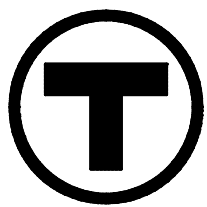


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Massachusetts Bay Transportation
Authority

Design & Construction Department

Project Manager's Manual

Revision No. 4

Rev. #4 – January 2014

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Rev. #2 – June 2003

Rev. #1 – November 2000

	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY PROJECT MANAGER'S MANUAL STANDARD OPERATING PROCEDURE	
Section 1 - INTRODUCTION	NUMBER: Rev. 4	REVISION DATE: 01/27/14

1. INTRODUCTION

1.1 Purpose and Scope

This manual provides Project Managers and senior management with an understanding of the role and responsibilities of the Project Manager during the various phases of project development and execution. This manual applies to all Project Managers assigned by the Assistant General Manager for Design & Construction.

Throughout the design and construction phases each Project Manager will need to coordinate efforts with numerous departments within the MBTA. At a minimum each PM should understand the roles of the following departments with whom design & construction interacts:

D&C Administration & Finance – This department is a Project Manager's best friend. Prior to initiating any action the PM must obtain funding through his/her Budget Analyst.

D&C Project Controls – The Project Controls department assists PMs in the review and tracking of project design and construction schedules. The department also assists PMs comply with project reporting requirements.

Budget Department – Located at 10 Park Plaza, this department is responsible for obtaining grant funding. The D&C A&F work closely with Budget.

Environmental – Located at 10 Park Plaza, this department signs off on construction project advertisements given the permitting impacts on D&C projects.

Real Estate – Also located at 10 Park Plaza, this department is responsible for approving construction advertisements given the access issues impacting D&C projects.

Other departments with whom D&C closely coordinates during project development include:

- Safety
- Systemwide accessibility

1.2 Online Project Manager Manual (PMM)

This Project Manager Manual (PMM) presents the series of responsibilities, tasks, and activities performed by the Project Manager (PM) from project conception to the final stages of project closeout. In particular, the responsibilities of the PM and policies of MBTA Design & Construction (D&C) are stressed. The PMM clarifies relationships between the PM, Authority staff, other state and public agencies, outside private agencies, and all internal and external stakeholders.

While you may be viewing this PMM in printed form, bear in mind that by its very nature the PMM is subject to ongoing updates and revisions in order to keep pace with changing Federal Transit Administration (FTA) and Authority policies and with improved best practices of project management. Within the online text, hyperlinks exist to all of MBTA D&C's relevant forms and template documents. These hyperlinks appear twice for each exhibit, once in the Table of Exhibits, and again in the text where the exhibit is first referenced.

The PMM and other Design & Construction Policy and Procedures Manuals are available on the MBTA website:

http://www.mbtta.com/business_center/bidding_solicitations/manuals/

While this PMM outlines these responsibilities, it is not intended to convey all the specific actions required to successfully manage an MBTA project. It is the responsibility of the PM to also understand and follow all the applicable Design and Construction manuals, policies, and procedures in their current version, including the following:

- Project Controls Manual
- Change Order Guidelines
- Contract Administration SOPs
- Procurement Manual
- Resident Engineer's Manual
- Quality Assurance/Quality Control Manual
- Project Initiation (PI) Agreement Policy
- Systemwide Accessibility Policy
- Design & Construction Monthly Bulletins
- Other Manual and Standards as applicable

1.3 Revisions to PM Manual

Please refer to the MBTA website shown below for the most up-to-date PM Manual.

Requests for revisions, updates, and improvements to the PMM should be coordinated with the Contract Administration Department, who is the only designated member of MBTA D&C with read/write access to the online PMM files.

1.4 Project Manager

The Project Manager (PM) is the individual within the MBTA Design and Construction Department who has the responsibility, from inception to completion, for managing the project according to specifications in a timely manner and within budget. The PM has substantial authority, commensurate with his/her responsibilities, to direct all elements of work required for the scope, design, construction and delivery of a Project. The PM is the main contact between the MBTA and consultant or contractor. The AGM of Design and Construction assigns a Project Manager as set forth in the Project Initiation procedures.

The MBTA Project Manager is expected to fully understand that project's goals, schedule, and budget. The MBTA PM is expected to be that project's primary advocate throughout all project phases, until successful completion.

While the PM should be knowledgeable, it is not expected that the PM be an expert in all aspects. The PM must be responsible, as needed, to ask for help.

Management authority and responsibility rests with the PM. The PM is the point of contact for all project activities from conception through project closeout. This authority gives the PM the responsibility for project success. Their activities include the following:

- Technical and Budgetary Responsibility - Responsibility for the project's technical and financial directions and for ensuring external and internal customer satisfaction with project results
- Contract Administration - Administer professional service, design and construction contracts, including involvement in design contract and amendment negotiations.
- Cost Estimating and Forecasting - Establish initial project budgets, cost estimates, cash flow projections.
- Reporting - Provide monthly updates of project schedules and budgets. Scheduling - Monitor project schedules and budgets to ensure financial and schedule milestones are met.
- Public Liaison - Resolve public questions and concerns about the project and coordinate with other state and public agencies, private utilities and companies, and all Project Stakeholders involved in the

- project.
- Utility Coordination - Coordinate with all Utility Companies for all Construction related activities.
- Problem Solving - Prevent or resolve problems occurring during project development and execution. Analyze problems occurring during the project and take actions to ensure project goals are being met.
- Procurement - Participate in the development of bidding documents and the construction contract award process (as applicable).
- Document Management - Ensure project records and documentation are properly filed, maintained, and archived.
- Departmental Coordination - Coordinate with MBTA Internal Departments (as needed)
- Project Development Group - Set schedules for interim project reviews
- Project Website – Monthly or as needed

In addition to performing any of the duties as described above, the PM shall:

- Maintain the complete official project file
- Administer the contract for architect/engineer (A/E) and contractors.
- Lead contract negotiations and execution.
- Draft project correspondence
- Attend and assist with public meetings
- Facilitate monthly project website and schedule updates
- Coordinate and track progress of project submittals
- Provide construction observation and quality assurance review
- Respond to inquiries from all Internal and external project stakeholders.

1.5 Architect or Engineer

The architect or engineer (A/E), typically a private consultant, is responsible for designing the project and preparing plans, specifications and estimate (PS&E). The MBTA D&C's own engineering staff, especially on smaller design projects where a quick turnaround is required, may perform A/E services in-house. Large projects requiring a full range of professional services (soils, investigation, survey, public involvement, hydraulic analysis, etc.) are typically performed by A/E's who have been awarded a qualification-based professional services contract (PSC) with the Authority. MBTA D&C may also enter into professional services task order contracts with A/E firms wherein specific services are provided such as soils investigation, surveying, civil, structural and electrical design, construction support and even comprehensive project management services.

1.6 Budget Requirements

The Budget Process, which is further defined under Section 2 describes the steps necessary to develop a conceptual budget and schedule, monitor compliance and process changes to the budget as the project progresses through to completion. The budget process begins with the conceptual budget and continues through the authorization process and includes the periodic reporting of budget compliance and amending the budget. This applies to all projects.

NOTE: When the Project Manager is aware of the need to secure funding for a project, the Budget Department would strongly stress the need to submit all appropriate paperwork as soon as possible. This will allow the Budget Department enough time for the opportunity to federalize the funding for the project. Even if a project is state funded, the Budget Department would like to follow all federal guidelines in the performance of the contract.

1.7 Independent Cost Estimate (ICE)

Prior to procuring A/E or construction services, the Project Manager must prepare an independent cost estimate (ICE). This estimate will be used to assist project staff to determine the reasonableness of proposals received from consultants or contractors. The ICE is required not just for the initial procurement, but also for changes such as amendments and change orders. The Contract Administration Department maintains templates for use by PMs that have been approved by the FTA.

1.8 A/E Services Procurement

The MBTA procures A/E services contracts through the Contract Administration Department ([See MBTA Procurement Manual](#)).

The MBTA procures A/E contracts following the [Brooks Act](#) where the selection is based on the Qualifications of the firm. Cost is not an evaluation criterion.

Briefly, the MBTA follows a two-step Qualifications Based Selection (QBS) process as detailed in the MBTA PROCUREMENT MANUAL, where a project is publicly advertised:

- a. The MBTA publicly advertises a Request for Qualifications (RFQ). A selection committee assigned by the AGM evaluates and ranks consultant qualifications. The committee invites the most qualified teams to submit a proposal.
- b. The selection committee evaluates proposals, conducts consultant interviews,

and ranks the teams. The highest ranked firm is invited to begin negotiations for a contract.

This process is detailed in the MBTA PROCUREMENT MANUAL, and is discussed further in this PM Manual (See Section 5)

1.9 Five Phases of an A/E Design Contract

The MBTA breaks down A/E contracts into 5 phases of design:

- a. Phase I - 0% - 15% - Conceptual Design
- b. Phase II - 15% - 30% - Preliminary Design
- c. Phase III - 30% - 60% - Design Development
- d. Phase IV - 60% - 100% - Final Design (PS & E)
- e. Phase V - Construction Phase Services

1.9.1 Project Manager Responsibilities during Design Phases

As noted previously, the PM shall fulfill their responsibility in accordance with all applicable D&C manuals, policies, and procedures. During Design, the Project Manager's responsibilities shall include but not be limited to the following:

- Developing and maintaining the monthly Assistant General Manager (AGM) Report and keeping the Project in as close compliance as possible with the Conceptual Budget and Schedule.
- Reporting variances between the estimated budget and conceptual budget and schedule to senior management of the department and the Budget Director.
- Complying with the requirements of any necessary environmental approval processes.
- Convening and chairing all project meetings with representatives of the Sponsor Department, Budget Department, Design & Construction, Real Estate Acquisition, Operations, Planning, Engineering & Maintenance, Safety, Security, and all Project Stakeholders.
- Assistance in development of MBTA Safety Department's safety certification process.
- Establishing meeting agendas and approving meeting minutes.
- Directing and facilitating communication and negotiation among Project participants.
- Preparing a project records index and maintaining the project file.
- Creating a project management plan that identifies how the Project will be managed from design through closeout.
- Reviewing and approving payment requisitions.
- Discussing with the Director of Design whether a design consultant or

- in-house personnel will perform design.
- Coordinating with the Contract Administration Department to procure A/E Services. Drafting the RFP to retain consultant services, including construction managers for the project (if necessary) as set forth in Reference 2.6.
- Discussing with the AGM of Design & Construction whether a construction manager will be retained for the project.
- Serving on the selection committee for any outside consultants, including design consultant and construction manager.
- Monitoring real estate requirements and acquisition as set forth in Reference 2.5 (Update) real estate acquisition procedure.
- Considering and reviewing at least 3 alternatives to accomplish the goals of the project.
- Overseeing the review of design submittals, including the 30% Design Review.
- Reviewing and approving the cost estimates and schedule projections contained in design submittals. Directing designers to design to budget.
- Reviewing and negotiating all proposed scope changes and amendments and recommending approval of such changes.
- Preparing Consultant Performance Evaluation Rating (CPER) Sheets
- Complying with MBTA procedures:

- ☐ [Value Engineering \(VE\)](#)
- ☐ [Risk Analysis](#)
- ☐ [Peer Reviews](#)
- ☐ [Constructability](#)

1.9.2 Project Manager Responsibilities during Construction Phase Services for A/E Contracts:

The PM will oversee the A/E during phase V - construction phase services (CPS) in the performance of some standard tasks:

- bid phase services;
- shop drawing reviews;
- request for information (RFI's);
- consultation and advice - Resolve technical issues;
- sketches and drawings;
- progress meetings;
- start-up of mechanical and electrical contractor;
- lab, shop and mill test reports;
- monthly site visits;
- semi-final and final inspections;
- disposition of claims and change orders;
- operation and maintenance (O&M) manuals;

- project management coordination;
- critical path method (CPM) schedule review,
- as-built drawing review

The Contract Administration Department maintains standard language for construction phase services scope of work.

1.10 Construction Procurement

The MBTA procures construction contracts through the Contract Administration Department (See [MBTA PROCUREMENT MANUAL](#)). **The MBTA Procurement Manual is available on the MBTA intranet under Procurement Policies.**

For Design-Bid-Build contract types, the MBTA procures construction contracts following [Massachusetts General Law, Chapter 30 Section 39M](#) where the most competent qualified low bidder team is selected to perform the services.

Briefly, the MBTA follows a two-step process as outlined in the MBTA construction prequalification procedures where a project is publicly advertised:

- Contractors must be prequalified in the specific classes of work to be able to bid on a project with a value greater than \$1 million. Contractors must follow the [MBTA Prequalification Procedures](#). Please refer to the MBTA website for the most up-to-date procedures
- The MBTA publicly advertises the project, and schedules a public bid opening. After an evaluation of the bids, the firm with the lowest responsible and responsive bid will be selected for award of the project.

This process is further outlined in the [MBTA PROCUREMENT MANUAL](#) and is discussed further in this PM Manual (See Section 9)

Project Manager Responsibilities during Contract Bidding

The Project Manager's responsibilities during the construction contract bidding process (advertisement through contract award) shall include but not be limited to:

- Completing the Pre-Bid Review Control Sheet (please see Section 8)
- Assisting Contract Administration and/or Materials Management Department with all aspects of the advertisement, bid, and award process. Ensuring timely submission of documents to keep the procurement process on schedule.
- Reviewing the bid documents and identifying the need for

coordination and issuing of addenda, including timely and accurate responses to contractors' questions

Project Manager Responsibilities during Construction

Once a construction contract has been awarded, the Project Manager's responsibilities shall include but not be limited to:

- Convene and chair the project kick-off meeting with project participants to discuss policy and procedural aspects of the construction phase, including a review of scope, schedule, and budget.
- Lead contract change order negotiations.
- Develop and maintain the monthly AGM report and keep the project in as close compliance as possible with budget and schedule.
- Preparing or updating a project management plan that identifies how the PM will coordinate design and construction activities and all other supplementary activities.
- Organizing and chairing regularly scheduled meetings with contractor, design consultant, and other project participants to provide construction updates, discuss problems and coordinate the construction process.
- Monitoring all construction-related activities, with emphasis on staging, site preparation, milestones, phasing/sequencing, submittals, efficient and balanced work flows, major tests and any unique requirements needing special scheduling or tracking.
- Supervising the Resident Engineer, Inspectors, and other field staff necessary to monitor daily activities at the construction site.
- Developing and updating a record-keeping system of all construction activities, including daily logs and field office filing system for change orders, pay estimates.
- Occasionally reviewing the Resident Engineer field office to ensure compliance with document control requirements
- Managing the process of shop drawing and submittal reviewing and expediting the distribution and routing of all such materials to ensure timely turn around.
- Ensure the proper review and acceptance of baseline schedule and monthly updates.
- Preparing all paperwork required for approval of change orders.
- Monitoring all quality assurance (QA) issues and ensuring quality control (QC) procedures are followed.
- Reviewing and approving all pay estimates and invoices submitted by the design consultant and contractor.
- Maintaining a current status of each claim, its ultimate resolution and its impact on the project budget and schedule.
- Completing Contractor and Consultant Performance Evaluation

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- Rating (CPER) Sheets
- Coordinate information exchange with internal and external parties, to ensure smooth acceptance and closeout
- Supervise project closeout activities
- Supervise testing/commissioning activities as needed

1.11 Construction Manager (CM) Procurement.

This procurement process is the same as the A/E Procurement Process.

The MBTA procures A/E services contracts through the Contract Administration Department (For detailed descriptions – (See [MBTA PROCUREMENT MANUAL](#)) .

Project Manager's Responsibilities when a Construction Manager (CM) has been retained on the Project.

The PM manages the CM's contract and serves as a liaison between the CM and the Authority. The PM approves all deliverables submitted by the CM.

The PM manages all Authority internal operations including relations with the community.

The Project Manager's responsibilities will be as follows:

- Ensuring compliance with the authorized budget and schedule.
- Updating monthly project status reports.
- Ensuring the development and submittal of monthly AGM reports
- Convening and chairing regularly scheduled meetings with the CM, contractor, design consultant, and other project participants as necessary to review project accomplishments provide direction if there is any doubt as to a particular course of action.
- Managing all internal coordination and ensuring that the operating departments participate in the design reviews.
- Periodically reviewing the CM's file system to ensure that daily journals are written and that records of events are maintained.
- Reviewing, and when authority exists, either approving or denying CM recommendations for change orders. If approval is required from other Authority staff, ensuring that the recommendation is routed to those individuals or department(s) and following up on the subsequent recommendation.
- Reviewing all major submissions. This includes commenting on the design submissions (drawings, budget estimate and schedule estimate), the weekly and monthly schedule and budget updates provided by the CM, the constructability review, etc.
- Assisting Contract Administration in developing and participating in

the design consultant and contractor procurement processes. This includes writing the RFP, managing the design consultant selection process, and negotiating contracts.

- Reviewing and approving the CM's design and construction management plans, paying careful attention to the organizational and reporting arrangements.
- Leading site inspections with the CM during the construction phase, paying careful attention to safety issues, the integrity of the construction and conformance with the design specifications.
- Reviewing and approving all invoices submitted both by the CM and by the design consultant and contractor via the CM.
- Updating monthly Project Status Reports.
- Ensuring that a comprehensive punch list is completed and that each item on the list is addressed to the Authority's satisfaction.
- Holding a final meeting with the CM following the post-construction phase to review the project and identify any issues that might create problems in the future.
- Reviewing the CM's performance after the CM has completed all contractual obligations and submitting the evaluation to Contract Administration as specified in Reference 2.4, consultant/contractor/CM evaluation.

1.12 Alternative Project Delivery Methods

Most MBTA projects are delivered via design bid build. Occasionally alternative delivery methods may be used. The following procedures may be found in the procurement manual.

- Construction Manager at Risk ([CM at Risk](#)) Procurement
- Design-Build Procurement ([Procurement Manual](#))
- Construction Manager/General Contractor (CMGC)

1.13 Project Manager's Responsibilities during Closeout

The Project Manager's responsibilities during the closeout phase of a project include (see sections 5 and 10 for more detailed close-out information):

- **Punchlist** - Coordinating with the A/E, other MBTA departments, and contractor to develop the punch list(s) that documents all items of work that are incomplete or that need correction, providing a cost estimate for each item and monitoring the work to ensure that all punch list(s) items have been completed by the contractor prior to final payment.
- **Start-up** - Coordinating with the contractor and the MBTA for the initial start-up of all project equipment, utilities and operations system after installation is completed and checked out and supervising equipment removal and site clean-up.

- **Final Review Meeting** - Holding a final meeting with the contractor and other project participants following the post-construction phase to review the project and identifying any issues that might create problems in the future.
- **As-Built Drawings** - Ensure timely and acceptable as-builts submittals
- **Inspections** - Ensure timely inspections by appropriate MBTA and outside parties
- **Claims** – The PM must address any and all claims that are submitted as part of the project. Claims for additional compensation and/or time are part of administering complex contracts.

While they can never be eliminated or entirely avoided, the number of claims can be reduced and their impact lessened significantly by Project Managers with assistance from Resident Engineer and their staff by acting “claims conscious” and following effective principles of claim avoidance/reduction.

To prevent claims, extra work should always be properly authorized.

Project staff should thoroughly review plans and specifications to identify errors and ambiguities in documents and also incorporate “lessons learned” from previous projects. These actions should be addressed during the design review process.

PM's should follow the MBTA claims process as described in Section 9 of this PMM.

- **Errors and Omissions** – This procedure establishes the methods for processing design errors and omissions (E&O). This procedure applies during the performance of a construction contract.

Errors and omissions in a professional services contract can be identified by various methods during the construction process such as, but are not limited to, the inspection process, processing requests for information, processing change orders, processing claims, and preparing changed quantity variance (CQV) Reports. Once the E&O has been identified it will be documented in accordance with this procedure.

The threshold for processing an error and/or omission claim or cumulative claims which meets or exceeds \$5,000.00.

PM's should follow the [MBTA Errors and Omissions Process](#).

- **Lessons Learned** - The [Lessons Learned](#) should be implemented at project initiation and conducted throughout the life of the project through project close out. Lessons should be collected, analyzed, and implemented in all project phases.
- **Performance Evaluation** - Reviewing the performance of the design consultant and contractor after all contractual obligations are completed and submitting the [Consultant and Contractor Performance Evaluation Rating Form](#) to Contract Administration.

	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY PROJECT MANAGER'S MANUAL STANDARD OPERATING PROCEDURE	
SECTION 2 - PROJECT PLANNING (BUDGET)	NUMBER: Rev. 4	
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2.0 PROJECT PLANNING (BUDGET)

2.1 Capital Investment Program (CIP)

The CIP is a 5-year program of improvements that provides primary scope, schedule, and budget direction to the MBTA and the MBTA Design and Construction program. It must be annually updated and approved by the MBTA Board of Directors. Thus, the period covered by the CIP includes the current budget year and the four years that follow.

The CIP document presents basic project information, including:

- Project title, category, and a brief description of its scope
- Impacts on the Environment, State of Good Repair, and Operations
- Legal Requirements
- Impact on Operating Budget
- Conceptual Budget and Schedule
- Total Capital Spending by Fiscal Year
- Funding sources

2.1.1 Capital Funding Requests and CIP Approval

When a sponsor department identifies a need for a capital project, a representative of the sponsor department writes a concise capital funding request (CFR). The CFR is located at the end of this section. Based on the criteria described below, the CFR is submitted to the Assistant General Manager (AGM) of Design and Construction and a Project Manager is assigned.

For capital project development, long range projects and feasibility studies, the Director of Planning requests the Assistant General Manager of Design & Construction to assign a Project Manager.

Upon assignment, the Project Manager completes the Project CFR, including a Conceptual Budget and Schedule. The AGM for Design and Construction submits CFRs to the Deputy Director of Capital Budget on an annual basis. Guided by the selection criteria set primarily by Forward Funding legislation, the Budget Department

ranks the Capital Funding Requests and works in conjunction with top senior management to determine which CFRs will ultimately be incorporated into the Five Year CIP. The Board of Directors approves the CIP in its entirety.

2.1.2 Project Implementation

The implementation of individual projects is subject to funding availability and the required authorization level. Once the CIP is approved, the Budget Department works to initiate individual projects by identifying the necessary funding. It is the goal of the MBTA to use Federal funds for as many projects as possible. Therefore, all projects must follow federal procurement guidelines. Although the project may be listed within the CIP, it may not move forward until funding is adequately identified (i.e. Federal, State or other). It is recommended that the Project Manager contact the Manager of Federal Programs or the Deputy Director of Capital Budget within the Budget Office for further guidance. Funding may take upwards of 3-6 months, depending on the source of those funds. Project Managers should work closely with the Manager of Federal Programs in the Budget Department to provide the background information for the filing of federal grant applications.

Once a project has been initiated by the Budget Department, the project must receive authorization from the Board of Directors, Secretary of Transportation, GM, AGM, or Director, depending on the size of the project's budget. Please refer to Section 3 for MBTA authorization levels when seeking to implement projects.

2.2 Infrastructure Reinvestment Projects/Construction

Infrastructure Reinvestment projects for which Design and Construction takes the lead role include bridges and tunnels, transit facilities, commuter rail, other facilities and Transit Oriented development, and general design and architectural projects. The construction of system expansions and enhancements are also managed by Design and Construction.

2.3 Pre-Design Activities

Once the CIP identifies a project as having the required priority status and available funding, the pre-design phase is initiated. The intent of pre-design is to evaluate the proposed project for conformity with long-range comprehensive planning, potential assessments, and coordination with other proposed projects.

The Sponsor Department for projects managed by Design and Construction must submit a CFR identifying the problem/need and the proposed scope of work (see Exhibit 2.1.0). The CFR requires approval by a Director from the Sponsor Department (or equivalent position). After receiving such approval, the Director submits the CFR to the AGM for Design and Construction.

The CFR form is located in an Access database called the CFR Database. However, a blank Word version of the CFR form can be distributed for editing before the final

submittal is done through the CFR Database. Note that only pre-selected individuals will have access to the shared network drive (the “Q” drive) on which the CFR Database is located. To request access for an individual, contact Capital Budget.

2.4 Selection of Project Manager

After receiving the CFR, the AGM for Design and Construction reviews the summary and determines if it is complete. If it is deemed complete, the Assistant General Manager assigns a Project Manager to the proposed Project. If the CFR is incomplete, it is returned to the Sponsor Department for completion and resubmission.

2.5 Submission of Capital Funding Request

After the Project Manager is selected, his or her first priority is to review the Capital Funding Request, which includes the Conceptual Budget and Schedule and Projections by Fiscal Year. The Project Manager should work with the Sponsor Department as necessary to complete the Capital Funding Request.

Upon approval by the AGM for Design and Construction, CFRs are submitted on an annual basis to Capital Budget via the CFR Database, except where urgent circumstances dictate quicker submission.

2.6 Capital Funding Request Prioritization Process

Capital Budget performs a prioritization of the CFRs based on the following considerations:

Prioritization of projects to be included in the CIP is based on the following criteria, as defined by MBTA senior management and reflected in the MBTA’s enabling legislation: the impact of the project on the effectiveness of the Commonwealth’s transportation system, service quality, the environment, health, the state of good repair of MBTA infrastructure, and the Authority’s operating costs and debt service. Projects that receive the highest priority are those with the greatest benefit and the least cost, as prioritized by the following criteria:

- **Factor One: Impact on the Environment / Alignment with GreenDOT Objectives.** Two criteria are used to assess the impact of the project on the environment including areas of focus as identified in the GreenDOT objectives:
 - **Pollution Reduction and Consumption of Natural Resources.** This criterion assesses if and how the project reduces pollution (greenhouse gas or other air pollutant emissions, water pollutants, trash) or the consumption of natural resources (energy and water) through the use of technology, improved procedures, or other measures.
 - **Promote Mode Shift.** This criterion assesses if and how the project encourages a shift in the mode of transportation utilized by travelers away

from private vehicles and to the healthy transportation options (walking, biking, and public transit) identified in the GreenDOT objectives.

- **Factor Two: System Preservation.** These criteria are used to assess the impact of the project on system preservation:
 - **State of Good Repair (SGR) Database Rating.** The CFR submittal includes a list of assets affected by the project that can be referenced in the SGR Database. This criterion provides the average SGR rating (a measurement of an asset's state of repair) for these assets from the SGR Database.
 - **Lifecycle Management.** This criterion assesses if the following elements are or will be associated with the project's assets: an inventory of the assets, up-to-date condition assessments, a preventative maintenance plan (including documented schedules and organizational responsibilities), and documented maintenance and inspection training procedures for staff.
 - **Reduce Vulnerability to Climate Change / Extreme Storms.** This criterion assesses if and how the project will reduce vulnerability to floods, storms, landslides, and drastic temperatures through the use of technology, improved procedures, or other measures.
- **Factor Three: Impact on the Operating Budget.** These criteria are used to assess the impact of the project on the operating budget:
 - **Impact on Operating Costs.** This criterion assesses how the project would impact the Authority's operating costs – in terms of labor, materials, utilities, etc.
 - **Impact on Operating Revenues.** This criterion assesses how the project would impact the Authority's operating revenue – in terms of fares, advertising, real estate, etc.
- **Factor Four: Impact on Operations.** These criteria are used to assess the impact of the project on operations:
 - **Impact on Customer Experience.** This criterion assesses how the project would impact customer satisfaction and the customer experience through service quality improvements, accessibility improvements, providing new services, or other measures.
 - **Operations Criticality.** This criterion assesses the extent to which the project affects assets that are critical to the Authority's daily operations.
 - **Operational Sustainability.** This criterion assesses the extent to which the operational impact/benefits of the project are sustainable in future years by considering whether the Authority has the resources (sufficient skills, dedicated personnel and time, and the availability of funding) to sustain the assets associated with the project.

The MBTA also considers the implications of several other factors in its capital investment decision-making process. These include any legal requirements addressed by the project, the consequences of not funding the project, each MBTA department's own internal ranking of projects, and environmental justice implications. With regard to analyzing environmental justice, the MBTA has worked with the Central Transportation Planning Staff (CTPS) and the Boston Metropolitan Planning Organization (MPO) to ensure that minority and low-income regions are treated equitably regarding the delivery of transportation services.

2.7 Budget and Schedule

Senior managers throughout the MBTA, Board members, the Project Development Group and other interested parties all require a basic understanding of Project cost at the outset of the Project, however, little or no engineering has been performed, environmental concerns are not fully understood, little community outreach has been undertaken, etc. For these reasons, project scope and cost can be estimated only with a margin of error. This section addresses the MBTA's need to present cost and schedule data at Project outset while recognizing that such estimates are preliminary.

During design of the projects by the time 30% design has been attained, much more is known about Project requirements and a more precise estimate and schedule can be developed. By 60% design, most projects should require only a relatively modest contingency to account for field conditions and other unforeseen circumstances. This manual sets forth MBTA policy with respect to what is required of a 30% estimate and schedule, including force account budgets and actions at the 30% level. It also holds Project Managers accountable to budgets and schedules developed at the 30% design stage.

The Project Manager recommends a Conceptual Budget and Schedule when preparing the Capital Funding Request at Project Initiation.

The Conceptual Budget and Schedule includes adequate contingencies for unknowns in the design and construction phases of the Project. Conceptual Budgets and Schedules are part of the Capital Funding Requests submitted to the Budget Director and when approved are included in the Five Year Capital Investment Program (CIP). The Conceptual Budget is used as a basis to proceed with the project until a 30% design estimate is established and a more final version of the Budget is prepared.

Once the Project achieves the 30% design milestone, the Project Manager will prepare a more finalized budget and schedule. This Budget includes reduced contingencies, reflecting a greater degree of certainty about what is being built. For non-construction projects (e.g. fleet procurement), the budget and schedule is submitted to Capital Budget when project specifications or scope are essentially developed. Changes to the Conceptual Budget and Schedule that require increased funding are transmitted via a

Capital Funding Request by the AGM for Design and Construction to Capital Budget for inclusion in the 5-Year Capital Investment Program. Project Managers are responsible for completing their Projects within the approved budget and schedule.

Conceptual Budget and Schedule

No Capital Project may be included in the Five-Year Plan until the Project Manager has prepared a Capital Funding Request, including a Conceptual Budget and Schedule, which must be approved by the applicable Director, the Chief Engineer, and the AGM. The Project Manager develops the Conceptual Budget and Schedule with the assistance of the Sponsor and other Departments, using the following guidelines. It is essential that, as in the development of every cost and schedule estimate, the PM must develop and include a Basis and Assumptions document that outlines the assumptions being used.

Conceptual Budget Summary

These line items are estimated:

Task Budgets: cost estimates for each task (backup documentation should be attached) required to complete the Project, including:

- **Design and Engineering:** estimated total costs of environmental assessment, Conceptual (0-15%), Preliminary (15-30%), Development 30-60% and Final (60-100%) design, including any special engineering studies, construction document preparation, technical bid review, and construction phase services, exclusive of escalation. If anticipated, also include PM/CM costs.
- **Construction Contracts:** estimated bid cost of the Project's construction contract and/or in-house construction, exclusive of escalation but including allowances for mitigation, site cleanup, traffic control, and all subcontracts. A more detailed breakdown of individual contracts and/or costs under this line item should be attached.
- **Construction Contingency:** Depending on the type of project and the risk associated with it, a percentage of the preceding estimate to account for potential change orders, claims, etc. Contingency is to be carried as a separate line item. The PM should work with the Project Controls Group to develop an appropriate contingency amount. See Section 5 for guidance.)
- **Vehicles and Capital Equipment:** estimated cost of capital, non-construction items to be purchased (e.g., vehicles, signal equipment, and

computers).

- **Vehicles and Capital Equipment Contingency:** 5% of the preceding estimate to account for potential change orders. Contingency is to be carried as a separate line item.
- **Land Acquisition:** estimated cost of any temporary or permanent easements, takings, negotiated settlement, or other acquisition required to construct the Project, including the cost of appraisals, review appraisals, title opinion services, relocation consultant services, relocation claim payments, outside legal counsel services and land damage judgments. These estimates must be reviewed with the Real Estate Acquisition Staff.
- **Soft Costs:** itemized, estimated total in-house (labor) costs associated with project development, exclusive of the costs of in-house engineering, design and construction. Itemized soft costs include, but are not limited to:
 - Inspection (include fringe rate)
 - Flagging/Force Account (include fringe rate)
 - Project Administration (include fringe rate)
 - Indirect costs
 - Insurance, as needed

At the conceptual budget stage, soft costs generally total 30%-50% of Construction costs. The PM shall coordinate with the Administration & Finance Department to establish the soft costs.

- **Escalation:** Based on the Conceptual Schedule, all Design phase costs (i.e. all costs expected to be incurred prior to the Bid Date) are escalated to the mid-point of design, and all Construction phase costs (all costs expected to be incurred on or after the Bid Date) to the mid-point of construction.
- **Project Subtotal:** The total of the preceding items.
- **Project Contingency:** Depending upon the nature/complexity of the Project a project contingency should be calculated in accordance with the MBTA Project Controls Manual. The Project Contingency is taken to reflect uncertainties regarding environmental conditions, community review, site conditions, materials and means of construction, etc. The Project Contingency is reduced over the span of Project development, until, by the completion of the project,, it has been reduced to 0%.

- **Conceptual Budget Cash Flows:** Conceptual Budget submissions should be accompanied by an estimate of annual spending, by fiscal year.
- **Conceptual Schedule:** The Project Manager estimates the completion dates of Key Milestones and identifies critical path issues and other assumptions that will potentially affect the schedule or budget. These milestones are estimated:
 - Completion of Conceptual Design
 - Any procurement of PS services
 - Completion of Environmental Assessment
 - Completion of Preliminary (30%) Design Review
 - Identification of Authorized Budget and Schedule
 - Completion of 60% and 90% Design Reviews
 - Completion of Final Design and Permitting (not to exceed five (5) years from date of award)
 - Advertisement Date
 - Contract Award and Construction NTP
 - Construction/Delivery Milestones
 - Substantial Completion
 - Completion of Closeout

Approval of Conceptual Budget and Schedule

The Project Manager reviews the draft Conceptual Budget and Schedule with the appropriate Director, Chief Engineer, and AGM and transmits it to the AGM for Design and Construction, the Chief Operating Officer, or the Director of Planning, as appropriate. The appropriate senior manager then transmits it to the Budget Director as part of the Capital Funding Request.

2.7.1 Updating the Conceptual Budget and Schedule

Once the Project reaches the 15% design milestone, the Project Manager shall update the Conceptual Budget and Schedule, based on consideration of a minimum of three design alternatives (if applicable).

2.7.2 30% Budget Update

At the 30% design milestone the project should be more defined and the Budget updated to reflect the changes. The PM shall follow the guidance outlined in the Project Controls Manual. At this stage, any update shall include an explanation of any variance from the approved budget.

- **Task Budgets:** cost estimates for each task (backup documentation should be attached) required to complete the Project, including:

- **Design and Engineering**: actual total costs of environmental assessment, Conceptual Design (0-15%) and Preliminary Design (15-30%) and estimated (or actual if available) costs of 30% - 100% design, including any special engineering studies, construction document preparation, technical bid review, and construction phase services.
- **Construction Contracts**: estimated bid cost of the Project's construction contract and/or in-house construction, including all subcontracts, exclusive of escalation, but including allowances for mitigation, site cleanup, and traffic control. A more detailed breakdown of individual contracts and/or costs under this line item should be attached.
- **Construction Contingency**: Project Managers should coordinate with MBTA Project Controls to determine an appropriate contingency percentage that is based on the risk for a project's particular classification. The contingency is to account for change orders, claims etc. Contingency is to be carried as a separate line item.
- **Vehicles and Capital Equipment**: estimated cost of capital, non-construction items to be purchased (e.g., vehicles, signal equipment, and computers).
- **Vehicles and Capital Contingency**: 5% of the preceding estimate to account for potential change orders. Contingency is to be carried as a separate line item. Land Acquisition: estimated (or actual if available) cost of any temporary or permanent easements, takings, or other acquisition required to construct the Project. As described in the later section on Real Estate Acquisition, projects cannot proceed past the 30% design milestone until there is an estimate completed by Real Estate Acquisition staff for land acquisition. This estimate is incorporated into the Budget.
- **Soft Costs**: itemized, estimated total in-house (labor) costs associated with Project development, exclusive of the costs of in-house engineering, design and construction. Itemized Soft Costs include, but are not limited to:
 - Inspection (with fringe rate)
 - Flagging/Force Account (with fringe rate)
 - Project Administration (with fringe rate)
 - Indirect Costs
 - Insurance, as needed

At the 30% update, Soft Costs are estimated based on the specific requirements of the Project and approved by the heads of the relevant MBTA departments.

- **Escalation:** Design phase costs are presented in year-of-expenditure dollars. Based on the Authorized Schedule, construction phase costs are escalated to the mid-point of construction.
- **Project Subtotal:** The total of the preceding items.
- **Project Contingency:** Depending upon the nature and complexity of the project a project contingency of 5%-10% of the project subtotal should be calculated. The project contingency is taken to reflect ongoing but significantly reduced uncertainties regarding environmental conditions, community review requirements, site conditions, materials and means of construction, etc. If at the completion of 60% design, a project contingency in excess of 5% of the project subtotal remains (i.e., has not been allocated to task budgets), the Chief Financial Officer may reallocate any such funds in excess of 5% of the project subtotal to other projects.
- **Budget Cash Flows:** The updated budget accompanied by an estimate of annual spending by fiscal year.
- **Schedule:** At this stage of project development, the Project Manager reevaluates the Key Milestones developed at the Conceptual Budget stage and presents these to the Project Development Group (PDG) at the 30% meeting. The PM shall include in the presentation to the PDG a more detailed, expanded set of Project milestones and critical path issues for consideration.

2.8 Managing the Budget

The Project Manager is responsible for managing the project to the budget and schedule. The Project Manager will complete a monthly review of the Budget to compare forecast and actual expenditures, schedules with the established Schedule, to document the use of contingency, and to make required adjustments to budget allocations. In the case of variances, the Project Manager will develop an action plan to reduce total cost or revise the schedule as appropriate. The updated Budgets will be reviewed with the Budget Analyst to assure adequate funding is available for all items. This shall be documented in

the monthly AGM report.

2.8.1 Budget Revisions

If a budget revision is necessary, the PM shall prepare a memorandum outlining the required revisions. The PM shall consult with the Budget Analyst when preparing Exhibit 2.1.3. Exhibit 2.1.3 shall be concurred by the Director of Administration and Finance. A breakdown of the budget revision shall be prepared by Administration and Finance and included with the Budget Revision Memo as an attachment. The Budget Revision Memo will be submitted to the Budget Department to ensure that appropriate changes are made within the Capital Management System (CMS).

2.8.2 Use of Project Contingencies to Fund Budget Shortfalls

Prior to the completion of 60% design, use of the project contingency to fund shortfalls in the Task Budgets requires the following levels of approval, based on percentages of the Budget Project Subtotal:

REQUIRED APPROVAL – Prior to completion of 60% Design		
% of Project Subtotal	Individual Change	Cumulative Change
<2% and <\$200,000	Project Manager	Project Manager
2% -4% and <\$500,000	AGM for Design & Const., Chief Operating Officer, or Director of Planning, as applicable	AGM for Design & Const., Chief Operating Officer, or Director of Planning, as applicable
> 5% or <\$1,000,000	GM	GM

Between 60% and 100% design, use of the Project Contingency to fund shortfalls in the Task Budgets requires the following levels of approval, based on percentages of the Project Subtotal.

REQUIRED APPROVAL – Beyond completion of 60% Design		
% of Project Subtotal	Individual Change	Cumulative Change
<1% and <\$100,000	Project Manager	Project Manager
1 % - 2% and <\$200,000	Director of Construction, Chief Operating Officer or Director of Planning	Project Manager
2% - 4% and <\$500,000	AGM for Design & Constr., Chief Operating Officer, or Director of Planning	AGM for Design & Constr., Chief Operating Officer, or Director of Planning

>5% or <\$1,000,000	GM	GM
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Following the bid process and prior to contract award, the senior manager of the Department reviews and approves any changes to the budget necessary to fully fund the Construction Contract and Contingency.

Any changes to the Budget that result from Change Orders must be approved in the manner specified in the [Change Order Guidelines](#) defined later in this PM Manual. It is important that Project Managers understand the difference between the authorization processes for an entire project versus amendments or changes to a project. The entire project is authorized after the CIP to which it belongs is approved by the Board of Directors and the Budget Department has identified funding for the project (see Section 2.1.3). Amendments or changes to a project are authorized by the Board of Directors, Secretary of Transportation, GM, AGM, Chief Engineer, or Director, depending on the size of the project's budget. Please refer to Section 3 for MBTA authorization levels when seeking approval for specific contract actions such as amendments and change orders.

Amendment of the Schedule

The Project Manager approves changes to the schedule, but any changes that affect the dates and/or that affect the budget requires the approval of the Director, Chief Engineer, and AGM.

2.9 Amendments to the Budget

Any increase to the overall Budget requires approval of the Budget Director, who must identify the monies required to fund such a shortfall. Amendments to the Budget are required when budget variances are identified in the project status report and the Project Manager does not foresee any actions that could be implemented to recover these expected cost overruns. The first step in determining whether a new Capital Funding Request is needed should be for the PM to review all Budget Department reports currently prepared for ongoing projects.

When any "Cost-to-Complete" column in any Budget Department report exceeds the "Current Authorized Budget" column, a Capital Funding Request may be initiated.

A narrative should be attached to the Amendment providing an explanation for each line item with a projected budget variance. The Project Manager should identify potential alternatives or actions that could be performed to help contain or recover these costs. The Project Manager shall exhaust all other remedies for budget overruns before requesting an amendment to the approved Budget. The Project Manager shall consult with the Budget Analyst for the project to assure

that other remedies are not available. If the approved budget must be amended due to project conditions the Project Manager shall prepare and process a Capital Funding Request detailing the requested changes.

2.10 Reporting

2.10.1 Quarterly Milestone Reporting

The MBTA is required to submit quarterly Milestone/Progress Reports (MPR's) to the Federal Transit Administration (FTA). Reports are due 30 days after the end of each federal fiscal quarter (federal fiscal year begins on October 1st). MPR's are processed by the budget department electronically, using the FTA's Transportation Electronic Award & Management (TEAM-Web) software. In order to allow adequate time for processing, project managers are required to submit quarterly reports to the budget department a week in advance of the reporting deadline. The Assistant Manager of Federal Programs will send out an e-mail reminder requesting Quarterly Reports to Directors 2 weeks in advance of the end of quarter. Reports are completed using a template (attached) provided by the Budget Department to facilitate ease of data entry into TEAM.

The FTA details the information that, at a minimum, must be included in these reports in its regulations:

- a) Current status of each open Activity Line Item (ALI) within the active/executed grant.
- b) A narrative description of projects, status problems encountered in implementation, specification preparation, bid solicitation, resolution of protests, and contract awards.
- c) Detailed discussion of all budget or schedule changes.
- d) The dates of expected or actual requests for bid, delivery, etc.
- e) Actual completion dates of completed milestones.
- f) Revised estimated completion dates when original estimated completion dates are not met accompanied by:
 - Explanation of why scheduled milestones or completion dates were not met.
 - Identification of problem areas.
 - Narrative on how the problems will be solved.
- g) Discussion of the expected impacts and the efforts to recover from the delays.
- h) Analysis of significant project cost variances using quantitative measures, such as hours worked, sections completed, or units delivered. Discussion of completion and acceptance of equipment and construction or other work,

together with a breakout of the costs incurred and those costs required to complete the project.

- i) A list of all outstanding claims exceeding \$100,000, and all claims settled during the reporting period accompanied by a brief description, estimated costs, and the reasons for the claims.
- j) A list and brief description of all potential and executed change orders and amounts exceeding \$100,000, pending or settled, during the reporting period.
- k) A list of claims or litigation involving third party contracts and potential third party contacts that:
 - Have a value exceeding \$100,000.
 - Involve a controversial matter, irrespective of amount.
 - Involve a highly publicized matter, irrespective of amount.
- l) A list of all real property acquisition actions, including just compensation, property(s) under litigation, administrative settlements, and condemnation of each parcel during the reporting period.
- m) An annual transit enhancements report (4th quarter only) for designated recipients in urbanized areas who receive funds under Section 5307.

If a grant includes only operating assistance, the reporting requirement is limited to the estimated and actual date when funding has been expended.

When completing the MPR template, it is important that PM's make certain that the Revised Estimated Completion Date and Actual Completion Date field for each milestone has been updated if applicable. Provide a narrative explanation of changes, as they occur. Large narratives should be sent via e-mail to the Assistant Manager of Federal Programs in Microsoft Word format and he/she will include the document as a file attachment to the FTA Quarterly Narrative Report.

It is critical that all grant reporting be completed accurately, in a detailed manner, and on time. The FTA has cited the MBTA in the past for lack of detail on MPR's and may withhold funding if reports are not submitted satisfactorily.

2.11 Grant Closeout Process

Once a grant is completed, it must be closed out internally within CMS and externally (in the case of Federal grants) within TEAM. The project manager should notify the Assistant Manager of Federal Programs via email that the grant is completed. The Budget Department will verify the following:

- All funds have been distributed and expended and that the dollar amounts match up with the FTA funding amount. (Note: Remaining funds must

either be expended under the scope of the grant or they will be de-obligated).

- The project is completed and all contractors have been paid.
- There are no remaining work orders open in CMS.
- The Final Milestones Report has been submitted.

Upon verification of all the above with the project manager, the Budget Department will close out the grant in CMS and in TEAM.



**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
PROJECT MANAGEMENT MANUAL
STANDARD OPERATING PROCEDURE**

SUBJECT: Project Initiation Report

NUMBER: PMM-SOP-2-2

REVISION DATE: Draft

A. Department Sponsor:

(Design & Construction), (Operations), (Operations Support), (Development),
(Department of Transportation) etc.

**B. Project Number: _____
Project Name: _____**

(The number is for tracking reviews and comments on submissions. If the project originates externally to the MBTA, the number used for tracking purposes can be the number assigned by the owner or consultant on the project.)

C. Project Category: (Insert the source of the Project such as 5 Year Plan, TOD, Planning, etc.)

D. Project Description/Scope
(Brief Description of project scope)

E. MBTA Project Manager: _____

F. Department: _____

G. Support Services Required of Other Departments:

H. Budget & Schedule
(Insert Conceptual Budget & Schedule for Capital Projects or Estimated Budget & Schedule for other projects)

I. Funding Source

J. Special Instructions

Project Initiation Report (cont.)

K. Project Development Group (PDG) (Check all that apply)

☐ <u>Design and Construction:</u>	☐ QA Department	☐ Design	☐ Administration & Finance (Budget Analyst)	☐ Other _____
☐ Systemwide Accessibility	☐ Engineering & Maintenance (E&M)			
☐ Signal Department	☐ Communications Department	☐ Maintenance of Way		
☐ Operations Support:	☐ Power Division	☐ Building Division		
☐ Development	☐ Planning	☐ Environmental Affairs		
☐ Bus Operations	☐ Safety Department			
☐ <u>Subway Operations:</u>				
☐ Green Line	☐ Orange Line	☐ Red Line	☐ Silver Line	
☐ Railroad Operations	☐ Water Transportation	☐ Budget Department	☐ Marketing	
☐ Department Intergovernmental and Public Affairs		☐ Legal Department		
☐ Police Department	☐ AFC Department	☐ Parking		

Approval: _____ Date: _____
Sr. Manager of Sponsoring Department

Concur: _____ Date: _____
Sr. Manager of Supporting Department



Massachusetts Bay Transportation Authority Budget Department

Capital Funding Request

For Inclusion in the FY15-FY19 Capital Investment Program

CFR Group:

CIP Asset Category:

Mode:

Line:

Rank:

Submitted By:

Phone #:

A. Project Title:

B. Project Category (check all that apply – double click box to check):

- ☐ Improvement of Existing Infrastructure/Replacement of Equipment
- ☐ New Infrastructure/Equipment
- ☐ Additional Funding for Existing Project (see B-1)
- ☐ Americans with Disabilities Act (ADA) Accessibility Project
- ☐ Legal Commitment (other than ADA)
- ☐ Service Expansion (Planning and/or Construction)

C. Detailed project description/scope. What will this project entail?

D. Impact on the Environment/Alignment to GreenDOT Objectives

These criteria are used to assess the impact of the project on the environment including areas of focus as identified in the GreenDOT objectives.

D.1. Pollution Reduction and Consumption of Natural Resources

Describe if and how the project reduces pollution (greenhouse gas or other air pollutant emissions, water pollutants, trash) or the consumption of natural resources (energy and water) through the use of technology, improved procedures, or other measures.

D.2. Promote Mode Shift

Describe if and how the project encourages a shift in the mode of transportation utilized by travelers away from private vehicles and to the healthy transportation options (walking, biking, and public transit) identified in the GreenDOT objectives.

E. System Preservation

These data and criteria are used to assess the impact of the project on system preservation.

E.1. List of Assets

List the physical assets that the project will replace, renew, or otherwise affect and each asset's expected life.

E.2. Lifecycle Management

Describe if the following elements are or will be associated with the project's assets: an inventory of the assets, up-to-date condition assessments, a preventative maintenance plan (including documented schedules and organizational responsibilities), and documented maintenance and inspection training procedures for staff.

E.3. Reduce Vulnerability to Climate Change/Extreme Storms

Describe if and how the project will reduce vulnerability to floods, storms, landslides, and drastic temperatures through the use of technology, improved procedures, or other measures.

F. Impact on the Operating Budget

These criteria are used to assess the impact of the project on the operating budget.

F.1. Impact on Operating Costs

Describe how the project would impact the Authority's operating costs - in terms of labor, materials, utilities, etc.

F.2. Impact on Operating Revenue

Describe how the project would impact the Authority's operating revenue - in terms of fares, advertising, real estate, etc.

G. Impact on Operations

These criteria are used to assess the impact of the project on operations.

G.1. Impact on Customer Experience

Describe how the project would impact customer satisfaction and the customer experience through service quality improvements, accessibility improvements, providing new services, or other measures.

G.2. Operations Criticality

Describe the extent to which the project affects assets that are critical to the Authority's daily operations.

G.3. Operational Sustainability

Describe the extent to which the operational impact/benefits of the project are sustainable in future years. Does the Authority have the resources (sufficient skills, dedicated personnel and time, and the availability of funding) to sustain the assets associated with the project?

H. Legal Requirements

Does a law, agreement, or other commitment directly require that the MBTA complete the project? (AG's Office, DEP, ADA project within Key Station Plan, MOU, etc.) Is there a timeline for compliance or the threat of fines? Are there alternatives or substitutes the MBTA can use to comply?

I. Consequences of Not Funding the Project

What will happen if this request is not approved?

J. Alternative Scope of Work/Solution

What other possible alternatives exist to completing the project, besides taking no action? How else can the MBTA meet the need for the project? Can the effort be funded in stages? Can the scope be reduced and still address the most pressing problems?

K. Conceptual Budget and Schedule (provide back-up as appropriate)

How long do you expect the project to take? How was this budget estimate developed? What assumptions were used? Was this based on prior experience, best estimates, known costs, or other information sources? Please be specific and provide supporting documentation.

Expenditure Summary

Submitted By:

Budget Analyst:

Grant ID (for previously awarded funding - if applicable):

Project Title:

Sponsor Dept.:

Task Budgets	<i>Expended to Date</i>	Previously Awarded	CIP FY15-FY19	Post-CIP	Project Total
Software					
Construction					
Const. Contingency					
Veh. Contracts					
Veh. Contingency					
Real Estate					
Materials					
Prof. Services					
Force Acct.					
Flagging					
Field Inspection					
Legal					
Proj. Admin.					
Indirect Costs					
Proj. Subtotal					
<i>Proj. Contingency</i>					
Direct Enter Tot.					
Total					

Task Budgets	FY15	FY16	FY17	FY18	FY19
Software					
Construction					
Const. Contingency					
Veh. Contracts					
Veh. Contingency					
Real Estate					
Materials					
Prof. Services					
Force Acct.					
Flagging					
Field Inspection					
Legal					
Proj. Admin.					
Indirect Costs					
Proj. Subtotal					
<i>Proj. Contingency</i>					
Direct Enter Tot.					
Total					

Task Notes

Software Costs:

Construction Costs:

Construction Contingency:

Vehicle Contracts:

Vehicle Contingency:

Real Estate:

Materials Procurement:

Professional Services:

Force Account (support):

Flagging:

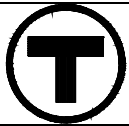
Field Inspection:

Legal:

Project Administration:

Indirect Costs:

Project Contingency:



**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
PROJECT MANAGER'S MANUAL
STANDARD OPERATING PROCEDURE**

**SECTION 3 – PROJECT INITIATION, PROCUREMENT AND
AUTHORIZATION
01/27/2014**

3 PROJECT INITIATION, PROCUREMENT, AND AUTHORIZATION

3.1 Project Initiation

While section 2 provides information on the development of [Capital Funding Requests](#) (CFR), the intent of this section is to provide specific guidance on the steps necessary for a PM to prepare, review, and obtain approval of CFR and the process to incorporate the project into the 5-year Capital Investment Plan. This section also defines the process to initiate a new project from advertisement through award.

This section describes the procedures and resources available to the PM for project initiation and authorization. Project Managers need to be aware that consultants and contractors are authorized to perform work only through specific delegation of authorization levels stated in this section.

3.1.1 Capital Funding Request (CFR)

When a Sponsor Department identifies a need for a capital project, a representative of the Sponsor Department will prepare a [CFR](#), (Note: Some CFRs will result from budgetary needs of existing projects. These will be determined during the updating process of the Budgets. Based on the criteria described below, the CFR is submitted to the Assistant General Manager (AGM) for Design and Construction and a Project Manager (PM) is assigned. For capital project development, long range projects and feasibility studies, the Director of Planning assigns the Project Manager. Please see Contract Administration SOP PS Sample 053 for sample assignment memo. Upon assignment, the Project Manager completes the Project CFR, including a Conceptual Budget and Schedule. The AGM for Design and Construction submits CFRs, ranked by priority, to the Budget Director on an annual basis or as directed by the Budget Department. The Budget Director in conjunction with the appropriate senior managers determines which proposed Projects will be incorporated into the five-year Capital Investment Plan (CIP). When the project comes off the CIP and into development a Project Initiation Report will be prepared by the sponsoring Department.

Non-capital funded projects that affect MBTA property or resources and require participation of Design & Construction need to be reviewed by the appropriate Department(s) to assure that MBTA requirements and/or funding sources are addressed and MBTA requirements get included in the Requests for Proposal or project scoping document. These projects may develop from sources other than Planning, Design & Construction, and Operations, such as Real Estate Development, Cities and Towns or Operations Support, Transit Oriented Developments (TOD), etc. When the document requesting participation by the Design & Construction or Operations Department is received from these other sources a Project Initiation Report shall be prepared. The appropriate senior manager shall assign a Project Manager and add the MBTA requirements to the report, including budget and funding considerations.

3.1.2 Definitions - Senior Managers: For the purposes of this manual the term shall mean the most senior manager of the Department, such as the AGM for Design & Construction.

3.1.3 Long Range Projects/Planning

Long range projects include:

- the conceptual phases of system expansion enhancement projects that advance the State Implementation Plan (SIP);
- are contained or proposed for inclusion in the program for mass transportation;
- meet the requirements of the Americans with Disabilities Act and
- reflect the priorities of elected officials.

In general, they are sponsored by the Planning Department and require longer term planning, infrastructure reinvestment or other operational improvements.

3.1.4 Infrastructure Reinvestment Projects/Construction

Infrastructure Reinvestment projects for which Design and Construction takes the lead role include signal system repair, station rehabilitation, railroad tie replacement, etc. The construction of system expansions and enhancements are also managed by Design and Construction.

3.1.5 Responsibilities

Senior Managers of Sponsor Departments are Responsible for:

- Completing a CFR, whether or not the project will be managed by the sponsoring department. It is essential that a clear concise scope of the project is developed to enable senior management to accurately assess the project's importance.
- Approving the CFR. Within each Department the CFR shall be approved by the appropriate senior manager. For projects that will be managed by the Design & Construction Department, the CFR must also be approved by the AGM for Design & Construction. The AGM for Design & Construction shall also make a determination on whether or not to use a Construction Manager on the project. Costs associated with the use of a Construction Manager shall be included in the Conceptual Budget.
- Assigning a Project Manager to each proposed project that will be managed by their organizations.
- Submitting CFRs to the Budget Director on an annual basis.
- Participating in the prioritization process for CFRs.

- Issuing a project initiation report, for all projects. This report is necessary to enable the D&C Department to adequately assess the level of participation required by their Department, assign the necessary resources to the project and to identify funding sources.
- Identifying the members of the Project Development Group.

Budget Director is Responsible for:

- Reviewing all CFRs for projects proposed for inclusion into the 5-Year Capital Investment Plan.
- Participating in the prioritizing of CFRs along with appropriate senior managers.
- Inputting projects into the Capital Management System (CMS) when funding is available.
- Assisting in the determination of funding sources for non-capital funded projects.

Director of Administration & Finance is Responsible for:

- Compiling CFRs for Design & Construction and processing to the Budget Director.

3.2 Capital Funding Procedure

3.2.1 Capital Funded Projects – Sponsor Departments

Upon determination that a new project is required, the Sponsor Department will prepare a CFR identifying the problem/need and the proposed scope of work. The CFR requires approval by the appropriate senior manager (AGM for Design and Construction). Note: If a construction contract is likely to be advertised in the next 18 months, then funding should be requested to advance this phase of the project.

3.2.2 Selection of Project Manager

After determining that a project is necessary the appropriate senior manager shall assign a Project Manager to complete the CFR including the Conceptual Budget and Schedule. Please see Contract Administration SOP PS Sample 053 for sample assignment memo.

3.2.3 Project Manager - Completing the CFR – New

The Project Manager shall complete the CFR which includes the Conceptual Budget and Schedule and Projections by Fiscal Year. The Conceptual Budget shall be prepared and the information included in the CFR. Provide any required back-up information. The Project Manager should work with the Sponsor Department as necessary to

complete the CFR.

Once the conceptual budget and schedule has been prepared the Project Manager shall update the CFR forward it to the senior manager of the Department for approval and prioritizing.

3.2.4 Project Manager - Completing the CFR – Existing Projects

During the execution of projects it may be necessary to request increases in the budget due to unforeseen events. The first step in determining whether a new CFR is needed is for the PM to review all CMG reports currently prepared for ongoing projects. The PM shall review the CMG reports with the Budget Analyst to assure there is no other way to fund the required change. If there is no other way to fund the change the PM shall prepare a new CFR.

3.2.5 Prioritizing CFRs within the Sponsor Departments

The senior manager of the Department shall prioritize all CFRs based on the needs of their Departments. CFRs shall have one of the following priorities: High, Medium or Low. Approved CFRs shall be forwarded to the Budget Director on an annual basis. All funding requests shall be sent to the Director of Administration and Finance for processing.

3.2.6 The Director of Administration and Finance shall compile the CFRs and forward them to the Budget Director.

3.3 Prioritizing CFR for Inclusion in the 5-Year Capital Investment Plan.

The Capital Budget Director shall review all CFRs and prioritize the requests based on the following (5) factors:

- Health & the Environment
- State of Good Repair
- Cost/Benefit
- Operational Impact
- Legal Commitments as detailed in Section 2.

3.4 Project Initiation – Capital Funded Projects

Project initiation begins when the funding is available to the sponsor departments. Once CFRs have been included within the 5-Year Capital Investment Plan and funding has been secured, the Budget Director shall input the project into the CMS system and notify the appropriate senior manager.

The appropriate senior manager will complete a Project Initiation Report and notify the Project Manager to begin project management activities. This action will signify the “Notice to Proceed” (NTP) and allow the Project Manager to develop the Request for Proposal (RFP). The budget and schedule identified by the Capital Budget Director will become the “Authorized Budget” and “Authorized Schedule” for the Project.

3.5 Project Initiation – Non-Capital Funded Projects

Project Initiation begins when the Capital Budget Director has identified the funding source for the project and the senior manager of the department has issued a project initiation report. If no funding is required for the project the senior manager of the department will determine when project management activities will commence.

3.6 Changes in Scope or Budget

The Project Manager is responsible to assure that any changes in scope of the project or changes to the budget are documented (See Project Controls Manual and Change Management Guidelines)

3.7 Project Funding Sources

Typically, MBTA D&C funding comes from bonds, state grants, or federal grants.

3.8 Document Management

Once a project is funded and assigned to a PM, the PM works with the MBTA Budget Department and Budget Analyst to assign a work order. Upon assignment of a work order Contract Administration assigns a project number and sets up a project file in the Capital Management System (CMS). Originals of all project-related documents should be routed to the appropriate project file with copies to the other project staff as required. Care should be taken to ensure that the central project file maintained by the Project Manager contains complete documentation.

3.8.1 Filing System

The filing systems should be modeled after the guidance in the [Project Controls Policy Manual](#).

3.8.2 Project Data Collection

During project initiation, typical MBTA D&C project budgets and schedules can be effectively developed utilizing standard assumptions based on past experience. If the project is complex or unusual in scope, the PM may be compelled to collect other available existing information about a proposed project during the initiation phase so that potential variables which could impact budget and schedule are identified early on.

3.9 Project Database/Website

A project database has been developed by MassDOT and the MBTA IT Department for each project. This IT database for each project is controlled by Contract Administration. PMs are expected to keep the project database updated on an as needed, or at least on a monthly basis. The project schedule and budget, respectively, are essential tools to be used by the PM in keeping the project database current. All changes/updates should be forwarded to Contract Administration for updates for each project on the

database. The project database also makes up a real time project information website, which is used by executive management, the public, and other agencies having an interest in the project to obtain project status information. It is of critical importance that the information contained in the project database be kept as current and accurate as is reasonably possible.

3.10 Reference Documents

Other documents available to all PMs for FTA guidance include the following:

FTA website - The FTA website contains procurement news and links to important FTA documents, such as Circulars, Dear Colleague Letters, Best Practices Procurement Manual, etc. http://fta.dot.gov/about_FTA.html

Best Practices Procurement Manual (BPPM) - This Manual provides recipients of Federal Transit Administration (FTA) funds suggestions on conducting third party procurements to assist them in meeting the standards of FTA Circular 4220.1F. The Manual consists of required and suggested procedures, methods, and examples. http://fta.dot.gov/funding/thirdpartyprocurement/grants_financing_6037.html

FTA Circular 4220.1F – Third Party Contracting - This Circular set forth the requirements the Authority must adhere to in the solicitation, award and administration of its federally funded third party contracts. The Annotated Circular is available online at: http://fta.dot.gov/laws/leg_reg_circulars_guidance.html

Federal Acquisition Regulations - The Federal Acquisition Regulation is available at the following internet address: [FAR Part 31 Cost Principles](#).

FTA On-line Help Line (FAQs) - FTA maintains a Third Party Procurement HelpLine to provide a means for FTA customers to get answers to their procurement questions. The goal is to answer questions within 48 hours of receiving them. The web site also contains a topical index to Frequently Asked Questions and helpful links to important FTA documents, the FAR, the BPPM, etc.

FTA Waivers and Approvals - The Authority is required to process requests for waivers and approvals required by FTA Circular 4220.1F through the regional FTA office. The Region 1 FTA office will instruct the Authority as to the required content and format of these requests. FTA Region 1 contact information is:

Transportation Systems Center
Kendall Square, 55 Broadway, Suite 920
Cambridge, MA 02142-1093
Phone: (617) 494-2055
Fax: (617) 494-2865

3.11 Contracting for Professional Services

Professional services contracts are required when the MBTA does not have the in-house resources necessary to support project development. These services may range

from simple one-person to one-service contracts to multi-discipline complex design or design/build projects. When procuring services it becomes necessary to describe in as much detail as possible the exact nature of the services required. Please refer to the Contract Administration [Procurement Manual](#) for the details of the professional services procurement process, including the consultant selection process. Project Managers should contact the Contract Administration Department as soon as a procurement need is identified as the procurement process takes to 4 to 6 months from advertisement to selection.

Procurement of A/E services is a two-step qualifications based process: Statement of Qualification and Technical Proposal. The PM must coordinate all procurements through the Contract Administration Department.

3.11.1 Purpose and Scope

The consultant selection process involves the following stages:

- Pre-Selection
- Selection
- Negotiation
- Award

The Project Manager will prepare the Authorization to Advertise Package, which includes the RFP, Independent Cost Estimate (ICE), DBE Concurrence Memo and others as detailed in the Procurement Manual. Contract Administration maintains a model RFP for use by the PM. The PM works with Contract Administration in developing the RFP. The PM also typically serves on the consultant Selection Committee. Contract Administration facilitates and oversees the selection process from advertisement through contract award. Contract Administration will publicly advertise the project, requesting Statements of Qualifications. The Selection Committee will review the qualifications and determine a shortlist of the most qualified teams who will be requested to submit technical proposals and participate in oral interviews. The committee ranks the teams and recommends the highest ranked team be recommended for award by the General Manager, Secretary or Board of Directors. If the PM and Contract Administration cannot successfully negotiate with the highest ranked firm, negotiations will begin with the second ranked firm. The process is detailed in the MBTA Procurement Manual. It is highly recommended that the PM meet with Contract Administration personnel when the need for consultant services is first identified.

Preparation of the Request for Proposal (RFP)

Once the project has been initiated or as directed by senior management, the Project Manager shall proceed with the preparation of the Authorization to Advertise package and the Request for Proposal (RFP). The package is comprised of the documents listed in the MBTA Procurement Manual. As mentioned above, Contract Administration maintains a model RFP (Contract Administration SOP PS Sample 034) that contains standard language for use by the Project Manager. The PM should contact Contract Administration to obtain the most up-to-date standard language. Characteristics of well-written scopes of work are:

- Definite and clear
- Balanced between too narrow and too broad
- Defined obligation of the consultant
- Plain and precise language
- Established minimum needs
- States clear duration
- Establishes clear definition and schedule of deliverables

The RFP should provide background and an overview of services required and provides a general discussion of the project to give the proposers an understanding of how the project developed and the basic intent. Proposers must know the full scope of the project to submit accurate proposals and/or bids. A clear and concise RFP is the key document transmitting the needs of the MBTA to consultants and forms the basis for their proposals. Therefore, ambiguous language or phrases open to interpretation should be avoided to the greatest extent possible and a clear, concise scope of work prepared. The Scope of Work section of the RFP should include the tasks required to be performed by the consultant including “Deliverables” for each project milestone. Request for Proposals should be as consistent as possible in format and expanded depending upon increased scope. It shall include a description of major facilities or components of the project and the scope of services required to execute the project.

The scope of work provides the tasks the MBTA requires to be performed by the Consultant in executing the project. The Scope of Work expands on the Introduction section and provides the details of project requirements. Tasks should be specific and anticipated deliverables listed.

Consultants will be evaluated based on evaluation criteria stated in the RFP. Criteria typically include:

- Quality and Responsiveness of Proposal
- Management Approach
- Technical Approach
- General Capabilities
- General Evaluation
- Past experience with MBTA

For consistency in RFP presentation the information should be provided in the general order listed below:

- Introduction
- Scope of Work
 - Phase I (0-15%)
 - Phase II (15-30%)
 - Phase III (30-60%)
 - Phase IV (60-90% and 90-100%)
 - Phase V – Construction Phase Services (CPS)
- Schedule

- Administrative Requirements

3.11.2 Review of RFP

Once the tasks have been specified, the Project Manager shall process the RFP for review by the following parties as a minimum:

- D&C Director
- Contract Administration
- Environmental Compliance Director
- Others as Required

The PM shall resolve all comments with reviewers. Areas of conflict shall be resolved by the appropriate Director and the reviewer. The PM shall finalize the RFP by performing a review to assure all comments have been incorporated and the document is accurate and comprehensive.

3.12 Contract Procurement and Award

3.12.1 Initial Negotiations

Once the preliminary selection has been made, and the selection is approved, the selected firm shall be notified and a schedule set for negotiations. To initiate negotiations, the PM and Contract Administration meet with the selected consultant to discuss administrative requirements, project scope and schedule. This discussion should provide the consultant with the necessary information to draft a narrative design scope, schedule and fee proposal. Because the scope will become an attachment to the Professional Services Contract, the scope should as precisely as possible describe the services to be provided for the project. In addition, a detailed scope will permit the PM to perform a thorough cost analysis and make necessary scope adjustments to keep the design contract within budget constraints.

3.12.2 Cost Analysis and Negotiation

The Project Manager is responsible for leading the negotiations. The PM should review the independent cost estimate (ICE) that was prepared prior to advertisement and past project cost history to gain a sense of proportion on scope and fees. The PM must also consider that each project is unique and will have special requirements. The purpose of the negotiations is not to minimize the cost of the consultant's services, but rather to define a complete scope of services to be provided at a fair and reasonable price.

MBTA D&C typically compensates consultants on a cost-plus-fixed-fee basis. FTA requires MBTA to perform a cost analysis on every contract action. Cost elements contained in a cost analysis include:

- Direct Salary Cost
- Direct Salary Waiver, if applicable
- Overhead Cost (Field/Office Rates)

- Principal Costs
- Subconsultant Costs
- Other Direct Cost
- Fixed Fee

Strategies for cost analysis include but are not limited to:

- Comparison to Independent Cost Estimate (See Exhibit 3-3 for ICE template)
- Personnel classifications - Review of the level of effort and hours distributed among personnel classifications, such as PM, senior engineer, junior engineer, etc.
- Direct salary costs – The PM may consider the Department of Labor statistics, previous project experience, complexity of work in determining the reasonableness of direct salary rates.
- Fixed Fee - The PM should review the fixed fee in proportion to the complexity, location, and other factors of the project; PM should follow profit and overhead guidelines established by Contract Administration. See Exhibit 3-2 at the end of this section for fixed fee calculation table to be used in negotiation of all professional services actions.
- Contract Administration also maintains a pool of Independent Certified Public Accountant to perform cost analysis of consultant overhead rates, direct salary rates other direct costs and fixed fee

The MBTA also uses the American Society Civil Engineers (ASCE) manual as a guideline to negotiate A/E Contracts. The following steps are used by the PM, assisted by Contract Administration, to negotiate costs using the [Design Fee Summary and Construction Phase Services Analyses](#).

The Design Fee Summary and Construction Phase Analyses consider the consultant fees in comparison to the construction estimate. The classification of Basic and Special services are detailed in the ASCE Manual No. 45. Generally fees range within the following thresholds when compared to the construction estimate:

- 0% - 6% maximum for Basic Design Costs (up to 8% for smaller projects)
- 0% - 2% maximum for Special Design Costs
- 0% - 4% maximum for Basic and Special CPS Costs

It is extremely important that the PM document the events of the negotiation in a formal Record of Negotiation (Exhibit 3-4). Be sure to explain how issues were resolved. Remember that ***“if it isn’t documented, it didn’t happen!”***

3.13 Contract Authorization

The General Manager, Secretary or the Board of Directors are the only officials that

can approve Consultant Contract Awards. For contract awards that are between \$0 - \$5,000,000.00, the General Manager is allowed to authorize. For contracts that exceed \$5,000,000.00, the Secretary or Board of Directors is required to authorize.

3.13.1 MBTA Authorization Levels

All contract awards are required to have a Staff Summary package prepared by the Project Manager with assistance from Superintendent of Administration and Finance. The Staff Summary Guidelines at the end of this section detail the process for authorizing contract actions. The MBTA authorization levels follow:

Base Contracts/Change Orders/Amendments

Board of Directors	> \$15,000,000
Secretary of Transportation	>\$5,000,000 - ≤\$15,000,000
General Manager	>\$250,000 - ≤ \$ 5,000,000
Assistant General Manager for D&C	>\$100,000 - ≤ \$250,000
Chief Engineer of D&C	>\$25,000 - ≤\$100,000
Director	\$0 - ≤ \$25,000
Assistant General Manager	Time Extension

3.13.2 Staff Summaries

In the Design and Construction Department, staff summaries are used to transmit information, but most often to recommend a contract action, whether it is an award or change to the contract. A staff summary is the MBTA's document used for submitting recommendations for important actions or approval by the General Manager, Secretary, or Board of Directors. The staff summary must be complete and be capable of standing alone. It should tell a story by presenting the necessary information for the General Manager, Secretary, or Board of Directors to make a sound judgment and decision.

Changes to professional services contracts are referred to as amendments. Changes to construction contracts are referred to as change orders. Change orders are discussed in detail in later sections of this manual, but for purposes of authorization levels and staff summary processing, change order and amendment authorization are discussed in this section. Formal staff summaries are **not** required for change orders or amendments with a value less than or equal to \$250,000.

Staff Summary Preparation

Staff Summaries are prepared by the Project Manager with assistance from the Superintendent of Administration and Finance. Staff summaries must be submitted timely enough (at least two weeks in advance of actual need dates) to allow for Director and AGM reviews.

Format and Presentation

The staff summary should be prepared on Form No. GMR-16 and should not normally exceed three pages. Enclosures or attachments, including a Full

Discussion, can be used for the presentation of additional detailed data which may be required for a better understanding of the subject.

The following outlines the standard sections required in a Staff Summary. Please refer to the end of this section for a sample.

Purpose – States clearly what is being requested (i.e. approval to ...), and who will approve and execute the contract action, contract title, Contractor/Consultant, not to exceed amount and contract time extension if applicable.

Total Project Budget – States dollar values for: Design, Construction, Real Estate, Force Account, and Project Administration/Inspection.

Discussion – Tells a story and contract history, summarizes the scope of the contract action (change order or amendment), list of Selection Committee members (i.e., Margaret Hinkle – MBTA Contract Administration), Selection Committee Statement of Qualification – Score Tabulation of the three top ranked companies, states DBE goal, participation to date in % and \$ and lists the DBE subconsultants/subcontractors.

Sustainability – Summarizes project green environmental initiatives. The PM should work with the Environmental Compliance Group if needed.

Financial Impact – States the funding source and grant number.

Alternative – States the alternative to approving the contract action. The alternative may involve legal commitments, accessibility issues, etc. It should be as specific as possible.

Recommendations – Summarizes the contract action scope, approver (i.e. General Manager), contract number, dollar value and completion date (if the action includes a time extension).

Enclosures - Specific attachments required for staff summaries are detailed in the following pages.

The Staff Summary should not include transmittals, buck slips or other unnecessary documentation. To be effective, a staff summary sheet should be clear, concise, complete and convincing. All staff summaries should be carefully proofread before being submitted. Effective 5/22/2012, staff summaries needing the Board of Directors approval no longer require signature lines.

3.13.3 Change Order and Amendment Authorization Procedures

The Superintendent of Administration and Finance shall assist the Project Manager with the preparation of the Staff Summary. The process and contents of Staff Summaries vary depending on whether it is to be approved by the General Manager, Secretary, or Board of Directors. Please see Section 3.17 guidance on required documentation and specific authorization levels.

3.14 Post Authorization

3.14.1 Notice to Proceed

Upon receipt of the fully executed Staff Summary (and Board Vote, if required), Contract Administration will prepare and process a NTP for signature by the General Manager. Once counter signed by the consultant, the original will be scanned, saved and distributed. The consultant is now authorized to proceed with the scope of work. The consultant may not be paid until the financial audit is complete.

3.14.2 Financial Audits

Once the Consultant contract has been approved by the General Manager, Secretary, or Board of Directors, Contract Administration will initiate a Pre-Audit Evaluation for the costs associated with the contract. Contract Administration will assign an independent Certified Public Accountant (CPA) from the Contract Administration Audit Pool to perform a review of all charges (i.e. Direct Labor, Overhead, Principal, Other Direct Costs, Travel, Subconsultant and Fixed Fee charges) according to the Federal Acquisition Regulation (FAR) Part 31. The CPA will prepare a final audit report. If adjustments are made, the PM will receive revised cost documentation from the consultant. Once the audit is complete, insurance certifications are received in Contract Administration and the consultant submitted the countersigned NTP, Contract Administration will prepare the formal contract document.

3.14.3 Contract Document

Contract Administration will prepare a formal contract document for the PM's review and approval. Contract Administration also distributes three originals for signature and execution by the MBTA General Counsel, AGM/GM, and the Consultant. One fully executed, Contract Administration will distribute a copy to the PM. Three originals will be distributed to the MBTA Treasurer, Contract Administration file, and the consultant.

3.15 Authorization - Documentation and Process Overview

Base Contracts - Base Contract Awards may be approved by the Assistant General Manager, General Manager, Secretary, or the Board of Directors. Awards greater than \$15 million require Board of Director approval. See Table 1 through 5 at the end of this section for authorization levels and required documentation. Word versions of professional services internal documentation is contained at the end of this section. The templates for CN independent cost estimates are contained in the Change Order Guidelines. The template for professional services independent cost estimate is contained in the Procurement Manual Chapter 2, Exhibit 2.1.6.

Change Orders and Amendments - Change orders and amendments with a value less than \$250,000 require **no** Staff Summary.

Budget - It is extremely important to involve the A&F Budget Analyst **ASAP** as funding is not always readily available. Any delay in funding will delay the award.

Status - The PM is responsible for tracking the status of the staff summary and following up with Contract Administration in the event changes are required. PM should utilize the CMS provided tracking tool, which is located under the CMS tab “CO > CO/SA Staff Summary Routing Dates”.

Staff Summary Review Meeting - Prior to final authorization, the AGM will hold a staff summary review meeting with the PM, A&F, and Contract Administration. Edits to the staff summary may result from this review meeting.

3.15.1 Professional Services - Base Contract Award

1. AGM approves Recommended Selection resulting from procurement process.
2. Project Manager (PM) requests a proposal from the Consultant, which includes:
 - Signed Cover Letter
 - Scope of Work with deliverables and duration
 - Level of Effort (Hour Matrices)
 - Cost Proposal (Exhibit A and backup for Prime and all subconsultants)
3. PM receives a proposal from the Consultant. When the PM and Consultant have agreed on overall scope, the PM sends copy of proposal to Contract Administration (CA) for review.
4. Contract Administration reviews proposal. Makes recommendations to PM for his/her use during negotiations with Consultant.
5. PM negotiations with Consultant using the ICE, CA comment memo and other resources. The proposal may require revision based on CA comments memo.
6. Consultant submits revised proposal
 - Cover Letter
 - Scope of Work with deliverables and duration
 - Level of Effort (Hour Matrices)
 - Cost Proposal (Exhibit A and backup for Prime and all subconsultants)
7. PM writes a Full Discussion and Technical Evaluation
8. PM writes Record of Negotiation (RON) recording events and issues that took place and were discussed during negotiations.
9. PM works with the Budget Analyst to secure funding and assign the funding source.
10. PM signs the RON and Technical Evaluation confirming the scope of work, and that the cost of the work is fully supported and fair and reasonable.
11. PM presents the final Amendment package to his/her Director for review and signature.

12. A&F sends one (1) original and two (2) copies of the completed award package to Contract Administration Staff Summary Coordinator. The staff summary for PS Award contains the documentation contained in the following Table 1.

13. Once approved the Staff Summary Coordinator copies the signed signature page, then distributes the approved staff summary as follows:

- Original and 1 copy – Superintendent of A&F
- PDF – Project Manager
- PDF – Director of Contract Administration
- Copy – Director of Contract Administration

3.15.2 Professional Services – Amendment

The authorization process for contract amendments is the same as for contract awards. The only difference is the authorization levels and the documentation submitted. Please see below for internal documentation required for PS Amendment Staff Summaries. Table 2 below lists the staff summary documentation.

*Note: Amendments with a value of less than \$250,000 are for AGM approval and require **NO STAFF SUMMARY**.*

3.15.3 Construction – Base Contract Award

1. After bid opening, Contract Administration (CA) evaluates all bids and confirms the identity of the low bidder.
2. Project Manager (PM) consults with Design Engineer to obtain a recommendation letter for the award to the low bidder and Root Cause Analysis of bid if the bid varies from the engineer's estimate by >10%.
3. PM schedules a Pre-Award Meeting with contractor to discuss contractor capability, key personnel, scope of work and bid. PM prepares PM [Pre-award Meeting Minutes](#) to be included in the Authorization Package.
4. PM writes a Full Discussion
5. A&F submits one (1) original and two (2) copies of the completed award package to CA Staff Summary Coordinator. The Award Package contains the documentation listed in Table 4.
6. Award Package is given to CA Staff Summary Coordinator for routing to:
 - ODCR
 - Operations
 - Law Department

- Budget
 - AGM/GM/Secretary/Board of Directors
7. Once approved the CA Staff Summary Coordinator copies the signature page, then distributes packages to:
- Original and 1 copy – Superintendent of A&F
 - PDF – Project Manager
 - PDF – Director of Contract Administration
 - Copy – Construction Contract Coordinator

3.15.4 Construction – Change Order

1. Change identified - by RE/PM/Consultant/Contractor
2. PM requests a proposal from the Contractor
3. PM determines if change has merit to warrant a change order
4. PM proceeds with development of an Independent Cost Estimate (ICE).
5. PM receives a proposal from the Contractor and sends copy of proposal to Contract Administration (CA) for review.
6. Contract Administration reviews proposal. Makes recommendations to PM/RE for his/her use during negotiations with Contractor.
7. RE/PM/CA develops a negotiation position using the ICE, CA proposal review and input from the Project.
8. RE/PM/CA negotiate change order with contractor
9. Contractor may submit revised proposal (unnecessary as long as the Record of Negotiations (RON) details how final price was determined). If revised proposal is submitted, the change order must also include a copy of the cover letter, recap sheet and labor and equipment breakdown from the original proposal as well as the complete final proposal.
10. RE/PM develop a well defined and detailed scope for the Form 3 (change order)
11. RE/PM writes an Explanation of Necessity (EON) (see Change Order Guidelines.)
12. RE/PM records events and issues that took place and were discussed during negotiations in a formal RON. (See Change Order Guidelines.)
13. RE/PM work with A&F to compile Change Order Package. The Budget

Analyst confirms that funding is available and assigns the funding source.

14. PM reviews the final Change Order Package for accuracy and signs the RON, EON and Change Order confirming the scope of work, and that the cost of the work is fully supported and fair and reasonable.
15. PM presents the final Change Order package to the Director for review and signature.
16. PM presents the Change Order to the Contractor for review and signature.
17. A&F submits 1 original and 2 copies of the completed change order to Contract Administration Staff Summary Coordinator. The Change Order Package that comes from the Arborway contains (See CO/CQV Checklist) the following internal documentation and the documentation listed in Table 5.
18. C/A Change Order Analyst reviews package and prepares a comment memo. The memo either provides confirmation that the Change Order is ready to process or provides direction to the PM that additional information/documentation is required before processing can continue. This memo is:
 - a. emailed to the Project Manager
 - b. Filed in Contract Administration CO Memo Binder
19. Change Order package (per Change Order Checklist) is given to Staff Summary Coordinator for distribution to:
 - ODCR
 - Operations
 - Law Department
 - Budget
 - AGM/GM/Board of Directors
20. When fully signed and approved, the Staff Summary Coordinator emails Change Order Coordinator requesting confirmation that the Change Order is "OK to pay". Information is also available in on the MBTA T: Drive: T:/Change Order/Contract Status
21. CA Staff Summary Coordinator copies the signed Form 3s (3 Originals), then distributes six (6) packages to:
 - PDF - Payment Coordinator
 - PDF – A&F
 - PDF – Project Manager
 - Original – Treasurer
 - Original – Contractor

- Original – Contract Administration File

3.15.5 Extra Work Order (EWO) Requests

- a. When work is not critical to begin, the project office shall timely process a design amendment or change order in advance of any work being performed. That document – the design amendment or the change order – shall be the document that provides direction for the work to proceed.
- b. When work must proceed pending execution of design amendment or change order, an EWOL shall be processed in accordance with the authorizations levels as stated in the PM Manual (Rev #4 to be issued soon), Design amendments in accordance with the Project Controls Manual, and Construction change orders in accordance with the most current version of the Change Order Guidelines. Rev.6, Part VI (A) is the most current version at this time. That EWOL shall be the document that provides direction for the work to proceed. After an EWOL is processed, it is incumbent on the PM to process a design amendment or change order within 30 days. If that cannot be made, the PM must advise the Director and Chief Engineer.
- c. When work of a fast moving nature is identified (i.e. when work is in the middle of a weekend diversion or during non-revenue hours) and it must proceed immediately, verbal direction may be given by the PM. If given, it is incumbent on the PM to (a) notify the Director and the AGM immediately by phone or by email; (2) follow up as soon as possible with email documentation; (3) follow up within 24 to 48 hours with a EWOL.
- d. Please note that it is understood that occasionally work is identified whereby the merit is questionable. An EWOL is not necessary unless merit is established. Once merit is established, EWOL guidelines apply.
- e. Please note that it is understood that it is not always possible (especially in the case of a fast moving change) to obtain a consultant letter or contractor's cost proposal. The Change Order Guidelines state these should be provided "if available". An EWOL must, however, include documentation that the money is available within the budget.
- f. All EWORs and Change Orders require an Independent Cost Estimate (ICE) including T&M. It is understood that, especially in the case of fast moving changes or in cases where the work scope is not clearly defined) that the cost estimate may be more general in nature. That is acceptable; what is important is the estimate has some basis. It is fine (and understood) if estimates are incorrect – as long as the logic behind them is reasonable.
- g. FTA restricts the use of T&M change orders and not to exceed EWOs to cases where there is no other method of authorizing the work. They also require that work authorized on a not to exceed basis be negotiated to a lump sum at the earliest possible date. Most of our EWOLs are issued on a not to exceed basis. There should be language in all EWOLs going forward that

states that “it is our intent to negotiate a lump sum change order for this work within 30 days of the date of the EWOL.”

Note: It's extremely important to get the Project's Budget Analyst involved ASAP as Funding is not always readily available and may require a Budget Revision processed through the Budget Office. Any delay in funding will delay the Change Order processing procedure. Also, it is important to determine ASAP as to whether an Extra Work Order Letter (EWOL) is required. If yes, then the Fun

ding issue is even more imperative early on in the Change Order/Amendment process as Funding is required to process EWOLs. Please notify A&F to initiate the EWOL Packet for processing.

Documentation Availability – Please refer

TABLE 1
PS BASE AWARD
AUTHORIZATION DOCUMENT CHECKLIST

		DIRECTOR ≤\$25,000	AGM ≤\$250,000 Chief Engineer ≤\$100,000	GM >\$250,000 - ≤\$5,000,000	SECRETARY >\$5,000,000 - ≤\$15,000,000	BOD >\$15,000,000
1	Staff Summary*			X	X	X
2	Board Vote					X
3	Selection Committee Documentation (PM may request this documentation from CA)					
a	Authorization to advertise	X	X	X	X	X
b	Public Announcement/advertisement	X	X	X	X	X
c	Short List memo	X	X	X	X	X
d	Qualification Score Tabulation	X	X	X	X	X
e	Selection Cover Memo	X	X	X	X	X
f	Proposal Score Tabulation	X	X	X	X	X
g	Letter to Selected Firm	X	X	X	X	X
h	RFP	X	X	X	X	X
4	PS Consultant Information					
a	Consultant Cover Letter	X	X	X	X	X
b	Consultant Scope of Work	X	X	X	X	X
c	Consultant Cost Proposal:	X	X	X	X	X
i	Exhibit A Standard Consultant Contracts	X	X	X	X	X
ii	List of Direct Salary Rates (Name, Title, Rate) for GEC Contracts	X	X	X	X	X
5	Additional Information					
a	Approval Documentation Summary	X	X	X	X	X
b	Full Discussion/Technical Evaluation	X	X	X		
c	Independent Cost Estimate (signed)	X	X	X	X	X
d	Subconsultant List	X	X	X	X	X
e	Fee Calculation Table					
f	EWOL, If applicable	X	X	X	X	X
6	Internal Documentation:					
a	Routing Slip Green (DOC or AGM) or Pink Routing Slip (GM or SEC/BOD)	X	X	X	X	X
b	Contract Direction form	X	X	X	X	X
c	Contract Overview form	X	X	X	X	X
d	CMS-PS-008	X	X	X	X	X
e	CMS-PS-009	X	X	X	X	X
f	Signed Record of Negotiation	X	X	X	X	X

*No signature line is required on BOD Staff Summaries

**TABLE 2
PS AMENDMENT
AGM**

		DIRECTOR ≤\$25,000	Chief Engineer ≤\$250,000 ≤\$100,000	GM >\$250,000 - ≤\$5,000,000	SECRETARY >\$5,000,000 - ≤\$15,000,000	BOD >\$15,000,000
1	Staff Summary*			X	X	X
2A	Board Vote					X
2B	CMS-PS-020**	X	X	X	X	X
3	Consultant Proposal					
a	Consultant Cover Letter	X	X	X	X	X
b	Scope of Work	X	X	X	X	X
c	Cost Proposal:	X	X	X	X	X
i	Exhibit A for Standard Consultant Contracts	X	X	X	X	X
ii	List of Direct Salary Rates (Name, Title, Rate) for GEC Contracts	X	X	X	X	X
4	Additional Information					
a	Approval Documentation Summary	X	X	X	X	X
b	Full Discussion/Technical Evaluation	X	X	X	X	X
c	Independent Cost Estimate	X	X	X	X	X
d	Fee Calculation Table	X	X	X	X	X
e	Subconsultant List	X	X	X	X	X
f	EWOL, if applicable	X	X	X	X	X
5	Internal Documentation:					
a	Routing Slip: Green (DOC or AGM) or Pink Routing Slip (GM or SEC/BOD)	X	X	X	X	X
b	Contract Direction form	X	X	X	X	X
c	Contract Overview form	X	X	X	X	X
d	CMS-PS-008	X	X	X	X	X
e	CMS-PS-009	X	X	X	X	X
f	Signed Record of Negotiation	X	X	X	X	X

*No signature line is required on BOD Staff Summaries

**If no Board Vote, CMS-PS-020 becomes Tab A

**TABLE 3
PS TASK ORDER**

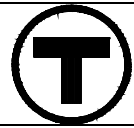
		DIRECTOR ≤\$25,000	AGM ≤\$250,000 Chief Engineer ≤\$100,000	GM >\$250,000 - ≤\$5,000,000	SECRETARY >\$5,000,000 - ≤\$15,000,000	BOD >\$15,000,000
1	Staff Summary					
2	Board Vote					
3	Consultant Proposal	X	X	X	X	X
a	Consultant Cover Letter	X	X	X	X	X
b	Scope of Work	X	X	X	X	X
c	Cost Proposal: Exhibit A for Prime & Subs	X	X	X	X	X
4	Additional Information					
a	Approval Documentation Summary	X	X	X	X	X
b	Requisition No. for FMIS (Operations)					
c	Full Discussion/Technical Evaluation	X	X	X	X	X
d	Independent Cost Estimate (ICE)	X	X	X	X	X
e	Fee Calculation Table	X	X	X	X	X
f	Subconsultant List	X	X	X	X	X
g	EWOL, if applicable	X	X	X	X	X
5	Internal Documentation:					
a	Routing Slip: Green (DOC or AGM) or Pink Routing Slip (GM or SEC/BOD)	X	X	X	X	X
b	Contract Direction form	X	X	X	X	X
c	Contract Overview form	X	X	X	X	X
d	CMS-PS-008 (NA for FMIS Contracts)	X	X	X	X	X
e	CMS-PS-009 (NA for FMIS Contracts)	X	X	X	X	X
f	Signed Record of Negotiation	X	X	X	X	X

**TABLE 4
CN BASE AWARD
AUTHORIZATION DOCUMENT CHECKLIST
AGM**

		DIRECTOR ≤\$25,000	≤\$250,000 Chief Engineer ≤\$100,000	GM >\$250,000 - ≤\$5,000,000	SECRETARY >\$5,000,000 - ≤\$15,000,000	BOD >\$15,000,000
1	Staff Summary			X	X	X
2	Board Vote					X
3	Pre-Award Documentation (Request this info from CA)					
a	Notice to Bidders (Public Solicitation)	X	X	X	X	X
b	Public Announcement/advertisement	X	X	X	X	X
c	Plan Holders List	X	X	X	X	X
d	Certified Tabulation of Bids	X	X	X	X	X
e	EPLS	X	X	X	X	X
f	Sole Source Justification, if applicable	X	X	X	X	X
4	Bid Form	X	X	X	X	X
5	Recommendation Relative to Award					
a	Consultant Recommendation Letter (Root cause analysis required if bid varies more than 10% from estimate)	X	X	X	X	X
b	Pre-Award Meeting Minutes	X	X	X	X	X
c	DBE Concurrence Memo (from CA)	X	X	X	X	X
6	Internal Documentation:					
a	Routing Slip Green (DOC or AGM) or Pink Routing Slip (GM or SEC/BOD)	X	X	X	X	X
b	Full Discussion	X	X	X	X	X
c	Contract Direction form	X	X	X	X	X
d	Contract Overview form	X	X	X	X	X
e	CMS-PS-008 NA in Awards	X	X	X	X	X
f	CMS-PS-009 NA in Awards	X	X	X	X	X
g	Signed Record of Negotiation	X	X	X	X	X

**TABLE 5
CN CHANGE ORDER AWARD
AUTHORIZATION DOCUMENT CHECKLIST**

		AGM ≤\$250,000				
		DIRECTOR ≤\$25,000	Chief Engineer ≤\$100,000	GM >\$250,000 - ≤\$5,000,000	SECRETARY >\$5,000,000 - ≤\$15,000,000	BOD >\$15,000,000
1	Staff Summary			X	X	X
2	Board Vote					X
3	CMS-CN-012	X	X	X	X	X
4	Contractor Proposal for Prime & Subs					
a	Cover Letter	X	X	X	X	X
b	Recapitulation Sheet	X	X	X	X	X
c	Equipment/Labor/Materials Sheet	X	X	X	X	X
d	All Supporting Documentation as required by CO Guidelines	X	X	X	X	X
e	Sole Source Justification, if applicable	X	X	X	X	X
5	Additional Information					
a	Signed Explanation of Necessity	X	X	X	X	X
b	Signed EWOL, if applicable	X	X	X	X	X
c	Signed Record of Negotiation (RON)	X	X	X	X	X
d	Signed RON Supporting Documentation, including ICE and internal review	X	X	X	X	X
e	Contractor signed Certificate of Current Cost & Pricing			X	X	X
6	Internal Documentation:					
a	Routing Slip Green (DOC or AGM) or Pink Routing Slip (GM or SEC/BOD)	X	X	X	X	X
b	Full Discussion	X	X	X	X	X
c	Contract Direction form	X	X	X	X	X
d	Contract Overview form	X	X	X	X	X
e	CMS-CN-002	X	X	X	X	X
f	CMS-CN-004	X	X	X	X	X
g	CMS-CN-012	X	X	X	X	X



**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
PROJECT MANAGER'S MANUAL
STANDARD OPERATING PROCEDURE**

Section 4 - PUBLIC INVOLVEMENT

NUMBER: Rev. 4

**REVISION DATE:
01/27/14**

4.0 PUBLIC INVOLVEMENT

The MBTA Design and Construction Department routinely has to interface with the public on nearly every design or construction project. The Project Manager needs to coordinate with the MassDOT Communications Department on all such projects. The following is the role of the MBTA's CRD during design and/or construction projects, and how the Project Manager should coordinate with them.

4.1 Introduction

It is the Project Manager's responsibility to involve the MassDOT Communications Department (MassDOT CD) early during the initial design development stage, and to continue to work with MassDOT CD through until the end of construction.

The MBTA's Community Relations Department was created to centralize, coordinate, and streamline the public outreach efforts of all the MBTA's Departments. MassDOT CD works in cooperation with all MBTA departments on all community relation initiatives. MassDOT CD is committed to building and maintaining a positive and lasting relationship with all communities and seeks to accomplish this through a concerted communication and outreach effort.

The objective of the MassDOT CD is to develop a level of trust and accountability between the MBTA and impacted neighborhoods, our commuters, and their elected representatives. This proactive approach has proven to substantially reduce the number of abutter and passenger complaints and sets up a program to address concerns in a timely and informed manner.

The MBTA's method of community involvement is more than just informing stakeholders and developing/fostering relationships; it includes maintaining a dialog and managing project developments to acknowledge stakeholder input and gain acceptance of the completed project. Consensus does not necessarily mean that all are 100% satisfied with the project results; it means stakeholders have worked together toward a project outcome that best achieves their individual goals.

Organizationally, the Communications Department is held in a high standing within the MBTA's construction project hierarchy with the department reporting straight to the General Manager. MassDOT CD staff members have extensive project experience as well as strong communications skills. These MassDOT CD members become the bridge between neighbors and engineers, translating the needs of each to the other and mediating inevitable disagreement. Almost any construction project can benefit from a

well-planned and organized communication and coordination strategy. Commitment to the program by all levels of management is essential for its success.

4.2 Agency Communication Channels

The public outreach effort rests on utilizing multiple communication channels to distribute information to affected constituencies. The MBTA typically communicates to the general public through one or more of the following methods:

- Agency website
- Customer service lines
- Press releases, posters, flyers, and mailings
- Newspaper, radio, and television advertisements
- T-Alerts
- Signs and handouts available in vehicles and at stations
- Public meetings
- Information stands at local events.

Some of these communication tools are geared specifically toward customers, while other methods are intended to reach community members at large.

Public meetings are planned and publicized as early as possible, at least three weeks in advance. Early engagement allows the MassDOT CD to develop a public community-involvement process tailored to each individual project to allow full participation by all stakeholders. It is the responsibility of the MassDOT CD staff or the MBTA department charged with the coordination of the public meeting to ensure that the location is accessible to people with disabilities by providing appropriate room set-up, alternate formats of handouts, sign language interpreters, and assistive listening devices at meetings when requested. Notices of public hearings related to service changes are also available on the MBTA and MassDOT websites.

In addition, all monthly MBTA Board of Directors meetings include time for public comment. This provides an open forum for individuals to present their concerns regarding transit construction, operations, and policies directly to the General Manager and Board.

4.3 Outreach Program Objectives

Outreach Program efforts are achieved through attendance at regular community meetings, creation of project websites, stakeholder database, as well as conducting regular project updates to elected officials. MassDOT CD Managers attend project meetings and work in cooperation with Construction Project Managers to make efforts to mitigate actions or events that may impact abutters or passenger service. Examples of

these impacts may include but not be limited to: weekend shutdowns, extensive construction noise, extended work hours, demolition, blasting, and changes in the path of travel (access) for transportation customers.

4.4 Identification of Project Stakeholders

The MBTA's Project Manager shall work closely with the MassDOT CD who is responsible for communicating and, to the extent possible, assisting in the mitigation efforts, regarding the impacts MBTA construction projects and other service oriented initiatives have on the public. Individuals can be described as project "stakeholders" if they are affected, either by their interest in or proximity to, a given project or initiative. Potential stakeholders include (but are not limited to):

- MBTA passengers
- Local residents
- Local businesses
- Neighborhood business associations
- Local officials, including elected officials, town and city officials, and emergency service providers
- Academic, religious, civic, and other non-government organizations and institutions

4.5 Development of Individual Project Programs

Given the individual characteristics of the MBTA's projects, the MassDOT CD will develop a suitable course of communication and outreach. Early involvement through the construction planning and design stages allows the MassDOT CD to assess the program scope for each individual project. Major projects, like the Green Line Extension or an upgrade of a Commuter Rail or Subway Line, are by definition going to have multiple stakeholders. The linear nature of these projects could impact as many as thousands of direct abutters, dozens of community interest groups, and affect numerous constituencies of both local and state officials. Other major projects such as multimodal transportation hubs, although limited to one project site, can have a far-reaching impact as service from these hubs extends well beyond the project limits. Smaller projects such as a rural bridge replacement may have minimal local impact or extended impacts.

Stakeholders are often identified during the public process in the design phase. MassDOT CD support and participation during this phase is predicated on need and should follow the guidelines below:

- The MassDOT CD is involved with the early planning stages for all primary and secondary construction projects to determine the scope of its program and the resources required to be included in project contract documents.
- The MassDOT CD will be represented at internal design review meetings as

needed for all projects through Conceptual (15%), Preliminary (30%), and Final Design (60, 90, & 100%) phases. At a minimum, the CRD will provide input at the Preliminary (30%) and Final (60%) design phases.

- A member of the MassDOT CD will be advised of, and attend as needed, the Design Department's public meetings at 30%, 60%, 90% and 100% completion phases. CRD will work with the Design and Construction Department and Construction Project Manager to ensure that project stakeholder's interests are identified and addressed through this phase of the public process.

These MassDOT CD efforts during the design phase will help to ensure that the project is designed from the start with maximum awareness by the community while facilitating an open dialog for issues and concerns that may arise throughout the design process.

4.6 Program Implementation

Any construction project will affect the adjacent community in some way. Because of this, community stakeholders desire to voice their opinions and be kept informed regarding these impacts.

Construction Impacts and Abatement

The noise, traffic, delays, and other impacts of construction may be more inconvenient at certain times of day; in some cases, for example, the MBTA may need to perform construction operations at night in order to minimize the extent of passenger service interruptions or delays to the public. Neighbors can accept disruption more easily when prepared in advance. In order to quickly inform affected neighbors about construction activities, the CRD develops a project specific database with the contact information of identified project stakeholders who wish to receive updates on projects.

Media Relations

MBTA construction projects can be targets of attention from the local news media. **The Project Manager should always refer all media inquiries to the MBTA Public Affairs Department.** Local newspapers in particular may spotlight alleged setbacks and controversy. The possibility of biased or inaccurate reporting necessitates cooperation and coordination with the MBTA's Public Affairs and Community Relations Department to ensure the proper dissemination of information that could be construed negatively.

Public Support

Obtaining public acceptance and support for construction projects can present difficult challenges. The dialogue enabled through the efforts of the MassDOT CD meets this challenge by fostering cooperation between the MBTA and the community with an emphasis on mutually beneficial outcomes.

Construction Phasing

The MassDOT CD construction phase programs are developed in cooperation with the construction project managers and include:

- Coordination and participation in the initial public meetings upon MBTA issuance of project notice to proceed. At this meeting the MBTA's contractor is introduced and the project scope, schedule, and potential impacts are reviewed. Construction project managers and MassDOT CD staff generally conduct these meetings. Support materials such as presentation boards, Power Point presentations, and project element mock-ups are provided by the project for these meetings.
- Attendance and / or hosting, as needed, of informational community meetings throughout the construction process. This will include attendance at neighborhood association meetings and MBTA-sponsored meetings to provide project updates and to inform stakeholders of substantive project impacts including (but not limited to) weekend shutdowns, anticipated extensive project noise, extended work hours, demolition, blasting, and changes in the path of travel / access points for MBTA passengers.
- Development of a multifunctional database to serve as a central repository of community information regarding the project. This is to be supported by access to updated project websites, frequent email updates, and project advisories.
- Development and dissemination of clear informational materials to project stakeholders to provide advance notification of service impacts and disruptive construction activities.
- Attendance of regular project meetings as necessary; project managers will inform the MassDOT CD of all substantive project impacts, scope changes, and service impacts.
- Coordination with project managers on all interaction with local administrative and elected officials.
- The MassDOT CD will be responsible for scheduling, planning, and implementing all project "groundbreaking" and "opening" events.

4.7 Financial Support for Communication and Coordination Objectives

In establishing force account budgets as described in Section 2.7.1(Conceptual Budget for soft cost force account) the Project Manager must include costs associated with potential community involvement issues.

At a minimum, MBTA construction projects need to provide funding for:

- Notification of service interruptions, diversions, and other substantive project impacts. This item needs to fund advertisements in local papers, informational signage and project informational materials.
- Presentation materials necessary for conducting public forums on the project. These include presentation boards, models, etc. as determined in the project planning and design phase.
- Provision of accessible services for public meetings to include (upon request) sign language interpreters, assistive listening devices, and materials in alternative formats.
- Provision by project consultants of presentation material in Power Point compatible format as needed for public forums.
- Language translation necessary to provide project information to impacted non-English speaking neighborhood groups.
- Incidentals necessary to support project groundbreakings and openings.

Summary

The Massachusetts Bay Transportation Authority's objective of customer service, consensus building, and promotion of positive relationships with project stakeholders pays dividends beyond the life of construction projects. The MBTA acts, after all, as a good neighbor by providing reliable public transportation to those with whom we have partnered during the construction process. Balancing the long-term positive of improved transportation services with temporary negative impacts of a construction project is a key principle behind community relation efforts.

	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY PROJECT MANAGER'S MANUAL STANDARD OPERATING PROCEDURE	
Section 5 - DESIGN		NUMBER: Rev. 4
		REVISION DATE: 01/27/14

5 DESIGN

5.1 Purpose and Scope

This section provides an overview of the Project Manager activities required to manage the professional services contract. This section applies to all contracts and begins with the "Notice to Proceed" and concludes when the professional service is completed.

Professional Services Contract Types

The MBTA procures a variety of professional services contracts. For projects with a value greater than \$50 million, an owner's representative must be assigned. The MBTA maintains task order contracts from which a PM may draw owner's representative services. The MBTA also procures a variety general engineering consulting (GEC) contracts that PMs may draw upon for a variety of engineering services. The PM is responsible for identifying funding whenever a task is assigned.

Managing the Design Consultant's Services and Performance

The PM is the single point of contact and manages the consultant's scope, schedule and budget. The PM is ultimately responsible for administration and oversight of the consultant's work. It is important to keep in perspective that the consultant works for you and they are your resource for getting a project designed and built. To properly manage resources, the PM must monitor and document the consultant's activities. The following are key areas of emphasis in regular tracking and documenting the consultant's activities:

- Regular communications
- Changes to the scope and basis of contract
- Progress payments
- Disadvantaged Business Enterprise (DBE) Participation
- Budget tracking
- Schedule tracking
- Project status reporting
- Close-out

Managing the professional services contract requires the Project Manager to coordinate many project activities to assure the project meets the established

scope, budget, and schedule. A very early activity for the PM is to establish a project management plan (PMP) in accordance with the Project Controls Manual. Note: The PM should refer to the appropriate procedures for the detailed steps necessary to accomplish the individual task. A major aid in managing a project is to have an up-to-date and accurate scope, budget and schedule. Requirements pertaining to schedule are included in the Project Controls Manual [Project Schedule Requirements Section](#). The project design schedule (PDS) shall also be submitted to the Project Controls Section.

The design consultant (A/E) and MBTA Project Manager shall agree on the method that will be used for earned value analysis (EVA) and management soon after the notice to proceed (NTP) is issued in accordance with the requirements specified in the Project Controls Manual. The PM is required to meet with the consultant monthly to review scope, budget, project design schedule, and the monthly status report. Having the latest information allows management to make informed decisions regarding project execution and funding. During these progress meetings, the Project Manager will use earned value analysis to assess project progress prior to the consultant submitting pay invoices. It is important for the PM to closely monitor scope, budget, and schedule performance. The PM and consultant will review any issues that impact the scope, budget and schedule, including comments received at the various design milestone submittals.

The PM must also guard against “scope creep”. The Project Manager must keep senior managers informed as early as possible when the project’s schedule, scope or cost may be impacted. These issues should be discussed in the monthly project status report, and at the next scheduled PDG meeting.

The PM must follow [Design Change Control Procedures](#) as outlined in the Project Controls Manual and assure there are sufficient funds available at all times to support any potential change. The MBTA Budget Analyst must be aware of all potential changes and perform a review to assure funding is available to support the change. If sufficient funding is not available, the Project Manager will request additional budget through the Capital Funding Request. Before any change can occur, the PM will obtain the approval of senior management. Subsequent to senior management approval, the changes in scope will be communicated officially to the consultant and the necessary actions taken to update the scope, budget, and/or schedule information. Communication to the consultant will be in the form of a letter signed by the Project Manager and the issuance of a notice to proceed or formal contract amendment.

Throughout the design process, the Project Manager is required to manage scope and costs, by avoiding scope creep. The PM is also required to manage costs within the authorized project budget. The PM should familiarize him/herself with the Article II General Conditions and Article III Compensation and Payment design contract terms, which are available in the Contract Administration office.

Specifically, estimates which indicate construction cannot be accomplished within Authority established budgets shall be addressed in a manner satisfactory to the Authority in order to bring the work within the Authority's budget and shall be completed at no additional cost to the Authority.

5.2 Project Design Schedule

Within thirty (30) calendar days after the start date specified in the NTP, the Engineer shall submit a detailed Project Design Schedule (PDS) to the Authority for review and acceptance. The PDS shall detail the activities required to complete Design Phase Services within the time period specified in the Contract. This Baseline Schedule shall meet the deliverable milestones established in the contract / work order / amendment. The PDS shall be a computerized **cost loaded** CPM (Critical Path Method) Schedule showing the estimated cost and duration of each activity for all phases of the design work. The Engineer shall cost-load the PDS by developing cost accounts for specific design scope items and assigning a cost value to each activity in the PDS. The cost value assigned to the activity shall be designated as the "Budget-At-Completion" (BAC). The BAC for each activity shall represent an allocation of the total project budget for the Design and Engineering Phase. The Engineer shall base the BAC on the labor rates and hours to complete each activity as determined by the Engineer or negotiated with the Authority.

The Engineer shall use Oracle Primavera Scheduling Software or equivalent CPM schedule software to develop the PDS. The schedule software shall have the capability to identify the critical activities along the longest path of work through the schedule network for the project. The schedule software shall run on PC compatible equipment and be compatible with Microsoft Windows© based software. The software shall be capable of processing and plotting the progress of the work, determining the earned value of the work performed by the Engineer on a monthly basis, and comparing the progress and earned value of the work shown in multiple updates submitted by the Engineer.

5.3 Project Budget

The project budget is initially developed using the estimated cost of construction, which is determined at the conceptual design stage and is updated when an A/E is selected, and at the 15%, 30%, 60% and 100% design stages. Whether a project is bond or federally funded, the PM can reference the CIP, respectively, for the construction estimate. Then, as additional information becomes known about the project, the PM should make adjustments to the estimated cost of construction and other budget line items.

MBTA D&C has developed factors which can be applied to the construction cost estimate to determine estimates for the design development components of the project budget. The PM should ensure that the budget is as realistic as possible

by consistently updating the budget line items to reflect current experience and known information about the project.

Once the PM is satisfied with the project budget, the completed Project Budget Form should be submitted to the Budget Department for setup of a cost center and entry into the CMS system for tracking of available funds, actual costs, and budget to actual comparison during the life of the project.

The MBTA Budget Analyst will provide the PM with CMS generated printouts of the project budget, which should be continually updated whenever warranted and returned to the Budget Analyst for entry into the Authority's CMS and accounting system.

Each month, the Engineer shall update the Project Design Schedule and submit to the Authority (refer to the Project Controls Manual for more detail regarding requirements).

Each month, the design consultant shall provide and submit to the Authority a Progress Monitoring Report.

5.4 Monthly Progress Meetings

5.4.1 The Project Manager shall hold monthly progress meetings with the consultant to review project performance and to assess issues that may have an affect on the scope, budget, or schedule. The Project Manager and consultant should determine an appropriate course of action to address each issue. Any course of action must be reviewed against the availability of funding. The Budget Analyst shall be consulted to determine the appropriate funding source to support any proposed change.

5.4.2 At the conclusion of the meeting, the PM shall have the consultant document the results in meeting minutes. If any issues have a potential affect on the scope, budget, or schedule, senior managers shall be formally informed immediately according to the design change control process identified in the Project Controls Manual. Additionally, a full discussion of the issue(s) shall be included in the monthly status report. The Project Manager shall present any changes in scope, budget or schedule to the PDG at the next scheduled meeting.

5.5 Changes in Scope, Budget and Schedule

All changes must be documented and official notification given to the consultant. Please refer to the design change control guideline previously described. The PM shall notify the consultant in writing and process an amendment to the

contract. Budget changes that require additional funding may require a capital funding request.

In the event the PM requires a consultant or contractor to do work before a full proposal is received or before the amendment or change order is fully authorized, an extra work order letter (EWOL) must be processed in accordance with guidance provided in Section 3.15.2.

5.6 Adding a Subconsultant

In the event it becomes apparent the consultant team requires the services of an additional subconsultant, the PM must consult with Contract Administration to determine if ODCR approval is required. With the approval of ODCR, the PM then notifies Contract Administration so the subconsultant may be added to the capital management system (CMS).

5.7 Project Management's Role in the Design Process

Whether a project is to be designed by a professional services consultant or by in-house design staff, the PM's role remains essentially the same.

- Ensure that the project schedule is accurately developed and updated monthly.
- Ensure that the project budget is developed and kept current.
- Identify the project scope and direct the designer toward development of design documents that will satisfy the purpose and need for the project.
- Communicate issues concerning schedule, budget and scope to all project participants. When needed, initiate corrective action.
- Guide the Public with the goal that all affected parties feel well-informed and satisfied that their concerns are a valid part of the design process.
- Assure timely and thorough review of the design documents including clarification of unclear comments and adjudication of conflicting comments when received.
- Monitor funding requirements and coordinate with the Budget Analyst to ensure that adequate funding is authorized and available on a timely basis.
- Administer the design consultant contract.
- Ensure the requirements of the Project Controls Manual are met.
- Review and process A/E consultant payments in a timely manner

The Project Manager is Responsible for:

- Assuring that tasks are performed in the required sequence and at the

appropriate time in the design development process.

- Conducting monthly meetings with the consultant to update the progress of the project and to review scope, budget and schedule performance.
- Presenting any scope changes to senior management, specifically the area Director, Chief Engineer, and the Assistant General Manager.
- Documenting any changes in scope, budget, and schedule.
- Processing contract modifications through the Administration & Finance and Contract Administration Departments

5.8 Project Coordination Elements of a Typical Project Design

Design phase coordination strategy is necessary to ensure that design submissions are reviewed in a timely and efficient manner. The intent is to help the Project Manager elicit most design concerns by the 30% design review milestone and to assure that the design review process is controlled and documented.

The Project Manager is responsible for managing the design review process to assure design concerns are addressed in a timely manner such that the authorized budget and schedule are not adversely impacted. During the design phases (as describe below, 0%-100% to Bid), the Project Manager must coordinate the internal MBTA design review process with the design consultant (and construction manager, if applicable).

Coordination begins with a meeting with the project development group and continues with five official design reviews, at the 15%, 30%, 60%, 90% and 100% design phase milestones. Please note that projects of limited scope may not include all five (5) design phase reviews. In these instances the Project Manager will define which design review milestones will apply to the project in the project scoping document and present them to the Project Development Group at the Pre-Design Phase meeting. All submittals are made through the MBTA Project Manager. All review comments will be transmitted to the design consultant by the PM.

5.8.1 Project Coordination and Design Review

This section describes the system used by the Project Manager to establish design review milestones and coordinate, process, and document design reviews for each design submittal with MBTA departments. This procedure applies to all design projects regardless of size.

The following is a list of MBTA operational and administrative areas to whom a PM should send documents for review:

- Design
- Operations Support (Buildings & Structures)
- Engineering & Maintenance
 - Systems Infrastructure
 - ☐ Power (Transmission and Distribution)
 - ☐ Signals
 - ☐ Communications
 - ☐ Track (ROW)
 - Physical Infrastructure Maintenance
 - ☐ Heavy Rail
 - ☐ Light Rail
 - ☐ Facilities
 - ☐ Night Operations
 - ☐ Electrical/Mechanical
- Environmental
- Project Controls
- Operations (BL, OL, SL, RL, GL, RRO, Bus)
- Safety
- Security
- QA/QC
- System Wide Accessibility
- Contract Administration
- Automatic Fare Collection (AFC)
- MBTA Transit Police
- Agency Permitting - Department of Public Safety (DPS) and Fire (R. McCarthy)
- Law
- Real Estate

At the beginning of each project, the PM should confirm the areas performing submittal reviews, the point of contact for each area, the submittal format and quantity.

FM Global Review

All designs and specifications for MBTA properties undergoing renovations or new construction must be submitted to FM Global for their review and approval during the design phase.

These documents can be sent directly to:

FM Global Engineering
Engineering Plan Review Department
500 River Ridge Drive, P.O. Box 9102
Norwood, MA 02062

FM Global will acknowledge receipt and provide a prompt turnaround.

In the event you have any technical questions about FM Global approved products and standards please feel free to contact the following for assistance and information:

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5.8.2 Submittal Review Period

The schedule for design or construction is such that an expedited review will sometimes be required. The PM will make every effort to provide the maximum feasible review interval (30 days). If the schedule is expedited, the Project Manager shall notify reviewers that an expedited review cycle is required by stating the review period on the Transmittal Sheet. The Reviewer is expected to complete their review and transmit comments within this interval. If it is apparent that a Reviewer cannot meet the stated schedule, the Project Manager is to be notified, comments to date transmitted to the PM and the review continued in an expeditious manner.

5.9 Design Phases

The typical requirements that may be involved during the design include, but are not be limited to:

- Project management and administration
- Design schedule requirements
- Construction schedule requirements
- Construction phasing
- Building code analysis
- ADA requirements analysis
- Contaminated soil management

- Project component and systemwide elements coordination
- Public participation
- Meetings and agency coordination
- Land acquisition/Public Improvement Commission (PIC) Plan
- Environmental compliance and design for the environment
- Safety and security (work with Safety Department)
- Architecture
- Civil engineering
- Track and signal design
- Power system review
- Structural engineering
- Community participation
- Existing engineering plan inventory
- Develop survey plan
- Building audits
- Utilities investigations
- Site assessment/alternatives development
- Develop traffic and parking plan
- Develop architectural program
- Vehicle and service planning
- Station site assessment, dimension, and design
- Design and reports
- Schematic plans review
- Cost estimating
- Preliminary plans and specifications review
- Plans and specifications review
- Project development group meetings

NOTE: Some of the standards outlined above are further explained in detail in other sections of the Project Manager Manual.

5.9.1 Pre-Design Phase

Pre-design is considered to be the time between project award and the commencement of design where the Project Manager develops the MBTA design criteria as input to the design process. The project goals in terms of basic scope, schedule and budget for work will be described. During this phase the PM will review documents to ensure they identify required elements and spaces with their program size and interrelationships, site analyses are performed if required, programmed relationships to neighborhood and other modes of transportation including vertical transportation are established, customer counts and flows are defined, and project development strategies and milestones, including sustainability goals are spelled out:

5.9.2 Phase I - Conceptual Design, 0-15%

Conceptual design is considered the first stage of the design where the concepts are put forth and the scales and relationships between project components are illustrated.

The feasibility study or alternatives analysis report contains a collection of all data required for further design development. Additionally, the final study report will either validate the need of the project or, in some cases, will result in the no-build alternative.

The feasibility study or Alternatives Analysis Report is first submitted as a “draft” for review by the project stakeholders. The PMs will use their own discretion, based on the scope and depth of the project, to develop the draft distribution list. At this stage, it is recommended that all potentially affected or interested stakeholders review and comment on the feasibility study or alternatives analysis report, as this is the appropriate time to address primary issues affecting the project design outcome.

The draft feasibility study or alternatives analysis report review concludes with the PM providing direction to the consultant as to the extent the reviewers’ comments are to be incorporated into the final feasibility study or alternatives analysis report and subsequent design phases. The final Report is then prepared with a documented recommended alternative and resolution of project issues.

If the project’s scope is of limited nature and there is a single alternative, then the design study phase can be bypassed. If there are only a few relevant issues affecting the smaller project, they can be evaluated and summarized in a brief design study memorandum.

A typical feasibility study or alternatives analysis report will contain the following elements:

- Schedule and timelines
- Revenue Impacts
- Agency coordination / permit requirements
- Phasing
- Assessment issues
- Existing Services
- Existing Infrastructure
- ROW requirements (see Chapter 8)
- Land Acquisitions (Temporary and Permanent)
- Recommended alternatives
- Traffic study
- Geotechnical analysis
- Environmental Issues
- Utility conflict report
- Design survey
- Cost estimate
- Conceptual drawings
- Building code analysis

Environmental Coordination during Phase I - Conceptual Design, 0-15%

The PM should set up a meeting with the Environmental Department. Also in attendance should be representatives of Design and Construction, the Architect/Engineer, Safety, Operations Support, and Operations End User Groups. During this meeting, the PM and the A/E will discuss programmatic needs, project elements, aspects and impacts, handling and storage of hazardous materials, environmental permitting and compliance issues, sustainability, and design for the environment.

This meeting shall include a review of an environmental checklist for design and environmental permitting as well as a project checklist for sustainable design elements to go over what the basic compliance issues are for the project with the PM and Architect/Engineer to cover elements listed above. (Note: these two checklists are included in all design stages).

5.9.3 Phase II – Preliminary Design, 15-30%

This phase establishes the basis of design – the scope, schedule, budget, fee and overall project design, including the forms, sizes, and overall appearance through further development of the plans, sections, typical

construction / fabrication details, and equipment layouts. Included within this phase are the preliminary specifications, which identify major building materials and systems, and establish quality standards.

Environmental Coordination during Phase II - Conceptual Design, 15-30%

In conjunction with the Environmental Department, the PM will revisit the Environmental Checklist for Design and Environmental Permitting as well as a Project Checklist for Sustainable Design Elements at the 30% design level with all affected parties.

Together, the PM and the Environmental Department will review and discuss all applicable State and Federal Environmental Requirements and Permits (i.e. NEPA, MEPA, 4F, Section 106, US Clean Water Act, MA Wetlands Protection Act, etc) for the project. Note: The Environmental Department will need to be cc'd on all Drawings and Specifications submittals.

The Environmental Department will review and discuss all Property Acquisitions focusing on environmental concerns at this stage.

Quality Assurance Coordination

Project Manager shall obtain memorandum from the QA Department detailing the Department of Public Safety (DPS) permitting requirements.

5.9.4 Phase III – Design Development, 30-60%

Any changes to the 30% documents should be included in a report. At 60%, all project systems and their formal expression should be described in both drawings and specifications. The overall extent of the project and its elements, as well as typical sections should be included.

Environmental Coordination during Phase II - Conceptual Design, 30-60%

In conjunction with the Environmental Department, the PM will revisit the environmental checklist for design and environmental permitting as well as a project checklist for sustainable design elements at the 60% design level with all affected parties.

State and Federal Environmental Requirements and Permits (i.e. NEPA, MEPA, 4F, Section 106, US Clean Water Act, MA Wetlands Protection Act, etc) for the project. Note: The Environmental Department will need to be copied on all drawings and specifications submittals. Note: The permitting process should be completed by the 60% design level. If the permitting process is not completed with the 60% design submittal, the submittal should include a memorandum explaining how permitting will be completed and a timeline for completing it prior to the 90% phase.

The Environmental Department will review and discuss all Property Acquisitions focusing on environmental concerns at this stage.

The Environmental Department will review and discuss all environmental requirements for the project to be able to be constructed (environmental constructability review).

Pre-Bid Review Control Sheet

At the 30% to 60% design phase, the PM shall start obtaining the documentation necessary to complete the pre-bid review control sheet (PRCS) needed to advertise the eventual construction contract. The PM must work with Contract Administration in the preparation of this PRCS. See Section 8 for more detail on the PRCS and construction procurement planning.

5.9.5 Phase IV – Final Design, 60-100%,

90% - Project documents should be virtually complete, accounting only for final coordination and quality assurance and quality control prior to bid.

100% - Documents must include everything necessary to procure the intended scope, quality and design without, barring unforeseen conditions, requiring expensive change orders during construction.

Environmental Coordination during Phase II - Conceptual Design, 60-100%

In conjunction with the Environmental Department, the PM will revisit the Environmental Checklist for Design and Environmental Permitting as well as a Project Checklist for Sustainable Design Elements at the 100% design level with all affected parties. A new Pre-Bid Environmental Checklist will be reviewed and discussed for the project.

State and Federal Environmental Requirements and Permits (i.e. NEPA, MEPA, 4F, Section 106, US Clean Water Act, MA Wetlands Protection Act, etc) for the project. Note: The Environmental Department will need to be copied on all drawings and specifications submittals. Note: All permits and environmental

approvals must be in hand by the completion of the 90% design level.

The Environmental Department will review and discuss all property acquisitions focusing on environmental concerns at this stage.

5.10 Responsibilities

5.10.1 Project Manager:

- Preparing the project scoping document and identifying the number of design review milestones applicable to the project.
- Convening meetings with the Project Development Group at the Pre-Design Phase and Design review milestones.
- Managing the design review process, including assembling comments from reviewers, holding comment resolution meetings between the consultant and reviewers and assuring that comments are resolved and documented.
- Maintaining a file of each formal submittal including: one copy of all material comprising the submittal; changes to approved plans or specification; a copy of review comments and responses and a copy of the approval to proceed to the next scheduled design review.
- Coordinating service disruptions or diversion or any other operational impact with the appropriate department.

5.10.2 Project Development Group

Senior managers assigned to the PDG shall attend the Pre-Design Phase meeting with the PM. Reviewers within their departments may also be invited. Reviewers should remain as department liaison for the duration of the project to the maximum extent practicable. Additionally, senior managers shall approve all comments presented by their departments and sign the design review comment sheet. Refer to Section 5.9.4.

5.10.3 Reviewers

Reviewers are responsible for providing comments on the design at the specified design review milestones and within the specified review time, normally 30 days. Additionally, reviewers shall document their reviews on

the Design Review Comment Sheet. Note: Reviewers shall not contact design consultants without first notifying the PM.

5.10.4 Design (0% - 100%) Submittals

The minimum requirements for conceptual/preliminary/final design (0% - 100%) include the following:

- Project design layout
- Engineers Estimate
- Plan and Profile base sheets
- General details
- Specifications outline
- Updated construction estimate

5.11 Design Guidelines and Standards

The Project Manager must adhere to the following guidelines as defined at the 15%, 30%, 60% and 100% design levels for:

- [Value Engineering Program](#) - Performed at the 15% and/or 30% stages.
- [Risk Analysis Program](#) - Performed at the 30% and 100% stages.
- **Internal/External Force Account Program** - Performed at the 30%, 60% and 100% stages.
- **Project Development Group (PDG)** - Performed at the 15%, 30%, 60% and 100% stages.
- **Design Submittal Review** - Performed at the 15%, 30%, 60% and 100% stages.
- **Peer Review - Performed** at the 60% and 100% stages.
- [Constructability Review](#) Performed at the 60% stage.

5.11.1 [Value Engineering Program](#)

This section provides the requirements for Value Engineering studies to be performed on projects. This procedure applies to all projects with a construction budget greater than \$2,000,000.00. Note that for projects

\$50 million and above, the Value Engineering may be performed by an Owner's Representative pursuant to M.G.L. c. 149A, § 15 ½.

Value Engineering (VE) is a project management technique in which an independent engineering team suggests modifications to the Project design to reduce life cycle costs while achieving goals established for performance, safety, and maintainability. There are typically six phases involved in the value study process: information; functional analysis; creativity; evaluation; development and final presentation. This section discusses the roles of the Project Manager with respect to Value Engineering.

The Project Manager (PM) requests value engineering through the Design and Construction Project Controls Section. Value Engineering is either performed by the MBTA VE consultant or by a consultant hired by the Project Manager. VE may be performed by an Owner's Representative or by a Construction Manager if hired for the project. In both cases the MBTA VE Coordinator shall be kept informed of all VE activities performed on the project.

Project Manager

Referring all projects for value engineering prior to the 30% design review milestone. For major capital projects the initial VE study may occur at 10% and an additional VE study at the 30% design milestone.

Note: The PM or the FTA may recommend additional VE studies for a project as the design progresses.

In certain instances, VE may not be warranted. In such cases, the Project Manager should discuss this with the Project Controls Section and request a VE Waiver from the Assistant General Manager for Design & Construction.

5.11.2 Risk Analysis Program

The purpose of the risk analysis is to take a proactive approach to taking control of projects and decreasing uncertainties as it relates to scope, cost and schedule. The results of the risk analysis will be used to determine a contingency level for the project.

At the 30% stage, the consultant & MBTA perform a risk analysis of the project. At the 100% stage, the risk analysis shall be revisited to develop the final construction contingency.

The PM should contact Project Controls Group for coordination and requirements.

Risk Workshops:

Three (3) weeks prior to the Workshop, the PM shall provide Project Controls Group with:

1. Bottom-up estimate (basis of estimate)
2. Schedule (Full & Critical/near Critical Path)
3. List of project risks
4. Plans & Drawings
5. Specifications

The project team consisting of the MBTA PM, A/E PM & critical team members, scheduler, estimator & Project Controls will meet to develop a risk to identify risks, determine probability of the occurrence, impact, ranking, and risk responses.

Estimate Review

At the 30%, 60%, & 100% design stages, the MBTA PM and Design Team will review the anticipated construction estimate and project estimate with members of senior management. Refer to the [Project Controls Manual](#). The PM shall provide estimate three weeks in advance to meeting.

Schedule

At the 30%, 60%, & 100% design stages, the MBTA PM and design team will review the schedule for the remaining design and the anticipated construction schedule (“contract time determination” schedule) and project estimate with members of senior management. Refer to the Project Controls Manual project schedule requirements section. The PM shall provide the schedule three weeks in advance of meeting.

Constructability Review

At the 60% design stage, the design consultant shall perform a constructability review to prove that the anticipated construction project can be built as depicted in the plans and specs. The PM must coordinate with Project Controls.

5.11.3 Force Account Program

This section defines the steps the Project Manager must take to develop

an accurate force account for the project.

The primary tool that the MBTA uses to document cost containment efforts and adherence to this Manual is the Force Account Phasing Plan (FAPP). The FAPP will guide MBTA personnel through the force account development and implementation process and provide specific documentation required at key stages during the design process.

PI Agreement

PMs should follow the most recent PI Agreement Procedures, which are available on the MBTA website as stated in Chapter 1 of this manual.

Force Account Review Process (FARP)

The force account review is comprised of senior managers who provide direction to the Project Manager regarding the best methods to be used in the Force Account Phasing Plan (FAPP) to achieve optimum cost savings in implementing the FAPP. The FARP shall include representatives from the following departments, as necessary:

- Design & Construction
- Subway Operations
- Bus Operations
- Railroad Operations
- Operations Support, including Power, Communications, Track Departments
- SMI
- Operations Planning
- Safety Department
- Budget

Project Manager Force Account Responsibilities

- Developing a Force Account Phasing Plan for the project.
- Requesting the review and Force Account Estimate (TRS Forms) from the impacted departments.
- Obtaining the approval of the Force Account Phasing Plan from the impacted departments.

Departments Providing the Force Account Review Responsibilities:

- Reviewing and approving all project design documents

- Developing labor and materials, equipment and force account estimate
- Exploring methods to reduce force account expenditures on a project.

5.11.4 Project Development Group (PDG)

This section defines the steps the Project Manager must take to convene meetings with the PDG and to present the progress of the design at the various design milestones. This procedure begins during the project initiation phase and continues to the 90% and 100% design milestones or as directed by the Project Development Group.

It is essential that all Departmental MBTA requirements are incorporated into project design as early in the design and development process to mitigate cost and schedule impacts. To this end, the Project Development Group was formed to provide assurance that all projects receive these Departmental requirements in a consistent and timely manner. Compliance with the stated requirements is then monitored during design development.

As a project develops from conception to completion issues may confront the MBTA that must be addressed when identified and alternatives explored to achieve stated goals. The PDG assists the Project Manager in identifying these issues and provides alternative approaches within the design parameters. As the design develops, the PM should present a more defined project scope with the assistance of the design consultant to the PDG in a kick-off meeting during the “Pre-Design” phase of the project. These meetings will continue at the various stages of design development until the 90% and 100% design plans and specifications have been developed. There will be approximately five meetings with the PDG.

5.11.4.1 PDG Membership Assignments and Responsibilities

Senior managers/representatives from the various MBTA departments as established by the General Manager will make up the PDG groups (depending on what type and location of the project).

- Design & Construction
- Risk Management (insurance)

- QA/QC Department
- Project Controls
- Planning/Development Department
- Real Estate Department
- Engineering & Maintenance
- Signals Department
- Communication Department
- Maintenance of Way (MOW) Department
- Operations Support
- Power Division
- Building Division
- Environmental Affairs
- Bus Operations
- Safety Department
- Systemwide Security
- Subway Operations (GL, OL, BL and RL)
- Commuter Rail and Water Transportation
- Budget Department
- Marketing Department
- Government and Public Affairs
- Community Relations Department (CRD)
- Law Department
- Police Department
- AFC Department
- Systemwide Accessibility

The PM must include other managers and representatives from the various MBTA departments responsible for assuring that all appropriate MBTA requirements are considered during the various phases of design.

Project Development Group Responsibilities

- Providing direction to the Project Manager regarding the MBTA requirements that must be addressed by the project.
- Assisting the Project Manager in determining alternatives and solutions to issues that affect the MBTA design and operational issues/requirements.
- Monitoring progress in achieving MBTA design and/or operational goals.

Project Manager PDG Responsibilities

- Notifying the PDG when meetings are required.
- Presenting the project scope and progress to the Project Development Group at the various phases of design.
- Identifying major issues that potentially have a negative affect on cost and schedule, design and/or operations.

Although the quantity and timing of PDG meetings will vary from project to project, the PDG will meet a minimum of five (5) times during the design phase. The five scheduled reviews shall occur at the beginning of the project (kick-off meeting) and at the 15%, 30%, 60% and 90% design milestones.

For some projects, PDG meetings will be facilitated by the Development Department. After the 30% design stage, the Design and Construction Department will facilitate meetings for all projects, including TOD projects, when any portion of the project in which construction of MBTA facilities is performed.

5.11.4.2 Procedure

The initial identification of the Project Development Group will be made on a Project Initiation Report when the project is initiated. If any project has not gone through the project initiation process, then a PDG must be created prior to implementing the project. A PDG will be created for all projects, including MBTA, TOD, and Operations / Support projects. The Committee will be formed from individuals from the master list of departments. Depending on the scope and the nature of a given project, specific departments may or may not be included on the Committee. The senior manager of the sponsoring project shall initially identify the members of the PDG.

5.11.4.3 Kick-Off Meeting

The Project Manager in conjunction with the design consultant will present the project scope to the PDG at the kick-off meeting. The PDG will provide the Project Manager with the MBTA requirements that must be addressed by the project. Any major areas of concern will be identified by the PDG and a record of the meeting shall be maintained by the Project Manager.

5.11.4.4 PDG Meetings (15%, 30%, 60% and 90% Design Milestones)

During the conceptual design process (0-15% design), the Project Manager will have a minimum of three design alternatives (as applicable) prepared that will be presented to the PDG for their consideration. The process of design development

and project presentation to the PDG will occur at each of the design milestones of 30%, 60% and 90% design.

5.11.4.5 PDG Review and Comment

In addition to focusing on the technical aspects of design, the PDG will also consider and comment on topics such as operations, affordability (capital and operational costs), benefits to the MBTA and its customers, safety, accessibility, ease of maintenance, durability of materials, functionality and conformity / uniformity with similar facilities.

Each PDG presentation shall include a specific agenda item to address safety and security. This presentation shall include public safety, MBTA employee safety, and construction worker safety.

The PDG will provide written feedback to the Project Managers at the conclusion of all PDG meetings. Note: Written feedback may be in the form of “meeting minutes” published by the Project Manager; however, the PDG should review the minutes prior to publication. All decisions of the PDG shall be documented

5.11.5 Structural Peer Review

This section describes the process the Project Manager must follow when a structural peer review is required for the project. This procedure applies to designs meeting the criteria stated in the Massachusetts State Building Code, 780 CMR, Section 110.11, Independent Structural Engineering Review. (Note: the PM must verify that the code is the most current version of the Massachusetts State Building Code when the peer review is performed).

The structural peer review is a condition for the issuance of the building permit as stated in the Massachusetts Building Code. The structural design shall be reviewed by an independent structural engineer to verify that the design of the primary structure is conceptually correct and that there are no major errors in the design. The process to have the design independently reviewed begins at the 90% design milestone. The Project Manager will require that the consultant determine whether the project requires an independent review as required by 780 CMR, Section 110.11.

Once established that the project requires an independent review the Project Manager will request the Peer Review coordinator to arrange for a peer review of the project. The MBTA Design Department retains firms on a task order basis to perform these reviews.

The Project Manager provides the Peer Review coordinator with a scope

of work for the project. The Peer Review coordinator then assigns a firm to perform the review. The 100% plans and specifications are forwarded to the reviewing firm. The reviewing firm may request calculations during the review process; however, they will not check the calculations for accuracy. The calculations will only be reviewed to assure the proper assumptions have been made and that the methodology supports the conclusion of the calculations.

At the conclusion of the review, the reviewing firm will provide comments to the designer for resolution. The designer will resolve the comments with the peer review firm. Once all comments have been resolved the independent structural engineer will issue a letter to the MBTA Project Manager stating the project design meets the Massachusetts Building Code. The letter will be stamped by the dated by the independent reviewer. This letter will become part of the building permit package.

Project Manager Peer Review Responsibilities

- Determining in conjunction with the design consultant whether or not the project requires an independent structural review.
- Notifying Contract Administration that an independent structural review is required for the project so a task order may be processed.
- Preparing the scope of work for the independent structural review RFP.
- Assuring the project and design consultant assist the independent structural reviewer with information required to perform the review.
- Assuring a copy of the letter from the independent structural reviewer stating the project meets the Massachusetts Building Code becomes part of the Building Permit package.

Peer Review Task Order (Contract Administration Designee)

- Assigning a unique Task Order number for the contract.
- Requesting a proposal from the selected Peer Review firm with the appropriate qualification to perform the independent structural review.

- Managing the Peer Review process once assigned to the independent structural reviewer.
- Processing comment and resolution document between the structural review firm and the project.
- If necessary, assigning a third party firm to review any outstanding issues resulting from the independent structural review.

Budget Analyst Responsibilities

- Determining the Work Order under which the Task Order Contract will be paid.

5.12 Invoicing and Payments – [MBTA PS SOP](#)

In addition to the discussion below, Contract Administration maintains an SOP that describes the steps and documentation necessary to process payment requests for professional services contracts. This section applies to all contracts.

Project Manager Responsibilities

- Reviewing the Project Design Schedule, Progress Monitoring Report, Earned Value Analysis, Monthly Progress Report, and Processing Invoices through the review and approval cycle
- Assuring that Invoices are correct and represent the level of effort by consultants
- Assuring that Invoices are reviewed by the Budget Analyst.
- Furnishing a copy of the Design Schedule and Progress Monitoring Report to the Project Controls Section.

Professional Services Contracts - Pay Requests

Contract Administration receives all payment invoices from consultants. The invoice package is received and logged in by the payment coordinator. Contract administration performs a review of the invoice package to assure it is complete. This review assures that sufficient funding is available within the budget and that invoice includes sufficient back-up information to support the pay request. The payment coordinator when satisfied that the package is complete shall attach a Voucher Routing Control Sheet (VRCS) and sign the appropriate block and forward the package to Administration and Finance.

Administration and Finance

The Staff Assistant (Budget Analyst) responsible for processing the pay estimate shall enter the date the package was received from Contract Administration on the VRCS and prepare a skeleton report based on the requested payment information. The Payment Voucher shall also be generated and attached to the package. The Staff Assistant shall sign the VRCS and forward the skeleton report, Payment Voucher, VRCS and payment information to the project assigned Budget Analyst.

The Budget Analyst shall review the charges to assure there are sufficient funds available for payment and current charges are correct. Any discrepancies will be brought to the attention of the Project Manager for resolution. Upon completion of the review the Budget Analyst shall initial the Payment Voucher under the Project Manager's signature line, initial the VRCS and forward the package to the Project Manager.

Project Manager

The Project Manager shall perform a review of the payment package to assure that the charges are proper and that the current work status corresponds to the actual charges. If there are discrepancies in the payment request, the Project Manager shall resolve the issues with the consultant. This may result in the consultant resubmitting the pay request. If this is required the process shall begin anew. When satisfied that the payment is justified, the PM shall sign the Payment Voucher, initial and date the VRCS and obtain the signature of the appropriate Director of Design & Construction. Once the Payment Voucher and Routing slip have been signed by the Director, the package shall then be returned to Administration and Finance by the PM.

An administrative review shall be performed by Administration and Finance and when complete the reviewer shall sign the Voucher Routing Control Sheet and return the package to Contract Administration.

Final Payments

The Final Pay Estimate shall be processed in accordance with Section 10 – Close out Procedures.

5.13 Progress Monitoring Report

The PM must ensure that the consultant submit each month a Progress

Monitoring Report (PMR) attached to their invoice for the Authority's review and approval. The PMR shall contain the following information regarding the progress of work performed by the Engineer along with the earned value data:

- a. Schedule tabular reports and cost control reports, which at a minimum shall include the following:
 - 1. Predecessor/successor report sorted by Activity ID.
 - 2. Early Start/Total Early Start sort report
 - 3. Total Float/Early Start sort report
 - 4. Critical Path of Work sort report
 - 5. Summary by Cost Account sort report
- b. A description of the design work completed during the reporting period;
- c. Work items and paths that are critical to the timely completion of the design phase;
- d. Anticipated work to start and finish during the next reporting period;
- e. Additional design scope items;
- f. Explanations of schedule delays;
- g. Anticipated problems and recommended possible solutions;
- h. Critical action items (listing person/agency/company responsible and date needed);
- i. Explanation of the SPI and CPI results in the PDS Update submitted by the Engineer;
- j. Explanation of the Variances between the previous PDS Update's SPI and CPI results to the current results;
- k. Statement of the adequacy of the remaining design budget and time;
- l. EVA summary analysis; and
- m. EVA cost curve graph.

5.14 Permitting and Agency Approvals

Typically, the A/E is responsible for identifying required permits and agency approvals. The PM is responsible for monitoring permitting activities and assuring that necessary permits/approvals are obtained a timely manner and with reasonable conditions for construction. The PM should coordinate with all appropriate departments (i.e. Safety, Environmental, Engineering & Maintenance Department, Quality Control, etc.) to verify that the department's requirements are met.

5.15 Consultant Performance Evaluation and Rating

Every six months (January 1st and July 1st), Contract Administration distributes to each Project Manager a [Consultant Performance Evaluation Record](#) (Exhibit 5-1) (CPER) Project Managers must complete the rating and return to Contract Administration. These CPERs are an important tool during consultant selection, so the Project Manager should take care when evaluating the consultant. The PM must complete a Final CPER for the project in order for the contract to be closed out.

5.16 PS Close-out

Upon completion of construction, the PM shall work with Contract Administration to prepare close-out documentation, which includes a close-out report, final CPER, and retainage billing. See Section 10 for additional information relating to PS close-out.

	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY PROJECT MANAGER'S MANUAL STANDARD OPERATING PROCEDURE	
Section 6 – UTILITY COORDINATION		NUMBER: Rev. 4 REVISION DATE: 01/24/14

6.0 UTILITY COORDINATION

6.1 Overview

Utility coordination requires a considerable expenditure of time on behalf of the PM during project design and construction. Diligent utility coordination, starting very early in the design process, is critical in avoiding design delays. Additionally, utility relocations can be expensive so the PM must ensure that the cost of utility relocations is factored into the project budget early on and that the budget is updated regularly as cost estimate data improves.

Utility coordination begins with the identification of known and potential impacts to area utilities that the project will encounter. Next, the utility relocation design, usually performed by the design consultant or the owning utility, must be completed along with the drafting and authorization of a utility relocation and force account agreement before bidding the project. During construction, careful coordination between the general contractor and the owning utility's contractor is necessary, and a considerable amount of effort by the PM is involved.

6.2 Utility Identification

The A/E is responsible for performing initial identification of existing utilities in the project area during the data collection phase. All known utility owners in the project area should be contacted as a very early activity in the preliminary design phase and copies of available utility as-built drawings obtained. Further, it is highly recommended that underground utility locations be identified throughout the project area. Underground utility markings and aboveground utility features are then located in the ground survey so they can be shown in plan and profile as the design develops. The PM shall require that test pits, vacuum excavation, or some other field verification method shall be used by the A/E to confirm locations.

A Utility Matrix should be prepared by the A/E, which identifies all known utilities and lists all known and potential utility conflicts as well as providing a conceptual estimate of relocation costs. The utility matrix must also show utility contact name, telephone numbers and email information. On complex projects, the A/E and PM may want to meet with the utility owner to begin the coordination effort even as the Utility Matrix is being developed.

All utility owners in the project area should be included in the Utility Matrix. The matrix shall include Utility company Points of Contact for the design phase as well as for the construction phase. This ensures that the utility owner is aware of the proposed project and becomes involved in the process of identifying and resolving utility impacts caused by the project. The owner utility's review comments enable the A/E to conceptually identify all of the proposed relocation requirements of the project.

6.3 Design Review by Utilities

All affected utilities should have initially reviewed documents related to the impacts of the project design on their utilities. Similarly, all subsequent design submittals should be submitted to the utility owners with a request for comments. Obtaining comments from utilities known to be in the area at each design phase is necessary even if no impacts are identified, in order to detect unanticipated impacts that all too often surprise the project team late in the design process. The PM must obtain formal documentation from the utility company acknowledging that design was coordinated with the utility.

6.4 Utility Relocation Design

If the coordination effort has been successfully executed, conceptual relocation needs will be established by the time the preliminary (30%) design drawings are submitted for review. The timely completion of relocation design by the utility owner requires diligent and consistent coordination by the PM and the A/E. Be assured that the utility engineer assigned to design the relocation of your project has many other tasks at hand is not likely to give your project adequate priority without frequent communications.

It is important to include adequate information for bidders about all utility relocations that are to be performed by the utility owner during construction. If the utility relocation is complex, informational utility relocation plan sheets should be included in the drawings. In all cases, specific coordination requirements must be spelled out in detail in the special provisions.

The A/E and the PM must include the final design, cost, and schedule for utilities in the 90% deliverable.

6.5 Utility Agreements

Each utility owner may have their own forms and procedures for agreement and authorization. Depending of funding requirements, MBTA D&C may find it satisfactory to utilize the owning utility's format for relocation agreements, or require the utility to use the MBTA standard agreement. All utility agreements must be coordinated through the MBTA Law Department.

Commented [A1]: NOTE DO WE HAVE A STANDARD AGREEMENT? IF SO, ATTACH IT.

6.6 Construction Coordination of Utility Relocations

The PM should request attendance by representatives of all impacted utilities at

the pre-construction meeting. The utility's contractor's work must be carefully coordinated so as not to cause any delays to the MBTA's contractor. The A/E and PM should consider early relocation activities to assure the relocation work is complete before any impact to the contractor. Such delays can be a common source of claims by MBTA contractors. During the pre-construction meeting, special provisions regarding utility relocation coordination should be reviewed with all parties present. The PM should review the general contractor's schedule submittal to ensure that all utility relocations are accommodated.

Ongoing communications between MBTA D&C project staff, the general contractor and the owning utility company's representative will be the norm as construction and relocation planning is executed. The PM should review daily inspection reports to ensure that the utility and general contractor's efforts are well documented. The details of these reports may be instrumental later on in the handling of contractor delay claims and utility company requests for reimbursement.

NOTE: For all dealings with Government Agencies (i.e. Department of Public Utilities, Department of Public Safety, State Building Inspector, etc.), all work must be coordinated through the MBTA Force Account and Utility Coordinator.

Commented [A2]: NOTE DO WE INCLUDE THE DOCUMENTATION (I.E. T&M SHEETS) OF UTILITY FORCE ACCOUNT WORK IN THE MBTA RE MANUAL?

Commented [A3]: WHO IS THIS?

	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY PROJECT MANAGER'S MANUAL STANDARD OPERATING PROCEDURE	
Section 7 – REAL ESTATE/RIGHT OF WAY (ROW) ACQUISITION	NUMBER: Rev. 4	
	REVISION DATE: 01/27/14	

7.0 REAL ESTATE /RIGHT OF WAY (ROW) ACQUISITION

7.1 Purpose and Scope

This section describes the process by which property is acquired on a permanent or temporary basis to support project development. This section describes how this process is integrated into the development of the Project budget and schedule and what actions the Project Manager must take to assure that real estate acquisition occurs prior to the commencement of construction. This section applies to all projects where it is necessary to acquire property to support the project.

Many MBTA capital projects require acquisition of non-MBTA property on a temporary and/or permanent basis. Property acquisition costs sometimes assume a large percentage of the Project budget. Accounting for property acquisition needs and costs early in a Project's design helps to avoid costly design modifications and change orders. The MBTA follows the [Real Estate Acquisition Process](#). The process to acquire a property requires a minimum of six to nine months, or nine to twelve months for projects with Federal Transit Administration participation. If there are any residential or business tenants on the property being acquired, an additional six months may be necessary after legal notice to those tenants in order to provide relocation assistance in accordance with state and federal regulations. Therefore, it is important that the acquisition process begin as soon as property needs are identified. These timelines must be incorporated into the overall project schedule. Property needs should be identified by the 15% design and limits defined by the 30% design submittal.

Property may be acquired by negotiated sale or by the eminent domain process. Property rights may include fee interests, permanent easements, and temporary easements in entire parcels or in portions of parcels. The Project Manager, through the AGM for Design & Construction, will make a formal request to the AGM for Development to acquire property for the project. At 30% design, the Project Manager will submit acquisition survey plans for the required property interests and will provide environmental site assessment information on all fee and permanent easement parcels. At the 60% design, the Project Manager will submit any revised acquisition survey plans and any revised environmental site assessment information including Phase II reports identifying contamination issues. The appraised value of the property interest is the basis for the amount of just compensation offered to the property owner or

paid as damages pursuant to an order of taking. All required property interests should be acquired before advertisement for bids for construction, unless the General Counsel approves otherwise. In the event property is not acquired prior to advertisement the PM must obtain Real Estate Department approval to advertise.

7.2 Property Acquisition Cost Estimates – Conceptual Design (0-15%) to Preliminary Design (30%) Design

Upon assignment to the Project, the Project Manager recommends a Conceptual Budget and Schedule during the initiation phase of the project. The Conceptual Budget recommendation must include an estimate of property acquisition and appraisal costs. To ascertain these costs, the Project Manager through the AGM for Design & Construction shall meet with the AGM for Development and the Real Estate Acquisition staff to review anticipated property acquisition needs. Property acquisition survey plans will be developed.

The Real Estate Acquisition staff, and possibly the design consultant, will assist the Project Manager in developing a preliminary estimate of property acquisition costs based on a review of city or town assessor records.

Acquisition staff with any revised acquisition plans and any revised environmental information.

7.3 Negotiation with Land Owner

Real Estate Acquisition staff forwards a formal offer to the property owner based upon the amount of just compensation and negotiations commence. If a settlement agreement is reached at a higher amount, the Project Manager follows the budget modification approval process.

7.4 License Agreements

The need for temporary use of a property may be met through a license agreement with a property owner. Any funds required for a license agreement must be incorporated into the Authorized Budget and Schedule and, if required, the approval processes set forth in the Authorization of Budget and Schedule procedure observed.

7.5 Orders of Taking

If the MBTA and the landowner are unable to agree upon a price for a property right, the MBTA acquires the property through the eminent domain process. All takings require MBTA Board of Directors approval.

- The Real Estate Acquisition staff prepares a Board agenda item for the property right.
- If the Board approves an Order of Taking to acquire the property right, the MBTA must provide payment of the approved amount to the property owner within 60 days of recording the Order of Taking at the appropriate Registry of Deeds.
- Real Estate Acquisition staff maintains a file on the project, and assists the General Counsel's Office as requested with any litigation.

7.6 Notification to PM

The Project Manager shall regularly consult with the Real Estate Acquisition staff to keep informed as to when required property rights have been acquired by the MBTA

7.7 Real Estate Acquisition Process

- 7.7.1** At 30% design, the project through the Assistant General Manager for Design and Construction makes a formal request to the Assistant General Manager for Development that acquisitions are needed for a particular project. Acquisition staff under the direction of the Assistant General Manager for Development begins the process of acquiring real property on behalf of the MBTA.
- 7.7.2** The acquisition staff meets with the Project Manager and design firm to obtain preliminary information on a particular project and evaluates all real estate needs which would allow the project to proceed to completion.
- 7.7.3** Acquisition staff receives an acquisition package on the real property to be acquired. This package includes but is not limited to: reason for acquisition, owners name, current title reference, type of property interest, size of parcel to be acquired and a metes and bounds acquisition plan.
- 7.7.4** Acquisition staff meets with impacted owner to introduce the project, explain the acquisition process and their rights under MGL, c. 79. If the relocation of tenants on a subject property is necessary, explains relocation process and benefits. If a project requires more than five relocations, a relocation plan must be submitted to the Commonwealth of Massachusetts Department of Community and Development's Bureau of Relocation. A relocation consultant may be necessary in this situation to assist MBTA acquisition staff to provide the needed relocation assistants

to the impacted tenants and preparation of a relocation plan. In accordance with MGL Chapter 79A, no acquisitions can be made until the Bureau of Relocation qualifies the MBTA to give relocation assistance to the occupants to be displaced. Also during this period 21E environmental documentation should be obtained.

- 7.7.5** Acquisition staff solicits and contracts with an appraisal company to value property to be acquired.
- 7.7.6** Acquisition staff solicits and contracts with a Law Firm to complete a Title Opinion of the Property to be acquired.
- 7.7.7** When the appraisal report is received, acquisition staff reviews report in house to assure it meets MBTA contract requirements.
- 7.7.8** Acquisition staff solicits and contracts with review appraisal company to review appraisal reports for compliance with USPAP, state and federal regulations.
- 7.7.9** Verify limits of required real estate to be acquired at the 60% design submittal, before settlement offer is made
- 7.7.10** Acquisition staff prepares and sends an offer, based on the established value, to the impacted property owner via certified mail. If federal money is involved and an acquisition cost exceeds \$500,000.00, FTA approval is required prior to sending out an offer letter.
- 7.7.11** Acquisition staff begins settlement negotiations with property owner.
- 7.7.12** In the event that the MBTA and the impacted owner cannot agree to a settlement on the land damages Acquisition Staff prepares a Staff Summary to obtain MBTA Board of Directors approval to acquire the subject property.
- 7.7.13** Acquisition staff orders a Municipal Lien Certificate.
- 7.7.14** Order of Taking and Acquisition Plan are recorded in the appropriate Registry of Deeds within 30 days of MBTA Board of Directors vote of Eminent Domain Taking.
- 7.7.15** Notice of Taking letter sent to owner via certified mail. Copies are sent to the mortgagees of record, all other interested parties and the collector of Taxes and the assessor's office in appropriate municipality via certified mail.
- 7.7.16** Acquisition staff prepares and makes Pro Tanto payment to owner.

7.7.17 If there are any tenants on the property acquired, a four (4) month notice to vacate letter is sent to the tenants by certified mail. All tenants will be provided relocation assistance and relocation benefits in accordance with the Uniform Relocation Act.

	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY PROJECT MANAGER'S MANUAL STANDARD OPERATING PROCEDURE	
Section 8 - BIDDING	NUMBER: Rev. 4	
	REVISION DATE: 01/27/14	

8.0 BIDDING (Design-Bid-Build Process)

MBTA bid and award policy and procedures are detailed in the [MBTA Procurement Manual](#). Project Managers should be aware that the bidding schedule from advertisement to NTP can take 4 to 6 months plus the time it takes to prepare the required bidding documents such as pre-bid review control sheet, plans and specifications.

8.1 OVERVIEW

The MBTA Contract Administration Department within the Design & Construction Department is responsible for the procurement of all design and construction contracts. The MBTA procurement process complies with state and federal third party contracting requirements for competitive bidding and award. The department uses a variety of procurement methods, including emergency sole source, design-bid-build, design/build and construction manager (CM) at risk. The majority of D&C contracts are procured using the Design-Bid-Build process. For other project delivery methods, see their procurement manuals. The Contract Administration Department is responsible for developing and maintaining a central File for bid documents for each project. Construction contract procurement is also charged with the responsibility of maintaining procurement programs including monthly construction payments, change order processing, contract quantity variance reporting, contract close-out and preparation and furnishing of statistical contract data and summary reports to the appropriate state and federal audit agencies and in-house staff.

8.1.1 Contractor Prequalification

It is the policy of the MBTA that contractors must be prequalified in order to officially respond to a MBTA solicitation for contracts that exceed \$1 million.

8.1.2 Emergency Sole Source

In the event that an emergency requiring a sole source procurement arises, Project Managers must work with the Law Department to prepare a justification memorandum. The memorandum shall include allowable sole source justification as described in FTA Circular 4220.1F. The sole source memorandum shall contain a signature line for approval by the person authorized to approve contracts as detailed in Section 3.

8.2 PRE-BID ADVERTISING

8.2.1 Obtaining Work Order Numbers

It is the Project Manager's responsibility to obtain two work order numbers from the Budget Department as the first step to get a contract advertised. The Work Order Numbers should be for:

- Work order number for the cost of the construction project; and
- Work order number for the cost of publically advertising the project.

8.2.2 Preparation of Bid Documents

The preparation of bid documents for advertising, prequalification of bidders and receipt and evaluation of bids is the responsibility of the Contract Administration Department. The PM must ensure that the necessary documents are provided to Contract Administration in a timely manner to support this process. The outline below provides an overview as to the construction procurement process for design-bid-build contracts.

The MBTA Procurement Manual also provides procurement procedures for Alternative Delivery Methods such as Design Build and CM at Risk are maintained in the Contract Administration Department (M.G.L. Chapter 149A.

(<http://www.malegislature.gov/Laws/GeneralLaws/PartI/TitleXXI/Chapter149a> .)

- 8.2.2.1 MBTA Project Manager transmits the construction specification at the 60%, 90% & 100% levels to Contract Administration for their review of the specification for compliance with MBTA policy, CSI format and State & Federal regulatory requirements. The A/E shall submit a table for review by Contract Administration, to show the spec sections being used are the most recent ones.
- 8.2.2.2 The four major sections of the specification: bid form, contract and bond forms, supplementary conditions and technical specifications are reviewed to ensure that each section is consistent with the MBTA's requirements. The MBTA maintains standard contract specification guidelines on the MBTA web site, which consultants download to initiate specification development. The MBTA Project Managers must ensure that the consultants are using the most up to date version of the specifications as required in the consultant professional services contract article II General Provisions.
- 8.2.2.3 At the 30% to 60% design phase, the PM shall start obtaining the

documentation necessary to complete the pre-bid review control sheet (PRCS) needed to advertise the eventual construction contract. The PM must work with Contract Administration in the preparation of this PRCS. See Section 8 for more detail on the PRCS and construction procurement planning.

At 90% design, the PM may instruct the A/E to begin the Pre-Bid Review Control Sheet (PRCS) process. At 100% design, the consultant provides a final engineer's construction cost estimate as detailed in the [Project Controls Policy Manual](#).

As part of the 100% design review, the Project Manager should have completed the PRCS and all the associated memos. Refer to Section 8.3 for details.

The Project Manager must also coordinate the implementation of escrow bid documents and escrow memorandum into all contracts that are valued at/or above \$1,000,000.00.

- 8.2.2.4 Upon final approval of the specification, the consultant provides an electronic copy to Contract Administration for distribution.
- 8.2.2.5 Contract Administration submits the request to advertise to the Director of Contract Administration with draft notice to bidder, engineer's estimate, additional Independent cost estimates if applicable, and budget letter attached. The request is forwarded to the Assistant General Manager for Design and Construction for approval to advertise.

Generally, the bidding documents are the materials distributed to interested bidders, which form the basis for their bids. The bidding document consists of three major components.

- **Contract Drawings and Specifications** — These are the construction drawings and related materials prepared by the consultant (architect/engineer), which details how the project is to be built.
- **Standard Forms** — The bid package must include standard forms to be completed by the contractor. These forms include:
 - Bid form
 - Schedule of Bid Prices (note: AN items must be submitted by the PM and approved by the AGM.
 - Bond forms
 - Prequalification statements, if necessary

➤ Other forms as required

- **Terms and Conditions** — The package must also contain various legal terms and conditions to which the contractor must agree. The MBTA has developed its "standard specifications" which includes the bidding and contract requirements (Instruction to bidders, general conditions) and division I — general requirements.

The Project Manager, Contract Administration and the consultant must all thoroughly review the contract specifications and related documents prior to advertisement.

Prior to advertising the "Notice to Bidders" Contract Administration must receive written approval by the Assistant General Manager for Design & Construction.

8.3 **PRE-BID REVIEW CONTROL SHEETS** (Exhibit 8-1)

8.3.1 Prior to advertising, a Pre-Bid Review Control Sheet must be completed and signed by the MBTA personnel listed below. It is the responsibility of the Project Manager to route and track the progress and completion of the PRCS. Once fully signed, the PM delivers the document to Contract Administration to arrange for public advertisement.

- Manager of Environmental Affairs
- Project Manager
- Director of Design and Construction
- Director of Contract Administration
- Director of Project Controls
- Director of Quality Assurance
- AGM for Systemwide Accessibility (see 8.3.3)
- Chief Engineer
- AGM for Design & Construction

8.3.2 The PRCS is accompanied with the following memoranda:

- DBE participation (for federally funded projects only),
- QA/QC approval for paint systems
- Liquidated damages calculation
- Allowance items
- Real estate
- Risk management
- Compliance with Architectural Access Board regulations
- Sole source justification approvals (if applicable)

- Value engineering waiver (if applicable)
- Force account (if applicable)
- Risk analysis
- Constructability review
- Environmental review and approvals

8.3.3 In compliance with federal and state regulations pertaining to transportation for the elderly and for persons with disabilities, the ADA Certification form must also be signed.

8.3.4 The PBRC should be submitted to Contract Administration, (attention: Contract Documents Coordinator, Ten Park Plaza) with the final review specifications and appropriate documents and pertinent signatures.

The PRCS and required memoranda **must be complete** before Contract Administration will allow the project to be advertised. Please refer to Exhibit 8-2 for guidance on completing the PRCS.

Contract Administration must verify inclusion of the bid validation memorandum.

8.4 Advertising

The Request to advertise package is submitted to the Director of Contract Administration with a draft Notice to Bidders, Engineer's Estimate and Budget Letter attached.

After the draft Notice to Bidders is approved, approval to advertise is obtained from the Assistant General Manager.

Once the Assistant General Manager's approval to advertise is obtained, the final dates for bid opening, plans & specification availability, site tour and pre-bid conference are made. Wage rates are also provided for inclusion in the contract. The notice to bidders is sent to the Central Register for posting 21 days before the bid opening. The advertisement must appear in the Central Register for 14 days. The MBTA publishes its notice to bidders at least thirty days prior to bid opening in the MBTA' Web site as well as in local newspapers and journals. The MBTA usually allows for a 30 calendar day bid cycle from the date of advertisement to the date of the bid opening. If a 21 day bid cycle is requested, the Project Manager must receive approval from Contract Administration and must notify ODCR.

For all projects, the Public Notice must contain the following information.

- A description of the project in sufficient detail to allow bidders to

determine if they are qualified and wish to bid

- Funding source
- Specific class of work and pre-qualification requirements. The PM must work with Contract Administration to determine which classes of work are applicable.
- Where and when bidding documents can be obtained
- By when and to whom any Questions must be submitted in writing
- Where and when bids are due
- Estimated project value (for contracts greater than \$1,000,000.00)
- Other state and federal requirements

8.5 Distribution of Bidding Documents

Contract Administration oversees and is responsible for the distribution of all bid documents. This involves:

- Providing bid documents to all requesting parties in the form of CDs.
- Maintaining a record of all contractors that receive the documents in the form of a plan holder's list
- Distributing addenda to all parties who have received bid documents.

As contractors prepare their bids, any questions formulated by the contractors relating to the bid documents are sent in writing to the MBTA's Project Manager. The Project Manager coordinates a response to the questions and any other clarifications to the documents and submits an addendum to Contract Administration for review.

Contract Administration reviews the addendum for conformance to MBTA policy and guidelines. Once the review is complete, Contract Administration obtains the Assistant General Manager for Design and Construction's approval to issue the addendum. The addendum is then e-mailed to each plan holder with a return receipt request.

To avoid misunderstandings or protests in such cases, the bidder is requested to acknowledge receipt of all addenda in their bid forms.

8.6 Prequalification Procedures

The prequalification process is administered by the Contract Administration Department. This process is required for all general contractors that wish to bid on MBTA contracts over \$1,000,000.00. The prequalification process can be found in the Contract Administrations Procurement Manual and on the website.

Any contractor proposing to bid on work with an aggregate value of one million dollars (\$1,000,000.00) or more, must comply with the MBTA Prequalification Guidelines and Procedures, setting forth financial data as noted in Part IV "Financial Data" section of the Contractor Prequalification Statement. To obtain prequalification, the MBTA considers financial capacity, work experience, adequacy of plant and equipment, and organization structure, as well as capabilities. All corporations must show proof of registration with the Massachusetts Office of the Secretary of State to do business in Massachusetts.

For work with an aggregate value less than one million dollars (\$1,000,000.00), post-qualification may be required. The information to be submitted after receipt of bids shall be similar to that required for prequalification. All bids submitted for work aggregating under one million dollars (\$1,000,000.00) in excess of fifty thousand dollars (\$50,000.00) will be accompanied by a letter of commitment from a surety company. This letter of commitment shall be in addition to any bid deposit.

A contractor may submit proposals for more than one project to be opened on the same or subsequent days. However, if the contractor is found to be the low bidder on one project, all subsequent bids which place the contractor in the position of exceeding the contractor's current capacity rating shall be subject to review. The Authority reserves the right to accept or reject any such bids when such action is determined to be in the best interest of the Authority.

Subcontractors are approved post award by the MBTA Director of Quality Assurance.

8.7 Bid Deposits

Each bidder must submit with its bid a bid deposit equal to five percent of the amount of the bid.

The bid deposit may be in the form of a certified check, bank treasurer's or cashier's check, cash or a bid bond from a licensed surety company.

8.8 Open Bids

All bids must be publicly opened and read at the time as stated in the publically advertised Notice to Bidders, and/or in any subsequent addenda.

Contract Administration reviews each bid to confirm that the low bidder has submitted a responsive and responsible bid. This evaluation is further detailed in the [MBTA Procurement Manual](#).

8.9 Pre-Award Conference/Designer Review Recommendation

After the bids are opened publicly, the engineer of record performs a bid analysis of all submitted bids to ascertain that the bids have met all of the technical requirements. The engineer of record submits a bid analysis recommendation letter documenting their analysis of all of the bids, any questions that may have arisen out of the analysis, their recommendation that the lowest responsible bidder's bid is fair and reasonable, and their recommendation to the MBTA to accept and award the contract to the apparent low bidder. Contract Administration maintains a database comparing engineer estimates to actual bids.

In the event a bid is received that varies from the engineer's estimate by more than 10%, the engineer shall include in the bid analysis a root cause analysis explaining the reasons for the variance.

Contract Administration also performs a bid analysis of the individual line items and required forms and certifications and makes a determination if the low bidder has correctly filled out the bid form.

For federally funded contracts, Contract Administration provides ODCR the low bidder's DBE schedule of participation for review and concurrence that the low bidder meets the established goal.

Once Contract Administration's review is completed and the engineer of record has performed its analysis, the apparent low bidder is invited to a pre-award conference to explain how they came up with their bid and answer any questions that may have arisen out of the bid analyses. The MBTA Project Manager, the Director of Design and Construction, the engineer of record, and the apparent low bid contractor attend the pre-award conference.

Use of Bid Alternates - In the event bid alternates will be accepted, the Project Manager must notify Contract Administration in order to advance the award process. The exercise of bid alternates impacts the determination of the low bidder..

Bid Cancellation – In the event the MBTA cancels or re-advertises a bid, the PM must provide the Director of Contract Administration memorandum providing the rationale for cancellation.

8.10 Authorization

Following the recommendation for award, the contract must be properly awarded, authorized, and executed in accordance with MBTA authorization levels.

All contracts are required to have a staff summary package prepared by the Project Manager with assistance from Superintendent of Administration and Finance. The staff summary guidelines contained in section 3 of this manual explain the process of preparing staff summaries in order for a contract to be approved/authorized.

8.11 Contract Execution

Notice of Award - Contract Administration prepares a notice of award for signature by the General Manager and issues the notice of award to the low bid contractor. The notice of award informs the contractor that the award has been voted upon and approved by the MBTA and instructs the contractor to coordinate with the Director of Contract Administration for execution of the contract.

Payment and Performance Bond - As part of the award process, the contractor signs the contract, the surety company signs and seals the performance and labor and materials payment bonds. The performance bond provides protection to the MBTA in the event of deficient work or default on the part of the contractor. The payment bond provides similar protection to the contractors' subcontractors, guaranteeing they will be paid any monies owed them during the project. The contractor must submit to Contract Administration payment and performance bonds within 10 days of the date of the issuance of the notice of award.

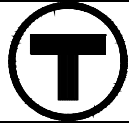
Insurance Certificates - The insurance certificates are provided and a statement of management controls letter is furnished in accordance with the MBTA general conditions, article 5.4. The contractor must submit to Contract Administration insurance certificates within 10 days of the date of the issuance of the notice of award. The insurance certificates are reviewed by Contract Administration and the MBTA Risk Manager to ensure the requirements of the specification are met.

Escrow Bid Document - The contractor is also required to submit within five (5) days of the date of the issuance of the notice of award their escrow bid documents to the escrow agent.

Contract Document - The conformed copy is forwarded to the Risk Manager and General Counsel for "Approval as to Form". Once signed by

the General Counsel, the contract is forwarded to the General Manager for final signature. The fully executed contract is returned to Contract Administration where it is dated and mailed to the contractor.

Notice to Proceed – The notice to proceed is issued upon General Manager approval of the contract.



**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
PROJECT MANAGER'S MANUAL
STANDARD OPERATING PROCEDURE**

**Section 9 – CONSTRUCTION
01/27/14**

9.0 CONSTRUCTION

MBTA Design & Construction has full responsibility for construction administration and inspection of construction projects. The Project Manager (PM) is responsible for the project and monitors the day-to-day construction progress.

9.1 Coordination

The PM provides coordination and leadership of the individual consultants and contractor(s) in meeting the project requirements.

Within the organization of the project team, the PM is responsible for:

- Managing project costs to meet budget
- Managing project schedule to meet the project milestones
- Ensuring that the work is performed in compliance with the plans and specifications
- Managing the construction conditions and anticipated changes in the work, including processing and negotiating change orders
- Keeping current project records
- Addressing any public concerns and issues
- Investigating and resolving concerns and complaints
- Managing all aspects for the overall project
- Overseeing Resident Engineer and field staff
- Providing timely information to senior management
- Coordinating with other MBTA Departments

Effective construction project administration requires that the entire project team become very familiar with the current MBTA contract provisions, which are contained in the [MBTA Procurement Manual](#) which contain detailed instructions to the contractor on procedures for bidding and award, interpretation of scope, control of the work, legal relationships, and measurement and payment.

Additionally, the MBTA supplementary conditions contain prevailing wage rates, federal clauses, disadvantaged business enterprise, equal employment opportunity and affirmative action requirements that the project team should be aware of. The PM should also be familiar with the Procurement Manual, Project Controls Manual, the Contract Administration Change Order Guidelines, the [MBTA Resident Engineer](#)

[Manual](#) and Inspectors Field Handbook in order to gain a comprehensive understanding of their roles in properly administering the construction project. These manuals are available on the MBTA website.

9.2 Meetings

The construction phase involves two (2) basic meeting categories:

- Pre-construction
- Progress (weekly or bi-weekly on-site meetings)

Pre-Construction Meeting – Upon award of the contract, the PM will schedule a pre-construction meeting. The purpose of meeting is to familiarize all on-site contractors with project procedures, safety and site utilization requirements, change order procedures, payment process, DBE compliance, reporting requirements and to generally review near-term and long-term activity plans. A sample pre-construction meeting agenda format is attached at the end of this section.

Progress Meetings – The PM holds weekly or bi-weekly meetings for the duration of the contract. Attendees at these meetings include the Contractor's principal personnel, the designer, and appropriate representatives of the MBTA, as required. These meetings address all project issues including safety, schedule, and quality. The PM is responsible for ensuring that meeting minutes are standardized, recorded, scanned electronically, and saved in an electronic manner for ease of retrieval during audit.

Additional Meetings – Special meetings are called, as necessary, to resolve issues of an immediate or short-term planning nature that cannot wait until the regularly scheduled progress meetings. Although the PM has primary responsibility for determining the need for these meetings, the designer or contractor may request a special meeting through the PM.

9.3 Notice to Proceed

The Notice to Proceed (NTP) determines the effective contract start date and name of the individual charged with responsibility for the project on behalf of the Authority.

9.4 Public Relations / Notice of Intent to Construct

Construction proceeds more smoothly when the public has received advance notification of impending construction, particularly in the neighborhoods impacted by the construction. The PM must involve the MBTA's Community Relations Department (CRD) from the start of construction and to continue to work with CRD until the end of construction.

9.5 PM Responsibilities

When the Notice-to-Proceed is issued to the Contractor, the construction phase of the

project begins and the Project Manager becomes the key MBTA representative for the work. The Project Manager's duties will include:

- Interface with the Contractor, MBTA Design & Construction, Project Controls and other departments, the designer, and others for all project-related matters
- Schedule a meeting with the Contractor and the MBTA Environmental Section to review all appropriate environmental permitting requirements (i.e. Emergency Response Plan)
- Supervise the activities of MBTA site personnel
- Process all submittals
- Hold regular scheduled meetings with contractor(s), and review and issue minutes (usually prepared by the designer)
- Track the progress of the job against the project schedule
- Facilitate timely resolution of construction problems (whether related to schedule, cost or technical issue)
- Schedule inspections, assign Inspectors, ensure that the work conforms to the contract documents and assure that inspections are properly documented
- Conduct periodic inspections of work and documentation
- Maintain hard copy and electronic project files and control documentation
- Log and process Resolution Reports
- Process pay estimates
- Lead contract change order negotiations
- Serve as lead negotiator and process change orders
- Ensure project filing incorporates electronic document control
- Ensure that all subcontractors are approved by the MBTA Quality Assurance Department
- Coordinate ODCR approval of all DBE subcontractors
- Oversee Project Safety Plan
- Process claims
- Perform contract close-out

To establish an effective relationship with the Contractor the Project Manager should:

- Know every part of the specifications and drawings
- Schedule job meetings on a regular basis and issue minutes
- Perform periodic site inspections
- Regularly check the progress of the work against the project schedule and completion dates (milestones)
- Require that the Contractor submit plans for getting delayed work back on schedule
- Track progress and process Contractor payment estimates based on accepted installed quantities
- Work with the contractor to ensure that proper backup documentation is provided with each progress payment to ensure efficient processing

- Facilitate communication between the MBTA and the contractor and others including the designer, the public and other agencies
- Ensure that the work is performed in compliance with the contract documents, or using approved substitute materials, methods, or designs
- Maintain records that document the job
- Direct the activities of the MBTA site personnel under their supervision
- Ensure Contractor compliance with all OSHA, state and MBTA safety requirements

9.6 Controlling the Work

The Project Manager is responsible for:

- Assuring that contractors comply with contract requirements.
- Approving contractor schedules, methods and procedures.

9.6.1 Schedules

The Project Manager must ensure that the contractors maintain their activities on a predetermined schedule, in accordance with the Contract terms. The critical path method (CPM) is an effective technique in planning, scheduling and controlling construction projects. The Project Manager shall request a detailed schedule to be prepared by the Contractor at the beginning of the project. The contractor is responsible for maintain an up-to-date schedule at all times as the schedule is the basis for monitoring progress and payment.

The Project Manager must monitor the status of construction progress vs. the contract schedule. If the PM observes delays that impact the contract completion dates the PM must immediately notify the attention of the Project Controls Group.

9.6.2 Monitoring Schedule Compliance

The objective of updating the schedule is to provide a complete and accurate report of actual construction progress as compared with the established schedule and to and to determine how each party associated with the project should proceed with the work in order to meet the overall completion date(s).

Network-based project cost resource loaded schedules are part of the contractual scope of work. The PM may use these schedules for developing progress payment requests and cash flow projections. Such cost techniques require that the total project cost be broken down, distributed, and assigned to activities for which costs will be expended. As part of each periodic update, a status date determination can be made as

to the cost value of work in place for each activity. Adjustments that increase or decrease total project cost are made for activities whose scope has changed. The updated information may then be used by the PM to develop progress payment reports and updated cash forecast curves.

9.6.3 Recovery Schedules

On occasion, it may be necessary for a PM to direct the contractor to recover any lost time or delay that may result from various causes. When the contractor is behind schedule due to lack of performance, the MBTA has the contractual right to direct the contractor to recover at the contractor's cost. Such rights are typical in most contract documents, particularly in those where network-based *systems* are used as the project scheduling method. There may also be occasion for the MBTA to direct the contractor to recover lost time due to delays, which are not the result of the contractor's lack of performance.

Such directives are issued as part of a change order, and the contractor is compensated for such acceleration based on proof of related cost. Directives of this nature require approval from the AGM for Design & Construction.

When a project is legitimately behind schedule, the PM and the contractor(s) involved should review the remaining schedule to determine opportunities for recovery. This should include a review of the critical activities and the specific durations of those activities which can affect the recovery program being sought. Since many activities are planned and sequenced on a preferential rather than absolute basis, it is possible that some time can be recovered by re-sequencing certain activities. There may be some activities which can be reduced in duration by increasing manpower or by employing an additional amount of support equipment. Every effort should be made to take advantage of time savings in terms of overall cost and completion.

Each situation should be analyzed in light of pertinent contract clauses.

9.6.4 Non-Conforming and Deficient Work

The Quality Management Plan must state the specific requirements for QC and QA. The contractor(s) must systematically review QC efforts by its forces. Periodically, items will be identified which are not in conformance with the contract specifications. A log must be maintained by the PM of all such items, until they are removed from the log as a result of an acceptable action by the contractor(s).

9.6.5 Stopping/Suspending Work

The Project Manager shall stop or suspend the contractor's operations in cases of illegal actions, safety violations or environmental hazards, when the contractor's activities represent a "clear and present danger" to site personnel, the public, property or the environment, when the contractor is in violation of contract conditions or laws. In such cases, the MBTA AGM for Design & Construction, Safety Department and Environmental Management Group (if appropriate) and the Project Controls Group must be notified immediately. The Project Manager must remember that in the cases of injury, property damage or environmental contamination due to contractor operations, the MBTA may be held liable, and part of the PM's role is to protect the MBTA's interests at the site. Any order to stop or suspend work must be documented in writing.

9.6.6 Reports and Recordkeeping

The PM is responsible to maintain all project records. The PM is also responsible for maintaining [AGM Reports, GM Reports, and Lessons Learned Reports](#).

9.6.7 Environmental Requirements

The Project Manager must ensure an environmentally secure work site which is a priority requirement for the MBTA field construction management team.

9.6.8 Safety

The development and application of a safety program for each contract is the responsibility of the contractor(s) who has the direct control of the work forces and control of methods and means of construction. The PM is responsible for ensuring that the contractor has a Site Health and Safety Plan. The PM is responsible for assuring that the contractor complies with their contractor safety program.

9.6.9 Safety Walks

The PM should conduct and document periodic safety walks as required to verify that the contractor is complying with their safety program. The results of these walks will be documented. The PM should coordinate safety walk downs with the Resident Engineer and the contractor.

9.7 Assistance During Construction

The A/E shall provide engineering assistance during construction to the Project

Manager as detailed in the A/E's [construction phase services](#) scope of work as stated in their contract.

9.8 Change Orders

The specific, documented procedures for initiating and approving Contractor change orders are implemented as described in the [MBTA Change Order Guidelines](#). These Guidelines can be obtained from the Contract Administration and are available on the MBTA.com website. The PM should take the lead in administering this procedure.

Levels of Authorization

As discussed in Section 3 of this manual, the dollar value of the change order will determine if the Assistant General Manager, General Manager, Secretary or Board of Directors must approve the change order. Staff Summaries are required for all actions that require General Manager, Secretary or Board of Directors approval.

When a change order requires General Manager, Secretary or Board of Directors approval, the PM prepares the Staff Summary (the document required to obtain approval for contract change order) and submits it to Administration & Finance (A&F). A&F will work with Contract Administration to process the change order through the Authority's signatory process. For actions requiring Board of Director approval, the PM should be aware that it may take four to six weeks for the change order to be placed on the Board's agenda.

All change orders will require signatures by the contractor, the PM, Director of Design and Construction, Director of Construction, Director of Contract Administration, and the AGM for Design & Construction.

In the event work must begin prior to approval of a change order the PM must process an extra work order letter (EWOL) in accordance with MBTA EWOL and authorization levels detailed in Section 3.15.2.

Foreman Salary Waiver

With proper authorization a contractor may request a salary waiver for a Laborer Foreman for a maximum of \$2.00 over the base Laborer rate. The signatures required on a contractor's request for a Laborer Foreman Salary Waiver are:

- Project Manager
- Director of Contract Administration
- Chief Engineer.

A memo of concurrence is also required from the PM.

9.9 Force Account

The PM should monitor and maintain cost records of expended labor, material and equipment for purposes of establishing cost associated with all force account activity (internal and external).

9.10 Claims Management/Claim Review

Contractor claims for additional compensation and/or time are an inevitable part of administering complex construction contracts. While they can never be eliminated or entirely avoided, the number of claims can be reduced and their impact lessened significantly by Project Managers, Resident Engineer and their staff by acting "claims conscious" and following effective principles of claim avoidance/reduction.

- To prevent claims, extra work should always be properly and formally authorized.
- Project staff should thoroughly review plans and specifications to identify errors and ambiguities in documents and also incorporate "lessons learned" from previous projects.
- Each Project Manager should document significant events as they occur in the forms of correspondence, Resident Engineer's and Inspector's daily diary entries, QA/QC documents, photographs, memoranda of telephone conversations and meetings, etc. A Project Manager should train his/her staff to create a project record, which is absolutely essential to evaluate claims reaching arbitration. Absolute attention to detail is vital both in discouraging submittals of invalid claims and properly analyzing any claims filed.
- It is important that the Project Manager encourage strict enforcement of CPM schedules to avoid time-related claims.
- The Project Manager should consult with his/her Director and the MBTA Law Department to ascertain if a particular claim has merit and is as described in Division 1.

If after preliminary review by the staff, it appears there may be some merit to the claim but more data or justification will be necessary to support it, the additional data or justification should be solicited by the Resident Engineer. Such a request for additional justification or data should be specific as possible, while carefully avoiding pre-committing the MBTA to a position of the claim.

- Before a claim is sent for processing, the amount must be sent to

the Budget Analyst so funding can be set aside pending execution. The AGM of Design and Construction will not sign support memorandum without verification from the Budget Analyst that funds are available.

9.10.1 Claims Processing Procedures

Proper Authorization – Claims shall be authorized at the appropriate level of authorization as defined in the Board of Directors regulations.

Law Department - The Project Manager and the Law Department are responsible for preparing the staff summary package. The Project Manager must supply the assigned attorney backup material.

Validity of Claim - Information must include a support memo stating claim is valid which includes history of project that led up to the claim as well as documentation why it is a claim instead of a change order.

Documentation - The following claim forms should be used for claim documentation:

- Explanation of Necessity – DBE Language
- Construction Claim – CMS Notification Form
- Claim Support Memorandum
- Schedule analysis with justification
- Cost determination and analysis related to the agreed upon compensable delay days

9.10.2 Entering Claims into the CMS System

9.10.2.1 Enter the Change Order Tracking Subsystem (Press PF 7)

9.10.2.2 Enter the Work Order Number and Claim Number (Press PF 1) (Note: All claims should be assigned a 900 series number.)

- a. In the space provided for "subject" enter the amount of the claim, including dollars signs (\$), commas (,) and decimal points (.).
- b. Amount of change order (Leave Blank)
- c. Time extension (enter number of days as appropriate)
- d. Daily value (leave blank)
- e. Standard rate (leave blank)

- f. Category (type in 8 for claim)
- g. Type (leave Blank except as noted below)
- h. Sum type (leave blank)
- i. Requested by (enter appropriate code)
- j. Prepared by (enter appropriate code)
- k. Claim status (enter "P" — all claims should be entered as pending)
- l. Initiated by Project Manager (enter correct date)
- m. To enter additional information press "enter" and type in information.
- n. If a separate work order number has been established for claims, be sure it is properly linked to the contract, and has the correct performing party code, originating party code, Project Manager code and responsibility area.

Performing party and originating party code NO0 and DOO are not acceptable.

Once the claim has been resolved, be sure to delete it from the dummy work order and re-input the claim under the correct funding work order prior to being executed in the system.

- o. When responsibility for a contract shifts from one Project Manager to another, enter the new Project Manager code associated with the work order that is linked to the claim. This will insure that the correct Project Manager's name will be reference on the claim reports.
- p. For claims which have been denied, rescinded, withdrawn and resubmitted as either a new claim or combined with another, be sure to put an "X" in the space provided for "Type". By placing an "X" in this field, the claim and all related information will remain in the database for future reference; however, it will not print out on claim reports.
- q. Project Managers are responsible for reviewing claims associated with their contracts on a monthly basis and to work with support staff to insure that the data entered into the CMS is

both timely and reliable. Claim data is forwarded to the Law Department monthly for review and action.;therefore, it is important that this information be accurate and up to date.

- r. **Important** - The Project Manager should coordinate with Law Department in order to ensure that Law Department is not preparing manual voucher for same claim.

9.11 Subcontractor/Supplier Demand for Direct Payment

Not every contractor is prompt in paying suppliers and subcontractors. Recognizing this, the MBTA Contract Provisions detail prompt payment requirements and provide a method for the affected parties to get relief without going to court. When a demand for direct payment is received by the AGM for D&C, the PM will work with Contract Administration and the Law Department to respond to the demand within 10 days of receipt of the demand notice. Please refer to the flow chart contained at the end of this section.

9.12 Invoicing and Payments

9.12.1 Budget & Cost Monitoring

The PM maintains the process of tracking, projecting, and monitoring costs through the construction phase. As contracts are awarded, the individual line item estimates are replaced with actual committed amounts, plus cost estimates for any unknowns or contingencies. The goal is to manage the incurred costs, estimated costs and costs to complete in order to stay within the budget. The PM must comply with the Project Controls Manual reporting procedures.

9.12.2 Progress Payments

The progress payment format should be prepared to accurately represent all current costs associated with the project and all current change orders and contingencies.

9.12.3 Payment Requests

The PM should implement and administer procedures for processing contractors' payments in conformance with contract requirements.

Payment Supporting Documentation

The contractor must submit all supporting documentation for pay requisitions electronically and hard copy following the Resident Engineer's review analysis. This documentation must be maintained in the payment files. The Resident Engineer must email the pay requisition and all supporting

documentation to Contract Administration Payment Coordinator for electronic filing. Supporting documentation for allowance payments and time & material work shall be the same as set forth in the [MBTA Change Order Guidelines](#)

Contractor Performance Evaluation Record (CPER) Sheet – The PM must include in the payment documentation a Contractor CPER (Exhibit 9-5) approximately every 6th payment. Contract Administration maintains the up-to-date CPER sheet.

Allowance Payments - The PM must scrutinize allowance payment documentation in the same manner as required for change orders and other payments. Allowance payments will be reviewed by the Contract Administration Group for compliance prior to payment. Proper cost analysis is essential. Contract allowance items may be increased only through the processing of a change order according to MBTA Change Order Guidelines. In the event balances remain in an allowance item at contract completion, the PM must process a Construction Quantity Variance (CQV) to adjust allowance item to \$0.00 balance. The CQV process is the mechanism used by PMs to reduce the contract value for unused items. The CQV process may **not** be used to increase unit quantities.

Overhead, Profit and Bond - The PM must also note that payment for allowance items are based on receipts and invoices without charges for contractor overhead ,profit and bond(except when the contractor performs the work). If subcontractors performed the work, the PM must not allow prime contractor overhead, profit or bond charges.

Police Detail Fee - The PM shall review allowance invoices for police detail costs. The PM shall not allow cities and towns to charge the MBTA a fee above the cost of the detail. (MGL Chapter 44, Section 53C)

Lump Sum Payments – Lump Sum can be paid by either the dollar value, or a percent of the lump sum. A lump sum breakdown representative of the actual cost of the work will be developed prior to making any payments and integrated into the project schedule. Lump sums cannot be overrun; the dollar value difference can be addressed by change order. Lump sum value (schedule of values) should mirror the contractor's cost and resource loaded schedule. The Project Controls Group is available to assist the PM in schedule analysis.

Retainage Retention - The Authority shall retain 5 percent of all pay estimates until 50 percent of the work has been completed. Retainage after 50% of the work has been completed shall be determined in accordance with Division 1 Section 1.7. The PM shall ensure 1% of retainage is held until formal close-out. Any variance from 1% rule requires AGM approval.

Release of Retainage - Prior to release of retainage the PM must provide Contract Administration with a memorandum that documents the PM's concurrence with the release of retainage in accordance with General Conditions, Measurement and Payment Section 1.7.B Partial Payments. The PM should receive Operations & Maintenance (O&M) Manuals, as-built drawings, etc. prior to releasing final retainage.

9.12.4 Payment for the Work

The MBTA General Provisions describes the procedures for progress payments. The MBTA D&C developed the following procedures to ensure that timely progress payments are made:

- **Discussion with Contractor** - When possible, the PM should discuss pay item quantities to be submitted with the contractor before the partial payment request is formally submitted for approval. A partial payment estimate is usually processed once a month.
- **Contractor Submits Pay Estimate** - The contractor is instructed to submit the partial payment estimate to the MBTA Resident Engineer, who will date and log the submittal. The Authority staff will prepare and attach the In-house Pay Estimate Control Sheet and forward it to the Contract Administration for processing and approval signatures.
- **PM Reviews Pay Estimate** – After review and approval by the Resident Engineer, the PM should consult with the Resident Engineer and inspector(s) regarding the claimed quantities, installed or stockpiled, for payment. If there are disputed pay items, the MBTA requires written notice to the contractor stating the reasons for rejection. However, the PM and Resident Engineer should contact the contractor and attempt to resolve the disputed items immediately, when possible. Once all pay items are determined to be acceptable, the partial payment request is approved by the Resident Engineer and forwarded to the Budget Analyst and PM, who will review and sign the contract pay estimate.
- **PM reviews Schedule with Project Controls Group** – The PM must obtain approval from the Project Controls Group prior to processing any payment requisition. Contractors are required to update Project Schedules on a monthly basis. The PM may withhold payment if the contractor fails to comply with this contract requirement.
- **Resident Engineer Processes Payment** - The Resident Engineer then attaches a Contract Pay Estimate and routes the package to the PM. The PM, Director of Design & Construction, Director of Administration & Finance, Director of Contract Administration and Director of Construction and/or the

Assistant General Manager for Design and Construction signs off on the package for accounts payable entry.

9.12.5 Payment Procedures

The Project Manager will receive the monthly pay estimates. The construction payment process is summarized below:

1. Contractor works with MBTA field office to confirm monthly expenses in order to develop a monthly pay estimate. This skeleton contains all contract unit and/or lump sum line items. The estimate is accompanied by all back up documentation, which includes the lump sum breakdowns and/or unit prices for scope of work by line item (i.e. slips for materials delivered, invoices, drawings, etc.).
2. Monthly, the Resident Engineer (RE) works with the A&F Staff Assistant to generate a contract skeleton (generated by CMS) for the construction contract payment process that is then transmitted to the MBTA Project Field Office.
3. Contractor and RE finalize payment amount. Skeleton is completed by the RE and submitted to A&F Staff Assistant for the preparation of a payment voucher generated from CMS.
4. The Budget Analyst reviews payment voucher for accuracy, initials under Project Manager's signature line. Estimate returned to Project Field Office for required signatures. (Contractor & RE).
5. Payment voucher is circulated for signature to project field office, returned to Staff Assistant at 500 Arborway where it is circulated for additional required signatures (PM & Director), and forwarded to Contract Administration at 10 Park Plaza.
6. Payment Package must be delivered to Contract Administration by noon on Wednesdays. Contract Administration Payment Coordinator provides final review before submitting to accounts payable for payment. The monthly payment checklist is contained in the [MBTA Contract Administration CN SOP](#).

9.13 Certified Payroll and DBE forms

All contractors must submit certified payrolls as established by the Davis Bacon Act. Contractors must also verify all DBE goals are being met. ODCR monitors DBE participation levels.

The required DBE forms for state and federally funded contracts must be attached to

the pay estimate forms for review by the Resident Engineer. If the DBE forms are not properly completed by the contractor, the pay estimate should be returned as "incomplete."

9.13.1 Adding a Subcontractor

The Project Office must receive Quality Assurance Department approval for all subcontractors. Additionally, the PM must provide notification to Contract Administration and ODCR when an approved subcontractor is to be added to a contract. This is to ensure that Contract Administration can add the subcontractor to CMS to allow for payment. The Project Office should provide the following information:

- Name of subcontractor, address, telephone number, contact person, email
- Scope of work to be performed
- Dollar value of work
- DBE Certification Letter from SDO (Supplier Diversity Office)
- Schedule of DBE Participation
- Letter of Intent
- DBE Affidavit

Further, the Project Office must obtain ODCR's approval on any changes relative to DBE subcontractors on contracts. Contract Administration must also be notified of any change. Changes may consist of the following:

- Adding a new DBE subcontractor
- Adjustments to DBE scope of work and/or financial commitment
- Substitution of DBE's
 1. Voluntary withdrawal – DBE must submit written notice of its withdrawal.
 2. Termination and/or substitution – Prior to requesting to terminate and/or substitute a DBE subcontractor, the prime contractor must give notice in writing to the DBE subcontractor, with a copy to ODCR, of its intent to request to terminate and/or substitute, and the reason for the request. The prime contractor must have documented good cause to terminate a DBE firm. The prime contractor must give the DBE five days to respond to the prime contractor's notice. **These provisions apply to pre-award deletions of or substitutions of DBE firms put forward by offerors in negotiated procurements.**

A brief explanation should be provided as to why the change is being made as well as the name, scope of work, and amounts associated with the DBE subcontractor.

9.14 Monthly Progress Schedule

The PM must ensure that the Contractor submit each month an updated Progress Schedule attached to their invoice for the Authority's review and approval. Prior to submitting an invoice for payment, the Contractor must have an approved project schedule as discussed earlier in this PMM Section.

9.15 Subletting & Prime Performance of 50% of Work

In the event the prime contractor is performing less than 50% of the work (excluding defined specialty items), the PM shall require the contractor submit a justification to Contract Administration with a memorandum explaining why the prime contractor is not meeting its 50% self-performing requirement as stated in the contract's general conditions section 6.1. The AGM shall be responsible for final approval.

Exhibit 9-1
MEETING AGENDA
TEMPLATE

RE: **Preconstruction Conference**
 MBTA Contract No. _____
 Project Title: _____

DATE:

TIME:

LOCATION: 500 Arborway, Jamaica Plain, MA 02130
 First Floor, Design and Construction Conference Room 1

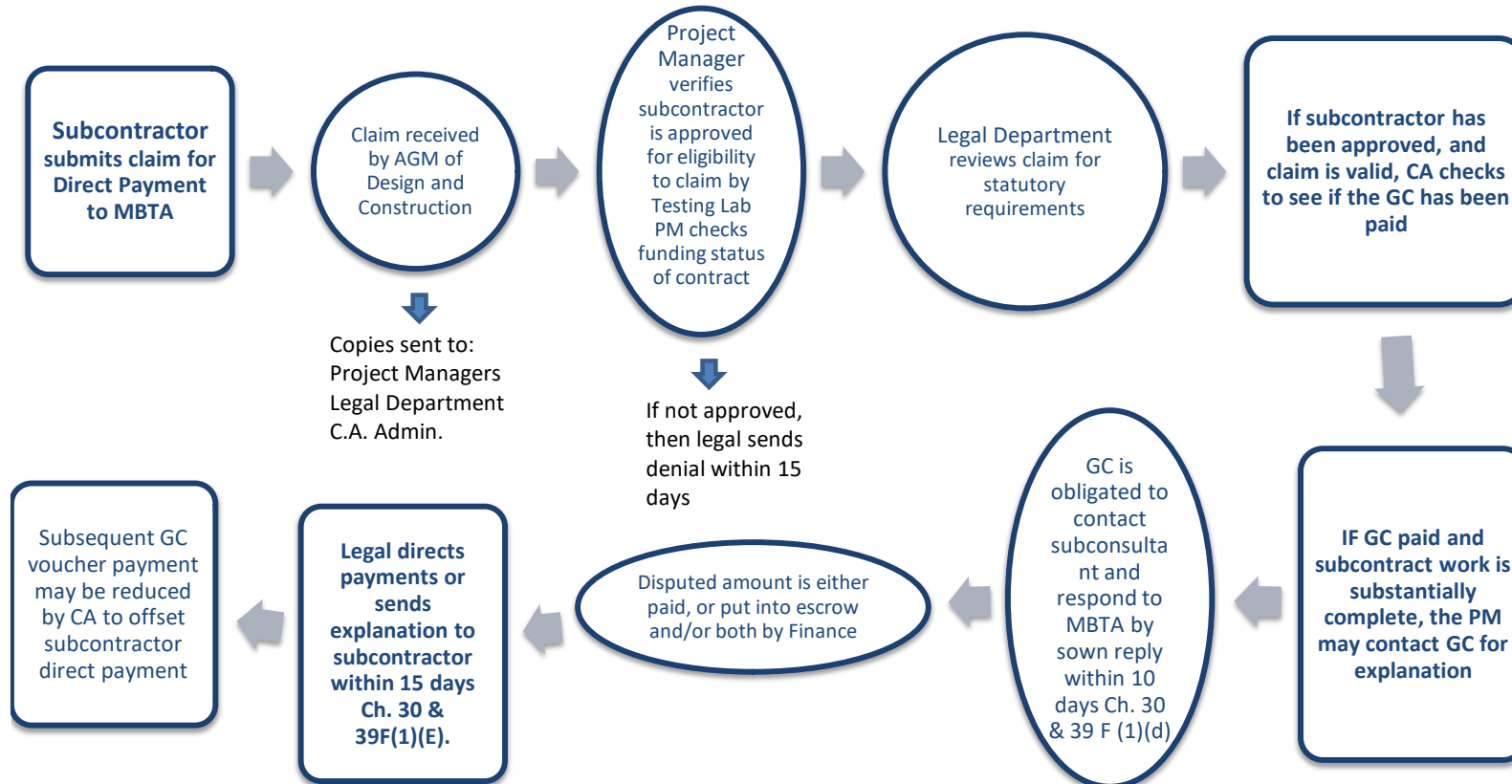
Originated By: *Project Manager*

- A. Introductions
- B. Project Overview
 - i. Scope
 - ii. Objectives
 - iii. General Timeline
 - iv. Information Dissemination (Submittals, Submittal Logs, RFI Logs)
 - v. Invoicing – Required backup documentation
- C. Real Estate / Land Acquisitions
- D. Construction Schedule
 - i. Contract Specification 01321
- E. MBTA Quality Assurance / Quality Control
 - i. Subcontractor Approval
 - ii. Field Memo Reports
 - iii. Request For Information Reports
 - iv. Auditing
 - v. Permitting
- F. MBTA Contract Administration
 - i. Extra Work Order Procedures
 - ii. Change Order Procedures
- G. MBTA Office of Diversity and Civil Rights
 - i. DBE Subcontractor Participation
- H. MBTA Environmental
 - i. General Concerns

- I. MBTA Safety
 - i. PPE
 - ii. Equipment Permits
 - iii. Operator Licenses
 - iv. Trench Excavation Permitting
- J. Railroad Operations/Subway Operations
 - i. General Concerns
- K. Mass Bay Commuter Rail (MBCR) (If Commuter Rail Project)
 - i. ROW
 - ii. Track
 - iii. Signals
- L.
 - i. General Concerns
- M. Utilities (NStar, National Grid. Etc)
 - i. General Concerns

Exhibit 9-2

MBTA Subcontractor Claim for Direct Payment Flow Chart



Progress Meeting Minutes *Template* - Exhibit 9-3

MBTA Contract No:
Contract Description:
Agenda:
Time:
Location:

Next Meeting:
Time:
Location:

Recorded By:
Attendees:

Item	Mtg#	Item description	Action	Due Date	Status	Notes
------	------	------------------	--------	----------	--------	-------

1. GENERAL/WEEKLY WORK TOPICS

1.1 Acceptance of progress meeting # minutes

1.2 Safety

- 1.2.1 Safety Briefing
- 1.2.2. Safety Walk Update
- 1.2.3 Safety Issues

1.3 Items Distributed during Meeting for Discussion

- 1.3.1
- 1.3.2

1.4 Schedules

- 1.4.1 3 Week Schedule Look-Ahead
- 1.4.2 Status of Monthly Update #_____
- 1.4.3 DBE Status

1.5 Requests for Information (RFIs)

- 1.5.1 Review RFI Log

Item	Mtg#	Item description	Action	Due Date	Status	Notes
1.6		SUBMITTALS				
	1.6.1	Review Submittal Log				
1.7		NON CONFORMANCE				
	1.7.1	Review Non-Conformance Log				
1.8		OPERATIONS				
	1.8.1					
1.9		COMMUNITY/CITY/TOWN ISSUES				
	1.9.1					
2		OLD BUSINESS				
	2.1					
3		NEW BUSINESS				
	3.1					
4		CHANGE ORDERS				
	4.1					
5		ENVIRONMENTAL				
6		ENVIRONMENTAL				
	6.1	Environmental Surveillance Checklist				
7		OTHER				
ATTACHMENTS						

A
B

NOTES:

GENERAL CONTRACTOR _____
 CONTRACT TITLE _____

CONTRACT AWARD \$0.00 CONTRACT NO. _____
 PERIOD ENDING _____ PAYMENT NO. _____
 NET PAYMENT _____

(General contractor's gross amount, less retainage)

M/WDBE Subcontractors	Trade	(\$) Mil.	Subcontractor Awards			Subcontractor Payments			(X) Final
			Award Amount	Adjustments	Revised Amt.	Previously Paid	This Payment	Total	
			\$0.00		\$0.00	\$0.00	\$0.00	\$0.00	
					\$0.00	\$0.00	\$0.00	\$0.00	
		\$			\$0.00	\$0.00	\$0.00	\$0.00	
					\$0.00	\$0.00	\$0.00	\$0.00	
					\$0.00	\$0.00	\$0.00	\$0.00	
M/WDBE Subtotal			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
Subcontractors (non-M/WDBE)									
			\$0.00		\$0.00		\$0.00	\$0.00	
					\$0.00			\$0.00	
					\$0.00			\$0.00	
					\$0.00			\$0.00	
					\$0.00			\$0.00	
					\$0.00			\$0.00	
Subcontractor Subtotal			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
GRAND TOTAL			\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	\$0.00	
(Per Article II, paragraph II, in Appendix 3 of subject contract)						M/WDBE Stated Goal		5.0%	
(Total M/WDBE Payments divided by Awarded Contract)						M/WDBE Participation		#DIV/0!	
(Total Subcontract Payments divided by Awarded Contract)						Subcontract Participation		#DIV/0!	
(Grand Total Subcontract Payments divided by Awarded Contract)						Grand Total - Participation		#DIV/0!	

(S) Refers to DBE Supplier – Amounts shown are actual payments, of which 80% will be counted toward the DBE goal.

I hereby certify, under pains and penalties of perjury, that all information provided herein is complete and accurate:

Signed: _____
 Authorized Contractor Representative

 Date

Notes:

EXHIBIT 9-6
CHANGE ORDER INPUT FORM
(Rev. 2013-06-11)

****IMPORTANT****: To produce an EXTRA WORK ORDER and/or a Change Order, the following information is **required** for input into the CMS System. Please review information with your Budget Analyst to ensure availability of funding, type, source and proper use of funding:

CONTRACT:

CO#:

GRANT#

DIRECTOR:

FUNDING TYPE (State or Federal)

PROJECT MANAGER:

WORK ORDER #

BUDGET ANALYST:

SUBJECT:

AMOUNT:

BRIEF DESCRIPTION:

AUTHORIZATION LEVEL: 1. ≤ \$25,000 Director
 2. ≤ \$250,000 Asst. GM
 3. ≤ \$5,000,000 GM
 4. < \$15,000,000 Secretary
 5. ≥ \$15,000,000 BOD

TIME EXTENSION: _____

DAILY VALUE: _____

CATEGORY(Select Only One):

1. DES OMISSION
2. DES ERROR
3. UNEXP. FLD. COND.
4. OVER/UNDER
5. CHANGE OF SCOPE
6. WORK BY OTHERS
7. CREDIT
8. CLAIM
9. DESIGN REVISION (CLAIMS ONLY)
10. NET \$0 ADJUSTMENT
11. ACCELERATED WORK SCHEDULE

TYPE(Select Only One)::

- E. EXTRA WORK
- F. TRANSFER FUNDS
- O. OTHER
- S. SUPPLEMENT
- T. TIME
- X. REJECTED CLAIM

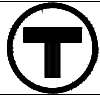
SUM TYPE(Select Only One)::

- A. LUMP SUM
- B. TIME & MATERIALS
- C. SUM NOT TO EXCEED
- D. SUBJECT TO AUDIT
- E. NO VALUE CHANGE
- F. ESTIMATED AMOUNT

PREPARED BY:

EXTRA WORK ORDER DATE:

LESSONS LEARNED:



**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
PROJECT MANAGER'S MANUAL
STANDARD OPERATING PROCEDURE**

**Section 10 – PROJECT CLOSE OUT
01/27/14**

10.0 PROJECT CLOSE OUT

Project closeout procedures apply to all projects, regardless of size.

10.1 Substantial Completion

This term substantial completion, if used on the project, should be defined in the contract specifications. Generally, it represents the recognition by the Authority that the project is “substantially completed” except for certain minor punch list items which do not hamper the use of the facility by the MBTA.

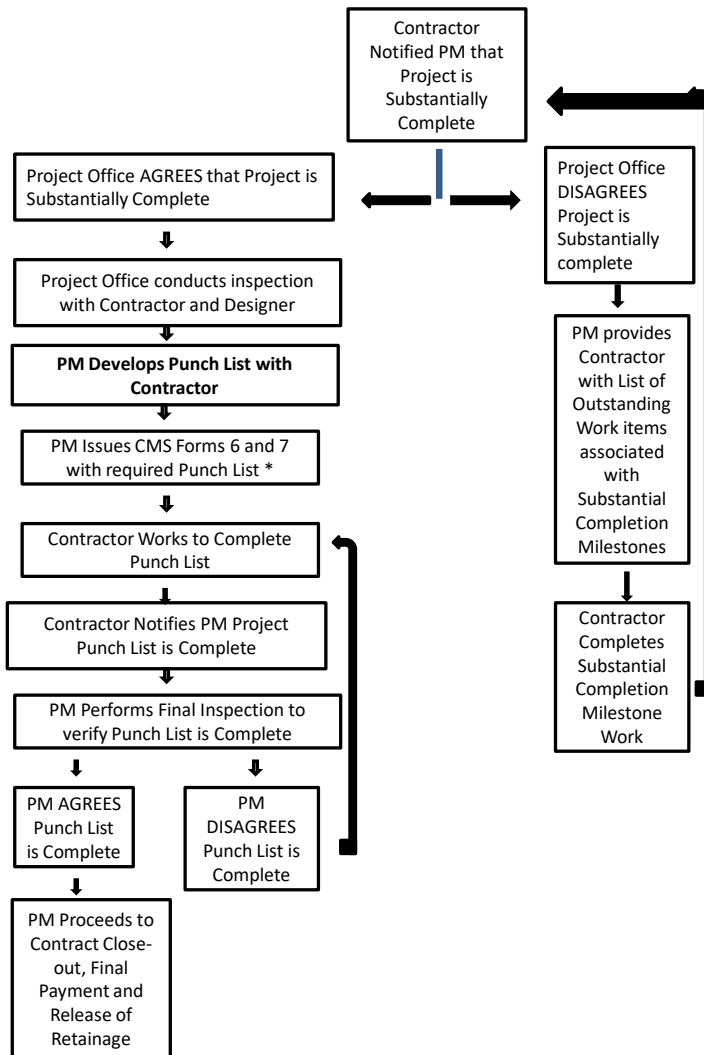
Substantial Completion is defined as the scope of work that is required by the Contract that has been completed except for work having a Contract price of less than 1 percent of the adjusted total contract price, or substantially all of the work has been completed and opened to public use except for minor incomplete or unsatisfactory work items that do not materially impair the usefulness of the work required by the Contract.

When the Contractor reaches “substantial completion”, the Contractor will request a semi-final inspection of the work. The PM will inspect the work and inform the Contractor:

- If the Project is “substantially complete”, the PM shall IMMEDIATELY prepare a written declaration to that effect and transmit this to the Contractor, along with a Punch List.
- If the Project is not “substantially complete”, the PM shall inform the Contractor that the project is not “substantially complete”. The written notification shall list outstanding or incomplete work items remaining that demonstrates the project is not “substantially complete”. The list shall be transmitted to the Contractor, in writing, within 21 days after receipt of the Contractor’s certification of “substantial completion”.

If the Authority fails to respond by presentation of a written declaration or itemized list within 21 days of the Contractor’s certification, then the Contractor’s certification shall take effect as the Authority’s declaration that the work has been “substantially completed”. Please see the following flow chart depicting the Substantially Complete Process.

Exhibit 10.1 Substantially Complete Flow Chart



* Attach Certificate of Occupancy and obtain approval of the fire alarm system, if applicable

10.2 [Environmental Checklist for Close Out](#)

The PM is required to fill out an Environmental Checklist for Closeout for all projects before the project can be closed out.

10.3 [Lessons Learned](#)

The PM is required to record and complete a Lessons Learned Form for both Professional Services and Construction Contracts prior to Contract Close Out (See [Project Controls Policy Manual](#))

During Project Closeout, PM's are required to fill out this form, and archive the Lessons Learned with the project records

10.4 **As-Built Drawings**

10.4.1 In Process Drawings

During the construction, the PM shall ensure that the Contractor maintains one set of black or red line drawings at the site, which clearly and completely show the actual installations in accordance with the Contract requirements. This shall also include all Subcontractors' changes. This set of drawings shall be kept current at all times, and will serve as the record set of drawings during the course of the project.

10.4.2 Submittal to the MBTA

Upon completion of the work, the PM shall ensure that the Contractor submits a complete set of marked-up record drawings to the MBTA. These drawings are usually required to be ink-on-mylar. These drawings should be reviewed and concurred to by the Consultant for the project. (Note: if the project was designed by the MBTA Design Department, the Design Department should review and concur on the drawings).

The PM should ensure that the final As-Built drawings, including any changes required by the Consultant, are delivered to the MBTA Plan Room for archiving. The Contractor should also supply the MBTA the As-Built in electronic format approved by the MBTA. (Only one (1) copy in AutoCAD and one (1) copy PDF.

The PM should provide the PDF copy of the as-built drawings to the MBTA Document Control Manager for archiving.

10.5 Operations Manuals and Warranties

The PM should obtain from the Contractor the following data (with the number of copies of each), in accordance with the Contract Terms:

- Operating Manuals and Operating Instructions for the various systems.
- Catalog data sheets for each item of equipment actually installed including performance curves, rating data sheets, parts lists, etc.
- Catalog sheets, maintenance manuals, and approved Shop Drawings of all equipment controls and fixtures with all details clearly indicated, including sizes.
- Names, addresses and telephone numbers of repair and service companies for each major system installed.
- All Warranty statements, guarantees, etc.

The PM is responsible for ensuring that these documents are properly distributed within the MBTA to all end user groups.

10.6 Final Acceptance

Final acceptance of the work generally allows the Owner to issue a "Certificate of Final Acceptance" to the Contractor for the work. This states that the contract is completed with no outstanding items remaining. This is also the milestone by which the Contractor will notify its bonding and insurance companies that no further obligations remain on the contract. This is performed after all "Punch List" items have been completed or corrected to meet Contract requirements.

The Certificate of Final Acceptance formally establishes the date of final completion for the contract and begins the warranty period. A Certificate of Final Acceptance is also a required attachment to process the Contractor's request for final payment.

10.7 Final Payment

10.7.1 Construction Contracts:

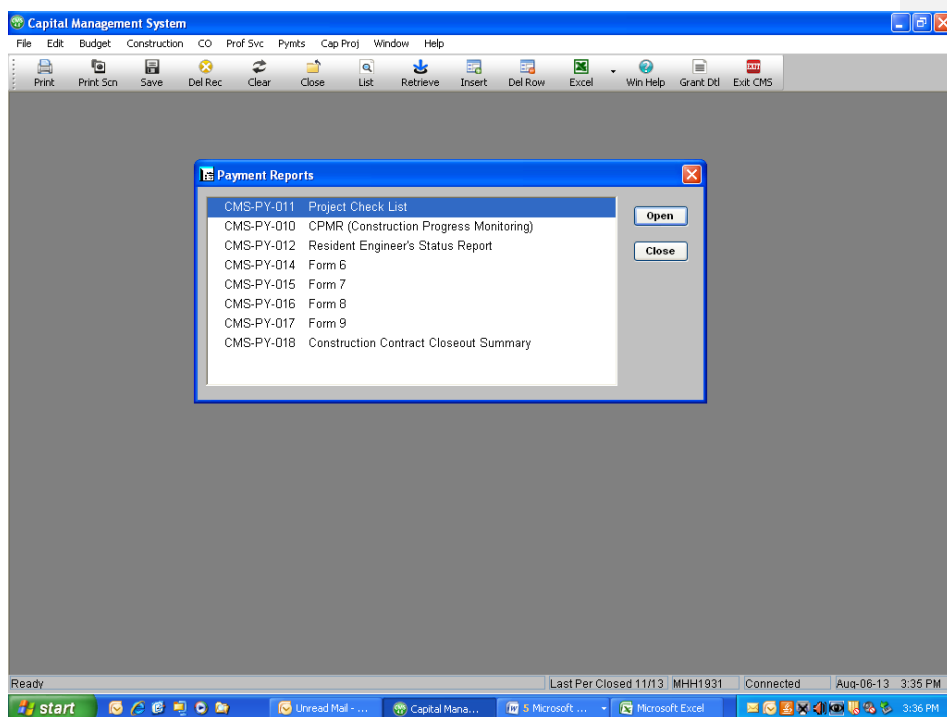
Upon completion of the contract work and receipt of the Certificate of Completion

from the Contractor, the PM shall request the Contractor submit a request for final payment. The Project Manager must assure that all safety critical elements are completed and verified by the Safety Department.

The following forms must be completed and signed **before** contract close out and submitted with final payment.

Procedures (Construction)

The following forms are generated in the Capital Management System (CMS). PMs may navigate to these forms through the CMS tool bar by clicking: Payments > Voucher Backup Documents > CMS-PY-014 through 018.



- [Form 6](#) – Certification of Substantial Completion (See Exhibit 10-4)
- [Form 7](#) – Notification – Opening Portions of Contract for Operations which must be completed and signed by the Principals listed on the forms. (See Exhibit 10-5)

- Attach DPS Certificate of Occupancy. Certificate of Occupancy after the life safety features are accepted, i.e., fire protection, elevators, plumbing, electrical. (See sample attached at the end of this section.) If no Certificate is available, the PM must coordinate with the Director of QA/QC.
- Complete the DPS "Final Construction Control Document". This document is attached and is available in word format at the following link:

<http://mass.gov/eopss/consumer-prot-and-bus-lic/license-type/csl/construction-control.html>

- **Close-out Report** - The PM must complete a Construction Contract Closeout Report. (See Exhibit 10-8)
- **Form 8 – Certificate of Completion and Release** (Generated in CMS) must be process using the information from the Final Pay estimate. (See Exhibit 10-6) All information must be exact, and then forwarded to the Contractor with the final pay estimate.
- **Form 9 – Certificate of Inspection and Acceptance** is taken verbatim from the pay estimate or contract skeleton with no abbreviation or deviations. (See Exhibit 10-7) The date of the official final inspection is inserted, and then the form is sent with a cover memorandum to the next listed individual. When fully executed, the project date is inserted. Project acceptance is the date the Director of Construction signs the form.
- ◆ Please note that the PM should provide Contract Administration a copy of each form referenced above when forms are signed so that the appropriate dates can be entered into CMS.

Final Pay Estimate - The PM must work with the Budget Analyst to run a final estimate so that a check can be made ensuring that the final figures for the Project totals are accurate. The completed Final Pay Estimate package is forwarded to Contract Administration.

Final Construction Quantity Variance (CQV) – The PM will perform cost compliance verification with the final CQV only. The final CQV will remove any outstanding quantities from the contract. The PM must reconcile that no payments were made for the same work.

DBE Information – The Project Manager should be monitoring the DBE goal throughout the contract to ensure the contractor is or will meet the DBE goal. If upon contract completion the contractor has not met the goal then the PM

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must provide a justification documenting the reasons why the goal was not met. A contractor should provide a good faith effort in the justification.

Final Contractor Performance Evaluation Rating Sheet - The Project Manager must complete a Final [Contractor Performance Evaluation Rating Sheet](#), which reviews the performance of the Contractor after all contractual obligations are completed, and submit the evaluation to Contract Administration.

10.7.2 Professional Services Contracts

Upon completion of the contract work and receipt of the Certificate of Completion from the Contractor, the PM shall request the Consultant submit a request for final payment. No final payment may be processed until all required affidavits and permanent certificates of occupancy have been submitted with the Form 7 or with approval by the Director of Quality Control.

Procedures (Professional Services)

All final payment invoices must be accompanied by a [Closeout Report](#) which is prepared by the Project Manager and approved by the Director of Design & Construction.

A printout of all Amendments must be attached to the closeout recommendation.

A letter from the consultant must be included stating there are no outstanding claims.

The Close-out Report includes the following items:

- Specific Design and Construction Department objectives and procedures have been met.
- The terms of the contract scope of services and costs were compiled with and the objectives accomplished.
- The contract was carried out in an economical and efficient manner.
- The quality of professional services and cooperation provided by each consultant supports their selection for future contracts.
- The contract was carried out in compliance with MBTA and FTA procedures and regulations.
- All environmental historical issues should be documented in the report.

- The contract records are complete and organized for easy future access by the Design and Construction Department and internal and external auditors.
- Certificate of Occupancy is approved and included in contract file.

Final Performance Evaluation Rating

The Project Manager must complete a Final [Consultant Performance Evaluation Rating Sheet](#) which reviews the performance of the Design Consultant after all contractual obligations are completed, and submit the evaluation to Contracts Administration.

Contract Administration Post-Audit

When the Professional Services contract is being prepared to be closed, Contract Administration will perform an evaluation of all associated costs and decide whether to perform a Close out Post Audit of the contract.

In addition to in-house close-out audits, Contract Administration manages the Certified Public Accountant (CPA) pool who perform "Agreed Upon Procedures" post-audits on selected consultant contracts to determine whether the billings were fair and reasonable. The "Agreed Upon Procedures" post-audit scope of work covers prime consultants and selected sub-consultants billings on direct labor rates, overhead rates, other direct costs and fixed fees. The CPA or in-house Auditor will review these billings as opposed to their actual costs for a project.

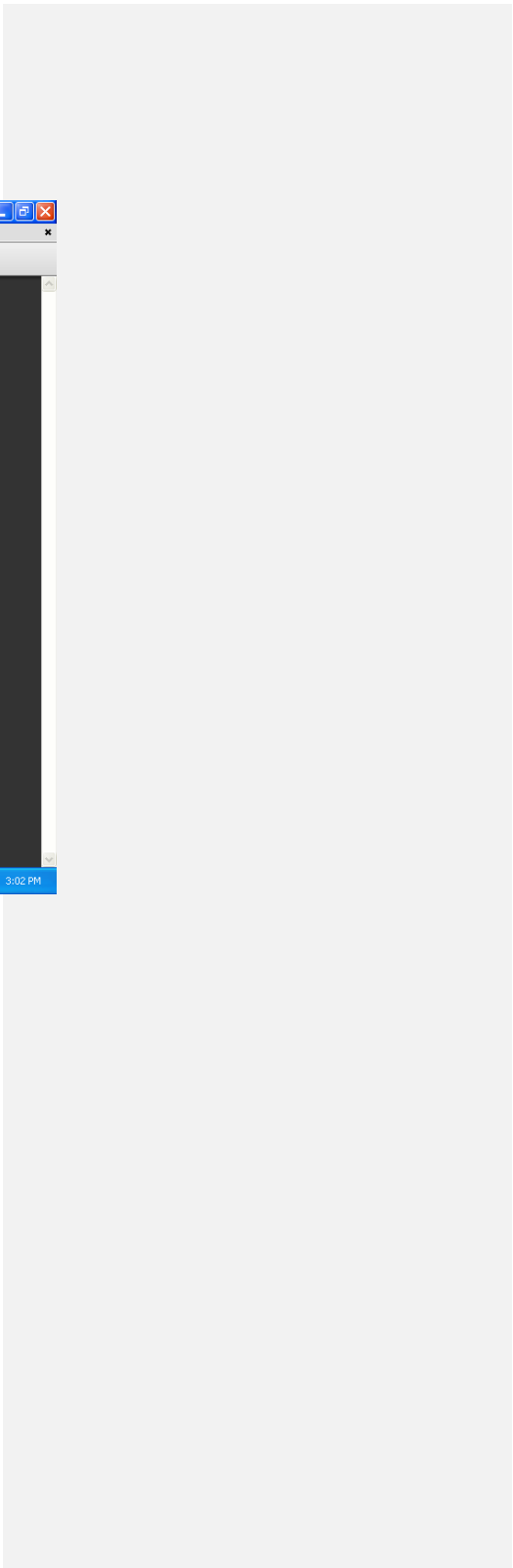
When a post-audit report results in adjustments to the ceiling price, Contract Administration presents them to the consultants, negotiates and resolves any issues, and obtains concurrence before issuing the post-audit report.

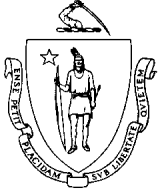
The post-audit report includes a summary of the findings and any adjustments with an opinion of the accepted costs. Reports are issued to the AGM of Design and Construction and MBTA Project Manager. When adjustments are required, Contract Administration negotiates the agreed upon vehicle for which the prime consultant can reimburse the Authority.

If questions arise concerning the appropriate closeout procedure for Professional Services Contracts, the Contract Auditor in Contract Administration should be contacted for specific closeout audit information.

Note: This procedure is required to be performed before the final payment is

processed for the professional services contract.





Final Construction Control Document

To be submitted at completion of construction by a
Registered Design Professional
for work per the 8th edition of the
Massachusetts State Building Code, 780 CMR, Section 107.6.4

Project Title: Date: Permit No.

Property Address:

Project: Check (x) one or both as applicable: New construction Existing Construction

Project description:

I MA Registration Number: Expiration date: , am a *registered design professional*,
and hereby certify that I have prepared or directly supervised the preparation of all design plans,
computations and specifications concerning¹:

Entire Project	Architectural	Structural
Mechanical	Fire Protection	Electrical
		Other:

for the above named project. I certify that I, or my designee, have performed the necessary professional services and was present at the construction site on a regular and periodic basis to determine that the work proceeded in accordance with the requirements of 780 CMR and the design documents prepared by me and approved as part of the building permit and that I or my designee:

1. Have reviewed, for conformance to this code and the design concept, shop drawings, samples and other submittals by the contractor in accordance with the requirements of the construction documents.
2. Have performed the duties for registered design professionals in 780 CMR Chapter 17, as applicable.
3. Have been present at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the work and to determine if the work was performed in a manner consistent with the construction documents and this code.

Enter in the space to the right a “wet” or
electronic signature and seal:

Phone number: Email:

Building Official Use Only

Building Official Name: Permit No.: Date:

Note 1. Indicate with an ‘x’ project design plans, computations and specifications that you prepared or directly supervised. If ‘other’ is chosen, provide a description.

|

	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY PROJECT MANAGER'S MANUAL STANDARD OPERATING PROCEDURE	
Section 11 – WORKFORCE PLANNING AND DEVELOPMENT PROGRAM		NUMBER: Rev. 3
		REVISION DATE: 01/27/14

11.0 WORKFORCE PLANNING AND DEVELOPMENT PROGRAM

The MBTA Workforce Planning and Development Program creates standards and systems for succession plans with mentoring, coaching, webinars, construction industry training, professional development, continued education, and certifications. This proactive, long-term strategy is designed to raise the skill level of the Project Manager and their staff, increase the effectiveness of the MBTA investment in human resources, and prepare employees to lead the department and/or the organization in coming years.

Workforce Planning and Development allows the Project Manager the opportunity to attend internal/external training programs to improve skills in the employee's current area of responsibility, as well as to develop needed competencies within their staff. Attendance at particular vendor trainings will require a written summary that discusses the highlights of the training with a strategy to implement ideas learned. While the program continues to improve the Project Manager's skillset, it also eases the difficulty of succession planning by developing a pool of well qualified employees within the department. The Project Manager can suggest training courses applicable to his/her area by contacting the Program Manager of Workforce Planning and Development. Also, at the request of the Project Manager, customized programs will be developed and implemented. (See Exhibit 11-3)

11.1 Purpose and Benefits

The purpose of the Workforce Planning and Development Program is to have experienced employees with diverse skillsets to fill leadership positions as they become available. The program is designed to:

- Train and develop candidates for leadership roles in advance of need and/or critical vacancies;
- Allow MBTA to participate in the development of diversified Administrative, Finance, and Technical employees;
- Achieve improved workforce capabilities and overall performance;
- Increase commitment and retention of management positions;
- Focus on leadership continuity and improves knowledge sharing; and
- Focus on job progression and job expansion to guide organizational growth and improved management effectiveness.

The benefit of the Workforce Planning and Development Program is to increase

employee commitment and retention by:

- Improved support to employees throughout their employment;
- Effective monitoring and tracking of employee performance, proficiencies, and skill gaps; and
- Increased efficiency in specific roles and use of resources with cross training.

As part of the MBTA's overall Workforce Planning and Development Plan, the Mentor and Training component is a mechanism by which standards and systems for succession planning are implemented. There are three (3) major areas of focus in regard to the Design and Construction Department's professional tenure tracks: Administrative, Finance, and Technical. The goal is to develop skills, competencies, and characteristics needed to function in leadership positions.

11.2 Mentoring

Traditionally, mentoring has been a one-to-one partnership between two (2) individuals where the mentee learns from the mentor in a safe and confidential environment. The Mentor and Training Program, "Lifting as we Climb" has been established within the Design and Construction Department of the Massachusetts Bay Transit Authority (MBTA) to identify and develop employees as future leaders and to support personal and professional growth through training, encouragement, direction and insight.

The focus of the program is growth and development. Mentor and Training is one of the most effective diversity programs an organization can offer to its employees. This is one reason many organizations include mentoring programs as part of their business objectives and succession planning strategies.

The Mentor and Training Program is a voluntary program for all employees of the Design and Construction Department with the exception of new hires and in some cases recently promoted employees. The procedures for enlisting new mentors/mentees are as follows:

- All new hires of the MBTA's Design and Construction Department must enroll in the Mentoring and Training Program for a one (1) year period as a Mentee, after which they will have the option to decline participation or continue in the program as a Mentor, Mentee, or both. All new Project Managers will be included in the Project Managers Mentoring Session with the Program Manager of Workforce Planning and Development Program, AGM of Design and Construction and/or Designee.

- Employees interested in the Mentor Program are required to submit an application (See Exhibit 11-1 and 11-2) as well as a resume to the Program Manager of Workforce Planning and Development Program. This information is used in determining suitable mentor/mentee matches.
- The Program Manager of Workforce Planning and Development Program will review applications submitted by interested employees and based on their skills and qualifications, this pool of individuals will be separated into groups of mentors and groups of mentees. Some participants will have the opportunity to serve as a mentor, while also participating as a mentee.
- All participants will undergo a one-on-one interview with the Program Manager of Workforce Planning and Development Program. During this interview mentees will discuss applicable career paths and relevant goals of interest. Mentors will discuss background, career path, and skillsets.
- The Program Manager of Workforce Planning and Development Program will also conduct an assessment of each mentees current competencies, training, (See Exhibit 11-4) education, and career goals. A Mentoring Action Plan (MAP) will be created to develop new competencies with training and education.

11.3 Training

Training and Development is an integrated approach to exploring careers and their skill requirements, and building those skills with the use of in-class training courses, webinars, instructional trainings, and peer-to-peer workshops. The combination of internal and external training programs encourages mentees to improve skills in regards to the Design and Construction Department's professional tenure tracks: Finance, Administrative, and Technical.

11.3.1 Internal Trainings: Involve training programs, such as Right of Way Training, MBTA Workforce and Conflict Resolution, CPR/AED Certification, Diversity courses, and Human Resource generated trainings. The Program Manager of Workforce Planning and Development Program serves as a point of contact for the coordinator of the latter trainings to set up, verify, and/or request an individual or groups of individuals participate. Programs are also set up by the Project Manager which include:

- **Webinar/ Instructional Trainings:** These seminars are perfect in that these training sessions are hosted in-house, minimizing

travel efforts by employees. The Program Manager of Workforce Planning and Development and staff take the responsibility of planning and setting up the webinars by determining the target audience and message, as well as the date and time of the session(s). Contact the Program Manager of Workforce Planning and Development Program to register for all trainings. Attendees are encouraged to take a brief survey in regards to their webinar experiences. The results from these webinars will provide useful feedback which will be considered when setting up future webinars and instructional trainings. Past webinars include “Avoiding the Pitfalls of Construction Claims”, “Construction Management for LEED Projects”, and “Earned Value Method” (EVM).

- **Peer-to-Peer Mentoring:** These group sessions are developed by the mentors and/or mentees with the support and assistance of the Program Manager of Workforce Planning and Development Program. (i.e. P2P Series – Processing Amendments, June 2010) Project Managers who have strong skills in a specific area will have the opportunity to develop and implement in-house workshops in order to share their expertise with their peers and/or the department. The Program Manager of Workforce Planning and Development Program will assist in the preparation of the materials/presentation for the workshop.

11.3.2 External Training: These Programs are vendor based trainings as well as industry related courses and workshops. Also, the Program Manager of Workforce Planning and Development and staff will assist employees with locating continuing education courses, construction industry courses, professional affiliations, or any other resources that will enable professional growth.

- **Continuing Education:** Employees are expected to have the potential to increase his/her understanding and capacity to manage technical aspects of the operation with the skills and competencies to lead employees within their respective area. In order to improve themselves, Project Managers and their staff must be committed to continued growth and professional development. This would include but is not limited to:
 - Courses conducted by the National Transit Institute
<http://www.ntionline.com/>
 - University/College level courses
 - Certificate Programs
 - Adult Training Program

- **Professional Affiliations:** Networking creates a community of people who support each other, provide emotional support, and information that can help each other. It also provides the possibility to learn of new developments in your field: new tools, processes, training programs, products and services, and can aide in the discovery of the solutions to problems you face.
- **Construction Industry Training:** (i.e. OSHA, Right of Way, National Highway Institute, CMAA, etc...).

11.4 COMPETENCIES AND CHARACTERISTICS

The inclusion of core competencies and characteristics will help to determine those areas where the Project Manager would focus his/her training and professional development. Core competencies and characteristics include six (6) basic elements: Professional Integrity, Leadership, Decision Making and Problem Solving, Effective Communication Skills, Knowledge of MBTA, and High Job Performance.

11.5 CONCLUSION

The Workforce Planning and Development Program has taken training and development efforts at the MBTA to the next level. The MBTA success is being measured in many ways: proactive employee development, improved performance, commitment to goal achievement, enhanced relationships between workgroups, and increased employee retention. It is important to understand that commitment to the program by the Project Managers, Directors and the AGM for Design and Construction is key to the continued success of the initiative. Participation in a Succession Plan or Mentor and Training Program does not guarantee a promotion but does put the individual in a more competitive place when positions open up. Successful performance in developing knowledge, skills, personal attributes, and competencies are key factors in determining suitability for advancement.

Exhibits 11-1, 11-2 and 11-3 (Hyperlinks) illustrate the Workforce Planning and Development Plan

- Workforce Development Plan (Exhibit 11-5)
- Sample Technical Career Ladder (Exhibit 11-6)
- Workforce Development in Action (Exhibit 11-7)

SUPPORTING DOCUMENTS

	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY PROJECT MANAGEMENT MANUAL STANDARD OPERATING PROCEDURE	
Construction Award Authorization Process (Staff Summary)		NUMBER: CN 002 REVISION DATE: 08-31-11

Base Contract Awards may be approved by either the General Manager or the Board of Directors. Awards greater than \$2 million require Board of Director approval.

Budget - It is extremely important to involve the A&F Budget Analyst ASAP as Funding is not always readily available. Any delay in funding will delay Award.

Status - The PM is responsible for tracking the status of the staff summary and following up with Contract Administration in the event changes are required. CMS provided tracking tool.

Staff Summary Review Meeting - Prior to final authorization, the AGM will hold a staff summary review meeting with the PM, A&F, and Contract Administration. Edits to the staff summary may result from this review meeting.

STAFF SUMMARY AND AUTHORIZATION DOCUMENTATION WHO WRITES WHAT?

STAFF SUMMARIES:	Professional Services (PS) Design Awards – A&F PS Amendments – A&F Construction (CN) Awards – A&F CN Change Order – A&F Interagency Agreements – Project Manager Claims – Project Manager
FULL DISCUSSION:	Amendments – Project Manager Awards – Project Manager Interagency Agreements – Project Manager Task Orders – Project Manager
TECHNICAL EVALUATION:	Project Manager
PARITAL NTP	Administration & Finance Office
AMENDMENT NTP:	Administration & Finance Office
SUPPORT DOCUMENTATION:	Contract Overview – PM Record of Negotiation – PM Contract Direction Form – PM CMS Input Form – PM Independent Cost Estimate (ICE) – PM Full Discussion - PM Technical Evaluation - PM

CONSTRUCTION

Base Contract Award

AUTHORIZATION PROCESS

1. After bid opening, Contract Administration (CA) evaluates all bids and confirms the identity of the low bidder.
2. Project Manager (PM) consults with Design Engineer to obtain a recommendation letter for the award to the low bidder.
3. PM schedules a Pre-Award Meeting with contractor to discuss contractor capability, key personnel, scope of work and bid. PM prepares PM Pre-award Meeting Minutes [HYPERLINK], to be included in the Authorization Package.
4. PM writes a Full Discussion
5. PM submits 1 original and 3 copies of the completed award package to CA Summary Coordinator. The Award Package that comes from the PM contains:

Internal Documentation:

- a. Green Routing Slip (DOC or AGM) or Pink Routing Slip (GM or BOD)
- b. Contract Overview Form
- c. Full Discussion

Award Documentation:

- d. Staff Summary (if >\$250,000)

Tab A – Pre-Award Documentation

- a. Notice to Bidders (Public Solicitation) (provided by CA)
- b. Plan Holders List (provided by CA)
- c. Certified Tabulation of Bids(provided by CA)

Tab B – Bid Form

- a. Bid Form (provided by CA)

Tab C – Recommendation Relative to Award

- a. Consultant Recommendation Letter
- b. Pre-Award Meeting Minutes
- c. DBE Concurrence Memo (provided by CA)

TAB D – Board of Director Vote (if applicable)

6. Approved Award Package is given to Staff Summary Coordinator for routing to:

- ODCR
- Operations
- Law Department
- Budget
- AGM/GM/Board of Directors

7. Staff Summary Coordinator copies the signature page, then distributes packages to:

- PDF – Project Manager
- Original and 1 copy – Superintendent of A&F
- Copy – Contract Administration File

	MASSACHUSETTS BAY TRANSPORTATION AUTHORITY PROJECT MANAGEMENT MANUAL STANDARD OPERATING PROCEDURE	
Construction Change Order Authorization Process (Staff Summary)		NUMBER: CN 001 REVISION DATE: 08-31-11

CONSTRUCTION Change Order

AUTHORIZATION PROCESS

1. Change identified - by RE/PM/Consultant/Contractor
2. Project Manager (PM) requests a proposal from the Contractor
3. PM determines if change has merit to warrant a change order
4. PM proceeds with development of an Independent Cost Estimate (ICE).
5. PM receives a proposal from the Contractor and sends copy of proposal to Contract Administration (CA) for review.
6. Contract Administration reviews proposal. Makes recommendations to PM/RE for his/her use during negotiations with Contractor.
7. RE/PM/CA develops a negotiation position using the ICE, CA proposal review and input from the Project.
8. RE/PM/CA negotiate change order with contractor
9. Contractor may submit revised proposal (unnecessary as long as the Record of Negotiations (RON) details how final price was determined. If revised proposal is submitted, the change order must also include a copy of the cover letter, recap sheet and labor and equipment breakdown from the original proposal as well as the complete final proposal.
10. RE/PM develop a well defined and detailed scope for the Form 3 (change order)
11. RE/PM writes an Explanation of Necessity (EON) (see Change Order Guidelines.)
12. RE/PM records events and issues that took place and were discussed during negotiations in a formal RON. (see Change Order Guidelines.)
13. RE/PM work with Steve Joy to compile Change Order Package. The Budget Analyst confirms that funding is available and assigns the funding source.

14. PM reviews the final Change Order Package for accuracy and signs the RON, EON and Change Order confirming the scope of work, and that the cost of the work is fully supported and fair and reasonable.
15. PM presents the final Change Order package to the Deputy Director for review and signature.
16. PM presents the Change Order to the Contractor for review and signature.
17. A&F submits the completed change order to Contract Administration Staff Summary Coordinator. The Change Order Package that comes from the Arborway contains (See CO/CQV Checklist)

Internal Documentation:

- a. Green Routing Slip (DOC or AGM) or Pink Routing Slip (GM or BOD)
- b. Contract Overview Form
- c. Contract Direction Form – Except for Credit COs
- d. CMS-CN-002
- e. CMS-CN-004
- f. CMS-CN-012

Change Order Documentation:

- a. Staff Summary (if >\$250,000)
 - b. Form 3s: 3 Copies with Original Signatures (No Photocopies permitted)
 - c. Signed Explanation of Necessity (EON)
 - d. Signed Extra Work Order Letter (if applicable)
 - e. Contractor Proposal for Prime and Subcontractors
 - i. Cover Letter
 - ii. Recapitulation Sheet
 - iii. Equipment/Labor/Materials Sheet
 - iv. All supporting documentation as required by the Change Order Guidelines
 - f. Signed Record of Negotiation (RON)
 - g. Signed RON Supporting Documentation including ICE, and internal review
 - h. Contractor Signed Certificate of Current Cost and Pricing (if > \$250,000)
18. Contract Admin Change Order Analyst reviews package and prepares a comment memo. The memo either provides confirmation that the Change Order is ready to process or provides direction to the PM that additional information/documentation is required before processing can continue. This memo is:
- a. emailed to the Project Manager
 - b. Filed in Contract Administration CO Memo Binder

19. Change Order package (per Change Order Checklist) is given to Staff Summary Coordinator for distribution to::

- ODCR
- Operations
- Law Department
- Budget
- AGM/GM/Board of Directors

20. When fully signed and approved, the Staff Summary Coordinator emails Change Order Coordinator requesting confirmation that the Change Order is "OK to pay". Information is also available in on the MBTA T: Drive:

T:/Change Order/Contract Status

21. Staff Summary Coordinator copies the signed Form 3s (3 Originals), then distributes six (6) packages to:

- PDF - Payment Coordinator (AMN)
- PDF – Steve Joy
- PDF – Project Manager
- Original – Treasurer
- Original – Contractor
- Original – Contract Administration File

Note: It's extremely important to get the Project's Budget Analyst involved ASAP as Funding is not always readily available and may require a Budget Revision processed through the Budget Office. Any delay in funding will delay the Change Order processing procedure.

Also, it is important to determine ASAP as to whether an Extra Work Order Letter (EWOL) is required. If yes, then the Funding issue is even more imperative early on in the Change Order process as Funding is required to process EWOLs. Please notify Steve Joy to initiate the EWOL Packet for processing.

MBTA
[Insert project name]

**PROJECT
MANAGEMENT
PLAN
Template**

[insert date]



PROJECT MANAGEMENT PLAN –[insert project phase]

ENDORSEMENT PAGE

[Insert name of project manager]
Project Manager

Reviewed by: [insert name]
Project Controls

Approved by: [insert name of AGM]
Assistant General Manager for Design and Construction

Revision Log

[illegible]

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1. Introduction

1.1 Purpose of the Project Management Plan

The Massachusetts Bay Transportation Authority (MBTA) has prepared this Project Management Plan that provides a basis for administering the design, construction of the [insert project name] Project. This document outlines the management philosophy, goals and objectives, and organizational structure; defines the responsibilities and roles of project participants; identifies the interactions among project staff and consultants; and specifies the general procedures and management tools that will be implemented to ensure effective project management and successful project completion. This Project Management Plan defines the details of management of project implementation during preliminary engineering design and provides the framework for managing the subsequent final design, construction, procurement, testing and startup phases.

In addition to serving as a guide for all project participants and assisting in clarifying their respective roles, responsibilities and assignments, this document will serve as a basis for measuring and assessing the project's performance and consistency with the plan. The MBTA will provide the necessary elements to allow for proper and effective management upon completion of this project. As design and construction work advances and additional procedures are developed the MBTA will update the plan as needed and appropriate.

The development of the Project Management Plan will be an evolutionary process. The PMP will be updated and revised as needed, as the program proceeds through its various phases. The maintenance of and subsequent revisions to the PMP are the responsibility of the MBTA.

The parties requesting the revision issues a written request to the MBTA stating the proposed change(s) and the reason(s) for the changes. The MBTA reviews each request. If the proposed revision(s) is approved, the MBTA issues the change(s) to all recipients of the manual. A published revision will include:

- a cover memo describing how and where to place the revision in the manual (revision instructions);
- a new cover page with revised date;
- a revised Table of Contents, if required;
- the revised pages of text with revision number and revision date placed at the bottom of the page; and
- a side-bar in the right hand margin of the page for changes to the text.

1.2 MBTA Legal Authority

Massachusetts Bay Transportation Authority (MBTA) is a body politic and corporate, and a political subdivision of the Commonwealth of Massachusetts. The MBTA is duly organized and existing pursuant to Chapter 161A of the Massachusetts General Laws (as amended) and having a usual place of business at 10 Park Plaza, Boston, Massachusetts. Its primary purpose is to hold, operate and manage the mass transportation facilities and equipment acquired by the Authority.

The [insert project name] Project Management Team will design and oversee the construction of the project in accordance with all applicable federal and state laws and regulations, codes and guidelines. In addition, the Team will proactively work to provide community outreach and relations to ensure the project is compatible not only with city regulations, services and facilities, but with the community and businesses abutting the project.

1.3 Project Objectives

[Explain project objectives]

1.4 Project Description

[Brief overview of project]

1.5 Grant Budget

[List each grant and its value]

1.6 Total Project Budget

[Provide Project budget]

1.7 Project Completion Date

[Provide grant project completion date and current substantial completion date]

2. Organization and Staffing

To successfully manage the planning, design, and construction of the [insert project name] Project, an integrated team of Authority and consultant staff will be established. This section describes the organization and its structure. It provides a description of the functions, major responsibilities, and qualifications of the senior executives and key managers involved.

The [insert project name] Equal Employment Opportunity (EEO) policy is the same one that is incorporated by the MBTA and the consultant firms that comprise the Project Team. This section affirms the project's commitment to fair employment considerations for all applicants considered for employment or procurement activities.

2.1 Project Organization

The [insert project name] Project will be accomplished by the concerted efforts of various organizations and responsible parties, who will work together as an integrated team providing multiple levels of oversight to ensure a successful outcome. The "Project Team" for [insert project name] Project is the combined staff of the MBTA and the Design Consultant. The Design Team primarily includes the Design Consultant and all associated subconsultants. The Team also consists of other key support and oversight organizations such as the FTA. The Project Team will work towards the common goal of successfully

completing the project and meeting the expectations of the Project stakeholders. The Design Team is responsible for planning, designing, and completion of all state and federal environmental review documents as well as all documents and submittals required.

The following sections describe the structure, integration, and interfaces of the project organization. For clarity, the MBTA organization will be described in Section 2.2 followed by the Design Consultant described in Section 2.3. Organization charts for both the MBTA and Design Consultant are provided in Figures 2-1 and 2-2, respectively, at the end of this section.

2.2 Project Management Team

The Project Management Team (PMT) is an integrated staff of managers and personnel from the MBTA and the Design Consultant. The PMT reduces overlaps in duties and functions and provides the flexibility to accomplish project objectives effectively and efficiently. To illustrate the structure, refer to the organization chart (Figure 1) at the end of this section.

The PMT is led by the Project Manager, Area Director and Assistant General Manager for Design and Construction, who report to the General Manager and Rail & Transit Administrator of the MBTA. Different areas of expertise from various departments within the MBTA support the GM.

This basic structure will be maintained throughout the project's life providing continuity between phases and maintaining effective project communications. The positions of General Manager and Rail & Transit Administrator, Assistant General Manager for Design and Construction, Project Manager and listed staff define the Project Management Team. In addition, various MBTA departments are supporting the Project Management Team.

Figure 1 – Integrated Project Management Team

[Insert Organizational Chart of MBTA and Design Consultant]

The MBTA key staff by position (and current personnel) is:

MBTA General Manager and Rail & Transit Administrator

The MBTA General Manager and Rail & Transit Administrator (GM) provides executive leadership and guidance regarding policy issues and project financing. The GM is responsible for all operations, facilities, and projects at the MBTA. The GM is available to address issues requiring top-level decision-making in support of the project schedule.

Assistant General Manager for Design and Construction

The Assistant General Manager (AGM) for Design and Construction reports directly to the GM of the MBTA. The AGM for Design and Construction serves as the direct supervisor of all MBTA design and construction projects providing executive guidance.

Accountability

The AGM reports directly to the MBTA General Manager.

Chief of Design and Construction

The Chief of Design and Construction reports directly to the AGM. The Chief of Design and Construction provides oversight to all projects in relation to design and construction issues.

Accountability

The Chief of Design and Construction reports directly to the AGM.

Director of [Provide Area]

The Director reports directly to the Chief of Design and Construction. The Director serves as the supervisor of this project providing executive guidance.

Accountability

The Director reports directly to the Chief of Design and Construction.

Project Manager

The Project Manager is the authorized representative of the MBTA and reports to the AGM for Design and Construction indirectly through the Director of Design and Construction. The Project Manager is responsible for day-to-day oversight of the Design Consultant in accordance to specifications, design direction, and schedule. The Project Manager directs all elements of work required for the scope, design, construction, and delivery of the Project. The Project Manager is the single point of contact for all official information on the project. All project activities are coordinated through the Project Manager including acting as liaison with the FTA.

Major Responsibilities

- Evaluate project cost at each design phase submissions.
- Review all project documents at each design phase submission.
- Review all related project agreements, including interagency and other third party agreements.
- Assist with managing the planning, scope, design and engineering, construction administration, and construction inspection to deliver timely, cost-effective, and high quality projects for the MBTA.
- Review progress reports in accordance with the scope to maintain schedule and budget.
- Coordinate with MBTA Departments and other key stakeholders.
- Represent the MBTA with outside agencies and community groups.
- Manage/Oversee the Contractor during the construction process to ensure the successful completion of the Project.

Accountability

The Project Manager reports directly to the Director for Design and Construction.

2.3 Design Consultant

[Identify the Design Consultant, their role and responsibility]

The Design Consultant organization/Team consists of the following:

[List the Team disciplines]

The Design Consultant organization is described in more detail in the descriptions that follow.

2.3.1 Design Consultant Team

[Identify each task discipline classification lead (i.e Officer in Charge, Project Manager, Design Lead, Architectural Lead, Structural Design Lead, Signal Lead, Project Controls Lead, Civil, Electrical Lead, ect...)]

[List task leader's responsibilities as it relates to this project]

[Identify what position the task leaders are accountable to]

2.4 Governmental and Oversight Agencies

2.4.1 Federal Agencies (if applicable)

[Indicate if this project will be federally funded]

[Identify which Federal agency has oversight of this project]

2.4.2 Local Agencies

[Identify the location of the project]

[Identify which local agencies and departments the project must coordinate with]

2.4.3 Regulatory Agencies

[Describe all regulatory agencies the Project will have to interface with]

The Project designed will be reviewed the Massachusetts Department of Public Safety for compliance with the State Building Code, [] Edition, NFPA [] and ADA.

2.4.4 Utilities

This project may affect the right-of-way of various utilities. The following is a list of utilities that may be affected:

- [insert utility - example; City of Somerville DPW]
- [insert utility - example; Verizon]
- [insert utility - example; Nstar]

2.4.5 Developer Team (if applicable)

[Name of developer team, if applicable]

2.5 Equal Employment Opportunity Policy

The MBTA has developed its EEO policy, which prohibits discrimination against any person in employment and/or in access to contracts. Further, it is the MBTA's policy to make certain that all applicants are considered for employment, or procurement opportunities regardless of race, religion, creed, color, sex, age, national origin, disability, or marital status. All consultants will comply with the MBTA policy, as well as the Federal EEO policy.

The [insert project name] Project EEO policy will adopt the policy of the MBTA. As defined in this policy, affirmative action will include, but not be limited to, recruitment, hiring, promotion, compensation, benefits, transfers, layoffs, recalls, company sponsored training, education, and social and recreational programs. Goals with specific measurement factors are established to assist management's progress toward finding remedies to any apparent discrimination.

The [insert project name] Project bases decisions on the individual's qualifications as related to the position for which he or she is being considered. In this regard, rules of conduct are enforced equitably and impartially.

3. Management Control

3.1 Technical Control

Functional control of the Project will be guided by the MBTA Project Manager's Manual (PMM) and the Project Controls Policy Manual (PCPM) that will be used by the Design Consultant and the MBTA. The PMM and PCPM will include topics such as correspondence control, invoicing procedures, project reporting, file management, and other items pertinent to the execution of the Program. The format and content of the PMP will be consistent with the MBTA Project Controls Policy Manual, and will be submitted to the MBTA for review and concurrence. The PMP will outline in general terms the procedures common to all Project participants.

Technical control of the Project will be administered by the Design Consultant and will follow the requirements of and full knowledge of input sources and guidance documents by the use of Design Task Protocols (DTP's). The intent of DTP's is to provide those preparing technical documents with the input, references, criteria, direction, and background information necessary to carry out their tasks in a complete and efficient manner. DTP's will be completed for calculations, and may be used as input to specifications, drawings, and technical reports and studies. Exceptions to this requirement are cases where the tasks are simple or for information only, or where the input information is readily available or developed in another manner for the project (e.g. Design Criteria Document). Depending on complexity, DTP's may be developed for single documents or tasks, groups of documents or tasks, or at the project level.

3.1.1 Technical Baseline /Configuration Control

[What is the project's approach to defining and establishing a technical baseline]

[Explain the project approach to configuration management]

3.1.2 Design Reviews/Constructability/Risk

Design Reviews, as described in the MBTA's design review procedure (as contained in the MBTA's Project Management Manual, which is appended to this PMP as Attachment B) are an integral part of the design process and necessary to ensure that both the right problem is solved and that it is solved correctly. The quality assurance process for reviews is organized by phase, by discipline and across disciplines. It is both a pro-active and a reactive process; it is pro-active in the systems that are set up and the steps that are required, and it is reactive in the review of data and drawings by senior staff.

[Describe the process the Project will use for design reviews and constructability reviews]

[Against what criteria will design reviews and constructability reviews be based]

3.1.3 QA/QC Program

[Describe in detail the QA/QC plan that will be used for this project]

3.2. Cost Control

[Explain the cost controls system that will be utilized for this project]

[What reporting system will be used?]

[How often will reports be submitted to T?]

[How will trends, forecasts and variances be reported on and by what means?]

[Identify what cost elements of the project will be monitored and what is excluded]

[How will requirements of the MBTA's Project Controls Policy Manual are incorporated into the Projects Cost Control Program]

3.2.1 Maintaining Baseline Project Cost

The Baseline Program budget will be developed at the end of the [enter phase] phase (approximately 30%), after the alignment is refined and the project is very well defined. This will be the cost basis against which future performance will be measured. The Engineer's Estimate will be reviewed at each design phase of completion to assure budget accuracy.

Contractor bids and performance will be constantly monitored during construction for consistency with the baseline budget.

The program budget will be updated as conditions or changes warrant. Any updates to the budget require review and approval, at a minimum, by the MBTA Director.

3.2.2 Performance Measurement

[Explain what kind of performance metrics will the Project utilize during design and construction to monitor and measure progress?]

3.2.3 Cost Estimating

3.2.3.1 Estimating Methodology

[Explain what estimating methodology will be used]

3.2.3.2 Quantity Take-offs

[How will quantity take offs be performed?]

[What technology will be utilized?]

3.2.3.3 Pricing

[Explain how pricing will be obtained for labor, equipment, materials and indirect costs]

3.2.3.4 Estimating Software

[What estimating software will the project employ?]

3.2.4 Contingency Management

[Explain how contingency will be determined and managed? See sample below.]

Sample

Contingency funding is a fiscal planning tool for managing the risk of cost escalations and covering potential cost estimate shortfalls. Inclusion of a contingency amount in the cost estimate will minimize the impact of cost increases inherent in an overly optimistic estimate and provide for an earlier discussion of how potential circumstances can be addressed.

Risks will be defined with specific costs allocated to them, as determined by a risk analysis, as opposed to just "bumping up" the total cost. A risk allocated cost contingency will be included in the total project cost estimate for the mitigation of all significant risks. Risk management and contingency funding can be utilized to mitigate those risks that cause cost escalations throughout the project continuum.

During the preparation of the initial estimate, a risk assessment will be performed on the entire project in order to define and quantify the potential risk areas and types. Risk assessments will continue also be performed periodically throughout the project continuum to update contingency amounts. Some examples of risk assessment areas include the analysis of differing site conditions, utility impacts, hazardous materials, environmental considerations, third-party concerns, geological conditions, etc.

When preparing the project cost estimate, a risk assessment will include allocating risk contingencies for major cost elements. This will assist in the mitigation of uncertainties and help create a conservative cost expectation. Probability of occurrence, severity and expected dollar value are variables that may be utilized when quantifying risk as a contingency amount. After all known risk mitigation, the cost estimate's contingency-funding levels should reflect the amount of remaining risk associated with the project's major cost elements. Additionally, an overall management contingency can be included to cover unknown, unanticipated risks.

The following are major cost elements for contingencies that should be considered for Major Projects: 1) a Construction contingency to cover cost growth during construction; 2) a Design contingency (based on different levels of design completion); 3) an overall Management contingency for third-party and other unanticipated changes; and 4) other contingencies for areas that may show a high potential for risk and change, i.e., environmental mitigation, right-of-way, utilities, highly specialized designs, etc. Other areas of interest for contingency cost estimating may include contractor availability and historical contingency levels for similar projects.

Construction contingencies will be established and adjusted based on the assessed risk in exposure to construction cost escalations. Project funding will be reviewed at periodic intervals and unused contingency funds can be released to be made available for other contracts.

Design contingency amounts will be based on the amount of design completed. When the final design is complete, the design contingency amount in the cost estimate will equal zero. Projects under design are not over estimated; however the contingency is based on the uncertainty inherent in the remaining design to be completed.

The MBTA's Management responsibility will include managing cost and schedule deviations from the approved budget and schedule, impacts resulting from the deviations, and initiatives being analyzed or implemented in order to recover any cost overruns or schedule delays. While individual construction contracts will be analyzed for exposure to changes, comprehensive risk and contingency management tools and processes are not always in place. Project contingency funding management procedures will include continual comprehensive risk analysis to quantify and refine contract contingencies, individual contract contingency tracking, and a contingency drawdown plan that includes contingency forecasting.

An overall management contingency will be incorporated. This contingency will be a "stand alone" piece of the cost estimate that is managed by the MBTA Director and will be used for a broad spectrum of uncertainties.

Management of the transfer of costs to and from contingency line items will be administered and tracked carefully for decision makers. Cost transfers will be correlated to the major element type of cost escalation. For example, if work outside of a clearly defined scope is found to be essential and justifiable in the future, then a management decision can be made

to pay for the added work from the management contingency or another appropriate contingency. On the other hand, if a specific utility issue that has a utility contingency, careful tracking of this particular contingency can help management better analyze cost overruns.

Reasons supporting contingency transfers will be noted and included in all pertinent reporting. This is so a comparison analysis to the available contingency amounts can be periodically analyzed for contingency usage rates. This analysis will show MBTA Executive Managers that a reasonable and sufficient amount of contingency remains to keep the project within the latest approved budget.

3.2.5 Escalation Factor Derivation

[Explain how escalation for this project will be derived.]

3.2.6 Contracting Techniques

[Which project delivery methods are being considered for this project?]

[Explain each method]

[At what point in the design will the project delivery method be chosen?]

3.2.7 Cost Allocation Plan

The Preliminary Project Budget is \$XXXX million as outlined below.

Category	Budget (millions)
Professional Services	\$
Real Estate	\$
Construction	\$
Inspection	\$
Force Account	\$
Project Administration	\$
Contingency	\$

Table 1

3.2.8 Cost Accounting Plan

The MBTA Project Manager is responsible for monitoring of project commitments, expenditures, and other costs. A computerized cost control system will be used to facilitate the gathering and analysis of cost information. The cost tracking system will be based on the WBS detail elements and detailed Chart of Accounts. Information will be gathered and entered into the system at the account level and summarized or recombined as needed.

A Work Breakdown Structure (WBS) has been developed as a means of organizing all work elements to be completed for the Program/Project. By coding the cost and schedule information to the appropriate WBS element, detailed reports are produced for all levels of reporting. The WBS forms the basis for all scheduling, cost, estimating, document control reporting.

The Program/Project WBS is arranged in hierarchical levels.

Figure 3 on the next page shows the MBTA typical WBS structure. The [insert project name] Project will develop a project specific WBS in line with the MBTA's typical WBS:

MBTA TYPICAL WORK BREAKDOWN STRUCTURE (WBS)

1	MBTA TRANSIT EXPANSION PROGRAM
1 1	PROJECT #1
1 2	PROJECT #2
1 3	PROJECT #3
1 1 1	PS PROFESSIONAL SERVICES
1 1 1 1	ENGINEERING
1 1 1 1 1	FEASIBILITY/STUDY
1 1 1 1 2	15% design
1 1 1 1 2 1	15 % CIVIL
1 1 1 1 2 2	15% STRUCTURAL
1 1 1 1 2 3	15% ARCH
1 1 1 1 2 4	15% MEP
1 1 1 1 2 5	15% OTHER
1 1 1 1 3	30% design
1 1 1 1 3 1	30 % CIVIL
1 1 1 1 3 2	30% STRUCTURAL
1 1 1 1 3 3	30% ARCH
1 1 1 1 3 4	30% MEP
1 1 1 1 3 5	30% OTHER
1 1 1 1 4	60% design
1 1 1 1 4 1	60 % CIVIL
1 1 1 1 4 2	60% STRUCTURAL
1 1 1 1 4 3	60% ARCH
1 1 1 1 4 4	60% MEP
1 1 1 1 4 5	60% OTHER

WBS SHEET 1

MBTA TYPICAL WORK BREAKDOWN STRUCTURE (WBS)

1	1	1	1	5		90% design
1	1	1	1	5	1	90 % CIVIL
1	1	1	1	5	2	90% STRUCTURAL
1	1	1	1	5	3	90% ARCH
1	1	1	1	5	4	90% MEP
1	1	1	1	5	5	90% OTHER
1	1	1	1	6		100% DESIGN
1	1	1	1	6	1	100 % CIVIL
1	1	1	1	6	2	100% STRUCTURAL
1	1	1	1	6	3	100% ARCH
1	1	1	1	6	4	100% MEP
1	1	1	1	6	5	100% OTHER
1	1	1	1	7		CONSTRUCTION PHASE SERVICES
1	1	1	1	8		PROJECT MGMT
1	1	1	2			OWNER'S REP
1	1	1	3			PROGRAM MGMT
1	1	1	4			VE
1	1	1	5			ICE
1	1	1	6			RISK
1	1	1	7			OTHER
1	1	2				RE REAL ESTATE
1	1	2	1			LAND ACQUISITION #1
1	1	2	2			LAND ACQUISITION #2
1	1	2	3			OTHER

WBS SHEET 2

MBTA TYPICAL WORK BREAKDOWN STRUCTURE (WBS)

1 1 3	CN CONSTRUCTION
1 1 3 1	CONSTRUCTION PACKAGE 1
1 1 3 2	CONSTRUCTION PACKAGE 2
1 1 3 3	CONSTRUCTION PACKAGE 3
1 1 3 1 1	MILESTONES
1 1 3 2 1 1	SUBMITTALS
1 1 3 3 1 2	PROCUREMENT
1 1 3 4 1 3	CONSTRUCTION
1 1 3 4 1 1 1	PHASE/LOC/AREA
1 1 4	IN - INSPECTION
1 1 4 1	INSPECTION
1 1 4 2	RESIDENT ENGINEER
1 1 4 3	OTHER
1 1 5	FA -FORCE ACCOUNT
1 1 5 1	BUS DIVERSIONS
1 1 5 2	MBTA FLAGGING
1 1 5 3	TRACK DEPT
1 1 5 4	SIGNAL DEPT
1 1 5 5	COMMUNICATIONS DEPT
1 1 5 6	POWER
1 1 5 7	OPS SUPPORT
1 1 5 8	COMMUTER RAIL FLAGGING
1 1 5 9	OTHER
1 1 6	PA - PROJECT ADMINISTRATION
1 1 6 1	PROJECT MANAGER
1 1 6 2	DIRECTOR
1 1 6 3	T POOL/ADMIN STAFF/INDIRECTS
1 1 6 4	OTHER

WBS SHEET 3

MBTA TYPICAL WORK BREAKDOWN STRUCTURE (WBS)

1 1 7	PR -PROCUREMENT
1 1 7 1	VEHICLES
1 1 7 2	RAIL
1 1 7 3	SIGNALS
1 1 7 4	OTHER
1 1 8	CY- CONTINGENCY
1 1 8 1	PROFESSIONAL SERVICES
1 1 8 2	REAL ESTATE
1 1 8 3	CONSTRUCTION
1 1 8 4	INSPECTION
1 1 8 5	FORCE ACCOUNT
1 1 8 6	PROJECT ADMINISTRATION
1 1 8 7	PROCUREMENT

WBS SHEET 4

The Cost Control System will include the following basic elements:

[List and define the elements of the cost control system]

3.2.9 MBTA Force Account Plan

A preliminary force account budget and plan has been developed in cooperation with the Design Consultant. The anticipated force account needs include the following:

- [Insert line, ex. red, orange..]Line Diversions –[insert amount]
- [Commuter Rail] Diversion – [insert amount]

The force account budget currently available is presented in the Cost Allocation Plan in Section 3.2.7. The total force account budget as of [insert date] is approximately [insert amount] .

The force account budget will be updated at regular intervals during the design phase. Joint meetings with the Director of Subway Operations, the AGM for Design and Construction and other MBTA personnel will be held to balance operations requirements, customer service, and construction activities.

Force account costs for the use of MBTA Transit Police are contained in the construction estimate.

3.3 Schedule Control

Through the use of several levels of schedules, in accordance with the Project Controls Policy Manual, strict schedule management and control is the responsibility of the Design Consultant, with input from MBTA Project Manager and all project participants on the [insert project name] Project. This is accomplished through a stringent change control process, and a comprehensive monitoring and reporting system as described in the Project Controls Policy Manual.

The [name of project] uses industry standard scheduling software to develop and manage the schedule. The [name of project] has selected Primavera to provide consistent reporting of the Master Schedule and all program/project elements. Schedules generated by the consultant and all contractors, use the Primavera software for the purpose of maintaining uniformity and compatibility between interrelated project schedules, work calendars and resources

3.3.1 Types of Schedules

The schedules used for the [insert project name] Project will be:

[List the types of schedules to be used on this project]

[Explain the level of detail that will make up each schedule type]

Figure 2 – Project Schedule

[Insert Master Schedule]

3.3.2 Schedule Development, Progress Monitoring

[Explain how schedules will be developed and how progress will be monitored]

3.3.3 Schedule Reporting

[Identify who will issue schedule reports]

[What will be reported on?]

[How often will reports be issued]

[Who will receive schedule reports?]

3.3.4 Earned Value Reporting

[Explain how Earned Value will be incorporated, monitored and reported on for this Project. See Project Controls Policy Manual for more information.]

3.3.5 Schedule Updates

[Explain the schedule update process that will be used for this Project]

[Identify who is responsible for providing schedule updates]

[Identify who is responsible reviewing schedule updates]

3.4 Cash Management

The Authority's Capital Investment Program is financed by five sources of funds: revenue bonds, federal grant anticipation notes, pay-as-you-go capital, federal grants and project financing. In the event the Authority requests federal funds and those funds are not available in a timely manner, the MBTA would use either bond funds or pay-as-you-go-capital until the federal funds are received. Upon receipt of the federal funds either bond funds or pay-as-you-go-capital would be reimbursed.

3.5 Change Control

[Explain the Change Control process that will be used for this Project. See the MBTA's Project Controls Policy Manual and Change Order Guidelines for more information]

The Project will follow procedures outlined in the Project Controls Policy Manual and Change Order Guidelines.

3.6 Document Control

The Project will follow procedures outlined in the MBTA's Project Manager's Manual; Project Controls Policy Manual and Change Order Guidelines.

The Design Consultant will be responsible for maintaining the official project documents including, but not limited to:

- **Central Files** – All correspondence/documentation between the MBTA, Design Consultant, Contractors, and third parties.
- **Controlled Files** – A controlled set of project documents (plans, specifications, manuals and procedures), including approved changes.
- **Library – Reference** documentation for use by project personnel, such as Environmental Assessment, codes, standards, maps, etc.

In addition, the Design Consultant will establish measures for the storage and protection of vital records that will assure the continued operations of the project, in the event of a disaster.

3.6.1 Records Management

The Design Consultant will use the established MBTA archival system, using standardized forms that incorporate file descriptions and control fields that will automate the date entry process for archiving project documentation.

3.6.2 Document Control

[Identify and explain any specialized software that will be used for Document Control]

All project personnel generating or receiving project documentation will be responsible for conforming to the document preparation and identification standards set forth in the Project Document Control Procedures.

The Design Consultant will maintain the Central Files, Controlled Files, and Library. The Design Consultant will establish a universal file coding structure which will index all incoming and outgoing project correspondence and documentation received by postal mail, courier mail, hand delivery, fax, and email.

All documentation that is generated for the project will be forwarded to the Design Consultant who will be responsible for processing all project correspondence/documentation and filing including stamping, logging, copying, routing and distribution to designated project personnel.

The Project Design Quality Assurance Manager and Document Control Manager will perform routine audits of the files to ensure file integrity and compliance with the Document Control procedures. The Project Design Quality Assurance Manager will report violations and recommend corrective actions to the Project Manager.

4. Human Resources Management

4.1 General Approach and Responsibilities

The MBTA Project Manager reserves the right to request replacement of key staff when, in his/her sole discretion, the existing staff does not serve the best interests of the Project. The MBTA Project Manager will request a decision will be made based on a mutual agreement with both parties as to what is most beneficial to the Project.

Each participating contractor has a separate and unique human resources system and each retains the right to hire, promote, transfer or terminate employees in accordance with its own specific policies and consistent with federal, state and local laws and regulations. Payroll

and benefits administration remain the responsibility of the individual firms as does staffing, selection, evaluation and discipline.

4.2 Statutory and Regulatory Requirements

The Project's participants, including the PM, and design and construction contractors, shall use their best efforts to comply with all relevant federal and State laws and regulations.

4.3 Employment and Business Utilization Goals

The contract documents contain provisions concerning employment requirements and the Disadvantaged Business Enterprise goals for the selected Construction Contractor. These include:

- Design Disadvantaged Business Enterprise (DBE) participation goals of [insert %]
- Construction Disadvantaged Business Enterprise (DBE) participation goals of [insert %].

4.4 Labor Relations

All federally funded MBTA Projects will comply with the Federal Davis Bacon Act regarding wages on federally assisted construction projects.

5. Risk Management and Insurance

5.1 Scope

The Project will follow the procedures outlined in the Project Controls Policy Manual.

The scope of the MBTA's approach to Risk Management, and ultimately a decision on how to obtain cost-effective insurance coverage, is structured and well founded on significant experience in the development and construction of major capital projects. Risk Management is broken down into five distinct activities:

1. Risk Identification
2. Risk Evaluation: Magnitude; Probability; Schedule Implications
3. Risk Mitigation/Control
4. Risk Allocation
5. Insurance Methodology

Managing the risks associated with the project in this manner allows a more accurate reflection of the costs and contingencies necessary to ensure that a project budget is established that allows for a high probability that the project may be constructed and closed out within the budget and schedule established.

5.2 Risk Identification

Through a coordinated effort between the MBTA the Design Consultant, and the FTA, a Risk Register is prepared identifying all of the possible risks that may affect the Project anywhere along the course of its development from design to construction to start-up and being placed into revenue service. Risks may span from geo-political to design to procurement to environmental to technical to economical.

The Risk Register is used to identify, classify, organize, evaluate, and track all levels of risks that may affect the project. Mitigation strategies are then identified and tracked for implementation at the appropriate times during the timeline of the project.

5.3 Evaluation

Each risk identified and listed on the Risk Register is evaluated for its potential affect on scope, cost, and/or schedule of the project. A determination is made as to the following:

- Magnitude of the cost to the project should this risk occur;
- Probability of the risk occurring; and
- Impact to the schedule should the risk occur; and
- Mitigation strategies that when implemented may eliminate or reduce the cost impact, eliminate or reduce the likelihood of occurrence, and/or eliminate or reduce the potential impact to the project schedule of that particular risk.

5.4 Risk Mitigation/Control

Mitigation strategies that when implemented may eliminate or reduce the cost impact, eliminate or reduce the likelihood of occurrence, and/or eliminate or reduce the potential impact to the project schedule of that particular risk.

Risk Control is facilitated by maintaining the Risk Register as a “living” document throughout the life of the project. After Risk Identification and Evaluation, Controlling of the risks is done through determination of proper and potential mitigations that could be implemented. Those mitigation strategies are tracked and confirmed that they were in fact implemented and results monitored. Then proper Risk Allocation is accomplished through the MBTA’s Terms and Conditions and through the strategy used in the writing of the Technical Provisions, i.e., determination of measurement and payment provisions.

5.5 Risk Allocation

Allocation of risk should be to the entity that can best control that particular risk. Massachusetts Bay Transportation Authority (MBTA) is a body politic and corporate, and a political subdivision of the Commonwealth of Massachusetts. Therefore, as an agency it is inherently conservative and risk adverse. Allocation of risk onto contractors and/or through the purchase of insurance protects the MBTA. However, in today’s construction environment and contractor’s growing aversion or unwillingness to take on unquantifiable risks, a more strategic allocation of risk must be made to the entity that can best control or mitigate that risk – and in certain cases that may be the MBTA.

5.6 Insurance

The MBTA has utilized both Contractor Supplied Insurance(CCIP) and Owner Controlled Insurance Programs (OCIP) on its various capital projects and the determination as to which to use was made on a project by project basis.

The decision as to which insurance avenue to pursue for the project must be made in early [insert year] in order to facilitate the commencement of construction in [insert month/year]. The MBTA's procurement of an OCIP policy for the Project will take approximately [insert duration].

6. Environmental Assessment and Mitigation

[Describe environmental requirements and processes]

7. Procurement of Services

This section focuses on the development of procurement packages for construction to achieve project goals. The section also addresses affirmative action requirements and contract modifications. The section is broken down as follows:

- Procurement of Construction Contracts
- Affirmative Action Goals
- Contract Modifications

7.1 Procurement of Construction Contracts

[Describe procurement planned]

The contractor procurement will be in accordance with MBTA's Procurement Policy that also defines the level and degree of responsibilities.

7.2 Affirmative Action Goals

The MBTA EEO Office establishes the affirmative action goals for both consultant and construction contracts, within the parameters of State and Federal guidelines that require that construction by third parties be procured by free, open and unrestricted competition.

8. Procurement of Materials and Equipment

8.1 General Approach and Responsibilities

Conventional procurement has been successfully used for major projects by the MBTA, and throughout the United States, and will be utilized for the [insert project name] Project

Procurement objectives include:

[Describe approach]

8.2 Regulatory Environment for Procurement

[Describe Regulatory Requirements]

8.3 Contract Types

The Contractor will follow the procedures of the MBTA Procurement Manual.

8.4 Code of Conduct

The Project is governed by guidelines set forth in the MBTA Procurement Manual.

8.5 Contract Proposal and Award Process

The process of contract award will follow the listed sequence, with primary responsibility for each sequence item listed in parentheses:

- Prepare wording and procedure for advertisement for Bidders (PMT),
- Place advertisement, according to the agreed procedure (MBTA);
- Construction bid documents will be available (MBTA);
- Information meeting for qualified contractors (MBTA);
- Receive and open sealed bids (MBTA);
- Complete evaluation of bids., (PMT);
- Final contractor discussion, prior to final bid and award (PMT); and
- Award contracts (MBTA).

9. Design Program

The design phase will be undertaken with multidisciplinary teams and provide designs that meet the project objectives and the various targets of quality, cost, and time. Design management and planning will be accomplished through the project management and control elements as described herein. This section describes the design input and criteria control, design control, design review processes, design changes and CADD and GIS design standards. It also defines the use of an EMS and its components and implementation. The use of a value engineering (VE) consultant is stipulated, and the roles of value engineers are defined. The MBTA will procure the VE consultant and manage this process.

9.1 Requirements and Standards

The MBTA will have design requirements for the project, which will include:

- Project Objectives
- Operational Requirements
- Functional Requirements
- Operational and Maintenance Preferences
- Existing Design Standards and Guidelines
- Project approved design criteria

The Design Consultant will review all relevant MBTA, city, state, and federal codes and standards and select the most appropriate design criteria for the project. The Design Consultant will consolidate the criteria for the project in the Project Design Criteria memorandum, which will then be used to complete the design. Design inputs may include:

- Functional and Performance Requirements
- Regulatory Requirements, including the Americans with Disabilities Act (ADA) Compliance

- Codes and Standards
- MBTA Requirements or Preferences
- Previous Experience (Lessons Learned from Stage II)
- Proven Methods or Processes
- Engineering Judgment
- Investigation Data
- Existing or Previous Design Data

Design inputs shall be controlled to ensure that the history of design is maintained and that proper changes are made when they occur. Control is maintained through the process of identification, maintenance, and update of criteria. Identification occurs in design criteria documents, calculations, and design reports. The input documents are maintained through the document control process.

9.2 Design Supervision

The overall responsibility for the technical aspects of the design rests with the individual Discipline Design Leads and upwards to the Deputy Project Manager – Engineering/Design and ultimately to the Project Manager.

The Design Consultant will establish a standard method of communication and protocols to ensure that high-level technical decisions are made in an open and expeditious manner. This manner of communication also provides an efficient means for senior project committees to achieve timely decisions consistent with the overall project goals while keeping MBTA management and technical staff abreast of design issues. The process ensures that real-time knowledge is shared allowing for immediate action in response to changes to the in-process design.

Confirmation of design decisions will be provided by the MBTA Project Manager and upwards through the Director to the Assistant General Manager for Design and Construction.

9.3 Design Coordination – Internal, External

There are two levels of Internal Design Coordination, first being internal to the Design Consultant and the second being internal to the MBTA/Design Consultant Team.

[Designer explains their design coordination here]

The Design Consultant holds regularly scheduled weekly Senior/Technical Management meetings where specific design coordination issues are discussed and major technical resolutions are presented. The MBTA Management Team attends these meetings as well. At these meetings, further meetings are established between the Design Consultant and the various MBTA Engineering and/or Facilities and Operations people for their input, review and confirmation of specific technical solutions to issues.

Major technical issues and proposed solutions are presented to the Project Development Group (PDG). The PDG is comprised of the MBTA senior management and technical and operations staff to be identified. This group is responsible for collectively evaluating technical proposals, suggestions, or significant issues requiring resolution. The group will

then make recommendations to the MBTA Program Manager who is ultimately responsible for the project decisions.

To ensure expeditious resolution of design issues and proper coordination, and as stated in Section 2.0 Organization and Staffing, the Project Manager is responsible for all aspects of the project. The MBTA Program Manager is responsible for the day-to-day activities of the project and regular interface with the Design Team. The PDG was formed to have senior representatives with a common goal of advising the MBTA Program Manager on technical and operational issues and have a forum for discussion and input with various points of view.

9.4 Design Review Process

Design reviews, as described in the MBTA's design review procedure (as contained in the MBTA's Project Management Manual) are an integral part of the design process and necessary to ensure that both the right problem is solved and that it is solved correctly. The quality assurance process for reviews is organized by Phase, by discipline, and across disciplines. It is both a pro-active and a reactive process; it is pro-active in the systems that are set up and the steps that are required, and it is reactive in the review of data and drawings after their creation by senior staff.

The "Pro-active" Review systems are developed to assist engineering in controlling the design process. These systems elements are set up at the beginning of the project to enable efficient and complete project reviews including:

- Deliverables matrices that define what is required for each deliverable by discipline.
- Information management systems that ensure the latest information is available to all parties.
- Issue tracking system to ensure resolution before deliverables are due.
- Identification of responsible reviewer by discipline and by overall deliverable (cross-discipline).
- Creation of project-specific checklists for reviews, both within discipline and cross-discipline.

The "Standards and Criteria" Review process used during design will begin with the:

- Review of list of all applicable codes and standards;
- Review of emerging standards and agreement on their use;
- Agreement on operational and functional criteria;
- Review of study and field investigation results; and
- Review of concept design for key issues and their solutions.

Design reviews will be conducted for both individual disciplines and for multi-disciplinary coordination by senior staff, utilizing the review system tools including checklists, deliverable matrices and issues lists. Reviews will be both formal on a scheduled basis, and informal as the work progresses. The requirements for the review and approval of design deliverables are addressed within the Implementing Procedures. These elements include the internal checks from the preparer and reviewer. The procedures also address the need for interdisciplinary reviews and coordination between the departments and groups. In addition

to the in-process steps, the project conducts high-level design reviews, independent reviews and peer reviews at critical project junctures.

Reviews will be occurring on an on-going basis by the senior staff. Commentary from those reviews, as well as feedback from presentations and discussions with team members, will be documented in an issues tracking system. The system works to keep all interface disciplines and organizations informed on issues, to engender discussion and provide a way of tracking an issue to resolution. The issues list then serves as a final checklist in reviews.

9.5 Value Engineering

The Project will follow the procedures outlined in the MBTA Project Controls Policy Manual.

The objective of Value Engineering is to generate a plan to satisfy the required function of a project at the lowest cost consistent with performance requirements, reliability and maintainability. Value Engineering must be performed early in design in order to maximize cost benefits and for the recommendations to be implemented without causing delays to the construction schedule.

A formal Value Engineering Review workshop will be conducted at the Preliminary Design (30%) submission. The review will be conducted by an independent Value Engineering Panel consisting of technical specialists from various disciplines. The Value Engineering process is independent of both the PDG design review, risk analysis and constructability reviews.

The Value Engineering Review will be conducted through the following approach endorsed by the Society of American Value Engineers (SAVE):

Pre-Coordination (Pre-Workshop) – The Value Engineering Team Coordinator will collect drawings, specifications, and review information. The Coordinator will make all arrangements for the study, including logistics and participant scheduling. The Design Consultant will supply the participants with copies of drawings, background reports, detailed cost data, design calculations, specifications, and design criteria. The team members will then familiarize themselves with the project.

Orientation with Design Consultant – This orientation will be included as part of the first workshop session. The Design Consultant will present their design rationale to the VE Team.

Value Engineering Workshop – The VE Workshop will be divided into the following five phases:

1. The Information Phase – The VE Team will become familiar with all detailed data pertinent to the design.
2. The Creative Phase – During this phase, the team will create an extensive list of alternatives (i.e., materials, systems, etc.). There will be no evaluation of alternatives in this phase in order to encourage the free flow of ideas.

3. The Analytical Phase – At this time, the VE Team considers the feasibility of the various alternatives developed during the Creative Phase. Each alternative will be evaluated positively rather than critically with the best ideas selected for further development.
4. The Investigation Phase – The most feasible design alternatives selected in the Analytical Phase are evaluated. Factors such as cost, performance, reliability, aesthetics, and constructability will be evaluated.
5. The Recommendation Phase – The VE Team will draft recommendations for review with the MBTA and Design Consultant. Following the review of the preliminary report, the recommendations will be finalized in the post-workshop stage, incorporating both MBTA and Design Consultant comments.

Following the workshop, the Coordinator will prepare a preliminary report summarizing the results of the team investigations for review by the designers and the MBTA. The Coordinator will also make an oral presentation to the MBTA and Design Consultant. The Coordinator will also be available to further review potential results.

The PDG will provide concurrence or suggest rejection for each VE Team recommendation. The MBTA Program Manager, however, will be responsible for making all final decisions.

After the MBTA has made final selections, the Coordinator will prepare a final report, including a project description, all VE worksheets, the listing of potential savings, and a description of the costs. The report will also discuss the cost of re-design, environmental impact studies, and any other required items resulting from the selected changes. The recommendations made in the report, with the concurrence of the MBTA, will be forwarded to the Design Consultant. The Design Consultant will implement the report recommendations in the 60% Submission.

9.6 Constructability Reviews

The Project will follow the procedures outlined in the MBTA Project Controls Policy Manual.

Constructability Reviews will be performed at the 60% submission. The constructability review performed at the 60% design submission is important since it provides the last chance for incorporating design modifications and revisions without significant impact on the design schedule and budget.

The constructability review will include a thorough review for design errors and omissions, potential constructability issues, use of design standards, and intersystem compatibility. Items of particular concern are schedule and project interfaces, drawing interfaces, construction package interfaces, general and special conditions, milestones, long lead procurement items, liquidated damages and penalties, and risk assignment. Contract documents are also examined to verify the contract language is consistent across the various contracts within the project.

The constructability reviews will be performed by members of both the MBTA and independent construction specialists of the Design Consultant that have not participated specifically in the design. Each constructability review will be formally documented with all comments, recommendations, alternatives proposals, etc. incorporated together with the proposed response by the Design Consultant.

9.7 Operations and Management (O&M)

During the course of design, all specific elements are reviewed for conformance to the Manual of Design Criteria established for the [insert project name] Project. Additionally, special meeting and/or reviews are held with the appropriate MBTA Operations or Maintenance Department to review the design and incorporate any comments pertaining to operations management or maintenance. Comments are recorded, dispositioned and tracked to ensure incorporation into the design as it progresses.

9.8 Change Control

The Project will follow the procedures outlined in the MBTA Project Controls Policy Manual.

9.9 Systems Integration

System integration is the bringing together of the component subsystems into one system and ensuring that the subsystems function together as a system. During design, the Design Consultant will develop and maintain a Systems Integration Matrix that will list all critical project components, subsystems and interfaces, and responsibilities by discipline for ensuring that in fact those specific interfaces are considered and addressed in the design.

During design of project elements, review will be made by the MBTA and PDG to ensure compatibility with existing systems. As construction and installation of systems is nearing completion, tests and other checks will be made by contractors to ensure complete system integration.

9.10 Reliability, Availability, Dependability and Safety

[Insert requirements]

10. Right-of-Way Acquisition

10.1 Overview

The Project will follow the procedures outlined in the MBTA Project Manager's Manual.

Many MBTA projects require acquisition of property on a temporary and/or permanent basis. Property acquisition costs sometimes represent a large percentage of the Project budget. Accounting for property acquisition needs and costs early in a Project's design helps avoid costly design modifications and change orders. This procedure describes how the MBTA manages Real Estate Acquisition and explains how this process is integrated into the development of the Project schedule and budget.

Some projects require acquisitions (fees, permanent easements, temporary easements, licenses, etc.). An early and accurate understanding of property acquisition and easement needs and costs allow the Project Manager to develop the most favorable land acquisition plan and an accurate Project budget and schedule by the 30% design milestone. The Project Manager works with the Acquisition staff to acquire a comprehensive understanding

of the Project's property acquisition needs and costs prior to submission of the Authorized Budget and Schedule. The appraised property value serves as a basis for negotiation with the landowner, and is also the value that is used if it is necessary to acquire property by eminent domain.

It is intended that all acquisitions and/or temporary/permanent easement agreements be completed prior to the advertisement of a construction contract.

10.2 Conceptual to 30% Design Property Acquisition Cost Estimates

Upon assignment to the project, the Project Manager recommends a Conceptual Budget and Schedule. This recommendation must include an estimate of property acquisition and appraisal costs. In order to ascertain these costs, the Project Manager meets with the Acquisition staff to review anticipated property acquisition needs. The two explore issues such as partial takings versus full takings, and permanent acquisition versus temporary license. Following the meeting, the Project Manager requests that the Acquisition staff provide a summary of the preliminary estimate of property acquisition costs based upon the property acquisition plans to date. These costs may be determined through the utilization of an independent appraiser and/or review of prior appraisal reports completed in the Project area. Also a review of city or town assessor's records may help to determine the preliminary acquisition budget for the Project.

At the Preliminary Engineering completion milestone, the Project Manager and the Design Consultant will have finalized all property acquisition needs. The Project Manager also convenes at least one meeting prior to this milestone with the Acquisition staff and Design Consultant (and Real Estate Consultant, as necessary) to review the acquisition plans and explore less costly alternatives to those proposed.

The Project Manager then transfers the 30% design plans and an explanation of all property requirements to the Acquisition staff. A Right-of-Way Agent is assigned to solicit an independent appraiser to perform the appraisal assignment. Before receiving the appraisers report, Acquisition staff meets with the appraiser to verify the assumptions and methodology to see if it meets the requirements of the solicitation. After receiving the appraisal from the Certified Appraiser, the Acquisition staff review it and clarify the assumptions and methodology. Following the review, the Right-of-Way Agent assigns a Review Appraiser to conduct a formal peer review of the assumptions and methodology underlying the first appraisal and conduct a review of the first appraisal. The final recommendation of the review appraiser (Final Appraised Value) is incorporated into the Authorized Budget and Schedule and serves as the basis for negotiations with the landowner.

10.3 Negotiation of Final Appraised Value with Landowner

Acquisition staff forwards a formal offer to the property owner based upon the final appraised value or fair market value and negotiations commence. If preliminary agreement is reached, but the dollar amount established exceeds the Final Appraised Value, the Project Manager follows the budget modification approval procedure defined in the Authorization of Budget and Schedule procedure. Final agreement on price cannot be reached until these approval processes have been completed and the appropriate authorities of the MBTA approve the negotiated settlement.

10.4 License Agreements

Rather than permanently acquiring a property right, the MBTA may enter into a License Agreement with the landowner whereby the MBTA is granted temporary use of property. The Project Manager and Acquisition staff determines if the Project requires a License Agreement prior to the 30% milestone. Any funds required for a License Agreement must be incorporated into the Authorized Budget and Schedule and, if required, the approval processes set forth in the Authorization of Budget and Schedule procedures are observed.

10.5 Eminent Domain

If the MBTA and the landowner are unable to agree upon a price for the property in question, the MBTA acquires the property via the eminent domain process. All Orders of Taking require Board approval. Any acquisitions will be identified during Preliminary Engineering and will be subject to the following process:

- Acquisition staff prepares a Board agenda item on the taking.
- If the Board approves the Order of Taking, it must be recorded at the appropriate Registry of Deeds within 30 days of the Board vote, pursuant to Chapter 79 of the Massachusetts General Laws.
- If there are any tenants on the property being acquired, Chapter 79A of the Massachusetts General Laws applies and each tenant must be given four (4) months notice to vacate after the recording of the Order of Taking. In addition, each tenant is entitled to relocation assistance in accordance with state and federal regulations.
- Acquisition staff maintains all acquisition files for a period of at least three (3) years from the sale of acquisition. If an action is filed regarding an Order of Taking, Acquisition staff work with the General Counsel's office.

11. Community Outreach Plan

Community outreach and public participation is a crucial element to the [insert project name] Project. Its importance is so vital that the MBTA has assigned the Assistant General Manager for Community Outreach as the liaison to government officials, stakeholders, the media, and the general public. A detailed Public Participation and Community Outreach Program has been developed for preliminary engineering and design, which outlines the interfaces set up with stakeholders elected officials and government agencies. Basic information on meetings and media interface is also included.

11.1 Community Outreach Program Objectives

The objectives of the community relations and public participation program are to encourage an exchange of ideas and information on issues related to the project, including design consensus, identify and resolve public issues and concerns as they arise, and generate interest in and support for the [insert project name] Project. The MBTA and its consultants will be responsible for the overall public affairs program that will be in effect for the project's life-cycle.

The Community Relations and Public Participation Outreach Program is intended to work alongside the technical and design work efforts and conform to MBTA policies. It requires a careful mix of informational activities designed to inform stakeholders about the progress of

the project, and receive feedback from stakeholders that will improve the design and mitigate impacts.

11.2 Community Outreach Program

During each phase, outreach activities will be scheduled and structured to reflect the project's demographic and commercial diversity; and to facilitate open communications, problem resolution, and consensus building.

The community relations and public participation plan is designed to address the concerns of:

- [insert City/Town]
- Community-based organizations, neighborhood advocacy groups, and civic groups;
- Elected officials, and government agencies

In addition, the program provides a forum for affected communities and other stakeholders, allowing the Project Team to identify and address new or unanticipated local priorities and issues.

The Public Outreach Plan will consist of the following:

- Targeted stakeholder meeting
- General information meetings for all stakeholders
- Printed materials, including fact sheets, brochures, and newsletters;
- Presentations, possibly including three dimensional models so that stakeholders may better visualize outcome

11.3 Interfaces with Elected Officials and Government Agencies

The team will make certain that every agency involved in, or affected by, the project receives all necessary information in a timely, accurate manner.

Contact with elected officials and federal, state, and local agencies will be coordinated through the MBTA and its consultants.

11.4 Media Interface

MBTA Public Affairs will handle all media requests. The MBTA Project Manager will work with the MBTA Press Office to provide information, materials, and any other support required to assist with media briefings, announcements, and press releases.

12. Construction Program

The Project will follow the procedures outlined in the MBTA Resident Engineer's Manual.

12.1 General Approach and Responsibilities

The [insert project name] Project organization will provide an integrated team of design and construction professionals and it will emphasize safety, quality and on-time, within-budget

Project completion. Construction oversight services will be a key element of the organization. The construction oversight staff will be active throughout the preliminary design, proposal and award; final design, construction and post-construction phases of the Project.

12.2 Pre-Award Activities

The involvement of the MBTA Design and Construction Managers during the pre-award stage of the Project is crucial to ensure that constructability issues are addressed in the preliminary design phase and in developing the methods and procedures to monitor the construction.

During the preliminary design phase, the MBTA Design and Construction Managers and their staff will be responsible for reviewing preliminary design documents for constructability and interface issues, special construction conditions and compatibility with contractual language and schedule requirements.

During the proposal phase, the MBTA Design and Construction Managers and staff will be available to attend meetings, answer questions, tour work sites with prospective contractors, review proposal cost estimates and schedules and assist in the development and issuance of addenda related to construction as required by the MBTA Project Manager.

12.3 Prequalification of Contractors and Vendors

All Contractors and Vendors shall be prequalified according to the requirements set forth in the MBTA's Procedures Governing Classification and Rating of Prospective bidders.

12.4 Coordination of Construction

12.4.1 Project Schedule

A CPM Project schedule with critical milestones will be developed and made part of the bid documents. The CPM schedule is a cost-resource loaded schedule and will be used to determine the progress on the work activities which will be the basis for partial monthly payments to the Contractor. Upon contract award, the Contractor will be requested within two weeks of notice of award, to sign off on the bid schedule or to submit requests for modifications to the Project schedule. Upon review and acceptance, at the sole discretion of the MBTA, of the Contractor requested modifications, a revised construction schedule will be issued and monitored. The revised construction schedule will be issued within weeks from notice of award. The CPM Project schedule will be structured and updated on a bi-monthly basis by the Contractor and submitted to the MBTA.

12.4.2 Daily On-Site Meetings

The MBTA RE will hold daily meetings, as necessary, with the Contractor's field staff to discuss and coordinate operations scheduled for that day.

12.4.3 Bi-Weekly Meetings

The MBTA Project Manager and RE will conduct bi-weekly progress meetings with the Contractor's management and appropriate stakeholders and the design team to coordinate, discuss, and resolve various Project issues such as:

- Co-ordinate Monthly Activity,

- Construction Progress and Schedule Revisions,
- Material Procurement,
- Design Issues,
- Shop Drawing Submissions, and
- Safety.

12.4.4 Establish Point of Contact

The Contractor will assign a staff person for all contract administration issues. Meetings will be scheduled as required.

12.5 Change Management

The Project will follow procedures of the MBTA Change Order Guidelines.

At award, the design criteria, technical provisions, contract drawings, key schedule milestones and the contractor's cost proposal; constitute the contractual baseline from which changes will be measured. Thereafter, any deviations from the contract baseline must be carefully documented in order to effectively manage contract changes. During construction, the MBTA's Resident Engineer (RE) will monitor changes by maintaining an accurate and current record of the status of all change requests issued by the contractor and subsequently-approved change notices. A summary report on the status of changes will be compiled by the RE each month.

The RE will have the responsibility for reviewing Contractor change requests and making recommendations. All change requests shall be reviewed by the Design Consultant. The MBTA Project Manager will have the authority to approve changes via extra work orders or change orders.

12.6 Verification, Testing and Acceptance

The MBTA will monitor and review the performance of the Contractor's approved quality program and will verify the design process and observe inspection and testing activities associated with construction and manufacturing. The MBTA RE will have the authority to perform its own inspection and testing of work to ensure that the work is in accordance with the contract requirements. Noncompliance with contract requirements will be documented utilizing the non-conformance reporting procedure.

After substantial completion of the contract, the contractor will formally request an inspection of the work and a Project "punch list" will be prepared jointly by the contractor and the RE. The RE will make a determination of final completion of the contract after all punch-list items are resolved, and upon determining that:

- All final permits, approvals, licenses, certificates, affidavits and authorizations for use and occupancy have been obtained,
- All record documentation, including as-built drawings have been submitted,
- All operating and maintenance manuals have been issued, and
- Proof that any claims or liens arising out of the work have been resolved or released.

Having confirmed that those conditions and all other contractual obligations have been met, the MBTA RE will issue a Certificate of Final Completion to the MBTA Project Manager, who will have the authority to approve final payment.

12.7 Warranties/Equipment Guarantees

The contract documents contain provisions requiring that the contractors warrant all work for a period of *one year*. For those items placed into service prior to the end of construction, the warranty period will continue for one year after the completion of construction. In addition to the items listed in Subsection 12.4 above, the contractor will warrant that:

- All work will be carried out according to the approved final design, using materials, equipment, goods and employing workmanship that are of the quality required in the contract documents, and
- All work will comply with all applicable laws, regulations, and industry standards.

The Project Manager will ensure that the Contractors' warranty and guarantee obligations are met. Should the Project Manager discover or determine that a warranty or guarantee issue exists, the Project Manager will notify the Contractor and the Contractor will have no more than ten days to propose a method for correcting the problem. The Project Manager will evaluate the Contractor's proposal and if approved will make a recommendation for its implementation to the Contracting Officer. The Contractor will then be required to perform the corrective work using the most expedient means in order to minimize operational disruption

13. Safety/Security

13.1 General Approach

The primary objective of the [insert project name] Project Safety Program is the well-being, comfort, and security of patrons, travelers, employees and the general public. This program emphasizes the early detection and elimination or mitigation of hazards and concerns during the entire lifecycle of the project, including final design, construction, testing, startup, and operations stages. This safety program will enhance and secure the Project site as well as all interfaces with the surrounding community.

The program provides for an accident and drug-free workplace; employee safety training; the use of prescribed safety equipment on the job site; construction accident reporting and corrective actions; procurement of reliable equipment; safety programs for subcontractors; safety certification checklists; accident investigations during start-up and operations; preventive and corrective maintenance procedures; surveillance of all locations by MBTA Police; supervised evacuation of patrons as required; and the coordination of emergency response from police, ambulance and fire departments.

13.2 Design Safety and Security

The Project Manager and design and construction Contractors will be jointly responsible for developing, implementing and maintaining a series of programs which control and preserve safety and security during the final design stages. These programs will continue into the construction and operating phases. The specific programs are:

- Fire/Life Safety and Safety Design Reviews;

- Systems Safety - Hazard Analysis;
- Systems Assurance - Reliability Availability and Maintainability; and
- Safety Certification.

The physical design of the [insert project name] will be checked and modified to ensure protection from the effects of fire and smoke; ease of vehicular and pedestrian approach and egress; elimination of vehicular and pedestrian blind spots, dead ends, or dangerous intersections; adequate lighting; security surveillance by camera and security personnel; backup power supplies; and compliance with the Americans with Disabilities Act.

The design and construction Contractors will be responsible for submitting Systems Safety Programs which are comprised of various hazard analyses including preliminary, fault and interface studies. Any system wide hazard or those that could result in serious injury will be compiled into a Catastrophic/Critical Items List. These identified safety and security hazards will be eliminated or minimized by design measures or through the use of safety devices or procedures. System Safety Programs will also include a Hazard Reporting System and the submission of Test Plans which will verify the effectiveness of the design with respect to safety and security during the startup phases of the Project.

The [insert project name] Project's facilities will be designed using only proven methods and equipment. The design will emphasize the use of interchangeable modular components and the use of redundant, fail-safe systems whenever possible.

A Safety Certification Program managed jointly by the Project Manager and the design and construction Contractors will assure that all safety related requirements have been correctly translated into design criteria, specifications, drawings, calculations and sub-tier submittals, and eventually the installed condition. Safety-related requirements are extracted from design criteria and specifications. These requirements are compiled into checklists for each contract. Every checklist item such as a test report or certificate of conformance must be satisfactorily completed before operations commence.

The [insert project name] Project's construction site shall comply with all requirements of the Federal Occupational Safety and Health Act of 1970, the MBTA's safety regulations and all local laws, ordinances and regulations. To verify compliance with federal and local requirements, the construction Contractors will submit Construction Site Safety Programs.

These programs specify that Contractors assign Safety and Security managers; define interfaces and responsibilities of key personnel; and possess written procedures which control the work site operations. Further program requirements include the formation of an Emergency Response Team; safety and security drills; participation in the Fire/Life Safety Committee; classroom training and certification of staff in safety and security matters; hazard identification and elimination at construction sites; accident reporting systems; substance abuse program; sub-tier safety programs; and periodic audits by the local fire department.

Safety and security equipment employed at the sites includes entry barriers, perimeter fencing, alarms, exterior lighting, identification badges, warning signs, helmets, footwear, eye goggles, ear protection, safety harnesses, lifelines, gloves, knee pads, belts, respirators, fluorescent garments and foul weather gear.

The Project will comply voluntarily with all municipal requirements for a site safety project. The Project Manager will retain the services of a Site Safety Manager to oversee the Contractor's compliance with the Contractor's safety programs.

13.3 Protection of MBTA Operations during Construction

In general, all of the subways/railroads will be in continuous operation throughout the performance of the construction work. The railroads affected by the project include MBTA [insert name of lines affected]. The safety and continuity of the railroads' operation will be of primary importance.

Where the project includes work across, over, under, or adjacent to active railroad tracks or railroad right-of-way, the contractor will safeguard the traffic, tracks, and appurtenances, and other railroad property affected by its work. Construction will be scheduled and executed in a manner that will enable each of the railroads to maintain its full level of scheduled service to the fullest extent possible.

The contractors will be required to submit for approval, plans, computations, a detailed description of the construction procedures, and a schedule for accomplishing the work, including methods of protecting railroad traffic.

Contractors' employees working on the project will be required to attend a railroad and/or MBTA safety training class. All personnel will comply with the rules and regulations and safety requirements of the respective railroads throughout the project.

During the construction phase, the construction contractors will develop, maintain, and implement a plan of operations for maintaining and protecting all passenger and pedestrian operations, concessions, services, and flows. This plan will include working drawings showing the placement of barricades and barriers as well as a detailed narrative describing how the plan is to be implemented and how passengers and pedestrians will receive advisories regarding routings and detours. This plan will also include information on the location and installation of temporary directional signs. The plan will be coordinated with all system and utility work plans. TV monitors, public address speakers, signs, and public telephones will be placed in specific, affected areas.

14. Interagency Coordination

Effective coordination between participating agencies will be an important on-going activity on the project. This section addresses the coordination process through the discussion of the following key areas:

- Interagency Agreements with Utility Providers
- Tracking Interagency Inputs
- Agreements with City and State Agencies
- Protection of the MBTA Operations During Construction
- Impact Mitigation
- Easement Agreement

14.1 MBTA Interagency Agreements with Utility Providers

MBTA will enter into Cooperative and Force Account agreements with other agencies and utility providers for the project. These agreements will provide the legal framework for the project and the owners of the affected areas to identify, plan, design, rearrange, and construct facilities in the most cost-effective manner. The agreements will also provide the basis for identifying the scope of work; developing cost estimates; issuing work orders; and

authorizing costs and betterment credits, if applicable, and method of payment. They will also define the parties responsible for executing the documented tasks associated with the agreements and the funding source.

During the Preliminary Engineering design phase, the Design Team will coordinate with utility providers to develop preliminary plans for the rearrangement of the affected utilities and integrate these proposals with project plans. Utility and agency representatives will be included in kick-off discussions for each construction contract and develop schedules for rearrangement of impacted facilities.

During the Final Design phase, the Team will coordinate with utility providers to develop detailed plans for facility rearrangements and integrate these plans into the construction contract documents. Utility and agency representatives will be included in kick-off discussions for each construction contract and develop schedules for rearrangement of the impacted facilities.

The Design Team will coordinate the utility design with the [insert project name] Project design team during the Project.

The major utility providers include:

- [list utility]
- [list utility]
- [list utility]
- [list utility]

14.2 Tracking Interagency Inputs

The Team will develop a master list of all involved agencies that require deliverables whether it is for the approval of designs or the development and approval of the permits necessary to maintain the project's progress. A list of contacts within the various relevant agencies or within the departments of the same agency will be developed. This will ensure that a comprehensive list of existing and planned future contacts is produced. Based upon review of the list, an initial contact will be established via letter and meetings, as appropriate, for each phase of the project. Based upon the initial contacts, required signoffs; deliverables; and approvals for each department or agency will be identified and coordinated with a master project schedule.

14.3 Agreements with City and State Agencies and Authorities

The project will establish procedures for [City/Town] (City) services and the relocation of City facilities impacted by construction. The procedures will secure the city's assistance to the project in the areas of public works engineering, hazardous waste control, traffic engineering, and fire safety. Police services will be provided by the MBTA Transit Police. The following are the major City agencies:

- Department of Public Works;
- Police Department (Coordination with the [City/Town] Police will be through the MBTA Transit Police);
- Fire Department; and

- Office of Strategic Planning and Community Development.

CONSTRUCTION PHASE SERVICES**A. Office Engineering**

1. Assist the Authority in securing bids, tabulation and analysis of bid results, and furnish recommendations on the award of the construction contract.
 - a. Once the bid process is completed, and the construction contract has been awarded, the Engineer shall provide a complete conformed set of drawings and specifications, which updates all design changes made during the bid phase period, to the MBTA Project Manager and the MBTA Manager of Document Control.
 - b. The Engineer must certify that any changes/addenda made during the bid phase period that result in cost implications are recorded and updated within the Estimated Construction Cost by the Engineer's Professional Cost Estimator. This update shall be at no cost to the Authority, unless the changes/ addenda are made as a direct result of the Authority's request.
2. Consult with and advise the MBTA on specific problems as they arise during construction.
3. Prepare elementary and supplementary sketches required to resolve problems due to actual field conditions encountered.
4. Review detailed construction drawings, shop and erection drawings and material submittals by the Contractors, for compliance with the approved design, drawings and specifications, and all applicable laws, statutes, ordinances, codes, orders, rules and regulations; and when completed, will be in compliance with the requirements of the contract documents as follows:
 - a. When a submittal complies with construction contract documents, the Engineer shall approve it.
 - b. When a submittal clearly does not comply with construction contract documents, the Engineer shall either:
 - i. Disapprove it, or
 - ii. Disapprove it along with recommendations for resubmission.
 - c. When the submittal has only minor deviations from the construction contract documents, the Engineer shall note the deviations and omissions as may be appropriate and approve the submittal subject to notations.

5. Review Construction Project schedules submitted by contractor

- a. Baseline Schedule Review – (*Initial Construction Schedule Review*) In accordance with the MBTA Project Controls Manual, define and identify layouts and reports for routine reviews of contractor schedule submittals. Independently assess the project scope to establish compliance of “preliminary” As-Planned Construction Schedule. Compare Schedule and Scope against Contract Times. Review schedule for contract required sequencing, phasing and time allowances for submittal reviews and other owner responsibilities. Review schedule logic for completeness, feasibility and proper predecessor and successor relationships to submittals, procurement, permitting and ties to proper access restraints, milestones and interfaces. Ensure that all interfaces are practical and confirmed by appropriate agencies, parties and subcontractors. Review Contract accesses and milestones to ensure proper constraints are reflected. Identify preferential logic that could be removed if necessary. Review durations for reasonableness and identify if greater than 30 days. Review cost/resource loadings for reasonableness. Review schedule for reasonableness of critical path, float management and float utilization. Confirm submittals meet contract technical requirements. Confirm that reasonable allowances are included for uncertain events such a repeat submittals and normal weather effects on weather sensitive work. Confirm that schedule allows for actual project conditions. Prepare schedule review report along with recommendation.
- b. Update Schedule Review – (*Regular Monthly Schedule Updates*) In accordance with the MBTA’s Project Controls Manual, validate progress with MBTA team Project Manager and confirm compliance to contract times. Identify changes between updates and compare to the baseline. Identify/review critical path logic changes and out-of-sequence progress. Determine that change orders have been incorporated and delay issues are fair and reasonable. Summarize and review the critical and near critical paths. Prepare progress analysis and trend charts (manpower/cost). Consider overall implication of the information in the schedule submittal. Assist MBTA in preparing written responses to the Contractor and attend monthly progress meeting. Minor schedule changes and minimal time impacts will be reviewed as part of the typical update process.
- c. Time Impact Analysis Review - (TIA) In accordance with the MBTA’s Project Controls Manual, review substantial schedule impacts, delays or changes to the Contract submitted by contractor. Provide detailed analysis to determine time entitlement. Review contractors schedule fragnet, associated resources, cost loading and supporting documentation. Recommend approval or disapproval of TIA.

6. Review and comment on reasonableness of contractor's submitted Schedule of Values (Lump Sum Breakdown) that was derived from the project construction cost and resource loaded schedule.

B. Field Engineering

1. Make periodic visits to the project site to observe the progress at intervals appropriate to the various stages of construction and the quality of the executed work in order to determine if the work is proceeding in accordance with all requirements of the contract documents and all applicable laws, statutes, ordinances, codes, orders, rules and regulations. The Engineer shall promptly submit to the Authority a detailed written report subsequent to each on-site project visit.
2. Attend the regular project progress meetings.
3. At the request of the Authority, issue necessary interpretations and clarifications of contract documents, require special inspections and testing of the work, and make recommendations as to the acceptability of the work.
4. During the course of construction, Request for Information (RFI) Forms, as specified in Section 01300 of the Construction Contract Specifications will be submitted by the General Contractor requesting clarification of the design. The Engineer will respond to each RFI within 14 calendar days unless an extension to the response date is mutually agreed to between the Engineer and the MBTA Project Manager. In addition, the Engineer will maintain a database/list of each submitted RFI, and be able to document the status of each.
5. Review changes in plans and specifications and submit an attesting design approval letter to the Authority within 14 days of receipt of the change. The Consultant's Design Approval Letter shall include: A statement indicating that they have reviewed the proposed changes to plans and specifications, and confirmation that the change is consistent with respect to the intent of the design. The letter should also address any anticipated impact to schedule and confirmation that the work is necessary and not already part of the Contract. An attesting letter is required for each change. The attesting letter should not address the price of the change or the reasonableness of any Contractor provided pricing.
6. Design Consultant's Independent Cost Estimate (ICE) Responsibilities: At the request of the Authority, the Design Consultant will prepare an Independent Cost Estimate (ICE) for changes to the plans and specifications. The ICE should be completed and returned to the Authority within 7 days of the Authorities request. The ICE is to be prepared prior to receipt of the Contractor's Proposal (when possibly)

and shall be provided in the same detail as required in the MBTA's published Change Order Guidelines (Recapitulation Sheet and Labor, Equipment and Material Sheet and profit calculation only). (Note: The ICE is not an analysis of the Contractor's proposal. It is an independent estimate done prior to viewing the Contractor's proposal.)

- a. Independent Cost Estimate (ICE) - The ICE is to be provided to the Resident Engineer and the Project Manager in electronic excel format, in enough detail to be useful as a cost analysis and negotiating tool, and linked so that adjustments to Rates, Labor, Equipment or Material details will result in a corresponding price modification on the Recapitulation section of the spread sheet. Labor, fringe and other variable rates must be applicable to the Contractor and Trade Union doing the job and the time frame when the work will be done. The Consultant will use an Excel Spread sheet format that is available at MBTA, Contract Administration.
 7. Observe initial operation of the project, or performance tests required by the specifications as appropriate to determine if the work is in accordance with all requirements of the contract documents and all applicable laws, statutes, ordinances, codes, orders, rules and regulations, and approved Structural & Inspection Plan as required by the State Building Code.
 8. Participate in semi-final and final inspections and report on the completion of the project, including recommendations concerning final acceptance and assist in resolving project punch list items
 9. The Engineer shall prepare required documentation to obtain a State Certificate of Occupancy from the Department of Public Safety (DPS) State Inspector including the Final Construction Control Document at contract completion. The Engineer also needs to assist the MBTA Project Manager in obtaining other project closeout documents including Elevator Certificates and Fire Alarm Certificates required for obtaining a State Certificate of Occupancy for the project.
- The Engineer shall assist the MBTA Project Manager in obtaining a System Security Certification from MBTA Safety, and complete a review of as-built plans required to obtain a Closeout Notice from Design & Construction.
10. The Engineer shall be the primary reviewer of the contractor submitted As Built drawings.



Deval L. Patrick, Governor
Frank DePaola, Acting Secretary & CEO
Beverly A. Scott, Ph.D., General Manager
and Rail & Transit Administrator



Design Directive

To: Distribution

From: Erik Stoothoff 
Chief Engineer

Date: January 6, 2015

RE: Design of Permanent Construction

All permanent construction must be designed by the MBTA's Design Consultant. This includes all elements from signals to precast to handrails and installation details to ensure MBTA standards are met. In the case of design-build, design is to be performed by the designer-of-record, and all required documentation such as calculations must be provided. Deferring designer-of-record responsibility to the Contractor will not be permitted except as allowed by this Design Directive.

Project managers are required to verify that the design of all permanent construction and affected elements is included in the designer's contract, and that it is provided at successive phases of design.

When a designer advises that an element would be best designed by a contractor or fabricator, an assessment of the proposal must be made, and the Project Manager shall prepare the attached waiver request for signature by the Assistant General Manager or Chief Engineer. The waiver request should be made at the earliest stage of design possible. All waivers must be submitted in advance of the circulation of Pre-Bid Review Control Sheets.

In the event a project must include a proprietary, sole source element, the project manager shall submit both a sole source and a permanent construction waiver request for approval.



Permanent Construction Design Waiver

Contract #: _____

Description: _____

Project Manager: _____

Date: _____

The policy of the MBTA Design and Construction Department is that all permanent construction must be designed by the MBTA's design consultant, and not by the contractor. The project is requesting a waiver to allow for the above item to be designed by the Contractor. The reason for the waiver request as well as specified controls that will ensure proper design, and a description of related/affected elements, are described below:

Signature: _____ Date: _____

Approved ☐

Denied ☐

Director of Design and Architecture

Date: _____

Chief Engineer

Date: _____



Massachusetts Bay Transportation Authority

Deval L. Patrick
Governor

Timothy P. Murray
Lt. Governor

Bernard Cohen
Secretary and MBTA Chairman

Daniel A. Grabauskas
General Manager

DIRECTIVE

TO: Distribution

FROM: Charles L. O'Reilly
Assistant General Manager
for Design and Construction

DATE: August 8, 2007

RE: Adhesive Anchors

As previously communicated at the Design and Construction staff meeting held early in July, the use of adhesive anchors in overhead vertical applications (ceiling and/or roof attachments) and in horizontal applications (sidewall attachments) are prohibited from use.

Project Managers are required to verify that adhesive anchors, in the above referenced identified applications, have not been used and will not be used in the future.

Where adhesive anchors are present, an assessment to determine if an immediate threat (due to creep potential) exists, and when required, reinforce or replace the anchors with an alternate anchorage system.

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Massachusetts Bay Transportation Authority, Ten Park Plaza, Boston, MA 02116-3974

Pre-Bid Review Control Sheet (PRCS)

DOCUMENT CHECK LIST

- ☐ Budget Concurrence Memo
- ☐ DBE Goal (if applicable)
- ☐ Contract Time Determination (CTD) Schedule
- ☐ Specialties Memo
- ☐ Allowance Approval
- ☐ Engineer's Estimate (hard copy and electronic version)
- ☐ Signed Force Account and/or PI Agreements
- ☐ Copy of Section 01590-Field Office and Sheds
- ☐ Dummy Staff Summary or Exhibit 3-4 as applicable
- ☐ Slide Deck -PowerPoint(if applicable)
- ☐ Wayfinding approval (if applicable)
- ☐ Real Estate concurrence
- ☐ Bid Escrow
- ☐ Liquidated Damages calculations
- ☐ Value Engineering report or waiver
- ☐ Risk Analysis or waiver
- ☐ Constructability Review or waiver
- ☐ Risk Manager concurrence
- ☐ Building Permits
- ☐ Paint systems approval
- ☐ Table of Contents
- ☐ ADA conformance (if applicable)
- ☐ Systemwide Accessibility approval of 100% review
- ☐ Consultant Environmental Permitting Status Letter
- ☐ Environmental Checklist

**Prebid Review Control Sheet
(PRCS)**

To be completed, signed and submitted to Contract Documents Coordinator with review copy of Specifications and Final Estimate. Review copy is to be bound in such a manner to facilitate removal and/or insertion of pages. Insert **N/A** (not applicable) where appropriate in items below.

1. MBTA Contract No.: _____

Contract Specifications Title: _____

Scope of Work _____

2. a. FTA Project No.: _____ Grant No. _____ Other _____

b. FTA Project Title: _____

3. Designer's Name: _____

Address: _____

Individual to Contact: _____

Professional Service Contract No. _____

Phone No. _____ Email _____

4. Designee of the General Manager: _____

AGM of Capital Delivery

Project Manager: _____

Phone No. _____ Email _____

BUDGET

5. Estimated Construction Cost _____ *

If any of the information in question 5 is cannot be provided, the Project Manager must provide a waiver from the AGM for Capital Delivery.

Design	_____
Construction	_____
Real Estate	_____
Force Account	_____
Project Administration/Inspection	_____
Total Project Budget Cost	\$ 0.00

- a. Funds Available _____ (Attach concurrence memo from Director of Budget)

* If the Construction Estimate is **\$1,000,000 or over**, the Bidding Documents (Bid Form) must include prequalification paragraphs, project value, and Class of Work. Class of Work recommended must be approved by Contract Administration.

6. a. Source of Funds: (Insert CMS Work Order No.) _____

FTA ☐ BOND ☐ MASSDOT ☐ OTHER _____

- b. Source of Funds for **Printing and Advertisement of NTB: (different from source of funds work order No.)**

Area No. _____ Account No. _____

Center No. _____ **Active** Work Order No. _____

CONTRACT ADMINISTRATION

7. **Method of Procurement (See Decision Matrix attached)**

Design Bid Build ☐ Sole Source ☐
 Micro Purchase ☐ Small Purchase ☐ Other _____

8. Desired **advertising period** (minimum - 30 days) _____

- a. If less than 30-days are desired, the Project Manager must notify Organizational Diversity. Copy of notification must be submitted to Contract Administration.

- b. Proposed Construction Starting Date: _____ Completion Date: _____

Include Contract Time Determination Schedule

YES	N/A	NO
☐	☐	☐

9. Ensure that the contract documents do not contain **restrictive provisions** pertaining to the experience and responsibility of the bidders.



Method of Procurement Decision Matrix

Determine suitable procurement method by checking appropriate boxes. All elements must apply to use that method. The planned type of contract can be added to this checklist.

Micro Purchase

- ☐ Amount <\$3,000
- ☐ Multiple Sources

Small Purchase Amount <\$150,000 (<\$100,00 if executed prior to Super Circular)

- ☐ Complete and Adequate Specification or Description
- ☐ Two or More Quotes Available

Sole Source

- ☐ Approved by FTA
- ☐ OEM, Custom Item OR
- ☐ Only One Source OR
- ☐ Competition Inadequate after Solicitation OR
- ☐ Emergency / Public Exigency

Competitive Procurement

- ☐ Amount >\$3,000
- ☐ Multiple Sources
- ☐ Not an Emergency

Sealed Bid (IFB) Amount >\$150,000

(>\$100,000 if executed prior to Super Circular)

- ☐ Complete and Adequate Specification or Description
- ☐ Two or More Responsible Bidders willing to Compete
- ☐ Selection can be Made on Basis of Price Alone
- ☐ Firm Fixed Price Contract is used
- ☐ No Discussion with Bidders Required After Receipt of Bids

Competitive Proposals (RFP) >\$150,000

(>\$100,000 if executed prior to Super Circular)

- ☐ Complete Specifications Not Feasible
- ☐ Proposer input Needed
- ☐ Two or More Responsible Proposers willing to Compete
- ☐ Discussion Needed with Proposers After Proposals Received
- ☐ Fixed Price can be Set After Discussions OR a Cost Reimbursement Contract is Determined

Prepared By: _____

Date: _____

10. If station contract is in **excess of \$10 million** have alternative contracting methods been considered? ☐ ☐ ☐
11. Does each product listed in technical specifications provide for a minimum of **three equal named brands** or a description of material that can be met by a minimum of three manufacturers or producers? (see General Conditions, 00700 Articles 4.01) ☐ ☐ ☐
- a. If not, the Project must justify, in writing, and obtain the **AGM of Capital Delivery's approval**.

FEDERAL TRANSIT ADMINISTRATION

12. If this project is **FTA Funded**, has the project office verified that all applicable federal provisions are incorporated into the contract documents. (Specification Sections 00800F-Supplementary Conditions provided by Contract Administration) ☐ ☐ ☐
13. Has latest provisions of Standard Federal EEO Specifications with **Appendices Nos. 1, 2 and 3** been incorporated in Supplementary Conditions? ☐ ☐ ☐
14. Project Managers must furnish data to the Office of Organizational Diversity for establishment of DBE goal. **MMU-15.3%, FMU-6.9%** and **DBE, MUST be available prior to advertising**. ☐ ☐ ☐

PROJECT MANAGEMENT

15. Has the Designer designated **specialty items** which may be performed by subcontract? (Article 6.01 - subletting or assignment of Contract) ☐ ☐ ☐
16. If authority-furnished materials are required, has sufficient, **long-range procurement** planning taken place? ☐ ☐ ☐
17. If contract provides for **revenue producing construction** costs (concession shells), are separate items included? ☐ ☐ ☐
- a. If yes, the Project must submit to Contract Administration, a **signed letter** confirming that the concession plans and Specifications comply with Massachusetts Department of Health Standards.

		YES	N/A	NO
18.	Is other Authority construction work under way in the vicinity of this contract or presently planned to be under way during the duration of this work?	☐	☐	☐
a.	If yes, please list, by name or project number, other Authority construction under way in the vicinity:			
19.	Are Allowances to be incorporated in the bidding documents?	☐	☐	☐
a.	If yes, the Project Manager must attach a letter of approval signed by the AGM of Capital Delivery.			
20.	Has detailed Engineering Estimate of Bid Prices been attached?	☐	☐	☐
a.	In addition, the Project must also submit to Contract Administration lump sum breakdown of the Engineer's Estimate in excel format.			
21.	FORCE ACCOUNT-INTERNAL - Has a Force Account scope been defined?	☐	☐	☐
a.	If no, please provide a brief explanation.			
b.	Has a force account estimate been obtained from each force account entity? (i.e. Bus Ops, Signals, Track, Power, etc.)	☐	☐	☐
c.	Is there a letter/memo/e-mail/TRS from force account entity acknowledging and agreeing to the scope, cost and scheduling of the work to be performed	☐	☐	☐
1.	If no, will all the documents described above be obtained prior to bid advertisement.	☐	☐	☐
22.	FORCE ACCOUNT/THIRD PARTY/EXTERNAL – Has a force account been Defined	☐	☐	☐
a.	If no, please provide a brief explanation			
b.	Is there a letter/memo/e-mail /PI Agreement from force account entity acknowledging and agreeing to the scope, cost and scheduling of the work to be performed?	☐	☐	☐
	If no, please provide a brief explanation.			

YES N/A NO

23. Has the designer requested and received a waiver from AGM for all permanent elements that have final design delegated to the contractor? ☐ ☐ ☐
24. A copy of **Section 01590 –Field Office and Sheds** must be attached identifying all equipment ,i.e. laptop(s), cell phone(s) and tablet(s), to be used by field staff.
25. A copy of a dummy Staff Summary or Exhibit 3-4, as applicable, must be submitted.
26. Project Manager must prepare a slide deck, in power point, (see Instructions) if board approval is required.

DESIGN

27. Does the contract documents include graphics, wayfinding and/or artwork? ☐ ☐ ☐
- a. If yes, the project office must submit to Contract Administration a signed letter from the Director of Design stating that the graphics, wayfinding and/or artwork and their locations have been reviewed and accepted.

REAL ESTATE

28. Have all required property rights been acquired for this project? **Project Office must attach concurrence in writing from Chief of Real Estate)** ☐ ☐ ☐
- a. If no, the Real Estate Department must attach a concurrence memo approved by the Law Department indicating that all necessary property rights will be acquired prior to issuance of the Notice to Proceed and that advertising is approved.

PROJECT CONTROLS

29. Has a Bid Escrow account been established? (For projects \$1,000,000 or greater) ☐ ☐ ☐
30. Has Value Engineering been performed on this Contract? ☐ ☐ ☐
- a. If not, The Project must submit to Contract Administration a signed copy of the Value Engineering Waiver.

31. **LD/MILESTONES** – (LD) must be calculated by Project Office/Designer.

a. List contract milestones below

Milestones	Description	Calendar Days	Liquidated Damages \$

b. Attach Liquidated Damages calculations

32. **RISK ANALYSIS** – Has risk analysis been performed?
Provide copy of reports.

☐ ☐ ☐

a. Construction cost contingency value _____
b. Construction schedule contingency: ____ days

33. **CONSTRUCTABILITY REVIEW** – Was a constructability review performed at 60% design?

☐ ☐ ☐

a. If no, please provide a copy of the approved waiver.

RISK MANAGER –INSURANCE

34. Has MBTA Risk Manager confirmed contract specifications, Article 5.04- Insurance, requirements are sufficient for the scope of work for this project.

☐ ☐ ☐

Please attach confirmation email or memo

a. Is **railroad protection insurance** required?

☐ ☐ ☐

b. Is **pollution liability insurance** required?

☐ ☐ ☐

c. Are **asbestos, lead or hazardous material abatement** included in this Contract?

☐ ☐ ☐

QA/QC

35. **BUILDING PERMITS** - --Has the project office met with the Department of Public Safety (DPS) and identified all required permits.
- ☐ ☐ ☐
- a. If yes, the project office must submit to Contract Administration a **signed letter** from Director of QA/QC stating that all permit requirements have been identified and reviewed by DPS.
36. Does the contract specifications include paint systems?
- ☐ ☐ ☐
- a. If yes, the Project must submit to **a signed letter** stating that the paint systems have been approved by MBTA Director of QA/QC.
37. Have all sections included in the technical specifications been modified from the most current MBTA published standards to be project specific?
- ☐ ☐ ☐
- a. Designer must submit the **table of contents** of the specifications used, **with version dates**, for final specifications. **Please attach confirmation**

SAFETY

38. Have all safety items been addressed in the specification (refer to sections 5.15, Safety and First Aid, 01568, Construction Safety and 01569, Safety Certification)?
- ☐ ☐ ☐

SYSTEMWIDE ACCESSIBILITY

39. Has the Architect/Engineer submitted an appropriate Certificate of Compliance for conformance with 521 CMR Rules and Regulations of the Architectural Access Board, Department of Transportation 49 CFR, Parts 27, 37 and 38 regulations, ADA, and UFAS as applicable?
- ☐ ☐ ☐
- a. If the project design does not meet regulations of the Architectural Access Board (AAB), has a **variance application** been submitted to and approved by the AAB? **Please attach confirmation email or memo** from 100% design review
- ☐ ☐ ☐

FINAL PRE-BID REVIEW CONTROL SHEET

ENVIRONMENTAL PERMITTING CHECKLIST SUMMARY

PROJECT TITLE:**PROJECT CONTRACT #:****PM NAME:****DATE:**

Have any design changes occurred that have altered the previously submitted environmental permitting requirements?			If 'YES' provide detailed information on what changed, why, and how the permitting has been updated to reflect those changes in an attached consultants letter.
Include consultants' letter to verify.	YES	NO	
SECTION 1.1: NEPA	☐	☐	
SECTION 1.2: CZM	☐	☐	
SECTION 1.3: ESA	☐	☐	
SECTION 1.4: NHPA SECTION 106	☐	☐	
SECTION 2.1: MEPA	☐	☐	
SECTION 2.2: CHAPTER 91	☐	☐	
SECTION 2.3: WPA	☐	☐	
SECTION 3.1: WQC	☐	☐	
SECTION 3.2: CWA	☐	☐	
SECTION 4.1: MHC	☐	☐	
SECTION 4.2: MESA	☐	☐	
SECTION 4.3: MANAGEMENT OF HAZARDOUS MATERIALS	☐	☐	
ASBESTOS	☐	☐	
LEAD	☐	☐	
PCBs	☐	☐	
SECTION 4.4: MCP	☐	☐	
SECTION 4.5: ARTICLE 97	☐	☐	
SECTION 4.6: USCG	☐	☐	
SECTION 4.7: MWRA	☐	☐	
SECTION 4.8: EPA NPDES CGP	☐	☐	
SECTION 4.9: EPA NPDES MSGP	☐	☐	
SECTION 4.10: ON-SITE MACHINERY	☐	☐	
PETROLEUM	☐	☐	
COMBUSTIBLE LIQUID	☐	☐	
UST	☐	☐	
GENERATOR	☐	☐	
Have ALL permits and permit applications been included in bid package?	☐	☐	If 'no', explain in consultants letter.
Has all Project location property ownership due-diligence been completed?	☐	☐	If 'no' explain in consultants letter.



Senior Director of Energy and Environment

YOUR SIGNATURE(S) SIGNIFIES THAT YOU HAVE REVIEWED THE CONTRACT DOCUMENTS AND RECOMMEND PROCESSING:

MBTA Project Manager

Date

MBTA Deputy Chief (Capital Delivery, GLT, RLOL)

Date

MBTA Director of Construction Procurement and Staff

Date

MBTA Chief for (Capital Delivery, GLT, RLOL)

Date

Construction Contract Closeout Report Design Contract Closeout Procedures

CONSTRUCTION CONTRACT CLOSEOUT SUMMARY**Exhibit 6.11**

CONTRACT NO. _____ FINAL PAYMENT NO. _____

DESCRIPTION _____

CONTRACTOR _____

A. AWARD \$ _____

B. Change Orders No. \$ _____

C. Claims No. \$ _____

D. Balance & Excess Reports (Allowances only) \$ _____

E. AUTHORIZED CONTRACT VALUE \$ _____

F. Balance & Excess Reports (Excluding Allowances) \$ _____

G. TOTAL PROJECT COST (Total Work-to-Date) ADJUSTMENTS TO CONTRACT \$ _____

AWARD

H. Total Project Cost to Award (G divided by A) _____

I. Change Orders to Award (B divided by A) _____

J. Claims to Award (C divided by A) _____

K. Balance & Excess Reports to Award (D + F divided by A) B&E Allowances to Award _____

(0 divided by A) B&E Items/C.O.'s to Award (F divided by A)

L. DBE Participation Reported Through This Payment

M. DBE Goal _____ DBE Participation (L divided by E) \$ _____

N. Second Low Bidder _____

O. Second Low Bidder's Computed Bid Total _____

P. Difference Between Second Low Bid and Award (O divided by A) \$ _____

Q. Engineer Estimate _____

R. Difference Between Total Project Cost and Engineer Estimate (G divided by Q) _____

Project Manager

CON/ADWFEB01

CONSTRUCTION CONTRACT CLOSEOUT SUMMARY**Exhibit 6.11**

CONTRACT NO. _____ FINAL PAYMENT NO. _____

DESCRIPTION _____

CONTRACTOR _____

A. AWARD \$ _____

B. Change Orders No. \$ _____

C. Claims No. \$ _____

D. Balance & Excess Reports (Allowances only) \$ _____

E. AUTHORIZED CONTRACT VALUE \$ _____

F. Balance & Excess Reports (Excluding Allowances) \$ _____

G. TOTAL PROJECT COST (Total Work-to-Date) ADJUSTMENTS TO CONTRACT \$ _____

AWARD

H. Total Project Cost to Award (G divided by A) _____

I. Change Orders to Award (B divided by A) _____

J. Claims to Award (C divided by A) _____

K. Balance & Excess Reports to Award (D + F divided by A) B&E Allowances to Award _____

(0 divided by A) B&E Items/C.O.'s to Award (F divided by A)

L. DBE Participation Reported Through This Payment

M. DBE Goal _____ DBE Participation (L divided by E) \$ _____

N. Second Low Bidder _____

O. Second Low Bidder's Computed Bid Total _____

P. Difference Between Second Low Bid and Award (O divided by A) \$ _____

Q. Engineer Estimate _____

R. Difference Between Total Project Cost and Engineer Estimate (G divided by Q) _____

Project Manager

CON/ADWFEB01

TO: Deputy Directors
Project Manager



MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY

FROM: Margaret H. Hinkle
Manager of Professional Services
Procurement

DATE: November 1, 2007

RE: Close-out Procedures, Professional Services Contracts

Final payment invoices must be accompanied by a Close-out Report prepared by the Project Office and approved by the cognizant Deputy Director.

The following is a summary of items which should be included in the report. Additional and pertinent information and documentation as appropriate should also be addressed.

- Specific Design and Construction Directorate objectives and procedures have been met.
- The terms of the Contract, scope of services and costs were complied with and the objectives accomplished
- The contract was carried out in an economical and efficient manner
- The quality of professional services and cooperation provided by each consultant supports their selection for future contracts
- The contract was carried out in compliance with MBTA and FTA procedures and regulations
- The contract records are complete and organized for easy future access by the Design and Construction Directorate and Internal and External auditors
- Certification that there are no "errors and omissions" for which the Authority should pursue credit to the contract
- Final Consultant Performance Evaluation Rating Sheet must be attached to the Close-out Report.

If further clarification is required, please call me at ext 3135.

DAVIS-BACON ACT

Davis-Bacon Requirements

7. MINIMUM STATE WAGE RATES

- A. The minimum wage rates to be used for this Contract are shown on the schedules on the following pages. The rates shown on these schedules are the minimum to be paid during the life of the Contract. It is, therefore, the responsibility of bidders to inform themselves as to the local labor conditions such as the length of the work day and work week, overtime compensation, health and welfare contributions, labor supply and prospective changes or adjustment of rates. In the event of conflict between the schedules for any classifications, the greater amount for the classification shall prevail as the minimum wage rate.
- B. If the Contractor finds it necessary during the progress of the work to secure a minimum wage rate for some additional classification, he shall make a request for such additional classification to the Authority, who in turn will obtain the additional classification and corresponding minimum wage rate from the State Department of Labor and Industries and advise the Contractor of the same. These additional classifications and minimum wage rates are then to be considered a part of the Contract, and the Contractor shall have no claim for additional compensation because of the additional classification and minimum wage rates.
- C. Where a question arises as to the classification in the schedule of the Department of Labor and Industries in which any employee is to be included, the decision is to be made by the State Department of Labor and Industries, through their duly authorized representative.
- D. Within three days from the date of the first advertisement or call for bids, two or more employers of labor, or two or more members of a labor organization, or the awarding officer or official, or five or more residents of the town or towns where the public works are to be constructed, may appeal to the associate commissioners for a wage determination, or a classification of employment as made by the Commissioner, by serving on the Commissioner a written notice to that effect. Thereupon the Commissioner shall immediately cause the associate commissioners to hold a public hearing on the Commissioner's action appealed from. The associate commissioners shall render their decision not later than three (3) days after the closing of the hearing. The decision of a majority of the associate commissioners shall be final, and notice thereof shall be given forthwith to the awarding official or public body. (Section 27A, Chapter 149, General Laws, Commonwealth of Massachusetts).
- E. Payments by employers to health and welfare plans under collective bargaining agreements or understandings between organized labor and employers shall be included for the purpose of establishing minimum wage rates as herein provided, (Section 26, Chapter 149, General Laws, Commonwealth of Massachusetts).
- F. The aforesaid rates of wages in the schedule of wage rates shall include payments by employers to health and welfare plans as provided in the previous section, and such payments shall be considered as payments to persons under this section performing work as herein provided. Any employer engaged in the construction of such works who does not make payments to health and welfare plan where

such payments are included in said rates of wages shall pay the amount of said payments directly to each employee engaged in said construction. (Section 27, Chapter 149, General Laws, as amended).

- G. The Contractor's attention is directed to further minimum wage provisions under Paragraph ____ of the Supplementary Conditions. In cases of conflict, the higher rate shall apply.

U. LABOR PROVISIONS.

1. Labor Provisions - Construction

a. Minimum Wages

- (1) All laborers and mechanics employed or working upon the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), will be paid unconditionally and not less often than once a week, and without subsequent deduction rebate on any account (except such payroll deductions as are permitted by regulations issued by the Secretary of Labor under the Copeland Act (29 CFR Part 3), the full amount of wages and bona fide fringe benefits (or cash equivalents thereof) due at the time of payment computed at rates not less than those contained in the Wage Determination of the Secretary of Labor which is attached hereto and made a part hereof, regardless of any contractual relationship which may be alleged to exist between the Contractor and such laborers and mechanics. Contributions made or costs reasonably anticipated for bona fide fringe benefits under Section 1 (b) (2) of the Davis-Bacon Act on behalf of laborers or mechanics are considered wages paid to such laborers or mechanics, subject to the provisions of paragraph (a) (1) (iv) of 29 CFR Sec. 5.5; also, regular contributions made or costs incurred for more than a weekly period (but not less often than quarterly) under plans, funds, or programs which cover the particular weekly period. Such laborers and mechanics shall be paid the appropriate wage rate and fringe benefits on the wage determination for the classification of work actually performed, without regard to skill, except as provided in 29 CFR Sec. 5.5 (a) (4).

Laborers or mechanics performing work in more than one classification may be compensated at the rate specified for each classification for the time actually worked therein: provided, that the employer's payroll records accurately set forth the time spent in each classification in which work is performed. The wage determination (including any additional classification and wage rates conformed under paragraph (a) (1) (ii) of 29 CFR Sec. 5.5 and the Davis-Bacon Poster (WH-132) shall be posted at all times by the Contractor and its subcontractors at the site of the work in a prominent and accessible place where it can be easily seen by the workers.

- (2) The Contracting Office shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the Contract shall be classified in conformance with the wage determination. The Contracting Office shall approve an additional classification and wage rate and fringe benefits therefor, only when the following criteria have been met:

- (a) The work to be performed by the classification requested is not performed by a classification in the wage determination: and
 - (b) The classification is utilized in the area by the construction industry: and
 - (c) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.
- (3) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits, where appropriate), a report of the action taken shall be sent by the Contracting Officer to the Administration of the Wage and hour Division, Employment Standards Administration, U.S. Department of Labor, Washington, D.C. 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the Contracting Officer or will notify the Contracting Officer within a 30 day period that additional time is necessary.
- (4) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the Contracting Officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the Contracting Officer shall refer the questions including the views of all interested parties and the recommendation of the Contracting Officer, to the Administrator for determination. The administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the Contracting Officer or will notify the Contracting Officer within the 30-day period that additional time is necessary.
- (5) The wage rate (including fringe benefits where appropriate) determined pursuant to subparagraph (a) (1) (B) or (C) of 29 CFR Sec. 5.5 shall be paid to all workers performing work in the classification under this Contract from the first day on which work is performed in the classification.
- (6) Whenever the minimum wage rate prescribed in the Contract for a class of laborers or mechanics includes a fringe benefit which is not expressed as an hourly rate, the Contractor shall either pay the benefit as stated in the wage determination or shall pay another bona fide fringe benefit or an hourly cash equivalent thereof.
- (7) If the Contractor does not make payments to a trustee or other third person the Contractor may consider as part of the wages of any laborer or mechanic the amount of any costs reasonably anticipated in providing bona fide fringe benefits under a plan or program, provided that the Secretary of Labor has found upon the written request of the Contractor that the applicable standards of the Davis-Bacon Act have been met. The Secretary of Labor may require the Contractor to set aside in a separate account assets for the meeting of obligations under the plan or program.

(8) (A) The contracting officer shall require that any class of laborers or mechanics which is not listed in the wage determination and which is to be employed under the contract shall be classified in conformance with the wage determination. The contracting officer shall approve an additional classification and wage rate and fringe benefits therefor only when the following criteria have been met:

- (a) The work to be performed by the classification requested is not performed by a classification in the wage determination; and
- (b) The classification is utilized in the area by the construction industry; and
- (c) The proposed wage rate, including any bona fide fringe benefits, bears a reasonable relationship to the wage rates contained in the wage determination.

(B) If the contractor and the laborers and mechanics to be employed in the classification (if known), or their representatives, and the contracting officer agree on the classification and wage rate (including the amount designated for fringe benefits where appropriate), a report of the action taken shall be sent by the contracting officer to the Administrator of the Wage and Hour Division, Employment Standards Administration, Washington, DC 20210. The Administrator, or an authorized representative, will approve, modify, or disapprove every additional classification action within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(C) In the event the contractor, the laborers or mechanics to be employed in the classification or their representatives, and the contracting officer do not agree on the proposed classification and wage rate (including the amount designated for fringe benefits, where appropriate), the contracting officer shall refer the questions, including the views of all interested parties and the recommendation of the contracting officer, to the Administrator for determination. The Administrator, or an authorized representative, will issue a determination within 30 days of receipt and so advise the contracting officer or will notify the contracting officer within the 30-day period that additional time is necessary.

(D) The wage rate (including fringe benefits where appropriate) determined pursuant to paragraphs (a)(1)(v) (B) or (C) of this section, shall be paid to all workers performing work in the classification under this contract from the first day on which work is performed in the classification.

2. **Withholding**

DOT shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld from the Contractor under this Contract or any other Federal Contract with the same prime contractor, or any other federally-assisted contract subject to Davis-Bacon prevailing wage requirements, which is held by the same prime contractor, so much of the accrued payments of advances as may be considered necessary to pay laborers and mechanics, including apprentices, trainees and helpers, employed by the Contractor

or any subcontractor the full amount of wages required by the Contract. In the event of failure to pay any laborer or mechanic, including any apprentice, trainee, or helper, employed or working on the site of the work (or under the United States Housing Act of 1937 or under the Housing Act of 1949 in the construction or development of the project), all or part of the wages required by the Contract, the Department of Transportation may, after written notice to the Contractor, sponsor, applicant, or owner, take such any further payment, advance, or guarantee of funds until such violations have ceased.

3. **Payrolls and Basic Records**

- a. Payrolls and basic records relating thereto shall be maintained by the Contractor during the course of the work and preserved for a period of three years thereafter for all laborers and mechanics working at the site of the work (or under the United States Housing Act of 1937, or under the Housing Act of 1949 in the construction or development of the project). Such records shall contain the name, address, and social security number of each worker, his or her correct classification, hourly rates of wages paid including rates of contributions or costs anticipated for bona fide fringe benefits or cash equivalents thereof the types described in Section 1 (b) (2) (B) of the Davis-Bacon Act), daily and weekly number of hours worked, deductions made and actual wages paid.

Whenever the Secretary of Labor has found under 29 CFR Sec. 5.5 (a) (1) (iv) that the wages of any laborer or mechanic include the amount of any costs reasonably anticipated in providing benefits under a plan or program described in Section 1 (b) (2) (b) of the Davis-Bacon Act, the Contractor shall maintain records which show that the commitment to provide such benefits is enforceable, that the plan or program has been communicated in writing to the laborers or mechanics affected, and records which show the costs anticipated or the actual cost incurred in providing such benefits. Contractors employing apprentices and trainees under approved programs shall maintain written evidence of the registration of apprenticeship programs and certification of trainee programs, the registration of the apprentices and trainees, and the ratios and wage rates prescribed in the applicable programs.

- b. The Contractor shall submit weekly for each week in which any Contract work is performed a copy of all payrolls to the Department of Transportation if the Department of Transportation is a party to the Contract, but if the Department of Transportation is not such a party, the Contractor will submit the payrolls to the applicant, sponsor, or owner, as the case may be, for transmission to the Department of Transportation. The payrolls submitted shall set out accurately and completely all of the information required to be maintained under Sec. 5.5 (a) (3) (I) of regulations, 29 CFR Part 5. This information may be submitted in any form desired. Optional form WH-347 is available for this purpose and may be purchased from the Superintendent of Documents (Federal Stock Number 029-005-00014-1), U.S. Government Printing Office, Washington, D.C. 20402. The prime contractor is responsible for the submission of copies of payrolls by all subcontractors.
- c. Each payroll submitted shall be accompanied by a "Statement of Compliance", signed by the Contractor or subcontractor or his or her agent who pays or

supervises the payment of the persons employed under the Contract and shall certify the following:

- (1) That the payroll for the payroll period contains the information required to be maintained under Sec. 5.5 (a) (3) (I) of regulations, 29 CFR Part 5 and that such information is correct and complete.
 - (2) That each laborer or mechanic (including each helper, apprentice, and trainee) employed on the Contract during the payroll period has been paid the full weekly wages earned, without rebate, either directly or indirectly, and that no deductions have been made either directly or indirectly from the full wages earned, other than permissible deductions as set forth in regulations, 29 CFR Part 3.
 - (3) That each laborer or mechanic has been paid not less than the applicable wage rates and fringe benefits or cash equivalents for the classification of work performed, as specified in the applicable wage determination incorporated into the Contract.
- d. The weekly submission of a properly executed certification set forth on the reverse side of Optional form WH-347 shall satisfy the requirement for submission of the "Statement of Compliance" required by paragraph (a) (3) (ii) (b) of 29 CFR Sec. 5.5.
 - e. The falsification of any of the above certifications may subject the Contractor or subcontractor to civil or criminal prosecution under Section 1001 of Title 18 and Section 231 of Title 31 of the United States Code.
 - f. The Contractor or subcontractor shall make the records required under paragraph (a) (3) (I) of 29 CFR Sec. 5.5 available for inspection, copying, or transcription by authorized representatives of the Department of Transportation or the Department of Labor, and shall permit such representatives to interview employees during working hours on the job. If the Contractor or subcontractor fails to submit the required records or to make them available, the Federal Agency may, after written notice to the Contractor, sponsor, applicant, or owner, take such action as may be necessary to cause the suspension of any further payment, advance, or guarantee of funds. Furthermore, failure to submit the required records upon request or to make such records available may be grounds for debarment action pursuant to 29 CFR Sec. 5.12.

4. **Apprentices and Trainees - Apprentices**

- a. Apprentices will be permitted to work at less than the predetermined rate for the work they performed when they are employed pursuant to and individually registered in a bona fide apprenticeship program registered with the U.S. Department of Labor, Employment and Training Administration, Bureau of Apprenticeship and Training, or with a State Apprenticeship Agency recognized by the Bureau, or if a person is employed in his or her first 90 days of probationary employment as an apprenticeship program, who is not individually registered in the program, but who has been certified by the Bureau of Apprenticeship and Training, or with a State Apprenticeship and Training or a

State Apprenticeship Agency (where appropriate) to be eligible for probationary employment as an apprentice.

The allowable ratio of apprentices to journeymen on the job site in any craft classification shall not be greater than the ratio permitted to the Contractor as to the entire work force under the registered program. Any worker listed on the payroll at an apprentice wage rate, who is not registered or otherwise employed as stated above shall not be paid less than the applicable wage determination for the work actually performed. In addition, any apprentice performing work on the job site in excess of the ration permitted under the registered program shall not be paid less than the applicable wage rate on the wage determination for the work actually performed. Where a Contractor is performing construction on a project in a locality other than that in which its program is registered, the ratios and wage rates (expressed in percentages of the journeyman's hourly rate) specified in the Contractor's or subcontractor's registered program shall be observed. Every apprentice must be paid at not less than the rate specified in the registered program for the apprentice level of progress, expressed as a percentage of the journeyman's hourly rate specified in the applicable wage determination. Apprentices shall be paid fringe benefits, in accordance with the provisions of the apprentice program. If the apprentice program does not specify fringe benefits, apprentices must be paid the full amount of fringe benefits listed on the wage determination for the applicable classification. If the Administrator determines that a different practice prevails for the applicable apprentice classification, fringe benefits shall be paid in accordance with that determination. In the event the Bureau of Apprenticeship and Training or a State Apprenticeship Agency recognized by the Bureau, withdraws approval of an Apprenticeship Program, the Contractor will no longer be permitted to utilize apprentices at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- b. **Trainees** Except as provided in 29 CFR Sec. 5.16, Trainees will not be permitted to work at less than the predetermined rate for the work performed unless they are employed pursuant to and individually registered in a program which has received prior approval, evidence by formal certification by the U.S. Department of Labor, Employment and Training Administration. The ratio of trainees to journeymen on the job site shall not be greater than permitted under the plan approved by the Employment and Training Administration. Every trainee must be paid at not less than the rate specified in the approved program for the trainee's level of progress, expressed as a percentage of the journeyman's hourly rate specified in the applicable wage determination. Trainees shall be paid fringe benefits in accordance with the provision of the trainees program. If the trainees program does not mention fringe benefits, trainees shall be paid the full amount of fringe benefits listed on the wage determination unless the Administrator of the Wage and Hour Division determines that there is an apprenticeship program associated with the corresponding journeyman's wage rate on the wage determination which provides for less than full fringe benefits for apprentices. Any employee listed on the payroll at a trainee rate who is not registered and participating in a training plan approved by the employment and training administration shall not be paid less than the applicable wage rate on the wage determination for the classification of work actually performed. In addition, any trainee performing work on the job site in excess of the ration

permitted under the registered program shall be paid not less than the applicable wage rate on the wage determination for the work actually performed. In the event the Employment and Training Administration withdraws approval of a training program, the Contractor will no longer be permitted to utilize trainees at less than the applicable predetermined rate for the work performed until an acceptable program is approved.

- c. **Equal Employment Opportunity** The utilization of apprentices, trainees and journeymen under this part shall be in conformity with the Equal Employment Opportunity requirements of Executive Order 11246, as amended, and 29 CFR Part 30.

5. **Compliance with Copeland Act Requirements**

The Contractor shall comply with the requirements of the 29 CFR Part 3, which are incorporated by reference.

6. **Subcontracts**

The contractor or subcontractor shall insert in any subcontracts the clauses contained in 29 CFR 5.5(a)(1) through (10) and such other clauses as the Federal Transit Administration may by appropriate instructions require, and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for the compliance by any subcontractor or lower tier subcontractor with all the contract clauses in 29 CFR 5.5.

7. **Contract Termination: Debarment**

A breach of the contract clauses in 29 CFR 5.5 may be grounds for termination of the contract, and for debarment as a contractor and a subcontractor as provided in 29 CFR 5.12.

8. **Compliance with Davis-Bacon and Related Act Requirements**

All rulings and interpretations of the Davis-Bacon and related acts contained in 29 CFR Parts 1,3 and 5 are herein incorporated by reference in this contract.

9. **Disputes Concerning Labor Standards**

Disputes arising out of the Labor Standards Provisions of this Contract shall not be subject to the general disputes clause of the Contract. Such disputes shall be resolved in accordance with the procedures of the Department of Labor set forth in 29 CFR Parts 5, 6, and 7. Disputes within the meaning of this clause include disputes between the Contractor (or any of its subcontractors) and the Contracting Agency, the U.S. Department of Labor, or the employees or their representatives.

10. **Certification of Eligibility**

By entering into this Contract, the Contractor certifies that neither it (nor he or she) nor any person or firm who has an interest in the Contractor's firm is a person or firm

ineligible to be awarded government contracts by virtue of section 3 (a) of the Davis-Bacon Act or 29 CFR Sec. 5.12 (a) (1).

- a. No part of this Contract shall be subcontracted to any person or firm ineligible for award of a government contract by virtue of section 3 (a) of the Davis-Bacon Act or 29 CFR Sec. 5.12(a) (1).
- b. The penalty for making false statements is prescribed in the U.S. Criminal Code, 18 U.S. C. Sec. 1001.

11. Overtime Requirements

No Contractor or subcontractor contracting for any part of the Contract work which may require or involve the employment of laborers or mechanics shall require or permit any such laborer or mechanic in any work week in which he or she is employed on such work to work in excess of eight hours in any calendar day or in excess of forty hours in such work week unless such laborer or mechanic receives compensation at a rate of pay for all hours worked in excess of eight hours, in any calendar day or in excess of forty hours in such work week, whichever is greater.

12. Violation: Liability for Unpaid Wages: Liquidated Damages

In the event of any violation of the clause set forth in subparagraph (b) (1) 29 CFR Sec. 5.5, the Contractor and any subcontractor responsible therefor shall be liable for the unpaid wages. In addition, such Contractor and subcontractor shall be liable to the United States (in the case of work done under contract for the District of Columbia or a territory, to such district or to such territory), for liquidated damages. Such liquidated damages shall be computed with respect to each individual laborer or mechanic, including watchmen and guards, employed in violation of the clause set forth in subparagraph (b) (1) of 29 CFR Sec. 5.5 in the sum of \$10 for each calendar day or which such individual was required or permitted to work in excess of eight hours or in excess of the standard work week of forty hours without payment of the overtime wages required by the clause set forth in subparagraph (b) (1) or 29 CFR Sec. 5.

13. Withholding for Unpaid Wages and Liquidated Damages

The Department of Transportation or the recipient shall upon its own action or upon written request of an authorized representative of the Department of Labor withhold or cause to be withheld, from any monies payable on account of work performed by the Contractor or subcontractor under any such contract or any other federal contract with the same prime contractor, or any other federally assisted contract subject to the Contract Work Hours and Safety Standards Act, which is held by the same prime contractor, such sums as may be determined to be necessary to satisfy any liabilities of such Contractor or subcontractor for unpaid wages and liquidated damages as provided in the clause set forth in subparagraph (b) (2) of 29 CFR Sec. 5.5.

14. Nonconstruction Contracts

In addition to the clauses contained in 29 CFR Sec. 5.5 (b) (10) through (14), in any contract subject only to the Contract Work Hours and Safety Standards Act and not to any of the other statutes cited in 29 CFR Sec. 5.1., the recipient shall insert a clause requiring that the Contractor or subcontractor shall maintain payrolls and basic payroll records during the course of the work and shall preserve them for a period of three years from the completion of the Contract for all laborers and mechanics, including guards and watchmen, working on the Contract. Such records shall contain the names and address of each employee, social security number, correct classifications, hourly rates of wages paid, daily and weekly number of hours worked, deductions made, and actual wages paid. Further, the recipient shall require the Contracting officer to insert in any such contract a clause providing that the records to be maintained under this paragraph shall be made available by the Contractor or subcontractor for inspection, copying, or transcription by authorized representatives of the Department of Transportation and the Department of Labor, and the Contractor or subcontractor will permit such representatives to interview employees during work hours on the job.

15. **Subcontracts**

The Contractor or subcontractor shall insert in any subcontracts the clauses set forth in subparagraph 1 through 12 of this paragraph and also a clause requiring the subcontractors to include these clauses in any lower tier subcontracts. The prime contractor shall be responsible for compliance by any subcontractor or lower tier subcontractor with the clauses set forth in subparagraph 1 through 14 of this paragraph.

16. **Certified Payroll - Construction Projects (11/7/77)**

The Authority shall obtain from each Contractor and subcontractor a certified copy of each weekly payroll within seven days after the regular payroll date. Following a review by the Authority for compliance with State and Federal Labor Laws, the payroll copy shall be retained at the project site for later review by the Federal Transportation Administration. A Contractor may use the Department of Labor Form WH-347, "Optional Payroll Form", which provides all the necessary payroll information and certifications. This Department of Labor Form may be purchased at nominal cost from the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. However, the Contractor may use his own payroll form provided it includes the same information and certifications as the Department of Labor Form WH-348, "Statement of Compliance".

17. **Minority Business Enterprise Policy.** It is the policy of the Department of Transportation that minority business enterprises, as defined in 49 CFR Part 23, shall have the maximum opportunity to participate in the performance of contracts financed in whole or in part with federal funds under this agreement. Consequently, the MBE requirements of 49 CFR Part 23 apply to this agreement.

18. **MBE Obligation.** The Authority and its contractors agree to ensure that minority business enterprises as defined in 49 CFR Part 23 have the maximum opportunity to participate in the performance of contracts and subcontracts financed in whole or in part with federal funds provided under this Agreement. In this regard the Authority and its contractors shall take all necessary and reasonable steps in accordance with 49 CFR Part 23 to ensure that minority business enterprises have the maximum opportunity to compete for and perform contracts. The Authority and its contractors shall not discriminate on the basis of race, color, national origin or sex in the award and performance of DOT assisted contracts.

CC. **MINIMUM FEDERAL WAGE RATES**

Minimum wages to be paid on this construction project have been established by Wage Predetermination Decisions of the U. S. Secretary of Labor. These wage rates must be prominently posted at the construction site.

1. Wage Determination Decision

Wage predetermination decisions of the U. S. Secretary of Labor are incorporated herein as follows:

Design Fee Summary and Construction Phase Services Analyses

Fee Summary Analysis and Construction Phase Service Analysis Instruction Sheet

HOW TO PREPARE A FEE SUMMARY ANALYSIS

Basic Labor

- Step 1.** From the Base Contract, identify the dollar direct labor and overhead total of the Prime's basic hours. Multiply this total by 10% to arrive at the fixed fee.
- Step 2.** Add the Direct Labor/Overhead of basic hours for all the sub-consultants and 10% for the fixed fee. Multiply by 3%.
- Step 3.** Add the totals of Steps 1 and 2.
- Step 4.** Follow the same procedures for Steps 1, 2, and 3 for any Amendments that deal with the construction estimate.
- Step 5.** Add total from Steps 3 and 4 to get total basic hours/dollar costs.
- Step 6.** Divide total basic hours (Step 5) by construction estimate to arrive at percentage for fee summary.
- Step 7.** Amount of Step 6 cannot exceed 6% of construction estimate.

Special Labor

- Step 1.** From the Base Contract, identify the dollar direct labor and overhead total of the Prime's special hours. Multiply this total by 10% to arrive at the fixed fee.
- Step 2.** Add the Direct Labor/Overhead of special hours for all the sub-consultants and 10% for the fixed fee. Multiply by 3%.
- Step 3.** Add the totals of Steps 1 and 2.
- Step 4.** Follow the same procedures for Steps 1, 2, and 3 for any Amendments that deal with the construction estimate.
- Step 5.** Add total from Steps 3 and 4 to get total special hours/dollar costs.
- Step 6.** Divide total special hours (Step 5) by construction estimate to arrive at percentage for fee summary.
- Step 7.** Amount of Step 6 cannot exceed 2% of construction estimate.

HOW TO PREPARE A CONSTRUCTION PHASE SERVICE ANALYSIS

- Step 1.** From the Base Contract or Amendment, identify the dollar and overhead total of the Prime's basic and special hours. Multiply this total by 10% to arrive at the fixed fee.
- Step 2.** Add the direct labor/overhead for all basic and special hours for all the sub-consultants and 10% for the fixed fee. Multiply by 3%.
- Step 3.** Add total from Steps 1 and 2 to get total basic hours/dollar costs.
- Step 4.** Divide total basic and special hours dollar total by the construction estimate to arrive at percentage for Construction Phase Service Analysis.
- Step 5.** Amount of Step 4 cannot exceed 4% of construction estimate.

Example of Fee Summary (Basic Costs)

Step 1 Base Contract (Preliminary Design Services)

Prime Basic Hours	
Direct Labor and Overhead	\$ 135,362.00
10% Fixed Fee	\$ 13,536.00
Total Prime	\$ 148,898.00

Step 2 Subconsultants

Access consultant	\$ 4,196.00
Civil	\$ 42,475.00
Electrical	\$ 45,709.00
Geo Technical	\$ 63,902.00
Lighting	\$ 12,987.00
Mechanical	\$ 43,818.00
	\$ 213,395.00
10%	\$ 21,309.00
	\$ 234,395.00
3% Subconsultants	\$ 7,032.00
Total Subs	\$ 241,427.00

Step 3 Total for Prime and Subs \$ 390,325.00

Step 4 Amendment No. 1 (Final Design Services)

Prime Basic Hours	
Direct Labor and Overhead	\$ 150,000.00
10% Fixed Fee	\$ 15,000.00
Total Prime	\$ 165,000.00

Subconsultants

Access consultant	\$ 8,000.00
Civil	\$ 50,000.00
Electrical	\$ 60,000.00
Geo Technical	\$ 25,000.00
Lighting	\$ 15,000.00
Mechanical	\$ 50,000.00
	\$ 208,000.00
10%	\$ 20,800.00
	\$ 228,800.00
3% Subconsultants	\$ 6,864.00
Total Subs	\$ 235,664.00
AM 1 - Total for Prime and Subs	\$ 400,664.00

Step 5 Totals from Step 3 and 4

Base Contract Total for Prime and Subs	\$ 390,325.00
AM 1 - Total for Prime and Subs	<u>\$ 400,664.00</u>
Total	\$ 790,889.00

Step 6 Construction Estimate \$13,200,000.00

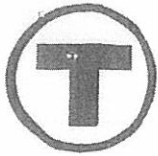
Total Basic Costs \$ 790,889.00

Step 7 6% Design Line Maximum \$ 792,000.00
Total Basic Costs \$ 790,889.00

5.99% of Construction Estimate \$ 790,889.00

Note: Same steps for Special Hours, but the maximum allowable is 2%.

MBTA ERRORS AND OMISSIONS PROCESS



Massachusetts Bay Transportation Authority

Mitt Romney
Governor

Kerry Healey
Lt. Governor

Daniel A. Grabauskas
Secretary and MBTA Chairman

Michael H. Mulhern
General Manager

MEMORANDUM

TO: Distribution

FROM: Michael A. Stoffel, P.E.
Assistant General Manager
for Design and Construction *[Signature]*

RE: Design Errors and Omissions Procedure

DATE: March 29, 2005

Attached for you use is the MBTA's Design Errors and Omissions Claims Procedure. Please review this procedure and begin implementing on all open and future MBTA construction contracts. All construction change orders currently identified in Construction Management System (CMS) as a contract change order due to design errors and omissions should be submitted to the Errors and Omission Committee if the \$5,000 threshold has been met.

If you have questions on this procedure, please contact Jack Donovan at 617-222-1822.

cc: J. Donovan
L. O'Neill
G. Kelley
B. Boylan

PAGE 1 OF 10 PAGES

PROJECT MANAGERS:

S. Banerjee
L. Becker
T. Bretto
J. Connor
H. Cooper
R. DeRoma
G. Doherty
J. Favorito
J. Furlong
P. Hadley
G. Hines
E. Johnson
F. Kelley
S. Kelley
M. Madden
T. Malbranche
T. Matai
J. McAuliffe
E. Ozthail
M. Patel
T. Rovero
S. Wei-Lee

DEPUTIES/DIRECTORS:

M. Ainsley
D. Anidi
J. Eng
J. Jackson
M. Lackner
T. Nee
J. Schwarz
J. Thornton



Massachusetts Bay Transportation Authority

Mitt Romney
Governor

Kerry Healey
Lt. Governor

Daniel A. Grabauskas
Secretary and MBTA Chairman

Michael H. Mulhern
General Manager

MBTA Processing of Errors and Omissions

1.0 Purpose and Scope

This procedure establishes the methods for processing design errors and omissions (E&O). This procedure applies during the performance of a construction contract.

Errors and Omissions in a Professional Services contract can be identified by various methods during the construction process such as, but are not limited to, the inspection process, processing Requests For Information, processing Change Orders, processing Claims, and preparing Balance and Excess Reports. Once the E&O has been identified it will be documented in accordance with this procedure.

The threshold for processing an error and/or omission claim or cumulative claims which meets or exceeds \$5,000.00.

2.0 GENERAL

2.1 References

- A. MBTA Specifications, Division I, Part 15, Warranty
- B. Project Management Manual, Section 4.0, Change Orders
- C. Project Management Manual, Section 5.0, Claims
- D. Project Management Manual, Section 7.0, Consultant Selection
- E. Quality Assurance Procedures Manual, QAP 12.1, Problem Identification and Resolution.

2.2 Definitions

A. Design Error

A condition that exists in the design documents for which the engineering consultant is responsible which results in the need for a change to the work. A design error includes but is not limited to the following: the product of incorrect dimensioning, specifying incompatible materials or equipment, code violation, impossibility conflict or other incorrect direction in the design document. A design error may result in the need for the construction contractor to perform rework or additional work.

B. Design Omission

A condition that exists in the contract documents where information is missing from the design documents. A design omission is work or requirements that are omitted from the design due to an engineering consultant's omission of work that is necessary for the proper and/or safe operation of the facility or system being constructed or required to meet the original designer's scope of work.

C. Damages

Costs incurred by the MBTA due to the design E&O, including but not limited to MBTA's administrative cost.

D. E&O

This acronym means errors and/or omissions.

E. E&O Committee

The MBTA internal committee that evaluates E&O claims.

F. Engineering Consultant

The Design Engineer of Record.

G. Commercial Credit

A payment to the Authority in the form of cash, credit, additional services or other forms deemed acceptable by the Authority.

- 2.3 The engineering consultant shall be notified of E&O's within 30 days of discovery of a potential E&O, as advanced notification. The E&O Committee will review the potential E&O and decide whether to proceed with an E&O claim.
- 2.4 The Project Manager is responsible for:
- A. Determining if a potential E&O exists;
 - B. Establishing a project file of E&O claims;
 - C. Documenting the potential E&O on Attachment 4.1, E&O Evaluation Form and processing the E&O to the E&O Committee;
 - D. Notifying the engineering consultant, in writing, that an E&O claim exists, Attachment 4.2 Consultant Notification Letter; and
 - E. Assisting in the negotiations with the engineering consultant for payment of damages to the Authority.
- 2.5 Attachment 4.3 is a flow chart of the actions required to process errors and omissions.

2.6 The E&O Committee is responsible for:

- A. Reviewing E&O Evaluation Forms; and
- B. Approving or disapproving the recovery of costs from the engineering consultant.

3.0 PROCEDURE

3.1 E&O Identification

The Project Manager (PM), and his staff shall determine if a potential E&O exists. The PM shall perform an evaluation of the conditions surrounding the E&O. The evaluation may be made as part of an internal review of the contract documents, processing a Change or Extra Work Order, Reference 2.1.A or Claims, reference 2.1.B, processing a Request for Information or Resolution Report, Reference 2.1.D. An estimated impact cost resulting from the E&O should be determined. The impact cost is any additional costs that are necessary to correct the error or omission. It should include costs that would not have been required had it not been for the delay in identifying and designing for the error or omission. Consideration shall also be given to the loss of competitive advantage which includes the MBTA costs due to changed work that is attributable to the E&O and is paid for as a change as opposed to being a part of the base contract. Use a figure of 10% of the total cost to calculate the damages attributable to loss of competitive advantage resulting from a design omission.

As part of the change order review, the PM needs to determine if the additional cost is due to an E&O. This calculation shall be entered on the MBTA CMS reporting form.

In reviewing an E&O issue, the documents and review criteria that may be considered include, but not limited to:

1. the terms of the applicable contract, including the scope of services and deliverables; construction plans and specifications;
2. relevant MBTA project documents and logs including Requests for Information (RFI) and Resolution Reports;
3. any mitigating factors affecting the engineering consultant, the MBTA or the contractor's performance;
4. an estimate of costs or damages that the MBTA has or may incur; and
5. an analysis of the overall performance of the engineering consultant on the contract.

3.2 Processing E&O Evaluations.

Once the evaluation has been completed, the PM shall:

- A. If the E&O or accumulations thereof are less than \$5,000.00, the evaluation shall be kept on file for possible future use. A running total of the costs of E&O's shall be retained for the duration of the contract and the project.
- B. If the E&O, or accumulations thereof, amount to more than \$5,000.00, the E&O Evaluation form shall be prepared and submitted to the E&O Committee. Any additional supportive information, including plans, sketches, etc. shall be submitted with the Evaluation Form. The engineering consultant shall be notified in writing that the MBTA is processing the E&O Evaluation Form. The engineering consultant should complete and submit to the PM an independent evaluation of the site condition and prepare its own evaluation of the claim. Engineering consultant documentation should also be forwarded to the E&O Committee by the PM.

3.3 Errors & Omissions Committee

An Errors and Omissions Committee shall review each PM's E&O Evaluation Form. The Committee will be chaired by the Assistant General Manager or his or her designee, and representatives from Contract Administration and Quality Assurance.

The E&O committee shall make the final determination regarding the extent of engineering consultant responsibility for any errors and/or omissions and the associated costs. If the Committee determines that an E&O claim should be pursued, the Committee's final recommendation will be used to formally initiate the recovery of the added costs from the engineering consultant.

The Committee shall inform the PM in writing of its decision with a copy sent to the Director of Contract Administration and to the General Counsel within 14 days of receipt of the Evaluation Form from the Project Manager.

3.4 The PM shall retain a copy of the E&O Committee's final determination in the project E&O file. The PM shall proceed as follows:

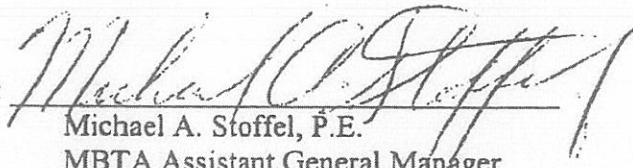
- A. If the E&O Committee's recommendation is not to pursue recovery of the costs, the E&O Evaluation sheet and the decision shall be retained in the project E&O file. Note: The matter may be pursued at a later date if additional E&O's occur. No further action is required.
- B. If the E&O Committee decision is to pursue recovery of the costs, immediately a Consultant Notification Letter, Attachment 4.2, shall be prepared and forwarded to the engineering consultant and the General Counsel for response. This letter will be forwarded prior to the Authority seeking to recover any damages for the E&O.

3.5 The engineering consultant will be given the opportunity to analyze the claim and respond to the MBTA's written determination within 3 weeks. Every effort will be

made to give the engineering consultant the opportunity to reach an effective and economical resolution to the dispute.

- 3.6 If the engineering consultant agrees to negotiate the E&O, the PM will finalize the commercial credit. A copy of the final agreement will be sent to the E&O Committee.
 - 3.7 If the engineering consultant does not agree to negotiate, documentation of the E&O will be forwarded to the MBTA Legal Department for review.
 - 3.8 The PM will maintain a ledger of E&O's for each MBTA contract.
 - 3.9 Individual commercial credits will be compiled for each construction contract. At the end of the project, the engineering consultant to finalize all claims on the contract may process one complete claim.
- 4.0 Attachments
- 4.1 MBTA E&O Evaluation Form
 - 4.2 E&O Notification Letter
 - 4.3 E&O Processing Flow Chart

APPROVED:


Michael A. Stoffel, P.E.
MBTA Assistant General Manager
for Design and Construction

DATE:

3 29 05



MBTA E&O EVALUATION FORM

Contract No.:

Contract Title:

Date:

Affected Specification:

☐

ERROR

☐

OMISSION

SUMMARY OF ERROR/OMISSION _____

JUSTIFICATION FOR PROPOSING E/O _____

LIST OF ATTACHMENTS: _____

Project Manager's Signature



CONSULTANT E&O NOTIFICATION LETTER

To: (Consultant Name)

Address:

Date:

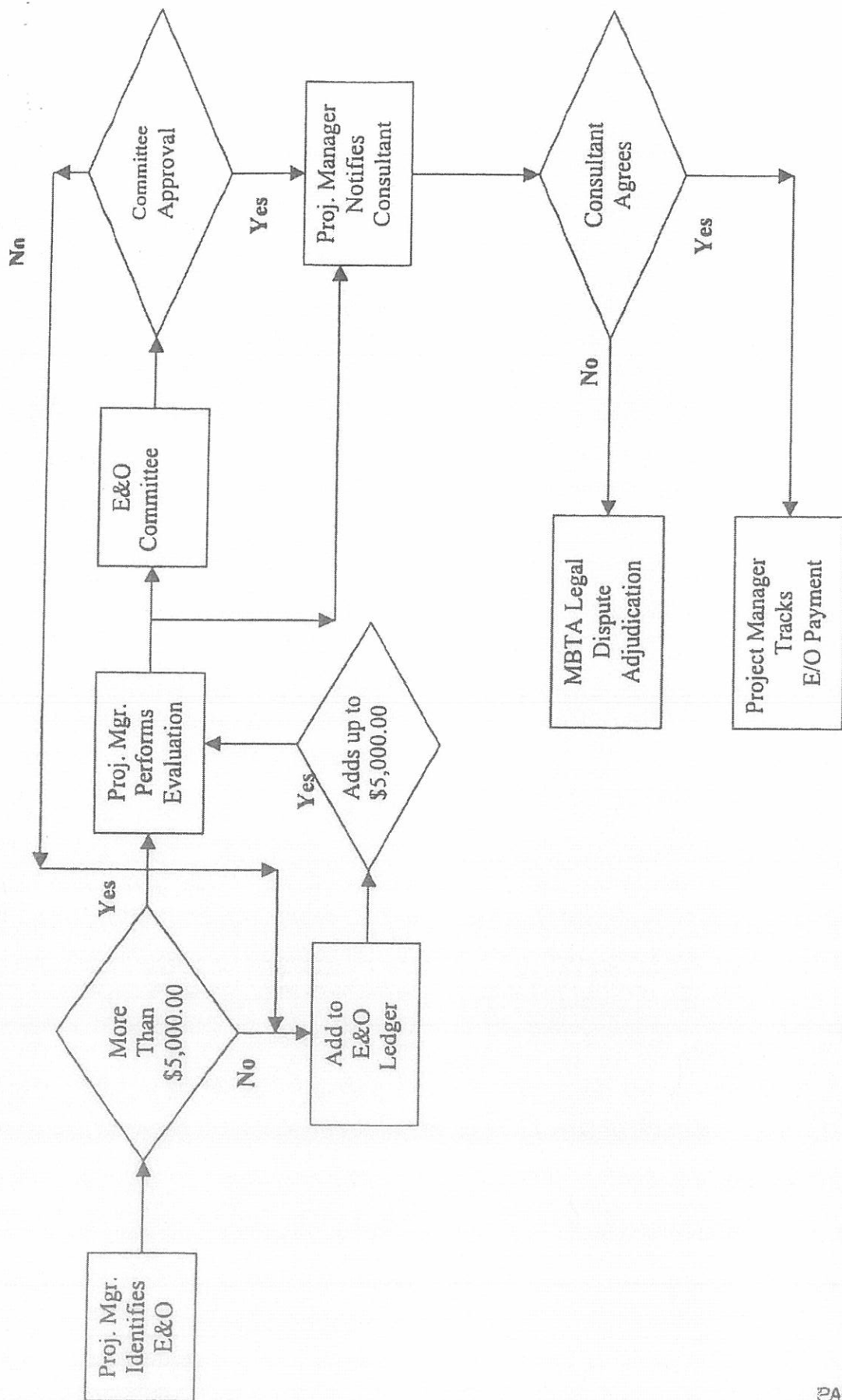
Contract No: _____

Contract Name: _____

Summary of Error and/or Omission: _____

Justification: _____

MBTA Project Manager



E&O FLOW CHART



Massachusetts Bay Transportation Authority Budget Department

Capital Funding Request

For Inclusion in the FY15-FY19 Capital Investment Program

CFR Group:

CIP Asset Category:

Mode:

Line:

Rank:

Submitted By:

Phone #:

A. Project Title:

B. Project Category (check all that apply – double click box to check):

- ☐ Improvement of Existing Infrastructure/Replacement of Equipment
- ☐ New Infrastructure/Equipment
- ☐ Additional Funding for Existing Project (see B-1)
- ☐ Americans with Disabilities Act (ADA) Accessibility Project
- ☐ Legal Commitment (other than ADA)
- ☐ Service Expansion (Planning and/or Construction)

C. Detailed project description/scope. What will this project entail?

D. Impact on the Environment/Alignment to GreenDOT Objectives

These criteria are used to assess the impact of the project on the environment including areas of focus as identified in the GreenDOT objectives.

D.1. Pollution Reduction and Consumption of Natural Resources

Describe if and how the project reduces pollution (greenhouse gas or other air pollutant emissions, water pollutants, trash) or the consumption of natural resources (energy and water) through the use of technology, improved procedures, or other measures.

D.2. Promote Mode Shift

Describe if and how the project encourages a shift in the mode of transportation utilized by travelers away from private vehicles and to the healthy transportation options (walking, biking, and public transit) identified in the GreenDOT objectives.

E. System Preservation

These data and criteria are used to assess the impact of the project on system preservation.

E.1. List of Assets

List the physical assets that the project will replace, renew, or otherwise affect and each asset's expected life.

E.2. Lifecycle Management

Describe if the following elements are or will be associated with the project's assets: an inventory of the assets, up-to-date condition assessments, a preventative maintenance plan (including documented schedules and organizational responsibilities), and documented maintenance and inspection training procedures for staff.

E.3. Reduce Vulnerability to Climate Change/Extreme Storms

Describe if and how the project will reduce vulnerability to floods, storms, landslides, and drastic temperatures through the use of technology, improved procedures, or other measures.

F. Impact on the Operating Budget

These criteria are used to assess the impact of the project on the operating budget.

F.1. Impact on Operating Costs

Describe how the project would impact the Authority's operating costs - in terms of labor, materials, utilities, etc.

F.2. Impact on Operating Revenue

Describe how the project would impact the Authority's operating revenue - in terms of fares, advertising, real estate, etc.

G. Impact on Operations

These criteria are used to assess the impact of the project on operations.

G.1. Impact on Customer Experience

Describe how the project would impact customer satisfaction and the customer experience through service quality improvements, accessibility improvements, providing new services, or other measures.

G.2. Operations Criticality

Describe the extent to which the project affects assets that are critical to the Authority's daily operations.

G.3. Operational Sustainability

Describe the extent to which the operational impact/benefits of the project are sustainable in future years. Does the Authority have the resources (sufficient skills, dedicated personnel and time, and the availability of funding) to sustain the assets associated with the project?

H. Legal Requirements

Does a law, agreement, or other commitment directly require that the MBTA complete the project?
(AG's Office, DEP, ADA project within Key Station Plan, MOU, etc.) Is there a timeline for compliance or the threat of fines? Are there alternatives or substitutes the MBTA can use to comply?

I. Consequences of Not Funding the Project

What will happen if this request is not approved?

J. Alternative Scope of Work/Solution

What other possible alternatives exist to completing the project, besides taking no action? How else can the MBTA meet the need for the project? Can the effort be funded in stages? Can the scope be reduced and still address the most pressing problems?

K. Conceptual Budget and Schedule (provide back-up as appropriate)

How long do you expect the project to take? How was this budget estimate developed? What assumptions were used? Was this based on prior experience, best estimates, known costs, or other information sources? Please be specific and provide supporting documentation.

Expenditure Summary

Submitted By:

Budget Analyst:

Grant ID (for previously awarded funding - if applicable):

Project Title:

Sponsor Dept.:

Task Budgets	<i>Expended to Date</i>	Previously Awarded	CIP FY15-FY19	Post-CIP	Project Total
Software					
Construction					
Const. Contingency					
Veh. Contracts					
Veh. Contingency					
Real Estate					
Materials					
Prof. Services					
Force Acct.					
Flagging					
Field Inspection					
Legal					
Proj. Admin.					
Indirect Costs					
Proj. Subtotal					
<i>Proj. Contingency</i>					
Direct Enter Tot.					
Total					

Task Budgets	FY15	FY16	FY17	FY18	FY19
Software					
Construction					
Const. Contingency					
Veh. Contracts					
Veh. Contingency					
Real Estate					
Materials					
Prof. Services					
Force Acct.					
Flagging					
Field Inspection					
Legal					
Proj. Admin.					
Indirect Costs					
Proj. Subtotal					
<i>Proj. Contingency</i>					
Direct Enter Tot.					
Total					

Task Notes

Software Costs:

Construction Costs:

Construction Contingency:

Vehicle Contracts:

Vehicle Contingency:

Real Estate:

Materials Procurement:

Professional Services:

Force Account (support):

Flagging:

Field Inspection:

Legal:

Project Administration:

Indirect Costs:

Project Contingency:

**STAFF SUMMARY SHEET
(MBTA PROCEDURES NO. 1)**

TO		FOR		FROM:			
1	GM	1	Approval	Dept:	Design & Construction	Author:	Wile E. Coyote
		1	Signature				
	BD		Vote	Subject:	MBTA Contract No. XXXXXXXX Award, Amendment, or Change Order No. X	Date:	July 29, 2013
			Info				

Implications: (The implications checked below are involved in this action, are discussed below or in a separate enclosure, and have been considered in the final recommendation.)

☒ Capital Budget
 ☐ Operating Budget
 ☐ Legal
 ☐ Other

PURPOSE:

The purpose of this staff summary is to request the General Manager and Rail & Transit Administrator to execute amendment no. XX to MBTA contract no. XXXXXXXX entitled, "Contract Name" with Acme Corporation for additional design engineering services for an estimated sum not to exceed \$X,XXX,XX.XX and to extend the contract to December 31, 2014. An extra work order letter (EWOL) directing the contractor to begin work was issued on June 27, 2013, by the General Manager and Rail & Transit Administrator.

TOTAL PROJECT BUDGET:

This contract is for the design of the Arborway Garage Complex that has a total project budget of \$XX,XXX,XXX.XX which includes the following:

Design	\$XX,XXX,XXX.XX
Construction	\$XX,XXX,XXX.XX
Force Account	\$ XXX,XXX.XX
Unallocated Contingency	\$ XXX,XXX.XX
Project Administration/Inspection	<u>\$ X,XXX,XXX.XX</u>
Total	\$XX,XXX,XXX.XX

DISCUSSION:

The Board of Directors awarded this contract on June 14, 1991 in the amount of \$XX,XXX.XX. A notice to proceed (NTP) was issued on June 27, 1991. There are twenty-six (26) amendments to this contract authorized or pending to date and the estimated ceiling price, including this amendment is \$XX,XXX,XXX.XX.

An EWOL, for a sum not to exceed \$ X,XXX,XXX.XX dated June 27, 2013, was issued by the General Manager and Rail & Transit Administrator.

MBTA contract no. XXXXXXXX, with Acme Corporation provides design engineering services for the permanent Arborway Bus Storage & Repair Facility to support the MBTA CNG and diesel fueled buses at the Arborway Yard. The new facility will garage, fuel and service one hundred and eighteen (118) CNG and diesel fueled buses. It will also include the anticipated demolition of the 500 Arborway building.

Amendment no. XX will provide additional Design Engineering Services for Phase II (15-30%) Preliminary Design, Phase III – (30-60%) Design, Phase IV - (60-100%) Final Design Engineering Services necessary to complete the Arborway Garage Complex. The phased engineering work will include:

Subject: MBTA Contract No. XXXXXXXX, Amendment No. X

The DBE goal on this contract is 16%. This amendment has a DBE participation of \$281,177.80 (24.7%) as follows: Road Runner Services (\$164,219.57) and Elmer Fudd Enterprises (\$116,958.230). The contract value to date including this amendment is \$14,569,690.93. The DBE commitment to date including this amendment is \$2,106,859.80 (14.5%) as follows:

<u>Subcontractor</u>	<u>Work Type</u>	<u>DBE Amount</u>
Elmer Fudd Enterprises, Inc.	Estimating & Scheduling	\$117,008.00
Beep Beep Engineering, Inc.	Fire Protection	\$249,356.42
Road Runner Services, Inc.	Civil Eng./Survey	\$930,751.00
Sam Sheepdog Engineering, Inc.	Structural	\$26,445.58
Looney Toons Landscape	Landscape	\$296,561.00
Merrie Melodies Design Collaborative	Landscape	\$197,000.00
Gizmos Environmental, Inc.	Environmental	\$8,560.00
Total		\$1,825,682.00

The DBE participation paid through last as of payment no. 180 is 14.3% with the breakdown as follows:

<u>Subcontractor</u>	<u>Work Type</u>	<u>DBE Amount</u>
Beep Beep Engineering, Inc.	Fire Protection	\$229,440.42
Tiny Toons Engineering	Engineering	\$168,051.35
Road Runner Services, Inc.	Civil Eng./Survey	\$846,913.47
Sam Sheepdog Engineering, Inc.	Structural	\$26,445.58
Looney Toons Landscape	Landscape	\$271,989.41
Merrie Melodies Design Collaborative	Landscape	\$194,391.06
Elmer Fudd Enterprises, Inc.	Estimating & Scheduling	\$112,287.87
Gizmos Environmental, Inc.	Environmental	\$8,026.76
Total		\$1,857,545.92

SUSTAINABILITY:

(PM shall work with MBTA Environmental Compliance Department for sustainability language) The scope of the project does not provide typical opportunities to implement sustainable design elements since, as a bridge reconstruction project, it does not involve new electrical lighting, designs for water consumption, HVAC systems which would have opportunities for reducing resource consumption. The project does, however, require the contractor to conform to best management practices during construction in regard to stormwater management, natural resource protection, dust and noise control, worker protection for the removal of lead, asbestos or other hazardous materials that might be present on the existing structure and need to be removed. These practices are designed to reduce construction related impacts and are requirements for all MBTA construction projects.

FINANCIAL IMPACT:

Funds for this action are temporarily available through MBTA Revenue Bond Grant No. XXXXXX. The project anticipates FTA funding 80% of this effort with 20% MBTA Revenue Bond Fund match.

Subject: MBTA Contract No. XXXXXXXX, Amendment No. X

ALTERNATIVE:

This amendment can be denied and the additional design engineering services necessary for the demolition of the existing 500 Arborway facility along with the adjacent City of Boston pole yard and parking lots would not be authorized resulting in a site that is not suitable for the new Arborway bus storage and repair facility.

RECOMMENDATIONS:

This amendment has been reviewed by the project staff and found to be necessary to complete the design engineering services for the construction of the Arborway Garage Complex. Therefore, it is recommended that the General Manager and Rail & Transit Administrator approve and execute this amendment no. X to MBTA Contract No. XXXXXXXX for an estimated sum not to exceed \$X,XXX,XXX.00 and to extend the contract to December 31, 2014.

ENCLOSURES: FOR BOARD

TAB A – BOARD VOTE, then follow the Tabs (below) that pertain to the type of staff summary.

ENCLOSURES: (FOR PROFESSIONAL SERVICE (BASE) CONTRACT)

TAB A – Selection Committee Documentation
TAB B – PS Consultant Information
TAB C – Additional Information

ENCLOSURES: (FOR PROFESSIONAL SERVICE (AMENDMENT) CONTRACT)

TAB A – CMS-PS-020
TAB B – Consultant Proposal
TAB C – Additional Information

ENCLOSURES: (FOR CONSTRUCTION (AWARD) CONTRACT)

TAB A – Pre-Award Documentation (Request this info from CA)
TAB B – Bid Form
TAB C – Recommendation Relative to Award

ENCLOSURES: (FOR CONSTRUCTION (CHANGE ORDER) CONTRACT)

TAB A – CMS-CN-012
TAB B – Contractor Proposal for Prime & Subs
TAB C – Additional Information

Project Manager: Wyle E. Coyote
Date: July 29, 2013
Page: Page 4 of 4

Subject: MBTA Contract No. XXXXXXXX, Amendment No. X

COORDINATION:

S. McCarthy, Chief Operating Officer - Concur/3150

S. Neal-Johnson, Acting Chief of Diversity and Civil Rights Officer/ (857) 368-8893

P. Scott Reed, General Counsel – Concur/ (857) 368-8775

RECOMMEND APPROVAL:

Wyle E. Coyote
Project Manager

RECOMMEND APPROVAL:

Name
Director

RECOMMEND APPROVAL:

Edmond F. Hunter
Assistant General Manager for
Design and Construction

RECOMMEND APPROVAL:

Jonathan R. Davis
Deputy General Manager &
Chief Financial Officer

APPROVED:

Beverly A. Scott, Ph.D.
General Manager and
Rail & Transit Administrator

MBTA Profit Calculation-DesignPS Sample 047 (CA SOP)
Exhibit 3-2 PM Manual

	Weight	Low 8%	9%	10%	High 11%	Total
Complexity of the Work	20%	0	0	0	0	0%
Size of Contract	20%	0	0	0	0	0%
Term of Contract	20%	0	0	0	0	0%
Consultant's Financial Risk	20%	0	0	0	0	0%
Consultant's Investment	10%	0	0	0	0	0%
Consultant's Past Performance	10%	0	0	0	0	0%
TOTAL	100%					0.0%

Instruction: Place a "1" in the box under the category/rate that applies and zeros in the others in that row.

NOTE: Any fixed fee greater than 10% requires approval by the Assistant General Manager.

Scoring Guidelines**Complexity of the Work**

Normal: Design, CPS, REI, PM for typical MBTA facilities and projects
 High: Design of special or unique facilities - tunnels, movable bridges, underpinning historic buildings, etc.; inspection of such facilities; management of large and complex projects

Low: Design of simple/template facilities or simple modifications; basic planning studies

Size of Contract/Task

Normal: Contracts between \$1M and \$10M
 High: Contracts less than \$1M (due to inefficiencies)
 Low: Contracts over \$10M (due to efficiencies)

Term of Contract/Task

Normal: Contracts between 1 and 3 years
 High: Contracts longer than 3 years (more inflation risk)
 Low: Contracts less than 1 year (less inflation risk)

Consultant's Financial Risk

Normal: Cost plus fixed fee contract; no deviations from MBTA standard terms and conditions

High: Lump sum & fixed/guaranteed price contracts; additional uncompensated insurance requirements

Low: Reduced insurance requirements; no retainage; planning studies without guaranteed cost estimates

Consultant's Investment

Normal: Typical MBTA selection process - Letter of Interest, Proposal, Interview

High: Significantly longer LOI or proposal than typical; travel for requested out of state personnel; presentation of developed design concepts; Task order contracts requiring subsequent development of cost proposals

Low: Simplified proposal process; shorter than typical proposal; sole source selection

Consultant's Past Performance

Normal: Average consultant ratings in the 80s
 High: Average consultant ratings 90 or above
 Low: Average consultant ratings below 80

Procurement Manual EXHIBIT 2.1.6/PM Manual Exhibit 3-3**Professional Services Independent Cost Estimate**

INTERNAL MBTA ESTIMATE:

Prepared by MBTA PM Name: _____

DESIGN CONSULTANT:

Date MM/DD/YYYY

CERTIFIED ESTIMATING FIRM:

Signature : _____

Estimate is based on anticipated hours and personnel classifications needed for these services

I CERTIFY THAT THIS ICE WAS DEVELOPED PRIOR TO VIEWING THE CONTRACTOR'S PROPOSAL:

MBTA Contract No.**Contract Title****MBTA Project Manager****Amendment Description**

<u>Personnel Classifications</u>	<u>Hours - Basic</u>	<u>Hours - Special</u>	<u>Rates</u>	<u>Total Basic</u>	<u>Total Special</u>	<u>TOTAL COST</u>
Project Manager				#VALUE!	#VALUE!	#VALUE!
Structural Project Engineer				#VALUE!	#VALUE!	#VALUE!
Project Controls				#VALUE!	#VALUE!	#VALUE!
System Engineer				\$0.00	\$0.00	\$0.00
Mechanical Engineer				#VALUE!	#VALUE!	#VALUE!
QA/QC Engineer				#VALUE!	#VALUE!	#VALUE!
Communications Engineer				#VALUE!	#VALUE!	#VALUE!
Signal Engineer				\$0.00	\$0.00	\$0.00
Engineer				#VALUE!	#VALUE!	#VALUE!
Technician				\$0.00	\$0.00	\$0.00
Administrative Support				\$0.00	\$0.00	\$0.00
CADD Technician				#VALUE!	#VALUE!	#VALUE!
Senior Architect				\$0.00	\$0.00	\$0.00
Architect				\$0.00	\$0.00	\$0.00
Scheduler				\$0.00	\$0.00	\$0.00
Cost Estimator				#VALUE!	#VALUE!	#VALUE!
TOTALS	0	0		#VALUE!	#VALUE!	#VALUE!

**Please add and/or delete personnel classifications as need based on anticipated needs for contract

This includes hours/costs for subconsultants.

<u>Overhead Rate</u>	<u>Total Basic</u>	<u>Total Special</u>	<u>Overhead Basic</u>	<u>Overhead Special</u>	
155%	#VALUE!	#VALUE!	#VALUE!	#VALUE!	
TOTAL LABOR AND OVERHEAD					#VALUE!

Other Direct Cost Expenses

Printing and Copying	
Insurance	\$0.00
Express Mail/Shipping	\$0.00
Communication	\$0.00
Environmental Services	\$0.00
Soil Testings	\$0.00
Borings	\$0.00
Police Details	\$0.00
Flag Persons	\$0.00
Aerial Photography	\$0.00

ODC TOTALS

\$0.00

**Please add and/or delete anticipated other direct cost expenses based on the contract

Travel

Mileage	Miles	\$0.50 per mile	#VALUE!
Tolls	\$0.00		\$0.00
Parking	\$0.00		\$0.00
Hotel	\$0.00		\$0.00
Airfare			

TRAVEL TOTALS

#VALUE!

**Please add and/or delete anticipated travel expenses based on the contract

Lodging Expenses	\$150.00 per day
Other Expenses	\$40.00 per day
Mileage	\$0.50 per mile

Fixed Fee

Total Labor and Overhead	#VALUE! ~10%	#VALUE!
ODC Expenses and Travel	#VALUE! ~3%	#VALUE!

FIXED FEE TOTAL

#VALUE!

INDEPENDENT COST ESTIMATE

#VALUE!



**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
DESIGN & CONSTRUCTION DIRECTORATE
CONSULTANT PERFORMANCE EVALUATION RATING SHEET**

PREAMBLE

The Consultant Performance Evaluation Rating Report (CPER) is required to be submitted a.) twice each year for the duration of the design contract and b.) upon contract closeout.

The report is divided into three (3) categories: Administration (20%); Procedural (20%); and Technical (60%). Each category is weighted and further subdivided to assist in rating each category.

Though the outline is fairly comprehensive, it should be noted that these criteria are only tools to assist the reviewer and that each project has its own special circumstances.

Again, this report should be completed on a semi-annual basis, thereby permitting the reviewer and the consultant additional opportunities to work together to provide plans and specifications that will satisfy all concerned parties.

CONTRACT NUMBER:

CONTRACT TITLE:

TASK NUMBER (IF APPLICABLE):

MBTA PROJECT MANAGER:

CONSULTANT NAME:

CONSULTANT PM:

CONTRACT CEILING PRICE:

RATING PERIOD:

INTERIM REPORT

☐

or

FINAL REPORT

☐

PERCENT (%) COMPLETE CURRENTLY:

 %

NUMERICAL RATING SCALE: (0-20%)

Excellent 18-20

Satisfactory 14-17

Unsatisfactory 0-13

1. ADMINISTRATION: (Weight = 20%)

a. Organization

Does the design team work well together?
Is the team well organized and focused?
Is a good work plan in place?
Is the project properly staffed?

b. Project Management

Does the Project Manager communicate well?
Is the PM responsive? In a timely manner?
Is progress reporting timely and informative?
Are meeting minutes accurate, complete and timely?
Is the MBTA informed of design and construction changes (time and fee) in a clear and timely manner?
Are project files organized and maintained properly?

c. Scheduling

Are schedules and Milestones being maintained?
Has the MBTA been kept informed of changes in schedule?
Are submissions complete, organized and correct?

d. Financial

Are invoices submitted on a regular basis that are complete and accurate? Is design level consistent with invoicing?
Are invoices for contract/amendments being segregated properly to allow for timely payments?

TOTAL 0

Average Rating for Category (Total of a thru d divided by 4) 0

Comments (required for unsatisfactory)

NUMERICAL RATING SCALE: (0-20%)

Excellent 18-20

Satisfactory 14-17

Unsatisfactory 0-13

2. PROCEDURAL: (Weight = 20%)

a. Knowledge

Application, understanding and implementation of federal, state, MBTA, AMTRAK and local policies, procedures, regulations, law, orders, decrees, etc., as required?
Are MBTA policies, procedures, and design standards being met? Are project goals fully understood?

b. Project Approach

Has the consultant been creative to project needs?
Has the consultant been innovative? Has the consultant been thorough? Has the consultant addressed constructability issues/concerns?
Has the design considered value engineering?

c. Coordination

Does the consultant cooperate with the MBTA and joint operating agencies (e.g. AMTRAK) and affected local communities and officials?

d. Subconsultants

Is work being coordinated and managed well? Does the prime address problems with their subs in a timely fashion? Does the prime coordinate the "Exchange of Information" amongst the design team?

TOTAL

0

Average Rating for Category (Totals of a thru d divided by 4)

0

Comments (required for unsatisfactory)

NUMERICAL RATING SCALE: (0-60%)

Excellent 54-60

Satisfactory 42-53

Unsatisfactory 0-41

3. TECHNICAL: (Weight = 60%)

a. Expertise

Application and presentation of design information generated? Is the design(s) documented, complete and coordinated properly? Are reports clear and concise with recommendations well supported?

b. Budget Conformance

Have alternatives, if necessary, been considered to stay within the design and construction budget?

c. Quality of work

Is the data submitted accurately? Does work comply with governing standards? Are design issues identified and resolved before proceeding with additional work? Are design review comments being addressed/responded/resolved and incorporated into design documents?

d. Supervision Required

Does the consultant require excessive oversight? Does the consultant work cooperatively with the Authority? Does the consultant comply with MBTA's quality assurance?

TOTAL

0

Average Rating for Category (Total of a thru d divided by 4)

0

Comments (required for unsatisfactory)

TOTAL PERFORMANCE RATING

NUMERICAL RATING SCALE: (0-100%)

Excellent 90-100

Satisfactory 70-89

Unsatisfactory 0-69

(Sum of all Average Rating Categories - Maximum Rating = 100)

0.00 %

GENERAL COMMENTS (OPTIONAL)

Input has been received from those identified on the attached list in preparing this evaluation.

Prepared By:

MBTA Project Manager Name

Signature

Date

Reviewed/

Concurred by:

Director Name

Signature

Date

CONSULTANT RESPONSE (CONCURRENCE OR EXCEPTION):

Reviewed by:

Consultant Project Manager Name

Signature

Date

Reviewed by:

Consultant Principal Name

Signature

Date

Instructions

Pre-Bid Review Control Sheet

At approximately the 60% design phase, the Project Manager shall start preparing the pre-bid review control sheet in preparation of advertising a construction contract. The PM shall prepare a binder that contains tabs for each of the items requiring back-up documentation. The back-up documentation shall be tabbed in accordance with the numerical item listed on the sheet.

The PRCS and back-up documentation must be complete prior circulating for signatures. The PM must provide the latest copies of the specifications, drawings, estimate and Contract Time Determination (CTD) with the PRCS package. A construction project may not be advertised until the PRCS is complete.

1. Contract number – Obtain from Contract Administration. You must have a work order prior to assigning a contract number. Complete Scope of Work and a brief description of project.
2. FTA Project number and title – Obtain from Administration and Finance.
3. Designer Information – Obtain from engineering consultant.
4. GM Designee – Obtain information from Contract Administration.

BUDGET

5. Estimated Construction Cost – Obtain from engineer's estimate in concert with MBTA Project Controls Policies.
 - a. Funds Available – Obtain information from Administration and Finance Group for Director of Budget approval.
6. Funding Information
 - a. Source of Funds
 - Budget No. - Obtain from Administration and Finance
 - CMS Work Order Number – Obtain from Administration and Finance
 - b. Source of Funds
 - Area No. – Obtain from Administration and Finance
 - Account No. – Obtain from Administration and Finance
 - Center No. – Obtain from Administration and Finance
 - Active Work Order No. – Obtain from Administration and Finance

CONTRACT ADMINISTRATION

7. Method of Procurement – Sign and date Decision Matrix
8. Desired Advertisement Period – PM to determine
9. Restrictive Provisions – PM to coordinate with Contract Administration Department.
10. Alternative Delivery – PM to coordinate with AGM and Contract Administration.
11. Product specifications – PM to coordinate with Procurement and Logistics Department and consulting engineer.

FEDERAL TRANSIT ADMINISTRATION

12. FTA Provisions – Work with Contract Administration and Administration and Finance. PM must sign this section.
13. Federal EEO - Work with Office of Diversity and Civil Rights for latest EEO Specifications
14. Federal EEO - Work with Office of Diversity and Civil Rights for DBE and Contract Administration for MMU and FMU

PROJECT MANAGEMENT

15. Specialty Items – Project Manager
16. Long-range Procurement – PM to consult with the Procurement and Logistics Department, the consulting engineer, and the applicable MBTA Technical Department.
17. Revenue Producing Construction Cost – Project Manager
18. Other construction projects – Project Manager – List adjacent projects including contract number and the impact if any it will have on your project (i.e. access restraints, etc.) if project is impacted, explain how the effects will be mitigated?
19. Allowances – PM must provide justification and backup for the dollar values stated for each allowance. PM must provide substantiation as to how each allowance value was derived. PM should coordinate with the engineering consultant. Coordinate risk contingency allowance with Project Controls Group. Note: Check Specifications to make sure allowance items are included and correct.

20. Engineering Estimate – Project Manager to provide a copy of the engineering estimate for the PRCS and an electronic copy (Excel, not just PDF) must also be provided (electronic copy to be sent to project controls). Project Manager in conjunction with Project Controls Manual Section 2.
 - a. Lump Sum – Project Manager
21. Force Account
 - a. Internal – PM to coordinate with MBTA internal operations departments and obtain cost estimates and agreements required to complete the work. Concurrence on the scope and estimate from each entity must be included in Pre-Bid Package.
22. Force Account
 - a. External – PM to coordinate with railroads, municipalities, utilities, etc. Provide cost estimates and agreements required to complete the work. PI Agreements and estimates to be included in Pre-Bid Package.
23. Designer to request a waiver from the AGM for all permanent elements that have final design delegate to the contractor
24. Include **Section 01590 –Field Office and Sheds** identifying all equipment, i.e. laptop(s), cell phone(s) and tablet(s) to be used in the project
25. If applicable attach a dummy staff summary or Exhibit 3-4 (located on the Y Drive; Y:\Contract Administration\Standard Forms\Exhibit 3-4 Forms)
26. Project Manager to prepare a slide deck (including but not limited to the scope of project, why it is needed, construction schedule, project budget, if MBTA entities will be completing a portion of the work) if FCMB Board approval is needed. See attached for information on the Deck Development Process.

DESIGN

27. Art, Way Finders and Graphics – PM to coordinate with Director of Design

REAL ESTATE

28. Real Estate – PM works with MBTA Real Estate Department and engineering consultant. Attach concurrence memo.

PROJECT CONTROLS

- 29. Bid Escrow – PM to obtain an estimate for MBTA Bid Escrow Agent Services for projects \$1,000,000 or greater
- 30. Value Engineering – Coordinate with Project Controls Group and provide VE report or waiver
- 31. LD/Milestones
 - a. List contract milestones, including MS# and description
 - b. Liquidated Damages – PM to coordinate with Project Controls Department and consulting engineer. The substantiation for LD's must be included in Pre-Bid Package.
- 32. Risk Analysis – Coordinate with Project Controls Group and provide copy of report.
 - a. Contingency Value - Value taken from Risk Report. If providing a contingency value that differs from the Risk Report, explain why.
 - b. Construction schedule contingency – Value taken from Risk Report. If providing a value that differs from the Risk Report, explain why.
- 33. Constructability Review – Coordinate with Project Controls Group. Provide copy of report or waiver.

RISK MANAGER - INSURANCE

- 34. Insurance (RR Protection/pollution liability) – PM to coordinate with MBTA Risk Manager
 - a. Railroad Protection – PM to coordinate with MBTA Risk Manager
 - b. Pollution Liability – PM to coordinate with MBTA Risk Manager
 - c. Hazardous Materials – PM to coordinate with the Director of Environmental Compliance and the engineering consultant.

QA/QC

- 35. Building Permit – PM to coordinate with Director of QA/QC. See attached for memo template
- 36. Paint Systems – PM to coordinate with MBTA Quality Assurance Department within Design & Construction. See attached for memo template

37. PM to coordinate with the designer in order to provide a table of contents of the specifications used with version dates. PM to coordinate with QA/QC for approval of modified sections. See attached for memo template

SAFETY

38. Safety – PM to coordinate with MBTA Safety Department.

SYSTEMWIDE ACCESSIBILITY

39. Equal Facilities – PM to coordinate with consulting engineer and Systemwide Accessibility. Attach Systemwide Accessibility confirmation email from 100% review.

ENVIRONMENTAL

40. Environmental Permit Worksheet – Coordinate with Environmental Compliance Group.

Signatures – Signatures should be obtained in the order depicted on the signature page in order to minimize delays.

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY CONTRACTOR PERFORMANCE RECORD

DATE: _____ MBTA CONTRACT NO. _____

CONTRACT TITLE: _____

PROJECT MANAGER: _____ PAY ESTIMATE NO.: _____

CONTRACTOR: _____

CONTRACTOR PROJECT MANAGER: _____

AWARD AMOUNT: _____ ADJUSTED VALUE: _____

PERCENT OF PROJECT COMPLETE TO DATE: _____

PERCENT OF WORK PERFORMED BY PRIME CONTRACTOR: _____

INTERIM REPORT NO.: _____ FINAL REPORT: _____

The Contractor Performance Evaluation is required to be submitted every **6th** payment for the duration of the construction contract and upon contract closeout.

Rating: (100 Points Maximum)

Unacceptable	Needs Improvement	Satisfactory	Good	Very Good	Excellent
0-5 Points	6 Points	7 Points	8 Points	9 Points	10 Points

- Adherence to MBTA Safety Requirements:** Rate this contractor's safety and housekeeping procedures on this project. Were there any OSHA violations or serious safety accidents? Was there a culture of safety on this project? If so, provide specific examples.

Points: _____

Comments: _____

2. **Rate the overall quality of this contractor's workmanship.** Were there quality-related or workmanship problems on the contract? Was there a culture of quality on this project? Please provide specific examples:

Points: _____

Comments: _____

3. **Resolution of Construction Deficiencies:** Rate the contractor's ability to resolve quality issues. Did the contractor correct problems on their own or did they resist until forced? Did the contractor proactively propose solutions?

Points: _____

Comments: _____

4. **Project Management:** Rate this contractor's performance with regard to adhering to contract schedules and milestones. Did the contractor regularly submit good quality schedule updates? Did the contractor meet the contract schedule or the schedule as revised by approved change orders? If not, was the delay attributable to this contractor? If so, provide specific examples.

Points: _____

Comments: _____

5. **Subcontractor Management:** Rate this contractor's ability, effort, and success in managing and coordinating subcontractors (if no subcontractors, rate this contractor's overall project management). Was the contractor able to effectively resolve problems related to subcontractor work? If not, provide specific examples. Provide below the current DBE goal and DBE Paid Through Last percentage achieved by the contractor:

Project DBE Goal (From CMS) % **Current DBE Paid Through Last % (From CMS):** %

If the current DBE Paid through last is below the DBE goal, explain how the contractor plans to achieve the DBE goal.

Points: _____

Comments _____

6. **Change Orders:** Was the contractor reasonable to work with on identifying and resolving change orders or claims? Were this contractor's prices on change orders and extras reasonable? If not, provide specific examples.

Points: _____

Comments _____

7. **Paperwork Processing:** Rate this contractor's performance in completing and submitting required project paperwork (i.e. change orders, submittals, drawings, requisitions, payroll, workforce reports, etc.). Did the contractor submit the required paperwork promptly and in proper form? If not provide specific examples.

Points: _____

Comments: _____

8. **Working Relationships:** Rate this contractor's working relationships with other parties (i.e. owner, designer, subcontractor, third parties such as municipalities or utility companies, etc.). Did this contractor relate to other parties in a professional manner? If not, give specific examples.

Points: _____

Comments: _____

9. **On-Site Supervisory Personnel Rating:** Rate the general performance of the contractor's on-site supervisory personnel. Did the superintendent(s) have the knowledge, management skills and experience to run a project of the size and scope? If not, provide specific examples.

Points: _____

Comments _____

10. **General Performance:** INTERIM REPORT: Is the contractor resolving open issues in a reasonable manner such that future closeout will be efficient.

FINAL REPORTING ONLY: Efficiency in Closing Out Project: Were as-built plans accurate and provided promptly at the end of project? Were they responsive to completing punch list items?

Points: _____

Comments _____

TOTAL RATING: 0 _____

Request Meeting

Contractor:

Signature:_____

Date:_____

Comments

Signature:_____

Date:_____

MBTA Resident Engineer

MBTA Project Manager

MBTA Director

MBTA Director of Quality Assurance

MBTA AGM for Capital Delivery

CMS Form 6 – Certificate for Substantial Completion

CERTIFICATE FOR SUBSTANTIAL COMPLETION

Exhibit 6.12

MBTA CONTRACT NO. _____ TITLE _____

LOCATION _____

AUTHORITY: _____

MBTA General Conditions, Section 00700, Article 3.11

TO: Contractor _____

Pursuant to the authority noted above, you are notified that the Massachusetts Bay Transportation Authority is satisfied that the portion of the above noted project, as hereinafter enumerated, is substantially completed. (Identify portions to be substantially accepted.)

The Massachusetts Bay Transportation Authority, through its undersigned representatives, here accepts from the Contractor, subject to Contract Stipulations, said portion of the project effective as of midnight _____. The Contractor is relieved of responsibility for performing further work or supplying further materials, equipment or items, except that which is described on the attached list. Attached herewith is a complete list of all incomplete or unsatisfactory items of contract work.

The use of any portion of the project or the occupancy of any facility or portion thereof by the Massachusetts Bay Transportation Authority shall not be construed as an acceptance of the work not performed in accordance with the contract nor relieve the contractor of liability to perform any work required by the Contractor or required by the Contractor of liabilities with respect to any warranties or guaranties required by the contract.

The undersigned recommend the issuance of this Certificate for Substantial Completion:

Signature

Date

Design Firm _____ by _____

MBTA Project Manager _____

MBTA Deputy Director of Design and Construction _____

cP. 6

MBTA MeRager of Quality Assurance _____

APPROVED _____

Date _____

Director of Construction

cc: Contract Administration
P. Hoffmann, Risk Manager

June 2003

**CMS Form 7 – Notification – Opening Portions of Contract
for Operations**

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

NOTIFICATION - OPENING PORTIONS OF CONTRACT FOR OPERATION

Exhibit 6.1

MBTA CONTRACT NO. _____ TITLE _____

LOCATION _____

AUTHORITY: *Division I General Requirements and Covenants, Subsection 5.20*

TO: Contractor _____
Pursuant to the authority noted above, you are notified that the Massachusetts Bay Transportation Authority is satisfied that the portion of the above noted project, as hereinafter enumerated, is ready

for use occupancy. (Identify portions to be used and/or occupied):

The Massachusetts Bay Transportation Authority, through its undersigned representatives, here from the Contractor, subject to contract stipulations, said portion of the project effective as of midnight _____. The Contractor is relieved of responsibility for performing further work or supplying further materials, equipment or items except that which is described on the attached list. Attached herewith is a complete list of all incomplete or, unsatisfactory items of contract work.
The use of any portion of the project or the occupancy of any facility or portion thereof by the

Massachusetts Bay Transportation Authority should not be construed as an acceptance of the work not performed in accordance with the Contract, nor relieve the Contractor of liability to perform work required by the Contractor, of liabilities with respect to any warranties or

guaranties required by the contract.

The undersigned recommend the issuance of the Notification - Opening Portions of Contract for Operation: Signature

Date

Designer _____ By _____

MBTA Project Manager

MBTA Deputy Director of Design and Construction

MBTA Manager of Quality Assurance

D I

APPROVED

DATE Director of Construction

CMS Form 8 – Certificate of Completion and Release

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
CERTIFICATE OF COMPLETION AND RELEASE

Exhibit 6.14

MBTA CONTRACT NO. _____ TITLE _____
LOCATION _____

KNOW ALL MEN BY THESE PRESENTS:

1. The undersigned certifies that all work required under this contract and approved Change Orders has been performed in accordance with the terms thereof, and that there are no unpaid claims for materials, supplies, or equipment and no claims of laborers or mechanics for unpaid wages arising out of the performance of this contract, and that the wage rates paid by the Contractor and all subcontractors were in conformity with the contract provisions relating to said wage rates.

2. The undersigned hereby certifies that there is due from and payable by the
Massachusetts Bay Transportation Authority to the Contractor under the Contract and duly approved
Change Orders and modifications the balance of 0.00 . STATED AS FOLLOWS:

Contract Award Amount	\$ _____	B&E Reports*: Items & TM's \$	_____
Auth. Addition/Deduction:		(*Excluding Allowance Items)	
C.O., Claim, and B&E's* \$	_____	Total Value Work-to-Date	0.00
(*B&E Allowance Items only)		Paid to Date	\$ _____
Authorized Contract Total	\$ 0.00	Balance Due Contractor	0.00

3. The undersigned further certifies that in addition to the amount set forth in paragraph 2, there are outstanding and unsettled the following requests for changes which he claims are just and due and owing by the Massachusetts Bay Transportation Authority to the Contractor, as submitted on MBTA CONSTRUCTION FORM 3 STATED AS FOLLOWS:

a. Request No.	Dated	Amount	\$ _____
b. Request No.	Dated	Amount	\$ _____
c. Request No.	Dated	Amount	\$ _____

4. Except for the amount stated under paragraph 2 hereof, the undersigned has received from the Massachusetts Bay Transportation Authority all sums of money payable to the undersigned under or pursuant to the above-mentioned contract or any modifications or changes thereof.
5. That in consideration of the payment of the amount stated in paragraph 2, hereof the undersigned does hereby release the Massachusetts Bay Transportation Authority from any and all claims arising under or by virtue of this contract, except the amount listed in paragraph 3, hereof; provided, however, that if for any reason as the Massachusetts Bay Transportation Authority does not pay in full amount stated in paragraph 2, hereof, said deduction shall not affect the validity of this release, but the amount so deducted shall be automatically included in paragraph 3 as an amount which the Contractor has not released but will release upon payment thereof. The Contractor further certifies that upon the payment of the amount listed in paragraph 3 hereof, and of any amount which may be deducted from paragraph 2 hereof, he will release the Massachusetts Bay Transportation Authority from any and all claims of any nature whatsoever arising out of said contract or modification thereof, and will execute such further releases or assurances as the Massachusetts Bay Transportation Authority may request.

IN WITNESS WHEREOF the undersigned has signed this instrument this _____ day of _____, 20____

(Contractor) By _____
(Signature and Title of Officer)

Commonwealth of Massachusetts

Subscribed and sworn to before me this _____ day of _____

My commission expires _____

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

CERTIFICATE OF INSPECTION AND ACCEPTANCE

MBTA CONTRACT NO. S10CN04 TITLE / LOCATION Blue Line Modernization Project, Maverick Square Station and Blue Line Vents, East Boston, MA

CERTIFICATE OF INSPECTION

This is to certify that a complete inspection of the above entitled project was made on _____ by the undersigned and the entire work was completed in accordance with the plans and specifications. The undersigned recommends acceptance of the project.

Signature

Date

Designer _____ By _____

MBTA Project Manager ☐ As-Built Plans Submitted

MBTA Director of Design & Construction

MBTA Director of Environmental Affairs

MBTA Director of Quality Assurance

MBTA Director of Document Control

MBTA Risk Manager

MBTA Chief Engineer of Design and Construction

MBTA Chief Engineering and Maintenance

MBTA AGM Systemwide Accessibility

CERTIFICATE OF ACCEPTANCE

The above entitled project is accepted as of _____

APPROVED _____

Chief Operating Officer

DATE _____

APPROVED _____

AGM for Design & Construction

DATE _____

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

Exhibit 10-8

CONSTRUCTION CONTRACT CLOSEOUT SUMMARY

CONTRACT NO.	<u>H74CN04</u>	FINAL PAYMENT NO.	<u>25</u>
DESCRIPTION	<u>Fairmont Corridor Improvements, Bridge Replacement Project, Boston, MA</u>		
CONTRACTOR	<u>J. F. White Contracting Co.</u>		

A.	AWARD		<u>\$22,865,125.00</u>
B.	Change Orders	No. <u>15</u>	<u>\$990,486.80</u>
C.	Claims	No. <u>0</u>	<u>\$0.00</u>
D.	B&E / CQV Reports (Allowances Only)		<u>\$398,186.41</u>
E.	AUTHORIZED CONTRACT VALUE		<u>\$24,253,798.21</u>
F.	B&E / CQV Reports (Excluding Allowances)		<u>\$459,363.25</u>
G.	TOTAL PROJECT COST (Total Work-to-Date)		<u><u>\$24,713,161.46</u></u>
ADJUSTMENTS TO CONTRACT AWARD			
H.	Total Project Cost to Award (G divided by A)		<u>108.1%</u>
I.	Change Orders to Award (B divided by A)		<u>4.3%</u>
J.	Claims to Award (C divided by A)		<u>0.0%</u>
K.	B&E / CQV Reports to Award (D + F divided by A)		<u>3.8%</u>
	B&E / CQV Allowances to Award (D divided by A)	<u>1.7%</u>	
	B&E / CQV Items/C.O.'s to Award (F divided by A)	<u>2.0%</u>	
L.	DBE Participation Reported Through This Payment		<u>\$2,064,669.66</u>
M.	DBE Goal <u>0%</u>	DBE Participation (L divided by G)	<u>8.4%</u>
N.	Second Low Bidder	<u>Barletta Heavy Division, Inc.</u>	
O.	Second Low Bidder's Computer Bid Total		<u>\$22,944,200.00</u>
P.	Difference Between Second Low Bid and Award (Difference of A from O, divided by A)		<u>0.3%</u>

 Project Manager

Design Fee Summary and Construction Phase Services Analyses

Fee Summary Analysis and Construction Phase Service Analysis Instruction Sheet

HOW TO PREPARE A FEE SUMMARY ANALYSIS

Basic Labor

- Step 1.** From the Base Contract, identify the dollar direct labor and overhead total of the Prime's basic hours. Multiply this total by 10% to arrive at the fixed fee.
- Step 2.** Add the Direct Labor/Overhead of basic hours for all the sub-consultants and 10% for the fixed fee. Multiply by 3%.
- Step 3.** Add the totals of Steps 1 and 2.
- Step 4.** Follow the same procedures for Steps 1, 2, and 3 for any Amendments that deal with the construction estimate.
- Step 5.** Add total from Steps 3 and 4 to get total basic hours/dollar costs.
- Step 6.** Divide total basic hours (Step 5) by construction estimate to arrive at percentage for fee summary.
- Step 7.** Amount of Step 6 cannot exceed 6% of construction estimate.

Special Labor

- Step 1.** From the Base Contract, identify the dollar direct labor and overhead total of the Prime's special hours. Multiply this total by 10% to arrive at the fixed fee.
- Step 2.** Add the Direct Labor/Overhead of special hours for all the sub-consultants and 10% for the fixed fee. Multiply by 3%.
- Step 3.** Add the totals of Steps 1 and 2.
- Step 4.** Follow the same procedures for Steps 1, 2, and 3 for any Amendments that deal with the construction estimate.
- Step 5.** Add total from Steps 3 and 4 to get total special hours/dollar costs.
- Step 6.** Divide total special hours (Step 5) by construction estimate to arrive at percentage for fee summary.
- Step 7.** Amount of Step 6 cannot exceed 2% of construction estimate.

HOW TO PREPARE A CONSTRUCTION PHASE SERVICE ANALYSIS

- Step 1.** From the Base Contract or Amendment, identify the dollar and overhead total of the Prime's basic and special hours. Multiply this total by 10% to arrive at the fixed fee.
- Step 2.** Add the direct labor/overhead for all basic and special hours for all the sub-consultants and 10% for the fixed fee. Multiply by 3%.
- Step 3.** Add total from Steps 1 and 2 to get total basic hours/dollar costs.
- Step 4.** Divide total basic and special hours dollar total by the construction estimate to arrive at percentage for Construction Phase Service Analysis.
- Step 5.** Amount of Step 4 cannot exceed 4% of construction estimate.

Example of Fee Summary (Basic Costs)

Step 1 Base Contract (Preliminary Design Services)

Prime Basic Hours	
Direct Labor and Overhead	\$ 135,362.00
10% Fixed Fee	\$ 13,536.00
Total Prime	\$ 148,898.00

Step 2 Subconsultants

Access consultant	\$ 4,196.00
Civil	\$ 42,475.00
Electrical	\$ 45,709.00
Geo Technical	\$ 63,902.00
Lighting	\$ 12,987.00
Mechanical	\$ 43,818.00
	\$ 213,395.00
10%	\$ 21,309.00
	\$ 234,395.00
3% Subconsultants	\$ 7,032.00
Total Subs	\$ 241,427.00

Step 3 Total for Prime and Subs \$ 390,325.00

Step 4 Amendment No. 1 (Final Design Services)

Prime Basic Hours	
Direct Labor and Overhead	\$ 150,000.00
10% Fixed Fee	\$ 15,000.00
Total Prime	\$ 165,000.00

Subconsultants

Access consultant	\$ 8,000.00
Civil	\$ 50,000.00
Electrical	\$ 60,000.00
Geo Technical	\$ 25,000.00
Lighting	\$ 15,000.00
Mechanical	\$ 50,000.00
	\$ 208,000.00
10%	\$ 20,800.00
	\$ 228,800.00
3% Subconsultants	\$ 6,864.00
Total Subs	\$ 235,664.00
AM 1 - Total for Prime and Subs	\$ 400,664.00

Step 5 Totals from Step 3 and 4

Base Contract Total for Prime and Subs	\$ 390,325.00
AM 1 - Total for Prime and Subs	<u>\$ 400,664.00</u>
Total	\$ 790,889.00

Step 6 Construction Estimate \$13,200,000.00

Total Basic Costs \$ 790,889.00

Step 7 6% Design Line Maximum \$ 792,000.00
Total Basic Costs \$ 790,889.00

5.99% of Construction Estimate \$ 790,889.00

Note: Same steps for Special Hours, but the maximum allowable is 2%.

Filing Systems
(Also, See Project Controls Policy Manual)

Project Manager Filing System

Consultant Selection

- LOI
- RFQ
- RFP
- Budget Concurrence memo
- Public announcement
- Authorization cover memo
- Selection Committee
- Proposal evaluation sheet and scoring
- Letter to selected firm
- ICE

Design Award

- Award Documents
- Amendments
- Reallocations

Design

- PDG Meetings
- Environmental Permits
- Design Reports (EVM)
- Project Design Schedules and Updates
- 0-15% Plans/Specs/Review Comments
- 15-30% Plans/Specs/Review Comments
- 30-60% Plans/Specs/Review Comments
- 60-90% Plans/Specs/Review Comments
- 90-100% Plans/Specs/Review Comments

- Contract Documents/Plans/Specs/Addendum/Conformed Documents
- VE Reports
- Risk Assessments
- Engineers Estimates
- IA Agreements
- PI Agreements
- Utility F.A Agreements
- MBTA F.A Agreements (TRS)
- Design Meetings
- Real Estate Acquisition
- Peer Reviews
- DPS, Fire Approvals
- Variances
- Pre bid control sheets w/back up
- Anticipated construction schedules from designer
- Change management documents and log
- Bid escrow task order

Construction

- Prebid
- Notice of Award
- Pre award meetings
- Preconstruction
- NTP
- Construction baseline schedule and updates

- Schedule workshop meeting
- Progress meeting minutes
- Letters from Contractor
- Letters to Contractor
- Memo to file
- Subcontractor approvals
- Submittal log
- RFI's
- RFI Log
- Shop drawing log
- Misc correspondence (external stakeholder) to MBTA
- Misc correspondence (external stakeholder) from MBTA
- Change orders
- Construction change directives (Modifications)
- EWOL
- Claims
- Photos
- Contractor schedule of values
- Meetings (misc)

Contract close out

- Lessons learned
- Form 6, 7,8 &9
- Contract closeout documents

Misc. Files

- AGM reports (Design)
- AGM reports (Construction)
- Budget Documents
- Contractor pay requisition
- Contractor evaluation
- Consultant evaluation
- Errors and Omissions

MBTA General Provisions

GENERAL CONDITIONS

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SECTION 00700

GENERAL CONDITIONS

PART 1 - DEFINITION OF TERMS

1.1 DEFINITION OF TERMS

- A. Wherever in the Bid or Contract Documents the following terms, or pronouns in place of them, are used, the intent and meaning shall be as follows:
1. Acceptance - Formal written acceptance by the Authority of the completed Work.
 2. Addenda - Written interpretations of and/or revisions to the Bid Documents issued by the Authority prior to opening of Bids.
 3. Alteration - A change or substitution in the form, character, or detail of the Work done or to be done within the original scope of the Contract.
 4. Authority - Massachusetts Bay Transportation Authority, created by Chapter 563, Section 18 of the Acts of 1964, of the Commonwealth, the Party of the First Part to the Contract.
 5. Award - Award by the Authority of a Contract.
 6. Bid - Offer of the Bidder for the Work when submitted on the prescribed Bid Form, properly signed, dated, and guaranteed, and which includes the schedule of bid items.
 7. Bid Documents - Documents provided by the Authority for the purpose of soliciting Bids for the Work. Bid Documents will include, as applicable, Standard Specifications, Contract Specifications, Contract Drawings, MBTA Geotechnical Data Reports, Bid Form, and Addenda.
 8. Bid Form - Forms issued by the Authority requesting bids for a specific Contract and includes the Notice to Bidders, Instructions to Bidders, and Form for Bid.
 9. Bid Security (Bid Guaranty) - The cash, cashier's or treasurer's check, certified check, or Bidder's Bond accompanying the Bid submitted by the Bidder, as a guaranty that the Bidder will enter into a Contract with the Authority for the performance of the Work and furnish acceptable bonds and insurance if the Contract is awarded to the Bidder.
 10. Bidder - An individual, firm, partnership, corporation, or combination thereof, submitting a Bid for the Work on the prescribed Bid Form.
 11. Chairman of the Board of Directors of the Authority - Chief Executive Officer or designee, such designee acting within the scope of the particular duties entrusted to him.
 12. Change Order - A document executed and issued to the Contractor by the Authority amending the Contract.
 13. Commonwealth - Commonwealth of Massachusetts.

14. Contract Documents - The Standard Specifications, Contract Specifications, Bid, and Contract Drawings revised to incorporate all changes made during the Bid period by Addenda and to incorporate information included in the Bid accepted by the Authority and all authorized changes to the Contract issued subsequent to the execution of the Contract.
15. Contract - The written agreement executed by the Authority and the Contractor, setting forth the obligations of the Parties there under.
16. Contract Administrator - Manager of the Office of Contract Administration or his designee.
17. Contract Bonds –
 - a. Performance Bond - A bond executed by the Contractor and the Contractor's Sureties in the full amount of the contract to ensure the faithful performance of the contract.
 - b. Labor and Materials Payment Bond - A bond executed by the Contractor and the Contractor's Sureties in the full amount of the Contract to ensure the payment of labor, materials, and rental of equipment.
18. Contract Drawings - Plans, profiles, typical cross sections, general cross sections, elevations, and details list as referenced on the Drawing Index, or amendments thereto, and working drawings and shop drawings approved by the Engineer, all of which show locations, character, dimensions, and details of the Work.
19. Contract Item - A specifically described unit of work for which a price is provided in the Contract.
20. Contract Specifications - A set of documents issued by the Authority for the intended Work which includes the Notice to Bidders, Instructions to Bidders, Bid Form, Contract Forms, Contract Bond Forms, Supplementary Conditions, technical provisions, and other requirements, forms and exhibits identified therein.
21. Contract Time - Number of calendar days allowed or specified date(s) for completion of the Contract.
22. Contractor - The individual, firm, partnership, corporation, or combination thereof, private, municipal or public, including joint ventures, which, as an independent contractor, has entered into Contract with the Authority, as Party or Parties of the Second Part, and who is referred to throughout the Contract Documents by singular number.
23. Days - Every day shown on the calendar, Saturdays, Sundays and holidays included.
24. Engineer - The General Manager of the Authority or designee acting within the scope of the particular duties entrusted to this person.
 - a. Design Engineer and/or Consultant (name of Consultant firm) has been retained by the Authority as engineering consultant during the construction of (name of project). The terms "Design Engineer" and "Consultant" are at times interchangeable.
25. Engineer's Estimate of Quantities - List of quantities of work estimated to be performed as contained in the Bid.

26. Extra Work - Work which is not included in the Contract as awarded but found to be necessary for the satisfactory completion of the Contract within its intended scope, and bears a reasonable subsidiary relation to the full execution of the Work originally described in the Contract.
27. Extra Work Order - An order in writing issued by the Engineer to the Contractor prior to performing the Extra Work, setting forth the Extra Work to be done, the basis of payment and time adjustments, if any. Following the issuance of an Extra Work Order, a Change Order will be executed to amend the Contract Documents.
28. Form for Bid - see Bid Form.
29. General Manager - Shall be the Chief Executive Officer of the Authority, and shall have general direction, supervision and control of the conduct of the business, property, personnel and affairs of the Authority except as may be otherwise prescribed by law or by the regulations of the Board of Directors.
30. General Terms - Wherever the words "required," "determined," "directed," "specified," "authorized," "ordered," "given," "designated," "considered necessary," "deemed necessary," "Permitted," "reserved," "suspended," "established approval," "approved," "disapproved," "acceptable," "unacceptable," "suitable," "accepted," "satisfactory," "unsatisfactory," "sufficient," "insufficient," "rejected," "condemned," or words of like import are used, they shall be understood to imply "by the Engineer" or "to the Engineer," unless the context clearly indicates a different meaning.
31. Indicated - A term meaning as shown on the Contract Drawings, as described in the Specifications, or as required by other Contract Documents.
32. Manager of Contract Administration - the Manager of the Office of Contract Administration for the Massachusetts Bay Transportation Authority or his designee.
33. MBTA Transit System - Authority Transit System, including right-of-way, pavement, tracks, facilities, structures, equipment, appurtenances, and other property of the Authority.
34. Non-System facilities - Facilities which are not a part of the MBTA Transit System.
35. Notice to Bidders - That portion of the Bid which advertises for Bids for a specific Contract. Notice to Bidders will indicate time and place for submitting and for opening of Bids, location of the Work, a brief description of the Work to be provided, and bid security required.
36. Notice to Proceed - Written notice from the Authority to the Contractor to proceed with the Work.
37. Project - That specific portion of MBTA Transit System indicated in the Contract Documents.
38. Provide - In reference to work to be performed by the Contractor, "provide" means furnish, install, and (as applicable) test complete in place.
39. Reference Utility Standards - Drawings and specifications, published by municipalities, utility companies, and railroads which are included or referenced in the Contract Documents.

40. Specifications - Directions, provisions, and requirements contained in the Contract Specifications.
41. Subcontractor - The individual, firm, partnership, corporation, vendor, supplier, or combination thereof to whom the Contractor, with written approval of the Authority, sublets any part of the contract.
42. Supplementary Conditions - Supplements and additions to the General Conditions.
43. Surety - Corporate body bound with and for the Contractor for the full and complete performance of the Contract and for the payment of all legal debts pertaining to the Work, and who executed the Contract Bonds.
44. U.S. Department of Transportation (DOT) - Secretary of the U.S. Department of Transportation, and other person authorized to perform the functions of that office, including representatives of the Federal Transportation Administration (FTA).
45. Value Engineering - The systematic application of recognized techniques which identify the function of a product or service, and provide the necessary function or service reliably at lower overall cost.
46. Work - All the construction, materials, equipment, and contractual requirements as specified, shown, or indicated in the Contract Documents, including all alterations, amendments, or extensions thereto made by authorized changes.
47. Working Drawings and Shop Drawings - Any supplementary drawings or similar data which the Contractor is required to submit to the Engineer for approval, including but not necessarily limited to erection, falsework, and formwork drawings; dewatering; bending diagrams and bar schedules for reinforcing steel; calculations; and manufacturers' catalog information and data.

PART 2 - SCOPE OF WORK

2.1 INTENT OF THE CONTRACT

- A. Intent of the Contract is to provide for the construction and completion in every detail of the Work. The Contractor shall complete the Work to the satisfaction of the Engineer at the prices set forth and agreed upon. Where portions of the Work are described in general terms, but not in complete detail, the best general practice shall be followed. Only materials and workmanship of best standard quality shall be used. The Contractor shall, unless otherwise specified, furnish all labor, superintendence, materials, tools, equipment and incidentals necessary to complete the Work in a proper, thorough, and workmanlike manner.
- B. Work consists of

2.2 CHANGES IN THE WORK

- A. The Authority reserves the right at any time during the progress of the Work to make alterations to, deviations from, additions, to, and deletions from the Contract Drawings and Specifications. Such changes shall not invalidate the Contract nor release the surety. The Contractor agrees to accept the Work as changed, the same as if it had been a part of the original Contract. Such changes will be authorized in writing by the Engineer. The Contractor shall accept as full

compensation for Work, except as specified in Paragraphs B. and C., the Contract unit prices stipulated in the Contract for the actual quantity of work provided in an acceptable manner. Such changes shall not invalidate the Contract, nor any part thereof.

- B. Wherever an alteration, deviation, addition, or deletion involves a change in the nature of design or in the type of construction which increases or decreases the cost of performance of the Work or requires the Contractor to furnish materials or provide work of a kind not susceptible of classification for payment under any of the items scheduled in the Bid, the Authority and the Contractor may enter into Supplementary Agreements covering the work to be done and -the manner and method of payment therefor. If the Contractor and the Authority disagree on increased or decreased costs, the changes shall be by a Change Order.
- C. If the changes, in the opinion of the Engineer, are of sufficient magnitude as to require additional time to complete the Contract, such time adjustment may be made in accordance with the provisions of Article 6.8.

2.3 EXTRA WORK

- A. The Contractor shall do any work not herein provided for when and as ordered in writing by the Engineer, such written order to contain particular preference to this Article and to designate the work to be done as Extra Work.
- B. Unless specifically noted in the Change Order, Extra Work will not extend the time of completion of the Contract as stipulated in Article 6.8 A.6.
- C. Determination of the Engineer will be final upon all questions concerning the amount and value of Extra Work (except as provided in Article 5.19).
- D. Payment for Extra Work will be as specified in Section 01150 - MEASUREMENT AND PAYMENT.

2.4 CONTRACTOR COST REDUCTION PROPOSALS VALUE ENGINEERING (APPLICABLE TO CONTRACTS IN EXCESS OF \$200,000)

- A. The Contractor may submit cost reduction Proposals for changing the Contract requirements. The Proposals shall be based upon a sound study made by the Contractor indicating that the Proposal:
 - 1. Will result in a net reduction in the total Contract cost to the Authority;
 - 2. Will not impair any essential form, fit, function, or characteristic of the Work, such as safety, service life, reliability, economy of operation, ease of maintenance, and necessary standardized features;
 - 3. Will not require an unacceptable extension of the Contract completion time; and
 - 4. Will require a Change Order to the Contract.
- B. Cost reduction or Value Engineering Proposals shall be processed in the same manner as prescribed for any Contract initiated Proposal which would necessitate issuance of a Change Order. The Contractor shall submit the following information as a minimum, with each Cost reduction Proposal:
 - 1. A description of the difference between the existing Contract requirements and the proposed change, and the comparative advantages and disadvantages of each;
 - 2. An itemization of the requirements of the Contract which must be changed if the Proposal is adopted and a recommendation as how to make such change (e.g., suggested revision);

3. An estimate of the reduction in Contract performance costs that will result from adoption of the Proposal, taking into account the cost of implementation by the Contractor (including any amount attributable to subcontracts in accordance with Paragraph E. below and the basis for the estimate).
 4. A statement of the time by which a Change Order must be issued so as to obtain the maximum cost reduction during the remainder of this Contract, noting any effect of the Contract delivery schedule.
- C. The Authority will not be liable for any delay in acting upon, or for failure to act upon, any Value Engineering Proposal submitted pursuant to this Article. The decision of the Authority as to the acceptance of any such Proposal shall be final. The Authority may accept in whole or in part, any Proposal submitted pursuant to this Article by issuing a Change Order. Unless and until a Change Order is issued, the Contractor shall remain obligated to perform in accordance with the terms of the Contract.
 - D. If a Value Engineering (cost reduction) Proposal is accepted and applied, an equitable adjustment in the Contract price and in any other affected provisions will be made. The equitable adjustment in the Contract price will be established by determining the total estimated decrease in the Contractor's cost of performance resulting from the accepted changes, taking into account the Contractor's cost of implementing the change (including any amount attributable to subcontracts in accordance with Paragraph E. below). The Contract price shall be reduced by such total estimated decrease in the cost of performance minus 50 percent of the difference between the amount of such total estimated decrease and any ascertainable collateral costs to the Authority which must reasonably be incurred as a result of application of the cost reduction Bid.
 - E. The Contractor shall include appropriate value engineering arrangements in any subcontract which, in the judgment of the Contractor, is of such a size and nature as to offer reasonable likelihood of cost reductions. In computing any equitable adjustment in the Contract price under Paragraph D., the Contractor's cost of implementation of a Value Engineering Proposal which is accepted shall include any implementation cost of a Subcontractor and any value engineering incentive payments to a Subcontractor, which clearly pertain to such Proposal and which are incurred, paid or accrued in the performance of a subcontract.
 - F. The Contractor may restrict the Authority's right to see any portion of the Contractor's Proposal by marking it with the following requirement:
 1. This data, furnished pursuant to Article 2.4 of the General Conditions of Contract No. _____ may not be duplicated, used or disclosed, in whole or in part, for any purpose except for evaluation, unless the Proposal is accepted by the Authority. This restriction does not limit the Authority's right to use information contained in this data if it is or has been obtained, or is otherwise available, from the Contractor or from another source, without limitations. When this Proposal is accepted by the Authority, the Authority will have the right to duplicate, use, and disclose any data in any manner and for any purpose whatsoever, and have others do so whether under this or any other Authority contract.
 - G. Contract modifications made as a result of this Article will state that they are made pursuant to it.

2.5 ~~INCREASED OR DECREASED CONTRACT QUANTITIES~~

- A. When the accepted quantities of work vary from the quantities in the Bid Form, the Contractor shall accept as payment in full, so far as Contract Items are concerned, payment at the original contract unit prices for the accepted quantities of work done. An adjustment, as determined by the Engineer, will be made by means of a Change Order to credit the Authority with any reduction in

cost or to compensate the Contractor for any increase in cost resulting from such change in quantity.

- B. The Engineer may order omitted from the Work any items or portions of Work. Such omission shall not operate as a waiver of any conditions of the Contract nor invalidate any of the provisions thereof, nor shall the Contractor have any claim for anticipated profit (also see Section 01150 - MEASUREMENT AND PAYMENT).
- C. Except as specified herein, no allowance will be made for any increased expenses, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor resulting either directly or indirectly from such increased or decreased quantities or from unbalanced allocation, among the Contract Items of overhead expense on the part of the Contractor and subsequent loss of expected reimbursement therefor, or from any other cause.

2.6 RIGHTS IN THE USE OF MATERIALS FOUND ON THE WORK.

- A. Contractor, with prior written approval of the Engineer, may take suitable ledge, gravel, sand, loam, clay, or other material from within the location lines of the Contract and use it on the same Contract for other purposes than for forming embankments. If such use necessitates securing additional material for forming embankments, the Contractor shall replace, at no additional expense to the Authority, material of at least similar quality. The Contractor shall not excavate or remove any material which is not within the excavation as indicated by the Contract Documents without written approval. Excavated material suitable for use shall not be wasted, unless otherwise directed.

2.7 ARCHEOLOGICAL AND PALEONTOLOGICAL SALVAGE

- A. The Contractor's attention is directed to the United States Department of Transportation, Federal Highway Administration, Federal Aid Highway Program Manual, Volume 7, Chapter 7, Section 4, subject "Archaeological and Paleontological Salvage", incorporating Policy and Procedure Memorandum 20-7, dated March 31, 1979, and to the Commonwealth of Massachusetts, Acts of 1973, Chapter 1155.
- B. In compliance with these procedures and legislation, the Contractor shall exercise special care during his operations to avoid injury to underground prehistoric and historic archaeological remains or paleontological remains. Should any archaeological or paleontological remains be encountered during any phase of construction, the Contractor shall immediately suspend all work in the area and shall notify the Engineer. The Engineer shall immediately notify the State Archaeologist and the Massachusetts Historical Commission. All construction work in that area will be temporarily delayed while the State Archaeologist and representatives of Massachusetts Historical Commission inspect the site to determine the importance of the discovery. Areas of prehistorical, historical, or paleontological significance shall be carefully protected in accordance with the above referenced manual and shall not be disturbed by the Contractor until so directed by the Engineer.
- C. Contractor shall receive no extra compensation for such special care, unless said compensation is authorized in writing by the Engineer as specified under Section 01150 - MEASUREMENT AND PAYMENT, Part 1 "Payment for Extra Work" Article. Material from such areas shall be carefully protected, and if necessary to remove specimens, the Contractor shall do so only at the Engineer's direction, and after an authorized agent has witnessed or otherwise referenced their locations.

2.8 WARRANTY OF WORK

- A. Neither final acceptance, final payment nor any provision in the Contract Documents nor partial or entire use or occupancy of the premises by the Authority shall constitute an acceptance of work not done in accordance with the Contract Documents or relieve the Contractor of liability with respect to any express warranties or responsibility for faulty materials or workmanship.
- B. Except where longer periods of warranty are specified for certain items, the Contractor warrants all work done under the Contract to be free from faulty materials and workmanship for a period of one year from date of acceptance thereof.
- C. Upon receiving notification from the Authority, the Contractor shall immediately make the required repairs or replacements to any work found defective. If repairs or replacements are not started within 10 days from the date of notification and prosecuted to completion, the Authority reserves the right to employ others to complete the Work. The Contractor agrees, upon demand, to pay the Authority all amounts which it expends for such repairs or replacements.
- D. All remedied Work shall carry the same warranty as the original work starting with the date of acceptable replacement or repair.

2.9 CHANGED CONDITIONS

In accordance with Chapter 30, Section 39N of the General Laws of the Commonwealth, as amended, the following paragraph shall apply to the Contract:

- A. If during the progress of the Work, the Contractor or the Awarding Authority discovers that the actual subsurface or latent physical conditions encountered at the site differ substantially or materially from those indicated in the Contract Documents either the Contractor or the Authority may request an equitable adjustment in the Contract price of the Contract applying to work affected by the differing site conditions. A request for such an adjustment shall be in writing and shall be delivered by the party making such claim to the other party as soon as possible after such conditions are discovered. Upon receipt of such a claim from a Contractor, or upon its own initiative, the Authority will make an investigation of such physical conditions, and, if they differ substantially or materially from those indicated in the Contract Documents or from those ordinarily encountered and generally recognized as inherent in work of the character provided for in the Contract Documents-and are of such a nature as to cause an increase or decrease in the cost of performance of the Work or a change in the construction methods required for the performance of the Work which results in an increase or decrease in the cost of the Work, the Authority will make an equitable adjustment in the Contract price and the Contract will be modified in writing accordingly.
 - 1. Filing, investigation, and settlement of all claims made under said Chapter and Section shall be as follows:
 - a. The Contractor shall promptly and before such conditions are disturbed, notify the Engineer in writing describing in full detail the subsurface or latent physical conditions at the site where it is maintained, that conditions differ substantially or materially from those conditions indicated in the Contract Documents. The Engineer will promptly investigate the conditions and will promptly submit a written report of its findings and determinations to the Contractor, and if it is found that such conditions as have been described in detail by the Contractor do exist and in fact do so differ materially or substantially, an equitable adjustment will be made and the Contract modified in writing accordingly. No such claim of the Contractor will be allowed unless the Contractor has given the detailed notice specified, or shall it be allowed if such conditions are disturbed prior their investigation by the Engineer.

- b. No adjustment or allowance of any kind except as provided in Article 6.8 will be made to the Contractor due to delay or suspension of the Work or any portion thereof where the actual subsurface or latent physical conditions encountered at the site differ substantially and materially from those indicated in the Contract Documents.
 - c. No claim will be approved and no adjustment or allowance made when encountering subsurface or latent physical conditions at the site that differ substantially and materially from those indicated in the Contract Documents unless such conditions were in existence at the time of the Award of the Contract.
 - d. Any dispute concerning a question of fact under the Subsection which is not disposed of by agreement shall be decided by the engineer.
 - e. If as provided in (a) of this Subsection an equitable adjustment is to be made or contemplated, the Contractor shall submit promptly in writing to the Engineer an itemized statement of the details and amount of work together with his estimated costs for the same and the Engineer shall require the Contractor to keep actual costs and certify the same to the Authority in writing.
- B.** If the Contractor and the Authority fail to agree on an equitable adjustment to be made under this Article, then the Contractor shall accept as full payment for the Work in dispute an amount determined in accordance with Section 01150 - MEASUREMENT AND PAYMENT.

2.10 CONTRACTOR PROPOSED CHANGES

- A.** Contractor may at any time submit to the Engineer for the Engineer's review and approval or denial, proposed changes to the Contract Documents which will benefit the Authority. Upon acceptance of the proposed changes, the provisions of Article 2.2 and 2.4 (as applicable) shall apply. Denial of a proposed change shall neither provide the Contractor with any basis for claim for damages nor release the Contractor from contractual responsibilities.

2.11 COMMUNITY RELATIONS

- A.** The Contractor shall establish and maintain a continuing liaison with persons residing or doing business in the vicinity of the Project site, for the purpose of minimizing inconveniences resulting from construction, and shall appoint a representative, acceptable to the Engineer, for community relations. The representative shall have the authority to act directly, or through the Contractor's approved Superintendent, regarding all valid requests or complaints. Information as to their disposition by the Contractor, shall be furnished to the Engineer. The name and telephone number of the Contractor's community relations representative shall be furnished to those residents or businessmen in the community who might reasonably be expected to be affected by the construction.

PART 3 - CONTROL OF WORK

3.1 AUTHORITY OF THE ENGINEER

- A.** The Engineer will decide all questions relating to interpretation of the Contract Documents, and may alter, adjust, and approve same when necessary; all questions relating to quality, quantity, value, and acceptability of materials to be furnished and work provided or to be provided; all questions relating to progress of the Work and need for and manner of correcting same, and also the need for and terms of delays and suspensions; all questions relating to the need for and terms of Extra work; all questions relating to the supervision, control and direction of Work on the site

and the use thereof; and all questions as to the acceptable fulfillment of the Contract by the Contractor.

B. Attention of the Contractor is directed to the following limitations on the scope of the duties entrusted to the Engineer.

1. The Regulations of the Authority's Board of Directors state that the General Manager is authorized to approve, without prior authorization of the Board, issuance of Change Orders or Extra Work Orders, pursuant to any Agreement previously authorized by the Board or the General Manager, in a total amount not exceeding 7% or \$500,000.00 above the contract price of such Agreement, whichever is greater; provided that if the issuance of any such Change Order or Extra Work Order would result in exceeding said 7% or \$500,000.00 limitation or if the issuance of any one such Change Order or Extra Work Order would require an expenditure by the Authority of an amount exceeding \$500,000.00, it shall not be issued without prior authorization of the Board.
2. The General Manager, as provided by the Regulations of the Board of Directors, has delegated to the Assistant General Manager for Design and Construction the power to approve, without prior authorization of the General Manager or the Board, the issuance of Change Orders or Extra Work Orders, pursuant to any agreement previously authorized by the Board or the General Manager, in a total amount not exceeding 7% or \$100,000.00 above the contract price of such agreement, whichever is greater; provided that if the issuance of any such Change Order or Extra Work Order would result in exceeding said 7% or \$100,000.00 limitation or if the issuance of any one such Change Order or Extra Work Order would require an expenditure by the Authority of an amount exceeding \$100,000.00, it shall not be issued without prior authorization.
3. The General Manager, as provided by the Regulations of the Board of Directors, has delegated to the Chief of Engineering and Construction the power to approve, without prior authorization of the General Manager or the Board, the issuance of Change Orders or Extra Work Orders, pursuant to any agreement previously authorized by the Board or the General Manager, in a total amount not exceeding 7% or \$50,000.00 above the contract price of such agreement, whichever is greater; provided that if the issuance of any such Change Order or Extra Work Order would result in exceeding said 7% or \$50,000.00 limitation or if the issuance of any one such Change Order or Extra Work Order would require an expenditure by the Authority of an amount exceeding \$50,000.00, it shall not be issued without prior authorization.
4. The General Manager, as provided by the Regulations of the Board of Directors, has delegated to the Directors of Design and Construction, the power to approve, without prior authorization of the General Manager or the Board, the issuance of Change Orders or Extra Work Orders, pursuant to any Contract or other Agreement previously authorized by the Board or the General Manager, in a total amount not exceeding 7% or \$25,000.00 above the contract price of such agreement, whichever is greater; provided that if the issuance of any such Change Order or Extra Work Order would result in exceeding said 7% or \$25,000.00 limitation or if the issuance of any such Change Order or Extra Work Order would require an expenditure by the Authority of an amount exceeding \$25,000.00, it shall not be issued, without prior authorization.
5. Employees of the Authority are not authorized to request work to be performed or service to be provided other than as specified above. The Authority will not accept any responsibility whatsoever for extra work performed for which there is no specific proper authorization.

3.2 CONTRACT DRAWINGS

- A. Contract Drawings showing the general arrangement and such details as necessary to give a comprehensive idea of the construction contemplated will be furnished by the Authority. As work progresses, the Contract Drawings may be supplemented by the Engineer as required to amplify or control the work. The Contractor shall perform the work required by such supplements without additional compensation, except as provided by the Contract.

3.3 CONFORMITY WITH DRAWINGS AND SPECIFICATIONS

- A. Attention is directed to Chapter 30, Section 391 of the General Laws of the Commonwealth which provides that no willful and substantial deviation from Contract Drawings and Specifications shall be made unless directed in writing by the Engineer duly authorized by the Authority to approve such deviation. Chapter 30, Section 391 further provides that in order to avoid delays in the prosecution of the Work, such deviation may be authorized by a written order of the Engineer authorized to approve such deviation, and that within 30 days thereafter such -written order shall be confirmed by a certificate of the Authority.
- B. All work provided and all materials furnished shall be in conformity with the lines, grades, cross sections, dimensions, details, gradations, physical, and chemical characteristics of materials and other specific requirements of the Contract. Where the terms "in conformity with" "in agreement with" "in compliance with" or terms of like exactness occur in the Contract Documents, they shall be understood to imply "in reasonable close conformity with".
- C. Where definite tolerances are specified in the Contract, such tolerances shall fix the limits of conformity. Where tolerances are not specified in the Contract, the Engineer will determine the limits of conformity in each individual case and such determination shall be final and conclusive and mutually accepted by all parties.
- D. If materials or the finished product in which the materials are used are not within conformity with the Contract Documents, but acceptable work has been produced, the Engineer will make a determination whether the work shall be accepted and remain in place. The Engineer will document the basis of acceptance by Contract modification which will provide for an appropriate adjustment in the Contract price for such work or materials as he deems necessary to conform to his determination based on engineering judgment, and in accordance with current construction practices.
- E. If the Engineer finds the materials, or the finished product in which the materials are used or the work provided, are not in conformity with the Contract Documents and have resulted in an inferior or unsatisfactory product. The work or materials shall be removed and replaced or otherwise corrected by the Contractor and at no additional expense to the Authority.
- F. Deviations from the Contract Drawings and approved Shop or Working drawings, that may be required by the need of the construction, will be determined by the Engineer and authorized by him in writing.

3.4 COORDINATION OF CONTRACT DRAWINGS, CONTRACT SPECIFICATIONS, AND STANDARD SPECIFICATIONS

- A. Contract Drawings (including Authority Standards as may be referenced therein), Contract Specifications, and all supplementary documents are essential parts of the Contract, and a requirement occurring in one is as binding as though occurring in all. They are intended to be complementary and to describe and provide for a complete Work. In the event of any discrepancy

between a Drawing and figures written thereon, the figures, unless obviously incorrect, are to govern over scaled dimensions. Contract Drawings will govern over Contract Specifications. Where work is to be accepted by a municipality, railroad, or utility company, the Reference Utility Standards which apply to their materials and workmanship will govern.

- B. The Contractor shall take no advantage of any apparent error or omission in the Contract Documents. If the Contractor discovers, such an error or omission, the Engineer shall be notified immediately. The Engineer will then make such corrections and interpretations as may be deemed necessary to fulfill the intent of the Contract.

3.5 COOPERATION BY CONTRACTOR

- A. The Contractor will be given three copies of the Contract Documents. The Contractor may request and the Authority may approve furnishing additional copies of Contract Drawings, either full or half-size. The Contractor shall have one copy of The Contract Documents on the work site and available for reference at all times during the prosecution of the Work.
- B. Prior to starting Work the Contractor shall designate in writing the name, title, qualifications, and experience of his proposed representative who, upon approval by the Engineer, shall have complete authority to represent and to act for the Contractor. A facsimile of the authorized representative's signature shall be furnished to the Engineer. The authorized representative or a substitute acceptable to the Engineer shall be present at the work site at all times while work is actually in progress on the Project. Arrangements for responsible supervision acceptable to the Engineer shall be made for emergency work which may be required during periods when Work is suspended. The Contractor shall notify the Engineer, in writing, of any proposed change of his representative, and shall provide identical information for approval of the new representative.
- C. The Contractor shall ascertain that the materials and workmanship are in accordance with the Contract Documents. The Contractor shall preserve baseline monuments, benchmarks, and other controls for the Work.
- D. The Contractor shall carry on his work under the direction of the Engineer such that representatives of Utility Owners, State, or Municipal Departments may enter on the work site without interference to make changes in their facilities which may be affected by the Work. The Contractor shall have no claim for, or use of any delay which may be due to or result from work of Utility Owners, State or Municipal Departments. No allowance of any kind will be made except as provided in Article 6.8. Nothing contained herein shall be construed to hold the Contractor responsible for any acts or omissions by such Utility Owners, State or Municipal Departments, or their contractors.

3.6 ADJACENT CONTRACTS

- A. The Authority reserves the right at any time to contract for and perform other or additional work on or near the Work covered by the Contract. The intent of this Article is to provide for the cooperation of contractors where the Authority deems it expedient or necessary and in the best interest of the Authority to let separate contracts for the performance of other work on or near the location of the Work being performed under the Contract, but it is not intended to indicate an intention on the part of the Authority to let separate contracts for work within the scope of or necessary for the successful completion of the Contract.
- B. When separate contracts are let within the limits of any one project (either prior to Award of Contract, as specified in the Bid, or as specified above), each contractor shall conduct their work so as not to interfere with or hinder the progress or completion of the work being performed by

other contractors. Contractors working on the same project shall cooperate with each other as directed.

- C. Each contractor involved shall assume all liability, financial or otherwise, in connection with its contract and shall protect and save harmless the Authority from any and all damages or claims that may arise because of inconvenience, delay, or loss experienced because of the presence and operations of other contractors working within the limits of the same project. No allowance of any kind will be made except as provided in Article 6.8.
- D. The Contractor shall arrange the work and shall place and dispose of the materials being used so as not to interfere with the operations of other contractors within the limits of the same Project. The Contractor shall join the work with that of others in an acceptable manner and perform the work in proper sequence to that of others.

3.7 LINE AND GRADE

- A. The Authority will establish primary control for the Work, both horizontal and vertical. The Authority will provide the Contract or Project centerline and such benchmarks and basic tie-in points on or near construction site as in its judgment are necessary for the proper control of the Work. Monuments, stakes, and marks set by the Authority shall be preserved by the Contractor. If such monuments, stakes, or marks are destroyed or damaged, they may be replaced by the Authority. The Contractor will be charged the cost of replacing monuments, stakes, or marks destroyed or damaged by reason of his operations. The replacement cost will be deducted from payment for the Work.
- B. The Contractor shall proceed from the controls established by the Authority to make all surveys and layouts necessary to conform all of the work to the requirements of the Contract Documents; shall provide qualified engineering and other personnel for the purpose; and shall be solely responsible for the accuracy of the line and grade features of his Work.
- C. The Authority will make such checks, as necessary, of the control work established by the Contractor as the Work progresses. The Contractor will be informed of results of such checks but the Authority by so doing will in no way relieve the Contractor of responsibility for accuracy of the Contract control. The Contractor shall provide such assistance as may be required for checking purposes when requested by the Authority.
- D. The Contractor shall notify the Authority a reasonable time in advance of his needs, of the time and place the Contractor plans to provide the Work for which such primary control will be needed. The Authority will furnish the Contractor with such primary lines, grades, and elevations as it deems necessary by such time so as not to delay the Contractor's operations. The Authority, however, will not be held responsible for any delay resulting from lack of such information if the Contractor fails to notify the Authority sufficiently in advance of the Contractor's needs.

3.8 AUTHORITY AND DUTIES OF ENGINEER'S ASSISTANTS

- A. The Engineer may appoint assistants and representatives. The assistants and representatives are authorized to inspect work and materials, to give directions pertaining to the Work or to the safety and convenience of the public, to approve or reject materials and to make measurements of quantities.
- B. In case of any dispute arising between the Contractor and the Engineer's assistants, as to materials furnished or the manner of providing work, the Engineer's assistants are authorized to reject materials or to suspend work until the dispute is referred to and decided by the Engineer.

- C. The Engineer's assistants are not authorized to revoke, alter, enlarge, relax, or release any requirements of these Specifications nor to issue instructions contrary to the Contract Drawings and Specifications.
- D. The Engineer's assistants will not act as foremen or perform other duties for the Contractor.

3.9 INSPECTION OF WORK

- A. All materials and each part or detail of the Work shall be subject to inspection by the Engineer. The Engineer shall at all times have access to the Work and be furnished with information and assistance by the Contractor as required to make a complete and detailed inspection.
- B. The Contractor, if requested by the Engineer, shall before acceptance of the Work, remove or uncover such portions of the finished Work as directed. After examination, the Contractor shall restore said work to the standard required by the Contract Documents. Should Work exposed or examined prove accessible, the uncovering, or removing, and the replacing of the covering or making good of the parts removed will be paid for as Extra Work. Should Work exposed or examined prove unacceptable, the uncovering or removing and the replacing of the covering or making good of the parts removed, will be at no additional expense to the Authority.
- C. Any Work done or materials used without authorization by the Engineer may be ordered removed and replaced at no additional expense to the Authority.
- D. The Contractor shall furnish written information to the Engineer stating the original sources of supply of all materials manufactured away from the Work site. This information shall be furnished at least two weeks (or as otherwise required by the Engineer) in advance of the incorporation in the Work of such materials.
- E. When any unit of government or critical subdivision is to pay a portion of the Cost of the Work, its respective representatives shall have the right to inspect the Work. Such inspection shall in no sense make any unit of government or political subdivision a party to this Contract, and shall in no way interfere with the rights of either party hereunder.
- F. Inspection of Work shall not relieve the Contractor of any of his obligations to fulfill the requirements of the Contract Documents.
- G. Failure to reject any defective Work or materials shall not in any way prevent later rejection when such defect is discovered, nor obligate the Authority to make final acceptance.
- H. The Contractor shall give prior notice to the Engineer when Work on the various items is to be performed by him or his subcontractors. If Work is suspended on any item, prior notice shall be given to the Engineer before resumption of such Work. Except in the case of an unforeseen emergency, neither the Contractor nor any subcontractor shall perform any Work requiring inspection at hours other than during the normal workday without prior approval of the Engineer.

3.10 REMOVAL OF DEFECTIVE OR UNAUTHORIZED WORK

- A. Defective Work shall be promptly remedied, or removed and replaced, notwithstanding that such Work has previously been inspected and approved or estimated for payment. If the Work or any part thereof shall be found defective at any time, the Contractor shall, at no additional expense to the Authority, make good such defect in a satisfactory manner.

- B. Work performed beyond the lines and grades shown on the Contract Drawings or established by the Engineer, and extra Work done without written authorization, will be considered unauthorized Work and the Contractor will receive no compensation therefor. If required by the Engineer, unauthorized work shall be remedied, removed, or replaced at no additional expense to the Authority.
- C. Upon failure of the Contractor to remedy, remove, or replace defective or unauthorized Work, or to comply promptly with any requirement of the engineer made under this Article 3.10, the Authority may cause defective or unauthorized Work to be remedied, removed, or replaced by others and deduct the costs thereof from any monies due or to become due to the Contractor.

3.11 FINAL ACCEPTANCE (ALSO SEE ARTICLE 5.24)

- A. Upon substantial completion of the Work, the Contractor shall present, in writing, to the Authority its certification that the Work has been substantially completed. Within 21 days thereafter, the Authority as a result of its inspection of the Work will present to the Contractor either a Written declaration that the Work has been substantially completed or an itemized list of incomplete or unsatisfactory Work items required by the Contract sufficient to demonstrate that the Work has not been substantially completed. The Authority may include with such list a notice setting forth a reasonable time, which shall not in any event be prior to the Contract completion date, within which the Contractor must achieve substantial completion of the Work. If the Authority fails to respond, by presentation of a written declaration or itemized list as aforesaid, to the Contractor's certification within the 21-day period, the Contractor's certification shall take effect as the Authority's declaration that the Work has been substantially completed.
- B. If the Work or any part thereof is not acceptable to the Engineer at the time of the inspection, the Contractor will be notified in writing of the particular defects or parts to be remedied before final acceptance. If the Contractor has not arranged within a period of five days after the date of transmittal of such notice of nonacceptability, to complete the Work as directed by the Engineer, the Authority may, without further notice and without in any way affecting the Contract, make such other arrangements as may be considered necessary to insure satisfactory completion of the Contract. The cost of completing such Work will be deducted from any moneys due or which may become due to the Contractor under the Contract.
- C. Substantial completion, for the purposes of this Article, shall mean either that the Work required by the Contract has been completed except for Work having a Contract price of less than one percent of the then adjusted total contract price, or substantially all of the Work has been completed and opened to public use except for minor incomplete or unsatisfactory Work items that do not materially impair the usefulness of the Work required by the Contract.
 - 1. See Section 01150 - MEASUREMENT AND PAYMENT, for Final Acceptance and Final Payment.

PART 4 - CONTROL OF MATERIALS

4.1 TRADE NAMES AND ALTERNATIVES

- A. An item equal to that named or described in the specifications may be furnished by the Contractor, and the naming of any commercial name, trademark, or other identification shall not be construed to exclude any item or manufacturer not mentioned by name or as limiting competition, but shall establish a standard of equality only. An item will be considered equal to the item so named or described if:

1. it is at least equal in quality, durability, appearance, strength, safety, reliability, operability, maintainability, and design;
 2. it will perform at least equally the function imposed by the general design for the Work being contracted for; and
 3. it conforms substantially, even with deviations to the detailed requirements for the item specified.
- B.** For each item of material the specifications shall provide for either a minimum of three brands of material or a description of material which can be met by a minimum of three manufacturers or producers and for the equal of any one of said named or described materials.
- C.** Burden of proof as to the quality and suitability of alternatives shall be upon the Contractor. The Contractor shall furnish, in writing, all information necessary as required by the Engineer at no additional cost to the Authority. Requests for review of alternative materials will not be accepted by the Engineer from anyone other than the Contractor. The Engineer will be the sole judge as to the quality and suitability of alternative materials and the Engineer's decision will be final.
- D.** Information furnished shall state whether or not acceptance of the alternative material for use in the Work will require a change in the Contract Drawings or Specifications to adapt the design to the alternative and whether or not incorporation or use of the alternative in connection with the Work is subject to payment of any license fee or royalty. The Authority does not pay license fees or royalties. Where use of an alternative material involves redesign of or changes to other parts of the Work, the cost and the time required to effect such redesign or changes will be considered in evaluating the suitability of the alternative material and the Contractor shall pay charges incurred by the Authority for such redesign or change.
- E.** No tests nor action relating to the approval of alternative materials will be made until the request for substitution is made in writing by the Contractor accompanied by complete data as to the equality of the materials proposed. Such request shall be made in ample time to permit approval without delaying the Work, but such requests need not be made less than 30 days after receipt of Notice to Proceed.
- F.** Whenever classification, rating, or other certification by a body, such as UL, NEMA, or AREA, is a part of the specification for any material, proposals for use of alternative materials shall be accompanied by reports from the listed or equivalent independent testing laboratory indicating compliance with specification requirements.
- G.** The Contractor shall pay costs of testing required to prove equality of the material proposed.
- H.** Approval of an alternative material shall be only for the characteristics or use named in such approval, and shall not be used to change or modify any Contract requirement, or to establish a basis for subsequent approval for material to be used on any other phase of the Work of the Massachusetts Bay Transportation Authority Transit System.

4.2 CERTIFICATES OF COMPLIANCE

- A.** The use of certain materials on the basis of a notarized certificate of compliance may be allowed under the following conditions: Before such materials are incorporated into the Work, the Contractor shall submit to the Engineer, for approval, copies of the manufacturer's or supplier's statement for each kind of such material furnished. The statement shall contain the following information:
1. Contract to which the material is consigned;
 2. Name of the Contractor to which the material is supplied;

3. Kind of material supplied;
4. Quantity of material represented by the certificate;
5. Means of identifying the consignment, such as label, marking, seal number, etc.;
6. Date and method of shipment;
7. Statement to the effect that the material has been tested and found in conformity with the pertinent parts of the Contract;
8. Results of all required tests including the chemical analysis in the case of metal; or in lieu of furnishing the results a statement that the results of all required tests pertinent to the certificate and not submitted shall be maintained available by the undersigned for a period of not less than 3 years from date of final acceptance;
9. Signature of a person having legal authority to bind the supplier.

B. If the Contractor has new materials purchased for use on a previous Authority contract which have never been used and which comply with the Contract Documents, these materials may be furnished and installed in the Work provided the Contractor submits his own sworn statement certifying that such materials were purchased for use on a previous contract (name and identifying such contract) and that certificates of compliance were furnished for such materials on the previous contract, to which reference can be made.

1. Costs involved in furnishing the certificates shall be borne by the Contractor.
2. Materials used on the basis of a certificate of compliance may be sample and tested at any time. The fact that material is used on the basis of a certificate of compliance shall not relieve the Contractor of responsibility for incorporating material in the Work which conforms to the requirements of the Contract Documents and Specifications and any such material not conforming to such requirements will be subject to rejection, whether in place or not.
3. The Engineer reserves the right to refuse to permit the use of materials on the basis of a certificate of compliance alone.

C. Certification of specification compliance shall be furnished for all materials and installation of the same as specified throughout the construction specifications. (See sample Certificate of Compliance included on page SC-)

4.3 AUTHORITY-FURNISHED MATERIALS

- A.** Materials furnished by the Authority will be available at locations designated in Supplementary Conditions of the Contract Specifications or, if not so designated, they will be delivered to the Work site. Authority-furnished materials shall be stored and transported to the place of use by the Contractor at his expense, including all necessary loading and unloading. The Contractor's costs of storing, handling, and installing Authority furnished material shall be considered as included in the Contract price paid for the Item involving such Authority-furnished material.
- B.** Contractor shall be responsible for all materials furnished to him, and shall pay all demurrage and storage charges as a result of his failure to take delivery of Authority-furnished material. The Contractor shall be liable to the Authority for the cost of replacing or repairing Authority-furnished material lost or damaged from any cause whatsoever after receipt by the Contractor. The costs will be deducted from any moneys due or to become due the Contractor, except those amounts when covered under any claims' payments made under insurance policies furnished by the Authority.

4.4 DEFECTIVE MATERIALS

- A. Contractor furnished materials not conforming to the requirements of the Contract Documents will be rejected, whether in place or not. Rejected material shall be removed immediately from the site of the Work unless otherwise permitted by the Engineer. No rejected material, the defects of which have been subsequently corrected, shall be used in the Work unless approved in writing by the Engineer. If the Contractor fails to comply promptly with a request by the Engineer, made under the provisions of this Article, the Engineer may cause the removal and replacement of rejected material and the cost thereof will be deducted from any moneys due or to become due the Contractor.

4.5 ASBESTOS MATERIALS

- A. Contractor shall not furnish or install asbestos or any material containing asbestos under this Contract.

4.6 BANNED MATERIALS

- A. Lead Paints: Contractor shall not furnish or install lead containing paint on any surfaces within the limits of this Contract. A lead containing paint is defined by the Consumer Product Safety Commission's Paint Poisoning Prevention Act of 1979 as any coating whose dried film contains greater than 0.06% by weight of lead.

PART 5 - LEGAL RELATIONS AND RESPONSIBILITY TO THE PUBLIC

5.1 LAWS TO BE OBSERVED

- A. The Contractor shall keep fully informed concerning all requirements of law, including all state and federal laws, county and municipal ordinances, and regulations which in any manner affect those engaged or employed in the Work, or the materials used in the Work, or such orders and decrees of bodies or tribunals having jurisdiction or authority over the same. The Contractor shall protect, indemnify and hold harmless the Authority and the Engineer, and all of their officers, agents, and employees against all claims and liabilities arising from or based on the violation of any such requirement of law whether by the Contractor, his employees, agents, or subcontractors. If any discrepancy or inconsistency is discovered in the Contract Documents in relation to any such requirements of law, the Contractor shall immediately report the facts to the Engineer in writing. The Contract shall be governed by the laws of the Commonwealth.
- B. The Contractor, if a foreign corporation (a corporation established, organized, or chartered under laws other than those of the Commonwealth) shall comply with the provisions of Chapter 181 of the General Laws as amended. The Contractor shall file with the Authority a certificate of the State Secretary stating that such corporation has complied with Chapter 181 and the date of such compliance.
- C. Other out-of-state business organizations, such as individual proprietorship, partnership, and joint ventures, shall appoint an agent in this Commonwealth for the service of legal process and furnish a copy of such appointment to the State Secretary prior to the issuance of a contract by the Authority.
- D. Work shall be in accordance with the Massachusetts State Building Code.

1. The Contractor shall protect and indemnify the Authority and its representatives against any claim or liability arising from or based on the violation of any law, ordinance, safety code, regulation, order or decree whether caused by the Contractor, its employees or its subcontractors employed on the Project.
2. Such laws, ordinances, codes, regulations, orders, or decrees may restrict and limit the Contractor's working hours or use of certain types of equipment on the Project. The Contractor shall become familiar with such restrictions and limitations prior to submitting a Bid.
3. The Contractor shall give all necessary notices, obtain all permits as required and pay all government taxes, fees, and other costs in connection with the Work. The Contractor shall file all necessary drawings, prepare all documents, and obtain all necessary approvals of all governmental departments which have jurisdiction. The Contractor shall obtain all required Certificates of Inspection prior to acceptance and final payment for the Work. Compensation for conforming to all provisions of this Article 5.1, except as may be provided otherwise in Supplementary Conditions, shall be considered as included in the prices for the various Contract Items of Work and no additional compensation will be allowed therefor.

- E. Without limiting the Contractor's responsibility for ascertaining and complying with all applicable laws, ordinances, regulations, orders, and decrees, the Contractor's attention is called particularly to Division 1, General Requirements, Section 01560 - TEMPORARY CONTROLS.

5.2 PERMITS AND LICENSES

- A. The Contractor shall procure all permits and licenses, pay all charges, fees, and taxes and give all notice necessary and incidental to the due and lawful prosecution of the Work.

5.3 MOTOR VEHICLES

- A. Motor vehicles (except vehicles used solely for transporting employees to and from the Contract location) used wholly or in part within the Commonwealth by the Contractor or a subcontractor, or by a person directly or indirectly employed by them in the execution of the Contract, shall be registered in the Commonwealth and bear Massachusetts registration plates.
- B. Motor vehicles used solely for transporting employees to and from the Contract location shall be registered as required under General Laws, Chapter 90, Section 3, of the Commonwealth, as amended.
- C. A vehicle shall not be driven on any way, as defined in Section I of Chapter 90 of the General laws of the Commonwealth, unless it is constructed or loaded so as to prevent any of its load from dropping, shifting, leaking, or otherwise escaping therefrom, except that sand may be dropped for the purpose of securing traction, or water or other substance may be sprinkled on such a way in cleaning or maintaining the same. (General Laws, Chapter 85, Section 30, of the Commonwealth as amended.)
- D. All Diesel Construction Equipment must have emission control devices installed, such as oxidation catalysts or particulate filters on the exhaust system side of the diesel combustion engine equipment.

5.4 INSURANCE REQUIREMENTS

- A. The Contractor shall carry Commercial General Liability Insurance for personal injury, bodily injury and property damage with limits not less than \$1,000,000 per occurrence, \$1,000,000 aggregate covering all work performed under this Contract. The insurance should include the following:
1. All operations.
 2. Contractual liability.
 3. Coverage for the so-called "X, C, U" hazards, i.e., collapse of building, blasting, and damage to underground property.
 4. Completed operations hazard for a period of at least two years following acceptance by the Authority of the completed Contract.
 5. Use of watercraft, aircraft when applicable.
- B. Pollution Liability Insurance (Incorporate when applicable, otherwise delete provisions and specify "PLI is not applicable to this Contract")
1. The Contractor or his designated Subcontractor shall carry Pollution Liability in an amount not less than \$1,000,000 per occurrence and \$5,000,000 aggregate, for sudden and gradual occurrences arising out of the work being performed under this Contract including, but not limited to, all hazardous material identified under this Contract.
 2. The Contractor shall designate the disposal site and furnish a Certificate of Insurance from the Disposal Facility for Environmental Impairment Liability insurance covering liability for sudden and accidental occurrences in the amount of not less than \$3,000,000 per occurrence and \$6,000,000 aggregate and shall also include liability for non sudden occurrences in the amount of not less than \$5,000,000 per occurrence and \$10,000,000 aggregate.
 3. The Contractor shall designate the hauler and furnish a Certificate of Insurance from the hauler for Automobile Liability insurance with endorsement MCS90 for the liability arising out of the transportation of hazardous material with an amount not less than \$5,000,000 annual aggregate.
 4. Certificates of Insurance shall clearly state the hazardous materials exposure identified under the contract.
- C. Automobile Liability Insurance - including the use of all vehicles; owned, leased, hired and non-owned, with limits not less than \$1,000,000 combined single limit covering all work performed under the Contract.
- D. Railroad Protective Insurance (Incorporate when applicable, otherwise delete provisions and specify "RPI is not applicable to this Contract")
1. The Contractor shall furnish, with respect to the operations of the Contractor or any of the Contractor's subcontractors performing within the Railroad right-of-way, broad form Railroad Protective Liability Insurance covering all work performed under this Contract in the amount of not less than \$2,000,000 per occurrence, \$6,000,000 aggregate combined bodily injury and property damage.
 2. The insurance hereinbefore shall be written on an occurrence basis.
 3. The MBTA and applicable railroads shall be named insured on the insurance hereinbefore.
 4. The Contractor shall furnish to the MBTA and railroad companies a signed original of the policy for Railroad Protective Liability prior to entry upon the railroad right-of-way.
 5. All certificates shall be endorsed to provide 30 days notice to each named insured by the insurance company before any change or cancellation of the policies.

6. The required Railroad Protective Insurance provided herein must be in the form commonly referred to as the AAR-AASHTO- Form (not Oregon).
7. Original policies and certificates shall be made out to the MBTA and applicable railroads and mailed to:

MBTA: Treasurer-Controller
 Massachusetts Bay Transportation Authority
 10 Park Plaza
 Boston, MA 02116
 Tel. (617) 222-3064

(Change/revise to proper railroad[s])

AMTRAK: General Superintendent
 230 Congress Street
 Boston, MA 02110
 Tel. (617) 654-2020

CSXT: General Manager
 CSX Transportation
 1 Bell Crossing Road
 RD. #2, Box 145
 Selkirk, NY 12158-9618
 Tel. (518) 767-6111

- E. The Contractor shall carry Worker's Compensation Insurance, including Employers Liability Insurance as provided by Massachusetts General Laws, Chapter 152, as amended, covering all work performed by him under the Contract.
- F. The Contractor shall carry Umbrella Liability Coverage with limits of not less than \$10,000,000 per occurrence, covering all work performed by him under this Contract.
- G. The Contractor shall carry Builder's Risk Insurance (All Risks' form) on a 100 percent completed value basis for the full insurable portion of such Work for the benefit of the Authority, the Contractor and all Subcontractors.
- H. The required insurance coverages hereinbefore specified shall be placed with insurance companies licensed by the Massachusetts Division of Insurance to do business in the Commonwealth of Massachusetts and having a Best's rating of B+ or better, shall be taken out before the Contract is commenced and be kept in full force and effect throughout the term of the Contract, shall be primary to and non-contributory to any insurance or self-insurance maintained by the MBTA, and shall require that the MBTA be given at least 30 days advance written notice in the event of any cancellation or materially adverse change in coverage. All such required insurance, with the possible exception of Pollution Liability Insurance, shall be written on an occurrence basis form, as opposed to a claim made basis form. The MBTA shall be named as an additional insured under the Commercial General Liability, Automobile Liability, Umbrella, Pollution Liability, and Builder's Risk Insurance Policies. The Workers' Compensation and Employers' Liability Insurance Policies shall include a waiver of subrogation in favor of the MBTA which precludes these insurers from being able to make any subrogation claims against the MBTA. All such required insurance shall not contain any exclusions for acts of terrorism, and shall fully cover any acts of terrorism, irrespective of whether such acts of terrorism are caused by domestic or foreign terrorists, and irrespective of whether such acts of terrorism are certified or non-certified by the Secretary of the Treasury, in concurrence with the Secretary of State and the Attorney General of the United States, to be an act of terrorism pursuant to the federal Terrorism Risk Insurance Act of

2002. All such insurance as is required of the Contractor shall be provided by or on behalf of all subcontractors to cover their operations performed. The Contractor shall be held responsible for any modifications, deviations or omissions in the compliance with these requirements by the subcontractors. At the inception date of the Contract and throughout the term of the Contract, the MBTA shall be provided with certificates of insurance evidencing that such insurance policies are in place and provide coverage as required. The following statement affirming that coverage completely complies with contract requirements shall be included in the special items section of the certificate or in an attached special items addendum page:

The aforementioned insurance coverages completely comply with Article 5.4
Insurance Requirements Paragraphs A - I of MBTA Contract No. _____.

- I.** In the event it is determined during excavation or construction that an asbestos condition does exist, a Licensed Asbestos Specialist shall be employed by the Contractor to perform the asbestos containment and abatement work. Prior to asbestos containment and abatement work, the Contractor shall, through the Licensed Asbestos Specialists, obtain insurance in amounts and types specified by the Authority, naming the MBTA as an additional insured as its interest appears under this Contract. Payment for this work will be made in accordance with Division 1 - General Requirements, Section 01150, Article 1.5. **PAYMENT FOR EXTRA WORK.**

5.5 PATENTED DEVICES, MATERIALS, AND PROCESSES

- A.** The Contractor shall indemnify and save harmless the Authority and all persons acting for or on behalf of the Authority from all claims and liability of any nature or kind, and all damages, costs and expenses, including attorney's fees, arising from or occasioned by an infringement or alleged infringement of any patents or patent rights on any invention, process, material, equipment, article, or apparatus, or any part thereof, furnished and installed by the Contractor, or arising from or occasioned by the use of manufacture thereof, including their use by the Authority. In case such materials, equipment, devices, or processes are held to constitute an infringement and their use enjoined, the Contractor, at his expense, shall:
1. Secure for the Authority the right to continue using said materials, equipment, devices, or processes by suspension of the injunction or by procuring a license or licenses; or
 2. Replace such materials, equipment, devices, or processes with noninfringing materials, equipment, devices, or processes; or
 3. Modify them so that they become noninfringing, or remove the enjoined materials, equipment, devices, or processes and refund the sums paid therefor without prejudice to any other rights of the Authority or the Engineer.
- B.** When Federal Funds are involved, patent rights to any patentable result arising out of the Work, as well as all information, designs, specifications, know-how, data, and findings, shall be made available to the Government for public use, unless the Federal Department involved shall, in specific cases where it is legally permissible, determine that it is in the public interest that it not be so made available.

5.6 RESTORATION OF SURFACES OPENED BY PERMIT

- A.** Contractor shall not allow any party to make an opening in a street or highway for any purpose except upon the direction of the Engineer and the presentation of a duly authorized permit or other instrument. The holder of such a permit or instrument shall be considered in the same class as a contractor on an adjacent contract, and the provisions of Articles 3.5 and 3.6 shall apply.

5.7 FEDERAL PARTICIPATION

- A. (Applicable only to contracts where the cost of any portion thereof is paid out of federal funds). Attention is directed to the provisions of the Federal Transportation Act of 1964 (U.S. Public Law 88-365), as modified or amended, and any other provisions of law, or amendments thereto whereby such federal participation is authorized, and any regulations properly and lawfully promulgated thereunder, under which the United States shall aid the individual states in the development of efficient and coordinated mass transportation systems. When the United States government is to pay any portion of the cost of the Contract, the above act of Congress provides that the construction work and labor in each State shall be done in accordance with the laws of that State and applicable federal laws. The Work embraced in the Contract will, therefore, be subject to such inspection by representatives of the U.S. Department of Transportation or other such Federal Agency as may be necessary to meet the above requirements. Such inspection shall, however, in no sense make the United States government a party to the Contract, and will in no way interfere with the rights of either party hereunder.

5.8 RELATIONS WITH RAILROAD AND RESPONSIBILITY FOR DAMAGE TO RAILROAD

- A. Provisions in these General Conditions, which require the Contractor to protect property against damage, and which place upon the Contractor all responsibility for damage to property, injury to persons, and loss, expense, and delay to the owners of property and others, shall also apply to railway lines or railroads, their tenants, licenses, and utility companies which jointly own or use facilities with a railroad company (hereinafter collectively and severally referred to as "Railroad"), the same as in connection with other kinds of property.
- B. General and special requirements concerning the Contractor's relations with Railroad will be set forth in the Supplementary Conditions. The Contractor shall conform to those requirements in the conduct of his work under the Contract.
- C. The Contractor shall be solely and directly responsible to the owners and operators of such properties for any damage, injury, expense, loss, or delay which may result from the carrying out of the work to be done under the Contract; and if specified in the Supplementary Conditions, the Contractor shall give bond or insurance of the kind and in the amount therein specified to each corporation, company, partnership, or individual owning or operating any of the properties affected, in guarantee of this responsibility. Any extension of time granted the Contractor in which to complete the Contract shall not relieve him or his surety from this responsibility.
- D. If any of the Work required to be done by the Contractor may obstruct the tracks of a Railroad or in any way endanger the operation of its trains and the services of a flagman or flagmen or other railroad protective personnel are required by the Chief Engineer of the Railroad and men are assigned by him for the protection of the property and traffic of the Railroad against hazards capable of being caused by the Contractor, the cost of all such flagging and protective services shall be borne by the Contractor and no compensation therefor will be made other than that provided by the Contract unit prices. The provisions of this paragraph do not apply to the tracks of the MBTA or to the operations of its trains thereon. Required flagmen and other protective personnel for such purposes will ordinarily be furnished by the Authority at no cost to the Contractor.

5.9 USE OF EXPLOSIVES

- A. Explosives, when necessary for use in the Work, shall not be brought within the Contract limits or onto property under the jurisdiction of the Authority, without the prior approval of the Authority.

- B. Explosives shall be stored safely under lock and key. The storage places shall be marked conspicuously DANGEROUS EXPLOSIVES and be in the care of a competent watchman at all times. Storage, handling, and use of explosives shall conform to the regulations of the Massachusetts Department of Public Safety, federal regulations and local ordinances relating thereto.
- C. The Contractor shall be responsible for all damages resulting from the use of explosives. The Contractor shall exercise care not to endanger life and property, including new Work. When directed, the number and size of the charges shall be reduced. Flagmen shall be provided, when directed, to warn and keep traffic from the danger area. All persons within the danger area shall be warned and given time to withdraw.
- D. Prior to start of the blasting, the Contractor shall give at least a 48-hour notice and a schedule of his operations thereof to the operating official, company, or companies leasing, owning, or responsible for pipes, conduits, poles, wires, railroad tracks, or any other public or private utility which may be endangered by the blasting in order that a representative of said owner or lessee may be present at the site. The Contractor shall take proper precautions to prevent injury to said properties during all blasting operations.

5.10 PROTECTION AND RESTORATION OF PROPERTY

- A. The Contractor shall, at no additional expense to the Authority, preserve and protect from injury all property either public or private along and adjacent to the proposed Work. The Contractor shall be responsible for and shall repair at no additional expense to the Authority any and all damage and injury thereto, arising out of or in consequence of any act or omission, neglect or misconduct in the execution of the Work, or in consequence of the nonexecution thereof by the Contractor or his employees or subcontractors in the performance of the Work covered by the Contract prior to completion and acceptance thereof. The Contractor shall be solely responsible for any trespass upon adjacent property or injury thereto, resulting from or in connection with his operations. The Contractor shall be liable for any claims that may be made on account of the felling of trees or the deposit of debris of any kind upon private property. Special care shall be exercised during blasting operations to avoid injury to underground structures and utilities.
- B. Written notice shall be given by the Contractor to all public service corporations or officials owning or having charge of public or private utilities of his intention to commence operations affecting such utilities at least five days, exclusive of Saturdays, Sundays, and legal holidays in advance of the start of such operations in accordance with Chapter 82, Section 40 of the General Laws of the Commonwealth, as amended. The Contractor shall, at the same time, file a copy of said notice with the Engineer.
- C. Although the Contract Drawings may indicate the approximate location of existing subsurface utilities in the vicinity of the Work, accuracy and completeness of the information is not guaranteed by the Authority. Before commencing any work or operations which may endanger or damage subsurface structures, the Contractor shall carefully locate all such structures and conduct his operations in such manner as to avoid damage thereto. When necessary, the Contractor shall cooperate with representatives of public service and utility companies in order to avoid damage to their structures by furnishing and erecting suitable supports, props, shoring, or other means of protection. The Contractor shall not interrupt live services until new services have been provided. All abandoned services shall be plugged or otherwise made safe and secure. Compensation for conforming to all provisions of this Article 5.10, unless compensation is authorized in writing by the Engineer, as specified in Article 2.3, Extra Work, or as may be Conditions, shall be considered as included in the prices for the various Contract items of Work and no additional compensation will be allowed therefor.

- D. If the Contractor desires to temporarily relocate a utility, other than those contemplated by the Authority, he shall make the necessary arrangement with the appropriate utility company and make reimbursement for the cost thereof at no additional expense to the Authority.
- E. Access to fire hydrants and fire alarm boxes shall be maintained by the Contractor throughout the prosecution of the Work. Hydrants, alarm boxes, and standpipe connections shall be kept clear of obstructions and kept visible at all times. If visibility cannot be maintained, the Contractor shall provide clearly visible signs and lights showing the locations of fire hydrants, fire alarm boxes, or standpipe connections. Utility companies and municipal agencies having facilities within the limits of the Work shall have access to their facilities at all times for inspection and repair.
- F. Land monuments and property marks shall be carefully protected by the Contractor and if necessary to remove the same, he shall do so only at the Engineer's direction and after an authorized agent has witnessed or otherwise referenced their location.
- G. The Contractor shall protect and preserve natural surroundings and roadside growth either within or adjacent to the project site from damage or injury due to these operations. The Contractor shall not, except by written permission of the Engineer, remove, destroy, or trim roadside trees or shrubs. Trees or landscape features carelessly scarred or damaged by the Contractor's operations shall be removed and replaced or neatly trimmed and restored to their original condition as required by the Engineer. The Contractor shall be responsible for all damage to roadside growth due to his operations and shall, without compensation, satisfactorily repair or replace all such damaged growth. Scars on trees shall be painted as soon as possible with an approved tree paint.
- H. The Contractor shall protect existing structures, shall provide lights and fences and take all other precautions that may be necessary to protect life and property at no additional expense to the Authority. The Contractor shall carry on all operations and use equipment of such types that noise resulting from construction operations will be kept to a minimum. Barriers and bridges shall be provided for the protection and use of the public and for the protection of the Work as necessary. The Contractor shall provide and maintain access for occupant and customer entrance to and exit from all adjacent buildings and property at all times. All temporary facilities required for the general protection of the public and the Work shall be subject to approval of the Authority.
- I. Prior to commencing Work, the Contractor shall record the existing condition of abutting property. The Contractor shall obtain the necessary permission for entry and cause a detailed examination to be made of such abutting property as the Contractor deems necessary, as required in the Supplementary Conditions, or as directed by the Engineer. The Contractor shall invite the owner, in writing or by registered mail, to be present during the examination. A representative of the Authority shall also be invited. A complete report of the existing conditions, including photographs, if required, shall be made in triplicate, and signed by the Contractor. One copy shall be delivered to the owner, one to the Authority and one shall be retained by the Contractor. If at any time thereafter a claim for damages or alleged damages is filed by the owner or tenant, the Contractor shall make further detailed examinations. A representative of the Authority will be invited to attend. All facts as to changes between the then existing conditions of said property and those which existed at the time of the original examination shall be noted and recorded in triplicate. One copy of this report shall be delivered to the owner, one to the Authority, and one shall be retained by the Contractor.
1. In the event that the Contractor cannot obtain from the owner of such abutting property permission to enter upon the property for such examination, the Contractor shall immediately notify the Authority.
 2. For these detailed examinations, the Contractor shall employ an independent person who has had previous experience in examining or surveying the conditions of the property and who shall be approved by the Authority.

- J.** The Contractor shall conform to all requirements of this Article and shall serve written notice to all Utility Owners or officials and to all others concerned with or having charge of public or private-owned utilities, of his intention to commence operations affecting such utilities at least one week in advance of the beginning of such operations. The Contractor shall at the same time file a copy of said notices with the Engineer.
- K.** The Contractor shall confine his movements and operations insofar as possible to the area within the limits of the Work, and the area outside the limits of the Work shall not be disturbed except as directed.
- L.** All costs of work included in this subsection shall be borne by the Contractor and no separate payment will be made to the Contractor.

5.11 FOREST PROTECTION

- A.** In the execution of any Work within or adjacent to any State or National forest, park, or other public or private lands, the Contractor shall comply with all of the regulations of the appropriate authorities having jurisdiction over such forest, park, or lands. The Contractor shall keep the areas in his construction operations in an orderly condition and properly dispose of all refuse and discarded materials.
- B.** The Contractor shall obtain construction permits which may be required for Contract operations, not a part of the Contract, in accordance with the requirements of the regulations of the appropriate authorities.
- C.** The Contractor shall take all reasonable precautions to prevent and suppress open fires in any area involved in his construction operations or occupied by him as a result of such operations. The Contractor shall cooperate with the proper authorities of the state and federal governments in reporting, preventing, and suppressing any open forest fires.

5.12 PROTECTION OF FENCES

- A.** By constructing temporary fences, or by other adequate means, the Contractor shall restrain stock from leaving the lands wherein they are confined or from trespassing which would be made possible by, or which might result from, the removal or destruction of existing fences or the carrying out of any part of the Work under the Contract. The Contractor shall be responsible for all loss, injury, or damage that may result from the Contractor's failure to restrain stock as above provided. Compensation for erecting and maintaining temporary fences and for otherwise providing for the restraint of stock shall be considered as included in the prices for the various Contract Items and no additional compensation will be allowed therefor.
- B.** If the Contractor is ordered by the Engineer to construct new right of way fences or to move and reconstruct existing fences, such Work shall be paid for at the unit price bid for same, or as Extra Work.
- C.** The Contractor shall use care to avoid damaging existing fences. The Contractor shall repair or replace at no additional expense to the Authority, and to the satisfaction of the Engineer, all fences which are in any way damaged by Contract operations.
- D.** Tearing down and removal of fences occurring within the right-of-way limits shall be considered to be a part of the clearing and grubbing work as set forth in the Contract Specifications, and payment therefor included in the payment for clearing and grubbing.

5.13 SAFEGUARDING OF EXCAVATIONS

- A. Contractor shall provide safeguards and protection around and in the vicinity of excavations necessary to prevent and avoid the occurrence of damage, loss, injury, and death to property, animals, and persons because of such excavations. Liability for any such damage, loss, injury, or death shall rest with the Contractor.

5.14 DISPOSAL OF MATERIALS OUTSIDE THE WORK SITE

- A. Unless otherwise specified in the Contract Specifications, the Contractor shall make his own arrangements for disposing of waste and excess materials outside the work site at no additional expense to the Authority.
- B. Prior to disposing of material outside the Work site, the Contractor shall obtain written permission from the owner on whose property the disposal is to be made. The Contractor shall file with the Engineer the permit, or a certified copy thereof, together with a written release from the property owner absolving the Authority from any and all responsibility in connection with the disposal of material on said property.
- C. When material is disposed of as provided in Paragraph B. and the disposal location is visible from an MBTA System track or a public highway, the Contractor shall dispose of the material in a manner to the satisfaction of the Engineer and the Owner.
- D. Unless otherwise provided in the Contract Specifications, full compensation for all costs involved in disposing of materials as above specified, including all costs of hauling, shall be considered as included in the price paid for the Contract Item involving such materials and no additional compensation will be allowed therefor.

5.15 SAFETY AND FIRST AID REQUIREMENTS

- A. The Contractor shall have a full-time (all working hours/one each shift) on-site experienced Safety Supervisor/Representative, whose sole responsibility is on-site safety management. The Contractor shall submit, within five (5) working days after receipt of notification of contract award, to the Engineer (Authority Resident Engineer) a detailed site-specific Safety Program, including the name, experience, and qualifications of the Contractor's full-time, on site Safety Supervisor/Representative and alternate. In the absence of the Safety Representative (e.g. vacation, sick leave, short term shift work not exceeding two weeks) the contractor must assign a full time Authority approved alternate Safety Supervisor/Representative to this contract. All safety submittals must be approved by the Engineer (MBTA Safety Department) prior to the start of construction. No work at the job site shall begin until the Engineer has reviewed and commented on the Contractor's safety program and safety representatives. Implementation and enforcement of the safety program for the forces of the Contractor and all subcontractors shall be the responsibility of the General Contractor.
- B. The Contractor's full-time Safety Supervisor/Representative shall have a thorough knowledge of construction safety and OSHA regulations. If, in the opinion of the Engineer, the Contractor's safety representative is not effective in carrying out the assigned duties as described below, the Engineer may request, in writing, that the Contractor replace the safety representative.

Contractors Safety Supervisors/Representatives and alternate are classified into levels with their qualifications based upon the extent of their construction safety supervisory experience and capabilities, and the nature of each individual contract. All contracts require a Class III Full-time

Safety Supervisor/Representative unless otherwise specified. Qualifications for each classification shall include, at minimum:

Class I

Basic safety and health training (minimum requirement: successful completion of OSHA 10 hour Construction Safety and Health training course):

- Two years experience as a construction safety supervisor where safety was 100% of the position responsibility
- Working knowledge of safety regulations and hazard control measures
- Demonstrated ability to conduct safety training
- Working knowledge of safety specific contract hazardous work procedures Physically able to perform the job.

Class II

Five years experience as a construction safety supervisor, three of which include full-time on-site construction safety experience (minimum requirement: successful completion of OSHA 30 hour Construction Safety and Health training course):

- Specialized safety training relevant to the project
- Demonstrated ability in creating a safe work environment
- Working knowledge of safety regulations and hazard control measures
- Demonstrated ability to conduct safety training
- Working knowledge of safety specific contract hazardous work procedures
- Physically able to perform the job.

Class III

Seven years experience as a construction safety supervisor, five of which include full-time on-site construction safety experience (minimum requirement: successful completion OSHA 30 hour Construction Safety and Health or OSHA's Instructor #500 Training course):

- # Specialized safety training relevant to the project
- # Demonstrated ability in creating a safe work environment.
- # Working knowledge of safety regulations and hazard control measures.
- # Demonstrated ability to conduct safety training.
- # Working knowledge of safety specific contract hazardous work procedures.
- # Physically able to perform the job.

- C. The duties of the Safety Supervisor/Representative shall include maintenance of the Contractor's safety program, enforcement of safe practices, and the use of safety equipment and personal protective equipment, and other such activities as may be required by OSHA and the Engineer to maintain job safety and accident prevention. The safety representative shall not be replaced, terminated, nor reassigned without the written approval of the Engineer. A minimum transition of two weeks shall occur. Vacancies in these positions must be filled within two weeks of the vacancy occurring. The Safety Representative shall be assigned full-time to the contract and shall not be utilized concurrently on any other MBTA contract or any other projects outside this MBTA contract.
- D. Attention of the Contractor is, specifically directed to the General and Supplementary Conditions of this Contract, which shall be made a condition of each subcontract entered into pursuant to the Contract. Further, that the Contractor and any subcontractor shall not require any laborer or mechanic employed in performance of the Contract to work in surroundings or under working conditions which are unsanitary, hazardous, or dangerous to health or safety, as determined under construction safety and health standards (Title 29, Code of Federal Regulations, Part 1518, Published in the Federal Register on April 17, 1971) promulgated by the United States Secretary of Labor, in accordance with Section 107 of the Contract Work Hours and Safety Standards Act (83 Stat. 96). This contract will require all contractors and subcontractors to comply one hundred percent (100%) with OSHA's fall protection standard.
- E. The Authority may stop any work that it considers to be unsafe.
- F. The Contractor shall notify the Engineer 48 hours prior to bringing in any hoisting equipment (cranes, etc.) on the Authority's property. Equipment must be inspected by the Engineer (MBTA Safety Department) before being used on the work site.
- G. The Contractor shall assume full responsibility for the safety of all his work. He shall perform work in a manner that will insure the safety of personnel and the work; and not expose personnel and equipment to hazardous or potentially hazardous conditions. All work in the construction of the project shall comply with the requirements of the U.S. Department of Labor Occupational Safety and Health Administration (OSHA) provisions, as well as those of State and local regulations. Safe breathing levels must conform to the Massachusetts Department of Environmental Protection (DEP) standards. In the case of conflict of regulations, the most stringent regulations shall apply.
- H. The Contractor shall provide at the site such equipment and medical facilities as are necessary to supply first-aid service to any person who may be injured in the progress of the work. At least one individual member of the contractor's staff, properly qualified with current certification (Red Cross or equivalent) in basic first aid and cardiopulmonary resuscitation (CPR), must be continuously present, on the site at all times when work is in progress. This individual must also have a general knowledge regarding blood borne pathogens. First-aid equipment shall be complete in all respects. The Contractor shall also have standing arrangements for the removal and hospital treatment of any employee who may be injured or who may become ill.
- I. The Contractor shall promptly report in writing to the Authority all accidents whatsoever arising out of or in connection with the performance of the work, whether on or adjacent to the site, which cause death, personal injury or property damage, giving full details and statements of witnesses. In addition, if death, or serious injuries or serious damages are caused, the accident shall be reported immediately by telephone to the Authority.

- J.** If any claim is made by any third person against the Contractor or any subcontractor on account of any accident, the Contractor shall promptly report the fact in writing to the Authority, giving full details of the claim.
- K. REQUIRED TRAINING**
1. All workers employed by the Contractor or subcontractors who work within the MBTA property limits i.e. (Authority's stations, track area right-of-way on and/or adjacent to the power traction system, etc.) shall be required to attend a four (4) hour safety awareness course at the Authority's Safety School. A Fifty dollar (\$50.00) Administrative Service cost will be charged per attendee. This Administrative/Service cost will be directly invoiced to the contractor by the Safety Department at the end of each month. The contractor shall remit this fee to the Authority within thirty (30) days of said invoice. The location and the time of such school will be at the sole discretion of the Authority. The purpose of this course is to make the Contractor's personnel aware of the particular hazards related to the Authority's operations. Re-certification is required every three years. This class is separate and in addition to the eight (8) hour Subway Operations Right-of-Way Safety Training.
 2. The Contractor shall certify that all employees to be employed at the worksite shall have successfully completed a course in construction safety and health. The course must be approved by the United States Occupational Safety and Health Administration, and it must be at least 10 hours in duration per MGL 30.39S. The Contractor shall submit documentation of successful completion of said course with the first certified payroll report for each employee.
 3. All workers employed by the Contractor or subcontractors who work within the MBTA property limits i.e. (Authority's stations, track area right-of-way on and/or adjacent to the power traction system, etc.) shall be required to attend a one-day, eight-hour training class conducted by Subway Operations Training and the Safety Department. Attendees must successfully complete the Right of Way Safety Training in order to receive a Right of Way license. The license is valid for a two-year period after which the person must attend the Authority's Right of Way re-certification class. To register for the "Right of Way Safety" class, contact:

Supervisor and Chief Rules Examiner of Training
Cabot RTL Training
275 Dorchester Avenue, 2nd floor
Telephone: (617) 222-5377
- L.** All personnel working on the project site, within the MBTA construction project limits are required to wear high visibility reflective orange safety vests, similar to the standard MBTA equipment. In addition, all personnel working in the MBTA track area or on the platform will require the use of MBTA flagman.
- M.** Work activities necessitating the traction power system (third rail and trolley wire) deenergization will require the services of an Authority power lineman on site at all times.
- N.** The Contractor will be required to comply with the applicable requirements of the Environmental Protection Agency's National Emission Standards for Hazardous Air Pollutants, Part 51, Chapter 1, Title 40, Code of Federal Regulations, Subpart B, ~~effective April 6, 1973~~, and as amended October 5, 1975 (Published October 14, 1975, in the Federal Register), and also subpart M published in June 1984.

- O. All equipment used by the contractor on Authority property must be inspected by the Engineer (MBTA System wide maintenance and Improvement representative) prior to use on the work site and shall not be used if considered unsafe or not conforming to Authority specifications. All contractor/subcontractor equipment (including hi-rail) operators must be trained, certified, and properly licensed for each specific piece of equipment they will operate. The contractor/subcontractor must keep a copy of the Manufacturers Operating Manual or instructions onboard the hi-rail equipment at all times. The contractor/subcontractor hi-rail vehicles must be equipped with and exhaust gas purifier, and the hi-rail equipment used shall comply with requirements of the hi-rail equipment manufacturer. Documentation of same must be readily available and provided to the Authority upon inspection. If the contractor/subcontractor equipment is involved in a derailment or a near miss incident or accident which caused injury or exposed personnel to injury and/or caused damage to Authority property, that equipment is subject to the Authority's Impound Policy/Procedure. Contractor equipment to be used on or in the vicinity of the tracks shall be in first-class condition, so as to positively prevent any failure that would cause delay in Authority operations or damage to its property or compromise the health and safety of personnel working on the project. Equipment shall not be placed or operated within fouling distance (15' from the centerline) of track without first obtaining the permission of the Authority.
- P. The Authority will not compensate the Contractor for delays or denials to work when the Contractor is in violation of the above regulations.
- Q. Heavy Equipment used in tunnel operations must utilize Fire Resistant hydraulic fluids and conform to OSHA 20 CFR 1926.800 (m)(8), and the Massachusetts Fire Prevention Regulations {527 CMR 1.03 (8)} and the Boston Fire Prevention Code {Section 1.05 (b)}.

5.16 RESPONSIBILITY FOR DAMAGE CLAIMS

- A. The Contractor shall indemnify, defend, and save harmless the Authority and all its officers, agents, and employees against all suits, claims, or liability of every name and nature, for or due to any injuries to persons or damage to property arising out of or in consequence of the acts of the Contractor in the performance of the Work covered by the Contract or failure to comply with the terms and conditions of said Contract, whether by the Contractor or the Contractor's employees or subcontractors.
- B. The Contractor shall be held responsible for any and all claims for damage to underground structures and utilities due to the Contractor's operations or to the operations of any of the Contractor's subcontractors.
- C. The Authority agrees to indemnify the Contractor against loss by reason of the liability to pay damages to others for entry upon any land included within and adjoining the boundaries of the area within which the Work is to be provided as set forth in the Contract Documents applying to such Contract or any approved changes thereof or for damage sustained upon any lands adjoining said land by reason of the flowage or drainage of water thereto or therefrom, in any case wherein such damages and interest or easement in such adjoining area, provided that the Authority acting by an authorized representative thereof has issued a notice in writing to the Contractor prior to the making of any entry upon such premises directing or permitting the Contractor to proceed with the Contract and to make such entry upon the premises for the purpose of providing the Work required by said Contract. or any approved alteration thereof, and provided, further, that the Contractor has given notice in writing to the Authority within 15 days after receiving notice of any claim to come in and settle the same and upon the commencement of any action against the Contractor to come in and defend said action, but in no event shall any such damage claim be compromised or adjusted without the written consent of the Authority. The provisions of this Article shall in no way relieve the Contractor from any liability for damage to property of others

caused by the Contractor's negligence or that of the Contractor's employees nor shall they be construed to require the Authority to indemnify the Contractor against any loss resulting from such acts of negligence.

5.17 CLAIMS AGAINST CONTRACTOR FOR PAYMENT OF LABOR AND MATERIALS

- A. The Contractor shall be responsible for prompt payment for all services, labor, equipment, and materials furnished by or through the Contractor for purposes of the Contract.
1. Forthwith after the Contractor receives payment for a periodic estimate, the Contractor shall pay to each subcontractor the amount paid for the labor performed and the materials furnished by that subcontractor, less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the Contractor.
 2. Not later than the sixty-fifth day after each subcontractor substantially completes its work in accordance with the Contract Documents, the entire balance due under the subcontract less amounts retained by the Authority as the estimated cost of completing the incomplete and unsatisfactory items of work, shall be due the subcontractor; and the Authority will pay that amount to the Contractor. The Contractor shall forthwith pay to the subcontractor the full amount received from the Authority less any amount specified in any court proceedings barring such payment and also less any amount claimed due from the subcontractor by the Contractor.
 3. Each payment made by the Authority to the Contractor pursuant to subparagraphs 1. and 2. of this Article for the labor performed and the materials furnished by a subcontractor shall be made to the Contractor for the account of that subcontractor; and the Authority will take reasonable steps to compel the Contractor to make each such payment to each such subcontractor. If the Authority has received a demand for direct payment from a subcontractor for any amount which has already been included in a payment to the Contractor or which is to be included in a payment to the Contractor for payment to the subcontractor as provided in subparagraphs 1. and 2., the Authority shall act upon the demand as provided in this Article.
 4. If, within 70 days after the subcontractor has substantially completed the subcontract work, the subcontractor has not received from the Contractor the balance due under the subcontract, including any amount due for extra labor and materials furnished to the Contractor, less any amount retained by the Authority as the estimated cost of completing the incomplete and unsatisfactory items of Work, the subcontractor may demand direct payment of that balance from the Authority. The demand shall be by a sworn statement delivered to or sent by certified mail to the Authority, and a copy shall be delivered to or sent by certified mail to the Contractor at the same time. The demand shall contain a detailed breakdown of the balance due under the subcontract work. Any demand made after substantial completion of the subcontract work shall be valid even if delivered or mailed prior to the seventieth day after the subcontractor has substantially completed the subcontract work. Within 10 days after the subcontractor has delivered or so mailed the demand to the Authority and delivered or so mailed a copy to the Contractor, the Contractor may reply to the demand. The reply shall be by a sworn statement delivered to or sent by certified mail to the Authority and a copy shall be delivered to or sent by certified mail to the subcontractor at the same time. The reply shall contain detailed breakdown of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the Contractor and of the amount due for each claim made by the Contractor against the subcontractor.
 5. Within 15 days after receipt of the demand by the Authority, but in no event prior to the seventieth day after substantial completion of the subcontract work, the Authority will make direct payment to the subcontractor of the balance due under the subcontract, including any amount due for extra labor and materials furnished to the Contractor, less

any amount (1) retained by the Authority as the estimated cost of completing the incomplete or unsatisfactory items of work, (2) specified in any court proceedings barring such payment, or (3) disputed by the Contractor in the sworn reply; provided, that the Authority will not deduct from a direct payment any amount as provided in part (3) if the reply is not sworn to, or for which the sworn reply does not contain the detailed breakdown required by subparagraph 4. The Authority will make further direct payment to the subcontractor forthwith after the removal of the basis for the deductions from direct payments made as provided in parts (1) and (2) of this subparagraph.

6. The Authority will forthwith deposit the amount deducted from a direct payment as provided in part (3) of subparagraph 5. in an interest-bearing joint account in the names of the Contractor and the subcontractor in a bank in Massachusetts selected by the Authority or agreed upon by the Contractor and the subcontractor and shall notify the Contractor and the subcontractor of the date of the deposit and the bank receiving the deposit. The bank shall pay the amount in the account, including accrued interest, as provided in an agreement between the Contractor and the subcontractor or as determined by decree of a court of competent jurisdiction.
7. All direct payments and all deductions from demands for direct payments deposited in an interest bearing account or accounts in a bank pursuant to subparagraph 6, shall be made out of amounts payable to the Contractor at the time of receipt of a demand for direct payment from a subcontractor and out of amounts which later became payable to the Contractor and in the order of receipt of such demands from subcontractors. All direct payments will discharge the obligation of the Authority to the Contractor to the extent of such payment.
8. The Authority will deduct from payments to the Contractor amounts which, together with the deposits in interest-bearing accounts pursuant to subparagraph 6, are sufficient to satisfy all unpaid balances of demands for direct payment received from subcontractors. All such amounts shall be earmarked for such direct payments, and the subcontractors shall be right in such deductions prior to any claims against such amounts by creditors of the Contractor. Subcontractor, for contracts awarded as provided in paragraph (a) of Section Thirty-Nine M, Chapter Thirty shall mean a person approved by the Authority in writing as a person performing labor or both performing labor and furnishing materials pursuant to a contract with the Contractor.

5.18 PAYMENT OF TAXES

- A. Contract prices paid for the Work shall include full compensation for all taxes which the Contractor is required to pay whether imposed by federal, state, or local government, including, without being limited to, federal excise tax.
- B. However, attention is directed to the Massachusetts Sales Tax, Chapter 64H, Section 6 and the Massachusetts Use Tax, Chapter 64I, Section 7, which state that these taxes are not applicable to the sales of construction materials and supplies incorporated, consumed, employed or expended in construction projects of the Authority. This exemption is also applicable to rental charges for construction vehicles, equipment, and machinery rented, specifically for use on the site of the Authority's construction projects. Bidders are directed to exclude any allowance for Sales or Use Tax from their Bid Form as said tax would relate to the foregoing specific categories. The MBTA Sales Tax Exemption Number is E-042-323-989.

5.19 CLAIMS OF CONTRACTOR FOR COMPENSATION

- A. No person or corporation, other than the signer of the Contract as Contractor, now has any interest hereunder, and no claim shall be made or be valid; and neither the Authority nor any member, agent, or employee thereof, shall be liable for, or be held to pay, any money except as provided in

Article 2.2, 2.3, 2.4, 2.5, and Section 01150 - MEASUREMENT AND PAYMENT, of these Standard Specifications and Clause 3 of the Contract.

- B. All claims of the Contractor for compensation other than as provided for in the Contract due to any act of omission or commission by the Authority or its agents must be made in writing to the Engineer within 10 days after the beginning of any work or the sustaining of any damage due to such act. Such written statement shall contain a description of the nature of the Work provided or damage sustained; and the Contractor, shall on or before the fifteenth day of the month succeeding that in which such Work is performed or damage sustained file with the Engineer an itemized statement of the details and amount of such work or damage. Unless such statement shall be made as required, the claim for compensation shall be forfeited and invalidated, and the Contractor shall not be entitled to payment due to any such work or damage. Such notice by the Contractor and the keeping of costs by the Engineer shall not in any way be construed as proving the validity of the claim. The provisions of this paragraph shall not apply to changes in quantities as provided under Article 2.5 or to Extra Work ordered by the Engineer in writing.
- C. On the basis of information provided in writing by the Contractor's own employees, servants, or agents, the Contractor shall certify, in writing, that the Work for which he is claiming payment, other than as provided for in the Contract, is work actually performed, and the costs as shown are the amounts legally due for providing such Work for which payment is claimed.
- D. The Engineer will determine all questions as to the amount and value of such Work, and the fact and extent of such damage and will notify the Contractor in writing of this determination.
- E. Acceptance by the Contractor of the final payment made under the provisions of Section 01150 - MEASUREMENT AND PAYMENT shall operate as and shall be a release to the Authority and every member, agent, and employee thereof, from all claim and liability to the Contractor for anything done or furnished for, or relating to, the Work, or for any act or neglect of the Authority or of any person relating to or affecting the Work except the claim against the Authority for the remainder, if any there be, of the amounts kept or retained as provided in Article 5.17. For claims for extensions of time, see Article 6.8.

5.20 OPENING PORTIONS OF CONTRACT FOR OPERATION

- A. Any portion of the Work which is in acceptable condition for operation may be opened for MBTA Transit System operation as directed in writing by the Engineer, but such opening for operation shall not be construed as an acceptance of the Work or part thereof, nor shall it act as a waiver of any of the provisions of the Contract Specifications or of the Contract; provided, however, that on such portions of the Contract as are opened for such use, the Contractor shall not be required to assume any expense entailed in maintaining the MBTA Transit System for operation. The Authority will be responsible for maintenance and any damage to the Work caused solely by MBTA Transit System operation on any portion of the Contract which has been opened to operation as stipulated above, and it may order the Contractor to repair or replace such damage, where upon the Contractor shall make such repairs at Contract unit prices so far as the same are applicable, or as Extra Work under the provisions of Article 2.3, if there are no applicable items in the Contract.
- B. If the Contractor is dilatory in completing shoulders, drainage structures, or other features of the nontransit system portion of the Work, the Engineer may order all or a portion of the nontransit system portion of the Work open to traffic, but in such event the Contractor shall not be relieved of his liability and responsibility during the period the Work is so opened prior to final acceptance. The Contractor shall conduct the remainder of his construction operations so as to cause the least obstruction to traffic.

5.21 CONTRACTOR'S RESPONSIBILITY FOR THE WORK

- A. Until final written acceptance of the Work, the Contractor shall have the charge and care of the Work. The Contractor shall take every necessary precaution against injury or damage to the Work by action of the elements, or from any other cause, whether arising from the execution or the nonexecution of the Work, and especially when blasting is to be done.
- B. Except as provided in Article 2.9, the Contractor shall bear all losses resulting from or due to the amount or the character of the work or because the nature of the land in or on which the Work is done is different from that which was estimated or expected, or due to bad weather or other causes.
- C. The Contractor shall rebuild, repair, restore, and make good all injuries or damages to any portion of the Work occasioned by any cause before its completion and final acceptance, and all bear the expense thereof, except damage to the Work due to war, whether or not declared civil war, insurrection, rebellion or revolution, or to any act or condition incident to any of the foregoing, to "Acts of God" (limited to hurricane, tornado, cyclone and earthquake as classified by the United States Weather Bureau for the particular locality and for the particular season of the year and in addition thereto, damages resulting directly from flooding from any of the aforementioned "Acts of God"). The repair of such damages shall be done by the Contractor and paid for at the respective Contract unit prices for the quantity and items of Work involved. In any case in which the estimate for replacing such Work or repairing such damage caused by war, whether or not declared, civil war, insurrection, rebellion or revolution, or to any act or condition incident to the foregoing, or an "Act of God" combined with any previously authorized Extra Work results in a change of such magnitude as to be incompatible with competitive bid status, the Authority reserves the right to terminate the Contract and to call for new bids and award a new Contract for such Work. In the event a Contract is terminated for such reason, the Authority will pay the Contractor such sum as may be due for Work performed up to the date of the "Act of God", or of damage directly due to war, whether or not declared, civil war, insurrection, rebellion or revolution, or to any act or condition incident to any of the foregoing and will also take over and pay for any material stored at the site of the Work provided said material was intended to be and could have been incorporated into the Work; the Authority will also take over and pay for any material which was being especially fabricated for incorporation into the Work, provided, however, that as a condition precedent to the Authority's liability for such material, the Contractor is legally liable therefor and the material was intended to be and could have been incorporated in the Work.
- D. Issuance of an estimate on any part of the Work done will not be construed as final acceptance of any Work completed up to that time.
- E. Should the Contractor fail to take prompt action whenever conditions make it necessary, the Authority will make emergency repairs or cause the same to be made, with the stipulation that the costs for such repairs shall be charged against the Contractor and deducted from moneys due the Contractor.
- F. In case of suspension of Work from any cause whatever, the Contractor shall be responsible for the Contract and shall take such precautions as may be necessary to prevent damage to the Work, provide suitable drainage and shall erect any necessary temporary structures, signs, or other facilities at no additional expense to the Authority. The Contractor shall also maintain in an acceptable growing condition all living material in newly established plantings, seeding, and sodding furnished under the Work, and take adequate precautions to protect new tree growth and other important vegetative growth against injury.

5.22 CONFLICT OF INTEREST

- A.** It is understood and agreed that no gift, loan, or other thing of value has been or shall be given to any employee, agent, or officer of the Authority in connection with the award or performance of the Contract. Also no employment shall be given to and no renting, leasing, or purchasing of equipment, supplies, or materials shall be arranged or made with or through any employee, agent, or officer of the Authority by the Contractor.
- B.** No Board Member, officer or employee of the Authority, officer or employee of any independent authority or political subdivision of the Commonwealth of Massachusetts, officer, employee or elected official of the Commonwealth of Massachusetts, officer, employee or elected official of any city, county or town within the Commonwealth of Massachusetts, officer, employee or elected official of any city, county or town authority within the Commonwealth of Massachusetts, during his/her tenure and for one year thereafter shall have any interest, direct or indirect, in this contract or the proceeds thereof.
- C.** No member of or delegate to the Congress of the United States shall be admitted to any share or part of this contract or to any benefit arising therefrom.

5.23 PERSONAL LIABILITY OF AUTHORITY OFFICIALS

- A.** In carrying out any of the provisions of the Contract Documents, or in exercising any power or authority granted to them by or within the scope of the Contract, there shall be no liability upon the Directors, Engineer, or their authorized representatives, either personally or as officials of the Authority, it being understood that in all such matters they act solely as agents and representatives of the Authority.

5.24 NO WAIVER OF LEGAL RIGHTS

- A.** Authority shall not be precluded or stopped by any measurement, estimate, or certificate made either before or after the completion and acceptance of the Work and payment therefor, from showing the true amount and character of the Work provided and materials furnished by the Contractor, nor from showing that any such measurement, estimate, or certificate is untrue or is incorrectly made, nor that the Work or materials do not in fact conform to the Contract. The Authority shall not be precluded or stopped, notwithstanding any such measurement, estimate, or certificate and payment in accordance therewith, from recovering from the Contractor or the Contractor's sureties, or both, such damage as it may sustain by reason of the Contractor's failure to comply with the terms of the Contract. Neither the acceptance by the Authority, or any representative of the Authority, nor any payment for or acceptance of the whole or any part of the work, nor any extension of time, nor any possession taken by the Authority, shall operate as a waiver of any portion of the Contract or of any power herein reserved, or of any right to damages. A waiver of any breach of the Contract shall not be held to be a waiver of any other or subsequent breach. Any remedy provided in the Contract shall be taken and construed as cumulative, that is, in addition to each and every other remedy herein provided; and the Authority shall also be entitled as of right to writ of injunction against any breach of any of the provisions of the Contract.

5.25 LABOR, LODGING, BOARD, MAXIMUM HOURS OF EMPLOYMENT, KEEPING OF PAYROLL RECORDS

- A.** Every employee in public work shall lodge, board, and trade where and with whom the employee elects; and no person or person's agents or employees under contract with the Authority for the doing of public work, shall directly or indirectly require as a condition of employment therein, that

the employee shall lodge, board, or trade at a particular place or with a particular person (Chapter 149, Section 25 of the General Laws of the Commonwealth).

- B. No laborer, workman, mechanic, foreman, or inspector working within this Commonwealth, in the employ of the Contractor, subcontractor, or other person doing or contracting to do the whole or a part of the Work contemplated by the Contract, shall be required or permitted to work more than 8 hours in any one day or more than 48 hours in any one week, or more than six days in any one week, except in cases of emergency. The Authority or the Contractor or any subcontractor may employ laborers, workmen, mechanics, foremen, and inspectors for more than 8 hours in any one day in the work to be done or under the Contract when, in the opinion of the Commissioner of Labor and Industries, public necessity so requires. (Chapter 149, Section 34 of the General Laws of the Commonwealth, as amended.)
- C. Upon request of the Engineer or the Massachusetts Department of Labor and Industries, the Contractor shall furnish certified copies of any or all payrolls for the Contract, showing the name, address, and occupational classification of each employee on said Works, and the hours worked by, and the wages paid to each such employee. Such payroll shall also include the rates paid for rented trucks or rental equipment of any kind used on the Work. This requirement shall also apply to the work of any subcontractor, having a subcontract for any of the Work performed on the Contract. Such records shall be kept in such manner as the Commissioner of Labor and Industries shall prescribe, and shall be open to inspection by the Engineer or any authorized representative of the Department of Labor and Industries at any reasonable time and as often as may be necessary.
- D. In case the Work covered by the Contract is financed from federal funds, the above provisions relative to the hours of employment shall be subject to such revision and amendment as are required by the Rules and Regulations controlling the expenditures of such federal funds.

5.26 EQUAL OPPORTUNITY CLAUSE

- A. During the performance of the Contract, the Contractor agrees as follows:
- B. The Contractor shall not discriminate against any employee or applicant for employment because of race, creed, color, religion, sex, or national origin. The Contractor shall take affirmative action to ensure that applicants are employed, and that employees are treated during employment without regard to their race, creed, color, religion, sex, or national origin. Such action shall include, but not be limited to, the following: Employment, upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms of compensation; and selection for training, including apprenticeship. The Contractor agrees to post in conspicuous places, available to employees and applicants for employment, notices to be provided setting forth the provisions of this nondiscrimination clause.
- C. The Contractor shall, in all solicitations or advertisements for employees placed by or on behalf of the Contractor, state that all qualified applicants shall receive consideration for employment, without regard to race, creed, color, religion, sex, or national origin.
- D. The Contractor shall send to each labor union or representative of workers with which he has a collective bargaining agreement or other contract or understanding, a notice advising the said labor union or workers' representatives of the Contractor's commitments under this section, and shall post copies of the notice in conspicuous places available to employees and applicants for employment.
- E. The Contractor shall comply with all provisions of Executive Order 11246 of September 24, 1965, as amended, and of the rules, regulations and relevant orders of the Secretary of Labor.

- F. The Contractor shall furnish all information and reports required by Executive Order 11246 of September 24, 1965, as amended, and by rules, regulations, and orders of the Secretary of Labor, or pursuant thereto, and will permit access to his books, records and accounts of investigation to ascertain compliance with such rules, regulations, and orders.
- G. In the event of the Contractor's noncompliance with the nondiscrimination clauses of the Contract or with any of the said rules, regulations or orders, the Contract may be cancelled, terminated or suspended in whole or in part and the Contractor may be declared ineligible for further Government contracts or federally assisted construction contracts in accordance with procedures authorized in Executive Order 11246 of September 24, 1965, as amended and such other sanctions may be imposed and remedies invoked as provided in Executive Order 11246 of September 24, 1965, as amended or by rules, regulations, or orders of the Secretary of Labor, or as otherwise provided by law.
- H. The Contractor shall include the portion of the sentence immediately preceding paragraph A. and the provisions of paragraphs A. through G. in every subcontract or purchase order unless exempted by rules, regulations or orders of the Secretary of Labor issued pursuant to Section 204 of Executive Order 11246 of September 24, 1965, as amended so that such provisions shall be binding upon each subcontractor or vendor. The Contractor shall take such action with respect to any subcontract or purchase order as the administering agency may direct as a means of enforcing such provisions, including sanctions for noncompliance. Provided, however that in the event a Contractor becomes involved in, or is threatened with, litigation with a subcontractor or vendor as a result of such direction by the administering agency, the Contractor may request the United States to enter into such litigation to protect the interests of the United States.
- I. Applicable Massachusetts and Federal Anti-Discrimination Requirements are contained in the Appendix to the Bid Conditions, Affirmative Action Requirements, Equal Employment Opportunity of the Supplementary Conditions.

5.27 REQUIREMENTS OF CHAPTER 30, SECTION 39R OF GENERAL LAWS OF THE COMMONWEALTH OF MASSACHUSETTS

- A. The words defined below shall have the meaning stated whenever they appear in this subsection:
 - 1. "Contractor" means any person, corporation, partnership, joint venture, sole proprietorship, or other entity awarded a contract pursuant to Section 39M of Chapter 30.
 - 2. "Contract" means any contract awarded or executed pursuant to Section 39M of Chapter 30.
 - 3. "Records" means books of original entry, accounts, checks, bank statements and all other banking documents, correspondence, memoranda, invoices, computer printouts, tapes, discs, papers and other documents or transcribed information of any type, whether expressed in ordinary or machine language.
 - 4. "Independent Certified Public Accountant" means a person duly registered in good standing and entitled to practice as a certified public accountant under the laws of the place of this person's residence or principal office and who is in fact independent. In determining whether an accountant is independent with respect to a particular person, appropriate consideration should be given to all relationships between the accountant and that person or any affiliate thereof. Determination of an accountant's independence shall not be confined to the relationships existing in connection with the filing of reports with the awarding authority.
 - 5. "Audit", when used in regard to financial statements, means an examination of records by an independent certified public accountant in accordance with generally accepted accounting principles and auditing standards for the purpose of expressing a certified

opinion thereon, or, in the alternative, a qualified opinion or a declination to express an opinion for stated reasons.

6. "Accountant's Report", when used in regard to financial statements, means a document in which an independent certified public accountant indicates the scope of the audit which she has made and sets forth her opinion regarding the financial statements taken as a whole with a listing of noted exceptions and qualifications, or an assertion to the effect that an overall opinion cannot be expressed. When an overall opinion cannot be expressed the reason therefore shall be stated. An accountants report shall include as a part a signed statement by the responsible corporate officer attesting that management has fully disclosed all material facts to the independent certified public accountant, and that the audited financial statement is a true and complete statement of the financial condition of the contractor.
7. "Management", when used herein, means the chief executive officers, partners, principals or other person or persons primarily responsible for the financial and operational policies and practices of the contractor.
8. Accounting terms, unless otherwise defined herein, shall have a meaning in accordance with generally accepted accounting principles and auditing standards.

B. Subsection A2 hereof notwithstanding, every agreement or contract awarded or executed pursuant to Section 39M of Chapter 30 shall provide that:

1. The Contractor shall make, and keep for at least six years after final payment, books, records, and accounts which in reasonable detail accurately and fairly reflect the transactions and dispositions of the Contractor, and
2. until the expiration of six years after final payment, the awarding authority, office of inspector general, and the deputy commissioner of capital planning and operations shall have the right to examine any books, documents, papers or records of the Contractor or of his/her subcontractors that directly pertain to, and involve transactions relating to, the Contractor or his/her subcontractors, and
3. if the agreement is a contract as defined herein, the Contractor shall describe any change in the method of maintaining records or recording transactions which materially affect any statements filed with the awarding authority, including in his/her description the date of the change and reasons therefore, and shall accompany said description with a letter from the Contractor's independent certified public accountant approving or otherwise commenting on the changes, and
4. if the agreement is a contract as defined herein, the Contractor has filed a statement of management on internal accounting controls as set forth in paragraph C. below prior to the execution of the contract, and
5. if the agreement is a contract as defined herein, the Contractor has filed prior to the execution of the contracts and will continue to file annually, an audited financial statement for the most recent completed fiscal year as set forth in paragraph D. below.

C. Every Contractor awarded a contract shall file with the awarding authority a statement of management as to whether the system of internal accounting controls of the Contractor and its subsidiaries reasonably assures that:

1. transactions are executed in accordance with management's general and specific authorization;
2. transactions are recorded as necessary
 - a. to permit preparation of financial statements in conformity with generally accepted accounting principles, and
 - b. to maintain accountability for assets;
3. access to assets is permitted only in accordance with management's general or specific authorization; and

4. the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action was taken with respect to any difference.

Every Contractor awarded a contract shall also file with the awarding authority a statement prepared and signed by an independent certified public accountant, stating that she has, examined the statement of management on internal accounting controls, and expressing an opinion as to

5. whether the representations of management in response to this paragraph and paragraph B. above are consistent with the result of management's evaluation of the system of internal accounting controls; and
6. whether such representations of management are, in addition, reasonable with respect to transactions and assets in amounts which would be material when measured in relation to the applicants financial statements.

D. Every Contractor awarded a contract by the Commonwealth or by any political subdivision thereof shall annually file with the awarding authority during the term of the contract a financial statement prepared by an independent certified public accountant on the basis of an audit by such accountant. The final statement filed shall include the date of final payment. All statements shall be accompanied by an accountants report.

E. The office of inspector general, the deputy commissioner for capital planning and operations and any other awarding authority shall enforce the provisions of this section. The deputy commissioner of capital planning and operations may after providing an opportunity for the inspector general and other interested parties to comment, promulgate pursuant to the provisions of Chapter 30A such rules, regulations and guidelines may be applicable to all awarding authorities. A Contractor's failure to satisfy any of the requirements of this section may be grounds for disqualification pursuant to Section 44C of Chapter 149.

1. Note: The record retention aspects of this subsection apply to all contracts awarded by the Authority regardless of value. The requirements relative to the internal auditing and management controls, including the filing of an annual statement, apply to contracts awarded with a value greater than \$100,000.

PART 6 - PROSECUTION AND PROGRESS

6.1 SUBLETTING OR ASSIGNMENT OF CONTRACT

- A. The Contractor shall give personal attention to the fulfillment of the Contract and shall keep the Work under control.
- B. The Contractor shall not sublet, sell, transfer, assign, or otherwise dispose of the Contract or any portion thereof, or of the Contractor's right, title, or interest therein, without written consent of the Authority. If consent is given, the Contractor shall be permitted to sublet a portion thereof, but shall provide with the Contractor's own organization, Work amounting to not less than 50 percent of the original total Contract amount, except that any items designated in the Contract as "specialty items" may be provided by subcontract and the amount of any such specialty items provided by subcontracts may be deducted from the total amount in computing the amount of Work required to be provided by the Contractor's own organization. No subcontracts, or transfer of contract, shall in any case release the Contractor from liability under the Contract and bonds.
- C. Consent to sublet any part of the Work shall not be construed to be an approval of the said subcontract or of any of its terms, but shall operate only as an approval of the making of a subcontract between the Contractor and subcontractor.

- D. A subcontractor (vendor, or supplier) will be recognized only in the capacity of an employee or agent of the Contractor, and the subcontractor's removal may be required as in the case of an employee.
- E. As soon as practicable after execution of the Contract, the Contractor shall submit to the Authority applications for approval of subcontractors for any part of the Work A is proposed to sublet. In addition to stating the name and address of the proposed subcontractor each application shall give the items, or any portions thereof, proposed to be sublet by item number and description, and the total value of the Work proposed to be sublet based on the primary contract unit prices where established or, where not established, on the approved breakdown estimate of a lump sum price required under Section 01150 - MEASUREMENT AND PAYMENT, and not on the amount of the subcontract. The application shall also show other pertinent information in order to enable the Authority to ascertain whether the proposed subcontractor is reliable and able to perform the work.
- F. The Contractor shall direct the attention of subcontractors to the requirements of:
1. Article 5.4 regarding insurance, and also to the Minimum Wage Rates and Health and Welfare and Pensions Fund Contributions as determined by the Commission of Labor and Industries of the Commonwealth and also to the provisions of Article 5.25 and 5.26; and:
 2. Chapter 30, General Laws of the Commonwealth, Section 39L, requires under 1. above that the Commonwealth and every county, city, town, district, board, commission shall not enter into a contract for such Work with, and shall not approve as a subcontractor furnishing labor and materials for a part of any such Work, a foreign corporation which has not filed with the Authority a certificate of the State Secretary stating that such corporation has complied with Sections 3 and 5 of Chapter 181 and the date of such compliance. Chapter 181, Section 3, requires foreign corporations to appoint the Secretary of the Commonwealth as an attorney for service of process, and Section 5, Chapter 181, requires foreign corporations to file certain documents with the Secretary of State which will permit them to do business in Massachusetts.
- G. The Contractor shall direct the attention of subcontractors and of all suppliers of material to the requirements of Article 3.9, and Section 01400 - QUALITY ASSURANCE, regarding facilities for the Engineer and his inspectors.

6.2 PROSECUTION OF WORK

- A. The Contractor shall commence Work within fifteen (15) calendar days from the date of the mailing of the executed contract to the Contractor unless otherwise ordered in writing by the Engineer; and he shall complete the specified milestones within the days specified below from the date of the mailing of the executed contract to the Contractor.

In the event the Contractor fails to complete the specified milestones within the days specified, liquidated damages will be assessed pursuant to Section 00700, Article 6.09 of the General Conditions for each calendar day of delay in the completion of the specified milestones as follows:

<u>Milestone</u>	<u>No. of Calendar Days</u>	<u>Liquidated Damages</u>
1. XXXX	XXX days after relocation of building tenants	\$X:XX/day
2. Completion of Entire Work	XXX	\$XXXX/day

In no event shall the total amount of liquidated damages for failure to complete the above milestones within the days specified exceed \$XXX.00 for any one day.

- B. Should the prosecution of the Work for any reason be discontinued, the Contractor shall notify the Engineer at least 24 hours in advance of resuming operations.
- C. If in the Engineer's judgment it is necessary at any time, the Contractor shall when directed, employ such forces and equipment for one or more additional shifts as will be required to insure the proper and timely completion of the Work.
- D. The Contractor shall not provide work at any time when conditions are unsuitable for its execution, safety, and permanence. This provision shall not be interpreted as constituting any waiver, release or lessening of the Contractor's obligation to bring the Work to entire completion within the Contract time stipulated therefor.
- E. The Contractor shall not receive any additional compensation for the requirements of this Article.

6.3 REMOVAL OR DEMOLITION OF BUILDINGS AND LAND TAKINGS

- A. When the removal or demolition of buildings within the Contract limits is done under other and separate contracts, the provisions of Article 3.6 shall apply. The Authority will not be held liable for any expense to the Contractor due to any delay or interference with his Work, due to removal or demolition of the buildings, or due to any failure to remove or demolish any buildings, or due to the necessary land takings.
- B. No allowance of any kind will be made except as provided in Article 6.8.

6.4 LIMITATIONS OF OPERATIONS

- A. The Contractor shall conduct the Work at all times in such a manner and in such sequence as will assure the least interference with vehicular, marine, and pedestrian traffic, operations of railroads, and existing portions of the MBTA Transit System, and occupant and consumer entrance to and exit from adjacent buildings and property. The Contractor shall have due regard to the location of detours and to the provisions for handling traffic. The Contractor shall not open up work to the prejudice or detriment of work already started.

6.5 CHARACTER OF WORKMEN, METHODS, AND EQUIPMENT

- A. The Contractor shall at all times employ sufficient labor and equipment to prosecute the several classes of work to full completion in the manner and time required by the Contract Documents.
- B. The Contractor shall provide all cutting, fitting, and patching of the work that may be required to make its several parts fit together properly, and shall not endanger any work by cutting, excavating, or otherwise altering the work or any part thereof.
- C. All workmen shall have sufficient skill and experience to perform the Work assigned to them. Workmen engaged in special work or skilled work shall have sufficient experience in such work and in the operation of the equipment required to perform all work properly and satisfactorily.
- D. Any person employed by the Contractor or by any subcontractor who, in the Engineer's judgment, does not perform the work in a proper and skilled manner or is intemperate or disorderly or otherwise unsatisfactory or not employed in accordance with the provisions of Article 5.25, shall at the written request of the Engineer, be removed by the Contractor or subcontractor employing

such person, and shall not be employed again in any portion of the Work without the approval of the Engineer.

- E. Should the Contractor fail to take the necessary action to remove such person or persons as required above, or fail to furnish suitable and sufficient personnel for the proper prosecution of the Work, the Engineer may suspend the Work by written notice until such orders are complied with.
- F. The Contractor shall employ engineers registered in the Commonwealth of Massachusetts, qualified superintendents, foremen, and other supervisory employees to plan all construction operations and to represent the Contractor at all of the several parts of the Work and they shall be present at all times while the Work entrusted to them is in progress and shall be informed thoroughly regarding the Work.
- G. All equipment used on the Work shall be of sufficient size and in such mechanical condition as to meet the requirements of the Work and to produce a satisfactory quality of work. Equipment used on any portion of the Work shall be such that no injury to the transit system, city streets, highways, or adjacent property will result from its use.
- H. When methods and equipment to be used by the Contractor in accomplishing the construction are not prescribed in the Contract, the Contractor may use any methods or equipment that demonstrate to the satisfaction of the Engineer the ability to accomplish the Work in conformity with the requirements of the Contract.
- I. When the Contract Documents specify the methods and equipment by which the construction shall be performed, such methods and equipment shall be used unless otherwise authorized in writing by the Engineer. If the Contractor desires to use a method or type of equipment other than that specified, such authority should be requested in writing from the Engineer. The request shall include a full description of the methods and equipment proposed to be used as an explanation of the reasons for desiring to make the change. If written approval is given, it will be on the condition that the Contractor shall be fully responsible for producing construction work in conformity with the Contract requirements. If after trial use of the substituted methods or equipment, the Engineer determines that the Work produced does not meet Contract requirements, the Contractor shall discontinue the use of the substitute method or equipment and shall complete the remaining construction with the specified methods and equipment. The Contractor shall remove the deficient Work and replace it with Work of specified quality, or take such other corrective action as the Engineer may direct. No changes will be made in basis of payment for the construction items involved nor in Contract time as a result of authorizing a change in methods or equipment under these provisions.
- J. Prior to the Contractor's selection of the job superintendent, a detailed resume must be submitted to the Authority for approval. Included in the job superintendent's requirements are:
 - 1. Commonwealth of Massachusetts Department of Public Safety License for Construction Supervisor without any restrictions.
 - 2. A minimum of 10 years of related construction experience.

The above requirements may only be waived by the Director of Construction.

6.6 DELAY AND SUSPENSION OF WORK

- A. The Engineer has the authority to delay the commencement of the Work and delay or suspend any portion thereof, for such period or periods as it may be deemed necessary, because of conditions beyond the control of the Authority or the Contractor, for the failure of the Contractor to correct conditions unsafe for the general public; for failure to carry out provisions of the Contract; for

failure to carry out orders; for causes and conditions considered unsuitable for the prosecution of the Work; for acts of third persons not a party to the Contract; or for any other cause, condition, or reason deemed to be in the public interest.

- B.** Upon receipt of written order of the Engineer, the Contractor shall immediately delay the commencement of the Work or delay or suspend any portion thereof in accordance with said order. Work shall not be suspended or delayed without prior written approval or order of the Engineer. The work shall be resumed when conditions warrant or deficiencies have been corrected and the conditions of the Contract satisfied as ordered or approved in writing by the Engineer. The Contractor's attention is also directed to the requirements of Section 01560 - TEMPORARY CONTROLS, Part 1 "Laws to be Observed" Article, and Article 5.21 herein which shall govern during any period of temporary or partial suspension of work.

6.7 CLAIM FOR DELAY OR SUSPENSION OF WORK

- A.** The Contractor shall have no claim for damages of any kind due to any delay in commencement of the Work or any delay or suspension of any portion thereof, except as hereinafter provided.
1. Attention is directed to Section 39.0 of Chapter 30 which requires that every contract subject to the provisions of Section 39M of Chapter 30 contain the following provisions
 - a. and b. in their entirety and, in the event a suspension, delay, interruption, or failure to act by the Authority increases the cost of performance to any subcontractor, that subcontractor shall have the same rights against the Contractor for payment for an increase in the cost of his performance as provisions a. and b. give the Contractor against the Authority, but nothing in provisions a. and b. shall in any way change, modify, or alter any other rights which the Contractor or the subcontractor may have against each other.
 - a. The Authority may order the Contractor in writing to suspend, delay, or interrupt all or any part of the Work for such period of time as it may determine to be appropriate for the convenience of the Authority; provided, however, that if there is a suspension, delay, or interruption for 15 days or more or due to a failure of the Authority to act within the time specified in the Contract, the Authority will make an adjustment in the Contract price for any increase in the cost of the Contract but shall not include any profit to the Contractor on such increases; and provided further, that the Authority will not make any adjustment in the Contract price under this provision for any suspension, delay, interruption, or failure to act to the extent that such is due to any cause for which this Contract provides for an equitable adjustment of the Contract price under any other contract provision.
 - b. The Contractor shall submit the amount of a claim under provision a. to the Authority in writing as soon as practicable after the end of the suspension, delay, interruption, or failure to act and, in any event, not later than the date of final payment under the Contract and, except for costs due to a suspension order, the Authority shall not approve any costs in the claim incurred more than 20 days before the Contractor notified the Authority in writing of the act or failure to act involved in the claim.

6.8 DETERMINATION AND EXTENSION OF CONTRACT TIME FOR COMPLETION

- A.** The Contractor shall complete, entirely, and in an acceptable manner, the Work required under the Contract within the time stated in the Bid Form, except that the Contract time for completion shall be adjusted as follows:

1. If the Contract is not awarded as contemplated by Section 00100 of the Contract Specifications, then the number of days allowed for the completion of the Work will be computed from the date of receipt of the Contract by the Contractor or the date on which the Contractor was ordered to commence work whichever is later. For the purpose of this paragraph, the Contractor will be presumed to have received the Contract on the day following the mailing of the executed Contract to the Contractor by the Authority. If the Contract specifies a specific calendar date for completion and the Contract is not awarded as contemplated by Section 00100, of the Contract Specifications then the Contractor will be entitled to an extension of time equivalent to the number of days elapsed from 60 days (45 days if Federal funds are involved) after the opening of bids up to and including the day of receipt of the executed Contract by the Contractor or the date on which the Contractor was ordered to commence Work whichever is later.
 2. In case commencement of work is delayed or any part thereof is delayed or suspended by the Authority (except for unsuitable weather, winter months, or reasons caused by the fault or neglect of the Contractor), the Contractor will be granted an extension of time in which to complete the Work or any portion of the Work required under the Contract equivalent to the duration of the delay less a reasonable period of time within which the Contractor could have done necessary preliminary work.
 3. When delay occurs due to reasonable causes beyond the control and without the fault or negligence of the Contractor, including but not restricted to "Acts of God", to war, whether or not declared, civil war, insurrection, rebellion or revolution, or to any act or condition incident to any of the foregoing, acts of the Government, acts of the state or any political subdivision thereof, acts of other contracting parties over whose acts the Contractor has no control, fires floods, epidemics, abnormal tides (not including spring tides), severe coastal storms accompanied by high winds or abnormal tides, freezing of streams and harbors, abnormal time of winter freezing or spring thawing, interference from recreational boat traffic, use of beaches and recreational facilities for recreational purposes during the summer season, abnormal ship docking and berthing, unanticipated use of wharves and storage sheds, strikes except those caused by improper acts or omissions of the Contractor, extraordinary delays in delivery of materials caused by strikes, lockouts, wrecks, freight embargoes, the time for completion of the Work shall be extended as determined by the Engineer to be equitable.
 4. An "Act of God" as used in this Article is understood to imply an earthquake, flood, cyclone, or other cataclysmic phenomenon of nature beyond the power of the Contractor to foresee or make preparation in defense of. A rain, windstorm or other natural phenomenon of normal intensity, based on United States Weather Bureau reports, for the particular locality and for the particular season of the year in which the Work is being prosecuted, shall not be construed as an "Act of God" and no extension of time will be granted for delays resulting therefrom. Within the scope of acts of the Government, consideration will be given to properly documented evidence that the Contractor has been delayed in obtaining any material or class of labor because of any assignment of preference ratings by the Federal Government or its agencies to other defense contracts.
 5. In case the Work is delayed by public or private utility owners or municipal agencies, see Article 3.5.
 6. Each Extra Work Order or Change Order as issued will include a statement of additional time, if any, that is agreed upon by the Contractor and the Engineer required for the completion of the Contract by reason of this Extra Work Order or Change Order, and no other time allowance due to the performance of the Work covered by such Extra Work Order or Change Order will be allowed.
- B.** An extension of time will not be granted for any delay or any suspension of the Work due to the fault of the Contractor, nor if a written request for an extension of time on account of delay due to any of the aforesaid causes is not filed within 15 days of the date of the commencement of the delay nor if the request is based on any claim that the Contract period as originally established was inadequate.

- C. Contract period has been carefully considered and has been established for reasons of importance to the Authority. This time limit will be enforced.
- D. The probable slow-down or curtailment of Work during inclement weather and winter months has been taken into consideration in determining the total time required to complete the Contract-hence no extension of time will be allowed due to this reason.

6.9 FAILURE TO COMPLETE WORK ON TIME

- A. On or before the date stated in the Contract Specification for completion, or the date to which the time of completion will have been extended under the provisions of Article 6.8, the Work shall have been performed in accordance with the terms of the Contract. The time in which the various portions and the whole of the Contract are to be Provided and the Work is to be completed is an essential part of the Contract.
- B. In case the Work has not been substantially and physically completed by the time stipulated in the Contract Specification (or by the date in which the completion time may have been extended in accordance with Article 6.8), the Contractor shall pay to the Authority a designated sum per day for the entire period of overrun in accordance with the following Schedule of deductions unless a different amount is stated in the Supplementary Conditions.

SCHEDULE OF DEDUCTIONS

VALUE OF CONTRACT		Charges per calendar day
For more than \$ 0	To and including \$ 25,000	\$ 60
\$ 25,000	\$ 50,000	\$ 150
\$ 50,000	\$ 100,000	\$ 225
\$ 100,000	\$ 500,000	\$ 300
\$ 500,000	\$1,000,000	\$ 450
\$1,000,000	\$2,000,000	\$ 600
\$2,000,000	\$3,000,000	\$ 900
\$3,000,000	\$3,500,000	\$ 1,050
\$3,500,000	\$4,000,000	\$ 1,200
\$4,000,000	\$4,500,000	\$ 1,350
\$4,500,000	\$5,000,000	\$ 1,500
\$5,000,000		\$ 2,000

- C. Whatever sum of money may become due and payable to the Authority by the Contractor under this Article may be retained out of money belonging to the Contractor in the hands and possession of the Authority. This Article shall be construed and treated by the parties to the Contract not as imposing a penalty upon the Contractor for failing fully to complete the Work as agreed on or before the time specified in the Contract Specification (as it may have been extended in accordance with Article 6.8), but as liquidated damages to compensate the Authority for all

additional costs incurred by the Authority because of the failure of the Contractor fully to complete said Work on or before the date of completion specified in the Contract Specification (as it may have been extended).

- D. Permitting the Contractor to continue and finish the Work or any part of it after the time fixed for its completion, or after the date to which the time for completion may have been extended, shall not operate as a waiver on the part of the Authority of any of its rights under the Contract.

6.10 TERMINATION OF CONTRACT

- A. If the Contractor shall be adjudged bankrupt, or make a general assignment for the benefit of creditors, or if a receiver shall be appointed of the Contractor's property, or if the work to be done under the Contract shall be abandoned, or if the Contract or any part thereof shall be sublet without the previous written consent of the Authority, or if the Contract or any claim thereunder shall be assigned by the Contractor otherwise than as herein specified, or at any time the Engineer certifies in writing to the Authority that the Work, or any part thereof, is unnecessarily or unreasonably delayed, or that the Contractor has violated any of the provisions of the Contract, the Authority may, by written notice, instruct the Contractor to discontinue the Work, or any part thereof, and thereupon the Contractor shall discontinue such Work or such part thereof, as the Authority may designate, and the Authority will require the surety or sureties to complete the Contract.
- B. If the Engineer determines that the rate of progress as reflected by the Contractor's CPM submitted and approved in accordance with the requirements of Section 01300 - SUBMITTALS, is not satisfactory, the Authority, instead of notifying the Contractor to discontinue the Work or any part thereof, may notify the Contractor from time to time to increase the force, equipment, and plant, or any of them, employed on the whole or any part of the Work, stating the amount of increase required; and unless the Contractor shall, within five working days after any such notice, increase such force, equipment, and plant to the extent required therein, and maintain and employ the same from day to day until the completion of the Work or such part thereof or until the conditions as to the rate of progress shall, in the Engineer's judgment, be fulfilled; or unless the Contractor submits and receives approval of a revised CPM indicating the Work being completed on time, the Authority may employ and direct the labors of such additional force, equipment, and plant as may, in the Engineer's judgment, be necessary to insure the completion of the Work or such part thereof within the time specified, or at the earliest possible date thereafter, and charge the expense thereof to the Contractor. Neither the notice from the Authority to the Contractor, to increase the force, equipment, or plant, nor the employment of additional force, equipment, or plant by the Authority shall be held to prevent a subsequent notice from the Authority to the Contractor to discontinue Work under the provisions of the preceding portion of this Article.
- C. The Engineer may exercise the rights under this paragraph to rectify adverse conditions described in Article 3.10, Removal of Defective or Unauthorized Work, and Article 4.4, Defective Material, and notify the Contractor's bonding company to take the necessary appropriate action to remedy the situation. It shall be understood that when the Authority exercises its rights hereinbefore described, the breach of Contract by the Contractor does not itself constitute termination unless stipulated by the Authority. The Contractor shall, as directed by the Engineer, continue other works of the Contract.
- D. All expenses charged under this Article will be deducted and paid by the Authority out of any moneys then due or to become due the Contractor under the Contract, or any part thereof, and in such accounting, the Authority will not be held to obtain the lowest figures for the Work of completing the Contract or any part thereof, or for insuring its proper completion, but all sums actually paid therefor shall be charged to the Contractor. In case the expenses so charged are less than the sum which would have been payable under the Contract if the same had been completed

by the Contractor, the Contractor will be entitled to receive the difference; and in case such expenses shall exceed the said sum, the Contractor shall pay the amount of the excess to the Authority upon completion of the Work without further demand being made therefor.

6.11 TERMINATION FOR CONVENIENCE

- A.** If the Engineer determines that it is in the public interest to do so, the Engineer may notify the Contractor to discontinue all work, or any part thereof, such notice shall be given to the Contractor in writing and thereupon the Contractor shall discontinue such work, or such part thereof, as the Engineer may designate.
- B.** If the Engineer notifies the Contractor to discontinue all work, or any part thereof, the Engineer shall pay and the Contractor shall accept, as full payment for all work done and materials provided, the following sums:
 - 1. For all completed items of work for which there are unit prices provided in the contract.
 - a. The original contract unit prices.
 - 2. For all work on partially completed items.
 - a. A sum agreed to by the Contractor and the Engineer or:
 - 1) The actual costs for direct labor, materials (less salvage value, if any) and use of equipment, plus 10% of this total for overhead; and
 - 2) the actual cost for Workmen's Compensation and Employer's Liability, Insurance, Health, Welfare and Pension benefits, Social Security deductions, and Employment Security Benefits; and
 - 3) 6 percent of the total of (a) and (b) for profit and;
 - 4) the estimated proportionate cost of surety bonds; and
 - 5) the actual cost to the Contractor for work performed by a Subcontractor, plus 10 percent of such cost. No allowance shall be made for general superintendence and the use of small tools and manual equipment,
 - 3. For costs of settlement as:
 - a. Reasonable and necessary accounting, legal, clerical and other costs of work discontinuance; and reasonable and necessary storage, transportation and other costs incurred for the preservation, protection or disposition of the discontinued work.
 - b. When requested by the Engineer, the Contractor shall furnish itemized statements of the cost of the work performed and shall give the Engineer access to all accounts, bills and vouchers, relating there to and unless the Contractor, when requested, shall furnish such itemized statements and access to all accounts, bills and vouchers, he shall not be entitled to payment for the work for which such information is sought by the Engineer.
 - c. The Contractor shall not be paid and the Contractor shall not have any claims for loss of anticipated profits, for loss of expected reimbursement or for any increased expenses resulting directly or indirectly from the discontinuance of any or all, work or from unbalanced allocation, among the contract item, of overhead expense on the part of the bidder and subsequent loss of expected reimbursement therefor or for any other cause. The Contractor shall incorporate the provisions of this section as provisions in its contracts with each of its subcontractors.

CERTIFICATE OF COMPLIANCE
(Manufacturer of Fabricated Material)

Date _____ 20____

WE HEREBY CERTIFY THAT

(Description, or Kind of Material)

Furnished to
(Name of Contractor Prime or Sub)

For Use on _____ Federal No.
(Project No.)

In the Amount of
(Quantity Represented)

Identify by
(Label, Marking, Seal No., Consignment, or Waybill No.)

Shipped on _____ 20__ Delivered on _____ 20____

Shipped via

(Method of Shipment, Car No., or Truck No.)

MEETS THE REQUIREMENTS OF THE PERTINENT PROJECT PLANS, SUPPLEMENTARY CONDITIONS AND SPECIFICATIONS OF THE MASSACHUSETTS BAY TRANSPORTATION AUTHORITY, IN ALL RESPECTS, PROCESSING, PRODUCT TESTING AND INSPECTION CONTROL OF RAW MATERIALS ARE IN CONFORMANCE WITH ALL APPLICABLE SPECIFICATIONS, DRAWINGS AND/OR STANDARDS OF ALL ARTICLES FURNISHED.

All records and documents pertinent to this certificate and not submitted herewith will be maintained available by the undersigned for a period of not less than three years from date of final payment by the MBTA.

(Manufacturer of Supplier)

Signed by _____

Title _____ NOTARY STAMP

Notarized Signature of Person having Legal Authority to bind the Supplier

INSTRUCTIONS

1. The above is a suitable sample of an acceptable certificate.
2. Certificate is to be submitted in triplicate to the Engineer prior to, or on delivery of, material.
3. The following regulation is applicable to all projects involving Federal Funds.

Section 1001 of Title 18 of the United States Code (Criminal Code and Criminal Procedure) is applicable to this statement. (Section 1001 of Title 18, among other things, provides that whoever knowingly and willfully makes or uses a document or writing containing any false, fictitious or fraudulent statement or entry, in any matter within the jurisdiction of any Department or Agency of the United States shall be fined not more than \$10,000 or imprisoned not more than five years, or both).

END OF SECTION

CONTRACT NO.
YEAR

GENERAL CONDITIONS
00700 - 49

MBTA
REV 04/09

Lessons Learned
(Also, See Project Controls Policy Manual)



Deval L. Patrick, Governor
Timothy P. Murray, Lt. Governor
Jeffrey B. Mullan, MassDOT Secretary & CEO
Richard A. Davey, General Manager
and Rail & Transit Administrator



MEMORANDUM

TO: Directors, Deputy Directors and Project Managers

FROM: Edmond F. Hunter
Acting Assistant General Manager
for Design and Construction 

DATE: June 27, 2011

RE: Lessons Learned

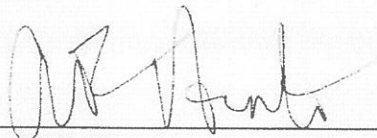
In accordance with Federal Transit Administration (FTA) requirements of sharing experiences gained in the planning, design, construction and revenue operations of major capital transit projects, the Design and Construction Department is mandated to incorporate Lessons Learned on every project.

Lessons Learned can potentially produce higher quality projects while saving time and cost and help the project team share knowledge gained from experience so that the entire organization may benefit. A successful Lessons Learned program will help project teams:

- Repeat desirable outcomes
- Avoid undesirable outcomes

Project Managers are required to record Lessons Learned throughout the life cycle of each project. The form attached, should be submitted quarterly - an exception of this would be when there is a safety incident, in which case, the form will need to be filled out immediately. The data that is compiled will be available for Project Managers and design consultants to review as they are assigned new projects or projects enter new phases. This information will be collected and should be sent to Project Controls.

Thank you for your adherence to this matter. Feel free to contact me if you have any questions.



Edmond F. Hunter
Acting Assistant General Manager for
Design and Construction



Lessons Learned

The objective of Lessons Learned (LL) is to document aspects of each project that did not go well and recommend a strategy or solution to avoid or reduce the probability of the event occurring in future projects. Some lessons are positive. Document reasons attributed to the positive outcome.

Project Managers are required to record LL throughout the life cycle of each project. The LL form is the means that MBTA will use to record LL. Lessons Learned forms can be completed at anytime within a quarter. At the end of each quarter, the PM shall submit the LL created within the quarter to Project Controls. A minimum of one (1) LL is required each quarter for each project. Project Controls will organize all the data by project classification and phase. The LL data will be available for PMs and design consultants to review as they are assigned new projects or projects enter new phases.

During project closeout, PMs are required to archive LL with the project records.



Massachusetts Bay Transportation Authority
Design & Construction Department

Lessons Learned Form

QTR. 20____

- | | |
|---|--|
| ☐ 1. Jan. - Mar. | ☐ 3. Jul. - Sept. |
| ☐ 2. Apr. - June | ☐ 4. Oct. - Dec. |

1. Project Title: _____

2. Contract #: _____

3. Lessons Learned #: _____

4. Date: _____

5. Project Delivery Method

- ☐ Design - Bid - Build
- ☐ Design Build
- ☐ CM @ Risk

6. Phase:

- ☐ Conceptual Design of 15%
- ☐ Preliminary Design 15% - 60%
- ☐ Final Design 60% - 100%
- ☐ Procurement
- ☐ Construction

7. Project Classification:

- | | |
|--|---|
| ☐ System Improvement | ☐ Maintenance Facility Improvement |
| ☐ Parking Lot | ☐ New Elevator |
| ☐ Roadway | ☐ Replacement Elevator |
| ☐ Commuter Rail | ☐ Parking Garage |
| ☐ Bridge | ☐ Light Rail Right-of-Way |
| ☐ Station Renovation | ☐ New Vertical Construction |
| ☐ New Capital Expansion | ☐ Environmental |
| ☐ Noise Wall | ☐ Heavy Civil |
| ☐ Building Demo | ☐ Signal/Comm./Power |

8. Lessons Learned Affected Category:

- | | |
|--------------------------------|-------------------------------------|
| ☐ Scope | ☐ Time |
| ☐ Cost | ☐ Management |

9. Is this a safety related lesson? ☐ Yes ☐ No



Massachusetts Bay Transportation Authority
Design & Construction Department

10. Title of Lessons Learned: _____

11. Background:

12. Lessons Learned Challenges (what needs improvement or what went well?):

13. Lessons Learned Recommendations (how would you improve or avoid or why do you think it went so well?):

14. Applicability:

Submitted by: _____

Telephone #: _____

Email: _____



Massachusetts Bay Transportation Authority
Design & Construction Department

Instructions for Lessons Learned Form

Limit one (1) form per Lesson Learned.

Project Managers are encouraged to document as many lessons learned as possible in an effort to share their experiences with others.

Lessons Learned are submitted quarterly to Design & Construction Project Controls. Only new lessons learned, created within the corresponding quarter are submitted.

QTR: Provide year and appropriate quarter.

Project Title: Self-explanatory.

Contract #: If project is in design, provide design contract number. If project is in construction, provide construction contract number.

Lessons Learned #: For the duration of design, each lesson learned shall have a unique designated number. Numbering shall be sequential. The same applies to projects in construction.

Date: Indicate date Lessons Learned is recorded.

Project Delivery Method: Self-explanatory.

Phase: Choose one phase Lessons Learned applies to.

Project Classification: Choose appropriate project classification.

Lessons Learned Category: Determine which category the Lessons Learned issue applies to. What was the root cause of the issue? Choose one.

Title of Lesson Learned: The project lessons should be descriptively titled to allow the reader to understand the lesson content through the title alone.

Lessons Learned: Describe the issue surrounding the lesson. This should include just enough information to facilitate understanding the lesson.

Background: Briefly describe product. What happened during the execution of the project that brought to light the deficiency or need to create or modify a process, procedure, plan and/or specification?

Lessons Learned Recommendation: How would you improve or avoid the situation? What would you do differently?

Applicability: When or where can this particular Lessons Learned be used?

Submitted By: Individual completing the Lessons Learned form.

Telephone # & Email: Self-explanatory.

Environmental Pre-Bid Checklist

	Approval Received	Approval Not Received	Not Applicable to this Project
NEPA (EIS, EA, CE)			
MEPA (EIR, ENF)			
Section 106 – Historic Resources			
Section 4f			
Wetlands/Waterways	-	-	-
• ACOE (404, Section 10)			
• Wetlands Protection Act			
• 401 Water Quality			
• Chapter 91			
• USCG			

Project Initiation Report



**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
PROJECT MANAGEMENT MANUAL
STANDARD OPERATING PROCEDURE**

SUBJECT: Project Initiation

NUMBER: PMM-SOP-2.1

REVISION DATE: Draft

5.0 Exhibits

5.1 Capital Funding Request

5.2 Capital Funding Flow Chart

5.3 Project Initiation Report

6.0 Records

Capital Funding Requests (Including Conceptual Budget and Schedule)

Project Initiation Reports

Budget Department

Capital Funding Request

For Inclusion in the FY12-FY16 Capital Investment Program

Submitted By: Any Department Head (x1234)

Priority

☐ High

☐ Medium

☐ Low

Ranking

#

Department Sponsor: Any Department

A. Project Title:

B. Project Category: (check all that apply)

- ☐ Improvement of Existing Infrastructure/Replacement of Equipment
- ☐ New Infrastructure/Equipment
- ☐ Additional Funding for Existing Project (See B-1)
- ☐ Americans with Disabilities Act (ADA) Accessibility Project
- ☐ Service Expansion (Planning and/or Construction)

B-1. If this request is for **additional funding of an existing project** please provide the following information:

Previously awarded funding \$ _____

Expended to date \$ _____

Additional funding requested \$ _____

C. Detailed Project Description/Scope. What will this project entail?

D. Is there an impact to the environment?

E. Impact on State of Good Repair. If this project funds a new facility or the procurement of new equipment this question does not apply (write N/A). If this project funds the improvement or

replacement of existing assets respond the following questions: What is a) the useful life and b) age of the asset that this project seeks to repair/improve or replace? What will be the remaining useful life after the asset is improved/enhanced/repared or replaced?

F. **Impact on Operations.** Does this project directly impact operations? If so, how? Will this project correct an existing operating deficiency? Will MBTA customers enjoy improved service? If yes, how will service improve specifically – efficiency, reduced trip times, customer service, increased ridership, etc.?

G. **Legal Requirements.** Does any law, agreement, or other commitment directly require that the MBTA complete this project? (AG's Office, DEP, ADA project within Key Station Plan, MOU, etc.) Is there a timeline for compliance or the threat of fines? Are there alternatives or substitutes the MBTA can use to comply?

H. **Alternative Scope of Work/Solution.** What other possible alternatives exist to completing this project as described above, besides taking no action? How else can the MBTA meet the need for this project? Can the effort be funded in stages? Can the scope be reduced and still address the most pressing problems?

I. **Impact on the Operating Budget.** Please quantify how this project would impact the department's or the Authority's operating budget – in terms of labor, materials, etc. How do the operating costs of the alternatives outlined in section H above compare to this project? If this capital project is funded, will the department's next operating budget request increase or decrease as a result?

J. **Consequences of Not Funding this Project.** What will happen if this request is not approved?

K. **Conceptual Budget and Schedule** (provide back-up as appropriate). How long do you expect this project to take? How was this budget estimate developed? What assumptions were used? Was this based on prior experience, best estimates, known costs, or other information source? Please be specific & provide supporting documentation. A summary form is provided on the next page.

K. (continued) **Total Capital Spending By Fiscal Year**

Submitted by: **Any Project Manager**

Budget Analyst: _____

Project Title: **Any Project Name**

Sponsor Department: **Any Department**

Sponsor

Fiscal Year Expenditure Summary

Task Budgets	FY11	FY12	FY13	FY14	FY15	Total FY11-15	Beyond FY15	Project Totals
Software Costs								
Construction Contract								
Construction Contingency								
Vehicle Contract(s)	\$38,016,000	\$16,896,000	\$46,071,768	\$38,408,232	\$32,736,000	\$172,128,000	\$8,632,000	\$180,760,000
Vehicle Contingency					\$500,000	\$500,000	\$4,000,000	\$4,500,000
Materials Procurement								
Professional Services	\$1,000,000	\$1,500,000	\$1,800,000	\$1,800,000	\$800,000	\$6,900,000	\$800,000	\$7,700,000
Force Account (support)			\$200,000	\$200,000	\$100,000	\$500,000		\$500,000
Flagging								
Field Inspection								
Legal	\$20,000	\$20,000	\$20,000	\$20,000	\$20,000	\$100,000	\$200,000	\$300,000
Project Administration	\$500,000	\$525,000	\$600,000	\$600,000	\$600,000	\$2,825,000	\$700,000	\$3,525,000
Indirect Costs (will calculate)	\$497,163	\$433,991	\$716,600	\$686,713	\$604,683	\$2,939,151	\$536,057	\$3,475,207
Project Subtotal	\$40,033,163	\$19,374,991	\$49,408,368	\$41,714,945	\$35,360,683	\$185,892,151	\$14,868,057	\$200,760,207
Project Contingency@ 5%	\$2,001,658	\$968,750	\$2,470,418	\$2,085,747	\$1,768,034	\$9,294,608		\$9,294,608
Total	\$42,034,821	\$20,343,741	\$51,878,787	\$43,800,692	\$37,128,717	\$195,186,758	\$14,868,057	\$210,054,815

LTD expenditures \$43,140,000

Grand Total \$253,194,815

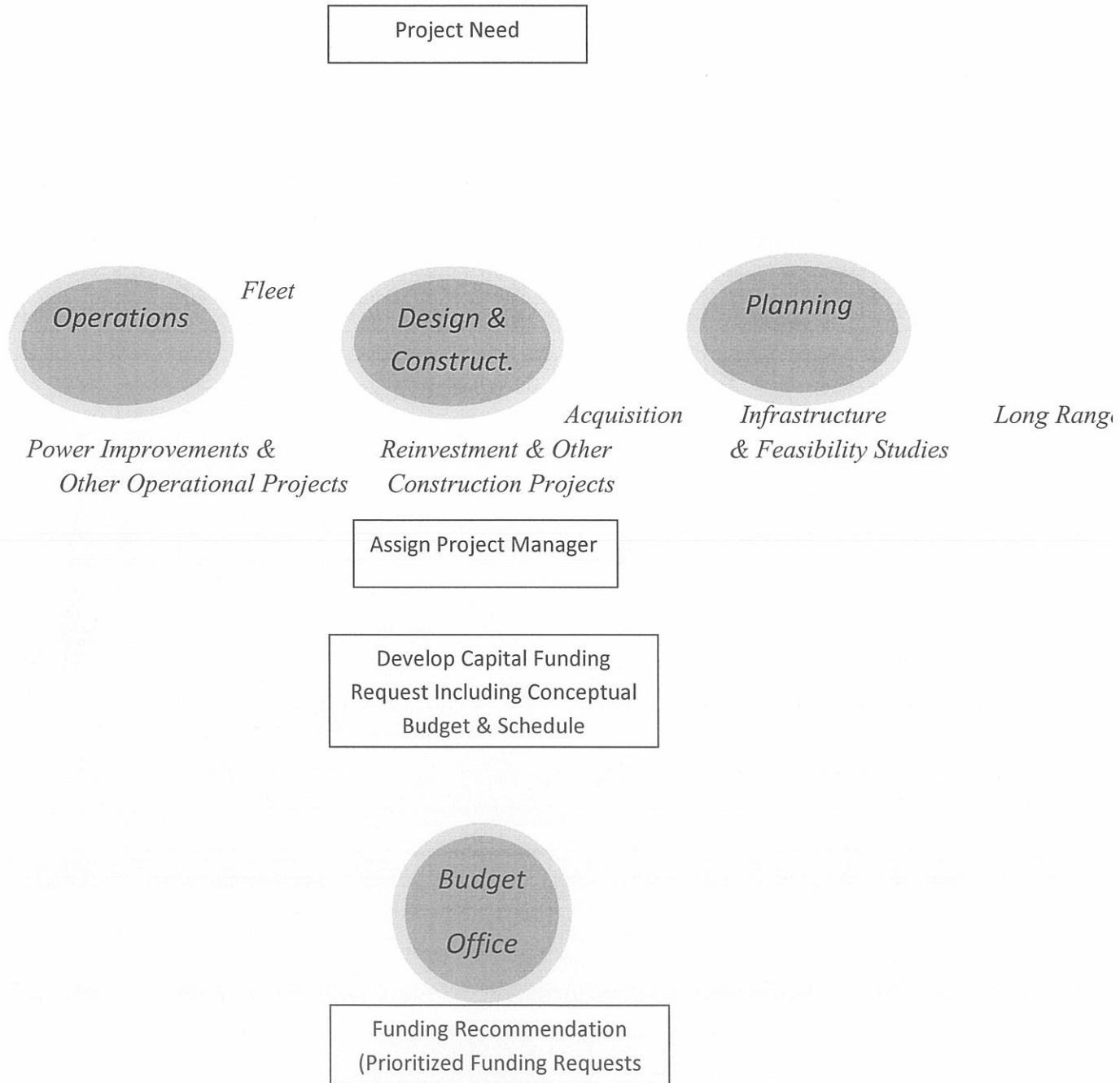
* Previously Allocated \$190,000,000

Additional Funding Request \$63,194,815

(from section H)	FY11	FY12	FY13	FY14	FY15	Total FY11-15	Beyond FY15	Project Totals
Total Capital Cost of Alternative Project					\$ -	\$ -		

Exhibit 5.2

CAPITAL FUNDING FLOW CHART



SOP 2.1

PIAN

PROJECT INITIATION REPORT

- A. Department Sponsor:**
(Design & Construction), (Operations), (Operations Support), (Development),
(Department of Transportation) etc.
- B. Project Number:** _____
Project Name: _____

(The number is for tracking reviews and comments on submissions. If the project originates externally to the MBTA, the number used for tracking purposes can be the number assigned by the owner or consultant on the project.)
- C. Project Category:** (Insert the source of the Project such as 5 Year Plan, TOD, Planning, etc.)
- D. Project Description/Scope**
(Brief Description of project scope)
- E. MBTA Project Manager:** _____
- F. Directorate:** _____
- G. Support Services Required of Other Directorates:**
- H. Budget & Schedule**
(Insert Conceptual Budget & Schedule for Capital Projects or Estimated Budget & Schedule for other projects)
- I. Funding Source**
- J. Special Instructions**
- K. Project Development Group (PDG)**
(Check all that apply)

☐ Design and Construction: ☐ QA Department ☐ Design ☐ Administration & Finance (Budget Analyst) ☐ Other _____

☐ Systemwide Accessibility ☐ Systemwide Maintenance and Improvements (SMI)

☐ Signal Department ☐ Communications Department ☐ Maintenance of Way

☐ Operations Support: ☐ Power Division ☐ Building Division

☐Development ☐Planning ☐Environmental Affairs ☐Bus Operations ☐Safety Department
☐Subway Operations: ☐Green Line ☐Orange Line ☐Red Line ☐Silver Line
☐Railroad Operations ☐Water Transportation ☐Budget Department ☐Marketing ☐Department
Intergovernmental and Public Affairs ☐Legal Department ☐Police Department
☐AFC Department ☐Parking

Approval: _____ Date: _____
Snr. Manager of Sponsoring Directorate

Concur: _____ Date: _____
Snr. Manager of Supporting Directorate

Real Estate Acquisition Process

Real Estate Acquisition Process

1. At 30% design, the Project through the Assistant General Manager for Design and Construction, makes a formal request to the Assistant General Manager for Development that acquisitions are needed for a particular project. Acquisition staff under the direction of the Assistant General Manager for Development begins the process of acquiring real property on behalf of the MBTA.
2. The Acquisition Staff meets with the Project Manager and Design Firm to obtain preliminary information on a particular project and evaluates all real estate needs which would allow the project to proceed to completion.
3. Acquisition Staff receives an Acquisition Package on the real property to be acquired. This package includes but is not limited to: reason for acquisition, owners name, current title reference, type of property interest, size of parcel to be acquired and a metes and bounds acquisition plan.
4. The Acquisition Staff meets with impacted owner to introduce the Project, explain the acquisition process and their rights under MGL, c.79. If the relocation of tenants on a subject property is necessary, explains relocation process and benefits. If a project requires more than five relocations a relocation plan must be submitted to the Commonwealth of Massachusetts Department of Community and Development's Bureau of Relocation. A Relocation consultant may be necessary in this situation to assist MBTA acquisition staff to provide the needed relocation assistants to the impacted tenants and preparation of a Relocation Plan. In accordance with Massachusetts general Laws, Chapter 79A, no acquisitions can be made until the Bureau of Relocation qualifies the MBTA to give relocation assistance to the occupants to be displaced. Also, during this period 21E environmental documentation should be obtained
5. Acquisition Staff solicits and contracts with an appraisal company to value property to be acquired.
6. Acquisition Staff solicits and contracts with a Law Firm to complete a Title Opinion of the Property to be acquired.
7. When the Appraisal report is received, acquisition staff reviews report in house to assure it meets MBTA contract requirements.
8. Acquisition Staff Solicits and contracts with Review Appraisal Company to review appraisal reports for compliance with USPAP, state and federal regulations.
9. Acquisition Staff prepares and sends an offer, based on the established value, to the impacted property owner via certified mail. If Federal money is involved and an acquisition cost exceeds \$500,000.00, FTA approval is required prior to sending out an offer letter.
10. Acquisition staff begins settlement negotiations with property owner.

11. In the event that the MBTA and the impacted owner cannot agree to a settlement on the land damages Acquisition Staff prepares a Staff Summary to obtain MBTA Board of Directors approval to acquire the subject property.
12. Acquisition Staff orders a Municipal Lien Certificate.
13. Order of Taking and Acquisition Plan are recorded in the appropriate Registry of Deeds within 30 days of MBTA Board of Directors vote of Eminent Domain Taking.
14. Notice of Taking letter sent to owner via certified mail. Copies are sent to the mortgagees of record, all other interested parties and the collector of Taxes and the assessor's office in appropriate municipality via certified mail.
15. Acquisition Staff prepares and makes Pro Tanto payment to owner.
16. If there are any tenants on the property acquired, a four (4) month notice to vacate letter is sent to the tenants by certified mail. All tenants will be provided relocation assistance and relocation benefits in accordance with the Uniform Relocation Act.

CONSULTANT LETTERHEAD

Date

Jack Donovan
MBTA Capital Delivery
100 Summer Street
Boston, MA 02110

Re: Project Name
DPS Building Permit

(Provide the date, attendees and details on the project meeting with DPS Building Inspector; include major discussion topics and recommendations/decisions made by the DPS Inspector related to construction permits).

Consultant Signature

Concurrence:

Jack Donovan

Date

CONSULTANT LETTERHEAD

Date

Jack Donovan
MBTA Capital Delivery
100 Summer Street
Boston, MA 02110

Re: Project Name
09900 Painting Specification

(Submit the final version of the 09900 Painting specification for approval).

Consultant Signature

Concurrence:

Jack Donovan

Date

CONSULTANT LETTERHEAD

Date

Jack Donovan
MBTA Capital Delivery
100 Summer Street
Boston, MA 02110

Re: Project Name
Technical Specifications

(Submit the Table of Contents of the final version of the project technical specifications. Include in the spreadsheet the version (month/year) of each specification as downloaded from the MBTA Website. If there are new specifications included, identify these specifications sections as “new” in the spreadsheet).

Consultant Signature

Concurrence:

Jack Donovan

Date



Value Engineering Waiver

Contract #: _____

Description: _____

Project Manager: _____

Date: _____

All projects over \$5 Million are required to undergo the process of value engineering when they reach the 30% design stage*. The project is formally requesting a waiver from value engineering requirements shown above. Please provide a reason for the waiver request in the allotted space below:

Print Name: _____

Signature: _____ Date: _____

☐

Approved

☐

Denied

Assistant General Manager for Capital Delivery

Date: _____

*Major capital projects are encouraged to undergo the process of value engineering at the 10% design stage.