



Oversight Procedure 32C - Project Scope Review

1.0 PURPOSE

The purpose of this Oversight Procedure is to describe the review, analysis and recommended procedures and reporting requirements that the Federal Transit Administration (FTA) expects from the Project Management Oversight Contractor (PMOC) regarding the sponsor's project scope. The purpose of the review is to verify that the scope of the project represented by the totality of all documentation, including environmental documents, basis of design and design criteria, third-party agreements, Real Estate Acquisition and Management Plan, and contract plans and specifications is internally consistent, defined to a level appropriate for the project development phase and applicable project delivery method, consistent with the estimated cost and schedule, and when applicable, consistent with the scope approved by FTA in the Sponsor's approval letters and Letters of No Prejudice (LONP), Letters of Intent (LOI), Early Systems Work Agreements (ESWA) and Full Funding or Small Starts Grant Agreements (SSGA).

2.0 BACKGROUND

Monitoring scope as the project moves through the various phases of development benefits cost control and management of risks inherent in the design and construction process. The scope of a transit project funded by Section 5309 or other federal funds is first established through the development of alternatives, and the selection of a preferred alternative. The scope at that point is often defined in general terms by the type of transit technology to be employed, the length of the project, the number of stations, and other general characteristics. The project scope is continuously refined as it moves through the successive phases of Project Development and Engineering. The scope of the project is first defined at the completion of the environmental review process required under the National Environmental Policy Act (NEPA) and ultimately the scope of the project is established in the Full Funding Grant Agreement (FFGA) or Small Starts Grant Agreement (SSGA) entered into between the Sponsor and the FTA. Any changes in the scope as defined in the FFGA or SSGA are expected to be minor in nature, and any significant changes are subject to the approval of the FTA.

The scope of the project is subject to FTA review as part of the process of approving the Sponsor's entry into Engineering, and later, prior to award of an FFGA or SSGA. Ideally, scope definition and refinement occurs during the Project Development Phase. The scope of the project should be very well defined at the completion Project Development or early in the Engineering phase; the later stages of the Engineering phase should be limited to preparing the drawings, specifications and related documents necessary for construction. In practice, however, some projects are not completely defined at the completion of the Project Development phase and additional definition is provided during the Engineering phase. Note that the effort to define (or redefine) any particular element of project scope becomes increasingly costly and disruptive as the project moves from the evaluation of alternatives through Project Development, Engineering, and into construction. The cost of a construction change order is greater and its impact on completion of the project is more significant than if the change had

occurred prior to bid. This is especially true if an alternate project delivery method such as design-build has been selected. For these reasons, the scope must be tightly defined prior to advertising the work for construction, or design and construction in the case of an alternate delivery method.

If the sponsor has selected a design-build project delivery method, the most important design document will be a performance specification. This document will determine what the construction contractor has to deliver, and once under contract, the Sponsor gives up the right (subject to contractual provisions) to make detailed design decisions. Because of the nature of a design-build contract, a change in scope that occurs after contract award is likely to be much more costly than a similar change to a project being built using a design-bid-build process. This result occurs because any scope change will affect both the design schedule and the construction schedule, which are closely tied by the design-build contract.

In the TCRP Report G-07, *Managing Capital Costs Of Major Federally Funded Public Transportation Projects* (2006), the Transportation Research Board notes that project definition entails the “conceptualization of the alternatives and the refinement of this project definition through the course of the project-development process. The inception and evolution of a project can have a large impact on the capital costs. In particular, the level of design is an important factor affecting the uncertainty of the capital costs and the subsequent variation in the estimates.

Clear cost priorities, established early in project development, are important to cost and schedule performance. These priorities should be reflected in the initial evaluation of alternatives. Establishing clear budget and schedule constraints early in the project-development process helped contain scope creep and identify reasonable project-development schedules. However, some flexibility with respect to scope and schedule should be maintained in the project-development process in order to adapt to the more unique project conditions identified throughout the development process. This flexibility combined with appropriate budgetary targets and reasonable developmental schedules formed the successful factors in project definition.”

Further: “[t]he project definition strategies that contributed the most success to the project-definition process were a transparent development process with extensive stakeholder input, a reasonable project-development schedule that reflects sufficient time for stakeholder outreach, *a value engineering exercise at each stage that reconsiders the definition results to that point, and a design-to-budget approach that maintains budgetary considerations within each stage of project development.*” (Emphasis added.)

3.0 OBJECTIVES

The objective of this review is to assess the Sponsor’s definition of the project scope as represented by environmental documents and permits, basis of design and design criteria, third party agreements, Real Estate Acquisition and Management Plan, drawings, specifications, narratives, plans for project delivery, etc., for adequacy and completeness given the phase; for internal consistency; for compliance with applicable laws, regulations, policies, etc.; bid-ability and constructability. If the review is performed after issuance of approval letters, Letters of No Prejudice (LONP) or Early Systems Work Agreements (ESWA) or award of an FFGA or SSGA, the review may include verification that the

scope definition still meets the functional requirements documented in the approval letter, LONP, ESWA, FFGA or SSGA.

4.0 REFERENCES

The following are the principal, but by no means the only, references to Federal legislation, codification, regulation and guidance with which the PMOC should have a good understanding as related to the Sponsor's project work being reviewed under this OP:

4.1 STATUTES AND LEGISLATION

- Moving Ahead for Progress in the 21st Century Act (MAP-21), Pub. L. 112-141, effective October 1, 2012.
- National Environmental Policy Act of 1969, as amended, 42 U.S.C. §§ 4321 *et seq.*
- Americans with Disabilities Act of 1990 (ADA), as amended by the ADA Amendments Act of 2008 (Pub. L. 110-325).

4.2 EXECUTIVE ORDERS

- Executive Order 11988 - Floodplain Management, May 24, 1977, 42 Federal Register 26951, page 117, 3 CFR, 1977 Compilation, page 117, as amended.

4.3 REGULATIONS

- Project Management Oversight, 49 C.F.R. Part 633
- Chapter 53 of Title 49 as amended by MAP-21 provisions
- 49 CFR Part 602, Emergency Relief Program, Interim Final Rule, 78 Federal Register 61, March 29, 2013, pages 19136 – 19147.
- 49 CFR Parts 27, 37 & 38: U.S. Department of Transportation regulations implementing the transportation provisions of the ADA.
http://www.fta.dot.gov/civilrights/ada/civil_rights_5936.html. Important to the design of transit stations are paragraphs 206.3 regarding the location of accessible routes relative to general circulation paths, and 810.5.3 regarding the coordination of platform and rail car door height. Paragraph 810.5.3 also contains language correcting a misunderstanding of 49 CFR 38.71(b) (2) concerning light rail.

4.4 GUIDANCE

- Project and Construction Management Guidelines, 2011 Update
- Project Construction Management Handbook, 2013
- FTA Standard Cost Category Workbook (SCC)
http://www.fta.dot.gov/planning/newstarts/planning_environment_2580.html

5.0 PROJECT SPONSOR SUBMITTALS

The PMOC should obtain the most current versions of the following documents from the Sponsor. Depending on the project phase in which this review is completed, not all of the documents below will be available.

- Written Project Description
- Environmental Documents (FEIS/ROD; EA/FONSI; CATEX)
- Basis of Design Reports, Design Criteria Reports

- Design Documents (Plans, Performance Specifications and Specifications)
- Project Management Plan, Project Delivery Plan
- Real Estate Management Plan (RAMP) with current status
- Risk and Contingency Management Plan or Risk Register (if available)
- Permits
- Project Schedule
- Current Capital Cost Estimate
- Review documents
 - Independent Cost Estimates
 - Threat and Vulnerability Assessments
 - Hazard Analyses
 - Value Engineering Reports
 - Constructability Reviews
 - Risk Assessment Reports
- Documentation of changes to scope that have occurred since last milestone
- Approval letters, Letters of No Prejudice (LONP) or Early Systems Work Agreements (ESWA) issued by the FTA
- Full Funding Grant Agreement or Small Starts Grant Agreement and Attachments; approved and pending amendments

6.0 SCOPE OF WORK

6.1 PMOC QUALIFICATIONS

The individual or team of individuals selected to perform this evaluation should have extensive experience in the planning and delivery of large, complex, federally funded transit projects. The experience should include familiarity with the issues usually presented during the construction phase of such projects.

6.2 PRELIMINARY DOCUMENT REVIEW

Upon receipt of the assignment, the PMOC should obtain the specified materials from the Sponsor. The PMOC may already be generally familiar with the project as a result of on-going monitoring activities. If the assigned personnel are not familiar with the project, they should review the materials in preparation for their on-site visit.

6.3 PROPOSED APPROACH TO REVIEWING THE SCOPE – A SAMPLING PLAN

The PMOC shall propose to FTA an approach to reviewing the Sponsor's scope documentation that, regardless of the level of development of the project, will provide FTA with reliable analysis and recommendations. The proposal should include a description of the level of sampling of the documentation.

6.4 ON-SITE REVIEW MEETING

The PMOC should arrange for an on-site briefing by the Sponsor's project management team. The briefing should include a narrative description of the project scope supplemented by suitable graphics with particular emphasis on any changes in the scope of the project that have occurred since the last major review milestone, e.g. commencement of project development, commencement of engineering, execution of the FFGA or SSGA. The discussion of project scope should include a review of the Sponsor's plan for project delivery, any changes in the Sponsor's plans for managing the project through the construction, start-up, testing and acceptance phases, and any changes in external factors such as right-of-way, permits or third-party agreements that would affect project scope.

6.5 REVIEW AND ASSESSMENT

The PMOC should review the Sponsor's internal plan to check and review its design for scope completeness and coordination. The PMOC should review the adequacy and timing of the checks planned and implemented by the Sponsor. Checks may be in the form of peer reviews and/or independent or internal design reviews that ensure the design provided to the PMOC for FTA's review is, at a minimum, adequately complete given the project phase, internally consistent and coordinated.

The Scope Review Checklist, attached as Appendix B, provides a guide to evaluating the scope for completeness. The checklist should be used in conjunction with the project cost estimate and schedule to develop a comprehensive understanding of the scope and as a cross-check for scope omissions and conflicts.

The PMOC should address the following questions. The answers should be comprehensive, with sufficient information to allow the reader to develop a complete understanding of any significant changes in the scope of the project since the last major milestone.

- 1) What changes in project scope have occurred since the last major milestone e.g. commencement of project development or engineering, execution of the FFGA, or SSGA?.
- 2) Have the known changes been incorporated into the documents, design criteria, plans, specifications, related Management Plans, and the Grant Agreement?
- 3) Are there any additional known or anticipated changes to scope at the time of this assessment?
- 4) Do the project delivery plans and construction documents reflect the full scope of the project? If not, identify any missing elements.
- 5) Does the current capital cost estimate and schedule correlate with the known and anticipated scope of the project?
- 6) Identify any unknown or uncertain conditions (e.g., real estate to be acquired, permits to be issued, and third-party agreements to be finalized) that may affect the cost and/or schedule for construction and assess the Sponsor's plan and schedule for resolving these issues.
- 7) Do the contract documents address these unknown or uncertain issues in a way that appropriately allocates risk and avoids incurring unnecessary costs?

- 8) Based on this review of the project and its current documentation, are there likely to be changes in project scope (including related cost and schedule impacts) beyond those ordinarily expected of a project at this phase of development. If so, identify these items and discuss the Sponsor's plan for resolving them.
- 9) If the scope of the functional elements of the project has changed, e.g., longer/shorter alignment, fewer/more stations, fewer traction power substations, etc., can the revised project still meet the capacity requirements of the program and as approved in the FFGA or SSGA?

The PMOC shall assess and evaluate Sponsor and material third party project information and data. Then the PMOC shall produce characterizations of the project scope that integrate and summarize available information and data for the project, providing professional opinions, analysis, information, data and descriptive text in an accessible and understandable format.

- 1) Such project information can include but is not limited to scope, capacity, level of service, functionality, reliability, etc.
- 2) Characterizations for individual scope elements such as guideway, vehicles, systems, etc. shall be sufficient to provide FTA with a project-level and element-level of understanding.
- 3) For projects in Project Development or Engineering, the PMOC shall review and characterize the Sponsor's project scope in terms of its descriptions, designs, products, etc. using the checklist from Appendix B to determine that:
 - a) The scope is substantially consistent with the scope adopted in the environmental decision document, e.g., Record of Decision, Finding of No Significant Impact or Categorical Exclusion;
 - b) The scope will support the level and quality of revenue service typically offered by the Sponsor;
 - c) Proprietary systems or methods specified will permit a reasonable number of construction contractors with the appropriate expertise to compete for construction packages;
 - d) Major work details, structural element dimensions, design interfaces and physical interfaces are complete and well defined;
 - e) Plans and drawings or performance specifications are adequate in terms of content, presentation, clarity, cross-referencing and detail;
 - f) Roles and responsibilities of construction contractors versus those of the Sponsor's team of staff and consultants or other third-parties are well defined;
 - g) Project is constructible.
- 4) Review and characterize the Sponsor's project systems and vehicle design. Determine whether the Sponsor has matched appropriate technologies with the planned transit applications for the best performance at a reasonable cost.
- 5) In the absence of adequate scope detail for a given level of design, the PMOC shall validate project data by comparing the current Sponsor assumptions to relevant, identifiable industry standards or experience.
- 6) The PMOC's findings should be presented in order of importance (most likely, largest

consequences, etc.) and accompanied by recommendations for modifications or additional work by the Sponsor along with a time frame for the performance of the work.

7.0 REPORT, PRESENTATION, RECONCILIATION

The PMOC shall provide FTA with a written report of its findings, analysis, recommendations, professional opinions, and a description of the review activities undertaken. After FTA approval, the PMOC should share the report with the Sponsor. In the event that differences of opinion exist between the PMOC and the Sponsor regarding the PMOC's findings, the FTA may direct the PMOC to reconcile its findings with the Sponsor and provide FTA with a report addendum covering the agreed modifications by the Sponsor and PMOC.

The report formatting requirements of OP 01 apply. When necessary, the PMOC shall perform data analysis and develop data models that meet FTA requirements using Microsoft Office products such as Excel and Word and use FTA-templates when provided. The PMOC may add other software as required but documentation and report data shall be made available to FTA.