PROJECT CONFIGURATION MANAGEMENT PLAN (CMP)
for
PRELIMINARY ENGINEERING AND DESIGN/BUILD PROCUREMENT
CONFIGURATION MANAGEMENT PLAN

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Configuration Management Plan

1.0 Introduction

It is the policy and purpose of the Green Line Extension (GLX) Project to develop procedures for establishing, monitoring and revising baseline documentation to reflect design, construction, procurement, system testing and start-up phases of the project. The Configuration Management Plan is a management control tool which will be a living document which will be developed as the project progresses and must be responsive to the requirements of the GLX and its development activities.

1.1 Scope

Ultimately the scope of the Configuration Management Plan will be to establish procedures designed to ensure that:

- The contract and revision status of any Baseline Document at any point in time is known, clearly identified, accurately recorded, and provided to all project participants
- The integrity and status of the GLX Baseline Documents are maintained throughout all program phases
- Coordination of approved changes between MBTA, the Program Management/Construction Management Consultant (PM/CM), the Design-Build Contractor (DB) and other participants is effective and timely
- Changes to the defined project Baseline Documents are controlled and evaluated for impact on all related system aspects, and incorporated only after review and approval by the appropriate authority
- Current revisions of Baseline Documents are distributed in a timely manner to all project participants

1.2 Definitions

- **Configuration Management** is the process by which information and data related to a specific system is managed and controlled. It uses a uniform, specific, well-documented path from
identification of a configuration item to the establishment of the baseline and subsequent changes to the baseline to maintain its integrity and status throughout all phases of the program.

- **Baseline Documents** are drawings, specifications, standards, design criteria, and program plans including budget and schedule which have been formally accepted by MBTA and define the configuration in combination with one another. The baseline documents will be prepared using the Design Definition report and will be included and set at the time of the D/B procurement.

- **Change Initiator** is a staff member of MBTA, the PM/CM, DB, or other responsible entity, when there is sufficient reason to make a formal change in a baselined document.

- **Baseline Change Request (BCR)** is a formal written request to initiate a change to a baseline document.

- **Change Control** is the formal process of review approval and contract modification required for changes that materially affect elements of the project baseline and/or work that is the subject of an awarded contract.

- **Configuration Control Board (CCB)** is a review panel that evaluates contract changes and recommends disposition to MBTA. The CCB comprises:
  - Assistant General Manager for Design and Construction
  - Program Manager, Director of Design and Construction – Green Line
  - Chief Safety Officer
  - Chief Operating Officer
  - Director of Light Rail Lines
  - Senior Project Manager – Document Control

- **Interface Control** identifies, maintains, and controls various physical and functional interfaces that exist in the project.

- **Document Control** is the function established to control storage, retrieval and distribution of project documents.

- **Contract Amendment** is a revision to a contract issued by MBTA reflecting a change in scope, schedule, or budget.

**1.3 Responsibility**

- **MBTA** – The MBTA General Manager for Design and Construction (AGM) and the MBTA Program Manager (Director of Design and Construction – Greenline) are responsible for the engineering and construction activities of the GLX Project.

- **Program Management / Construction Management Consultant (PM/CM)** – The PM/CM is responsible for assisting MBTA by advancing the Design Definition report to establish the various baseline documents prior to and as part of the D/B procurement of the GLX Project.
- **Design Build Contractor (DB)** – A professional organization, contracted with MBTA, responsible for providing the technical expertise and management to design and construct the project in accordance with the baseline documents.

- **Other Agencies** are responsible for providing input to the project for interfaces and coordination as required.

### 1.4 Referenced Management Plans

#### 1.4.1 Change Control Plan

Many changes that occur during the course of the further development of the Design Criteria and the Baseline Document preparation, final design, construction or testing/start-up phase of the Project can be accomplished routinely and are not subject to a formal change control process. Those changes that must be in conformance with the change control process fall into the following categories:

- Changes which materially affect elements of the project's baseline configuration, cost, or schedule

- Changes that materially affect work that is the subject of an awarded contract. These contracts include:
  - Professional service contracts (e.g., design and property appraisals)
  - material/equipment procurement contracts
  - construction contracts

The Change Control Procedures constitute a system that operates with and in support of the Project's primary control systems for: Configuration Control, Quality Assurance/Quality Control, Cost Control, and Schedule Control. The process for change control within each of the primary control systems includes these common elements:

- Expeditious evaluation of the necessary changes through effective delegation of authority

- Timely identification of potential changes as soon as they become apparent

- Prompt evaluation of the change's impact and justification

Entities working on the GLX project are required to institute a formal change proposal when a change in the ongoing work or a baseline design is being proposed or precipitated by project circumstances. The Change Control Procedures are designed to:

- Formalize the assessment of proposed changes for subsequent effects on other items such as capital cost or schedule
Ensure that the cost and schedule impacts of making the change are estimated and considered.

Advance the decision-making to the level of authority where approval or denial rests and will provide for a Configuration Control Board (CCB) to rule on changes, which have potentially profound impacts.

1.4.2 Document Control Plan
MBTA and the PM/CM have developed a Document Control Plan for the GLX Project that will:

- Standardize procedures for document control
- Assure that documents are safely secured, maintained and readily available for use by persons with access approval
- Index documents received or collected for systematic filing
- Preserve records of quality including: financial records, personnel records, contracts, and agreements; basis of design, construction, procurement, and end operations; and maintenance records
- Support the processes of Configuration Management, Change Control and Interface Control
- Assure that all project participants are properly informed of the current policies, procedures and basis of design, construction and procurement, including facility and systems configurations and interfaces

1.4.3 Interface Control Plan
A separate GLX Interface Control Plan will be developed (by the Design-Build Contractor) and will be utilized in conjunction with this Configuration Management Plan to interface GLX design with the DB and with interested agencies, utilities and organizations. The Interface Control Plan will help assure maximum compatibility between all system elements and with outside entities, and that all applicable codes, statutes, requirements, policies, and procedures have been considered and accommodated.

When approved by the MBTA, the Preliminary Engineering documents (i.e. plans, specifications, design criteria, et. al.) developed by the PM/CM will be established as the Engineering Baseline. After establishment of the Engineering Baseline, each external interface will be controlled on both sides of the interface. Any change to an external interface will be reviewed for changes to the baseline documents in accordance with this Configuration Management Plan.
2.0 Project Baseline

2.1 Establishing Baselines

Upon award of the Design-Build contract for GLX, the final engineering phase will begin for most of the proposed scope. At a minimum the following documents establish the baseline for the final engineering phase by the D/B team:

- MEPA document
- Environmental Assessment (EA)
- Design Definition Report
- Design Criteria
- Third Party Agreements
- Preliminary Engineering (PE) Documents
- Design-Build Contract
- Other applicable documentation such as the Program Management Plan

At the conclusion of PE, the above documents will establish the baseline for the project. The baseline scope provides the benchmark against which each phase of the final design will be compared to identify any changes in scope.

2.2 Documentation of Baselines

The PM/CM will provide an update of the Design Definition Report to the MBTA which will constitute the baseline documentation for the Project upon MBTA's approval. The baseline documents shall be issued as Revision 0 to all project participants by the PM/CM. The PM/CM shall log all issues of the baseline documents in the computerized tracking system as required by the Document Control Plan.

2.3 Distribution of Baselines

The baseline documents are considered controlled documents and shall be distributed in accordance with procedures outlined in the Document Control Plan.
3.0 Baseline Change Management

3.1 Initiation of Baseline Changes

Changes are permanent alterations to the established baseline configuration. A change is proposed when a new requirement is received, an improvement is desired, or a problem requires a solution that deviates from the established configuration. The Change Initiator prepares a Baseline Change Request (BCR) together with marked-up baseline documents. (Exhibit 3-1 is a sample BCR Form with instructions.) The change initiator shall submit the BCR to the PM/CM. The PM/CM shall log the BCR in the document control system (DOCS). See Exhibit 3-2 for a sample Change Request Log. The PM/CM assigns a severity level in accordance with the parameters:

- **Level I** – A Level I BCR requires CCB approval prior to implementation. A BCR will be classified as a Level I when the proposed change could potentially revise the scope of facilities, resulting in an end product that will potentially change the functionality of the current baseline configuration or would have an adverse impact on the Project schedule or cost.

- **Level II** – A Level II BCR can be approved for implementation by the MBTA PM. A Level II severity can be assigned when, in the opinion of the PM/CM, implementation of the requested change will not materially impact the quality, performance, or level of service of the end product. A Level II BCR does not require the approval of the CCB. However, CCB members can challenge the assignment of a Level II status. If the assigned severity level is challenged, then the BCR will be assigned a Level I severity.

3.2 Review and Approval of Baseline Changes

MBTA and the PM/CM shall evaluate the merits of the BCR. If the Baseline Change concept has merit, MBTA and the PM/CM shall distribute the BCR to team participants for review and comment. Upon receipt of comments from the team participants, MBTA and the PM/CM shall re-evaluate the BCR and approve or disapprove it for further processing.

If the change request is approved for further processing, MBTA and the PM/CM shall request additional information such as cost and schedule impacts from the Change Initiator. Upon receipt of this information, MBTA and the PM/CM shall decide to either proceed with the change request or reject it. The change request shall then be submitted to the Configuration Control Board for approval. Change requests that are rejected will be sent back to the Change Initiator. See Exhibit 3-3, Flow Chart.
The PM/CM shall transmit copies of both the Change Request Log and each completed BCR form to the MBTA Project Controls Manager.
Exhibit 3-1
Baseline Change Request

Change Initiator (Name): _______________ Organization: _______________

1. Project Title: ______________________

2. Change Request #: __________________

3. WBS # Affected: _____________________

4. Title (Brief description): ______________________

5. Date (Enter the date when originator submitted change request): _______________

6. Date Required: (Enter the estimated date approval is needed to avoid adverse impacts on performance, schedule or cost): _______________

7. Drawing Revisions/Spec#: ______________________

8. Level of Change Request: □ Level 1 □ Level 2

9. Description of Proposed Change: ______________________

10. Justification of Proposed Change: ______________________

11. Impacts if Change is NOT Approved: ______________________
12. Impacts:

A. **Budget:**

B. **Schedule:**

<table>
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<th>Project Milestone</th>
<th>Old Date</th>
<th>New Date</th>
<th>Total Float (Before)</th>
<th>Total Float (After)</th>
</tr>
</thead>
</table>

C. **Quality:**

D. **Safety:**

**APPROVED BY:**

Name: ________________________ Date: ________________
(Senior Project Manager – Document Control)
Comment/Recommendation: ________________________________________

Name: ________________________ Date: ________________
(Director of Light Rail Lines)
Comment/Recommendation: ________________________________________

Name: ________________________ Date: ________________
(Chief Operating Officer)
Comment/Recommendation: ________________________________________

Name: ________________________ Date: ________________
(Chief Safety Officer)
Comment/Recommendation: ________________________________________

Name: ________________________ Date: ________________
(Program Manager, Director of Design and Construction – Green Line)
Comment/Recommendation: ________________________________________

Name: ________________________ Date: ________________
(Assistant General Manager for Design and Construction)
Comment/Recommendation: ________________________________________
Exhibit 3-2

Change Request Log

1. Change Request #:______________________________________________
   
   A. WBS#: ______________________________________________________
   
   B. Title: _______________________________________________________
   
   C. Date Submitted: _____________________________________________
   
   D. Date Required: _____________________________________________
   
   E. Approval Date: _____________________________________________
   
   F. Status: ____________________________________________________
   
   G. Cost: ______________________________________________________

2. Change Request #:______________________________________________
   
   A. WBS#: ______________________________________________________
   
   B. Title: _______________________________________________________
   
   C. Date Submitted: _____________________________________________
   
   D. Date Required: _____________________________________________
   
   E. Approval Date: _____________________________________________
   
   F. Status: ____________________________________________________
   
   G. Cost: ______________________________________________________
Exhibit 3-3

Configuration Management Flowchart

Baseline Change Request

MBTA and PM/CM for Evaluation

Project Participants Review

Concept Rejection

MBTA and PM/CM Re-evaluate BCR

Concept Approval

MBTA and PM/CM Request Cost/Schedule Impacts From Change Initiator

CCB Decision

Proceed w/Change

Change Order Processing for Review

Contract Amendment

DB Changes Baseline

Reject Change

BCR Return to Change Initiator
4.0 Configuration Management during Design-Build

4.1 Baseline Changes during Design-Build Procurement

Questions received during the Design-Build procurement process shall be reviewed for possible changes to baseline documents by MBTA and the PM/CM. When potential baseline changes are identified, procedures outlined in Sections 3.1.1 and 3.1.2 for the initiation, review and approval shall be followed.

4.2 Baseline Changes during Design

The GLX Project will likely have design milestones for the D/B team at the 60%, 90% and 100% design stage. It is also recognized that the D/B team will likely advance certain project components ahead of others in order to expedite the project into construction. MBTA and the PM/CM shall schedule and coordinate design reviews and transmit copies of the design documents to the appropriate reviewers which may include:

- Federal Transit Administration (FTA)
- Federal Highway Administration (FHWA)
- Massachusetts Department of Transportation (MassDOT)
- Massachusetts Bay Transportation Authority (MBTA)
- Other agencies with whom interfaces have to be made Design Build Contractor
- Others as appropriate

Reviewers shall submit their comments to the PM/CM on a copy of the Design Review Comment form, Exhibit 4-1.

Design comments will be distributed to the appropriate for review and response on the Design Review Comment form. Comments shall also be entered into the Document Control System for tracking until appropriately resolved.

Each review, after completion, shall become a part of the project record for the purposes of identifying changes to the baseline. All reviewer’s comment sheets shall be filed electronically and provided as part of the project record.
4.2.1 In-Progress Design Review of D/B Documents
This review is accomplished at approximately sixty percent (60%) of design completeness. At this review point, all design elements should appear in the drawings and specifications, and consist of the following.

- Drawings/Specifications
  - Design drawings
  - Contract specifications

- Design Support Data
  - Final geotechnical reports
  - Updated design criteria
  - Calculations
  - Cost and Schedule

4.2.2 Pre-Final Design Review of D/B Documents
This review essentially represents completion ninety percent (90%) of the project design less incorporation of final design review comments and final checking and coordination. Detailed drawings and specifications are available at this point. This submittal will include the following:

- Drawings and Specifications
  - Pre-final design drawings

- Design Support Data
  - Final geotechnical report
  - Updated design criteria (if applicable)
  - All design review comments not resolved
  - Identification of significant changes from previous submittals
  - Any significant design issues
  - Calculations
4.2.3 Final Design Review of D/B Documents
This review is of the one hundred percent (100%) complete, and ready for construction. The documents are totally coordinated, checked and approved, and reflect resolution of all comments from earlier design review submittals. This submittal will include the following:

- Drawings and Specifications
  - Complete contract documents
- Design Support Information
  - Final resolution of all previously unresolved design review comments
  - Identification of significant changes from previous submittals
  - Calculations
- Cost and Schedule Information
  - Final construction cost estimate
  - Final construction schedule

If during these milestone reviews, any changes to the baseline documents are required, they shall be initiated, reviewed and approved in accordance with Sections 3.1 and 3.2.

4.3 Configuration Management during Construction
All changes to the GLX Project construction baseline documents shall be initiated in accordance with the procedures herein. Contract documents covered under this procedure include but are not limited to:

- MEPA document
- Environmental Assessment (EA)
- Design Definition Report
- Design Criteria
- Third Party Agreements
- Contract Specifications
Changes may occur to the project baseline during the construction phase for various reasons. Among these are changed or differing site conditions, design conflicts, building code and permit changes, a value engineering proposal from the D/B contractor, the review of shop drawings or vendor submittals, a request for information from the D/B contractor, a request for change (or substitution) by the D/B contractor, a design baseline modification, and numerous others. As changes occur during the D/B contract, each change will be reviewed by the PM/CM to determine if it constitutes a change to the project baseline. If it is found to be a baseline change, a BCR will be prepared and submitted by the responsible Resident Engineer. At that point, the process outlined in Sections 3.1. and 3.2 of this plan shall be used for the review and approval of baseline changes.

4.3.1 Review and Approval of Baseline Changes
Review and approval of baseline changes shall be in accordance with Sections 3.1 and 3.2 of this plan.

4.3.2 Implementation of Baseline Changes
The DB shall revise the appropriate baseline documents in accordance with the approved change. The PM/CM shall log documents and distribute the revised baseline in accordance with Sections 2.2 and 2.3 of this Plan.

At construction completion and final acceptance, the project record drawings, specifications, and as-built drawings shall reflect all approved baseline changes.
MBTA Greenline Extension Project
DESIGN REVIEW COMMENTS

Exhibit 4-1

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<th>Reviewer's Organization:</th>
<th>Disposition By/Date:</th>
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