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## PROJECT MANAGEMENT PLAN GUIDANCE

### BACKGROUND

On August 10, 2005, the President signed into law the new surface transportation act, the "Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users" (SAFETEA-LU) (Pub.L. 109-59, 119 Stat. 1144). The requirement for the Project Management Plan and an Annual Financial Plan are contained in section 1904(a) of SAFETEA-LU. This provision amends 23 U.S.C. 106(h), as follows:

*"(h) MAJOR PROJECTS.-*

*"(1) IN GENERAL.-Notwithstanding any other provision of this section, a recipient of Federal financial assistance for a project under this title with an estimated total cost of \$500,000,000 or more, and recipients for such other projects as may be identified by the Secretary, shall submit to the Secretary for each project-*

*"(A) a project management plan; and*

*"(B) an annual financial plan.*

*"(2) PROJECT MANAGEMENT PLAN.-A project management plan shall document-*

*"(A) the procedures and processes that are in effect to provide timely information to the project decision makers to effectively manage the scope, costs, schedules, and quality of, and the Federal requirements applicable to, the project; and*

*"(B) the role of the agency leadership and management team in the delivery of the project.*

*"(3) FINANCIAL PLAN.-A financial plan shall-*

*"(A) be based on detailed estimates of the cost to complete the project; and*

*"(B) provide for the annual submission of updates to the Secretary that are based on reasonable assumptions, as determined by the Secretary, of future increases in the cost to complete the project...."*

This Project Management Plan guidance is to assist the recipient of Federal financial assistance in the preparation of a Project Management Plan to meet the requirements of SAFETEA-LU. The intent of this guidance is not to require a prescriptive format for the Project Management Plan; but rather to provide a general framework in which modifications can be made in order to produce a Project Management Plan that will most effectively serve the State Transportation Agency (STA), the FHWA, and other sponsoring agencies throughout the project continuum.

## GENERAL

Major projects are monitored from planning to operations. The Project Management Plan will help the management team maintain a constant focus towards delivering the major project in accordance with the customers' needs, wants, and expectations. The customers' desired outcomes are defined through the project objectives and goals. Major projects must be delivered in a manner that captures the public's trust and confidence in the State and Federal transportation agencies' ability to effectively and efficiently deliver a quality product. The public must perceive that the finished product was a wise investment of the very substantial amount of public resources. In order to insure major project success, it is imperative that good project management principles are used beginning early in the planning stage of a project. As the major project becomes more defined, the Project Management Plan will become the tool by which the project will be effectively managed.

For most projects, the recipient of Federal financial assistance will be a State Transportation Agency (STA). Therefore, the STA will prepare the Project Management Plan. For some Public Private Partnership projects, there may be no Federal financial assistance provided to a STA but the private entity delivering the project may secure a Transportation Infrastructure Finance and Innovation Act (TIFIA) loan. TIFIA loans are considered Federal financial assistance and Project Management Plans are required for these projects, too. For these projects, the private entity receiving funds from a TIFIA loan will prepare the Project Management Plan. This will only happen when the STA does not receive any Federal financial assistance. If the STA receives any amount of Federal financial assistance, then the STA will be responsible for submitting the Project Management Plan. This guidance will constantly refer to a STA; however, for Public Private Partnership projects receiving only TIFIA loans as Federal financial assistance, the term STA refers to the private entity receiving the TIFIA loan.

A draft Project Management Plan must be submitted to the FHWA for review prior to approval of the NEPA decision document. The FHWA will provide comments and the STA must submit a Project Management Plan for approval within 90 days of the date of the signed NEPA decision document.

For the first Project Management Plan, the FHWA Major Projects Team must provide concurrence prior to the FHWA Division Office approval. After that, either the Division or Headquarters Offices may request FHWA Headquarters review and concurrence prior to the Division's approval of subsequent Project Management Plan revisions. The Project Management Plan is to be a living document in which revisions will be issued as the project progresses in order to add, modify, or delete provisions that will result in the most effectively managed project. At a minimum, the Project Management Plan should be revised and approved prior to authorization of federal-aid funds for right of way acquisition and prior to authorization of federal-aid funds for construction.

In the case of major projects funded jointly by FHWA and another modal agency such as the Federal Transit Administration (FTA), it is expected that the STA will submit a single

Project Management Plan meeting the requirements of both agencies. The timing of the submission will also need to be coordinated, as FTA or other modal agency may have different submission requirements.

## PURPOSE

The Project Management Plan is the guide for implementing the major project and documents assumptions and decisions regarding communication, management processes, execution and overall project control. The ultimate purpose of the Project Management Plan is to clearly define the roles, responsibilities, procedures and processes that will result in the major project being managed such that it is completed:

- On-time,
- Within budget,
- With the highest degree of quality,
- In a safe manner for both the individuals working on the project and for the traveling public, and
- In a manner in which the public trust, support, and confidence in the project will be maintained.

The Project Management Plan addresses all phases of the major project life cycle, and ensures that the project will be managed holistically and as a continuum, not incrementally as the project progresses. It is essential that the Project Management Plan establish the metrics by which the success of the project is defined. It is expected that all sponsoring agencies will endorse the Project Management Plan.

## TOPICS

The following topics form the basic contents for the Project Management Plan. Again, the intent of the following sections is not to require a prescriptive format for the plan; but rather to provide a general framework in which modifications can be made in order to produce a Project Management Plan that will most effectively serve the STA, the FHWA, and other sponsoring agencies throughout the project continuum. References to existing STA documented processes may be used in the Project Management Plan.

**1. Project Descriptions and Scope of Work.** The complete description of the project and the overall program, along with the history of its development and important decisions should be documented in the Project Management Plan. A clearly defined project scope should be included. This scope statement should include all the requirements to be executed, verified and delivered. A clearly defined scope of work will document which items of work have been dedicated in the baseline cost budget. This will assist in controlling and minimizing future potential scope increases.

The Project Management Plan should clearly define the project scope of work, including construction, environmental work, utilities, and right-of-way. A map of the defined project can be included for added clarity.

**2. Goals and Objectives.** The goals and objectives of the overall project should be documented in the Project Management Plan. The degree to how the requirements and commitments of the major project will be fulfilled should also be included in this section. For example, one commitment may be to complete a project within a certain budget. The extent of how this commitment will be met is a quality measure. Completing the project at 10% under budget would be a possible outcome and would compare favorably to completing the project at 1% under budget. This could be one measure of quality for the project and must be used with other measurements. Quality measurements should cover schedule, budget (including cost containment), quality, safety, scope control, public trust and confidence, and federal requirements.

The quality of the project requirements should be stated upfront, such that all involved and concerned parties are in full agreement with the basic management philosophies that will be incorporated in order to meet these requirements. How quality will be measured needs to be clear and specific and should include appropriate targets and tolerances.

**3. Project Organizational Chart, Roles, and Responsibilities.** The project management team should be organized in such a way to achieve all of the stated project objectives and goals, from a managerial, technical, oversight, and decision-making perspective. A project organizational chart should be attached for clarity, with a brief description of roles and responsibilities for each section or individual team. Normally, an executive oversight committee (or steering committee) will be shown at the top of the chart to provide overall project direction. The executive oversight committee would be mostly made up of executive level Federal, STA, and local officials, and should meet on a periodic basis. The day-to-day project management team is normally led by a Project Director or Manager, which would support the executive oversight committee.

This section of the Project Management Plan should define the relationships between public and private stakeholders and their organizational structures. Also, if the major project is in multiple states, each State's overall roles and responsibilities should be spelled out.

In addition to technical and functional support teams such as right-of-way, utilities, design, construction, project controls (scheduling, cost, document control), QA/QC, etc., consideration should be given to creating separate teams for media and public information, civil rights, environmental monitoring and review, safety, and security.

The project team must have experienced key personnel dedicated to the success of the major project, with the requisite technical, managerial, leadership, and communication skills needed to proficiently perform the required tasks. Integrated project teams (mix of consultant and STA personnel in the project management and functional/support teams), as well as co-location of the project delivery team, have worked successfully on other Major projects. However, the use of consultants must be carefully structured and reviewed, to make sure that no conflicts of interest exist from a Government-Contractor relationship aspect and to ensure that the proper STA oversight will still exist. For example, no one consultant shall be responsible for both a design/construction role and an

oversight role. Also, the STA should not fully contract out the oversight of any one team, but should have at least one STA manager directly responsible and accountable for the project management team and each functional/support team. It should always be kept in mind that one of the most critical requirements of all key project personnel is to have the highest standards of ethical integrity.

As noted earlier, a private entity in a Public Private Partnership project may be the responsible party for a major project. In this case, the Project Management Plan should document the necessary information and assistance provide by the STA to deliver the project.

**4. Project Phases.** The Planning and Project Development process can include many phases. The Project Management Plan should include a description of the individual phases. Managing day-to-day activities of the project is necessary. In addition, the project management team must understand the broader context of the project phases to understand all potential influences on the project.

**5. Procurement and Contract Management.** How procurement and contract management activities are to be conducted are to be documented in the Project Management Plan. The management of all procurement and contract activities must be formalized.

The section should include how procurement decisions are to be made including selection of contractors and the types of contracts to be utilized. Consideration should be given to the size and length of contracts as they relate to bonding capacity, the number of likely bids, and other market conditions. It is also important to note that the strategy of multiple contracts may introduce additional coordination and interface issues among separate contracts.

This section should also include how the contracts are to be administered and should cover performance reporting, payments, claims administration, and records management. In addition, there should be a documented process for contract closeout, which includes an analysis of the contract's results.

**6. Cost Budget and Schedule.** Cost and schedule data are included in the project's Finance Plan and Annual Updates, which are required for all major projects. The Initial Finance Plan is required prior to the first federal authorization for construction funds. The Project Management Plan should specifically reference these Finance Plan and Annual Updates as an integral part of the Project Management Plan and include the process of how cost estimates and schedules are validated and its frequency. For completeness, the Project Management Plan should include the current cost and schedule information. This information should be broken down into major cost elements and significant schedule milestones. The initial financing arrangements, including any proposed loans and or bonds, for the project should also be discussed. The financing for major projects will always need to be consistent with any fiscally constrained plans, STIPs, TIPs, etc. The

Finance Plan Annual Updates will then document all subsequent budget and financing revisions.

Prior to the preparation of the initial Finance Plan, the Project Management Plan should include a mechanism to report an annual update of the cost estimate.

Independent validations of the cost and schedule at significant milestones are important to avoid sudden and unexpected cost overruns and schedule delays. Independent validations should be performed by an unbiased team, which does not have a stake in the outcome of the validation. The FHWA will conduct independent validations of the cost estimate as appropriate at critical stages throughout the project continuum. These stages may include prior to approval of the Final Environmental Impact Statement or Environmental Assessment and again during the preparation of the Initial Finance Plan, which will be prior to the initial FHWA construction authorization. In addition, the FHWA may conduct cost estimate reviews anytime an Annual Update of the Finance Plan shows a significant cost increase, schedule delay or scope change from the previous Annual Update. Any other validations conducted by the STA should be verified by the FHWA.

**7. Project Reporting and Tracking.** The actual project reporting and tracking procedures to be incorporated into the major project should be included in the Project Management Plan. The project reporting and tracking system is one of the key elements in ensuring that the project budget and schedule will be maintained to the maximum extent possible, that the project will be completed with the highest degree of quality, and that compliance with Federal regulations will be met.

The project reporting and tracking system should be developed to collect, assess and maintain project status information and data that is timely, independent, and accurate. This system should provide current information on project prosecution, progress, changes, and issues. This information should be used to identify trends and forecast project performance and to identify and proactively address challenges to eliminate major project surprises.

The need to continuously and accurately report cost increases; schedule changes; deficient quality items; and the causes, impacts, and proposed measures to mitigate these issues is paramount to effectively managing, administering, and protecting the public investment in the major project. Any apparent reporting deficiencies or questionable data should be completely resolved. Ultimately, the STA and FHWA must be fully aware of the complete status of the major project, and therefore be in a position to take appropriate action if necessary.

It is recommended that a monthly cost, schedule, and status report be produced by the sponsoring STA, and that a monthly status meeting be held with the project management team, STA, FHWA, and other applicable agencies in attendance. The monthly status meetings should discuss the project costs, schedules, quality issues, compliance with Federal requirements, and other status items in sufficient enough detail to allow all

involved parties to be fully aware of the significant status issues and actions planned to mitigate any adverse impacts. In addition, significant issues occurring between status meetings must be communicated immediately without waiting for the next regularly scheduled meeting, with any highly significant or sensitive issues elevated immediately to the executive leadership.

The following is an example of a way to format the monthly status reports. The intent is not to require a prescriptive format in which to report, but rather to provide an example of a general outline in which modifications or additions can be made in order to produce a monthly reporting format that will most effectively serve both the STA and the FHWA. It is recognized that some major projects will have a more extensive monthly status than others.

- **A. Executive Summary.** The executive summary should be a clear and concise summary of the current status of the project, including any major issues that have an impact on the project's scope, budget, schedule, quality, or safety. It may be done in a bulleted format for ease of briefing STA and FHWA upper management. The following summary information is an example of items that would be useful on a monthly basis:
  - Current total project cost (forecast) vs. latest approved budget vs. baseline budget. Reasons for any deviations from the approved budget.
  - Current overall project completion percentage vs. latest approved plan percentage.
  - Any delays or exposures to milestone and final completion dates. Reasons for the delays and exposures.
  - Any Federal obligations and/or TIFIA disbursements occurring during the month versus planned obligations or disbursements.
  - Any significant contracts advertised, awarded, or completed.
  - Any significant scope of work changes.
  - Any significant items identified as having deficient quality.
  - Any significant safety issues.
  - Any significant Federal issues such as environmental compliance, Buy America, DBE affirmative action requirements, etc.
  
- **B. Project Activities and Deliverables.** The purpose of this section is to: (1) highlight the project activities and deliverables occurring during the previous month (reporting period), and (2) define the activities and deliverables planned for the next two reporting periods. Activities and deliverables to be reported on should include meetings, audits and other reviews, design packages submitted, advertisements, awards, construction submittals, construction completion milestones, financial plan submittals, media or Congressional inquiries, value engineering/constructability reviews, and other items of significance. The two-month "look ahead schedule" will enable FHWA and STA personnel to better schedule their workloads to accommodate any activities requiring input or assistance.

- **C. Action Items/Outstanding Issues.** This section should draw attention to, and track the progress of, highly significant or sensitive issues requiring action and direction in order to resolve. In general, issues and administrative requirements that could have a significant or adverse impact to the project's scope, budget, schedule, quality, safety, and/or compliance with Federal requirements should be included. Status, responsible person(s), and due dates should be included for each action item/outstanding issue. Action items requiring action or direction that month should be included in the monthly status meeting agenda. The action items/outstanding issues may be dropped from this section upon full implementation of the remedial action, and upon no further monitoring anticipated.

The process of tracking action items, outstanding issues, proposed changes, etc. should be documented in the Project Management Plan to ensure resolution.

- **D. Project Schedule.** An updated master program schedule reflecting the current status of the program activities should be included in this section. A Gantt (bar) type chart is probably the most appropriate for monthly reporting purposes, with the ultimate format to be agreed upon between the STA and FHWA. It is imperative that the master program schedule be integrated, i.e., the individual contract milestones tied to each other, such that any delays occurring in one activity will be reflected throughout the entire program schedule, with a realistic completion date being reported.

Narratives, tables, and/or graphs should accompany the updated master program schedule, basically detailing the current schedule status, delays and potential exposures, and recovery efforts. The following information would be beneficial:

- Current overall project completion percentage vs. latest approved plan percentage.
  - Completion percentages vs. latest approved plan percentages for major activities such as right-of-way, major or critical design contracts, major or critical construction contracts, and significant force accounts or task orders. A schedule status description should also be included for each of these major or critical elements.
  - Any delays or potential exposures to milestone and final completion dates. The delays and exposures should be quantified, and overall schedule impacts assessed. The reasons for the delays and exposures should be explained, and initiatives being analyzed or implemented in order to recover the schedule should be detailed.
  - Project Schedule. An updated master program schedule reflecting the current
- **E. Project Cost.** An updated cost spreadsheet reflecting the current forecasted cost vs. the latest approved budget vs. the baseline budget should be included in



this section. One way to track project cost is to show: (1) Baseline Budget, (2) Latest Approved Budget, (3) Current Forecasted Cost Estimate, (4) Expenditures or Commitments To Date, and (5) Variance between Current Forecasted Cost and Latest Approved Budget. Line items should include all significant cost centers, such as prior costs, right-of-way, preliminary engineering, environmental mitigation, general engineering consultant, section design contracts, construction administration, utilities, construction packages, force accounts/task orders, wrap-up insurance, construction contingencies, management contingencies, and other contingencies. The line items can be broken-up in enough detail such that specific areas of cost change can be sufficiently tracked, and future improvements made to the overall cost estimating methodology. A Program Total line should be included at the bottom of the spreadsheet.

Narratives, tables, and/or graphs should accompany the updated cost spreadsheet, basically detailing the current cost status, reasons for cost deviations, impacts of cost overruns, and efforts to mitigate cost overruns. The following information would be beneficial:

- Reasons for each line item deviation from the approved budget, impacts resulting from the deviations, and initiatives being analyzed or implemented in order to recover any cost overruns.
- Transfer of costs to and from contingency line items, and reasons supporting the transfers.
- Speculative cost changes that potentially may develop in the future, a quantified dollar range for each potential cost change, and the current status of the speculative change. Also, a comparison analysis to the available contingency amounts should be included, showing that reasonable and sufficient amounts of contingency remain to keep the project within the latest approved budget.
- Detailed cost breakdown of the general engineering consultant (GEC) services, including such line items as contract amounts, task orders issued (amounts), balance remaining for tasks, and accrued (billable) costs.
- Federal obligations and/or TIFIA disbursements for the project, compared to planned obligations and disbursements.

A vigorous process should be implemented to enhance the monthly project reporting and tracking. Non-integrated cost and schedule reporting normally just compares the actual expenditures (contractor payments, invoices, right-of-way expenditures, etc.) to the planned expenditures. Non-integrated reporting does not take schedule slippage into account; therefore, if the project is behind schedule, the actual expenditures will naturally be less than the planned expenditures and the comparison could provide a misleading status as to whether or not the project is within budget.

One example of a project management methodology that integrates the cost and schedule progress reporting is Earned Value Management. Earned Value

Management reporting, takes the schedule slippage into account when comparing actual versus planned expenditures, and provides an early and more accurate indication of whether or not the project will be completed within budget. If the Earned Value reporting indicates that the project is trending to be over-budget, early action can be taken to reverse the trend, plan for contingency use, and/or dedicate additional resources to the project.

- **F. Project Quality.** The purpose of this section is to: (1) summarize the QA/QC activities during the previous month (reporting period), and (2) highlight any significant items identified as being deficient in quality. Deficient items noted should be accompanied by reasons and specifics concerning the deficiencies, and corrective actions taken or planned. In addition, the agency or firm responsible for the corrective action should be documented. Planned corrective actions should then be included as Action Items/Outstanding Issues.
- **G. Other Status Reports.** The STA and FHWA may agree that other reports may be beneficial in ensuring that project status issues are fully and openly communicated.

Such reports may include contractor safety performance (as compared to the National average or other benchmark), wrap-up insurance payments and reserves, and/or DBE actual utilization versus goals. Other reports may be more appropriate to include on a semi-annual or annual basis, such as the public relations plan, value engineering and constructability review plan, environmental compliance report, and/or compliance with the Buy America requirements.

**8. Internal and Stakeholder Communications.** In addition to the formal reporting and tracking of the project discussed above. The internal communications and stakeholder communications is integral to a successful major project. A discussion should be included in the Project Management Plan to address communications between project team members and stakeholders that cover how informal and formal communications will be conducted and managed.

**9. Project Management Controls (Scope, Cost, Schedule, Claims, etc.)** A project controls functional team will normally help manage the scope, total cost and overall master schedule for the project, in order for the entire project delivery team to meet the stated objectives of the project being completed on time and within budget. The project controls functional team will also produce project reports, including quantifying schedule delays and cost increases, and initiatives being analyzed to recover. This section includes project management controls that should be used on most major projects.

- **A. Risk Management Plan.** A systematic process to identify, analyze, and respond to project risk throughout all phases of the project should be documented in the Project Management Plan. This plan should result in maximizing the probability and consequence of positive events and minimizing the probability

and consequences of adverse events. This process should be evaluated throughout the project's life cycle.

- **B. Scope Management Plan.** The Project Management Plan should document the philosophy regarding scope management. The discussion should include the processes for approving scope changes and for verifying that the planned scope of work is actually completed.
- **C. Scheduling Software.** The Project Management Plan should include the scheduling software to be used for the project. Consideration should be given to requiring the same software package for all schedules to be generated by the project controls functional team, the design consultants, and the contractors, in order to ensure uniformity and compatibility for the overall master schedule. The frequency and the detailed process of reviewing and validating schedules should be also included.
- **D. Cost Tracking Software.** The software to be used to track and report costs should be included. The frequency and the detailed process of reviewing and validating cost estimates should be also included.
- **E. Project Metrics.** Appropriate project metrics by which success of the project are essential and should be documented in the Project Management Plan. These metrics should be developed such that appropriate analyses can be conducted to identify trends and forecast project performance. The metrics should be used to identify and proactively address challenges to eliminate surprises. Metrics for cost, schedule, and public opinion should be considered. Reports on project metrics should be incorporated into the Project Reporting and Tracking procedures outlined above.
- **F. New and Innovative Contracting Strategies.** Management processes for new and innovative acquisition strategies to be incorporated into the project should be included in this section. These could include Design-Build or Public-Private-Partnerships.

Any use of cost-plus-time bidding, lane rental, and bid options (simultaneous procurements of similar scopes with options to award) should be included.

- **G. Value Engineering, Value Analyses, and Constructability Reviews.** The decision as to when (i.e., what design stage completion) to perform value engineering, value analyses, and constructability reviews should be made during the early design stage and included in the Project Management Plan, with funding for each review set up and included in the project budget.

Also, if contractor-initiated value engineering change proposals (VECP) are used, this should be included in the Project Management Plan with a discussion on how savings will be shared.

Procedures should be established for reviewing each of the Value Engineering, Value Analyses, and Constructability reviews at the completion of the studies; such as documenting the acceptance or rejection of the individual proposals, documenting potential cost savings, and approvals for the actions taken.

- **H. Contractor Outreach Meetings.** If contractors are to be consulted during the early design process, this should be included in the Project Management Plan. The level of involvement by contractors should be discussed along with any procurement restrictions on contractors involved in the outreach meetings.
- **I. Partnering.** Successful projects usually depend on the development of mutual confidence and respect between the project delivery team and the contractors. Therefore, the project delivery team should develop a documented process to enhance working relationships in its contract administration activities with the contractors. This can be done through a formalized partnering process.

The Project Management Plan should document the level of organizational involvement and the professional facilitation for the key partnering processes, including any partnership development and team-building workshops.

- **J. Change Order and Extra Work Order Procedures.** The Project Management Plan should define the procedures for addressing change orders and extra work orders during the project execution. These procedures should: (1) ensure that each order is adequately reviewed by all parties affected by the change, (2) provide for efficient processing, and (3) ensure that the order is consistent with the Project Objectives. A graphical flowchart (and possibly a narrative) showing the change order procedure, parties involved, approval authorities, and maximum time frames allowed per activity, should be included in the Project Management Plan. These procedures should also include the process for accommodating work outside of the defined scope.

Checks and balances should be included in the change order procedure to ensure that a comprehensive, yet timely, review of the proposed change has been accomplished prior to execution. A few of the key elements in the proper management of change orders and extra work orders are:

- The full scope must be identified and understood as soon as possible, including assessing whether a change exists by comparing the contract documents and language to the alleged change.
- Viable alternatives should be fully considered and evaluated, including resultant impacts to the project scope, budget, schedule, and coordination requirements, with the goal of minimizing the impact of the change.

- Independent cost estimate reviews should be performed by the project delivery team to verify the reasonableness of the contractor/consultant's price. Contractors/consultants should be required to submit detailed cost and pricing data for each element of their cost estimate. Negotiations of quantities, unit prices, and other direct charges should be undertaken when determined to be in the best interests of the Government, in order to obtain a fair and reasonable price.
- An Error and Omissions process should be included as part of the overall change order procedure, to determine if there is any design consultant liability associated with the change that can possibly be recovered.
- Timely response to a change, from both the contractor/consultant and the project delivery team, should be implemented within the predetermined allowable time frames set up in the procedures.
- Detailed records, correspondence, photographs, etc. of all pertinent aspects of the change order must be maintained.

Significant change order and extra work order reports should be incorporated into the Project Reporting and Tracking procedures outlined above.

- **K. Claims Management Procedure.** The Project Management Plan should also define the claims review and management process to be followed in cases of contractor claims. Usually contract articles and specifications require the contractor to exhaust all possible administrative remedies, prior to seeking judicial relief in connection with a matter to be resolved, which would also be in concert with the partnering objectives. The roles and responsibilities of those reviewing and approving the claims, including legal reviews must be documented. A graphical flowchart (and possibly a narrative) showing the claims review and management procedure, parties involved, and approval authorities should be included in the Project Management Plan.

Status of significant claims should be incorporated into the Project Reporting and Tracking procedures outlined above.

- **L. Other Programs.** The Project Management Plan should include how other unique programs are to be managed. These may include:
  - Owner Controlled Insurance Programs (OCIPs)
  - Transportation Infrastructure Finance and Innovation Act (TIFIA) loan program

**10. Design Quality Assurance/Quality Control (QA/QC).** The Project Management Plan should set up the general requirements for Quality Assurance/Quality Control

(QA/QC) to be used during the design phase. A reference to standard design QA/QC documents may be appropriate, plus any enhanced QA/QC procedures to be incorporated due to the complexity and visibility of the Major project. It is suggested that, at a minimum, design QA/QC procedures include the following:

- An overall Design QA/QC Plan.
- Design standards to be adhered to.
- Design criteria specific to the individual project.
- Procedures for preparing and checking individual plans, specifications, estimates, calculations, and other submittal items.
- Procedures for preparing and checking any unique or highly specialized designs.
- Procedures for coordinating work performed by different persons for related tasks, to ensure that conflicts, omissions, or errors do not occur between drawings or between drawings and other design documents.
- Procedures for coordinating and obtaining permits from permitting agencies, utility companies, and railroad companies. This should include procedures for ensuring that all permitting, utility, and railroad requirements are incorporated into the design of the project; and procedures for coordinating submittals and agency reviews such that the overall project schedule is not delayed.
- Level, frequency, and methods of review of the adequacy of the total project design. Methods by which all final design documents will be independently reviewed; verified for constructability, completeness, clarity, and accuracy; and back-checked.
- Level and frequency of audit and oversight design reviews (concerning QA/QC and validity of consultant payments) to be performed by the STA, FHWA, independent consultants, and/or other agencies.
- Procedures for reviewing and checking design drawings and documents required during construction.
- Qualifications for all key design personnel.
- Documentation and submission procedures to ensure that the established design QA/QC procedures have been followed.

**11. Construction Quality Assurance/Quality Control (QA/QC).** The Project Management Plan should also set up the general requirements for Quality Assurance/Quality Control (QA/QC) to be used during the construction phase. A

reference to standard construction QA/QC documents may be appropriate, plus any enhanced QA/QC procedures to be incorporated due to the complexity and visibility of the major project. It is suggested that, at a minimum, construction QA/QC procedures include the following:

- An overall Construction QA/QC Plan.
- Construction standards to be adhered to for performing construction inspection. Documents to be used that will define materials to be certified, materials to be tested, sampling procedures, testing procedures, record keeping and reporting procedures, and nonconformance plan.
- Agency or party responsible for QA and QC, i.e., responsibilities of the contractor versus the STA for sampling, testing, monitoring, and reporting test results.
- Frequency and agency involvement for construction coordination (progress) and/or partnering meetings.
- Procedures for coordinating with permitting agencies, utility companies, and railroad companies during construction to ensure that all requirements are incorporated into the project such that the overall project schedule is not delayed.
- Level and frequency of inspections to identify and correct any deficiencies in the project construction that do not meet the requirements of the plans, specifications, and other binding documents.
- Level and frequency of audit and oversight construction reviews (concerning QA/QC and validity of contractor payments) to be performed by the STA, FHWA, independent consultants, and/or other agencies.
- Qualifications for all key construction personnel.
- Documentation and submission procedures to ensure that the established construction QA/QC procedures have been followed.

**12. Environmental Monitoring.** The final NEPA decision document and other agreements can define required mitigation for the major project. In addition, environmental permits may be obtained during the design of the project, which will specify additional requirements to be adhered to during construction. The Project Management Plan should set up the general requirements to ensure that all environmental commitments are included in the design and construction of the project, and that a proactive approach will be used for overseeing and inspecting environmental work during construction to help guard against cost overruns and schedule delays. In addition, many Records of Decision require environmental compliance after a facility is open to traffic on an ongoing basis (e.g. stormwater management or wetlands performance). It is

suggested that, for Major projects with a substantial amount of sensitive environmental issues, environmental monitoring procedures include some or all of the following:

- An overall Environmental Monitoring Plan to verify that the scope of environmental commitments from the NEPA document, environmental permits, and other environmental approvals are implemented.
- Roles and responsibilities of the environmental monitoring staff.
- Any strategic stationing or positioning of staff members to maintain constant contact with resource agencies and a working knowledge of the project's environmental issues to ensure that all FEIS and permit commitments are followed through.
- Any planned proactive coordination with the resource agencies during the project design and construction, in order to ensure early and constant communications of issues and requirements.
- Any fluctuating work schedules among the environmental monitoring staff members to ensure constant coverage of key contractor schedules and activities that may affect the environment.
- Coordination of environmental monitoring staff members' daily activities with the project management and construction management teams, in order to monitor and observe critical contractor activities.
- Record keeping and reporting procedures.
- Noncompliance and violations procedures.
- Permit modification procedures related to construction activities, including strategies for guarding against cost overruns and schedule delays while still acting as a good steward to the environment.
- Post-construction environmental performance for wetlands, stormwater, vegetation, wildlife crossings, endangered species, etc.

**13. Right of Way.** This discussion should include policies to be adhered to and processes for appraisals, acquisitions, relocations, demolitions, construction/utility easements, scheduling, and reporting.

**14. Safety and Security.** This section should define the requirements to be incorporated into the project in order to complete the project in a safe and secure environment for all individuals working on the project. The prevention of accidents during execution of a Major project should be a primary concern of all participants, and should be the



responsibility of all levels of management. Safety should never be sacrificed for production, but should be considered an integral part of an efficient and quality project.

It is suggested that safety and security procedures include the following:

- Safety and health standards to be adhered to.
- Roles and responsibilities of the safety/security staff.
- Contractors (meaning prime contractors and subcontractors combined) having a Safety Director and an approved safety manual (or plan) available to all employees.
- Contractors holding periodic on-site safety meetings.
- Contractors conducting periodic on-site safety inspections.
- Contractors providing safety training for all new employees, and refresher training for all employees.
- Contractors conducting drug screening for all new hires.
- Contractors establishing daily housekeeping and clean-up procedures.
- Possible employee sharing of accident prevention savings.
- Having first-aid and medical kits readily available.
- Having a site security plan, possibly including such items as restricted parking near vulnerable structures, physical barriers (fences, barricades, etc.), coordinated efforts with local law enforcement officials during heightened threat levels, video surveillance, alarm systems, emergency telephones, etc.
- Having an emergency preparedness and incident management plan, including roles and responsibilities, emergency evacuations, communications, first responder awareness training, and field drills.
- Establishment of an employee identification (ID) system.
- Level and frequency of audit and oversight safety/security reviews to be performed by the STA, FHWA, independent consultants, and/or other agencies.
- Safety and security periodic reporting (normally monthly).

In addition, appropriate threat and vulnerability assessments should be made and taken into consideration throughout the project's life cycle. The transportation elements of a Major project could have a significant impact on regional safety and security plans.

**15. Traffic Management.** This section of the Project Management Plan should define the requirements for providing monitoring and oversight of the contractors' day-to-day Maintenance of Traffic (MOT) operations, in order to complete the project in the most safe and efficient manner for the traveling public. It is suggested that traffic management procedures include the following:

- Maintenance of Traffic (MOT) standards to be adhered to.
- Roles and responsibilities of the traffic management staff.
- Reviewing MOT plans and proposals at various design reviews, for conformance with approved standards and familiarity with traffic phasing, traffic shifts, and lane closures proposed during construction.
- Coordinating with local agencies during design and construction regarding placements of temporary signing and traffic control devices within their jurisdictions.
- Coordinating with local agencies during design and construction regarding restrictions and management of special events.
- Coordinating with all local emergency agencies during design and construction, to ensure adequate passage of emergency vehicles through the construction zones.
- Coordinating traffic maintenance among multiple contractors, in order to integrate temporary signing and traffic control devices among various contracts.
- Coordinating with contractors concerning the specific wordings to be placed on variable message signs during construction.
- Conducting periodic MOT reviews during construction (including nighttime inspections), for conformance with plans, specifications, and approved standards; and to ensure that all traffic control devices are functioning properly.
- Having an incident management plan for accidents occurring within the project limits, including accident prevention strategies, emergency procedures, reporting requirements, and mitigation strategies.
- Coordinating and assisting the Media and Public Information team and local news media concerning traffic pattern changes, periods of lane closures, traffic delays, alternate routes available, work zone accidents, etc.

- Level and frequency of audit and oversight traffic management reviews to be performed by the STA, FHWA, independent consultants, and/or other agencies.
- Traffic management periodic reporting (normally monthly).

**16. Project Communications (Media and Public Information).** A critical objective for all Major projects is to maintain the trust, support, and confidence of the media and public throughout the life of the project. A critical component to successfully meet this objective is a Media and Public Information Plan that will provide proactive, effective, and responsive project communications. All external project communications should be documented in the Project Management Plan. Some key strategies that should be included in the plan are to:

- Set up a public information team or office responsible for all media and public information efforts for the project, in which all external information will flow through. Such a team or office will allow the project delivery team to effectively speak with “one voice”.
- Proactively convey current project status information to the media and public, including scheduled milestone completion dates; significant contacts advertised, awarded, or completed; and total cost projections.
- Proactively convey updated commuter and traffic information, including traffic pattern changes, periods of lane closures, traffic delays, work zone accidents, alternate routes available, and alternate forms of transportation available (including benefits and possible subsidies).
- Proactively convey and mitigate, to the greatest extent possible, construction impacts to the local residents and businesses.
- Respond timely to media and public questions and requests for information.
- Assist the community and other stakeholders in developing ownership and pride in the Major project, by building awareness and helping them understand the benefits of the project.

Underlying the media and public communications process is the need for all team members to be as accurate and forthright as possible, and to respond in a professional and timely manner. These characteristics will help to create the high-level of information communication needed to successfully maintain the media and public trust, support, and confidence.

The Media and Public Information Plan should identify all potential media and public stakeholders, normally consisting of businesses along the project corridor, communities along the corridor and others impacted by the project, all forms of media, governmental agencies (elected/appointed officials and their staffs), and civic associations and citizen

groups. Most Major projects have developed a project web site as one component of their communications plan to provide a central and easily accessible location for all stakeholders. The web site can allow for real-time project information including construction progress photos, traffic updates, trip planning, project maps, project history, new technological accomplishments, and contact information. Some web sites contain the latest monthly cost, schedule, and status report and/or latest Financial Plan Annual Update to allow all stakeholders the benefit of viewing total cost projections, revenue streams, scheduled milestones, and other status issues.

Other media and public information vehicles can include establishment of a staffed public information center, brochures, displays, computer-simulated videos showing a completed project drive-through, project newsletters, press releases, media briefings, groundbreaking and ribbon cutting ceremonies, project tours, and public information and citizens' advisory meetings.

In order to have an effective Media and Public Information Plan, an internal communications strategy should also be developed among the project delivery team members. The internal communications network should provide for open lines of communication and support between all project and functional teams, but allow for all external communication to flow through the public information team or office. It is important to identify major interfaces that exist between the project and functional teams, and to establish responsibilities, authorities, and communication procedures (meetings, memorandums, authorizations, reviews, etc.) at each of those identified interfaces.

A process for routinely surveying the stakeholders, and for providing opportunities for input and feedback into the media and public information process, may also be incorporated into the project to determine if the objectives are being met. A proactive and responsive approach should then be taken to remedy any reasonable issues or concerns that are expressed, and a system developed for documenting and responding back to the stakeholders with the proposed/incorporated resolution.

**17. Civil Rights Program.** The STA, FHWA, and other sponsoring agencies should make a commitment to provide a strong civil rights program for the Major project, meeting the needs of each of the sponsoring agencies. This section of the Project Management Plan should outline the specific goals and requirements related to Disadvantaged Business Enterprises (DBE), Small Business Enterprises (SBE), Equal Employment Opportunity (EEO), and other civil rights programs; for contractors, consultants, and the project delivery team itself. A separate civil rights team or office may be set up specifically for the project, to be responsible for the administration and oversight of the entire civil rights program.

Periodic (normally monthly) civil rights reporting requirements should be set up. Review and audit procedures should also be put into place. Prompt handling procedures of negative findings and complaints regarding the program should also be defined, including the use of appropriate sanctions should they become necessary.

The civil rights team/office should interface with the public information team/office to ensure that disadvantaged communities are included in the public outreach programs. Another vehicle used on some Major projects is for the project delivery team to conduct DBE outreach sessions, which bring DBEs and prime contractors together in “one-on-one” sessions to discuss large, upcoming contracts to be advertised in the near future. These DBE outreach sessions have shown positive results in helping to meet or exceed DBE goals.

**18. Closeout Plan.** A Closeout Plan consisting of the requirements to provide a coordinated transition from construction to operations along with the roles and responsibilities of various agencies and offices should be included in the Project Management Plan.

**19. Project Documentation.** A procedure to describe how project records will be kept should be included in the Project Management Plan. This includes defining the document control and tracking systems and possible use of a web site for search and retrieval of project documents. Also, at the end of the project, a final report should be prepared to document final project data and lessons learned.

**20. Other Possible Sections.** Other possible sections in the Project Management Plan could include:

- Human Resources Management. The Project Management Plan could include management of project teams. The discussion could include how roles and responsibilities for the project team are managed, project team performance assessment, and other human resource issues.
- Any other project functions that the project sponsors feel would be beneficial to include in the Project Management Plan to ultimately help in meeting the Project Objectives.

**21. Appendices.** Appendices to the Project Management Plan could include any prior interagency agreements or other applicable documents that will aid the users of the Project Management Plan in understanding prior commitments and previously established roles.

**22. Executive Leadership Endorsement.** It is suggested that the executive leadership of the STA, the FHWA, and other agencies sponsoring the project endorse the Project Management Plan via a briefing and a signature page. Executive leadership endorsement will further the commitment of achieving the project objectives and will officially initiate the procedures and requirements as set forth in the Project Management Plan. It should be noted on the signature page that the effectiveness of the Project Management Plan will be continuously evaluated, and that revisions will be issued as the project progresses in order to generate the most effectively managed project meeting the project objectives.

**PROJECT MANAGEMENT PLAN CHECKLIST:** How have the following factors been considered during the preparation of the Project Management Plan? Compare the Project Management Plan with the FWHHA guidance and identify critical issues and risks for the following sections:

1. Project Description and Scope of Work
  2. Goals and Objectives
  3. Project Organizational Chart, Roles, and Responsibilities
  4. Project Phases
  5. Procurement and Contract Management
  6. Cost Budget and Schedule
  7. Project Reporting and Tracking
    - Executive Summary
    - Project Activities and Deliverables
    - Action Items/Outstanding Issues
    - Project Schedule
    - Project Cost
    - Project Quality
    - Other Status Reports
  8. Internal and Stakeholder Communications
  9. Project Management Controls (Scope, Cost, Schedule, Claims, etc.)
    - Risk Management Plan
    - Scope Management Plan
    - Scheduling Software
    - Cost Tracking Software
    - Project Metrics
    - New and Innovative Contracting Strategies
    - Value Engineering, Value Analyses, and Constructability Reviews
    - Contractor Outreach Meetings
    - Partnering
    - Change Order and Extra Work Order Procedures
    - Claims Management Procedures
    - Other Programs
  10. Design Quality Assurance/Quality Control (QA/QC)
  11. Construction Quality Assurance/Quality Control (QA/QC)
  12. Environmental Monitoring
  13. Right-of-Way
  14. Safety and Security
  15. Traffic Management
  16. Project Communications (Media and Public Information)
  17. Civil Rights Program
  18. Closeout Plan
  19. Project Documentation
  20. Other Possible Sections (if appropriate)
  21. Appendices
  22. Executive Leadership Endorsement
- Other items may be added depending on the project's characteristics.