
- Operator and Maintenance Staff Training
- Emergency Preparedness
- Security System
- Public Education and Safety Awareness

Pre-Revenue Operations Planning

The Consultant shall confirm that the Grantee has prepared a PRO Plan/RAP to guide its activities. The PRO Plan/RAP is a narrative document that introduces the PRO requirements of operation and maintenance personnel prior to the opening of the Project.

The following will be done before operating the new Project or alignment in revenue service:

- Assurance that the system is safe for PRO including mitigating the unacceptable risk identified in the OHA or acceptable workarounds
- Rail Activation Committee or other applicable committee approvals
- Schedules for PRO and operations are completed
- Operations, maintenance, supervisor and first responder personnel training are complete
- SOPs and emergency operating procedures (EOP) should be updated
- The operating book of rules should be updated
- Completion of emergency drills with local emergency response agencies Completion of PRO activities
- Assurance that all rail operations certifiable items are complete/certificate of occupancy has been received

Completed Rule Book and Standard Operating Procedures

The Consultant shall review and confirm that the Rule Book and the SOPs have been updated, accepted and distributed to all operations personnel prior to the start of revenue service. The Grantee shall demonstrate that all Operations and Maintenance (O&M) staff has been trained in the new procedures.

Operator, Maintenance and Supervisor Staff Training

The Consultant shall determine that the Grantee has trained its staff to operate and maintain the new transit system. The Consultant should assess the training program to determine if new and updated procedures and rules are provided within the training curriculum, and to confirm that all training schedules or activities address training for all necessary staff, including supervisors, as applicable. If this has been confirmed by a recent MCC study, the Consultant shall reference the findings of that evaluation.

Emergency Preparedness

The Consultant shall review the Emergency Preparedness Plan and PRO schedule to confirm that emergency preparedness drills and familiarization training activities have been completed and coordinated with the affected community fire departments, police departments and first responding agencies, prior to revenue operations. The documentation of completeness should include a description of the drill, date, procedures, attendees and results of the drill. The proceedings should be incorporated into the Grantee document control system.

Security System

Implementation of a new transit system will often require additional security staff. The Consultant shall determine whether the Grantee has increased and trained its security forces proportionate to the added system capacity. If a recent MCC study has confirmed this, the Consultant shall reference the findings of that evaluation.

Public Education and Safety Awareness

Introduction of a new transit system into the community adds an element of risk, especially accidents related to pedestrian/transit vehicle and automobile/transit vehicle collisions. The Consultant shall document that the Grantee has prepared the community for the implementation of transit prior to train movements on the new system within a safety outreach plan and a grand opening plan. The outreach activities would typically include outreach to schools, neighborhood associations, and other well-attended community events.

Spare Parts Requirements and Inventory

The Consultant shall review and assess the Grantee's process to track and maintain spares, spare parts, spare parts inventory, warranties, and O&M manuals.

Evidence of MCC

As a confirmation of the readiness to enter revenue operations, the Consultant shall assess the MCC but with emphasized focus on operational capacity. This assessment will simply refresh the previous MCC evaluations if these have been completed within one calendar year. This will include a review of the following:

- a. PMP;
- b. O&M plan;
- c. Rail fleet management plans;

- d. Safety and security plans, signed third party agreements with railroads, utilities, other third parties; and
- e. Quality Management Plan (QMP).

Project Management Plan

The Consultant shall determine that the PMP and Sub-Plans are current and demonstrate the readiness to enter revenue operations. For example, the PMP should incorporate the updated SSMP and related plans including the RAP, SSCP, and OHA, and all should be tracked back to the findings and mitigation measures recommended in the refreshed PHA and TVA. Further, the O&M Plan and Rail Fleet Management Plan should demonstrate the ability to own and operate the new transit system.

Third Party Agreements

The Consultant shall determine if the Grantee has all third party agreements signed and accepted. This will most likely include all environmental agreements, agreements with railroads and other utilities, and all signed memoranda of understanding with the affected local governments.

Quality Management

The Consultant will assess the effectiveness of the QA/QC program as described in the DRPT approved QMP(s). The Consultant shall determine that the quality processes have assured that the Project has been constructed as intended by the finalized plans and specifications, including documented design reviews and reconciled changes, evidence of QC, inspections and QA audits conducted during the construction phase, and that all SIT and CIL forms have been validated, signed and included within the Project's secured document control system. The Consultant will also review and assess the workarounds and procedures for taking corrective actions of open quality non-conformances that can affect the operations, maintenance or safety of the Project.

Coordination With Other Reviews

Rail Fixed Guideway Projects not subject to regulation by the FRA shall be subject to SSOA jurisdiction as specified in the Rail Transit Agency Safety Plan. During the review, the Consultant shall consult the SSOA in its assessment of the Project's safety and security management program implementation. SSOA participation in Readiness Review interviews and inspection should also be supported and encouraged.

Where the SSOA conducts a Readiness to Enter Revenue Operations review, the Consultant's review shall, to the extent possible, be coordinated with this work. Other reviews subject to Consultant coordination may include DRPT's Safety and Security Readiness Reviews (SSRRs) and FRA inspections. Coordination with other reviews will reduce the amount of time required on the part of the Grantee addressing auditing requirements, and through information sharing between the Consultant and SSOA, reduce redundant professional hours.

Deliverables

The Consultant shall provide DRPT with a written report of its findings, analysis, recommendations, professional opinions, and a description of the review activities undertaken. The report should be written succinctly and not include extraneous information not pertinent to the review. Upon approval by DRPT, the Consultant should share the report with the Grantee. In the event that differences of opinion exist between the Consultant and the Grantee regarding the Consultant's findings, DRPT may direct the Consultant to reconcile with the Grantee and provide DRPT with a report addendum covering the agreed modifications.

Sample Rail Activation Plan (RAP) Table of Contents

1. Introduction
2. Project Background
 - a. Project Description
 - b. Rail Activation Schedule
3. Rail Activation Committee
 - a. Rail Activation Committee Participants and Organization Chart
 - b. Coordination with Safety Certification Committee
 - c. Coordination with Operations Safety Review Committee
 - d. Coordination with Operations Change Control Committee
4. Project Resources
 - a. Staffing / Budget
 - i. Skills Matrix
 - b. Hiring Schedule
 - i. Job Descriptions
5. System Testing and Acceptance
 - a. Applicable SIT Plan Activities
 - b. Roles and Responsibilities
 - c. Start-up Tests
6. Rulebook, SOPs and Manuals
 - a. Process for updating Rulebook
 - b. Process for issuing SOPs and Bulletins
 - c. Schedule of Rule revisions
7. Training
 - a. Vendor supplied training manuals
 - b. Operations Training
 - c. Maintenance Training
 - d. Rail Control Center Training
 - e. Supervisor Training
 - f. Schedule of Training Activities
8. Safety and Security
 - a. Safety and Security Certification / CIL
 - b. Safety and Security Verification Report (SSCVR)
 - i. State approval of SSCVR
 - c. Workarounds

- d. Quality Management
 - i. Review of non-conformances
 - ii. Assure that CIL forms are validated, signed and tracked in document control system
- e. Inspections and audits
- f. Review and Update of SSPP and Security Plan
- g. Documentation
- 9. Emergency Preparedness
 - a. NFPA 130 activities
 - b. Familiarization Training and Schedule
 - c. Table top and full-scale emergency drills
 - i. Drill Scenario, Location, Participating Agencies and Schedule
 - ii. After Action Reports and Tracking Corrective Actions
- 10. External Coordination
 - a. Permits
 - b. Coordination with Federal, State and Local Agencies
- 11. Rail Operations
 - a. Simulated Rail Service
 - b. Startup Procedures
 - c. Operating Procedures/Schedules
 - d. Emergency Operations Procedures (single tracking, bus bridge, etc.)
- 12. Appendices
 - a. Acronyms
 - b. Certifiable Items List

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Appendix L - Technical Assistance and Special Tasks

Objectives

DRPT would like to utilize the Consultant's professional experience and expertise in both program-wide and Project-specific ways to advance the knowledge base among Grantees and the state-of-the-practice in the industry; improve DRPT's oversight capabilities for the Project; and result in a higher quality Project that meets Project goals, budget and schedule requirements.

Scope

As such, DRPT may require the Consultant to conduct and/or provide the following:

- Special oversight and special studies
- Support audits by providing reports and requested research material
- Provide special technical assistance such as emergency support and other work as requested by DRPT. This work may entail site visits and interviews; providing technical assistance to Grantees on the development of its Project plans, schedules and procedures; Project investigations; preparation of professional papers based on research and development of concepts, trends, information; examinations of agency histories; etc.
- Technical assistance to the Grantee on their PMP, schedules, budget and cost estimates, Project organization and staffing requirements, Project control and reporting systems, supporting plans (addressing quality, safety and the like), policies and procedures, Project investigations, Project delivery requirements and methods, contracting strategies, and/or overall process of setting-up a Project management office. The scope of this Consultant work may be tailored to focus on specific Project issues and areas as requested by the Grantee or specified by DRPT

Findings, conclusions, and recommendations may be required by the Consultant in written documents to inform DRPT and designated third parties. The Consultant may be required to present papers and studies in meetings, represent DRPT, and lead or participate in meetings.

Deliverables

The Consultant shall provide DRPT with written materials fulfilling the requirements above. The report should be written succinctly and not include extraneous information not pertinent to the review.

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Appendix M - Real Estate Acquisition and Management Plan Review

Background

Real estate acquisition can significantly affect a Project's cost and schedule because of the number and types of uncertainties and risks. A separate Real Estate Acquisition Management Plan (RAMP) may not be required for this Project. If one is required, real estate cost and schedule elements should be fully described along with notations regarding perceived uncertainties and risks on a per parcel basis. The Consultant should discuss the uncertainties with the Grantee, the likelihood of a negative occurrence, the potential magnitude, and the Grantee's plan for mitigating the risk. An example of mitigation is requiring that property acquisition be complete prior to advertising construction contracts. The Consultant should verify the Grantee understands the potential cost and schedule impacts to the Project if real estate acquisition is delayed.

Objectives

DRPT requires the Consultant team to include and continuously utilize a specialized real estate expert Consultant, hereafter referred to as the Real Estate Consultant (RE Consultant). The RE Consultant should have significant experience in early right-of-way (R/W) planning and acquisition; have a working knowledge in the four major areas of Uniform Act compliance (Appraisal, Acquisition, Relocation and Property Management); and be able to:

- Evaluate the Grantee's RAMP and oversee implementation of defined policies and procedures, real estate acquisitions, and relocations.
- Evaluate the Grantee's understanding of, and assure compliance with, all state, local and Federal laws, regulations, and guidance associated with acquiring real estate.
- Evaluate the real estate components of the Project scope for completeness, adequacy, consistency, and appropriateness of level of detail given the phase
- Evaluate the real estate cost estimate for completeness, adequacy, consistency, appropriateness of level of detail given the phase
- Evaluate the real estate schedule for completeness, adequacy, consistency, appropriateness of level of detail given the phase; compatibility of the real estate schedule with the overall Project schedule is required as part of the evaluation.
- Identify risks inherent in the Project scope, schedule and cost estimate
- Evaluate the Grantee's effective use of tracking tools to monitor status and avoid negative budget and schedule impacts.
- Evaluate compliance with all governing requirements related to the real estate acquisition program to ensure eligibility of reimbursed cost. Provide timely reporting by the Consultant of recommended improvements, lessons learned, and best practices based on observations of the Project.

Grantee Submittals

In order to perform the review, the RE Consultant shall obtain the RAMP and supporting documents such as the real estate cost estimate and schedule as well as any applicable agency policies and procedures.

- Real Estate Team Organization information should include:
 - Organization chart for DRPT
 - Organization chart for Project including DRPT's Project executive, real estate staff and consultants
 - Real estate staff and Consultant/contractor functions/resumes/description of roles and responsibilities for both real estate acquisition and relocation
 - Lines of authority including as applicable, the Grantee's Board, chief executive officer, Project executive, Project staff, real estate staff and consultants
- Acquisition Plan and Relocation Plan should include:
 - Description of real estate to be acquired for the Project
 - Real estate planning, budgeting, scheduling, tracking and reporting documents
 - Discussion of any existing contaminated property based on content of Environmental Site Assessment documents or the NEPA documents and strategy to avoid, value, and/or remediate such property
 - Summary of potential third party agreements
- An explanation of the process to be used for:
 - Utility Relocations or Appraisals and appraisal reviews
 - Acquisition files including offers, negotiations and contact logs
 - Relocation files including notices, inventories, determinations, claims, payments and contact logs
- Real Estate Schedule should be portrayed in relation to overall Project schedule/critical path and should include detail on specific tasks and time required to complete
- Real Estate Cost Estimate may be submitted as an independent document.

Scope

The Consultant is expected to have the RE Consultant in attendance (by phone or in person) at any time matters involving real estate are discussed. The RE Consultant shall continue to provide ongoing oversight and monitoring in all areas involving real estate so that early warning signs can be recognized and potential issues can be identified and mitigated prior to serious impacts to schedule and/or budget.

The RE Consultant should determine if the Grantee's acquisition and relocation scope, schedule and budget are realistic, reflect the Grantee's plans and specifications, and agree with the overall Project scope, cost estimate and schedule. Real estate oversight in regard to these four areas should be an active process throughout the life of the Project, and should be scoped to the complexity of the proposed real estate program.

The RE Consultant should review the RAMP, scope of real estate to be acquired, cost estimate and schedule at the milestone points and more frequently if directed by DRPT. Tailor the review to the information and materials available at the time. During engineering, verify that the planned real estate acquisitions and relocations are comprehensive; the schedule is coordinated with the critical path of Project schedule; the real estate cost estimates are reasonable; and the Grantee is adhering to the policies and procedures set forth in the RAMP.

Deliverables

The RE Consultant should review and summarize its findings and opinions and provide recommendations with respect to the Grantee's plans and procedures. The report should be written succinctly and not include extraneous information not pertinent to the review.

- Introduction - Review any updates to the Grantee's Introduction section of its RAMP and ensure Grantee compliance with applicable statutory, regulatory and circular requirements. With consideration of the laws, regulations, etc. that apply to the work, the Consultant should review and analyze the Grantee's information for reasonableness within the scope and cost parameters for completeness and consistency.
- Organizational Structure - Review and assess the adequacy and soundness of the Grantee's organizational structure including any updates or modifications to the organizational structure and/or staff functions, and responsibilities and lines of authority.
- Document Control - Review and assess the Grantee's real estate document control plan and any updates to such plan.
- Property Management Plan - Review and assess the adequacy and soundness of the Grantee's property management plan including who will perform property management, what is included in the scope of work for property management, who contracts for demolition, what are contracting requirements, what are reporting requirements, statement of policy regarding rental property for extended possession by tenants and owners, who will prepare and track excess parcels, and what is the process to evaluate these tracts.
- Acquisition Plan
 - Tracking - Review and assess the adequacy of the Grantee's plan for tracking all required activities associated with acquisition and relocation including who will be responsible for developing, monitoring, and updating the tracking reports on a consistent and ongoing basis. This tracking plan should also include a process through which the RE Consultant can monitor the progress of the real estate program through regular access to the tracking reports.
 - Plans - Review and assess the adequacy of the Grantee's acquisition plan including who prepares the plan, who can authorize plan revisions, who will track plan revisions, who modifies the plan, and what is the process for considering property owner's request to modify, etc.
 - Ownership and title information - Review the Grantee's plans for gathering ownership and title information as well as its plan for identifying contractual requirements and whether contracts are in place. Review the Grantee's process to update and correct errors and omissions.
 - Review Grantee's plan for identification of parcel specific environmental assessments (i.e., Phase 1, Phase 2, etc.) and how this information will be provided to the appraisers.
 - Appraisal - Review the Grantee's plan for performing appraisals including appraisal scope of work development, identifying who will perform the appraisals and identifying contracting requirements if necessary and estimated duration of this task. Review what process is in place to insure the identification and resolution of

- personalty/realty issues at the time of the appraisal. Review the Grantee's plan for obtaining copies of appraisals and sharing of such appraisals with property owners. Review the adequacy and soundness of the Grantee's appraisal review process including the following: who will do this task: what is the appraisal scope of work (SOW) for the task in general; what is the turn around time for this work; will the reviewer handle updates of appraisals; will the reviewer handle modification of appraisals based on owner claims; will the review appraiser review owner's appraisals; will review appraisal be used to support administrative settlements. If contaminated property is involved, will the appraisal SOW delineate the appraiser's responsibility and information to be provided in that regard?
- Establishment of offer of Just Compensation - Review the adequacy and soundness of the Grantee's plan for establishing an offer of just compensation, including identifying responsible staff and the basis of the offer.
 - Negotiations - Review the adequacy and soundness of the Grantee's plan for conducting negotiations, including the following information: who will negotiate; what is their authority; when will negotiations initiate; who must approve administrative settlements and other concessions to property owners; what is the documentation required of the negotiations process; who signs the letter of offer; will the negotiator also handle relocation payments, how is the interface between negotiations and condemnation handled; what documents will the negotiator be expected to provide to legal for settlement and condemnation; will the negotiator be present at closing? If consultants will be utilized, what are the contracting requirements and the duration of the associated lead time?
 - Closing/Escrows - Review the adequacy and soundness of the Grantee's plan for handling closings/escrows, including the following information: who will provide this service; how will it function; what is the estimated length of time to deposit funds to escrow for closing' what documents will be necessary; how will closings be conducted; what form of deeds will be used; how will partial releases be handled, and how will the expected duration of that process fit into the schedule; and how will property taxes be paid and exempted?
 - Condemnation - Review the Grantee's plan for condemnations including the following information: who will authorize law suits; does the agency handling the condemnation have quick take authority; what is the lead time to obtain court ordered legal/physical possession; who will file the certificate; what is relationship between Grantee and its legal personnel; what authority does the attorney handling the condemnation case have for settlement; what are the progress reporting requirements; what is the expected timeframe to obtain possession; and how will contamination remediation be addressed with the responsible parties in the event it is encountered within the Project limits?
 - Disposition Plan - Review and assess the adequacy and soundness of the Grantee's resale plan, including who will determine when to sell excess land and/or buildings; what is the disposition of proceeds; and what are the agency handling the condemnation, federal, state or local restrictions on the sale of public property?
 - Third Party Real Estate Agreements - Ensure the Grantee has identified all third party

agreements anticipated and included any draft or executed agreements with third parties that may involve the transfer of real estate interests. This review should also include who will be responsible for negotiating third party agreements, anticipated time required and any potential issues that may involve the transfer of real estate interests.

- Real Estate Cost Estimate - Review and assess the adequacy and soundness of the Grantee's real estate cost estimate for acquisitions and relocations including a review of the background of estimate; what methodology was used; when the estimate was completed; what was the basis of the estimate; how and when will the any need for an update of the cost estimate be updated; and how the estimate will be compared to actual costs as Project progresses? Identify real estate acquisition and relocation program risks and recommend mitigation actions by the Grantee. Review the cost basis of the estimated allocations for various contractual services necessary for the Project.
 - Acquisition and Relocation Schedule - Review the adequacy and soundness of the Grantee's schedule including its critical path for real estate, established timeframes for acquisition and relocation, schedule for property negotiations for the Project, and identification of potential difficulties and delays. The Consultant shall also review the Grantee's plans for tracking and reporting progress and the dissemination of such progress updates. The real estate program should not be expected to cure the shortfall of time resulting from prior delays in other functional areas of the Project development process.

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Appendix N - Quality Assurance/Quality Control Review

Background

DRPT believes that the successful implementation of the Project depends on the development and execution of a sound QA/QC program by the Grantee and its design and construction contractors. A vital part of the PMP is the QA/QC program which defines a process for assuring that a quality Project is designed and constructed.

The FTA Quality Management System Guidelines (QMS), issued in December 2012, define and delineate QA and QC activities:

- Quality Assurance includes planning for quality management activities and confirming that those activities were carried out
- Quality Control includes the actual implementation of quality management activities, inspecting to confirm that processes are performed correctly and completely, and the documentation thereof.

FTA Quality Management System Guidelines also recommend that a QA/QC program should specify the organization, procedures, documentation, testing, and methods to be used to provide quality in accordance with contract documents. More specifically, a typical QA/QC program should address, but not be limited to, the following elements.

- Management responsibility
- Documented quality management system
- Design control
- Document control
- Purchasing
- Product identification and traceability
- Process control
- Inspection and testing
- Inspection, measuring, and test equipment
- Inspection and test status
- Nonconformance
- Corrective action
- Quality records
- Quality audits
- Training

The Consultant shall assess and evaluate the adequacy and soundness of the Grantee's QA/QC program and the Grantee's implementation of such program over the course of the Project.

Scope

Quality Management Program

The Consultant shall confirm that the Grantee has established a documented Quality Management Program (QMP) of procedures and activities to support the entire organization, as

well as the Project. The Consultant shall confirm that the program can ensure satisfaction of Project quality objectives related to the control of documents, design, procurement, construction, start-up, and operations. Procedures and activities should include document configuration, change control, and design review. Additionally, procedures may include, as relative to the Project, soils and materials inspection and materials testing, among other activities.

Regarding Quality Assurance, the Consultant shall evaluate the Grantee's plan for quality management activities; capabilities regarding the establishment of quality systems, identification and evaluation of quality problems, and provision of solutions. The Consultant shall confirm that quality activities were carried out.

Regarding Quality Control, the Consultant shall evaluate the Grantee's actual implementation of quality management activities and the documentation thereof.

The Consultant shall confirm and assess that the Grantee has adequately defined its quality policy and the quality responsibilities of the Project team. The Grantee is responsible for ensuring that the quality policy and program are being implemented and maintained at all levels of the Grantee organization and Project staff. The Consultant shall confirm that the Grantee has assigned qualified personnel, independent of those having direct responsibility for the work being performed, to be responsible for QA/QC functions within the Project. The Consultant shall also confirm that such personnel are implementing and maintaining the Grantee's quality policy.

Document Control

The Consultant shall confirm that the Grantee has an established document control program within its QA/QC Program Plan, and shall assess the adequacy of such control and assurance procedures and requirements. During review of the Grantee's document control procedures, the Consultant shall confirm that the Grantee has specified a written document control procedure, which includes document review and document distribution and storage, and that incorporates the requirements and responsibilities of design consultants and various construction contractors. Further, the Consultant shall confirm that the Grantee has in place adequate quality assurance procedures to ensure document controls are in place and being implemented.

Design Control

The Consultant shall confirm that the Grantee has an established design control plan within its QA/QC Program Plan and shall assess the adequacy of such quality control and assurance procedures and requirements. The Consultant shall confirm that the Grantee has specified procedures for design verification and design review, and shall assess the adequacy and efficacy of these control and assurance procedures. Design verification procedures shall include activities such as independent checks on design drawings and specifications, and/or checklists documenting completeness, coordination, constructability, operability, and maintainability; and design calculations for structural, mechanical, electrical, etc. Further, the Consultant shall

confirm that the Consultant(s) responsible for design have established procedures for controlling their design processes. The Consultant shall also confirm that the Grantee has specified design review procedures for all design Consultants and procedures for design and/or specification changes including signoff and documentation of such changes. Finally, the Consultant shall confirm that the Grantee has documented procedures and requirements regarding “as-built” documents. Further, the Consultant shall confirm that the Grantee has in place adequate quality assurance procedures to ensure design control procedures are in place and being implemented.

Procurement

The Consultant shall confirm that the Grantee has in place written procedures that will ensure competition in the bidding by obtaining bids from a number of qualified contractors for desired services. The Consultant shall confirm that the Grantee complies with the requirement to include in its procurement plan a statement of general requirements, which includes quality requirements and a requirement for any past, demonstrated capability, and performance of quality implementation. The Consultant shall review and assess the Grantee’s procedures for ensuring that quality control requirements are included within proposals/bids, and formally communicated to potential consultants/contractors/subcontractors.

The Consultant shall review the Grantee’s procedures for ensuring that procurement documents are reviewed and approved by a designated authority prior to release, with special attention to the review of the Grantee’s construction contract documents including general and special conditions and quality control requirements.

The Consultant shall confirm that the Grantee includes in contract documents, where appropriate, a requirement for equipment manufacturers or others supplying products for the Project, that clearly provides for product identification and traceability. The Consultant shall also review and assess the adequacy of the Grantee’s requirements for product identification and traceability for products and materials turned over to the owner at Project conclusion.

Construction/Inspection

The Consultant shall review and assess the adequacy of the Grantee’s requirements for a quality control inspection and testing program through all phases of the work including inspection and testing procedures for special processes and requirements for calibration and maintenance of inspection, measuring, and/or test equipment. The Consultant shall confirm that the Grantee’s QA/QC Program Plan adequately indicates and describes the types of inspection and testing required and the standards to be met and provides reference to such testing and standards requirements within the Project specifications. Further, the Consultant shall also confirm that the Grantee has in place adequate quality assurance procedures to ensure successful implementation of the quality control program during construction of the works.

The Consultant shall review and assess the adequacy of the Grantee’s procedures for handling nonconforming work. The Consultant shall confirm that such procedures define

responsibilities, conditions that would cause work to stop, and documentation procedures to record nonconforming work. Further, the Consultant shall review and assess the adequacy of the Grantee's procedures for determining the root cause of the nonconforming work and taking corrective action to preclude recurrence.

Operations, Startup, and Training

The Consultant shall review and assess the adequacy of the Grantee's control procedures for the testing of systems, vehicles, and service equipment, as well as the Grantee's safety certification process, and training procedures for operating and maintenance to ensure a smooth transition to operations. The Consultant shall also confirm that the Grantee has in place adequate quality assurance procedures to ensure successful implementation of the training program.

Deliverables

The Consultant shall provide DRPT with a written report of its findings, analysis, recommendations, and professional opinions, including a description of the review activities undertaken. The report shall be written succinctly and not include extraneous information not pertinent to the review. After DRPT approval, the Consultant should share the report with the Grantee. In the event that differences of opinion exist between the Consultant and the Grantee regarding the Consultant's findings, DRPT may direct the Consultant to reconcile with the Grantee and provide DRPT with a report addendum covering the agreed modifications by the Grantee and Consultant.

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Appendix O - Value Engineering Review

Objectives

VE has several core objectives. One of the most significant is to improve communication among involved parties. VE is particularly valuable when projects involve numerous stakeholders. Improvements in communication alone will make the VE effort a success. The greatest opportunity for potential savings results from clear communication of the following tradeoffs:

- Cost vs. flexibility and redundancy
- Cost vs. convenience
- Cost savings and innovation vs. agency risk
- Initial capital savings vs. operational cost
- Potential inefficiencies of phased construction vs. cash flow

The VE process should also address the cost to worth ratio of each of the Project's basic and secondary functions. The effective VE analyses will clearly:

- Identify cost driving design criteria and functions
- Identify marginally justified support functions
- Identify Project elements that have poor cost to worth relationships
- Identify schedules that maximize the time-value of capital investment

Project Grantee Submittals

In advance of performing the review, the Consultant shall obtain the following from the Grantee:

- VE work plan including disciplines and hours for the analysis
- Orientation Memorandum including logistics, assumptions, any scope limitations of the study, cost models if used and materials reviewed prior to the study
- Draft VE Report
- Final VE Report, including the disposition of the VE recommendations
- Documentation that adopted VE recommendations have been incorporated/implemented

Scope

The standard for conducting VE workshops is provided through guidance published by SAVE International. Federal agencies base their value programs on the SAVE Standard. The Consultant shall evaluate the Grantee's VE program against the SAVE Standard (the "Standard") formally referenced as the *Value Standard and Body of Knowledge*, June 2007 (or the latest edition) SAVE International.

According to the Standard, the following conditions must be met in order to represent an acceptable VE Study:

- The Value Study Team follows an organized job plan that includes the six phases identified in the Standard. Function analysis is performed on the Project.
- The Value Study Team is a multidisciplinary group of experienced professionals and Project stakeholders. Team members are chosen based on their expertise and relevant

experience.

- The Value Team Leader is trained in value methodology techniques and is qualified to lead a study team using the job plan. The SAVE International Certification Board certifies, with the designation Certified Value Specialists (CVS), those individuals who have met specified training requirements and have demonstrated competency in the application of the job plan. The Team Facilitator shall be a CVS, or an Associate Value Specialist (AVS) serving under the guidance of a CVS as defined by SAVE Certification criteria, or shall be the holder of another active certification recognized by SAVE International.

Pre-Workshop Phase

In this phase, the Grantee prepares for the VE study. This typically involves obtaining management support for the VE, selecting the appropriate team members, developing the scope of work and objectives for the study, and collecting the required background information for the work. This latter task includes transmittal of the Project discipline support memoranda, plan set, draft specifications, Project schedule and capital cost estimate. The logistics for the study are defined and distributed to the team. The main deliverable for the pre-workshop activities includes an Orientation Memorandum, which will suffice as a work plan for the study.

Workshop Phase

The workshop includes the six-step process, typically held over five consecutive days, as shown on Figure 1 and described below.

- *Step 1: Information Phase* - The team reviews and defines the current conditions of the Project and identifies the goals of the study.
- *Step 2: Function Analysis Phase* - The team defines the Project functions using a two-word active verb/measurable noun context. The team reviews and analyzes these functions to determine which need improvement, elimination, or creation to meet the Project's goals.
- *Step 3: Creative Phase* - The team employs creative techniques to identify other ways to perform the Project's function(s).
- *Step 4: Evaluation Phase* - The team follows a structured evaluation process to select those ideas that offer the potential for value improvement while delivering the Project's function(s) and considering performance requirements and resource limits.
- *Step 5: Development Phase* - The team develops the selected ideas into alternatives (or proposals) with a sufficient level of documentation to allow decision makers to determine if the alternative should be implemented.
- *Step 6: Presentation Phase* - The team leader develops a report and/or presentation that documents and conveys the adequacy of the alternative(s) developed by the team and the associated value improvement opportunity.
- *Post-Workshop Phase* - The purpose of the Post-Workshop activities is to confirm the disposition and benefits of the accepted VE recommendations. The benefits should be documented in a revised cost estimate. This shall be performed through review of the modified plan set and through tracking the changes in the Grantee's Configuration

Management process.

VE workshops should be multidisciplinary including staff representing all cost elements that have the greatest effect on cost, operability and risk. For a fixed guideway project, these will generally include:

- Value Engineering Team Leader (CVS)
- General civil engineer
- Track engineer
- Structural engineer
- Traction power engineer
- Vehicle specialist
- Construction expert
- Station Architect
- Cost estimator
- Owner representatives

Deliverables

The Consultant shall provide DRPT with a written report of its findings, analysis, recommendations and professional opinions, including a description of the review activities undertaken, as well as other supporting information. The report should be written succinctly and not include extraneous information not pertinent to the review. After DRPT approval, the Consultant may share the report with the Grantee. In the event that differences of opinion exist between the Consultant and the Grantee regarding the Consultant's findings, DRPT may direct the Consultant to reconcile its findings with the Grantee and provide DRPT with a report addendum covering the agreed modifications by the Grantee and Consultant.

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Appendix P - Buy America Compliance Review

Purpose

To preserve the ability for the Project to seek Federal funds, if warranted, the Grantee may elect to conform with FTA's Buy America requirements for procurements in excess of \$100,000. These procurements are most often of rail vehicles but may also be applied to systems equipment, other manufactured products, and iron and steel.

Background

Overview

A number of public transit agencies have experienced difficulties in understanding the nuances and complexity of FTA's Buy America Requirements (which are unrelated to the Buy American Act of 1933, which governs direct Federal procurements). FTA's Buy America requirements specifically apply to third-party procurements by state and local governments using grant funds.

The first Buy America provision was included in the Surface Transportation Assistance Act of 1978. Currently codified at 49 U.S.C. § 5323(j), this provision prohibits obligating funds for a project unless the steel, iron, and manufactured products used in the project are produced in the United States (US). For steel and iron end products to be considered produced in the United States, all manufacturing processes must take place in the US, except metallurgical processes involving refinement of steel additives. The following code sections should be considered:

- 1) 49 U.S.C. § 5323(j)(2)(C)
- 2) 49 C.F.R. § 661.5(b)
- 3) 49 C.F.R. § 661.5(c)

For manufactured products to be considered "manufactured" in the US, all of the manufacturing process must take place in the US, and the components of the product must be of US origin (a component is considered of US origin if it is manufactured in the United States, regardless of the origin of its subcomponents).

For railcars and other rolling stock (including train control, communication, and traction power equipment), at least 60 percent of the components, calculated by cost, must be produced in the United States and final assembly must take place in the United States.

Buy America Requirements for Revenue Service Rolling Stock

In addition to the requirements outlined above, a recipient purchasing rolling stock to carry passengers in revenue service must ensure that a pre-award audit as described in 49 C.F.R. § 663.21 is complete before the recipient enters into a formal contract for the purchase of rolling stock. Similarly, recipients purchasing revenue service rolling stock must also ensure that a post-delivery audit as prescribed in 49 C.F.R. § 663.31 is complete before the title to the rolling stock is transferred to the recipient.

Objectives

The primary objective of this procedure is to provide clear, consistent instructions to Consultants engaged in overseeing Grantee's audits of Buy America content.

When reviewing the Grantee's Buy America Audit, the objective is to confirm the Grantee's investigation and approval of the manufacturer's report of their plan for production of the rolling stock and compliance with the regulations of that plan. This procedure provides Consultants with direction regarding how to perform the following:

- 1) Review to ensure that Grantee has all necessary Buy America and related certifications, as they relate to rail vehicle procurements;
- 2) Review and make an assessment of manufacturer's data, including Grantee's efforts to identify component and sub-component values;
- 3) Determine manufacturer's compliance with the requirements for final assembly in the United States;
- 4) Identify if the Grantee agreed or disagreed with the manufacturer's reporting of components including where they are manufactured and the origin of all of the sub-components;
- 5) Identify if the Grantee investigated any component that is inconsistent with the components listed in 49 C.F.R. § 661.11, appendix for rail rolling stock;
- 6) Check Grantee's and manufacturer's files and records, when needed, to assure early detection of any deficiencies in Buy America regulations compliance;
- 7) Ensure timely intervention when there are indications that Buy America might not be met or the Grantee's audit is inadequate;
- 8) Guide Grantees to the regulations when manufacturers are found to be deficient in Buy America or other related requirements;
- 9) Visit the final assembly sites when requested and be prepared with tangible information and references to FTA regulations that will allow the Consultant to accurately evaluate Buy America audit results for compliance;
- 10) Request DRPT intervention when Buy America Audit reviews uncover deficiencies; and provide reporting protocols to be adopted;
- 11) Participate in FAIs of rolling stock or components that are near the requirement to be 60 percent domestic. This is to confirm components or sub-component source manufacturing and manufacturing site.

In addition to reviewing specific rail related audits, the Consultant may also be directed to evaluate general compliance for systems equipment, other manufactured products, and iron and steel.

References

The following are the principal but by no means the only references to federal legislation, regulation and guidance with which the Consultant should review and develop a solid understanding as related to the Grantee's Project work being reviewed under this OP.

Legislative

- The Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users, or SAFETEA-LU, Pub. L. No. 109-59
- Moving Ahead for Progress in the 21st Century, or MAP-21, Pub. L. No.112-141, and its successor

United States Code

- 49 U.S.C. ch. 53, specifically, section 5323(j)

Regulations (http://www.fta.dot.gov/legislation_law/12921.html).

- Buy America Requirements, 49 C.F.R. pt. 661
- Pre-Award and Post-Delivery Audits, 49 C.F.R. pt. 663

Guidance

- FTA's Buy America Audit Handbooks (http://www.fta.dot.gov/legislation_law/12921.html).

Project Grantee Submittals

The following are to be obtained by the Consultant from the Grantee for performance of this review:

- Pre-Award Audit
 - Pre-award Buy America Compliance certification
 - Pre-award Purchaser's Requirements certification
 - Manufacturer's Federal Motor Vehicle Safety certification, where appropriate;
 - Pre-award Buy America audit report prepared by the Grantee. This is based on manufacturer supplied reporting
- Intermediate Audit, when applicable
 - Interim Buy America audit report prepared by the Grantee. This is based on manufacturer supplied reporting.
- Post-Delivery Audits
 - Post-Delivery Buy America Compliance certification
 - Post-Delivery Purchaser's Requirements certification
 - Manufacturer's Federal Motor Vehicle Safety certification, where appropriate.
 - Post-delivery audit report prepared by the Grantee. This is based on manufacturer supplied reporting.
- Documentation verifying compliance of systems equipment and manufactured products
 - Buy America Compliance certification
 - Oversight activities report(s) prepared by the Grantee, including internal verification of observance

Scope

The Consultant is responsible for reviewing and reporting on the Grantee's audit report and should examine the Grantee's certifications and supporting documents, with all due diligence. Attention shall be focused on ensuring the Grantee's Buy America team has "drilled down" to the lowest level required, in order to demonstrate that the 60 percent rule has been followed and the content claimed is valid.

DRPT should assure that the Grantee understands that failure to comply with Buy America requirements can render the Project ineligible for future Federal funds.

The Consultant shall ensure that the vehicle component manufacturing requirements are/were met, and where there is doubt (for instance where major sub-assemblies of a component are foreign-made but incorporated during the domestic vehicle final assembly), that these concerns are identified and brought to the Grantee's attention for clarification. If the Grantee cannot justify the discrepancy, the Consultant should report this finding to DRPT for a determination.

Pre-Award Requirements for Buy America and Related Provisions

For rail rolling stock procurements, the Consultant must confirm that the Grantee has completed two certifications in this Pre-Award process. Both certifications must be kept together in the Grantee's files for future DRPT reviews. These certifications are:

- Pre-Award Buy America Compliance certification;
- Pre-Award Purchaser's Requirements certification.

Pre-Award Buy America Audits

The Consultant must confirm that the Grantee has certified through Pre-Award audits that the procurement of new revenue rail vehicles with DRPT appropriated funds is Buy America compliant.

Grantee's contract documents to acquire the rolling stock must contain language requiring compliance with approved waivers. The supplier's bids/proposals must show compliance that includes any waiver(s) issued to the supplier by DRPT or non-compliance.

Pre-award audits are required before a Grantee can enter into a formal contract for the purchase of such rolling stock with a manufacturer. The Pre-Award review period begins when the Grantee issues the solicitation and ends when the Grantee signs a formal contract with the selected manufacturer.

Rail, All Types

For the rail portion of the Buy America Pre-Award review, the Consultant must confirm the Grantee has verified that all vehicles will meet the following conditions:

- 1) The cost of all components produced in the United States is more than 60 percent by cost of the total of all rail rolling stock components including those in 49 C.F.R. § 661.11. The following is a list of items that typically would be considered components of rail rolling stock. This list is not all inclusive.

- 2) Car shells, engines, main transformer, pantographs, traction motors, propulsion gear boxes, interior linings, acceleration and braking resistors, propulsion controls, low voltage auxiliary power supplies, air conditioning equipment, air brake compressors, brake controls, foundation brake equipment, articulation assemblies, train control systems, window assemblies, communication equipment, lighting, seating, doors, door actuators and controls, wheelchair lifts and ramps to make the vehicle accessible to persons with disabilities, couplers and draft gear, trucks, journal bearings, axles, diagnostic equipment, third rail pick-up equipment and draft gear. Final assembly of the vehicles will take place in the United States; or, the Grantee has obtained from DRPT a waiver letter exempting the rail rolling stock or a component from FTA's Buy America requirement.
- 3) Grantee's determination that the manufacturer is responsible and capable of building the rail rolling stock to the Grantee's design and solicitation specification.
- 4) Purchaser's requirements certification.
- 5) FAIs of the rolling stock and components that are near the requirement to be 60 percent domestic. This is to confirm component or sub-component source manufacturing and manufacturing site.

A two-stage process for rail rolling stock manufacturing allows the transport of the empty car shell to the final assembly site. When the transportation is from a domestic car shell manufacturing facility to final assembly, the cost is domestic. The regulations require that final assembly in the U.S. include, as a minimum the following requirements described in 49 C.F.R. § 661.11:

- Installation and interconnection of propulsion control equipment, propulsion cooling equipment, brake equipment, energy sources for auxiliaries and controls, heating and air conditioning, communications equipment, motors, wheels and axles, suspensions and frames
- Inspection and verification of all installation and interconnection work
- The in-plant testing of the stationary product to verify all functions

The Consultant shall confirm the Grantee's compliance with the above requirements as well as those requirements stipulated on the FTA's website at http://www.fta.dot.gov/legislation_law/12921.html.

Pre-Award Purchaser's Requirement Audit

The Consultant must confirm the Grantee has verified that the manufacturer's bid is in compliance with Grantee's solicitation specifications. Further, the Consultant must review the specifications to assure there are no requirements that will impact the ability of the supplier to achieve Buy America compliance.

The Consultant's review shall include assurance that the Grantee's certification includes the most up-to-date language requiring compliance with Buy America. Consultants are advised to consult the FTA Website (http://www.fta.dot.gov/legislation_law/12921.html) for recent changes.

The Consultant must also confirm that the Grantee has verified that the vehicle manufacturer is responsible and capable of building the rolling stock to the Grantee's solicitation specifications; and identification by the Grantee of their agreement or disagreement with the manufacturer's reporting of components, where they are manufactured and the origin of all of the sub-components.

The Consultant must identify components in the Grantee's Pre-Award Buy America review that are at risk of being under the 60 percent line, moving from domestic to foreign; which could risk lowering the total domestic content below 60 percent minimum required. For each component near the 60 percent threshold, the Consultant must assure that the Grantee will conduct a line by line review of the sub-components noting the cost and country of origin. DRPT may request additional reports on these components. Grantee and Consultant concerns about the accuracy of the claims for final assembly must be identified.

Intermediate Audit (Rail)

DRPT and the Consultant should encourage the Grantee to include a requirement for an intermediate Buy America audit in the contract solicitation specification. The intermediate audit should occur early in the production but after the components and their sub-components are procured and under contract. While an intermediate audit is not required by the regulation, it shall be encouraged since it represents the last chance for the Grantee to minimize the risk of potential adverse impact on the total domestic content of the vehicle by taking corrective action before the end of the production process and prior to delivery; particularly for rolling stock contracts of extended delivery schedules and large order quantities or for any at-risk component(s) with near 60% domestic content that could change from domestic to foreign.

For an intermediate audit, DRPT should require the Grantee to provide the plan for the Consultants participation in the Grantee's FAIs of components (and subcomponents). The at-risk components (and subcomponents) identified in the pre-award purchaser's requirement review are those that are near the 60 percent domestic content requirement. DRPT should encourage the Grantee and supplier to conduct any FAI at the components (and subcomponents) manufacturing site. This is to get an onsite opportunity to confirm sub-component manufacturing source and country of origin. If the FAI is not at the components (or subcomponent) manufacturing site, a follow-up site visit to the component manufacturing site should be discussed with the Grantee and DRPT.

An intermediate audit or review should be best conducted after the vehicle manufacturer has signed contracts with component suppliers and as components are getting ready to be sourced. This review is conducted in the same manner as a post-delivery review. When DRPT requires a Consultant review of a Grantee's intermediate audit, the Consultant shall consult the post-delivery review requirements below for performance of this review.

Post Delivery Requirements Audit (Rail)

The Consultant must confirm that the Grantee has completed a post-delivery audit, before a vehicle title is transferred from the manufacturer to the Grantee. This section provides specific input that Consultants can use to evaluate the Grantee's post-delivery audit report.

The post-delivery audit review period begins when the Grantee signs a formal contract with the selected manufacturer and ends before the title transfer or when the vehicle enters into revenue service.

The Consultant must pay close attention to the pre-award audit report and follow or pursue any changes that the manufacturer may have made that could adversely affect compliance. Examples of such changes are a vendor of at-risk components (and subcomponents) identified in the pre-award purchaser's requirement review that was near the 60 percent domestic content requirement no longer complying with Buy America; or a U.S. vendor going out of business that is replaced with a foreign vendor; or the changing to a new vendor in order to avoid schedule delays and/or contract default and related liquidated damages due to unavailability of needed components or equipment; or the manufacturer's final assembly plan identified in the pre-award audit plan changing with less than required final assembly. The Consultant must ensure that Grantee's approval of a replacement vendor does not change the requirement to comply with Buy America.

As with the pre-award audit, Consultant must confirm for the rail post-delivery audit that the Grantee has completed separate certifications. Certifications must be kept in the Grantee's files for future DRPT reviews.

For rail projects, the required certifications are:

- Post-Delivery Buy America Compliance certification;
- Post-Delivery Purchaser's Requirements certification.

The Consultant should also review and confirm, for rail post-delivery audits that the Grantee has complied with other requirements stipulated on the FTA website at:

http://www.fta.dot.gov/legislation_law/12921.html.

Consultants should note that for rail projects, the Buy America Post-Delivery Purchaser's Requirements and certifications are similar to the reviews completed for Pre-Award certifications, except that the Post-Delivery audit must contain *actual data* instead of the estimated data used in Pre-Award audits. Estimates are not acceptable.

Consultants should confirm in writing in the report that, for the Rail Vehicle Post-Delivery Purchaser's certification, the Grantee that is purchasing any number of rail vehicles must certify the following:

- 1) An on-site inspector has performed complete visual inspections and performance tests to demonstrate that the vehicles meet the contract specifications; and

2) A resident inspector was on-site in the manufacturing facility during the final assembly period and has (a) monitored the final assembly process and (b) completed a final report describing the construction activities and explaining how the construction and operation of the rail vehicles meet the contract specifications.

Buy America Requirements Review for Systems Equipment

The Consultant should confirm that the Grantee understands that Buy America compliance applies not only to rail vehicles but is also required for procurement of equipment specific to stand-alone systems as defined in 49 C.F.R. pt. 661. This includes train control equipment (49 C.F.R. § 661.11.t), Communication Equipment (49 C.F.R. § 661.11.u), and traction power equipment (49 C.F.R. § 661.11.v).

The procurement of each category of such systems equipment must comply with domestic content and final assembly requirements delineated for the rolling stock procurements in 49 C.F.R. pt. 661 (i.e. if a component of Train Control Equipment is classified as domestic, it must have minimum 60 percent U.S. content and final assembly must have occurred in the U.S). Further that, domestic manufacture of all federally funded procurements is expected and should be certifiable.

The bill of materials provides a good initial material list. The final assembly of systems projects has been attributed to the field construction.

The Grantee should be able to demonstrate how Buy America compliance is verified, documented, and tracked.

Buy America Requirements Review for Manufactured Products

The Consultant should confirm that the Grantee understands that Buy America compliance applies not only to rail vehicles but is also required for procurement of all manufactured products, including all iron and steel, as defined in 49 C.F.R. pt. 661. Further that, domestic manufacture of all federally-funded procurements is expected and should be certifiable. The Grantee should be able to demonstrate to DRPT and the Consultant how Buy America compliance is verified, documented, and tracked.

The bill of materials provides a good initial material list. The final assembly of infrastructure projects has been attributed to the field construction.

Deliverables

The Consultant shall provide DRPT with a separate written report for the Consultant's review of the Buy America audit conducted by the Grantee. The report should be written succinctly and not include extraneous information not pertinent to the review. The report shall contain Consultant's findings including identified discrepancies and suggested corrective actions, analyses, professional opinions, and recommendations, as well as a description of the review activities undertaken.

After DRPT's approval, the Consultant may share the report with the Grantee.

Reporting for Rail

When the review applies to rail vehicles, the Consultant shall provide DRPT with a written report for each or any of the three reviews described above – pre-award, intermediate, and post-delivery. The report is specifically meant to discuss and help resolve issues associated with traditional rail audits.

Reporting for Systems Equipment, Other Manufactured Products, Iron and Steel

For manufactured products or equipment specific to stand alone systems; the Consultant is also tasked with evaluating whether Buy America regulations are being adhered to by the Grantee. Procurements that are not categorized solely as rail typically do not undergo a pre-award, intermediate, and post-delivery review; however the overall responsibility to monitor and perform oversight activities should be no different.

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Appendix Q - Lessons Learned

Purpose

The application of lessons learned by Grantees of future transit projects can potentially produce higher quality projects while saving time and cost and thereby increase the effectiveness of DRPT's capital investment.

Background

Lessons can be derived from any aspect of Project implementation: design, real estate, construction, management, etc. The Consultant, in concert with the Grantee, during each Project phase, should create, add to, and maintain a list of Lessons Learned. The Lessons Learned list should include significant findings, recommendations, and new insights realized. Maintenance of the list ensures that lessons will not be forgotten and it provides ready material for inclusion in Lessons Learned reports to DRPT in a timely manner. Grantee participation ensures that the lessons are accurately portrayed with the proper perspective.

Scope

The Consultant shall document lessons learned in the following manner:

- 1) Mini-Lessons: With each Comprehensive Monthly Report, the Consultant shall issue a separate document containing a cumulative list of briefly described potential lessons learned to date ("Mini-Lessons") on the Project for which oversight is provided. With each subsequent issue of the Mini-Lessons document, the Consultant should note, in as little as a sentence or two each, the potential lessons learned during the preceding quarter. Mini-Lessons should track insights and remind the Consultant and Grantee of hurdles crossed during the course of the Project. Mini-Lessons should be characterized by Project phase and by category. The cumulative list of Mini-Lessons will be reviewed later in the Project to confirm the continued validity of the potential lessons captured in the "Mini" write-ups. This process recognizes that not all "good" ideas turn out good after final invoices, change orders, and claims are reconciled at the end of the Project.
- 2) Project-Lessons: These are the two or three most important lessons that have been learned over the course of the Project. Near the end of the Project, after the Project is in revenue operations and most change orders and claims are resolved, the Consultant and the Grantee should review the cumulative list of Mini-Lessons to identify those two or three Mini-Lessons that continue to stand out as significant when all aspects of the Project have been taken into consideration. The Consultant and the Grantee then should collaboratively develop these into Project lessons, writing them for the benefit of DRPT and may be shared with others in the transit industry.

Deliverables

The Project lessons should be no more than two or three pages in length. The report should be written succinctly and not include extraneous information not pertinent to the review. If a longer report is desired, the Project lesson should include a link to the longer report. The Project lessons should be descriptively titled to allow the reader to understand the lesson content through the title alone. They shall include just enough Project background information

to facilitate understanding of the lesson. The lessons learned report should follow the following outline:

- 1) Date
- 2) Project name
- 3) Abstract (a summary or concentration of the essentials of a larger issue)
- 4) Project phase (Project Development, Engineering, Procurement, Construction, Startup)
- 5) Category (Management, Scope, Schedule, Cost, Risk)
- 6) Background (type of project, geographic location, other pertinent information)
- 7) The lesson (including condition, cause, effect, and remedy/resolution)
- 8) Applicability (types of projects, how lesson scan be applied, responsible party(ies) for action)
- 9) Contact person/Info

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Appendix R - Small, Women, and Minority Owned Business Information

SWAM Code Section

§ 2.2-4310. Discrimination prohibited; participation of small, women-owned, minority-owned, and service disabled veteran-owned business.

A. In the solicitation or awarding of contracts, no public body shall discriminate against a bidder or offeror because of race, religion, color, sex, national origin, age, disability, status as a service disabled veteran, or any other basis prohibited by state law relating to discrimination in employment. Whenever solicitations are made, each public body shall include businesses selected from a list made available by the Department of Small Business and Supplier Diversity.

B. All public bodies shall establish programs consistent with this chapter to facilitate the participation of small businesses and businesses owned by women, minorities, and service disabled veterans in procurement transactions. The programs established shall be in writing and shall comply with the provisions of any enhancement or remedial measures authorized by the Governor pursuant to subsection C or, where applicable, by the chief executive of a local governing body pursuant to § 15.2-965.1, and shall include specific plans to achieve any goals established therein. State agencies shall submit annual progress reports on small, women-owned, and minority-owned business procurement and on service disabled veteran-owned business procurement to the Department of Small Business and Supplier Diversity in a form specified by the Department of Small Business and Supplier Diversity. The Department of Small Business and Supplier Diversity shall make information on service disabled veteran-owned procurement available to the Department of Veterans Services upon request.

C. Whenever there exists (i) a rational basis for small business enhancement or (ii) a persuasive analysis that documents a statistically significant disparity between the availability and utilization of women-owned and minority-owned businesses, the Governor is authorized and encouraged to require state agencies to implement appropriate enhancement or remedial measures consistent with prevailing law.

D. In the solicitation or awarding of contracts, no state agency, department or institution shall discriminate against a bidder or offeror because the bidder or offeror employs ex-offenders unless the state agency, department or institution has made a written determination that employing ex-offenders on the specific contract is not in its best interest.

E. As used in this section:

“Minority individual” means an individual who is a citizen of the United States or a legal resident alien and who satisfies one or more of the following definitions:

1. “African American” means a person having origins in any of the original peoples of Africa and who is regarded as such by the community of which this person claims to be a part.

2. “Asian American” means a person having origins in any of the original peoples of the Far East, Southeast Asia, the Indian subcontinent, or the Pacific Islands, including but not limited to Japan, China, Vietnam, Samoa, Laos, Cambodia, Taiwan, Northern Mariana Islands, the Philippines, a U.S. territory of the Pacific, India, Pakistan, Bangladesh, or Sri Lanka and who is regarded as such by the community of which this person claims to be a part.

3. “Hispanic American” means a person having origins in any of the Spanish-speaking peoples of Mexico, South or Central America, or the Caribbean Islands or other Spanish or Portuguese cultures and who is regarded as such by the community of which this person claims to be a part.

4. “Native American” means a person having origins in any of the original peoples of North America and who is regarded as such by the community of which this person claims to be a part or who is recognized by a tribal organization.

“Minority-owned business” means a business that is at least 51 percent owned by one or more minority individuals who are U.S. citizens or legal resident aliens, or in the case of a corporation, partnership, or limited liability company or other entity, at least 51 percent of the equity ownership interest in the corporation, partnership, or limited liability company or other entity is owned by one or more minority individuals who are U.S. citizens or legal resident aliens, and both the management and daily business operations are controlled by one or more minority individuals.

“Service disabled veteran” means a veteran who (i) served on active duty in the United States military ground, naval, or air service, (ii) was discharged or released under conditions other than dishonorable, and (iii) has a service-connected disability rating fixed by the United States Department of Veterans Affairs.

“Service disabled veteran business” means a business that is at least 51 percent owned by one or more service disabled veterans or, in the case of a corporation, partnership, or limited liability company or other entity, at least 51 percent of the equity ownership interest in the corporation, partnership, or limited liability company or other entity is owned by one or more individuals who are service disabled veterans and both the management and daily business operations are controlled by one or more individuals who are service disabled veterans.

“Small business” means a business, independently owned and controlled by one or more individuals who are U.S. citizens or legal resident aliens, and together with affiliates, has 250 or fewer employees, or annual gross receipts of \$10 million or less averaged over the previous three years. One or more of the individual owners shall control both the management and daily business operations of the small business.

“State agency” means any authority, board, department, instrumentality, institution, agency, or other unit of state government. “State agency” shall not include any county, city, or town.

“Women-owned business” means a business that is at least 51 percent owned by one or more women who are U.S. citizens or legal resident aliens, or in the case of a corporation, partnership, or limited liability company or other entity, at least 51 percent of the equity ownership interest is owned by one or more women who are U.S. citizens or legal resident aliens, and both the management and daily business operations are controlled by one or more women.

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