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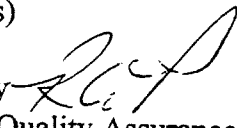
Kerry Healey
Lt. Governor

Daniel A. Grabauskas
Secretary and MBTA Chairman

Michael H. Mulhern
General Manager

MEMORANDUM

To: DISTRIBUTION
(Project Managers)

From: Raymond A. Perry 
Project Manager, Quality Assurance

Date: June 18, 2003

Re: Re-Issue of the 2003 revision to the Project Management Manual

Please find enclosed the re-issued version of the 2003 revision to the Project Management Manual. Each section of the manual should be removed and replaced with the attached. The manual is being re-issued due to a printing error. The update of the manual includes new titles and the latest methods and practices of the Design and Construction Department.

If anyone has questions or comments, I can be reached at x5100

Massachusetts Bay Transportation Authority

Project Management Manual Standard Operating Procedures

For Capital Projects managed by:

*Design and Construction
Operations
Planning*



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SECTION 0

PROJECT INITIATION AND BUDGET AUTHORIZATION

1.0 PROJECT INITIATION

1.1 Overview

The MBTA must repair and replace existing infrastructure to meet safety and reliability requirements. It must also undertake system enhancement and expansion to accommodate future increases in ridership and meet other policy objectives. Given the large number of projects necessary to satisfy these requirements and the constraints imposed by the fiscal environment, the MBTA is unable to fund every desirable project. In order to ensure that the MBTA maintains the maximum feasible program consistent with funding availability, it is necessary to establish a formal process by which identified needs are advanced by Sponsor Departments and evaluated for inclusion in the Five Year Plan. This procedure establishes such a process (see flow chart on following page). The Capital Management Group (CMG) is responsible, with oversight from the General Manager, for defining scope, setting budgets and addressing program and project management issues. The CMG consists of senior MBTA staff and is supported by the Department of Capital Management.

When a Sponsor Department identifies a need for a capital project, a representative of the Sponsor Department writes a concise one-page Project Proposal Summary. Based on the criteria described below, the Project Proposal Summary is submitted to *the Assistant General Manager (AGM) of Design and Construction or the Chief Operating Officer*, and a Project Manager is assigned. For capital project development, long range projects and feasibility studies, *the Director of Planning* assigns a Project Manager. Upon assignment, the Project Manager completes the Project Capital Funding Request (CFR), including a Conceptual Budget and Schedule. The appropriate senior manager (AGM of Design and Construction, Chief Operating Officer or Director of Planning) submit CFRs to the Director of Capital Management **on a bi-annual basis**. The Director of Capital Management and the CMG review all Capital Funding Requests and determine which proposed Projects will be incorporated into the Five Year Plan.

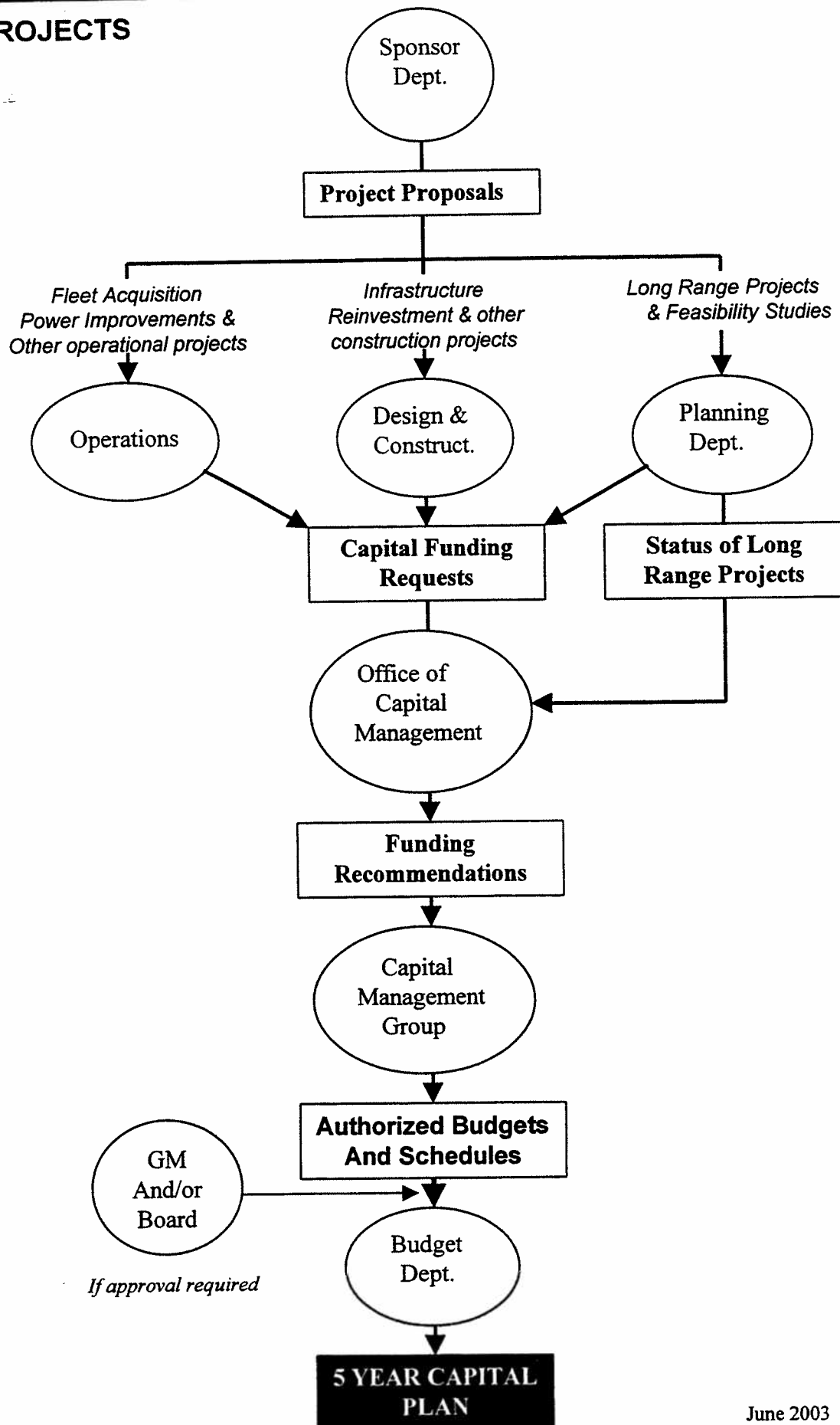
1.2 Submission of Project Proposal Summary

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.

THE CAPITAL MANAGEMENT PROCESS

NEW PROJECTS



The Sponsor Department for projects managed by Design and Construction must write a Project Proposal Summary/Capital Funding Request identifying the problem/need and the proposed scope of work (see Exhibit 0.1). The Project Proposal Summary requires approval by a Director from the Sponsor Department (or equivalent position). After receiving such approval, the Director submits the Project Proposal Summary to the AGM of Design and Construction.

Infrastructure Reinvestment/Operations

Infrastructure reinvestment projects for which Operations takes the lead role include the procurement of vehicles, fleet overhaul programs, power improvements, etc. Operations also initiates requests related to new infrastructure and/or safety projects.

The Sponsor Department for projects managed by Operations must also write a Project Proposal Summary identifying the problem/need and the proposed scope of work (see Exhibit 0.1). The Project Proposal Summary requires approval by a Director from the Sponsor Department (or equivalent position). After receiving such approval, the Director submits the Project Proposal Summary to the Chief Operating Officer.

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; are related to the Central Artery/Tunnel Project; 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.

Periodically, in relation to the PMT and other long range planning needs, Planning prepares a list of potential system enhancement ideas and requests that are consistent with the goals of the MBTA. The Director of Planning submits these Proposals (Exhibit 0.1) to the Director of Capital Management and the CMG, who work with the Director of Planning to arrive at a final list of projects. The Director of Planning then assigns a Project Manager who completes Exhibits 0.1 and 0.2, Conceptual Budget Form (see process described below) for the detailed examination/feasibility study for each of these projects. Periodically, the Director of Planning updates the CMG on the status of the feasibility studies. Upon completion of a feasibility study, MIS or other study, the CMG may recommend advancement of the proposed project, at which point the Director of Planning submits a Project Proposal Summary/Capital Funding Request. Exhibit 0.1 to the AGM of Design and Construction.

1.3 Selection of Project Manager

After receiving the Project Proposal Summary, the: 1) AGM of Design and Construction; 2) Chief Operating Officer; or, 3) Director of Planning reviews the Summary and determines if it is complete. If it is deemed complete, the appropriate senior manager (as identified above) assigns a Project Manager to the proposed Project. If the Project Proposal Summary is incomplete, it is returned to the Sponsor Department for completion and resubmission.

1.4 Submission of Capital Funding Request

After the Project Manager is selected, his or her first priority is to complete the Capital Funding Request (Exhibit 0.1), 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. The Project Proposal Summary is attached as a cover page to the Capital Funding Request.

Upon approval by the appropriate senior manager (AGM of Design and Construction, Chief Operating Officer or Director of Planning), Capital Funding Requests are submitted on a quarterly basis to the Director of Capital Management, except where urgent circumstances dictate quicker submission.

1.5 Capital Funding Request Prioritization Process

The Director of Capital Management recommends a prioritization of the Capital Funding Requests based on these considerations:

Health & Safety: Is the proposed Project necessary to maintain the safety of passengers, employees and the public? Will delay of the project potentially risk harm to individuals? Critical safety needs, as defined by Operations, Safety, SMI and Design and Construction, receive the highest priority for funding recommendations.

Reliability: Is the proposed Project necessary to maintain the integrity of the infrastructure? Could delay of the proposed Project create operational hazards that would lead to service reductions or shutdowns? Will the proposed Project advance the goal of achieving a state of good repair?

Environmental: Will the proposed project correct or prevent an environmental hazard?

Service: Will the proposed Project enhance the quality and level of service provided to the MBTA ridership? Will it increase ridership? What is the impact of the proposed project on the Commonwealth's transportation system?

Five Year Plan: Is there available funding for the proposed Project within the

current Five Year Plan, taking into consideration other proposed Projects?

Scope: Is the proposed Project the only solution to the identified need? Are there alternative scopes of work that offer a more cost-effective solution?

Legal Requirements: Is the proposed Project mandated (e.g., accessibility for the physically disabled as mandated by the American with Disabilities Act, an SIP requirement)? Is a delay of the project likely to lead to legal proceedings?

MBTA Priorities: Is the proposed Project consistent with other priorities of the MBTA?

Costs: What is the impact of the project on the MBTA's operating and debt service costs?

The CMG reviews the Director of Capital Management's recommendation and, following approval or amendment of the prioritization, establishes an Approved Project List.

2.0 AUTHORIZATION OF BUDGET AND SCHEDULE

2.1 Overview

Senior managers throughout the MBTA, Board members, and other interested parties all require a basic understanding of Project cost at Project outset. At Project outset, 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 Project management procedure addresses the MBTA's need to present cost data at Project outset while recognizing that such estimates are necessarily preliminary.

For construction 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 the time 60% design has been achieved, most Projects should require only a relatively modest contingency to account for field conditions and other unforeseen circumstances. This Project management procedure 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 (See Section 17, Force Account Process). 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," Exhibit 0.2, upon assignment to the Project, at the 0%-15% design stage. The Conceptual Budget and Schedule includes adequate contingencies for unknowns in the design and construction phases of the Project. Conceptual Budgets and Schedules are attached to Capital Funding Requests and

submitted to the Director of Capital Management by the AGM of Design and Construction, the Chief Operating Officer or the Director of Planning. The Director of Capital Management reviews these requests and forwards a funding recommendation to the Capital Management Group (CMG). Upon approval by the CMG, the Project is listed in the Five Year Plan. The MBTA's intent is to establish the Conceptual Budget that is used as a basis to proceed with the project until a 30% design estimate is established.

Once a Project achieves the 30% design milestone, the Project Manager recommends an "Authorized Budget and Schedule." The Authorized Budget includes reduced contingencies - - reflecting a greater degree of certainty about what is being built. For non-construction projects (e.g. fleet procurement), the Authorized Budget and Schedule request is submitted when project specifications or scope are essentially developed. Requests for Authorized Budgets and Schedules are transmitted (by the AGM of Design and Construction, the Chief Operating Officer or the Director of Planning) to the Director of Capital Management for review and are then approved by, first, the CMG, then, the General Manager. Once approved, Project Managers are responsible for completing their Projects within the Authorized Budget and Schedule.

2.2 CONCEPTUAL BUDGET AND SCHEDULE

As set forth in the Project Initiation procedure, no Project may be included in the Five-Year Plan until the Project Manager has prepared a Capital Project Funding Request, including a Conceptual Budget and Schedule. The Project Manager develops the Conceptual Budget and Schedule (using the Budget Summary form attached as Exhibit 0.2) with the assistance of the Sponsor and other Departments, using the following guidelines.

Conceptual Budget

These line items are estimated:

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

Design and Engineering: estimated total costs of environmental assessment, Conceptual (0-15%), Preliminary (15-30%) and Final (30%-100%) design, including any special engineering studies, construction document preparation and technical bid review; and construction phase design services, exclusive of escalation.

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: 10% of the preceding estimate to account for potential 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 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 appraisal. These estimates must be reviewed with the Real Estate Acquisitions.

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, if wrap up insurance will be required

At the Conceptual Budget stage, Soft Costs generally total 30%-50% of Construction 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 and complexity of the Project a project contingency of 15%-20% of the Project Subtotal should be calculated. The Project Contingency is taken to reflect uncertainties regarding environmental conditions, community review requirements, site conditions, materials and means of construction, etc. The Project Contingency is reduced over the span of Project development, until, by the completion of Final Design, it has been

reduced to 0%.

The Conceptual Budget provides a benchmark during the early stages of design. It is used by Project Managers to manage evolving designs, by the Budget staff as a "place holder" in the Five Year Plan, until a more detailed 30% estimate is prepared (or until project specifications are more defined), and by senior policy makers to gain a general understanding of likely Project cost.

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
- 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)
- Bid Date
- Contract Award
- Construction/Delivery Milestones
- Substantial Completion
- Completion of Closeout

Approval and Amendment of Conceptual Budget and Schedule

The Project Manager reviews his/her draft Conceptual Budget and Schedule with his/her supervisors and transmits it to the AGM of Design and Construction, the Chief Operating Officer, or the Director of Planning. The appropriate senior manager then transmits it to the Director of Capital Management who forwards the Conceptual Budget and Schedule with a funding recommendation to the CMG. Consideration of these funding requests by the CMG occurs on a quarterly basis. CMG Funding decisions will be made within 30 days of submission of the funding request to the Director of Capital Management.

Any proposed Conceptual Design decisions that cause the Project cost to exceed the Conceptual Budget require the approval of the CMG, which, depending on the nature and size of the Project, may review these decisions with the General Manager.

2.3 AUTHORIZED BUDGET AND SCHEDULE

Once the Project reaches the 30% design milestone, the Project Manager prepares an Authorized Budget and Schedule, based on consideration of a minimum of three design alternatives. The request for an Authorized Budget and Schedule is submitted on the form attached as Exhibit 0.3. Once approved by the CMG and General Manager, the Project Manager is responsible for managing the Project to this budget and schedule, unless amended by the CMG and General Manager.

Authorized Budget

The Project Manager will develop the Authorized Budget in the following format:

Task Budgets: cost estimates for each task (backup documentation should be attached) required to bring the Project to completion, 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 Final (30%-100%) design, including any special engineering studies, construction document preparation and technical bid review; and construction phase design 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: 10% of the preceding estimate to account for potential 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 a Final Appraised Value. Final Appraisals are

incorporated into the Authorized 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, if wrap up insurance is required

At the Authorized Budget stage, Soft Costs are estimated based on the specific requirements of the Project and approved by the heads of the relevant MBTA departments. Force account budget and actions must comply with Section 17, Force Account Process.

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.

The Authorized Budget is the definitive Project budget against which Project success and Project Manager performance are measured.

Authorized Budget Cash Flows

Authorized Budget requests should be accompanied by an estimate of annual spending, by fiscal year.

Authorized Schedule

At this stage of Project development, the Project Manager reevaluates the Key Milestones developed at the Conceptual Schedule stage and presents these for review and approval as set forth below. The PM also develops a more detailed, expanded set of Project milestones and critical path issues for

review with his/her supervisors.

Approval of the Authorized Budget and Schedule Exhibit 0.3

The Project Manager reviews the draft Authorized Budget and Schedule with his/her supervisors and transmits it to the AGM of Design and Construction, Chief Operating Officer or Director of Planning, who then transmits it to the Director of Capital Management **on a bi-annual basis**. Following review by the Director of Capital Management, the Authorized Budget and Schedule is forwarded to the CMG with a funding recommendation.

Once the Authorized Budget and Schedule has been approved, the Project Manager is responsible for managing the Project to the budget and schedule. The Project Manager will complete a quarterly Project Status Report to compare forecast and actual expenditures and schedules with the Authorized Budget and Schedule. In the case of variances from the Authorized Schedule and Budget, the Project Manager will develop an action plan to reduce total cost or revise the schedule as appropriate.

2.4 Amendment of the Authorized Budget

Any increase to the overall Authorized Budget requires approval of the CMG, which must identify the moneys required to fund such a shortfall. Amendments to the Authorized Budget are required when budget variances are identified on the quarterly status report and the Project Manager does not foresee any actions that could be implemented to recover these expected cost overruns.

An amendment request should be submitted by the Project Manager as part of the proposed action plan on the quarterly project status report. A management narrative should be attached 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.

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 original Authorized 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	CMG	AGM of Design & Const., Chief Operating Officer, or Director of Planning
> 5% or >\$500,000	CMG	CMG

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 of the Original Authorized Budget:

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	Chief of Engineering and Const., Chief Operating Officer, or Director of Planning	Project Manager
2% - 4% and <\$500,000	CMG	AGM of Design & Const., Chief Operating Officer, or Director of Planning
> 5% or >\$500,000	CMG	CMG

Following the bid process and prior to Contract Award, the CMG reviews and approves any changes to the Authorized Budget necessary to fully fund the Construction Contract and 10% Contingency. It is highly recommended that all property acquisitions be in place prior to the start of construction.

Any changes to the Authorized Budget that result from Change Orders must be approved in the manner specified in the Change Order Procedure.

Amendment of the Authorized Schedule

The Project Manager approves changes to the Authorized Schedule, but any changes that cause the Substantial Completion date to slip by more than six months or that affect the Authorized Budget require the approval of the CMG.

3.0 PROJECT STATUS REPORTS

3.1 OVERVIEW

Senior managers must have access to accurate, timely information regarding the status of Project budgets, schedules, and scope. Project Managers communicate this information to their supervisors, the Office of Capital Management, and the Capital Management Group via Project Status Reports. Among other functions, Project Status Reports assist senior managers in the identification of potential sources and needs of additional funds in the Five Year Plan. Equally important, Project Status Reports guard against unwelcome “surprises,” i.e., problems which, in the absence of the report, would not be identified until late in the their development.

From assignment through Project Closeout, Project Managers generate a quarterly Project Status Report (PSR) Exhibit 0.3 for each Project they manage. The PSR compares the Conceptual or Authorized Budget and Schedule with the Project Manager’s current estimates and expenditures to date. Additionally, the PSR summarizes key management issues (such as proposed and approved Change Orders and program progress) related to the Project. The PSR is the mechanism by which senior managers are notified of Project progress and through which the Conceptual or Authorized Budget can periodically be amended.

3.2 Project Status Report – Conceptual Budget Phase

Upon assignment to a proposed Project, the Project Manager prepares a draft Conceptual Budget and Schedule (using the form attached as Exhibit 0.2) that is included with the Capital Project Funding Request and submitted for approval as specified in the Project Initiation and Authorization of Budget and Schedule procedures. Following approval by the CMG, the Conceptual Budget and Schedule form becomes the basis for the quarterly Project Status Report.

Prior to the completion of 30% design, the PSR compares the Project Manager’s current estimate of the budget and schedule to the Conceptual Budget and Schedule. As specified in the Authorization of Budget and Schedule Procedure, Project Managers have the authority to change the value of line items within the Conceptual Budget as long as the overall Project cost does not exceed the Conceptual Budget.

Budget Summary

The Budget Summary section of the PSR compares the Conceptual Budget with current estimates and spending to date. The Budget Summary itemizes Project budgets in Task Budget detail (e.g., Design, Construction, Construction Contingency, Vehicles and Capital Equipment, Land Acquisition, and Soft Costs – Inspection, Flagging, Project Administration, etc.) as specified in the Authorization of Budget and Schedule Procedure. Additional line items may be included as appropriate for individual projects.

The Budget Summary distinguishes between budgeted value, value under contract (encumbrances), and actual expenditures. The budget summary also identifies the Budget Variance, which is the difference between the Current Budget Estimate and the Conceptual Budget. Any identified Variances must be explained in the management discussion.

Schedule Summary

The Schedule Summary section compares estimated and actual achievement of key Project Milestones with the Conceptual Schedule. The key Project Milestones are specified in the Authorization of Budget and Schedule procedure, and include Design Reviews, Permitting, Contract Award, Construction/Delivery Milestones, Substantial Completion, and Closeout. The Schedule Summary distinguishes between forecast dates and actual achievement of the Milestone. The Schedule Summary identifies variances between the current estimate and the Conceptual Schedule.

Management Discussion

In addition to the summary of budget and schedule information, the Project Manager includes a discussion of key managerial issues from the previous quarterly PSR and a forecast of potential upcoming issues. The goal of the forecast is to notify senior managers of project management issues as early in the process as possible. Key managerial issues in the Conceptual Budget phase include, but are not limited to:

- Progress and achievement in Project design and/or specifications development
- Status of environmental assessment and alternatives analysis
- Status of consultant contracts
- Proposed Scope Changes
- Potential Budget and/or Schedule Issues
- Action Plan to address proposed scope, budget, and schedule changes and identification of decisions required by the CMG

3.3 Project Status Report – Authorized Budget Phase

When the Project has reached the 30% design milestone, the Project Manager submits a Project Status Report with the request for an

Authorized Budget and Schedule (using the form attached as Exhibit 0.3) as specified in the Authorization of Budget and Schedule Procedure.

Upon CMG approval, the Authorized Budget and Schedule replaces the Conceptual Budget and Schedule and forms the basis for the monthly Project Status Report. (A sample Project Status Report is illustrated in Exhibit 0.4.)

Following approval of the Authorized Budget and Schedule, the Project Status Report compares the Project Manager's current estimate of the budget and schedule to the Authorized Budget and Schedule. As specified in the Authorization of Budget and Schedule and the Change Order procedures, scope, budget, and schedule changes may require the approval of senior managers in Operations, Design & Construction; the Capital Management Group; the General Manager; and/or the Board.

Budget Summary

The Budget Summary section of the Project Status Report compares the Original and Current Authorized Budgets with current estimates and spending to date. The Budget Summary itemizes Project budgets in Task Budget detail as specified in the Authorization of Budget and Schedule Procedure. Additional line items may be included as appropriate for individual projects.

The Budget Summary distinguishes between budgeted value, value under contract (encumbrances), and actual expenditures. The budget summary also identifies variances between the current estimate and the Current Authorized Budget. Any identified variances must be documented and explained in the attached management narrative.

Schedule Summary

The Schedule Summary section compares estimated and actual achievement of key Project Milestones with the Original and Current Authorized Schedules. The key Project Milestones are specified in the Authorization of Budget and Schedule procedure, and include 60%, 90% and 100% Design Review, Permitting, Contract Award, Key Construction/Delivery dates, Substantial Completion, and Closeout. The schedule summary for the current schedule distinguishes between forecast dates and actual achievement of the Milestone. The schedule summary identifies variances between the current estimate and the Current Authorized Schedule.

Management Discussion

In addition to the summary of budget and schedule information, the Project Manager includes a discussion of key managerial issues for the current quarter and a forecast of potential issues. The goal of the forecast is to notify senior managers of project management issues as early in the process as possible. An illustrative management discussion is provided

as Exhibit 0.5. Key managerial issues during the Authorized Budget phase include, but are not limited to:

- Progress and achievement in Design, Construction and/or Delivery
- Proposed Change Orders
- Approved Change Orders
- Scope Changes
- Action Plan to address proposed scope, budget, and schedule changes and identification of decisions required by the CMG

3.4 Update and Distribution of Project Status Reports

Project Managers review and update the PSRs for every Project they manage on a quarterly basis. Before the last business day of the quarter, Project Managers submit the completed PSRs for the previous quarter to the Director of Design and Construction, the Deputy Chief Operating Officer, or the Deputy Director of Planning, for review and approval. Upon approval of the completeness and accuracy of the PSRs, the appropriate senior manager (as identified above) transmits the PSRs to the Office of Capital Management, the Director of Budget, and the Capital Management Group with a transmittal letter discussing scope, budget, and schedule changes requiring approval. Such transmission occurs not later than the 5th day of the current quarter. The Capital Management Group reviews and discusses the previous quarter's PSRs before the end of the first month of the quarter.

**Massachusetts Bay Transportation Authority
Capital Funding Request**

**EXHIBIT 0.1
Page 1 of 2**

- A. Department Sponsor**
- B. Project Title**
- C. Project Category**
1. Infrastructure Reinvestment
 2. State Implementation Plan (SIP)
 3. Central Artery/Tunnel (CA/T)
 4. Americans With Disabilities Act (ADA)
 5. Other Service Expansion Project
- D. Project Description/Scope:**
- E. Is there an impact on Health & Safety of not doing the project? Is this a Safety Critical Project? If so, how?**
- F. Impact on Service Reliability/State of Good Repair**
- G. Impact on Operating Efficiency**
- H. Legal Requirements**

I. What are the impacts on operating costs, if any, of this project? (Be Specific)

J. Alternative Scope of Work/Solution

K. Consequences of Not Funding this Project

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

M. How was the budget estimate developed (please be specific& provide supportive documentation)?

N. Total Capital Spending Projects By Fiscal Year

	FY04	FY05	FY06	FY07	FY08	TOTAL
Engineering/Design						
Construction						
Vehicles/Equipment						
Land Acquisition						
Other						
TOTAL						

O. Suggested Funding Source

Massachusetts Bay Transportation Authority

Capital Funding Request

Conceptual Budget Form

Date: _____

EXHIBIT 0.2

Project Manager: _____
Project: _____
Scope Summary: [25 to 50 word summary of scope]

Budget Summary	
Task Budgets (attach backup)	Conceptual Budget
Design and Engineering	
Construction Contract(s)	
Construction Contingency	
Vehicle/Capital Equipment Contract(s)	
Vehicle/Capital Equipment Contingency	
Land Acquisition	
Flagging/Force Account	
Inspection	
Project Administration	
Insurance	
Indirect Costs	
Other Soft Costs	
Escalation	
Project Subtotal	
Project Contingency	
Total	

Schedule Summary	
	Conceptual Schedule
Environmental Documentation Complete	
30% Design Review	
60% Design Review	
90% Design Review	
Environmental Permitting Complete	
100% Design Completion	
Award	
Milestone 1	
Milestone 2	
Milestone X	
Substantial Completion	
Closeout	

Massachusetts Bay Transportation Authority
Project Status Report - Authorized Budget Long Form
Quarter:

ILLUSTRATIVE**EXHIBIT 0.3**

Project Manager: _____
Project: _____
Scope Summary: [25 to 50 word summary of scope]

Budget Summary					
	Original Authorized Budget	Current Authorized Budget*	Current Budget Estimate	Budget Variance (vs. Current Authorized)	Expenditures through _____
Task Budgets					
Design and Engineering					
Construction Contract(s)					
Construction Contingency					
Vehicle/Capital Equipment Contract(s)					
Vehicle/Capital Equipment Contingency					
Land Acquisition					
Flagging					
Inspection					
Project Management					
Contract Administration					
Other Soft Costs					
Escalation					
Project Subtotal					
Project Contingency					
Total					

Schedule Summary					
	Original Authorized Schedule	Current Authorized Schedule	Current Schedule Estimate	Date Completed	Variance (vs. Current Authorized)
60% Design Completion					
90% Design Completion					
100% Design Completion					
Award					
Substantial Completion					
Closeout					

Management Discussion:

Highlights: [50 to 100 word summary of managerial highlights]

Project Management Forecast: [50 to 100 word summary of management forecast]

Action Plan: [25 to 50 word summary]

Date:

Project Manager: John Smith
Project: Replace 4 Commuter Rail Bridges
Scope Summary: [25 to 50 word summary of scope]

Budget Summary

Task Budgets	Original Authorized Budget	Current Authorized Budget*	Current Budget Estimate	Budget Variance (vs. Current Authorized)	Expenditures through
Design and Engineering	\$ 1,000,000.00	\$ 1,000,000.00	\$ 1,000,000.00	\$ -	\$ 1,000,000.00
Construction Contract(s)	\$ 10,000,000.00	\$ 11,500,000.00	\$ 11,650,000.00	\$ (150,000.00)	\$ 2,500,000.00
Construction Contingency	\$ 1,000,000.00	\$ 600,000.00	\$ 450,000.00	\$ 150,000.00	
Vehicle/Capital Equipment Contra	\$ -	\$ -	\$ -	\$ -	
Vehicle/Capital Equipment Contin	\$ -	\$ -	\$ -	\$ -	
Land Acquisition	\$ 400,000.00	\$ 400,000.00	\$ 400,000.00	\$ -	\$ 400,000.00
Flagging	\$ 500,000.00	\$ 450,000.00	\$ 450,000.00	\$ -	\$ 97,800.00
Inspection	\$ 250,000.00	\$ 300,000.00	\$ 300,000.00	\$ -	\$ 65,200.00
Project Management	\$ 500,000.00	\$ 500,000.00	\$ 500,000.00	\$ -	\$ 108,700.00
Contract Administration	\$ 100,000.00	\$ 50,000.00	\$ 50,000.00	\$ -	\$ 10,900.00
Other Soft Costs	\$ 50,000.00	\$ -			
Escalation	\$ 700,000.00				
Project Subtotal	\$ 14,500,000.00	\$ 14,800,000.00	\$ 14,800,000.00		\$ 4,182,600.00
Project Contingency	\$ 1,450,000.00	\$ -	\$ -		\$ -
Total	\$ 15,950,000.00	\$ 14,800,000.00	\$ 14,800,000.00	\$ 1,150,000.00	\$ 4,182,600.00

Schedule Summary

	Original Authorized Schedule	Current Authorized Schedule	Current Schedule Estimate	Date Completed	Variance (vs. Current Authorized)
60% Design Completion	04/01/1996	04/01/1996	04/01/1996	04/01/1996	
90% Design Completion	10/01/1996	10/15/1996	10/15/1996	10/15/1996	
100% Design Completion	01/01/1997	01/01/1997	01/01/1997	01/01/1997	
Award	03/01/1997	03/10/1997	03/10/1997	03/10/1997	
Substantial Completion	06/01/1998	06/01/1998	07/01/1998		+ 1 month
Closeout	10/01/1998	10/01/1998	11/01/1998		+ 1 month

Management Discussion:

Highlights: On 11/13/97, the PM approved a \$35,200 Change Order for field obstructions. On 11/18/97 the Contractor completed the installation of ____.

Project Management Forecast: The Contractor has identified a Design Error that will require additional labor and materials to remedy. There will be no schedule impact, but a change order will be negotiated with an estimated cost of \$150,000. The Construction Contingency has adequate funds for this Change Order and the Director of Design & Construction has been notified of the upcoming negotiations.

Action Plan: Negotiate Change Order and request approval from the Chief of D&C to transfer funds.

Massachusetts Bay Transportation Authority
Project Status Report - Authorized Budget Form
November 1997

Exhibit 0.5

ILLUSTRATIVE

Management Discussion

November Highlights: Reconstruction of Bridges A and B are substantially complete. ____ punch list items have been identified.

Project Management Issues: The Contractor has identified a Design Error on Bridge C that will require additional labor & materials to remedy. There will be no schedule impact, but a change order will be negotiated with an estimated cost of \$150,000. The Construction Contingency has adequate funds for this Change Order and the Chief of Design & Construction has been notified of the upcoming negotiations. Negotiations with the property owner adjacent to Bridge D are ongoing. The Deputy Director for Real Estate Acquisition estimates that an additional \$50,000 may be required for acquisition.

Explanation of Variances:

Design: Design error on Bridge C resulted from _____. Negotiations with the designer to recover a percentage of the \$150,000 cost are ongoing.

Land Acquisition: Appraisal review process has increased acquisition estimate by 8 percent.

Action Plan: Negotiate Change Order on Bridge C. Direct RE Acquisition to continue negotiations with land owner. Requesting approval from CMG to transfer funds from contingency line items to reflect these actions.

SECTION 1

ACCOUNTS RECEIVABLE/PAYABLE/ FMS PURCHASING

1.0 ACCOUNTS RECEIVABLE INVOICE PROCEDURES

1.1 Policy

- a. An Accounts Receivable Invoice (ARI) (Exhibit 1.1) is used to bill for any funds owed to the Authority from outside entities or individuals for miscellaneous services or fees. This form should be completed with an original and 3 copies by the originating Department.
- b. In most instances, sufficient detail documentation needs to be attached to support and justify the amount owed.

1.2 Instructions to Complete an Accounts Receivable Invoice

- a. **Customer Name -** (Input name)
- b. **Customer Address** (Input address)
- c. **Date of Invoice** (Current billing date)
- d. **Date of Service** (Input date of service)
- e. **Services Rendered** (Description of services)
- f. **Amount of Services** (\$ amount)
- g. **Receivable Doc. No.** (This document number must be on all A R invoices. Accounts Receivable will call the Contact person listed on the invoice.)
- h. **Total** (Amount will be automatically calculated)
- i. **Company Object/Mode** The breakdown (if any) to more than one account center must be input by user.

- j. **Total Amount** The total figure should match the total in (h).
- k. **Contact Person** Please include the individual and phone number for A/R to contact to notify of invoice number or if there are any problems with the invoice.

All of the information set forth in (a-k) will be typed into lotus/excel spreadsheets (original copy). The information will automatically be copied to three (3) other spreadsheets as follows:

- Cashier's copy
- File copy
- Customer copy

When a check is accompanying the invoice, **INVOICE NOT TO GO OUT** should be typed boldly.

1.3 Approvals

- a. The preparer should sign the form with a date of signature.
- b. The appropriate manager from the department who has signatory authority should sign with date of signature.
- c. The other lines are for Treasurer Department approvals.

1.4 Supporting Documentation

- a. In certain instances sufficient detail documentation needs to be attached to support and justify the amount owed. The type and level of detail may vary according to the specific requirements of each invoice.
- b. Questions regarding the appropriate documentation should be referred to the Manager of Accounts Receivable.

1.5 Routing

Before the invoice is mailed to the customer:

- a. Send Original copy to the Accounts Receivable Department. 10 Park Plaza, Room 7610 with appropriate signatures in blue ink.
- b. Accounts Receivable will call the Contact Person listed on the invoice with the Receivable Document Number.

- c. The Contact Person will enter the Receivable Document Number on the remaining copies before distributing.
- d. Originating department will send Cashier's Copy to the Cashier's Office, 10 Park Plaza, Room 8413.
- e. Originating department will mail the Customer Copy and accompanying documentation to the customer.
- f. File copy will be retained by originating department.

All payments should be remitted to Cashier's Office with remittance copy (bottom of customer copy). Payments should not be sent to department originating the invoice. Any exceptions to this rule must be approved, in writing, by the Treasurer-Controller.

2.0 ACCOUNTS RECEIVABLE INVOICE PROCEDURES INTERAGENCY AND OTHER PARTIES

2.1 Obtain A Capital Receivable Work Order Number (093000 SERIES)

- a. Project Managers with projects involving capital reimbursable funds should request a capital receivable work order number from the Supervisor of Accounts Receivable. (Currently, these work order numbers have a #093000 series. Previously, it was a #05000 series, until used up.)
- b. Requests for a Capital Receivable work order number can be made by either phoning or preparing a written request Exhibit 1.3, to the Supervisor of Accounts Receivable. The requestor should provide the following information:
 - The name of the person requesting the work order number
 - A brief description of the job to be performed
 - The location of the job
 - The length of the job
 - The total cost of work to be done
 - The name of the person who authorized the work to be done
 - Copy of the agreement authorizing the charges
- c. After the work order number has been issued, the Project Manager should instruct the Program Controller to set up the work order by following the procedures in the Capital Management System (CMS) Manual.

2.2 Billing Process

- a. At the close of each accounting period, charges accumulated in a reimburseable work order can be billed by the project budget analyst. A listing of work order individual charges can be obtained by "running" the Work Order Activity Report CMS-CP-021. The actual documentation should be matched to this listing to ensure all charges are billed.
- b. Project Managers should review the detail charges, prior to invoicing, to ensure they are proper.
- c. Once the charges are determined proper, the Project Manager should forward them to the Budget Analyst for invoicing.
- d. The Budget Analyst should then prepare the Company #3 Accounts Receivable Invoice with supporting documentation. For Interagency Agreements, a Commonwealth of Massachusetts Payment Voucher (PV) must be filled out, signed and attached. The description in the body of the invoice must include the Agreement number. The invoice must be signed by the Project Manager. The original Accounts Receivable Invoice and supporting documentation is forwarded to the Supervisor of Accounts Receivable, who will provide an Accounts Receivable Document Number to the Budget Analyst. This A/R Document number is placed on the A/R copies prior to mailing the invoice.
- e. In cases involving reimbursement for an MBTA professional services, construction, railroad or other contractual agreements, the Accounts Receivable Invoice should be prepared within thirty (30) days after the payment has been made to the contractor. The current MBTA overhead rate should be added to the charges where applicable.
- f. For invoices received by the Accounts Receivable section, a journal entry will be made recording the receivable. Also, a work order "relief" entry will be initiated indicating the charges have been billed. The relief entry is forwarded to the Supervisor of Capital Accounting for recording. (Note: The work order "relief" amount should equal the amount billed.)

2.3 Reporting Payments and Overdue Unpaid Balances

- a. The Accounts Receivable Department monitors unpaid invoices using a "SmartStream" Aging Report. The report includes: A/R Document #, invoice date, interagency agreement number and invoice amount.

- b. The aging report is updated monthly for payments received and invoices issued. When a partial payment is received on an invoice the resulting balance remains "open" on the Aging Report.
- c. It is the Project Manager's responsibility to monitor overdue unpaid balances and determine proper resolution.

3.0 ACCOUNTS PAYABLE VOUCHER PROCEDURES

3.1 Policy

- a. An Accounts Payable Voucher (Exhibit 1.2) is used as the MBTA's document for issuing payment checks. It is used to pay:
 - Travel & mileage reimbursements
 - Personal service agreements
 - Equipment or services (If not purchased through Financial Management System (FMS).
 - Consultants (If payment voucher is not generated through CMS).
- b. As stated above, no A/R voucher is needed when a requisition is generated through the FMS purchasing system and a purchase order number is generated. Also, when a payment voucher paying contractor or consultant is generated using CMS, no separate A/R voucher is needed.
- c. Vouchers are classified as either **Operating** or **Capital** depending on funding source. This determination dictates the routing and approval process required.
- d. Checks are issued for properly prepared and approved vouchers on Tuesdays and Fridays for Operating budget vouchers; on Mondays for Capital vouchers; on Wednesdays for travel reimbursements, and each day for worker's compensation payments.

3.2 Instructions

- a. It is the Project Manager's responsibility to generate Accounts Payable Vouchers (APV) for their project office.
- b. The APV is the MBTA's document for issuing checks in payment for equipment or services provided by an outside vendor. All material purchases are handled through the FMS Purchasing System.
- c. All APVs must have supporting documentation attached to justify the expenditure. Any voucher received without this supporting documentation will be returned to the originating department.
- d. The Project Manager is responsible for:

- Availability of funding for payment
 - Allowance of charges for the source of funding
 - Submitting requisitions through FMS-Purchasing
 - Receipt and acceptance of goods/services
 - Overall accuracy of the voucher
- e. The completed APV should be signed by the Project Manager, Deputy Director of Design and Construction and the Deputy Director of Design and Construction -Administration if under \$50,000 or the Director of Design and Construction if over \$50,000. The voucher will then be submitted to the Treasurer's Office for further processing.

3.3 APV Procedures

a. How does the MBTA issue checks?

The MBTA uses an APV as one method for issuing checks. When properly filled out and signed by authorized personnel, the APV permits the MBTA to issue a check.

b. When is a voucher used?

1. If you want the MBTA to pay a vendor for services rendered. (Material purchases will be handled through the purchasing system.)
2. If you are a consultant and you want to be paid for services you have rendered to the MBTA under a contract or letter agreement and your contract is not included in CMS.

c. Where can I get blank voucher forms?

1. A blank form is contained in the back of this section.

d. What else do I need when I use a voucher?

You must provide supporting information to justify the expenditure. This information is usually one or more of the following documents:

1. A vendor's invoice requesting payment from the MBTA. The invoice must be attached to the voucher.
2. If you are a consultant working under a contract or letter agreement, you must develop and submit an invoice.

3. Any voucher received by the Treasurer-Controller, Accounts Payable section without this information will be returned to the originating department.

3.4 Operating Expenditures

a. Approvals

1. All operating expenditures **in excess of \$50,000** must be signed by the Department Head.
2. All operating expenditures **less than \$50,000** may be delegated by the Department Head to personnel in that department. Signature control forms, available in the Purchasing and Administrative Services Department, must be on file in the Treasurer-Controller, Accounts Payable Section which authorizes delegated signatory authorization.
3. Only one signature of approval is needed.

- b. Completed vouchers must be forwarded to Accounts Payable, Room 7610, Ten Park Plaza, Boston.

c. Payment Dates

1. All payments will be processed through the FMS System.
2. Payment dates for operating vouchers are Tuesday and Friday.
3. Travel reimbursements are processed on Wednesday.
4. Worker's Compensation checks are processed every day.
5. Exception for Holidays – In a holiday week, pay dates will be delayed by one business day. (Each time a holiday Occurs, i.e., if Monday were a holiday, the voucher, which would normally be paid on Tuesday, would be paid one day later on Wednesday.)

3.5 Capital Expenditures

a. Approvals

1. All capital expenditures **in excess of \$50,000** must be signed by the Department Head.
2. All capital expenditures **less than \$50,000** may be delegated by the Department Head to personnel in that department.

3. One signature of approval is required.

NOTE: Capital expenditure vouchers do not require a signature by the Design and Construction Department.

b. Documentation

1. Supporting documentation must be attached to the voucher. This includes a vendor bill, relevant correspondence, a capital requisition and a capital purchase order.
2. Any capital requisition for \$5,000 or more requires Budget Office approval.

c. Payment Dates

1. All payments will be processed through the FMS Financial System.
2. Capital payment dates are Monday.
3. **Exception for Holidays** – pay dates will be delayed by one business day. (Each time a holiday occurs; i.e., if Monday were a holiday, the vouchers, which would normally be paid on Monday, would be paid one day later on Tuesday.)

d. Review by Capital Accounting includes verification of an approved requisition.

1. Again, the Budget Office must approve any capital requisition for \$5,000 or more.
2. Any voucher not containing an approved requisition will be returned to the originating department.
3. The review also includes verification that the voucher expenditure does not overrun the work order. Any voucher that overruns a work order will be returned to the originating department.

3.6 Instruction to Complete an Accounts Payable Voucher

Vouchers should be completed according to the following instructions. (Certain capital construction and professional service payments do not require a voucher as they are generated directly from the Design and Construction's CMS system).

- a. **Date** – Enter date that voucher is created.
- b. **Debtor** – Legal name of vendor.
- c. **Street Address or Post Office Box** – Legal address of vendor.
- d. **City, State & Zip Code** – Legal address of vendor.
- e. **Purchase Order Number** – Indicate contract or purchase order number. Indicate here if Letter of Agreement, Consultant or Student Intern.
- f. **Invoice Date** – Date as it appears on vendor invoice.
- g. **Invoice Number** – Invoice number as it appears on vendor invoice.
- h. **Supervisor of Accounts Payable** – Initiated by the Accounts Payable Supervisor authorizing a voucher for payment.
- i. **Date, Quantity, Description, and Price** – The body of this form should be utilized for a brief description of the equipment or service provided. If appropriate, a breakdown of items by quantity and price should be included. Be as explicit as possible and, if vendor invoice is to accompany voucher, include “see attached.”
- j. **Company, Account, Center** – The correct accounting to properly reflect the expense/charge of these funds on the Authority’s records should be indicated. This is Company, Account, Department, Location, Activity for operating budget vouchers and; Company, Account, Department, Location, Work Order for capital vouchers. Contact the department Budget Analyst if unsure which number(s)
- k. **Amount** – The total amount should be indicated.
- l. **Approved By:**
 - The signature and date of signature, of an authorized official within the originating department must be obtained.
 - The persons who must sign the voucher to authorize the payment are different within each department. That information is available from the department Budget Analyst or area secretary. Be aware that all department level authorizing signatures must be obtained before the voucher is submitted to Accounts Payable. **Capital Voucher** requires additional approval of Design and Construction staff.

3.7 Supporting Documentation

- a. Sufficient detailed documentation must accompany the voucher. This information is usually a vendor's invoice or a contract/letter agreement.
- b. For capital vouchers, the contract document should specify the required documentation to be provided.

3.8 Routing

The completed Accounts Payable Voucher, which includes all required signatures and supporting documentation, should be forwarded to the Accounts Payable Department (operating funded payments) or the Capital Accounting section (for capital payments).

4.0 FMS PROCEDURES-PURCHASING

- 4.1 All Material purchases are processed through the FMS Purchasing System. It is the Project Manager's responsibility to supervise the material requisition process at the project office level.

4.2 Project Manager Responsibility

- a. Establishing up front sign off controls within the project office.
- b. Availability of funding for the requisition.
- c. Allowance of charges for this source of funding.
- d. Receipt and acceptance of materials.
- e. Overall accuracy of the material requisition.

4.3 Approvals

- a. Budget Analyst can approve on line a requisition for up to \$5,000.
- b. Requisitions in the \$5,000 to \$50,000 range are approved by the Deputy Director of Design and Construction - Administration for the Design and Construction Department.
- c. Requisitions greater than \$50,000 are approved by the AGM of Design and Construction.

4.4 Progression of Approvals

- a. Progression of approvals refers to on-line approvals only and is a result of the limitations of the FMS Purchasing Module.
- b. All requisitions regardless of dollar value require approval by the Project Manager and a Deputy Director of Design and Construction.

- c. The Requisition Header (RQH) screen should be printed and circulated for signature approval by the Project Manager and Deputy Director of Design and Construction.
- d. A copy of the signed RQH screen should be kept in the project office files in order to ensure proper approval of all requisitions and for audit purposes.

4.5 Payments to Vendors

- a. Payments to vendors are made using the automated features in the system.
- b. Invoices are not physically sent out for departmental signature but are entered directly into the system by Accounts Payable staff.
- c. Approval is made up front during the requisition process and, therefore, does not receive a second approval.
- d. When the receipt is confirmed on-line and there is a match, the invoice is processed automatically and payment is made.
- e. A second approval is required only when the bid price exceeds the system tolerance.

4.6 Automated Process

- a. The automated process can create a security problem if precaution is not taken.
- b. It is imperative that the Project Manager establishes material requisition sign-off controls at the project office level.

4.7 Training

- a. All Budget Analysts and Office Support Staff must be trained on the FMS Purchasing System.
- b. Each trainee should receive a Requester's Training Guide with detailed instructions on Creating Requisitions, Requisition Approval, Requisition Inquiry, Receiving and Purchase Order Inquiry.
- c. The training guide should be maintained at the project office.
- d. Definitions and work flow charts of the FMS Purchasing System are contained in this section.

4.8 Definitions

Buy Entities:	Buy Entities (Exhibit 1.4) are used to identify different funding sources being utilized in the new Purchasing Module. The Entities that will be used with this system are:
MATI:	Buy entity utilizing Inventory Material Purchase Order Designation: "11"
MATN:	Requisitions utilizing Operating Funds Purchase Order Designation: "44"
MATF:	Requisitions Utilizing Federal Funds (Capital) Purchase Order Designation: "77"
MATB:	Requisitions Utilizing State Bond Funds Purchase Order Designation: "99"
Requester:	Anyone who is authorized to create/enter a requisition on-line
Requisition:	Anyone who is authorized by Department and Buy Entity to approve a requisition on-line based on dollar value. (Similar to current MAT-21 Requisition Approval.)
Receiver:	Anyone who is authorized by Department and Buy Entity to approve receiving material on-line.
Payment Approver:	Anyone who is authorized by Department and Buy Entity to payments on-line.
Ship to Address:	Any address that will be used by individual departments to receive goods and services.

4.9 Screen Definitions/Requesters & Approvers

a. Creating a Non-Inventory Requisition (Exhibits 1.5 and 1.6)

RQH – Requisition Headers Screen: Used to create top portion of a requisition.

Enter:

- Buy Entity
- Requisition Number
- Requester's I.D.
- Requisition Total (total cost of requisition) – This can be done at the end of entering all lines of the requisition, if desired.
- Buyer I.D. (will always be BUY except for "Hotline")
- GL Company, Account, and Center

RQ1 – Requisition Line Screen: Used to create each line of a requisition, item by item (body of requisition).

Enter:

- Catalogue Number (will usually be NINV)
Item Number
- Item Description (See RCM for completion of description by line, if required)
- Quantity to be ordered (QTY RQD SKU)
- Estimated Unit Price
- Required Date Needed by Using Department
- Manufacturer's Item Number
- Unit of Measure (SKU)
- Ship to Code
- Name of person receiving material or service (Deliver to:)

MLR – Multiple Line Requisition Screen: This screen is used to enter multiple lines of a requisition using one screen. Suggested use: to create a requisition such as contracts utilizing a Catalogue or one with very short descriptions.

Enter:

- See RQH to MLR Screen
- Line No. (Item No.)
- Catalogue # (Contract Title, abbreviated)
- Item No. (Part number listed in catalogue for contract)
- Quantity
- Display Defaults

RCM – Requisition Comments Screen: This screen is used to add additional descriptions for each line of a requisition that does not fit on the RQ1 screen.

Enter:

- A (Add)
- Number of requisition line you want the comment or further description to fall under and sequence you want it to show on the body of the requisition.
- If you do not want the comment or description to physically print on the hard copy requisition (could be used for internal departmental note) enter an "N" in the next column. (**No printing on this line**)

b. **Requisition Approval Process** (Exhibits 1.7 and 1.8)

RAI - Requisition Approval Inquiry Screen: This screen is used to view a particular requester's requisitions that have been entered and are awaiting the approval process.

Enter:

- Buy Entity
- Requester I.D.

RAS – Requisition Approval Screen: This screen is used to authorize the purchase by the designated approver or approver(s) based on dollar value. (Signature on Line)

Enter:

- Approval Code
- Buy Entity

c. **Receiving Process** (Exhibit 1.9)

RSU – Receipt Set Up Screen: This screen is used to enter packing slip and purchase order information.

Enter:

- Buy Entity
- Packing Slip Number
- Receiving Location (Ship to Code)
- Date Delivered (Date goods were received)
- Receiver to enter P.O. Line number (by P.O. Line Number)

RBL – Receiving by Line: This screen is used to identify the particular P.O. Line that is being received and execute receiving process for that line.

Enter:

- Buy Entity
- P.O. Number
- P.O. Line Number
- Quantity Delivered
- Unit of Measure

d. **Requisition Inquiry** (Exhibit 10)

RQI – Requisition Inquiry Selection Screen: This screen is used to list all requisitions by a particular requester.

Enter:

- Buy Entity
- Requester I.D.

RI1 – Requisition Inquiry 1: This screen is used to view information for a specific line on a created requisition.

Enter:

- Buy Entity
- Requisition Number
- Requisition Line Number

RI2 – Requisition Inquiry 2: This screen is used to get additional information on a requisition line such as Budget (Company, Account and Center) and Buyer Assigned.

Enter:

- Buy Entity

- Requisition Number
- Requisition Line Number

RAI – Requisition Approval Inquiry: This screen is used to get a listing of requisitions by requester I.D. to see what requisitions are still awaiting the approval process.

Enter:

- Buy Entity
- Requester I.D.

e. **Purchase Order Inquiry** (Exhibit 1.11)

SRI – Split Requisition Inquiry Screen: This screen is used to get the purchase order number placed against a requisition by line.

Enter:

- Buy Entity
- Requisition Number
- Requisition Line Number (will always be 1)
- Split Number (will always be 01)

PHI – Purchase Order Header Inquiry/Main Screen (Exhibit 1.12): This screen is used to obtain information about the top of the purchase order only.

Enter:

- Buy Entity
- Purchase Order Number

Subheadings Utilized from this Screen:

PHG: P.O. Header/General Information

PHV: Vendor Information

PHF: Budget Information

PHC: Shipping and Freight Information

PHA: Blanket/Contract Information

PCI: Added Comments appearing on P.O.

PLI – Purchase Order Line Inquiry/Main Screen (Exhibit 1.13):

This screen is used to obtain information about a specified line (Item 1, 2) of the purchase order.

Enter:

- Buy Entity
- P.O. Number
- Buyer I.D.

Subheadings Utilized from this Screen:

PLG: P.O. Status/Receiving Information /Ship To

PLO: Description of Material Purchased by Line

PLC: A/P Invoice Information

PLR: Receiving/Inspection/Quantity Received to Date

PLF: Quantity and Price

PCI: Purchase Order Comments

4.10 REQUISITION AND PURCHASE ORDER STATUS CODES

(Exhibits 1.14 through 1.16)

Requisition Status (RQH)

- 0 Open
- 1 Closed
- 4 Delete

Requisition Line Status (RQ1 or MLR)

- 0 Unresolved (can be used when adding a line)
- 1 Unapproved
- 2 Approved
- 3 Split
- 4 Delete
- 5 RFQ Pending
- 6 Closed

PO Line Status (PLI)

- 0 Unresolved
- 1 Complete and ready for printing
- 2 Complete but not ready for printing
- 3 Cancel
- 4 Delete
- 8 Print
- 9 Closed

PO Status Control (PSC and PHS)

- 1 Ready
- 3 Canceled
- 4 Delete
- 5 Print
- 6 Reprint
- 7 Print Change Notice
- 8 Printed
- 9 Closed

Blanket Order Header (PSC or PHS)

- 1 Ready for manual release, reprint or change notice
- 3 Canceled
- 4 Delete
- 5 Authorized for automatic release
- 9 Closed

Blanket Release (PSC or PHS)

- 1 Ready for automatic release or on hold for manual release
- 3 Canceled
- 5 Ready for automatic release or on hold for manual reprint

6 Reprint
7 Print Change Notice
8 Printed

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

ACCOUNTS RECEIVABLE INVOICE

Exhibit 1.1

RECEIVABLE ACCOUNT ID		CUSTOMER NAME
RECEIVABLE DOC. NO.		CITY, STATE, ZIP
DATE OF SERVICE		SERVICES PERFORMED
AMOUNT		
TOTAL		\$0.00
COMPANY - OBJECT - MODE	DEPARTMENT - LOCATION - ACTIVITY/WORKORDER	AMOUNT
		\$0.00
CONTACT PERSON:		CONTACT PHONE:
APPROVED BY:		
ACCOUNTS RECEIVABLE		
GENERAL ACCOUNTING		

ORIGINAL COPY

Exhibit 1.2

[illegible]

Approved by:	
Approved by:	
Approved by:	

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
Request for Bill for Collection Number/Work Order Number

Bill for Collection No. _____ **Date issued:** _____

Requested by: _____ **Title:** _____

Date Requested: _____ **Date/Time of incident:** _____

Length of Job: _____

Description: _____

Operated by: _____ **Employed by:** _____
(name of individual)

Location of Damage: _____

Other details relating to incident: _____

B/C charge to: _____
(name of company/agency)

Address: _____

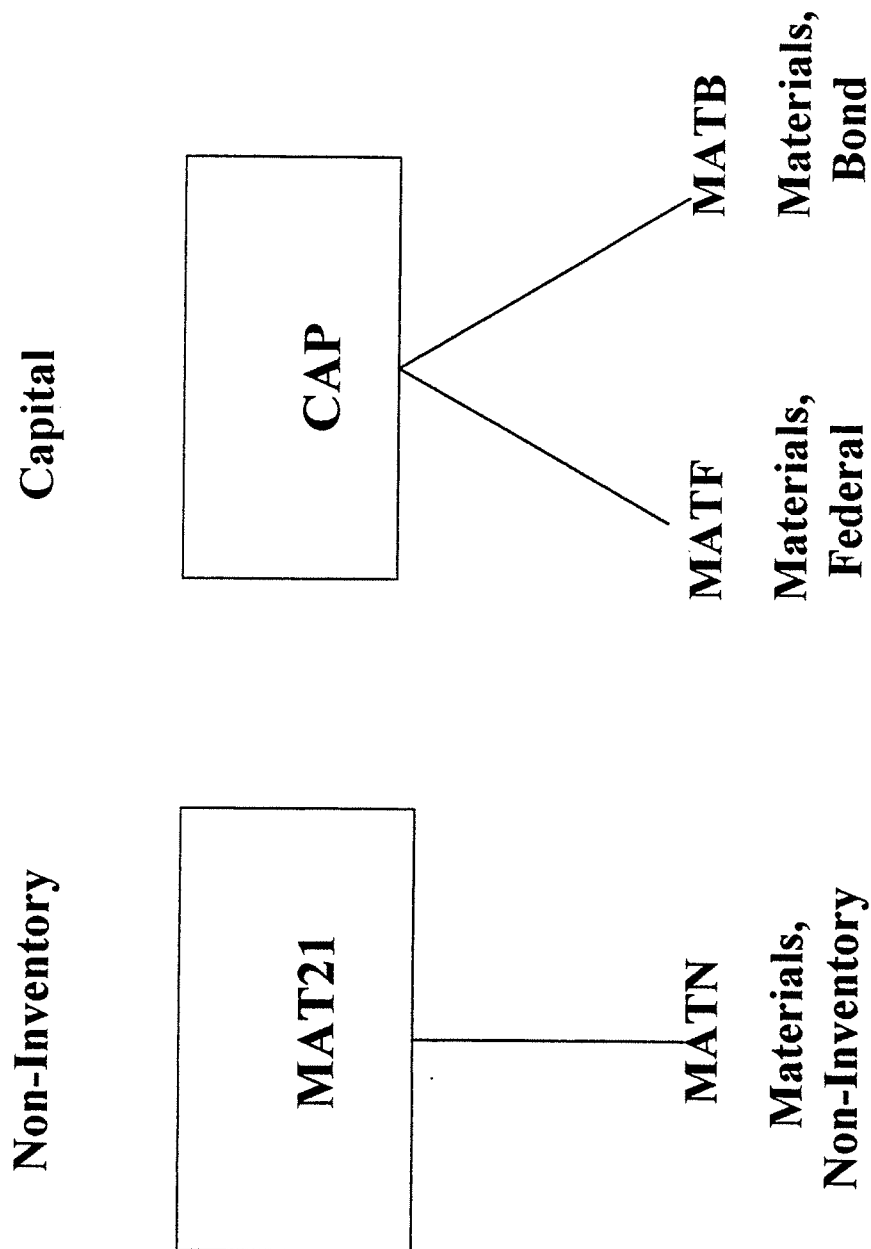
Prior to the incident, subject contractor did/did not request plans of the area. Plans of the area were/were not given to subject contractor.

B/C opened to Area(s): _____

Copies to:

Supervisor of Accounts Receivable _____
Initiator _____
Law Department _____

BUYING ENTITIES

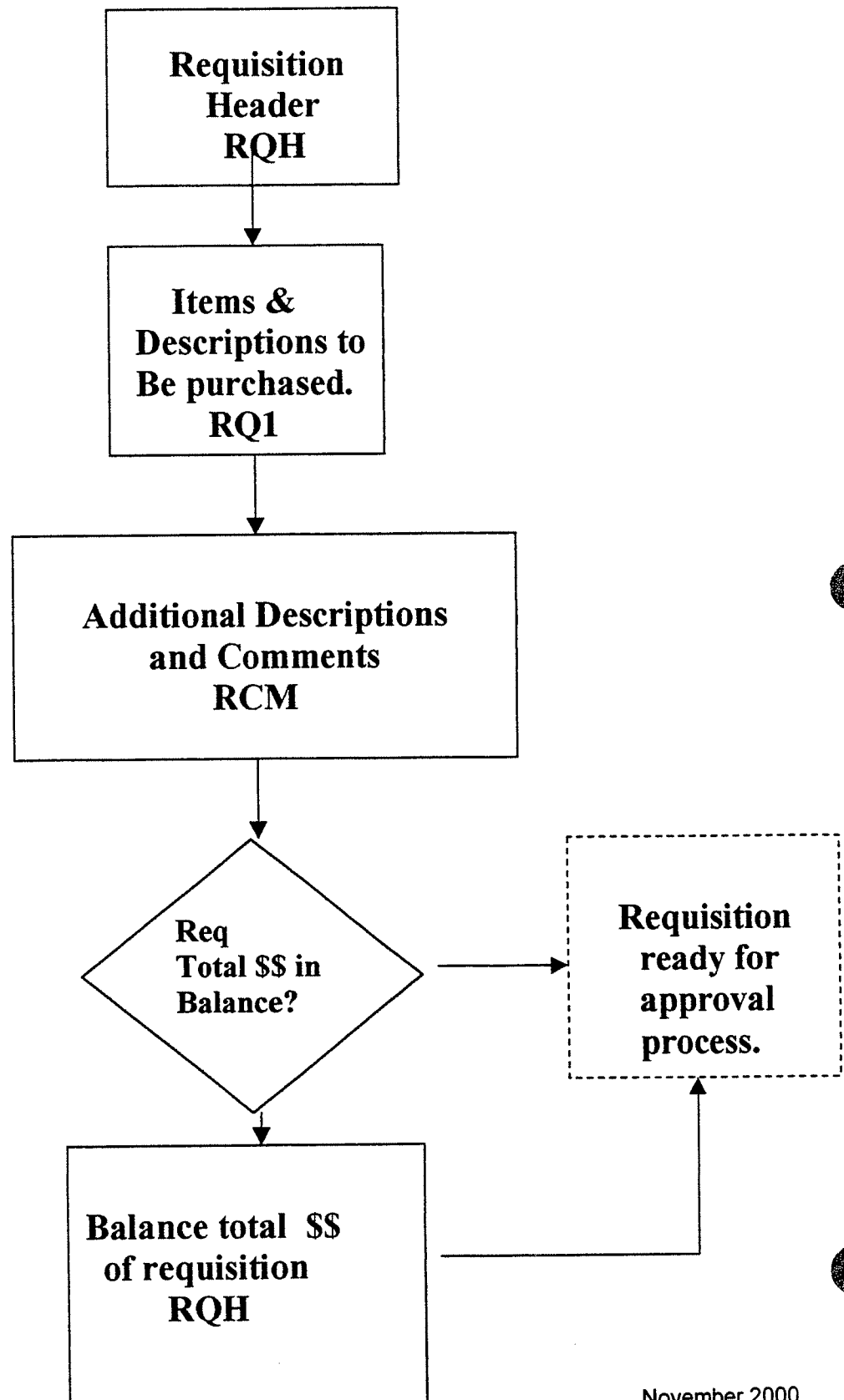


CREATING NON-INVENTORY REQUISITIONS

Operating & Capital

(MATN)

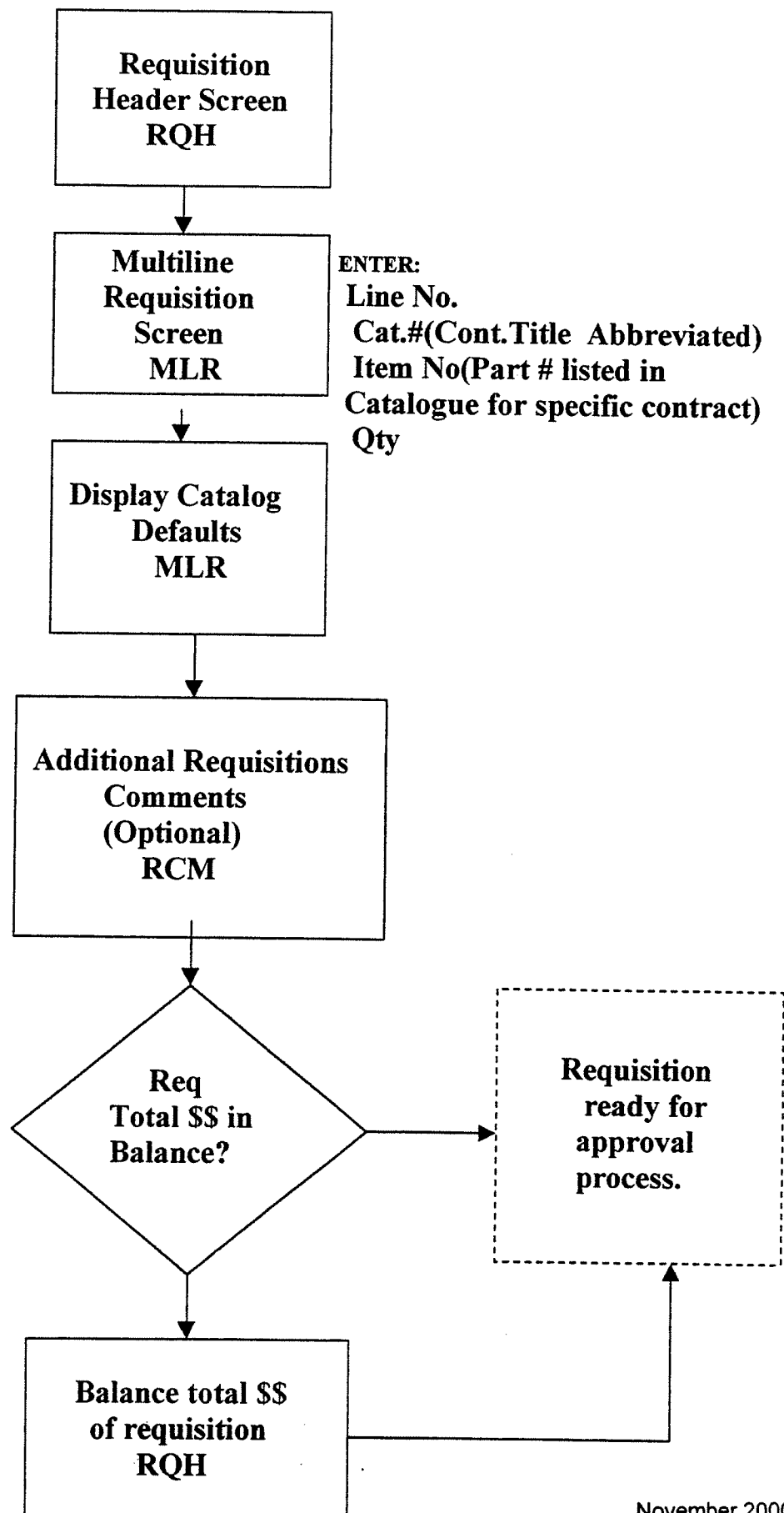
(MATF, MATB)



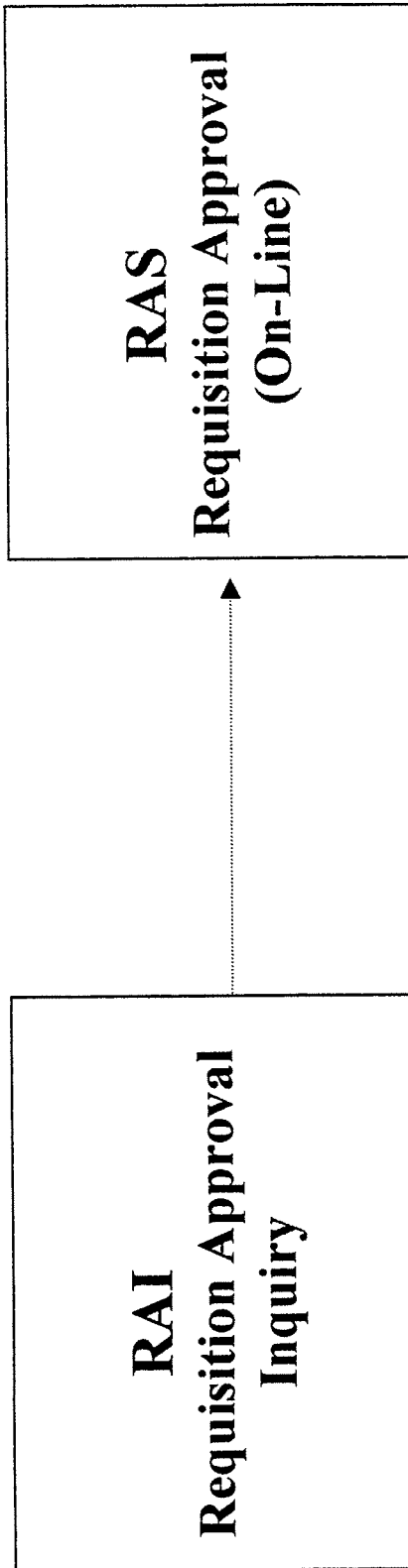
November 2000

CREATING NON-INVENTORY REQUISITIONS

UTILIZING CONTRACT CATALOG & MLR SCREEN



REQUISITION APPROVAL



Lists requisitions awaiting approval.

Authorized person approves requisition based on \$ value.

ENTER:
Approval Code
Buy Entity
"S" in ACT field

T Requisition Variance/Tolerance Flow

Requisitioner:

Enter Requisition.
RQH, RQ1

Approvers:

Approve Requisition.
RAS

Print Requisition
(Prior to final approval)

Purchasing Mgr:

Assign Buyer to place the order.
RQH

Buyers:

Once the Purchasing Manager has changed the Buyer ID on screen RQH, the change will filter down to all previously existing requisition lines.

Enter total quoted PO amount.
RAS

OK

Tolerance Check

No

Approvers re-approve requisition
RAS

Requester updates Requisition
RQH, RQ1

Return to Requisitioner

Buyers:

List requisitions waiting in Buyer's work queue.
RQS

Buyers:

Create Purchase Order header.
PH1

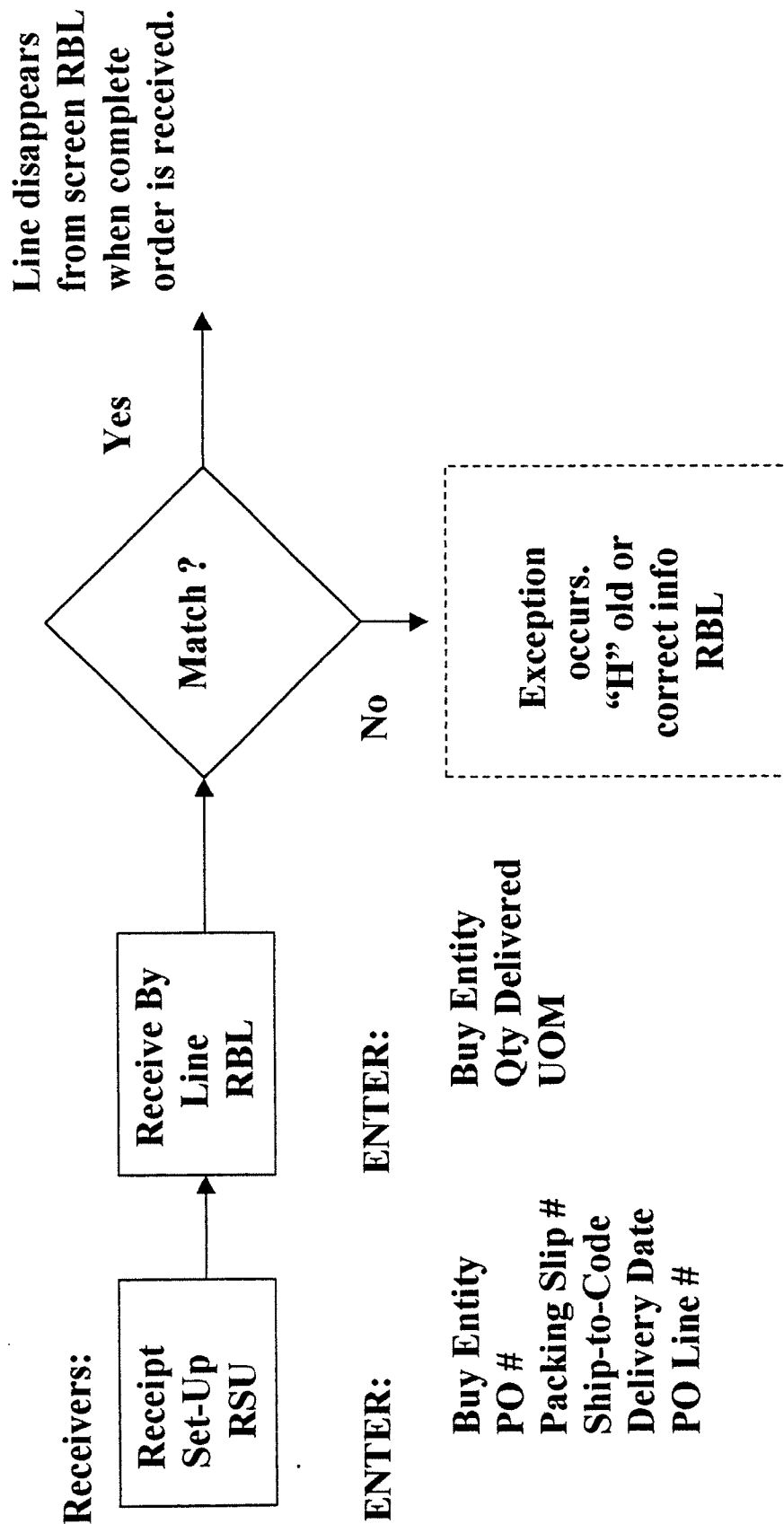
Buyers:

Create Purchase Order lines.
PL1

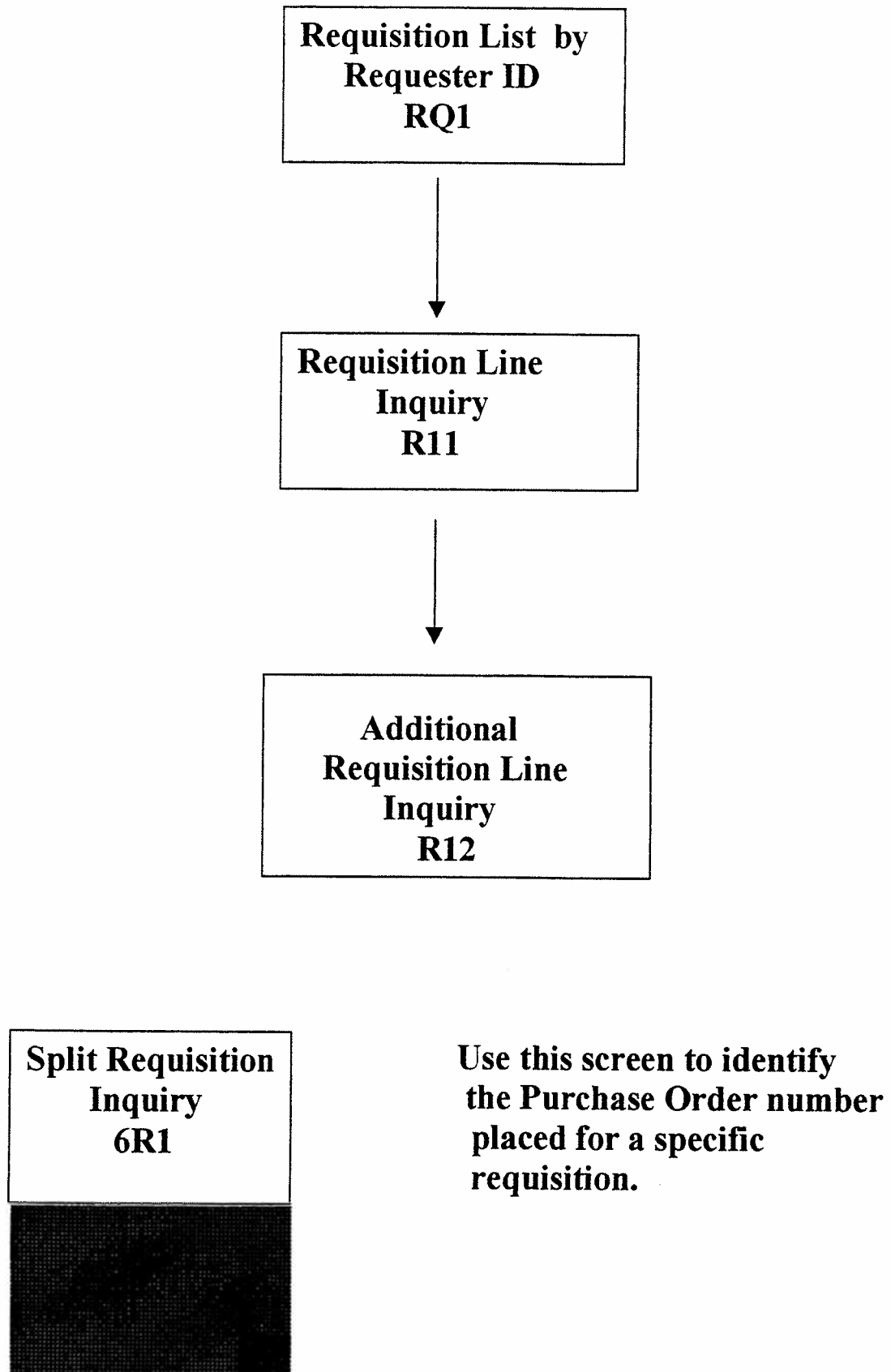
Add all Req lines to PO

RECEIVING

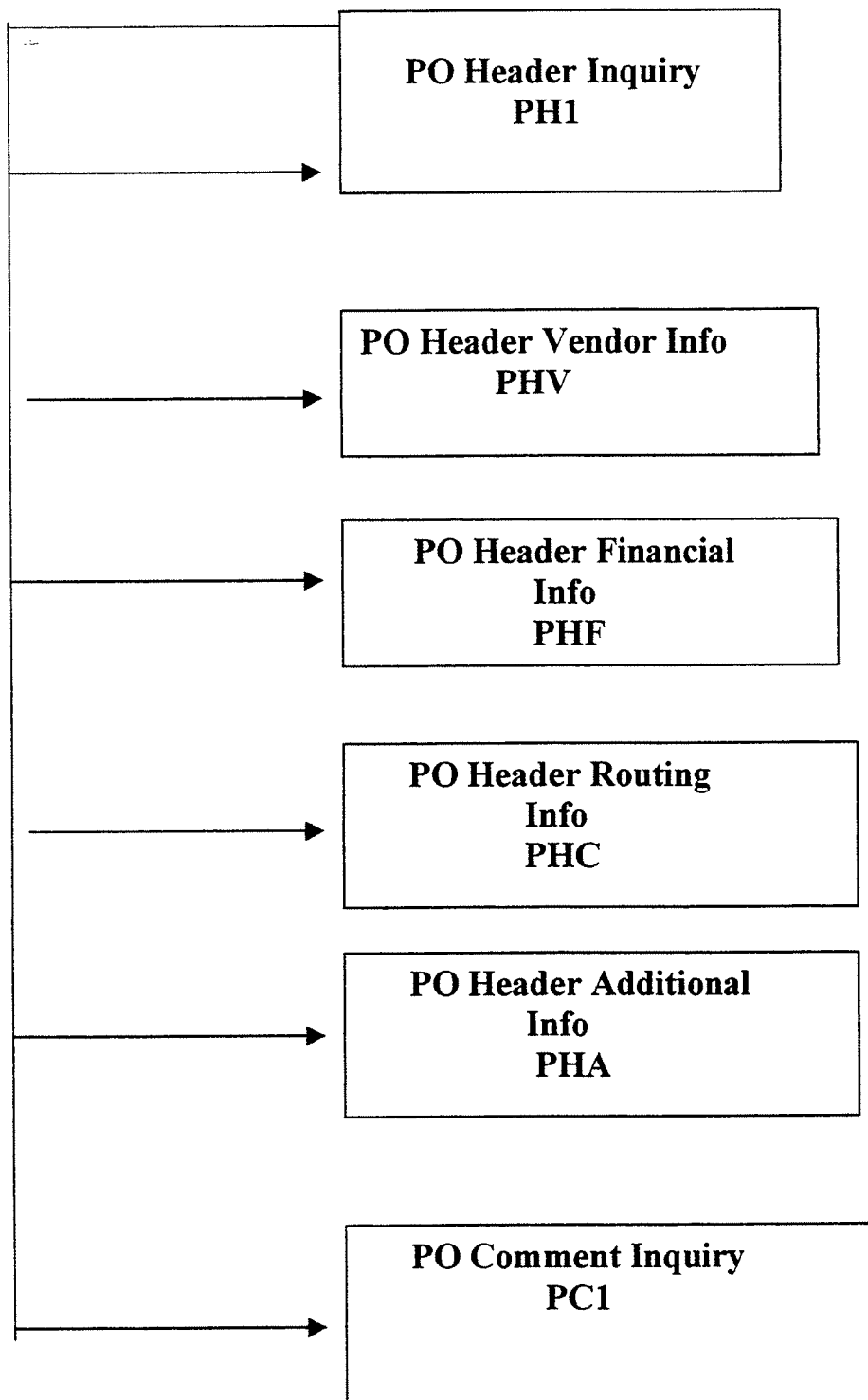
Operating & Capital



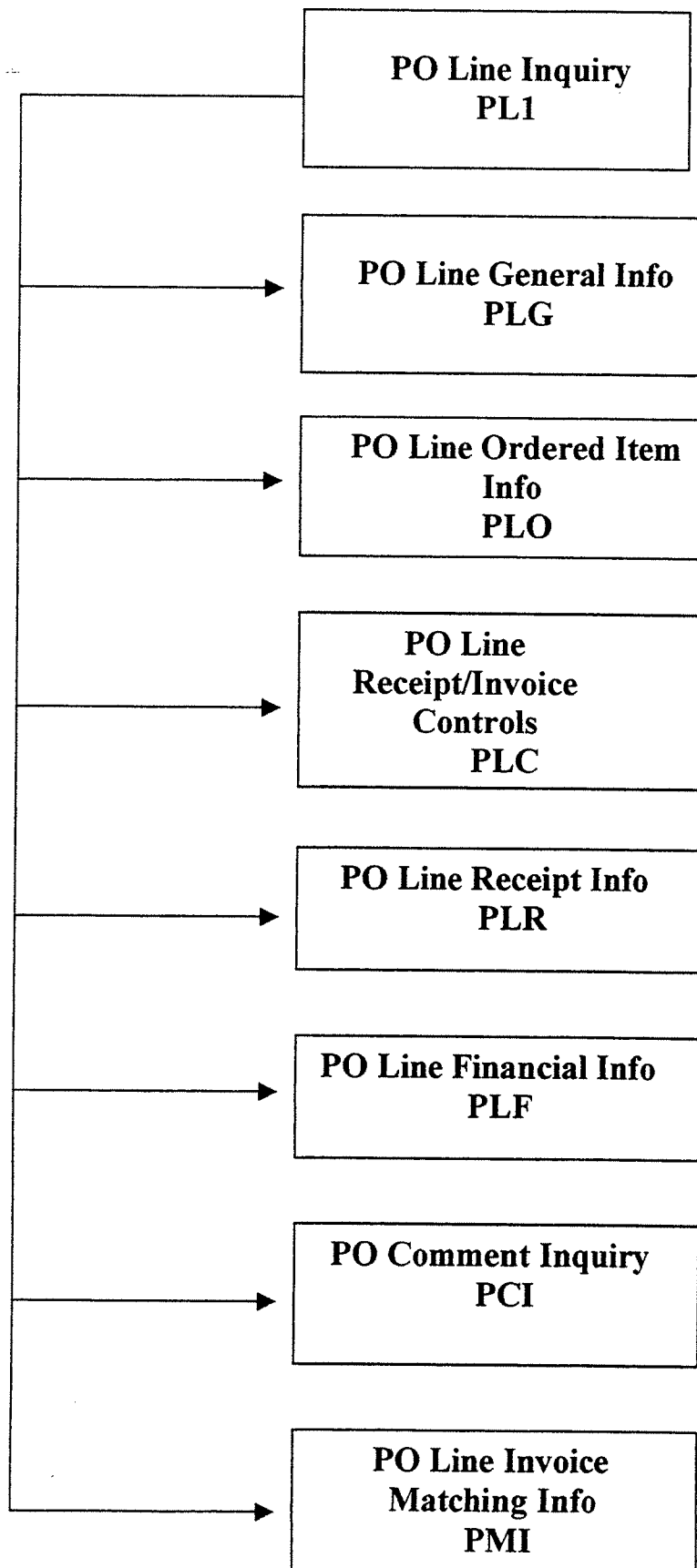
Requisition Inquiry



PO Header Inquiry



PO LINE INQUIRY



RQH

REQUISITION HEADER

DBS PS

NEXT FUNCTION: _____ ACTION: _____

REQUEST: _____ SAVE SHOW PAGE NO: _____

BUY ENTITY : _____	REQUISITION NO : _____
REQUESTER ID : _____	BUYER ID : _____
REQUISITION TOTAL : _____	REQ LINE TOTAL : _____
PAYING ENTITY : _____	DIFFERENCE : _____
VENDOR NUMBER : _____	REQUIRED DATE : _____
OR SHORT NAME : _____	SHIP TO : _____
GL COMPANY : _____	DELIVER TO : _____
GL ACCOUNT : _____	UNRESOLVED LINES : _____
GL CENTER : _____	PARTIALLY CLOSED LINES : _____
PROJECT COMPANY : _____	OPEN LINES : _____
PROJECT CODE : _____	CLOSED LINES : _____
WORK ORDER NUMBER: _____	TOTAL LINES : _____
BLANKET NUMBER : _____	DATE ENTERED : _____
BLANKET RLSE NO : _____	DATE LAST UPDATED : _____
SIGNATURE APPROVAL: _____	
CONTINUE TO RQ1 : _____	REQUISITION STATUS : _____

NOTES: _____

DBS PS

REQUISITION LINE

RQ1

NEXT FUNCTION: _____ ACTION: _____

REQUEST: _____ SAVE SHOW PAGE NO: _____

```

=====
BUY ENTITY      : _____ REQUISITION NO : _____ REQ LINE NO : _____
REQUESTER ID   : _____ BUYER ID       : _____ PRIORITY   : _____
CATALOG NO    : _____ ITEM NUMBER    : _____
ITEM DESCR    : _____
QTY RQD SKU   : _____ UNIT PRICE     : _____ PRICE TYPE  : _____
REQD DATE     : _____ VENDOR ITEM NO: _____ SKU        : _____
VENDOR ITEM DESC : _____
SHIP TO       : _____ DELIVER TO    : _____
PAY ENTITY    : _____ VENDOR NUMBER: _____
OR SHORT NAME : _____
QUOTE NO      : _____ ITEM SEQ NO   : _____ QUOTE FQD   : _____
GL COMPANY    : _____ GL ACCOUNT    : _____
GL CENTER     : _____ DISTRIB IND   : _____ MULT DISTRIB: _____
PROJECT CO    : _____ PROJECT CODE  : _____
DSP DEFAULTS  : _____ CONTINUE TO RQ2 : _____ LINE STATUS : _____
  
```

NEXT FUNCTION: _____ ACTION: _____

REQUEST: _____ SAVE SHOW PAGE N0: _____

BUY ENTITY:

CATALOG NO: _____ ITEM NO: _____ BENNING SEQUENCE NUMBER: _____

A/B	REQ.	SEQ.	COMMENTS/SPECIFICATIONS/INSTRUCTIONS	PRINT
C/D	LINE	NO.		LINE

[illegible]

MULTIPLE LINE REQUISITION

MLR

NEXT FUNCTION: _____ **ACTION:** _____

REQUEST: _____ SAVE SHOW PAGE NO: _____

BUY ENTITY : _____
 REQUISITION NO : _____
 START LINE NO : _____

LINE ST CAT ITEM NO	REQ DATE	ITEM DESCRIPTION	QUANTITY	UNIT PRICE	SKU SHIP DELIVER TO
					TO VENDOR ITEM NO

REQ DATE ITEM DESCRIPTION

DSP DEFAULTS: _____ PAGE: _____ STATUS: _____



SECTION 2

BALANCE AND EXCESS REPORTS

1.0 PURPOSE

The Balance and Excess Report (B&E) (Exhibit 2.1), provides a standard reporting system for submitting explanations of overruns and underruns, attributable to line items, to allow for an adjustment to contract value and timely payments to contractors.

2.0 TIME FRAMES

- 2.1 The initial report is done when the contract is one-third complete, using the pay estimate closest to the spending of one-third of the money of the contract.
- 2.2 The second report is done when the contract is two-thirds complete, using the pay estimate closest to the spending of two-thirds of the money.
- 2.3 The final report is done when all items are paid 100% and/or the final cost is known and adjustments made to insert monies into the budget for the contract for the Capital Management System (CMS).

3.0 BALANCE & EXCESS REPORT FORMS

- 3.1 Balance & Excess Report (Exhibit 2.1): Standard Cover Sheet to indicate contract completion level.
- 3.2 Overruns & Underruns Status Forms (Exhibits 2.2 and 2.3)
- 3.3 Adjustment to Contract Allowance Items (Exhibit 2.4)
- 3.4 Adjustments to Change Orders (Exhibit 2.5)
- 3.5 Resident Engineer's Statement – Underrun Status (Exhibit 2.6 Used only when no underruns are included in a B&E).

4.0 DETAILED INSTRUCTIONS

- 4.1 The Project Manager/Resident Engineer must provide a detailed explanation in a typed memorandum format for any overrun or underrun of a contract line item based on the following criteria:
 - a. If the total contract quantity varies by more than 10% from the original contract quantity, or
 - b. If the original total contract dollar value for a line item is less than \$25,000.00, an explanation is required only when the total quantity exceeds 50% of the original quantity.

- 4.2** The Design Consultant must provide a detailed explanation in a typed letter format for any overrun or underrun of a contract line item based on the following criteria:
- a.** If the total contract quantity/dollar value for a line item varies by more than double the the original contract quantity/dollar value, or
 - b.** If the total dollar value of the line item overrun or underrun is greater than \$50,000.00, or
 - c.** The line item quantity is at the zero level and will not be used.
- 4.3** The Resident Engineer must also include a statement, shown in Exhibit 2.6, for any B&E report which reflect overruns. The statement must indicate that no significant underruns are contained in this B&E and that all items currenty in an underrun status are projected for further use.
- 4.4** B&E reports should be reviewed internally by the appropriate members of the Design and Construction staff after the Resident Engineer has signed and submitted the B&E for further processing.
- 4.5** Each B&E should be initiated by the Resident Engineer and subsequently approved at each level as indicated.
- 4.6** A sign off by the Budget Analyst and the Program Controller, indicating there are sufficient funds to cover the adjustment to the contract, must be included.
- 4.7** Approval by the Project Manager and the Deputy Director of Design and Construction signifies that all extra costs are the result of true overruns/underruns and sufficient funds are available in the project budget to cover any additional costs.
- 4.8** After approval by the Deputy Director, the B&E report should be forwarded to the Deputy Director of Design and Construction, Contracts for review and approval then forwarded to the Chief of Engineering and Construction or the Director of Construction for final approval.

5.0 EXPLANATIONS FOR ADJUSTMENTS (See Exhibit 2.7)

- 4.4** Explanations should not be used which are of little or no meaning. For example; estimate too high or too low; slopes widened; change in design, etc. It is important to be specific in describing locations and reasons for differences large enough to be considered. Detailed explanations of overruns and underruns shall be provided for each type of line item (e.g. Bituminous Concrete, Steel Erection or Rebar, and Allowance items) as outlined in Exhibit 2.7. Each page of overrun and underrun explanations should indicate project location and contract number as outlined in Exhibit 2.7.

Note

If Lump sum items are not going to be fully utilized, then the adjustment to the lump sum item must be done through a credit change order.

Massachusetts Bay Transportation Authority
Balance & Excess Report for
MBTA Contract No: C04CN10

B&E # 3
Thru Payment # 30

OLD COLONY RAILROAD MIDDLEBOROUGH LINE
RIGHT-OF-WAY

Contractor: THE MODERN CONTINENTAL
CONSTRUCTION CO., INC.
600 MEMORIAL DRIVE
CAMBRIDGE, MA 02139

Exhibit 2.1

93 Percent Expended Level

Overruns to Contract Unit Items This Report	\$38,364.02
Underruns to Contract Unit Items This Report	(\$28,099.40)
Adjustment to Change Orders This Report	(\$42,247.80)
Subtotal	(\$31,983.18)
Adjustment to Contract Allowances This Report	\$220,950.00
Adjustment to Contract This Report	\$188,966.82

Previous B&E's - Number 1 thru _____ Net Value _____

Prepared
& Approved by

Resident Engineer

Date

Approved by

Project Manager

Date

Approved by

Deputy Director of Design and Construction

Date

Approved by

Deputy Director of Design and Construction, Contracts

Date

Approved by

Director of Construction

Date

Approved by

Chief of Engineering and Construction

Date

Funding Availibility
Confirmed by

Budget Analyst

Date

Funding Availibility
Confirmed by

Program Controller

Date

Copy of Approval :

2-4

June 2003

CA: CO-AUTH / BE-UPDT / PAYT / AUTH SMRY

Massachusetts Bay Transportation Authority
Balance & Excess Report for
MBTA Contract No: C04CN10
93 Percent Expended Level

B&E #3
Thru Payment #30

Overruns

Exhibit 2.2

Item Number	Description		Quantity	Unit of Measure	Unit Price	Total Dollar Value
0222.433	REHANDLE/DISPOSE OF EXCAVATED MATERIAL - CONTAMINATED	Contract Estimate	155,000.00	CY	\$0.01	\$0.01
		Previous Adjustments	-153,823.00			
		Revised Quantity	1,177.00			
		Actual Quantity	1,177.83			
		Overrun	0.83			
0222.451	REMOVE AND DISPOSE OF SPECIAL WASTE	Contract Estimate	57,000.00	CY	\$0.01	\$0.01
		Previous Adjustments	-55,738.00			
		Revised Quantity	1,262.00			
		Actual Quantity	1,262.75			
		Overrun	0.75			
0271.700	72" CHAIN LINK FENCE ADJ BY C.O. #10-6	Contract Estimate	101,020.00	LF	\$12.00	\$38,364.00
		Previous Adjustments	-10,896.00			
		Revised Quantity	90,124.00			
		Actual Quantity	93,321.00			
		Overrun	3,197.00			
Total Overruns =						\$38,364.02

Massachusetts Bay Transportation Authority
Balance & Excess Report for
MBTA Contract No: C04CN10
93 Percent Expended Level

B&E # 3
Thru Payment # 30

Exhibit 2.3

Underruns

Item Number	Description		Quantity	Unit of Measure	Unit Price	Total Dollar Value
0212.169	REMOVE AND DISPOSE OF BITUMINOUS CONCRETE PAVEMENT ADJ BY C.O. #10-6 & 20-19	Contract Quantity	12,090.00	SY	\$5.00	(\$10,880.90)
		Previous Adjustments	8,684.18			
		Revised Quantity	20,774.18			
		Actual Quantity	18,598.00			
		Underrun	2,176.18			
0222.453	DISPOSE OF HAZARDOUS DRUMS	Contract Quantity	3.00	EA	\$1,000.00	(\$3,000.00)
		Previous Adjustments	7.00			
		Revised Quantity	10.00			
		Actual Quantity	7.00			
		Underrun	3.00			
0450.040	REPLACEMENT OF BRICK MASONRY	Contract Quantity	950.00	SF	\$30.00	(\$5,400.00)
		Previous Adjustments	-660.00			
		Revised Quantity	290.00			
		Actual Quantity	110.00			
		Underrun	180.00			
0547.005	HANDRAILING INCR BY CO# 19-18	Contract Quantity	148.00	LF	\$150.00	(\$8,818.50)
		Previous Adjustments	-9.21			
		Revised Quantity	138.79			
		Actual Quantity	80.00			
		Underrun	58.79			
Total Underruns =						(\$28,099.40)

Massachusetts Bay Transportation Authority
 Balance & Excess Report for
 MBTA Contract No: C04CN10
 93 Percent Expended Level
 Allowances

B&E #
 Thru Payment #
Exhibit 2.4

Item Number	Description	Total Dollar Value
0130.430	TRAFFIC OFFICERS SERVICES INCREASED BY B&E # 2; ALSO INCR BY CO# 4-8 - SEE 0130.431	Contract Estimate: \$225,000.00 Previous Adjustments: \$20,250.00 Current Estimate: \$245,250.00 Actual Cost: \$630,000.00 Requested Adjustments: \$384,750.00
0216.050	GAS RELOCATIONS TEMPORARY AND PERMANENT	Contract Estimate: \$180,000.00 Previous Adjustments: \$0.00 Current Estimate: \$180,000.00 Actual Cost: \$16,200.00 Requested Adjustments: (\$163,800.00)
Total Allowances =		\$220,950.00

Exhibit 2.5

Change Orders

<i>Item Number</i>	<i>Description</i>	<i>Total Dollar Value</i>
1700.057	CHANGE ORDER NO. 59-57 RTE 139, UNION ST., ADD'L DRAINAGE SEE C.O.# 60-58 CREDIT ADJUSTMENT	
	Contract Estimate: \$0.00	
	Previous Adjustments: \$42,247.80	
	Current Estimate: \$42,247.80	
	Actual Cost: \$0.00	
	Requested Adjustment	(\$42,247.80)
	Total Change Orders =	(\$42,247.80)

June 2003

Exhibit 2.6

93 Percent Expended Level

Underrun Status

A review of all contract pay items for the purpose of submitting this 93% Balance and Excess Report, has not revealed any significant underruns.

All items that are presently in an underrun status are projected for further use.

Submittal of a future Balance and Excess Report should reflect underruns, as certain items are completed.

Resident Engineer

MBTA CONTRACT NO. _____

(CONTRACT TITLE)

BALANCE AND EXCESS REPORT NO. _____

LINE ITEM OVERRUNS

Item No. 0222.440 - Test Pits

Additional quantities required to relocate existing utilities at Charles and Kneeland Streets.

Item No. 0222.494 - Pervious Backfill

Additional backfill required to stabilize existing granite block stairway wall while completing work on the south abutment at Charles Street.

Item No. 0221.212 - Fine Grading and Compaction

The field requirement exceeded the contract quantity. This overrun was due to the extra sound walls that were installed at Park Street Station and the additional work at the path located at the Longfellow Bridge in Boston.

LINE ITEM UNDERRUNS

Item No. 1619.201 - 1" Rigid Steel Conduit

The actual quantity represents the field measured quantity in-place. The size of conduit was not utilized in the revised management and ticket office layout as originally planned.

ZERO QUANTITY LINE ITEMS

Line Item No. 1661.503 - Tenant Meters, Meter Socket and Transformers

The scope of work associated with this item was provided in a different method, therefore, the item was not needed.

ALLOWANCE LINE ITEMS

Item No. 0130.411 - Maintain & Protect Railroad Traffic

The actual quantity represents the field services provided by Amtrak Flagmen and verified by the MBTA Field Office. The increase in cost was due to additional work performed by the Contractor at the MBTA's request.

MBTA CONTRACT NO. _____
BALANCE AND EXCESS REPORT NO. _____
PAGE TWO

CHANGE ORDER LINE ITEMS

Line Item No. 1700.037 - Change Order No. 39-37 - Elevator Pit Sump Pump

The actual cost represents the field-verified cost for performing this change order work on a time and material basis.

Line Item No. 1700.400 - Change Order No. 3-4 - Shutdown/Restore Fire Alarm

The actual cost represents the field-verified cost for performing this change order work on a unit cost basis.



SECTION 3 REAL ESTATE ACQUISITION

1.0 Overview

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 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 budget and schedule.

Some Projects require a negotiated sale, taking, or easement or license. An early and accurate understanding of property acquisition needs and costs allows a 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 Assistant Director for Right of Way 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 pursue a taking.

It is highly recommended that all acquisitions be completed prior to the start of construction.

2.0 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 Real Estate Acquisition staff to review anticipated property acquisition needs. The two explore issues such as partial takings vs. full takings, and permanent acquisition vs. license. Following this meeting, the Project Manager requests that the Real Estate Acquisition staff provides a preliminary estimate of property acquisition costs based upon the proposed acquisition plans prepared 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.

Between submission of the Conceptual Budget and Schedule and the 30% design milestone, the Project Manager and Design Consultant finalize all property

acquisition needs. In this period, the Project Manager convenes at least one meeting with the Real Estate Acquisition staff and Design Consultant (and Property Estimating Consultant, as necessary) to review the acquisition plans and explore less costly alternatives to those proposed by the Design Consultant.

At the 30% design milestone, by which point all property acquisition needs should be defined, the Project Manager transfers the 30% design plans and an explanation of all property acquisition requirements to the Assistant Director for Right of Way. The Assistant Director for Right of Way assigns a Right of Way Agent to solicit an independent appraiser to perform the appraised assignment. After receiving the appraisal from the Certified Appraiser, the Right of Way Agent and Assistant Director for Right of Way review it and clarify the assumptions and methodology. Following the review, the Right of Way Agent assigns a Review Appraiser to conduct a 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 negotiation with the landowner. The Project can not proceed past the 30% design milestone until there is a Final Appraised Value.

3.0 Negotiation of Final Appraised Value with Landowner

Real Estate Acquisition staff forward 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 process 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 Board approves the negotiated agreement.

4.0 License Agreements

Sometimes it is necessary for the Project contractor and MBTA personnel to have temporary access to an adjacent property in order complete the Project. Rather than permanently acquiring the property, the MBTA may enter into a License Agreement with the landowner whereby the MBTA is granted temporary access to the property in exchange for a fee. The Project Manager and *Real Estate* Acquisition staff determines if the Project requires a License Agreement prior to the 30% design 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" procedure observed.

5.0 Takings

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 taking process. All takings

require Board approval, and the same procedure should be followed whether pursuing a partial taking or full taking.

- The Assistant Director for Right of Way prepares a Board agenda item on the taking.
- If the Board approves the taking at the Final Appraised Value or at another dollar value, the MBTA must provide payment in this amount to the landowner within 30 days, as per Chapter 79 of the Massachusetts General Law. Chapter 79 governs all MBTA takings.
- Real Estate Acquisition maintains a file on the Project in the event that the taking is challenged by the landowner. If this occurs, Real Estate Acquisition staff refers the matter to the MBTA General Counsel's Office.



SECTION 4 CHANGE ORDERS GUIDELINES FOR COSTS AND SUPPORTING DOCUMENTATION

1.0 OVERVIEW

Change Orders may result from several sources, see Exhibit 4.1, and may cause a Project to exceed its Authorized Budget and Schedule. Therefore, senior managers must be informed of and/or required to approve Change Orders before a Project's budget gets out of control.

Note: The Authorization of Budget and Schedule procedure specifies policies regarding the approval of budget modifications that do not result from Change Orders.

The detailed instructions for processing Change Orders is contained in Exhibit 4.2 "Construction Contract Change Orders Guidelines for Costs and Supporting Documents," Rev. 10/02. These Guidelines can be obtained from the Contract Administration-Cost Estimator. It is anticipated that the Guidelines will be incorporated into this manual at the next revision and the Guidelines will be cancelled.

1.1 References

A. Section 11, Professional Services Contracts

1.2 Authorization of Change Orders

For all proposed Change Orders, the following authorization standards apply.

Change Order Cost	REQUIRED APPROVAL
<\$25,000	Director of Design or Construction, Director of Planning
\$25,000 - \$50,000	Chief of Engineering & Construction
\$50,000 - \$100,000	AGM for D & C, Chief Operating Officer
\$100,000 - \$500,000	General Manager
> \$500,000	Board of Directors

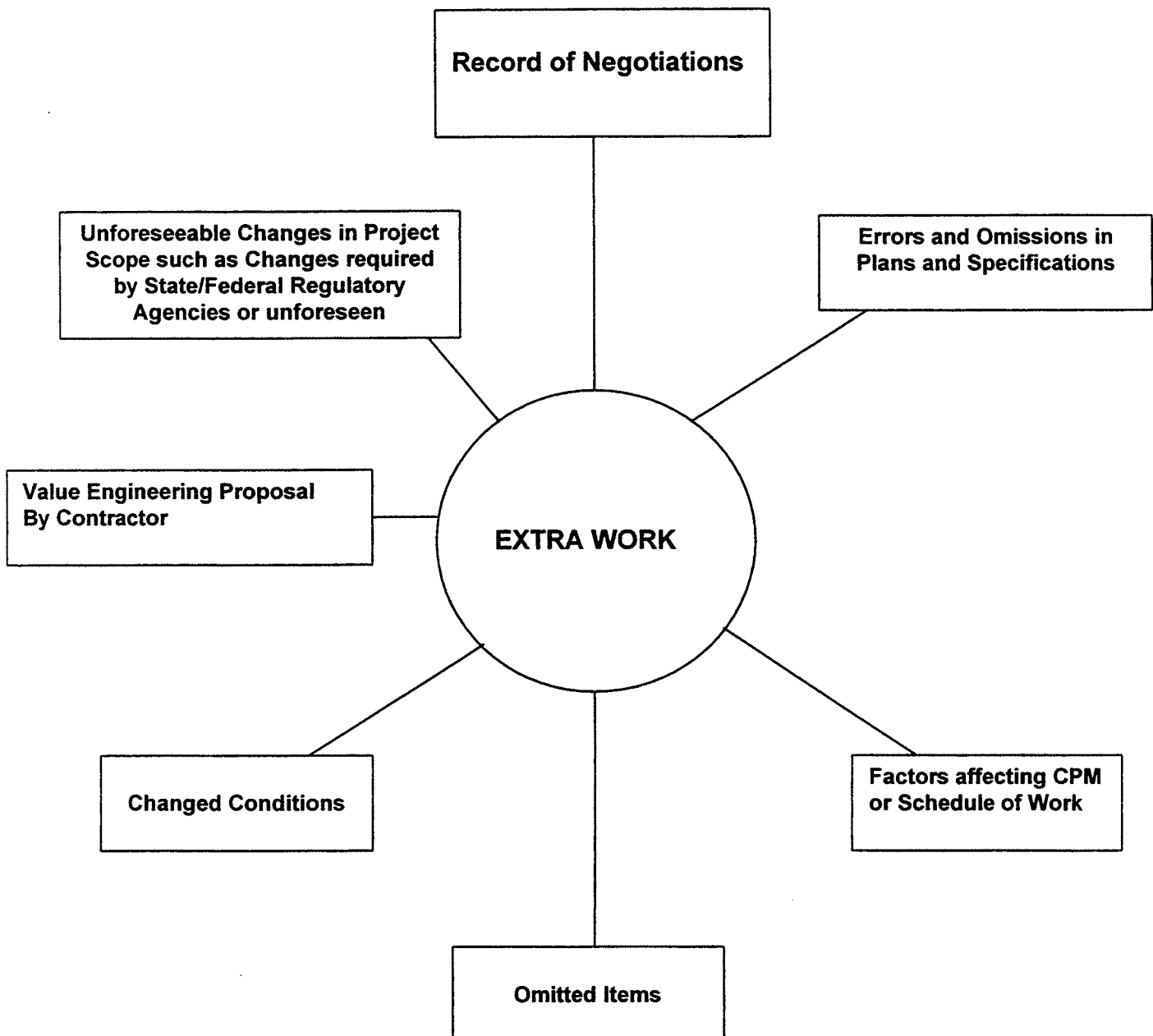
All change orders that require authorization from the Assistant General Manager

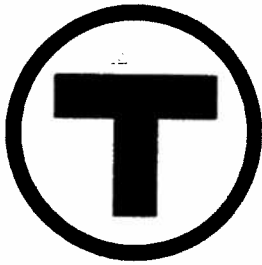
for Design and Construction, General Manager or Board of Directors, will require a staff summary. Staff summaries shall be prepared in accordance with reference 1.1.A, paragraphs 4.0, Procedures for preparing a Staff Summary and 5.0, Format and Presentation.

Exhibit 4.1

REASONS FOR CHANGE ORDERS

Def.: A Document executed and issued to the contractor by the Authority amending the contract.





**MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY**

**CONSTRUCTION CONTRACT
CHANGE ORDERS GUIDELINES
FOR COSTS AND
SUPPORTING DOCUMENTS**

**1993
Revision #1- 4/97
Revision #2- 10/2002**

**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
CONSTRUCTION CONTRACT CHANGE ORDERS
GUIDELINES FOR COSTS AND SUPPORTING DOCUMENTS**

Exhibit 4.2

INDEX

DESCRIPTION

PARTS

- I. GENERAL CONTRACTOR'S PROPOSAL
- II. SUBCONTRACTOR PROPOSAL
- III. GENERAL INFORMATION
- IV. CONSULTANT APPROVAL LETTER
- V. PROJECT EXPLANATION OF NECESSITY

TAB

- A. RECAPITULATION CHART AND COST/PRICE ANALYSIS SHEET
- B. BLUE BOOK EQUIPMENT RATE CALCULATION SHEET/SAMPLE
- C. MBTA EQUIPMENT DESCRIPTION FORM
- D. WORKERS COMPENSATION RATES/CLASSIFICATION EXAMPLES/SAMPLE INSURANCE COMPANY LETTER
- E. SAMPLE FORM 9701 FROM THE COMMONWEALTH OF MASSACHUSETTES DEPARTMENT OF EMPLOYMENT & TRAINING (SUTA)
- F. SECTION 01150, MEASUREMENT AND PAYMENT, 1.05-B, NEGOTIATED PROFIT
- G. PROFIT CALCULATION SUMMARY CHART/SAMPLE
- H. SPECIALIZED ENGINEERING SERVICES, SECTION 01150, 1.05-D
- I. CONTRACTOR SIGNATURE RECEIPT FORM
- J. CHANGE ORDER/ EXTRA WORK ORDER CHECKLIST
- K. INSTRUCTIONS AND TEMPLATE FOR WRITING EXPLANATION OF NECESSITIES (EON)/SAMPLE/AUTHORITY OF ENGINEER
- L. RECORD OF NEGOTIATIONS (RON)/SAMPLE
- M. CONTRACT OVERVIEW DBE PARTICIPATION FORM
- N. CMS CHANGE ORDER INPUT FORM (LESSONS LEARNED)
- O. SAMPLES – EXTRA WORK ORDER AUTHORIZATION LETTER



SECTION 6 CONSTRUCTION CONTRACTS

1.0 PRE-BID ADVERTISING

1.1 Preparation of Bid Documents (Step 1)

The preparation of bid documents for advertising, prequalification of bidders and receipt and evaluation of bids is the responsibility of the Contract Administration Office. The outline below provides an overview as to the construction contract bid process. Exhibit 6.1 provides an overview as to the construction contract bid process, while Exhibit 6.2 relates specifically to the contract materials utilized by the MBTA and its construction bidding procedures.

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

- a. **Contract Drawings and Specifications** – These are the construction drawings and related materials, prepared by the Project Designer, which explains and details how the project is to be built.
- b. **Standard Forms** – The package must include standard forms that must be completed by the contractor. These forms include:
 - Bid Form
 - Schedule of Bid Prices
 - Bond Forms
 - Prequalification Statements, if necessary
 - Other forms as required
- c. **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.

A thorough review of the contract specifications and related documents must be completed prior to advertisement.

Written approval and approval as to form by the General Manager and General Counsel for the authorization to advertise the “Notice To Bidders” for a construction contract must be received before advertising.

1.2 Advertising (Step 2)

At least two weeks prior to the deadline for submitting bids, a notice inviting bids must appear in the Central Register, published by the Secretary of the Commonwealth, and a local newspaper. The MBTA publishes its Notice to Bidders at least thirty days prior to bid opening in the Central Register as well as in national and local newspapers and journals.

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

- a. A description of the project in sufficient detail to allow bidders to determine if they are qualified and wish to bid.
- b. Where and when bidding documents can be obtained.
- c. Where and when bids are due.
- d. The estimated project value.

1.3 Distribution of Bidding Documents (Step 3)

- a. Bidding documents must be available for a fee to all that request them.
- b. A record must be kept of all that receive the documents.
- c. If it becomes necessary to issue an addendum to the bidding package, the addendum is sent to all those who have already received the document. To avoid misunderstandings or protests in such cases, the bidder is requested to acknowledge in their bid forms all addenda which they receive.

1.4 Bid Deposits (Step 4)

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

1.5 Open Bids (Step 5)

All bids must be publicly opened and read at the time at which they are due. The following items are generally checked for in each bid.

- Is the bid for the right project?
- Is the bid amount specified?
- Is the bid signed?
- Is a bid deposit included?

- Has the bidder acknowledged receipt of any and all addenda issued by the awarding authority?

Are the following documents included:

- Commitment of Surety (for contracts under \$1,000,000 only)
- Certification (pertaining to ineligible contractors)
- Bid Signatures, including EEO Certification
- Affidavit of Non-Collusion
- Buy America Certificate (FTA)
- Schedule for Participation of DBE Contractors
- Right to Know Certification
- Certification relating to Debarments Suspension, Ineligibility and Voluntary Exclusion (FTA)
- Certification of Restriction on Lobbying (FTA)
- Certification of Year 2000 Compliance

1.6 Review Bids (Step 6)

- a. The law requires that the contract be awarded to the lowest eligible and responsible bidder (G. L. c 30, s. 39).
- b. **Eligible means** the bidder meets all the requirements set forth in the bidding documents.
- c. **Responsible means** the bidder possesses the skill, ability and integrity to complete the job.
- d. During the review of the bids, the bid package of the lowest eligible and responsible bidder is forwarded to the respective MBTA departments for review and concurrence.
- e. If, in review of bid documents, the bidder indicates that it may qualify for an exemption from the "Buy America" requirements, then refer to Exhibit 6.20 for clarification.

1.7 Pre-Award Conference/Designer Review Recommendation (Step 7)

1.8 Authorization (Step 8)

- a. The next step in the contract process includes proper authorization and execution.
- b. When construction contracts are processed by the Staff July 31, 1996 Summary procedure, authorization for such contract is normally received from the General Manager or Board of Directors.
 - The General Manager is authorized to sign an award up to \$250,000.
 - Any Award exceeding \$250,000, must be voted by the Board of Directors.

- Any Construction Award exceeding \$1 Million requires the vote of the MBTA Board of Directors and the approval of the Executive Office of Transportation and Construction.
- When all of the approvals for the Award are signed and returned to Contract Administration, A Notice of Award is prepared for the General Manager's signature.
- After the General sign the Notice of Award, it is issued to the lowest responsible and eligible bidder.

1.9 Contract Execution (Step 9)

- a. The Notice of Award informs the Contractor that the award has been voted and approved by the MBTA, and instructs the Contractor to schedule an appointment with the Deputy Director of Design and Construction – Contracts for execution of the Contract.
- b. At the contract signing, the Contractor signs the Contract and along with the Surety Company signs and seals the Performance Bond along with the Labor and Materials Payment Bond. 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 contractor's subcontractors, guaranteeing they will be paid any monies owed them during the project.
- c. The insurance certificates are provided and a Statement of Management Controls letter is furnished in accordance with the MBTA General Conditions, Article 5.27.
- d. The insurance certificates are reviewed by Contract Administration and the MBTA Risk Manager to insure the requirements of the specification are met.
- e. After the contract is executed by the contractor and the insurance certificates have been approved, A Notice to Proceed may be issued.
- f. The Conformed Copy is forwarded to the General Counsel for "Approval as to Form".
- g. Once signed by the General Counsel, the Contract is forwarded to the General Manager for final signature.
- h. The fully executed contract is returned to Contract Administration where it is dated and mailed to the Contractor.

2.0 PRE-BID REVIEW CONTROL SHEETS

- 2.1** Before a construction contract can be bid, a Pre-Bid Review Control Sheet (Exhibit 6.3) must be completed and signed by the following MBTA personnel:
 - a. Manager of Environmental Affairs
 - b. Project Manager
 - c. Deputy Director of Design and Construction
- 2.2** In compliance with Federal and State regulations pertaining to transportation for the elderly and for persons with disabilities, the Certification form must also be signed (Exhibit 6.4). The Pre-Bid Review Control Sheets and accessibility sign-off are self-explanatory. However, the Pre-Bid Review Control Sheets must be completely addressed before the project will be allowed to be bid.
- 2.3** The Pre-Bid Review Control Sheets should be submitted to Contract Administration, (attention: Contract Documents Coordinator, Ten Park Plaza) with the Final Review specifications and appropriate documents and pertinent signatures.

3.0 FORMS

The forms listed below should be used to monitor construction contracts.

- a. Construction Progress Monitoring Report (Exhibit 6.5)
- b. Resident Engineer's Report (Exhibit 6.6)
- c. Construction Contract Payments – Project Checklist (Exhibits 6.7)
- d. Statement of Payment to Subcontractors (Exhibits 6.9A or 6.9B)
- e. Contractor Interim Performance Record (Exhibit 6.16) –The Project Manager shall establish the frequency at which Exhibit 6.16 will be completed for the project. At a minimum Exhibit 6.16 shall be completed twice a year during construction.
- f. Contractor Performance Record (Exhibit 6.17) – To be completed at job close-out.
- g. Pre-Activity Meeting Notes – The Project Manager shall assure that a pre-activity meeting occurs where the contractor's readiness to perform the major construction activity is reviewed. Detailed notes documenting the results of this meeting shall be prepared.
- h. The MBTA is a tax exempt organization. As such the Project Manager shall assure that contractors are provided with Tax Exempt Certificates (Exhibit 6.18, Form ST-2 and 6.19, form ST-5C).
- i. Applicable Safety Critical Element forms.

4.0 PAY ESTIMATES (Initial, Interim, Final)

4.1 Procedures

- a. The Resident Engineer shall originate a Work Sheet (Exhibit 6.8), listing all line items to be paid in numerical order (see Guide for Entering Pay Quantities).
- b. Transfer all pay quantities from work sheet to skeleton.
- c. The Resident Engineer's name, telephone number and dollar value to be paid shall be placed at the top of the skeleton.
- d. Submit skeleton and work sheet to the project office for entering into CMS and processing pay estimates.
- e. Upon receipt of two copies of pay estimate and one copy of accounts payable voucher, the Resident Engineer sign and shall have the contractor sign both estimate copies and attach a signed Statement of Payment to Subcontractors form.
- f. The contractor also submits a **Cash Draw Down Letter** reflecting the actual amount paid through the pay period and indicating projected future billing through the life of the project.
- g. The Resident Engineer fills out and signs the **Resident Engineer's Status Report**.
- h. The Resident Engineer generated the **Construction Progress Monitoring Report** from CMS (Voucher Backup Documents) for the Project Manager's signature.
- i. The complete package for submission to the Project Manager for further processing shall include all of the following:
 1. Work Sheet
 2. Skeleton
 3. Pay Estimate (2 original signature and 2 copies)
 4. Accounts Payable Voucher (Only one original S/B signed)
 5. Statement of Payment to Subcontractors Form
 6. Projected Cash Draw Down Letter
 7. Resident Engineer's Status Report

4.2 Final Pay Estimates

a. Signatures

1. **Contractor** – Be sure signatory is authorized as designated on letter submitted at the beginning of the project; otherwise, a new authorization letter must be submitted to Contract Administration.
2. **Resident Engineer** for project.
3. **Project Manager** for project.

7.0 CONTRACT CLOSEOUT

- 7.1 To close out a construction contract, project completion involves not only MBTA inspection and acceptance, but also public agencies, utility companies and railroads and safety certification.

The Project Manager must assure that all safety critical elements are completed and verified by the Safety Department.

- 7.2 The following forms must be completed and signed **before** contract close out and submitted with final payment.
- a. Construction Contract Payments – Project Checklist (Exhibit 6.7)
 - b. Contract Closeout Summary (Exhibit 6.11) Including an analysis of the total project cost compared to the Engineer's estimate.
 - c. Construction Progress Monitoring Report (Exhibit 6.5)
 - d. Resident Engineer's Status Report (Exhibit 6.6)
 - e. Safety Certification letter issued by the Safety Department to the GM, Exhibit 6.21.
 - f. Certification for Substantial Completion (Form 6, 1983 Division 1) (Exhibit 6.12)
 - g. Notification – Opening Portions of Contract for Operation (Form 7, 1983 Division 1) (Exhibit 6.13)
 - h. Certification of Completion and Release – Form 8 (Exhibit 6.14)
 - i. Certification of Inspection and Acceptance – Form 9 (Exhibit 6.15)
 - j. Statement of Payment to Subcontractors
- 7.3 All allowance and lump sum items must be paid 100%.
- 7.4 B&E reports must balance to contract overruns and underruns.
- 7.5 The Office of Organizational Diversity must sign the CMS "Subcontractor Payment" report on the final estimate.

4. **Budget Analyst** to initial availability of funds.
5. **Deputy Director of Design and Construction- Quality Assurance** (Forms 6,7 and 9).

Note: At this point pull carbons from Estimate but not from Accounts Payable Voucher.

6. **Deputy Director of Design and Construction** who oversees the project.
- b. **Routing** – Forward complete package to Contract Administration who will be responsible for further processing.

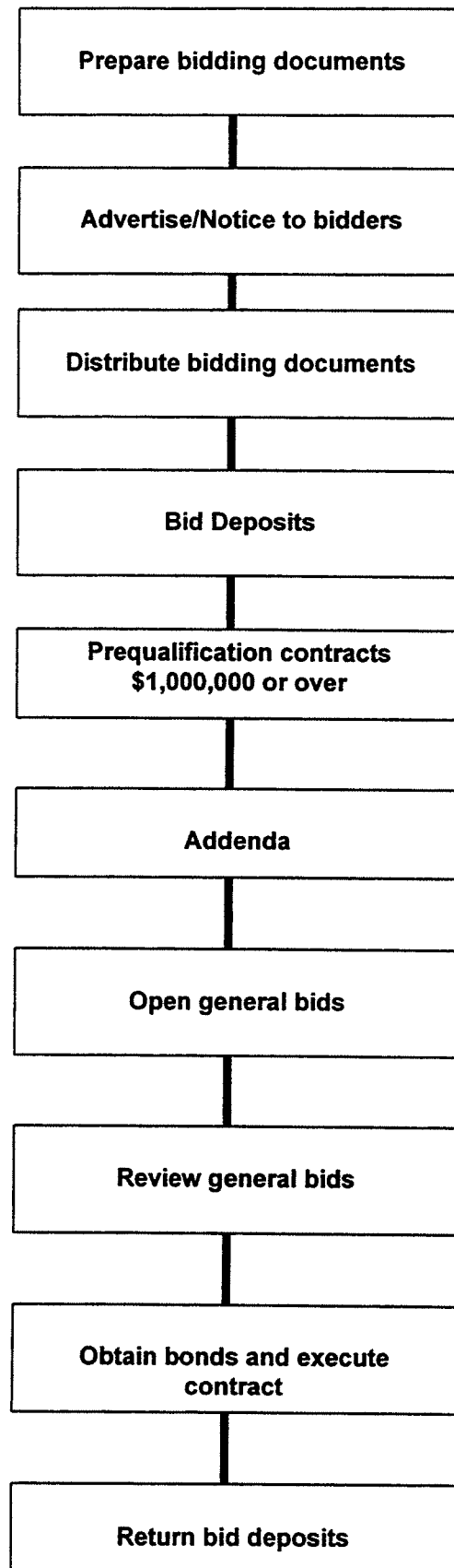
5.0 GUIDE FOR ENTERING PAY QUANTITIES ON SKELETONS AND ESTIMATES

- 5.1 **Unit Price Items** – Pay each L.F., C.Y., S.Y. (etc.) units. It is possible to pay part of one whole unit with a decimal brought out to two places (i. e., .23).
- 5.2 **Lump Sums** – These can be paid by either the dollar value or a percent of the lump sum. Lump sums cannot be overrun but can be underrun. The dollar value difference can then be addressed by Change Order.
- 5.3 **Allowance items** – These Items are always paid in decimals to the nearest two decimal points.
- 5.4 A running total of amounts paid and amounts billed should be kept in the pay item folder for each item.
- 5.5 Any monies due the contractor at the end of the contract shall be adjusted through the B&E Report; and/or unexpected funds will be credited against the adjusted contract value via a B&E Report.

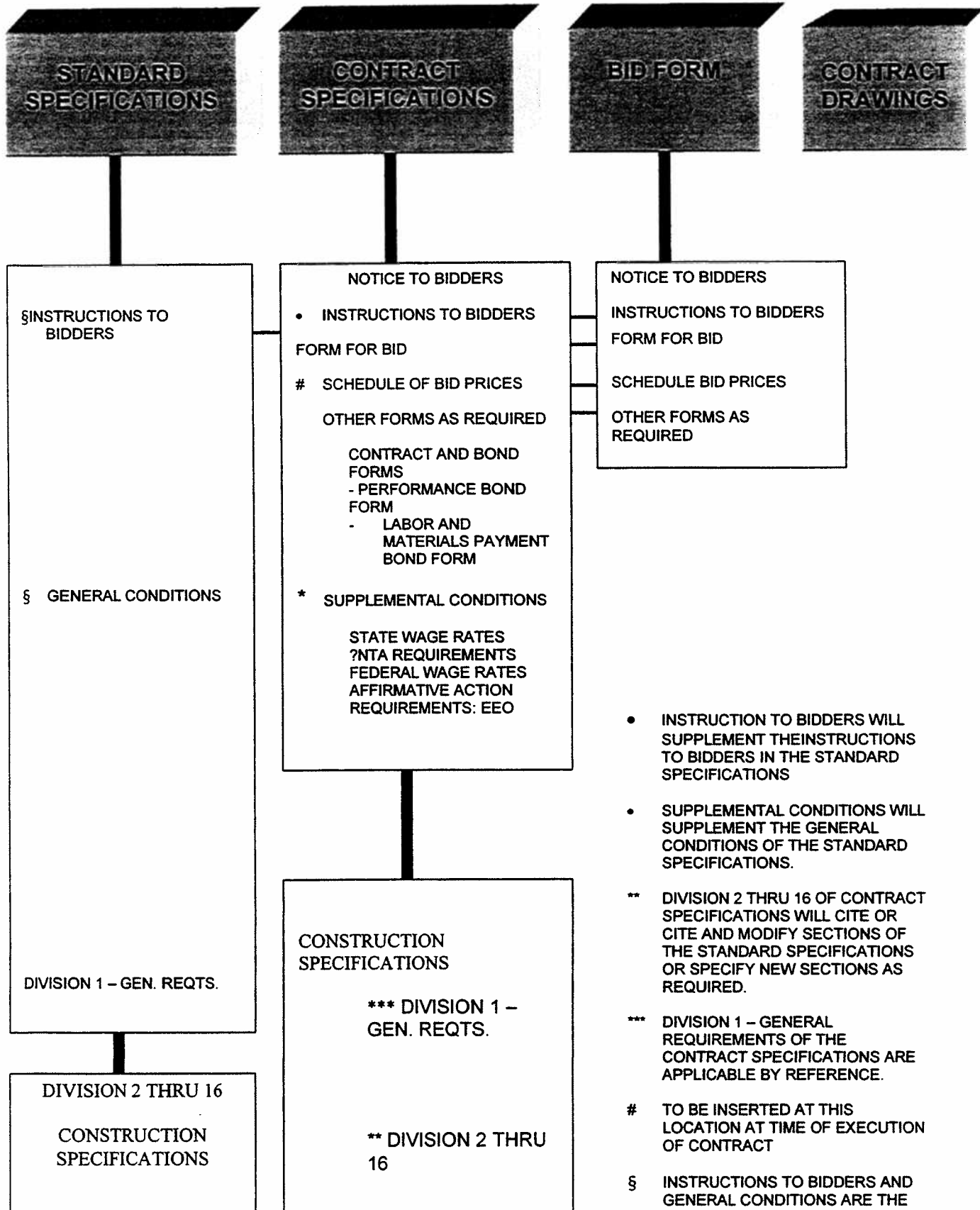
6.0 VOUCHER ROUTING CONTROL SHEET

- 6.1 The Voucher Routing Control Sheet (Exhibit 6.10) is always made a part of the estimate package that is forwarded to Contract Administration for payment.
- 6.2 The information located on the top portion of the form identifies the contract.
- 6.3 As each person signs, the form should be dated and initiated.

THE CONSTRUCTION BIDDING PROCESS



ELEMENTS OF BIDDING AND CONTRACT DOCUMENTS (CSI FORMAT) INTERIM ORGANIZATION



PREBID REVIEW CONTROL SHEETS (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.

- a. MBTA Contract No.: _____
 - b. Contract Specifications Title:_____
- a. FTA Project No.: _____
 - b. FTA Project Title:_____
- a. Designer's Name: _____
 - b. Address: _____
 - c. Individual to Contact:_____
 - d. Professional Service Contract No. _____
 - e. Phone No. ()_____
 - f. FAX No. ()_____
- a. Designee of the General Manager:_____
Assistant General Manager of Design and Construction
 - b. Project Manager: _____
 - c. Phone No. ()_____
 - d. FAX No. ()_____
- a. Estimated Construction Cost* \$ _____
 - b. Funds Available** \$ _____
 - c. Proposed Construction Starting Date: _____
 - d. Proposed Completion Date: _____

* 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.

**** Budget Department approval is required – Project Office must attach concurrence in writing from Director of Budget.**

6. a. Source of Funds: (Insert Budget No.) _____
 FTA _____ BOND _____ EOTC _____ OTHER _____
 CMS Work Order No. _____
- b. Source of Funds for Printing and Advertisement of NTB:
 Area No. _____ Account No. _____
 Center No. _____ Active Work Order No. _____
7. Desired **advertising period** (minimum - 30 days) _____
- a. If less than 30-days is desired, the Project Manager must obtain **approval in writing** from Organizational Diversity through the Assistant General Manger of Design and Construction. This approval must be submitted to Contract Administration.
8. Location, time and number of days after advertising, **Prebid Conference** will be held:

9. Arrangements for **on-site inspection**:
 a. Individual to contact: _____
 b. Phone No. () _____ FAX No. () _____
 c. Special Instructions: _____
10. If **FTA** is participating Project Manager must sign YES N/A NO
 Item g. below.
- | | | | | |
|----|--|-----|-----|-----|
| a. | Has the Buy America Provision been incorporated? | ___ | ___ | ___ |
| b. | Has Cargo Preference U.S. Flag Vessels Provision been incorporated in the Supplementary Conditions? | ___ | ___ | ___ |
| c. | Is Contract known to be of special interest to FTA , sensitive and subject to close scrutiny, or unique and require special evaluation? | ___ | ___ | ___ |
| d. | Has FTA requested the opportunity to perform a pre-bid review of the bid form and specifications? | ___ | ___ | ___ |
| e. | Has latest provisions of FTA Requirements been incorporated in the Supplementary Conditions? | ___ | ___ | ___ |

YES N/A NO

f. Does contract require budgeting or funding action by FTA? (e.g. **budget revision** or amendments)?* — — —

g. This project is **FTA Funded** and all applicable Federal Provisions are incorporated into the Contract Documents.

Concur:

Project Manager

* Preparation and processing of requests for Budget Revisions (for funding) to FTA are the responsibility of the Project Manager and must be coordinated through the Budget Office.

- | | | | | |
|-----|---|---|---|---|
| 11. | Has latest provisions of Standard Federal EEO Specifications with Appendices Nos. 1, 2 and 3 been incorporated in Supplementary Conditions? Project Managers must furnish data to the Office of Organizational Diversity for establishment of DBE goal. MMU and DBE goals MUST be available prior to advertising. | — | — | — |
| 12. | Has the Right-to-Know Law Provisions been incorporated? | — | — | — |
| 13. | Real Estate (Real Estate Department approval is required -- Project Office must attach concurrence in writing from Director of Real Estate): | | | |
| a. | Have all utility relocations been completed or arrangements made for their relocation prior to advertising? | — | — | — |
| b. | Is right-of-way available for contractor's operation? | — | — | — |
| c. | Have all residential and business relocations been completed? | — | — | — |
| d. | Have rights of entry on all real property or right-of-way required by the contractor for his operation been secured? | — | — | — |

YES N/A NO

- e. Have all **land acquisitions** required for this Contract been obtained?

— — —

(If answers 13a, 13b, 13c, 13d, or 13e are negative, the Project Manager must coordinate with General Counsel and submit to Contract Administration a **memorandum of explanation and/or his approval** to proceed with advertising/bidding process.)

14. 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?

— — —

If yes, please list by name or project number other Authority construction under way in the vicinity:

15. Has the Designer designated **specialty items** which may be performed by subcontract? (Article 6.01 - subletting or Assignment of Contract)

— — —

16. Is Contract to be lump sum?

— — —

- a. If not, has **Schedule of Bid prices (ENG-104)** been attached citing quantities, Authority items numbers, descriptions and units?

— — —

17. Has detailed **Engineering Estimate** of Bid Prices been attached?

— — —

18. Are **Allowances** to be incorporated in the bidding documents?

— — —

- a. If yes, the Project Manager must submit to Contract Administration a **letter of approval** signed by the Director of Design and Construction.

19. Is **Railroad Protection Insurance** required?

— — —

20. Is **Pollution Liability Insurance** required?

— — —

21. Are Asbestos, Lead or Hazardous Material Abatement included in this Contract?

— — —

YES N/A NO

- If yes,
- a. Have **Asbestos Abatement** specifications been incorporated in the Construction Specifications? ____
 - b. Has **Lead Abatement** specifications been incorporated? ____
 - c. Has **Hazardous Material Abatement** specifications been incorporated? ____
 22. Has a copy of Contract specifications, Article 5.04 Insurance Requirements been forwarded to the Risk Manager? ____
 23. Has **Article 5.22 - Conflict of Interest** been incorporated into the Contract Specifications? ____
 24. Are **display panels** applicable to this Contract? ____
 - a. If yes, the Project must incorporate the provisions and detail sketches. ____
 25. If station contract is in **excess of \$10 million** have alternative contracting methods been considered? ____
 26. 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. ____
 27. If authority-furnished materials are required, has sufficient, **long-range procurement** planning taken place? ____
 28. Does each product listed in "Part 2" of the 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, Article 4.01) ____
 - a. If not, the Project must justify, in writing, and obtain the **Assistant General Manager of Design and Construction's approval**. ____
 29. Do the Contract Specifications include paint systems? ____

	YES	N/A	NO
a. If yes, the Project must submit to Contract Administration - a signed letter stating that the paint systems have been approved by Construction - Quality Control.	___	___	___
30. Assure that the Contract Documents do not contain restrictive provisions pertaining to the experience and responsibility of the bidders.	___	___	___
31. a. 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?	___	___	___
b. 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?	___	___	___
c. Copies of the above must be submitted to Contract Administration.	___	___	___
32. Are equal facilities provided for male and female personnel as applicable?	___	___	___
33. Has the Liquidated Damages (LD) calculations been attached?	___	___	___
a. If no, contract can not be advertised	___	___	___
b. (LD) must be calculated by Project/Designer.	___	___	___
34. Building Permit (When Necessary) Has the necessary review and coordination been accomplished with agencies for the building permit as follows:			
a. Massachusetts Department of Public Safety, State Building Inspectors?	___	___	___
b. Local Fire Departments?	___	___	___
c. Executive Secretary Board of Plumbers and Gas Filters (When Necessary)?	___	___	___
d. Massachusetts Board of Elevators and Escalators (When Necessary)?	___	___	___
Questions on these matters should be referred to the the Force Account & Utility Coordinator, Design and Construction			

YES N/A NO

35. Have all safety items been addressed in the specification (refer to Article 5.15, Safety and First Aid, Sections 01568, Construction Safety and 01569, Safety Certification)?
36. Have **all Environmental permits and approvals** been obtained and forwarded to the Director of Environmental Affairs?
- a. Conservation Commission (S)
 - b. Corps of Engineers (S)
 - c. Chapter 91 License (waterways) (S)
 - d. DEP Soils Management (S)
 - e. Coast Guard (F)
 - f. Coastal Zone Management Consistency Statement (S)
 - g. MEPA Approvals (F)
 - h. NEPA Approvals (F)
 - i. Mass Historical Commissions approval (S)
 - j. 106 Approval (S/F)
 - k. 4F Statement (F)
 - l. Other
 - m. Has the Consultant identified in writing, the Environmental Permits, Licenses and their Status?

_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____
_____	_____	_____

Environmental requirements must be completed prior to advertisement.
Submit a signed copy of **Consultant's letter**.

(S) State Permit
(F) Federal Permit

Environmental Approval:

Director of Environmental Affairs

**YOUR SIGNATURE(S) SIGNIFIES THAT YOU HAVE REVIEWED THE CONTRACT
DOCUMENTS AND RECOMMEND PROCESSING:**

Project Manager

Deputy Director of Design and Construction

Date of Submission

Exhibit 6.4

**CERTIFICATION BY THE DESIGN ENGINEER/ARCHITECT
OF COMPLIANCE WITH
FEDERAL AND STATE REGULATIONS PERTAINING TO
TRANSPORTATION FOR THE ELDERLY AND FOR PERSONS WITH DISABILITIES**

The undersigned hereby certifies that the bidding documents for MBTA Contract No. () (Project Title) are in conformance with the regulations set forth in 521

CMR Rules and Regulations of the Commonwealth of Massachusetts, Architectural Access Board and in the Federal Register, Vol. 56, No. 173, published September 6, 1991, 49 CFR, parts 27, 37 and 38, pp. 45584-45778.

Firm

Signature of Authorized Representative of

Title

Date

Payment #:
Period Ending:
Contractor:

EXPENDITURES

WORK THIS PERIOD	RETAINED THIS PERIOD	NET PAYMENT
\$	\$	\$
% of Award	% of Payment	
% of Authorized		
% of Adjusted		

Includes current estimate

WORK-TO-DATE	RETAINED-TO-DATE	PAID-TO-DATE
\$	\$	\$
% of Award	% of Work-to-Date	
% of Authorized		
% of Adjusted		

MODIFICATIONS

AWARD AMOUNT	AUTHORIZED VALUE	ADJUSTED VALUE
\$	\$	\$
	% of Award	% of Award
		% of Authorized

	CHANGE ORDERS	B & E's Over/Underruns Allowances	CLAIMS	TOTAL
EXECUTED	\$	\$	\$	\$
PENDING	\$	\$	\$	\$
TOTAL MOD'S	\$	\$	\$	\$

CONTRACT TIME (to Substantial Completion only)

START DATE	DAYS ELAPSED	Time Elapsed	%
FINISH DATE	ORIGINAL TIME (days)	Completed	%
EXTENDED TO	ADJUSTED TIME (days)	Work-to-Date	%
SUBSTANTIAL COMPL.	DAYS OVER or (REMAINING)		

LIQUIDATED DAMAGES \$ Per Day POTENTIAL ASSESSMENT \$

SUBCONTRACTORS	DBE GOAL	%	DBE SUBS	NON-DBE SUBS	TOTAL SUB PAYMENTS
PAID-TO-DATE	\$		\$	\$	\$
	% of Award		% of Award	% of Award	% of Award

PROGRESS STATEMENT/COMMENTS: RATE OF PROGRESS: Satisfactory ☐ Not Satisfactory ☐

Project Manager

CON/ADM-2000

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

RESIDENT ENGINEER'S STATUS REPORT

Exhibit 6.6

A copy of this form completely filled-out and signed by the Resident Engineer must accompany each payment estimate. Failure to comply will result in return of the estimate due to incomplete documentation.

RESIDENT ENGINEER _____ CONTRACT NO. _____
PROJECT MANAGER _____ PAY ESTIMATE NO. _____

In accordance with existing directives relative to Project Record Keeping and/or Documentation, action has been taken as indicated below for all work performed during this pay estimate period.

DIARIES	Project and individual Diaries are up-to-date and have been signed by Project personnel.	Yes	No
MANIFOLD SLIPS	All required Manifold Slips have been received and properly signed.	Yes	No
WEIGHT SLIPS	All required weight slips have been received and properly signed.	Yes	No
MATERIALS CONTROL	All required materials tests and/or samples have been taken.	Yes	No
TRAFFIC POLICE RECORDS	Traffic police records are current and in proper form.	Yes	No
UTILITY AGREEMENTS	Copies of all Utility Agreements are on file.	Yes	No
UTILITY WORK	Force account work has been properly executed and documented.	Yes	No
SUBCONTRACTORS	All subcontractors have been approved.	Yes	No
DBE/WBE STATEMENT	Statement of Payments to DBE/WBE is on file.	Yes	No
DAVIS-BACON ACT COMPLIANCE	Compliance has been verified.	Yes	No
FINAL PAYMENT ONLY	All as-built drawings have been reviewed by design engineer and submitted to the MBTA.	Yes	No
	All Manuals have been submitted. N/A _____	Yes	No

If "NO", explanation is required.

RESIDENT ENGINEER _____

Date ____/____/____

cc: Resident Engineer
Project Manager
Manager of Quality Assurance

CONSTRUCTION CONTRACT PAYMENTS - PROJECT CHECK LIST**Exhibit 6.7**

- ☐ ROUTING SLIP
- ☐ ACCOUNTS PAYABLE VOUCHER (prepare and sign only one original)
- ☐ Signed by Project Manager
- ☐ Signed by Deputy Director
- ☐ Reviewed by Program Controller
- ☐ PAYMENT ESTIMATE (2 signed originals and 2 copies of signed estimate)
- ☐ Signed by Project Manager (if MTA or CA/T joint venture, include signed C Q E)
- ☐ Signed by Resident Engineer
- ☐ Signed by General Contractor (authorized signatory) *
- ☐ CONSTRUCTION PROGRESS MONITORING REPORT (CPMR - signed by PM)
- ☐ Authorized Contract Amount agrees with Pay Estimate (page 3)
- ☐ Contract Start and Finish dates agree with CMS (Bid Mgt./Contr./Data screen)
- ☐ SUBSTANTIAL COMPLETION (Form-6), if beyond finish date N/A ☐
- ☐ RESIDENT ENGINEER'S STATUS REPORT
- ☐ PROJECTED CASH DRAWDOWN FROM GENERAL CONTRACTOR
- ☐ DBE FORM SUBMITTED BY GENERAL CONTRACTOR, if joint MTA or CA/T N/A ☐
- ☐ DBE form's current payment agrees with current CMS record
- ☐ DBE form's Paid-to-Date agrees with CMS Paid-to-Date
- ☐ CONTRACTOR INTERIM PERFORMANCE RECORD (to be submitted bi-annually)
- ☐ STOP / REDUCE / RELEASE RETAINAGE N/A ☐
- ☐ Letter requesting retainage from General Contractor attached
- ☐ Memo of concurrence from Project Manager attached
Note: Do not release below 1% without signed Form-6; hold \$1,000 until final payment
- ☐ CLAIM PAYMENT - attach signed Release N/A ☐
- ☐ PRE-PAYMENT (90% on-site; 80% off-site) N/A ☐
- ☐ Transfer of Title to MBTA
- ☐ Certified paid Invoices
- ☐ Concurrence of Project Manager; including approval of location, if stored off-site
- ☐ FINAL PAYMENT (additional closeout documents) N/A ☐
- ☐ Prior to running Final, verify that no Balance & Excess Reports are required
- ☐ Substantial Completion (Form-6)
- ☐ Notification - Opening Portions of Contract for Operation (Form-7)
- ☐ Certificate of Completion and Release (Form-8)
- ☐ Certificate of Inspection and Acceptance (Form-9)
- ☐ Closeout Summary
- ☐ Contractor Performance Record - Contract Completion Report
- ☐ Project Manager's Closeout Memo
- ☐ Forward CMS DBE page to Office of Organizational Diversity for verification and signature

Project Manager

Period Ending

Page _____ of _____

June 2003

Exhibit 6.9A

CONTRACT NO.

PERIOD ENDING

NET PAYMENT

(General contractor's gross amount, less retainage)

[illegible][illegible]

(S) Refers to DBE Supplier -- amount shown is 60% of DBE contract value.

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

Authorized Contractor Representative

CA/2006-Subs-Bik.xls

Date _____

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY -- STATEMENT OF PAYMENT TO SUBCONTRACTORS

(Note: This form for Non-FTA funded Contracts)

GENERAL CONTRACTOR _____

CONTRACT AWARD _____

CONTRACT NO. _____

CONTRACT TITLE _____

TOTAL SUBCONTRACTORS VALUE (\$)

PAYMENT NO. _____

PERIOD ENDING _____

SUBCONTRACTORS PARTICIPATION (%)

NET PAYMENT _____

(Total subcontractor payments / Contract Award)

(General contractor's gross amount, less retainage)

Subcontractors	Trade	(S) Mat.	Subcontractor Awards		Subcontractor Payments			(X) Final
			Award Amount	Adjustments	Revised Amt.	Previously Paid	This Payment	Total
1								
2								
3								
4								
5								
6								
7								
8								
9								
10								
11								
12								
TOTALS								

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

Signed: _____

Authorized Contractor Representative

Date _____

(S) Refers to "Suppliers" -- amount shown is 60% of subcontract value.

VOUCHER ROUTING CONTROL SHEET

Contractor _____

Contract No. _____

Designer _____

Payment No. _____

Period End Date _____

	DATE		INITIALS	REMARKS
	IN	OUT		
Contract Administration (Audit)				
Project Manager				
Deputy Director of Design & Construction				
Dep. Dir. of Design & Constr.-Contracts				
Program Controller				
Director of Construction				
Asst. General Manager for Design & Constr.				

CD-1

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

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 (D 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/ADM/FEB01

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

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 of 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 _____

MBTA Manager of Quality Assurance _____

APPROVED _____
Director of Design and Construction

Date _____

6-28

June 2003

cc: Contract Administration
P. Hoffmann, Risk Manager

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

NOTIFICATION - OPENING PORTIONS OF CONTRACT FOR OPERATION

Exhibit 6.13

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

APPROVED _____ DATE _____

Director of Design and Construction

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

Exhibit 6.15

CONTRACT NO. _____ TITLE _____

LOCATION _____

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 _____

MBTA Deputy Director of Design and Construction _____

MBTA Manager of Environmental Affairs _____

MBTA Manager of Quality Assurance _____

MBTA Director of Transportation Support, or
MBTA Chief Engineering Officer Railroad Operations _____

CERTIFICATE OF ACCEPTANCE

The above entitled project is accepted as of _____

APPROVED _____ DATE _____
Chief Operating Officer

APPROVED _____ DATE _____
Director of Construction

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
CONTRACTOR INTERIM PERFORMANCE RECORD

Exhibit 6.16

Date: _____

Contractor: _____

Address: _____

MBTA Contract No.: _____

Award Amount: _____

MBTA RATING ON CONTRACTOR'S PERFORMANCE

RATING:

1. WORK PROGRESS:

2. PROJECT MANAGEMENT:

(including organization and submittals)

3. SAFETY:

4. QUALITY CONTROL:

5. EQUIPMENT:

6. SUPERINTENDENT:

Name: _____

Definitions of Ratings:

A - Outstanding Performance

B - Above Average

C - Acceptable Performance

D - Below Average - needs improvement

F - Unacceptable

**NOTE: If Ratings are D or F please
provide an explanation
and attach a corrective
action plan within 15 days.**

MBTA Resident Engineer

MBTA Project Manager

Contractor Superintendent Acknowledge Receipt of Report: _____

Contractor Comments: _____

Contract Admin. 6/99

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

Exhibit 6.17

Contractor Performance Record

Contract Completion Report -- Submitted with Final Payment

Contractor _____ Date _____
 Address _____ MBTA Contract No. _____
 _____ Award Amount _____

MBTA PROJECT MANAGER'S EVALUATION OF CONTRACTOR'S PERFORMANCE

RATING (100 points total)

1. **Work:** (30 Maximum) _____
 Has all 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, been adhered to by the contractor?
2. **Organization:** (20 Maximum) _____
 Have all aspects of project management including, but not limited to: supervision, cooperation, staffing of labor force, scheduling, payment of subcontractors and timely submission of shop drawings/plans been to the MBTA's satisfaction?
3. **Equipment:** (20 Maximum) _____
 Did the contractor provide all equipment, machinery and operators necessary to perform the work on the project? Did Equipment Operators demonstrate proficiency and skill in the operations of said equipment?
4. **Superintendent:** (30 Maximum) _____
 Did the Superintendent demonstrate knowledge of construction and contract documents necessary to complete the work specified? Was the superintendent authorized to make decisions in the field that were binding upon the contractor?

Name: _____

5. **Was the project completed on time?** Yes No
 (If no, give reasons on the attached sheet)

Overall Rating _____

Give explanations of rating 1 through 5 on the attached sheet. Use additional sheets if necessary.

I certify that the information contained in this evaluation form represents, to the best of my knowledge, a true analysis of this contractor's performance record on this contract.

I have mailed a copy of this completed evaluation form to the contractor on _____
 (a copy of this completed evaluation form MUST be mailed to the contractor)

 MBTA Project Manager

 Date

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

Contractor Performance Record

Exhibit 6.17

Contract Completion Report -- Submitted with Final Payment

Explanation of Ratings

Explanation of ratings 1 through 5:

MBTA Contract No. _____

1. Work:

2. Organization:

3. Equipment:

4. Superintendent:

5. Was the project completed on time?



Form ST-2
Certificate of Exemption

Massachusetts
Department of
Revenue

Certification is hereby made that the organization herein named is an exempt purchaser under General Laws, Chapter 64H, sections 6(d) and (e). All purchases of tangible personal property by this organization are exempt from taxation under said chapter to the extent that such property is used in the conduct of the business of the purchaser. Any abuse or misuse of this certificate by any tax-exempt organization or any unauthorized use of this certificate by any individual constitutes a serious violation and will lead to revocation. **Willful misuse of this Certificate of Exemption is subject to criminal sanctions of up to one year in prison and \$10,000 (\$50,000 for corporations) in fines.** (See reverse side.)

Massachusetts Bay Transportation Authority
Ten Park Plaza
Boston, MA 02116

EXEMPTION NUMBER E 042-323-989
ISSUE DATE 06/08/89
CERTIFICATE EXPIRES ON NONE

NOT ASSIGNABLE OR TRANSFERABLE

COMMISSIONER OF REVENUE
Mitchell Adams

Massachusetts General Laws, Chapter 64H, Section 6(e), as amended by Chapter 233 of the Acts of 1983, states as follows:

"The certificate of exemption issued by the commissioner under clause (2) shall be effective for a period of five years from the date of its issuance ... provided that ninety days prior to said date the commissioner shall notify such corporation, foundation, organization or institution of the expiration date of said certificate. Such corporation, foundation, organization or institution must obtain from the commissioner a renewal of such certificate in order to be entitled to a continuance of such exemption beyond the expiration date of any existing certificate."

Form ST-5
Sales Tax Exempt Purchaser Certificate**To be Completed by Exempt Organization**

Name Massachusetts Bay Transportation Authority

Address 10 Park Plaza

City Boston, Massachusetts State Zip 02116

Exemption number E- 042-323-989

Issue date 6/08/89 Certificate expires on NONE

Certification is hereby made that the organization named above is an exempt purchaser under Massachusetts General Laws, Chapter 64H, sections 6(d) or 6(e). All purchases of tangible personal property or services by this organization are exempt from taxation under said chapter to the extent that such property or services are used in the conduct of the business of the purchaser. Any abuse or misuse of this certificate by any tax-exempt organization or any unauthorized use of this certificate by any individual constitutes a serious violation and will lead to revocation.

Signed under the penalties of perjury.

Signature James A. Hale Title Mgr. of Purchasing Date 3/11/98

Warning: Willful misuse of this certificate may result in criminal tax evasion sanctions of up to one year in prison and \$10,000 (\$50,000 for corporations) in fines.

To be Completed by Vendor

Vendor's name

Check applicable box: ☐ Single Purchase Certificate ☐ Blanket Certificate

Attach detailed receipts/invoices or describe property on the back of this form.

General Information

The organization or agency must have obtained a Certificate of Exemption (Form ST-2) from the Commissioner of Revenue, certifying that it is entitled to exemption and must attach a photocopy of Form ST-2 to this certificate. The vendor must retain a completed Form ST-5 accompanied by a copy of Form ST-2 in the same manner as other sales tax records. For further information regarding the requirements for retaining records, see Massachusetts Regulation 830 CMR 62C.25.1.

Notice to Vendors

Vendors must obtain a copy of the Certificate of Exemption (Form ST-2) at the time of any sale to an exempt organization. Vendors should verify the validity of the certificate presented to them by checking the expiration date on the certificate. Vendors must not honor a Certificate of Exemption that has expired. Staple a copy of Form ST-2 to this form.

NOTE: Governmental agencies maintain ST-2 Certificates of Exemption that have an expiration date of "None."

Vendors should call the Bureau of Desk Audit at (617) 621-5251 if they have any questions regarding a Certificate of Exemption which is presented to them.

If you have any questions about completing this certificate, please contact
Massachusetts Department of Revenue
Bureau of Desk Audit
215 First Street
Cambridge, MA 02142
(617) 621-5251

BUY AMERICA

The Buy America provision that apply to construction contracts funded by the Federal Transit Authority guidelines that must be followed by the contractor in the bidding process Sections 662 and 5323j of the Federal Transit Law, 49, USC 5301, et seq., specify the rules.

1. All steel and manufacturing processes must take place in the U. S., except for metallurgical processes involving refinement of steel additives, and reinforcing steel.
2. The steel requirements apply to all steel and iron items, including but not limited to, structural steel, running rail and contract rail.
3. For a manufactured product to be considered produced in the U. S., all of the manufacturing processes for the product must take place in the U. S., and all items or materials used in the product must be of U. S. origin.
4. Cement is excluded from Buy America provisions.

The law provides the possibility of waiver or exception in four instances, only two of which, for all general purposes, are pertinent to contracts advertised by MBTA Design and Construction. These include:

1. If the steel and iron and goods produced in the U. S. are not produced in a reasonable available amount or are not of a satisfactory quality.
2. The F. T. A. (Administrator) may also waive the general requirement if it finds that the inclusion of a domestic item or domestic material will increase cost of the contract between the grantee (MBTA) and the supplier of that material by more than 25 per cent.

A contractor (Bidder) who seeks to establish grounds for an exception or waiver must do so in writing to the MBTA (Agent). This will include all facts and justification to support the waiver request. The Agent will forward this information to the Administrator. The Administrator will issue written determination setting forth the reasons for granting or denying the exception request. It is important to know that the entire process for the request and determination of the exception must be completed before the Award of Contract. The description of what the contractor is expected to build in the advertised invitation for bids is extremely important in determining what may be eligible for a waiver or exception. A component in a contract description is subject to Buy America Law. A sub-component is not subject to the law. What is considered a component in one contract and is subject to the law, may be considered, by contract description, a sub-component in a separate contract, and not subject to Buy America.

For example, if a bid description identifies a "maintenance facility and train wash," then both would be considered components. But if the description included just a "maintenance facility," then the train wash in this instance would be considered a sub-component.

A component is defined as any article or material, whether manufactured or unmanufactured, that is directly incorporated into an end product at the final assembly location. A sub-component is any article or material, whether manufactured, that is one step away from a component in the manufacturing process and is incorporated directly into a component.

SECTION 7 CONSULTANT SELECTION

1.0 INTRODUCTION

- 1.1** The purpose of this procedure is to establish a uniform method for the MBTA to use in the procurement of professional services (i. e. Architects, Engineers, Consultants).
- 1.2** It is emphasized that this procedure does not attempt to address every conceivable situation that may arise in contracting for professional services. Rather, its aim is to provide guidelines whereby necessary professional services can be obtained on a competitive basis and in accordance with established MBTA policies.

2.0 POLICY

The Consultant Selection Procedures are based on the MBTA's overall policy of providing maximum open and free competition in the procurement of professional services, ensuring that contract awards are made accordingly.

3.0 PROCEDURES

- 3.1** Consultants shall promote affirmative action and equal employment opportunities. Consultants shall provide maximum opportunity for participation of Disadvantaged Business Enterprises (DBE) in joint ventures or as subconsultants so that the Authority's subconsultant goal of 16% is achieved. DBE Prime participation cannot be applied to the Subconsultant goal of 16%.
- 3.2** The Authority is committed to the enhancement and growth of disadvantaged business firms. As evidence of its commitment, the Authority sets participation goals on each professional services contract to insure that a portion of the work is performed by DBE's. Such opportunities are provided in accordance with applicable state and federal guidelines.
- 3.3** The MBTA strives to promote the economic growth and development of professional services firms through broad solicitation and award of contracts.
- 3.4** A designer, programmer, consultant or subconsultant chosen by the MBTA to perform a feasibility study, master plan or program for a project shall not be eligible for a subsequent appointment or employment to

perform design development services for that project, unless sound reasons in the public interest otherwise dictate. All public announcements for above referenced services must clearly indicate this requirement.

4.0 PROCESS

The consultant selection process consists of six phases:

- Authorization
- Announcement
- Pre-Selection
- Selection
- Negotiation
- Award

The type of contract, dollar value or other circumstance may justify use of an abbreviated procedure (Section 5.0) which excludes the Announcement and Pre-Selection Phases.

4.1 Authorization

- a. The Assistant General Manager (AGM)/Director of the department with responsibility for using and administering the required professional services must authorize consultant selections.
- b. For most capital improvement projects (subsidized with federal funds or state bond proceeds) consultant selection authorization must include concurrence of the AGM for Design and Construction in addition to all other appropriate approvals.
- c. For projects charged to an operating budget, the cognizant Director (Operations, Information Technology Department, etc.) authorizes the consultant selection.
- d. The Authorization Request must be originated by a Deputy Director or Manager and transmitted to the appropriate Department Assistant General Manager. The Authorization Request contains the following documents:
 - Authorization Document
 - Executive Summary
 - Public Announcement
 - Recommended Consultant Selection Committee
 - Request for Proposal

4.2 Authorization Document

- a. This cover memo (Exhibit 7.1) is a transmittal document to the department head from the originating Deputy Director or Manager requesting approval to initiate the consultant selection process.
- b. This memo, which includes a brief narrative as to the subject selection, will be signed by the originator and contain concurrence lines for required approvals.
- c. The originating AGM/Director will forward the authorization document first to the Deputy Director of Design and Construction - Contracts for concurrence and second to the AGM of Design and Construction for approval.
- d. Additionally, the Project Office must prepare and submit for approval a budget concurrence request to the Budget Department for identification of funding. This budget concurrence request must be approved in writing by the Budget Department. (Exhibit 7.2) The General Manager must approve the Selection Committee assignments (Exhibit 7.3).
- e. Once all approvals have been secured, the selection request is considered authorized and the process continues.

4.3 Executive Summary

The Executive Summary will contain a sufficiently detailed project description, scope, justification, identification of funding source, individual work order numbers for both the estimated cost of the project and the advertisements, estimated construction budget if applicable, and a tentative schedule.

4.4 Public Announcement (Exhibits 7.4 and 7.5)

- a. This is the proposed solicitation notice intended for advertisement in local/national publications. (Exhibit 7.6)
- b. The public announcement will describe the project and list those specific services required (i.e., architect, engineer, other). The project description must contain sufficient information to enable interested parties to determine if the firm has the capability/desire to perform the work.
- c. Capable firms are invited to submit by a specific date (a minimum of three weeks from the date of advertisement) letters of interest

accompanied by supporting documentation which details the firm's abilities for the subject project.

For architectural/engineering projects, the supporting documentation consists of an updated SF-254 and SF-255, Architect-Engineer and Related Services Questionnaires. (Non A/-E contracts require resumes and qualifications to be requested.)

- d. The announcement will also include a statement describing the basis for selection, such as design ability, proposed staffing, specific task related experience, etc. The advertisement will explicitly state that consideration shall also be given to each firm's Affirmative Action Plan, Employee Profile, most current DBE Certification Letters, as well as its commitment to the utilization of Disadvantaged Businesses Enterprises (DBE's) in joint venture or as subconsultants

Two different public announcements exist: one for federally-funded projects and a second for state-funded projects. (Exhibits 7.4 and 7.5 respectively). The announcements differ in two ways: funding source and DBE participation goals. The announcement must state whether the project is state- or federally-funded. Secondly, the federal government maintains a DBE participation goal of 16% and requires that each project comply. In the event DBE firms are unavailable to participate on a team, the consultant must submit an attachment to their proposal documenting their efforts to include DBE firms in the project team. State-funded projects have no specific DBE requirement.

Firms must also furnish information related to their affirmative action plan and employee profile.

4.5 Recommended Consultant Selection Committee

- a. The Selection Committee (Exhibit 7.7) shall be composed of senior level management personnel who are thoroughly familiar with the selection process. Committee members must also be cognizant of the intended scope of the project and the specific services requested as well as the functional departmental concern that are involved in the procurement.
- b. The Committee should be chaired by a Senior Manager from the Department originating the Authorization Request. Every committee must also include the designated Project Manager; the Deputy Director of Design and Construction - Contracts (or designee); and the Director of Organizational Diversity (or

designee) (NON-VOTING). Other persons shall be added to the committee as required (Minimum of at least 2 or more individuals).

- c. The overall consultant Selection Committee is subject to approval by the General Manager and the appropriate Department AGM/Director.
- d. The administering Director is responsible for assigning members to the selection committee. This Director must submit in writing to the General Manager, a memo requesting the General Manager's concurrence with the committee assignments. (Exhibit 7.3)

4.6 Request for Proposals (Exhibit 7.8)

- a. The formal Request for Proposals (RFP) will include a detailed project description, scope, (construction estimate/budget if applicable), schedules, standard contract provisions, affirmative action requirements and other administrative requirements deemed appropriate.
- b. The scope of work for preliminary and final design services (or other professional services phases) shall be specific, detailed, well defined and provide for project schedules upon which responsive and competitive proposals may be based.
- c. Planning and feasibility studies which involve intensive investigations and analysis covering broad areas of long range capital improvement and environmental conditions shall be defined to the maximum extent possible and provide for specific deliverables.
- d. The Request for Proposals – Control Sheet (Exhibit 7.8) should be used to ensure that all requirements for proposal requests are met.

4.7 Announcement

- a. Upon approval of the appropriate department AGM/Director and concurrence from the Deputy Director of Design and Construction-Contracts, the public announcement of the project will be placed in the legal notice section of local newspapers, selected local minority commerce publications, and other publications deemed necessary to generate interest in the subject project.
- b. If necessary, the public announcement may also be placed in appropriate local and national trade, architectural, engineering

publications. Other means of notification may be initiated as required.

- c. Public announcements shall be placed by the Contract Administration Office. A copy of the fully approved authorization request must be sent to Contract Administration to initiate the public notification process. The customary publications used to announce MBTA professional service solicitations are shown in Exhibit 7.6.

4.8 Pre-Selection

- a. After the stipulated closing date for Letters of Interest, the Committee Chairperson shall transmit to each committee member the following:
 - 1. One copy of each Letter of Interest accompanied by forms SF-254 and SF-255 and other materials received from responding firms.
 - 2. A Selection Committee Certification Form, which is to be reviewed and signed by each committee member. The purpose of the form is to underscore the significance of the selection process while demanding impartiality and confidentiality (Exhibit 7.10).
 - 3. A complete copy of the proposed Request for Proposal.
- b. The Committee members will evaluate and rank each of the responding firms on the basis of proposed staffing, design ability, and specific task-related experience. A form has been developed to facilitate the initial screening as detailed in Exhibit 7.9. Meanwhile, a representative from Contract Administration will verify that no firm appears on the List of Parties Excluded from Federal Procurement Programs maintained by the U.S. General Services Administration.
- c. **Department of Organizational Diversity Involvement**

The Department of Organizational Diversity (DOD) shall evaluate each Letter of Interest accompanied by forms SF-254 and SF-255 and other materials received from responding firms on a Pass/Fail Basis for DBE requirements. DOD shall send a confirming letter notifying the committee whether each firm passed or failed.

EEO/Affirmative Action compliance shall be determined on a Pass/Fail Basis by DOD. A form has been developed to facilitate

the initial screening as detailed in Exhibit E. The Selection Committee Chairperson shall submit all Letters of Interest (SF 254/255's) to DOD prior to initial review/selection:

- DOD will review submittals for compliance with DBE, EEO and AA requirements.
- DOD will furnish written reports on all submittals with pass/fail recommendations (no more than five working days).
- DOD will not participate in the voting phase of initial selection committees.

DOD shall review the Letters of Interest (SF 254/255's) based on the following:

- Affirmative Action Plan
- Employee Profile
- DBE Certification Letter

If, at the time of submission of Letters of Interest (SF 254/255's), DOD determines that a respondent has failed to include the most recent Affirmative Action Plan, Employee Profile, or DBE Certification Letter, the respondent will have five working days from date of notification to present the missing data to DOD.

DOD will notify the Selection Committee of the Pass/Fail status of each respondent before the initial Selection Committee meeting to grade all respondents' Letters of Interest (SF 254/255's).

- d. It should be noted that with those projects that are not architect/engineer related, a modified initial screening form must be developed which will allow for scoring of respondents based upon the specific information requested and the overall nature of the project. For Non-A/E procurement, the MBTA shall determine whether cost shall be an evaluation criterion.
- e. After sufficient time to evaluate all materials submitted, the Committee will meet to complete their evaluations and rank the responding firms. The Committee will recommend at least three (all possibly more if deemed appropriate by the Committee) of the highest ranking firms to whom RFPs will be issued.

- f. The Recommendation Package (prepared by the Committee Chairperson) must be reviewed and concurred by the appropriate department Deputy Director of Design and Construction- Contracts and approved by the AGM/Director.

The pre-selection Authorization Package will contain the following:

1. Approval Cover Memo (Exhibit 7.11)
2. Score Tabulation Sheet (Exhibit 7.12)
3. Pre-Selection Screening Forms (Exhibit 7.9)
4. Selection Committee Member Certification (Exhibit 7.10)
5. Letter to the Respondents (Exhibits 7.13 and 7.14)

The letters notifying the responding firms of selection or non-selection are prepared for the Department AGM/Director's signature. Notifications, letters with RFPs attached, and Articles II and III will be issued by Contract Administration only after receiving final approvals.

- g. The Committee Chairperson shall formally request from Contract Administration (Exhibit 7.15) a listing of MBTA projects on which each preselected firm has previously been engaged over the past five years and most current Consultant Rating Scores.

The Committee Chairperson will contact the responsible Project Manager and prepare a report which assesses the performance of these firms on previous contracts with the MBTA. If a firm has limited experience with the MBTA, the Chairperson may elect to investigate that firm's performance on contracts with other agencies and require additional references.

- h. Performance assessments shall be prepared on the basis of documentable facts and presented to the selection committee in such terms. Primary bases for evaluation are time, cost and quality factors.

For example; Have prior contracts been completed on schedule? Has the firm caused any significant cost savings or overruns in prior efforts? Was overall performance considered satisfactory?

The intent here is not to alter the firm's professional reputation but rather to provide additional objective criteria upon which selection committee members can base their choice of one firm over another for the benefit of MBTA interests.

4.9 Selection

- a. After receipt of all proposals submitted by pre-selected firms by the closing date stipulated in the Request for Proposal (a minimum of 3-4 weeks from issuance of the RFP), the Committee Chairperson shall transmit to each Committee member the following:
 1. One proposal from each firm.
 2. Proposal Evaluation Rating Sheet and Instructions (Exhibit 7.16).
 3. A report on previous MBTA contracts awarded to the firms and performance evaluation information gathering by the Committee Chairperson.
- b. Committee members will evaluate the proposals using the proposal evaluation rating sheet.
- c. Prior to initial interviews, a Contract Administration representative will analyze consultant profitability to ensure that each firm is financially stable. The consultant will submit the required ratios in their proposals.
- d. At a time/place designated in the selection letter, oral presentations and interview sessions will be held with all firms from whom proposals were received. At the close of those interviews, committee members will complete a Proposal Evaluation Rating Sheet, rating written and oral presentations simultaneously based upon established proposal criteria (Exhibit 7.16) and weighted according to the requirements of each project.

Committee members will discuss, review and tabulate the scores of all firms and identify the highest ranking firm which shall be recommended for selection.
- e. A representative from Contract Administration will also tabulate the rankings (first, second, third) of each firm. The firm with the most first place rankings will be recommended for selection.
- f. Within a reasonable period of time, after the final scoring of firms each committee member will forward to the Committee Chairperson a memorandum which supports the evaluation and scoring of the proposals. This memo must be sufficiently detailed and provide appropriate rationale for point scores given to each firm. (Exhibit 7.21 is a sample memo.)

- g.** A selection recommendation package will be completed by the Committee Chairperson which will consist of the following:

 - 1.** Approval Cover Memo from the Chairperson to the appropriate Department AGM/Director. (Exhibit 7.17)
 - 2.** Tabulation of Scores.
 - 3.** Proposal Evaluation Sheets and Support Memorandum from each committee member (Exhibit 7.16 and Exhibit 7.21).
 - 4.** Letter notifying selected firm (prepared for appropriate department head's signature) (Exhibit 7.19).
 - 5.** Letter notifying non-selected firms (prepared for appropriate department head's signature) (Exhibit 7.18).
- h.** The Chairperson will forward the complete package to the Deputy Director of Design and Construction - Contracts for review and concurrence. The recommendation package will then be forwarded to the appropriate Department AGM/Director for final approval and issuance of letters by Contract Administration.
- i.** Selection committee documents are to be maintained at two levels. The Committee Chairperson must insure that all appropriate documents are furnished to Contract Administration and to the Project Manager delegated the responsibility for the contract. The Project Manager must maintain full sets of contract documentation at the Project Office.

4.10 Negotiations

- a.** Contract Administration must be directly involved in all professional services negotiations. This will be accomplished in full coordination with the designated Project Manager and other departments/individuals deemed appropriate.
- b.** The letter to the selected firm will include certain information and requirements that must be addressed during initial negotiations. The selected firm must furnish specific cost data (Exhibit 7.20), as required by the Deputy Director of Design and Construction-Contracts to support the preliminary estimated price of the contract (estimated labor effort, hourly rates, overhead, profit factors, etc.).
- c.** The initial phase of negotiations will involve establishment of a definite scope of work, project schedules (primarily the responsibility of the Project Manager) and determination of contract type.

- d. The importance of the negotiations phase must be emphasized. Documentation of all efforts is required to support the reasonableness of a final negotiated contract that is in the best interest of the MBTA and, correspondingly, the most efficient and effective use of public funds.
- e. The MBTA will negotiate a contract with the highest qualified firm for Architectural and/or Engineering services at compensation which the MBTA determines is fair and reasonable to the MBTA. In making such determination, the MBTA will take into account the estimated value of the services to be rendered, the scope, complexity, and other professional nature of the services.
- f. Should the MBTA be unable to negotiate a satisfactory contract with the firm considered most qualified, at a price the MBTA determines to be fair and reasonable to the MBTA, negotiations with that firm shall be formally terminated. The MBTA will then undertake negotiations with the next (second) most qualified firm. Failing accord with the next (second) most qualified firm then such negotiations will be formally terminated, and the MBTA will then undertake negotiations with the next (third) most qualified firm.
- g. Requests for Debriefings - Requests for debriefings shall be forwarded to the Deputy Director of Design and Construction-Contracts with a copy also sent to the Committee Chairperson. Debriefings shall be made in all appropriate cases, upon request, after the award of the contract.
- h. A Record of Negotiations is required for all negotiations.

4.11 Award

- a. The responsible department shall submit a Staff Summary to the Superintendent of Administration and Finance for review. Upon approval the Staff Summary shall be submitted to Contract Administration (prepared in accordance with established procedures) for either the General Manager's or Board of Directors' approval to award and execute a contract.

Once approval is received, Contract Administration will prepare an Award/Notice to Proceed for issuance by the General Manager
- b. Contract Administration will then perform a pre-audit evaluation review. No payments shall be made until the pre-audit evaluation is completed. Once the cost proposal has been verified and

appropriate negotiations completed, a contract will be prepared for execution.

5.0 ABBREVIATED PROCEDURE

- 5.1** When the estimated value of the professional services contract is less than \$50,000 and factors are considered appropriate to warrant its use, an Abbreviated selection process may be utilized with the approval of the appropriate Department AGM/Director.
- 5.2** For projects greater than \$50,000 but less than \$100,000 the abbreviated selection process requires the approval of the General Manager.
- 5.3** The Abbreviated Selection Process consists of the following:
 - a. Authorization** – The Authorization Request, as described previously, will now specifically request the abbreviated procedure, justify its use and identify at least five firms considered appropriate candidates for receipt of Request for Proposals.
 - b. Selection**
 - c. Negotiation**
 - d. Award** – Announcement and Pre-Selection phases are not utilized. All other requirements of the customary selection process must be adhered to and fully documented.

**Authorization for Consultant Selection
Cover Memo**

To: (Appropriate Director)

From: (Cognizant Deputy Director/Manager Initiating Request)

Date:

Re: Authorization to Solicit (Architectural/Engineer/Consultant Services for
(Design) of (Project Title)
MBTA Contract No. ()

Transmitted herewith, for your review and approval are the following documents:

- Executive Summary
- Public Announcement
- Recommended Selection Committee
- Request for Proposal

The amount of (\$) has been budgeted for this project from (identify source of funds, either Bond, Federal or Operating), Work Order No. _____. Advertising costs shall be paid from Work Order No. _____.

Your approving signature is requested to initiate consultant selection.

Deputy Director of Design and Construction

CONCUR:

APPROVE:

Deputy Director of Design
And Construction-Contracts

AGM of Design and Construction

Budget Concurrence Memorandum

TO: Mary E. Runkel
Director of Budget/Administration

FROM: Cognizant Deputy Director/Manager Initiating Request

DATE: XXX

SUBJECT: MBTA Project No. _____. Type of Services
for Project Title

At this time, it has become necessary to advertise for Type of Services for the above referenced project. Attached for your review and approval is a copy of the Executive Summary and Public Announcement.

Under Grant No. _____, the following amounts have been budgeted for the referenced services:

Amount	Services
\$ _____	<u>(procurement and installation)</u>
\$ _____	<u>(design and construction phase services)</u>
\$ _____	<u>(support costs)</u>

The total Budget estimated for this project is \$ _____.

The advertising costs for this project will be approximately \$ _____. Under grant No. _____, Work Order No. _____ has been set up to cover the cost of this action.

Your signature of approval is requested so that the _____ project department may proceed with the advertisement for _____ type of services (engineering) for this project.

If you require additional information please contact me directly at ext. _____.

APPROVED:

Mary E. Runkel
Director of Budget/Administration

**General Manager Concurrence Memorandum
Selection Committee Assignment**

To: Michael H. Mulhern, General Manager
From: Cognizant Assistant General Manager/Director
Date:
Subject: Approval of Selection Committee for MBTA Contract - _____.

Submitted for your review and concurrence is the proposed Selection Committee Membership for the above referenced contract:

- | | |
|---|---|
| 1. Committee Chairperson | _____ |
| 2. Project Manager | _____ |
| 3. Operations Senior Representative | Project Manager |
| 4. Contract Administration | _____ |
| 5. Organizational Diversity | Deputy Director of Design and Construction -
Contracts (or designee) |
| | _____ |
| | Director of Organizational Diversity
(or designee) |
| 6. Other Department Representation | _____ |
| 7. Outside Representation (as required) | _____ |

If acceptable, please indicate your concurrence by signing below and returning to Contract Administration for further distribution.

CONCUR:

Michael H. Mulhern
General Manager

**EXAMPLE
PUBLIC ANNOUNCEMENT**

**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
SOLICITATION FOR CONSULTANT SERVICES
FEDERALLY-FUNDED PROJECTS**

The Massachusetts Bay Transportation Authority is soliciting (Architectural/Engineering/Etc.) services for _____ (Project Title) _____.

Services will include (Preliminary and Final Design, and Construction Phase Services and/or appropriate Project Description).

Firms having capabilities for this work are invited to submit 10 copies of a Letter of Interest to (Committee Chairperson, address). Joint Venture participation will be considered.

This project is federally-funded.

Firms responding to this invitation not later than the close of business on DATE will be considered for selection, providing their responses include 10 copies each of a current Architect/Engineer and Related Services Questionnaire (SF-254), an Architect/Engineer and Related Services Questionnaire for Specific Project (SF-255), and the firms Affirmative Action Plan and employee profile.

Consideration for selection shall be based upon proposed staffing, organization, design ability, and specific task related experience. Also, to be considered for selection, each firm **must** submit, with the Letter of Interest, an Affirmative Action Plan, Employee Profile, and most current DBE Certification Letters, as well as its commitment to the utilization of Disadvantaged Businesses Enterprises (DBE's) in joint venture or as subconsultants so that the Authority's goals for Subconsultant DBE (16%) participation is achieved. Any firm submitting a Letter of Interest must identify and attach a current SF-254/SF-255 as part of their submittal for all proposed (as well as DBE) subconsultants. DBE Prime participation cannot be applied to the Subconsultant DBE goal of 16%, unless utilized in a joint venture.

It is the practice of the Authority to encourage the economic growth of professional services firms through broad solicitation and award of contracts. All capable firms are invited to submit letters of interest in accordance with the instructions presented in this solicitation.

Following an initial evaluation of qualifications and performance data, three or more firms considered to be highly qualified to provide the required services will be selected for proposals and interviews.

This is not a request for proposal.

Daniel A. Grabauskus
Secretary & MBTA Chairman

Michael H. Mulhern
General Manager

EXAMPLE
PUBLIC ANNOUNCEMENT

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
SOLICITATION FOR CONSULTANT SERVICES
STATE-FUNDED PROJECTS

The Massachusetts Bay Transportation Authority is soliciting (Architectural/Engineering/Etc.) services for _____ (Project Title).

Services will include (Preliminary and Final Design, and Construction Phase Services and/or appropriate Project Description).

Firms having capabilities for this work are invited to submit 10 copies of a Letter of Interest to (Committee Chairperson, address). Joint Venture participation will be considered.

This project is state-funded.

Firms responding to this invitation not later than the close of business on DATE will be considered for selection, providing their responses include 10 copies each of a current Architect/Engineer and Related Services Questionnaire (SF-254), an Architect/Engineer and Related Services Questionnaire for Specific Project (SF-255), and the firms Affirmative Action Plan and employee profile.

Consideration for selection shall be based upon proposed staffing, organization, design ability, and specific task related experience. Also, to be considered for selection, each firm **must** submit, with the Letter of Interest, an Affirmative Action Plan, Employee Profile. Any firm submitting a Letter of Interest must identify and attach a current SF-254/SF-255 as part of their submittal for all proposed subconsultants.

While there is no DBE goal associated with this contract, the Authority strongly encourages the use of Minority, Women and Disadvantaged Business Enterprises as prime consultants, subconsultants, and suppliers in all of its contracting opportunities.

Joint ventures will be considered. However, the Authority expects one firm to maintain the lead in terms of contact with the Authority.

It is the practice of the Authority to encourage the economic growth of professional services firms through broad solicitation and award of contracts. All capable firms are invited to submit letters of interest in accordance with the instructions presented in this solicitation.

Following an initial evaluation of qualifications and performance data, three or more firms considered to be highly qualified to provide the required services will be selected to receive the Request for Proposals and prepare for oral interviews.

This is not a request for proposal.

Daniel A. Grabauskus
Secretary & MBTA Chairman

Michael H. Mullhern
General Manager

Publications for Professional Services Procurement

The following publications are sent solicitation notices: (Note: Certain projects may warrant the use of other national publications – Passenger Transport, Engineering News Record, Railroad Age, etc)

- | | |
|--|---|
| <p>1. The Boston Globe (S-1)
Boston, MA 02127
Attn: Ms. Simons 979-2250</p> <p>2. Ms. John Paizza (S-1)
Legal Advertising
Boston Herald
Boston, MA 02106 -X 267</p> <p>3. Central Register (S-1)
Mass Regulations Division
Room 74, State House
Boston, MA 02133
Ms. Katherine H. Maillet, Director
727-9136</p> <p>4. New England Minority News (S-1)
PO Box 347
Hartford, CT 06141-0347
James H. Monroe, President
800-666-4696 203-293-2402- FAX</p> <p>5. Bay State Banner (S-1)
Banner Publications
925 Washington Street
Dorchester, MA 02124
288-4900</p> <p>6. El Mundo (S-1)
20 Columbia Street
Cambridge, MA 02139
617-876-4293</p> <p>7. Ms. Paula Golden (S-2)
Executive Director
Consulting Engineers Council of NE
1 Walnut Street
Boston, MA 02108
617-227-5551</p> <p>8. Mrs. Carol Fitzgerald
Executive Director
Mass. Society of Professional Engineers
555 Huntington Ave.
Boston, MA 02115
617-442-7745</p> <p>9. Mr. John Doorneweerd (S-2)
Director, Procurement and Marketing
SOWMBA
Ten Park Plaza
Boston, MA 02115 617-727-8692</p> | <p>10. Mr. Richard Fitzgerald (S-2)
Executive Director
Mass. State Association of Architects
Broad Street
Boston, MA 02110</p> <p>11. Baltimore Afro American (S-3)
P.O. Box 1857
Baltimore, MD 21203</p> <p>12. Cape Verdean News (S-3)
417 Purchase Street (P.O. Box H-3063)
New Bedford, MA 02741
508-997-2300</p> <p>13. Chicago Daily Defender (S-3)
2400 South Michigan Avenue
Chicago, IL 60616</p> <p>14. New Jersey Afro American (S-3)
P.O. Box 1857
Baltimore, MD 21203</p> <p>15. New Pittsburgh Courier (S-3)
315 East Carson Street
Pittsburgh, PA 15219</p> <p>16. New York Amsterdam News (S-3)
2340 Eighth Avenue
New York, NY 10027</p> <p>17. Philadelphia Tribune (S-3)
522 South 16th Street
Philadelphia, PA 19146</p> <p>18. Atlanta Daily World (S-3)
145 Auburn Avenue, NE
Atlanta, GA 30303</p> <p>19. Boston Metro Newspaper
354 Congress St., 4th Floor
Boston, MA 02210
Attn: Peter Glaser</p> |
|--|---|

S-1 For Publication
S-2 For Publication – time permitting
S-3 Information Copy- May be published if
deemed
suitable

Recommended Selection Committee Membership**AUTHORITY REPRESENTATION****Permanent Membership:**

- Deputy Director or Manager (Committee Chairperson)
- Project Manager
- Deputy Director of Design - Contracts (or designee)
- Director for Organizational Diversity (or designee) (non-voting)

Membership as required (minimum of 2):

- Construction
- Operations
- Railroad Operations
- Real Estate
- Management Information Systems
- Other Department Representation as required

OUTSIDE REPRESENTATION (if required)

- Other participation agencies such as DPW, EOTC, DPU or MAPC
- Community Representation

Note: Committee membership shall consist of professional management individuals with respected credentials who shall become thoroughly familiar with the Selection Procedure. Committee membership must be approved by the Department Chief (and the General Manager's office) and should be chaired by the Deputy Director or Manager originating the authorization request.

Outline for Requests for Proposals

SECTION I	Project Background
SECTION II	Scope of Work
SECTION III	Project Schedule
SECTION IV	Administrative Requirements (which should basically consist of the following):

Consultant proposals, in response to this Request, must be submitted to (Committee Chairperson), (Address) no later than 4:00 P.M. on (date). The proposal will be limited to a maximum of forty (40) pages (20 sheets, both sides), 8 ½" x 11" in size, which will include title sheet, index, all graphics, etc. Be advised that the DBE, Child Care, Debarment and Lobbying Forms are not considered to be part of the forty page technical proposal and can be included as an attachment. Ten (10) copies must be submitted and should include, but not be limited to, the following information:

1. The qualifications of the Consultant for the type of work required. Examples of similar work completed and appropriate references will be useful.
2. The names and qualifications of the principal staff members who will be assigned to the project, particularly the person to be in charge of the work day-to-day, and the approximate percentage of the total man-hours each key staff members will dedicate to the project compared to his/her other duties.
3. The address of the office in which the work will be performed.
4. The name, address, and qualifications of any proposed subconsultants and identification of the tasks to be performed by them.
5. A proposed time schedule for the description of the work as defined in this proposal.
6. Any recommendations for changes or additions to the Scope of Work consistent with the objectives of the design effort.
7. **FEDERALLY-FUNDED PROJECTS** - The proposed percentage and a description of the nature of the Disadvantaged Business Enterprise (DBE) participation in this contract. This description should be consistent with the Authority's commitment to Equal Employment Opportunity/Affirmative Action and the use of the DBE participation goal assigned to this contract. Federally-funded projects mandate DBE participation at 16% of the total adjusted contract ceiling price, which must be maintained throughout this contract. DBE Prime participation cannot be applied to the Subconsultant DBE goal of 16%, unless utilized in a joint venture
7. **STATE-FUNDED PROJECTS** – While there is no DBE goal associated with this contract, the Authority strongly encourages the use of Minority, Women and Disadvantaged Business Enterprises as prime consultants, subconsultants, and suppliers in all of its contracting opportunities.
8. Estimated labor effort by discipline with costs for each of the proposed work phases.

9. MBTA policy caps all Consultant Overhead Rates at 135%, and maximum hourly billing rates at \$45.00 respectively throughout the life of the contract, including any and all supplemental agreements.

NOTE: For projects using federal funds, the overhead cap of 135% shall not apply.

10. Post award, the Consultant must submit a detailed scope of work for the Basic Contract (and any and all supplemental agreements) on an IBM compatible 3-1/2 inch diskette (DOS) in American Standard Code for Information Interchange (ASCII) Text or Word Perfect 5.1/5.2 format, or the latest version of Microsoft Word format to the MBTA's Contract Administration Department.
11. The Consultant shall not receive any payments until after the MBTA completes the pre-audit evaluation of proposed labor, overhead, and other direct and travel costs for the contract (including any and all supplemental agreements).
12. Appeals/Protest Procedures: Appeals/protests relative to this procurement will be reviewed and adjudicated in accordance with the MBTA Appeals/Protest Procedures - Professional Services. A copy of this procedure is available by contacting the Professional Services Section of the MBTA Contract Administration Department.
13. The MBTA may, in its discretion, have discussions with individual proposed offerors for the purpose of clarifying responses to the solicitation requirements.
14. The Ceiling Price is the maximum compensation to be paid for completion of all services including allowable expenses incurred and fixed fee for the work scope described herein. In no case shall a cost underrun of a particular supplemental agreement for this contract be applied to offset a cost overrun, or any other supplemental agreement on any other work scope, without prior written approval from the MBTA Project Manager and MBTA Contract Administration Department.
15. The Consultant must accumulate and separate costs by individual contract element (i.e. Base Contract and each individual Supplemental Agreement). Additionally, the Ceiling Price and actual costs to date for individual supplemental agreements and each contract element must be provided, when submitting bills with the standard invoice. If multiple contract elements or supplemental agreements are combined on one standard invoice, a clear trail into supporting and separating each cost documentation by contract element must be provided.
16. Post-award, should the Authority make the request, the Consultant and all subconsultants shall make available (at no cost to the Authority) their Quality Assurance/Quality Control Program and Procedures for Authority review.
17. Provide Certified Financial Statements for last three years.
18. Complete and submit with the proposal the following attachments:

Attachment A: Conflict of Interest Disclosure Statement

Attachment B: Current SOWMBA Certification Letter

Attachment C: DBE Schedule of Participation

Attachment D: DBE Affidavit

Attachment E: DBE Unavailable Certification(if applicable)

Attachment F: Disadvantaged Business Enterprise Participation - Letters of Intent

Attachment G: Certification Relative to Debarment

Attachment H: Certification of Restriction on Lobbying

Acceptance of Standard Terms and Conditions

Attached to this Request for Proposals are Articles II, General Provisions and Article III, Compensation and Payment, dated January 1, 2002, which will be incorporated into the proposed contract. Acceptance of these terms and conditions is a prerequisite to commencing negotiations with the firm selected. Final acceptance must be so indicated within your proposal.

Any and all exceptions to Article II – General Provisions and Article III – Compensation and Payment must be detailed in your proposal.

Evaluation

The written proposal, presentation, and response to questions raised during the interview, will be evaluated by the Selection Committee membership based on the following criteria:

1.	Quality and Responsiveness of Proposal	(0%) Top 3
2.	Technical Approach	(0%) add up
3.	Managerial Approach	(0%) to 70
4.	EEO Compliance	(P/F)
5.	General Capabilities	(10%)
6.	General Evaluation	<u>(20%)</u>
	TOTAL	100%

PRE-SELECTION SCREENING FORM

Firm: _____

Project: _____

I. SF 255 – Architect/Engineer and Related Services Questionnaire for Specific Project

		FIRMS USING ITEM NO. 6	FIRMS NOT USING ITEM NO. 6
Item 4:	Personnel by Discipline (20 points) (25 points when Item 6 not used)	_____	_____
Item 6:	Outside Key Consultants/Associates Anticipated for this Project (15 points)	_____	_____
Item 7:	Resumes of Key Persons, Specialists, And Individual Consultants Anticipated for this project. (30 points when item 6 not used)	_____	_____
Item 8:	Work by Firm or Joint Venture Members that Best Illustrates Current Qualifications Relevant to this Project. (20 points)	_____	_____
Item 10:	Additional Information or Description of Resources Supporting Firms' Qualifications for the Proposed Project (15 points)	_____	_____

II. Administrative Evaluation

1.	Affirmative Action Plan Employee Profile DBE Certification Letters (0 points) (pass/fail)	_____	_____
2.	General Evaluation (Prior association with firm; overall assessment) (10 points)	_____	_____

TOTAL _____

DATE: _____

Signature of Committee Member

Title of Committee Member

**SELECTION COMMITTEE MEMBER
CERTIFICATION**

As a member of the Selection Committee to evaluate proposals for the:

project, I hereby certify that to the best of my knowledge, I do not have a conflict of interest, either real or apparent, as a result of any financial or other interest on my part or that of any member of my immediate family, nor of my partner(s), in relation to any contract or subcontract under consideration by this Committee.

I further certify that none of the above are currently employed by, negotiating with, or have an arrangement for future employment or contract with an organization under consideration.

If, during the course of this review process, I become aware of an appearance of conflict of interest due to my previous employment or other relationships with a firm involved with this process, I will notify immediately the Contracting Officer in writing of the facts surrounding the situation.

I further certify that I fully understand the meaning of this certification; that all committee activity is considered confidential and that I will not discuss or disclose said activity to others at anytime, now or in the future, other than with authorized selection committee members during committee meetings or with certain MBTA staff individuals designated by and with prior authorization of the Committee Chairman.

I further certify that I will not solicit or accept gratuities, favors or anything of monetary value from any organization associated with this selection.

Member's Signature and Title

Date

APPROVAL OF PRE-SELECTION

TO: (Appropriate Department AGM)

FROM: Deputy Director

SUBJECT: Approval of Pre-selection for Design Services for
Project Name (MBTA Contract No.)

On Date the Selection Committee met to screen Letters of Interest and pre-select firms to receive Requests for Proposal.

Letters of Interest were received from (number of) firms. After careful review of the materials submitted by each firm, the Committee recommends that the following (number of) firms receive RFP's and interview invitations:

- a. (Name of Firm)
- b. (Name of Firm)
- c. (Name of Firm)

The Committee further recommends that all other firms who submitted Letters of Interest receive letters notifying them of non-selection.

The following materials are attached for your review:

- Appropriate letters to respondents
- Tabulation of pre-selection screening forms
- Committee member pre-selection screening forms
- Selection Committee Member Certifications

Deputy Director/Chairperson

CONCUR:

APPROVED:

Deputy Director of Design
And Construction-Contracts

AGM of Design and Construction

SAMPLE SUMMARY TABULATION SHEET

To be used by the Selection Committee Chairperson to compile the evaluation results of all Statements of Qualifications. Note: Enter the grand total for each firm's qualifications from the respective evaluation sheets, to select at least three most qualified firms to be interviewed.

Reviewer	Firm A	Firm B	Firm C	Firm D
Committee Chairperson	88	70	82	76
Project Manager	84	75	80	78
Contract Administration (or designee)	85	73	79	79
Diversity (or designee) (NON-VOTING) (PASS/FAIL)				
Additional Members (as required)	74	66	74	70
Additional Members (as required)	74	66	74	70
TOTAL	405	350	389	373

LETTER TO NON-SELECTED FIRMS

Firm Name
Address
City, State Zip Code

Attention: Name
 Title of Individual submitting Letter of Interest

RE: MBTA Contract No. & Project Description

Ladies and Gentlemen:

The purpose of this letter is to advise you that your firm was not selected to receive a Request for Proposal for engineering and design work involved with the above referenced Project.

Numerous responses were received necessitating a screening process to establish a workable number of firms to receive RFP's. Extensive staff deliberations were required to determine who would best perform this work.

In closing, I wish to take this opportunity to express the Authority's appreciation for your firm's interest and to assure you that your firm will continue to be considered for future (engineering and design) assignments with the Authority.

Sincerely,

AGM of Design and
Construction

LETTER TO FIRMS RECEIVING RFP

Firm Name
 Address
 City, State Zip

Attention: Name
 Title (of individual submitting Letter of Interest)

RE: MBTA Contract No. and Project Description

Ladies and Gentlemen:

I am pleased to advise you that your firm has been selected to submit a proposal and to be interviewed as part of the Consultant Selection Process for (design) services in connection with _____.

Enclosed is the Request for Proposal. Your responding proposal must be delivered to (Committee Chairperson - address) no later than 4:00 P.M. on Date.

An interview has been scheduled for Date at Time in the (MBTA Board Room or other location). The requirements of the interview are as follows:

1. Attendance is limited to key personnel who will play an active role in the work. The project manager should be among those attending.
2. Discussion and response will be limited to 45 minutes*, 25 minutes for presentation by your Team and the remaining time for general questioning by the Committee membership.

You will note that the written proposal is limited to 20 sheets. (Both sides of each sheet can be used.) Your presentation at the interview should summarize your proposal with emphasis on the time schedule for each task and task priorities and interrelationships. Furthermore, you should describe individual team member assignments and qualifications, along with their current project assignments. Finally, you should address the affirmative action plan and current employee profile of your own firm as well as that of any proposed subconsultants.

Sincerely,

AGM of Design and
 Construction

Attachments
 (Request for Proposal w/all appropriate attachments)

*May be modified as deemed appropriate.

**PAST PERFORMANCE REPORT
REQUEST**

TO: Deputy Director of Design and Construction – Contracts

FROM: Selection Committee Chairperson

SUBJECT: Consultants' Past Performance Report
Project Name

DATE:

The Selection Committee for the above referenced project completed its initial evaluation of consultant qualifications submittals. At this time it is necessary to review the past performance of the following shortlisted firms. Please forward a copy of the Past Performance Reports for the following consultants:

Sincerely,

Selection Committee
Chairperson

PROPOSAL EVALUATION RATING SHEET

Page 1
Project Title: _____

Category	Description	Category Weight	Firm Name				
1.	<u>Quality and Responsiveness of Proposal</u> a) Completeness b) Organization and Conciseness of Material c) Use of Contingencies d) Deviations of RFP Total Average = (Total) Number of Criteria	=====					
2.	<u>Technical Approach</u> a) Identification of Problems b) Reasonableness of Technical Approaches c) Use of Imagination d) Logic of Project Plan Total Average = (Total) Number of Criteria	=====					
3.	<u>Managerial Approach</u> a) Organizational Makeup b) Adequacy of Procedures c) Adequacy of Budgets and Schedules Total Average = (Total) Number of Criteria	=====					

PROPOSAL EVALUATION RATING SHEET

Page 2
Project Title: _____

Category	Description	Category Weight	Firm Name			
4.	EEO Compliance a) Letter of Intent Submitted b) Schedule of Participation with Stated Goal Met c) Original DBE Affidavit Submitted	Pass/Fail				
5.	General Capabilities a) Experience (companies & individuals b) Reputation (quality of work; schedule cost; degree of cooperation) c) Manpower (number & skills) d) Facilities (size, type & condition) Total Average = (Total) Number of Criteria	10%				

6. General Evaluation

20%

GRAND TOTAL

Supporting memo to be forwarded to Committee Chairman, which will be attached to, and become An Integral part of scoring sheet.

Evaluated by: _____

Committee Member

Title

Date: _____

Weak _____ Average _____ / _____ Good _____ / _____ Excellent _____ /
0% 50% 80% 100%

**Instructions for Use of the
Proposal Evaluation Rating Sheet**

- 1) This is a numerical rating system. Thus for each evaluation, a relative numerical weight has been established by the Committee for each category. All committee members will use these values. These weights can be found in the category weight column. The sum of the weights will total 100.
- 2) The relative weighting assigned to each category will be the maximum number any criterion (subcategory) in the category can receive.
- 3) Four degrees of quality shown on page 2 of the rating sheet shall be considered when scoring each element. If, for example, an element in a category is outstanding, (Use suggested "questionnaire/issues to consider" sheet (attached) to determine this level), then the scoring will be 100 percent of Category Weight.
- 4) Total up criteria scorings in each category and divide by number of criteria per category to arrive at an overall category rating. Round off to the nearest whole number.
- 5) Add up all category ratings to arrive at a total rating for a particular proposal.
- 6) Category 6, "General Evaluation," is for the rater's use to adjust a proposer's score based on unquantifiable factors (e.g., prior personal knowledge of company and/or key employees), quantity of work with the Authority and general impression gained from this selection procedure.
- 7) Supporting Memo: Each selection committee member is required to write a memo to file which briefly describes the rationale used for ranking/scoring the preselected (shortlisted) forms. Explain why the highest rated firm received its high rating, why the second highest rated firm received its rating and so forth for each of the pre-selected firms. This memo must be submitted to the selection committee chairperson within a reasonable period of time after the interview/selection meeting. The memo (Exhibit 7.21) will be attached to and become an integral part of your proposal evaluation rating sheet.

Criteria Questionnaire**1. Quality and Responsiveness of Proposal****a. Completeness**

- 1) Does the proposal provide all the information asked for in the Request for Proposal (RFP)?
- 2) Is the information merely adequate or fully descriptive?

b. Organization and Conciseness of Material

- 1) Is the proposal organized as requested in the RFP?
- 2) Is there superfluous and extraneous information which clutters the proposal?
- 3) Does it appear that much thought was put into the proposal?
- 4) Is the Proposal presented so as to simplify evaluation (e.g., by major topics)?

c. Use of Contingencies

- 1) Does the proposal invoke any contingencies?
- 2) Are these contingencies reasonable?
- 3) Do they show a lack of understanding of the problem, a lack of vital resources, or deficiency in management acumen?

d. Deviations from RFP

- 1) Is there positive expression of concurrence to abide by all the terms and conditions specified in the RFP?
- 2) Where there is not, has the exception(s) been noted and reasons stated? Are they sound? Does the proposal offer alternatives?
- 3) Are there deviations to the schedule, the estimated cost, or the manpower requirements? If so, is there adequate justification?
- 4) Are the items required for delivery stated, and will they be in the form requested.

2. Technical Approach**a. Identification of Problems**

- 1) Does the proposal adequately identify the problem areas? The nature of the problem?
- 2) Are the problems given the proper order of criticality or are they merely listed in random order?

b. Reasonableness of Technical Approaches

- 1) Does the proposal identify solutions or approaches to solutions?
- 2) Are these reasonable in the light of the state-of-the-art and the time and cost limitations of the task?
- 3) Are any risks identified in the prosecution of the task?

c. Use of Initiative and/or Creativity

- 1) Does the proposal show any creative solutions or approaches?
- 2) Does the proposal include any unsolicited suggestions for improving results?
- 3) Does the proposal indicate use of initiative if awarded contract?

d. Logic of Project Plan

- 1) Does the plan show a logical interrelationship between activities?
- 2) Are the time estimates for each activity reasonable?
- 3) Are the major points of coordination (input requirements, deliverable items, approval, and decision points) identified and logically placed?
- 4) Does the plan show a logical transition between the design and construction phases of the project (if applicable)?
- 5) Is the plan complete in that it shows all aspects of the job including such support activities as logistics, maintenance, human factors, etc.?
- 6) Are Authority capabilities, where available, cited to support the efforts?

2. Managerial Approach**a. Organization Make-up**

- 1) Is the organization structure proposed reasonable for the job?
- 2) Is the level and authority of the project leader commensurate with the scope and complexity of the job?
- 3) Does the basic project team cover all required competencies?

Exhibit 7.16

- 4) Is every member qualified to perform his task based on experience and reputation?
- 5) Is the subcontracted effort at a reasonable level, and is it well balanced among participants?

b. Adequacy of Procedures

- 1) Are the procedures proposed simple yet effective to assure team leader is on top of job?
- 2) Are the supporting activities coordinated into the job or will the Authority have to follow up directly?
- 3) Is there recognition of the description of the procedures for the control of Progress, Documentation, Drawing Changes, Equipment Changes, Quality Assurance, Inspection, etc.?

c. Adequacy of Budgets and Schedules

- 1) Is the technique for budgeting effective and can it be tied in with a cost system?
- 2) Are financial and time plans meaningful?
- 3) Can they be used as the basis for time and cost control?
- 4) Recognizing the Authority's budgeted financial resources for this Project, does the estimated labor effort & cost appear appropriate?
- 5) Which proposals appear to make the most effective/efficient use of available funds?

EEO Compliance – Department of Diversity (DOD) shall review each proposal submitted with recommendations for Pass/Fail on the following:

- a. Has respondent submitted all Letters of Intent for DBE's?
- b. Has respondent submitted schedules of Participation with stated DBE Goal Met, and
- c. Have all DBE firms submitted an Original DBE Affidavit stating that there has not been any change in it's status since the date of it's last Certification.

5. General Capabilities

a. Experience

- 1) Is the technical experience of the firm (individual or team) directly applicable to the job?
- 2) If job is the first of a two-step effort, can the firm perform both?

Exhibit 7.16

- 3) If the job is a team approach, has the leader the experience in systems management?

- 4) Is the experience of the key individuals sufficient to assure successful completion of the job?

b. Reputation

- 1) Has the firm met the intent of the specification most of the time?
- 2) Has there been any comment during reference checks regarding the lack of cooperation with a client or other participants?
- 3) Do the key individuals have a known reputation in their fields of endeavor? Or what specific projects is it based?
- 4) Have they met their commitments in costs, schedule, and quality of work in previous Authority or other client dealings? If not, are there extenuating circumstances?
- 5) Overall impressions gained from the required Performance Assessment completed by the Committee Chairperson.

c. Manpower

- 1) Is there sufficient staff available to do the required task(s)?
- 2) Does the firm have the staff to assign adequate numbers of qualified specialists of the required kinds from the firm to coordinate, monitor, and/or supervise other members of the team of the major subcontractors?

d. Facilities

- 1) Does the firm have the necessary space and equipment to do the job without rental or lease?
- 2) If not, are the required facilities readily available through lease or subcontracting?
- 3) Are the required facilities in good condition to be applied to the job or must they be refurbished or repaired?

6. General Evaluation

- a. After reading the proposal material, listening to the oral presentation and considering any prior personal knowledge of firm's performance/competence, do you gain a more or less favorable impression?

Exhibit 7.16

- b. Recognizing the current volume of work/number of contracts that the firm(s) have with the Authority, does this selection offer an opportunity to

promote the economic growth and development of a firm that currently has limited work with the Authority?

**Approval of
Selection Committee Recommendation**

TO: (Appropriate Department AGM/Director)

FROM: Deputy Director/Manager Selection Chairperson

SUBJECT: Approval of Selection Committee Recommendation for Design
Contract Title

On Date, the Consultant Selection Committee met to review proposals and conduct interviews with the preselected firms.

Based on the scores submitted by Committee members, the top ranking firm of Firm Name was identified and is recommended for approval by (the Board of Directors or General Manager).

Appropriate documentation and letters are attached for your review and signature. Included are

- Tabulation of Proposal Evaluation Scores
- Committee member proposal evaluation sheets and supporting memos;
- Letter to selected firm;
- Letters to firms not selected.

Deputy Director/Manager
Chairperson

CONCUR:

APPROVED:

Deputy Director of Design
And Construction-Contracts

AGM of Design and Construction

Note: Certain departments may require additional intermediate management approvals.

Letter to Non-Selected Firm

Firm Name
Address
City, State Zip

Attention: Name
Title (of individual submitting proposal)

RE: MBTA Contract No. and Project Title

Ladies and Gentlemen:

The purpose of this letter is to advise you that your firm was not selected for engineering and design work involved with the Contract Title, as outlined in our Request for Proposals dated Date.

I wish to take this opportunity to indicate that the Authority sincerely appreciates the efforts your firm put into the proposal which you submitted. The competition for this work was especially keen. Most proposals were of high quality, requiring extensive staff deliberations to determine who would best perform the work.

Based on staff recommendations, I have authorized negotiations for this work with the firm of Firm Name.

In closing, I wish to advise you that your firm will continue to be considered for future (engineering and design) assignments with the Authority.

Sincerely,

AGM of Design and Construction

Letter to Selected Firm

Firm Name
Address
City, State Zip

Attention: Name, Title (of individual submitting proposal)

RE: MBTA Contract No. and Project Title

Ladies and Gentlemen:

The Authority's Consultant Selection Committee has recommended that Firm Name be selected to perform services for the above referenced Project. A contract award will be subject to satisfactory negotiations and to obtaining approval of the (Board of Directors of the Authority or the General Manager). As a condition of commencing negotiations, the Consultant agrees that the Authority may suspend or terminate negotiations at any time for reasons which appear to be in its best interests.

Contract negotiations will be initiated with the aim toward obtaining an agreement on terms and conditions of a contract as soon as possible. It is requested that you review the technical proposal submitted on Date, and the project description prepared by the Authority in order that a complete and comprehensive scope of work can be determined at the earliest possible time.

As the intent is to negotiate a cost plus fixed fee contract, it is requested that you furnish the following cost data:

1. A breakdown of estimated man-hours by classification and rates applicable to specific items of work.
2. A computation of contract ceiling price based upon provisional overhead rates and including a fixed fee.
3. A detailed tabulation of estimated direct costs.
4. Cost data similar to above for each of the proposed major subcontracts comprising the study team.
5. In addition to the foregoing, the cost data detailed in the attached schedule is necessary to facilitate the Authority's required pre-audit of overhead, payroll, and other costs.

You are also requested to submit data regarding your plans for Disadvantage Business Enterprise (DBE) participation on your proposed consultant team.

Prior to assembling your completed proposal, accompanied by the above referenced information, please contact Mr. Edward L. Karpinski, Jr. Deputy Director of Design and Construction - Contracts, to schedule in an initial negotiation meeting. The Authority's project manager will also attend. If any additional information or clarification is required, please contact Mr. Edward L. Karpinski, Jr. at 222-3131.

Sincerely,

Assistant General Manager of Design and Construction

**Schedule of Cost Data
Required for Pre-Audit (including SA's)**

1. Listing of employees assigned to the contract with hourly pay rates by labor category. If an average by category is applied, list all employees applied in that category. These rates or average rates by category should agree with the rates applied on Exhibit "A". If not, an explanation of any discrepancy must be provided.
2. A current payroll register, certified by the Chief Financial Officer, supporting the hourly rates of all employees applied in #1 above.
3. A current audited overhead report, including the CPA's opinion and schedule of overhead expenses. This audited rate must agree with the overhead rate applied on Exhibit "A".

If an audited rate is not available, provide a schedule of overhead expenses with audited financial statements. This schedule must be reconciled to the audited financial statements. The financial statements must include the CPA's opinion, Income Statement, Schedule of Direct and Indirect expenses (if available) and footnotes.

Under the terms of the cost-plus-fixed fee contract, actual allowable overhead cost are payable. Since actual overhead cost rates are not determined until after the end of the Consultant's fiscal year, the Consultant is allowed to use a provisional rate for billing purposes. The provisional rate is usually the audited rate for the previous fiscal year.

Once the most current rate is determined, the Consultant will forward a schedule, meeting the aforementioned criteria, to Contract Administration for approval. After approved, future bills will be compiled using the current rates.

This procedure of submitting the most current overhead support **must** be performed annually during the performance period of the Contract and all Supplemental Agreements. If there is **any** change in the Overhead Multiplier, the Consultant must submit this change to the Authority immediately.

4. Information on audits performed by federal or state agencies over the last three years including the names of the audit agencies and their audit managers, the managers' telephone numbers, the years audited, and the overhead rates allowed. If available, copies of audit reports should also be submitted.

For all future Supplemental Agreements over \$100,000.00, similar information as requested in Steps #1 through #4, and Steps #6 through #8 must also be submitted as support for that cost proposal.

The Consultant shall prepare Step #5 only when a significant change has been made to their accounting system from what was originally outlined in the information provided for the Base Contract. If no changes have occurred to the accounting systems, the Consultant will state this in writing.

5. A brief narrative describing your accounting system and significant accounting controls including, but not limited to, the following:
 - a. Is the system on an accrual basis?
 - b. To what extent, if any, is your system mechanized?
 - c. How are payroll costs accumulated within the accounting system? Does the system distinguish between direct and indirect hours worked?
 - d. How does the accounting system distinguish between non-payroll direct and indirect costs?
 - e. What books of original entry are used, and will expenses associated with the proposed contract be segregated within the books or original entry?
6. A chart of accounts for all overhead items and a brief description of the types of cost contained in each overhead classification.
7. Detailed analysis of Other Direct Costs and Travel including source of information, description, number of units and unit rates for each type of cost. In addition, documentation supporting the unit rates applied, such as formal bids, copies of invoices for similar payments and support for lump sum contracts must also be provided.
8. Each subconsultant will submit the aforementioned required information.

**EXAMPLE
RATING SHEET SUPPORTING MEMO**

TO: Selection Chairperson

CONFIDENTIAL

FROM: Committee Member

DATE:

RE: Consultant Selection for Contract No.

In accordance with current Selection Procedures, the following are comments with regards to my scoring for the above referenced Project:

Firm A - Detailed proposal and overall excellent presentation which addressed the Authority's needs. Firm has done their homework. Project Manager's credentials noteworthy. Subconsultant has demonstrated experience/qualifications with regards to the Project. The "team" appears to be thoroughly familiar with the project site and its attendant problems. DBE efforts appear acceptable. Subconsultant has indicated willingness to pursue SOMBA certification. Estimated labor effort requires further review. Funding constraints were discussed. Qualified acceptance of the standard terms and conditions as per previous contracts. Overall positive evaluation.

Firm B - Detailed proposal presentation. Firm has put together a highly experienced team, well versed in (specific project issues). Project Manager proposed for this work has successfully completed several similar projects. A unique testing concept for the (Project) was discussed, which appeared to be of great interest to committee members. Estimated labor effort and funding constraints were discussed. DBE efforts appear acceptable and firm has expressed a willingness to increase the percentage with further review. Acceptance of terms and conditions. Favorable evaluation.

Firm C - Proposal and presentation considered acceptable although not as complete as previous two firms. Familiarity with Authority (Project issues) is readily apparent. Efficient use of project time and money is considered quite valuable since "learning curve" would not be an issue. Qualifications and experience of Team Member(s) are recognized, although there is some concern as to team members availability with other projects continuing. DBE issues to be addressed further as project/contract becomes more defined. Funding constraints were cited. Acceptance of the terms and conditions. Favorable evaluation.

Committee Member
Title



SECTION 8

PROJECT COORDINATION AND DESIGN REVIEW PROCEDURES

1.0 OVERVIEW

A Design Phase coordination strategy is necessary to ensure that the Design Phase is coordinated and that design submissions are reviewed in a timely and efficient manner. Such a strategy will help the Project Manager elicit most design concerns prior to submission of the Authorized Budget and Schedule. This Project Management procedure establishes a system for distribution and review of all Project design materials.

The Project Manager is responsible for Project management from the preparation of the Conceptual Budget and Schedule through Project closeout. During the Design Phase (0%-100% to Bid), the Project Manager must coordinate the internal MBTA design review process as well as that with the Design Consultant (and Construction Manager, if applicable). Coordination begins with a Kick-Off meeting and continues with five official design reviews, at the 10-15%, 30%, 60%, 90% and 100% design milestones. The Design Review process begins with the Design Phase Coordination Strategy, as defined below, and follows the Design Review Procedures as described on the following pages.

1.1 Design Phase Coordination Strategy

Identification of Project Participants

Prior to submission of the Conceptual Budget and Schedule:

- The Project Manager notifies his/her senior manager that the Project will require Design Review.
- The Project Manager identifies all MBTA departments that should be involved with the Projects including Design & Construction, Operations, Planning, Real Estate, and external Project Participants (if any).
- The appropriate Senior Manager convenes a meeting attended by senior managers from other MBTA Departments, the PM, the Director of Capital Management, the Design Consultant (if applicable), and the Construction Manager (if applicable).
- The scope of the Project is presented and senior managers are asked to nominate Reviewers from their departments
- The list nominations for reviewers should be very inclusive.

The senior managers should designate a Reviewer who, if possible, will remain the department's liaison for the duration of the Project, will be responsible for the

participating in the scheduled design reviews and will provide comments as necessary that reflect the department's procedures and practices. The Project Manager compiles a final list of Reviewers and a copy is given to the appropriate senior manager (AGM of Design and Construction, Chief Operating Officer or Director of Planning).

Kick-Off Meeting

The goal of the Kick-Off Meeting is threefold: 1) to introduce the Design Consultant to the Reviewers; 2) to flag Project issues that might require additional attention or scrutiny; and, 3) to review the Design Review Guidelines. This meeting provides the first opportunity for the Project Manager to solicit concerns regarding the Project. The meeting should be scheduled immediately after selection of a Design Consultant.

The Project Manager also distributes a preliminary schedule of design submissions, design review meetings and comment submission deadlines for each design review. This schedule conforms to the Conceptual Schedule and must be approved by a Deputy Director of Design and Construction. The Project Manager should set the meeting agenda and prepare meeting minutes for approval by the meeting participants.

2.0 PURPOSE OF DESIGN REVIEW PROCEDURES:

The purpose of design review is threefold: 1) to ensure that the design is being performed in accordance with MBTA criteria; 2) to review the quality of the design to determine if it is being performed to accepted professional standards; and, 3) to ensure that the work of the involved disciplines is properly coordinated.

3.0 SCOPE

This procedure defines the policies and responsibilities of the various organizational elements within the MBTA relative to the review of the design of construction projects. It also establishes the system for distribution and control of the submitted materials and the comments developed during the reviews. The procedure for Design Consultant's response to review comments is also defined.

The following design submittals are to be reviewed in accordance with this procedure during the design of MBTA projects.

Conceptual Design - 10-15% Design Development
Preliminary Design - 30% Design Development
Final Design - 60, 90 & 100% Design Development

The Deputy Director of Design must sign off each phase of design (10-15%, 30%, 60%, 90% and 100%) before it advances to the next level of design.

4.0 DEFINITIONS AND RESPONSIBILITIES:

4.1 SCHEDULED SUBMITTALS

The Scheduled Submittal refers to the material submitted by the Design Consultant under one of the aforementioned milestones.

4.2 DESIGN CONSULTANT

The Design Consultant is an architect/engineer consulting firm engaged for the purpose of providing professional architectural and design services to the MBTA. In certain cases, members of the MBTA Design Department may provide this service.

The Design Consultant is responsible for producing a completely adequate and acceptable design, presented clearly in the Project documents and calculations, and thoroughly coordinated and checked. The Design Consultant's work is eventually signed and sealed by a Professional Engineer, Registered Architect, or a Landscape Architect.

4.3 PROJECT MANAGER

The Project Manager is the individual with the MBTA who is responsible for the management, technical direction and coordination of the design of a particular project. The PM acts as the representative of the MBTA for technical coordination between the Design Consultant and various disciplines within the MBTA. The PM is responsible for the orderly handling of Scheduled Submittals. The PM assists the Design Consultant in contacts with public and private agencies, monitors and reports the progress of the work, and coordinates the work. All formal communications between the Design Consultant and others are coordinated through the PM. The Project Manager is assigned the responsibility for overall coordination and compilation of the information and comments received from all Reviewers for a particular project. The PM resolves conflicts in review comments from various Reviewers, clarifies unclear areas, and is responsible for alerting management when problem areas are revealed or comments cannot be resolved.

If the Project utilizes a Construction Manager (CM), the PM is responsible for coordinating the internal review process. The CM will chair the design review meetings and is responsible for ensuring that all the Reviewers'

comments are addressed, as per the Use of Construction Manager Procedure, Section 16 of this Manual.

The PM is also responsible to develop, with the consultant and the System Safety Engineer, a list of safety critical elements.

4.4 REVIEWER

This is an individual from a division or department within the MBTA which is responsible for technical, operational and/or constructability review of a particular aspect of the work. In each division, a manager shall designate a person or persons from each of their sections who will serve as a liaison to the Project. For consistency this reviewer, if possible, shall remain as the division's liaison for the duration of the Project design and shall be responsible for all the scheduled design review for the Project. In addition, this reviewer shall serve as the source of technical data, within his/her expertise, to the Design Consultant through the Project Manager. Submission of comments by a Reviewer signifies an implicit acceptance of all design specifications except those that are otherwise indicated on the Design Review Comment Form. (See Exhibit 8.1)

5.0 POLICY OBJECTIVE:

Design reviews are conducted for the primary objective of assuring that the functional requirements of the MBTA are provided within the restraints of schedule and budget. The review must ensure that there is proper understanding and conformance to all design direction as well as adherence to accepted standards of professional practice. Reviewers generally do not provide the detailed coordination and checking required for completion of the project documents and design calculations; this is a Design Consultant's responsibility. However, all drawings of each discipline for each submittal shall be checked thoroughly. Checking thoroughly means that the drawing shall be checked against criteria and standards; that all cross checking with other drawings has been performed; and that affected specifications have been checked. It does not mean checking of surveys or verifying existing conditions; it does not necessarily cover the same area that another discipline has checked. If the drawings are unsatisfactory, it should be noted in the review comments. At the 100% Design Milestone submittal the Reviewer will make a thorough check to ensure that the architectural, landscape architectural, structural electrical, mechanical, and civil drawings as well as the respective specifications have been coordinated and have been responsive to all the design review comments

6.0 GENERAL PROCEDURES:

- 6.1** All submittals are made through the MBTA Project Manager. All review comments, including MBTA and agency comments, are transmitted to the Design Consultant by the PM. Reviewers shall not contact Design Consultants without notifying the PM.
- 6.2** Schedule - The schedule for design and construction of the MBTA System 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). The Reviewer is expected to complete his/her review and transmit comments within this interval. If it is apparent that a Reviewer cannot meet the schedule, the Project Manager is to be notified. Reviewers are to submit whatever comments or information is available on the deadline date. In such cases, the review must be continued and expedited and a second submittal of review comments made when the review is properly completed. A compressed Project schedule does not necessarily justify an expedited design review.
- 6.3** Record copies of submittals shall be maintained in the files of the Project Management Office. The following materials are retained as a matter of policy for the records.
- A.** One copy of all material comprising a Scheduled Submittal.
 - B.** All material comprising changes to approved plans or specifications.
 - C.** A copy of all Review Comments and responses.

7.0 SPECIFIC PROCEDURES:

- 7.1** Upon receipt of a Scheduled Submittal, the PM will handle distribution of sets, or portions of sets, as appropriate, to the Reviewers. The transmittal will identify all reviewers, the Scheduled Submittal and indicate clearly what material is provided to each Review Branch. Plan/Specification distribution shall be made in accordance with Exhibit 8.2. All Reviewers will receive a copy of this submittal. The memorandum will also indicate the deadline for comments to be resubmitted to the PM. If the schedule will not permit the Reviewer to complete their review on time, they will submit those comments finished by the deadline, and then submit the remaining comments as soon as possible. Project Managers should allow at least 30 days for review of the submittal

- 7.2 The Reviewer shall undertake review of the submittal. All comments shall be written on the MBTA Design Review Comment Form (See Exhibit 8-1).
- 7.3 The Reviewer shall retain a copy of his/her Design Review Comment Form and transmit a copy to the Project Manager.
- 7.4 The Project Manager undertakes the review and coordination of all Reviewers' comments. This effort must be accomplished in a very short period of time at the end of the review period. During this period, it is important that Reviewers lend their full attention and cooperation to the Project Manager if called upon to assist in clarifying comments or resolving conflicts.
- 7.5 The Design Review Comment Forms will be forwarded to the Design Consultant by the PM for the Design Consultant's review and study prior to the design review meeting. The PM will retain a copy of all comments in his file.
- 7.6 The PM will schedule a design review meeting following submission of the 10, 30, 60, & 90% design milestones and inform the Reviewers and the Design Consultant of the time and place for the meeting. In the event that a Reviewer is unable to attend, it shall be his/her responsibility to provide a replacement.
- 7.7 The Design Consultant shall prepare minutes of each design review meeting, and after review and concurrence by the attendees, copies will be transmitted by the PM to all Reviewers.
- 7.8 Following the review meeting and after study and consideration of comments, the Design Consultant annotates his/her Agreement (A), Disagreement for Reason noted (D), or Clarification (C) for each comment by the Reviewers on the Design Review Comment Form. For comments with a "D" or "C" action code, the Design Consultant should attach a separate sheet for their responses. All responses should reference the related comment number. One legible copy of the set of the marked Design Review Comment Forms is to be returned to the PM as soon as practicable after the review period. It is particularly important that other problem areas, which are revealed after more study by the Design Consultant, be brought to the PM's attention immediately. It may be necessary for the Design Consultant to return the Design Review Comment Forms "piecemeal" as items are resolved. In any event, all Design Review Comment Forms are to be returned expeditiously and in no event later than 30 days after the forms are received. The Project Manager should send each Reviewer

a copy of all Reviewers' comments and the Design Consultant's responses.

- 7.9 The Project Manager is responsible for reviewing responses to all Reviewers' comments. Where there is full agreement by the Design Consultant, no further action is required. In those areas however, where the "Action" indicates a need for further clarification or direction, the Project Manager is responsible for contacting the Reviewer, the appropriate Deputy Directors (and other responsible disciplines as necessary) to resolve the matter. When a Reviewer's comments cannot be incorporated into the plans or specifications, a full written explanation is required. In all cases, the Reviewer should be given a copy of the Design Consultants responses. Resulting direction is then given to the Design Consultant by the PM.
- 7.10 If, through the design review process, design modifications arise that might significantly affect post-construction operations or operating budget, the Project Manager should notify the Operating Department of the proposed modification. The PM transmits a written summary of the operational impacts to the Chief of Operations. If necessary, the Project Manager convenes a meeting with appropriate representatives from the Operating Department to review the design modification and identify possible design alternatives that don't affect existing operations or the estimated operating budget.
- 7.11 The PM shall perform a construction cost evaluation at each of the design phase (30%, 60%, 90% and 100%) submissions. The PM will perform an independent review of the estimate for accuracy and document the results of the review. The evaluation shall be forwarded to the Chief of Engineering and Construction for approval.

8.0 SPECIAL SITUATIONS (0% to 10% Design)

- 8.1 At the discretion of the Director of Planning, Projects that are initiated in Planning are subject to a design review in the 0-10% stage (during the feasibility study). Such a review would typically involve people from Planning and Design and Construction. The Director of Planning and the AGM of Design and Construction select representatives of their respective departments to participate in the design review. The goal of the review is twofold: 1) to consider Project alternatives considered by the feasibility study and 2) to make the transition from Planning to Design and Construction as efficient as possible.

A member of the Planning Department is responsible for writing a design review meeting summary and submitting it for review and approval by all meeting participants. Additionally, people who participate in the design review of the feasibility study are not necessarily the Reviewers who will be responsible for the Project throughout the Design Phase.



**MASSACHUSETTS
BAY
TRANSPORTATION
AUTHORITY**

Design and Construction
500 Arborway, Jamaica Plain, MA 02130
Tel. 617.222.5678
Fax. 617.222.3426

Contract No.
Project Title:
Design %: %
Reviewer:
Date:
Dispositioned by:
Designer:
Date:

**DESIGN
REVIEW**

Reviewer: Maintain a copy of your comments for future reference.

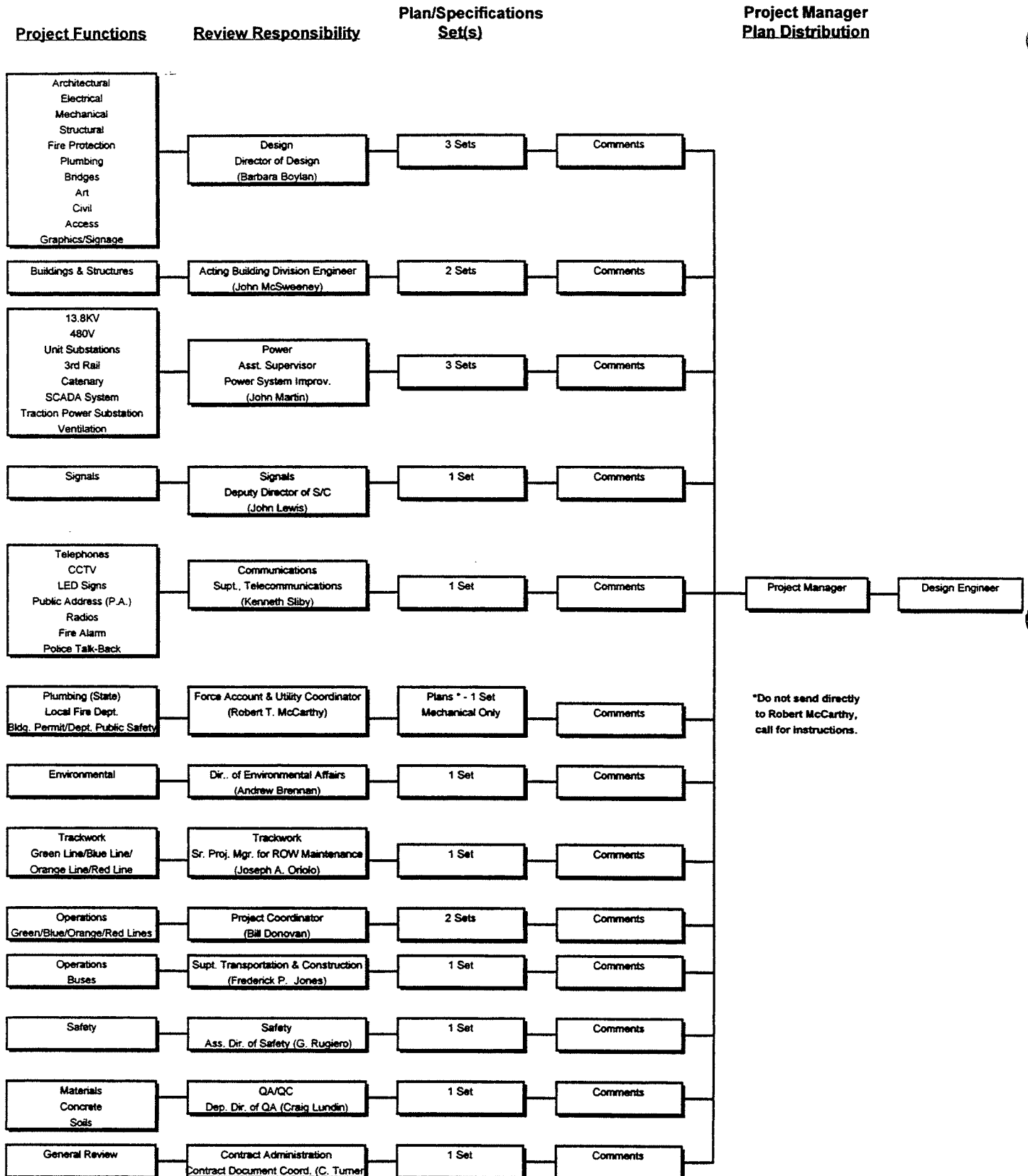
Action Codes: A - Agree, designer will comply, D - Disagree for reasons noted, C - Clarification or answer provided.

COMMENT NO.	DRAWING NO. SPEC. SECTION	REVIEWERS COMMENT
		STATE ACTION REQUIRED BY DESIGNER. (CLARIFY, ADD, DELETE, ETC.)
1		
2		
3		
4		
5		
6		
7		
8		
9		
10		
11		
12		
13		
14		
15		
16		

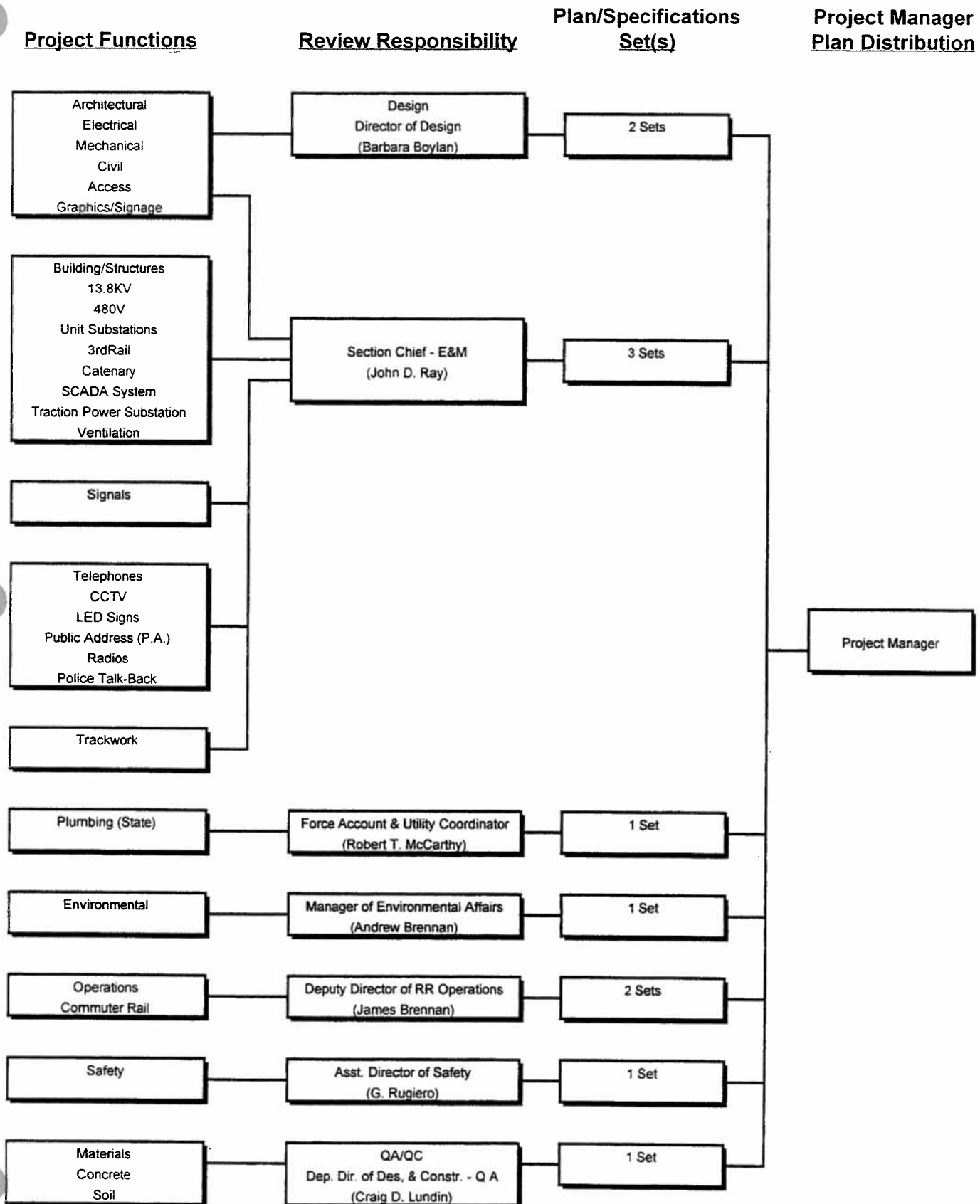
June 2003

PLAN/SPECIFICATION REVIEW FLOW CHART TRANSIT/STATION/BUS CONSTRUCTION PROJECTS

Exhibit 8.2



PLAN/SPECIFICATION REVIEW FLOW CHART COMMUTER RAIL CONSTRUCTION PROJECTS





SECTION 9

DISADVANTAGE BUSINESS ENTERPRISE (DBE)

1.0 OVERVIEW

- 1.1** The Massachusetts Bay Transportation Authority (MBTA) is committed to providing business opportunities, whenever possible to disadvantaged (appropriately designated minority/women) business enterprises in joint venture or as subconsultants.
- 1.2** As evidence of its commitment, the MBTA sets participation goals on each professional services contract to ensure that a portion of work is performed by DBE Consultants/Subconsultants.

There is currently a 16% minimum percentage of participation by DBE firms for Professional Services contracts. Although the current goal is set at 16%, percentage goals for construction contracts can vary considerably depending on the nature of the work to be performed and the availability of the DBEs to perform such work.

- 1.3** The MBTA strives to promote economic growth and development of professional services firms through broad solicitation and awarding of contracts. Such opportunities are provided in accordance with applicable state and federal guidelines.

2.0 MBTA POLICY

- 2.1** It shall be the policy and the objective of the MBTA to:
 - a.** Take affirmative action to ensure that Disadvantaged Business Enterprises have the maximum opportunity to participate in all of the MBTA's business activities through contracting, subcontracting, supplying, purchasing, leasing, professional and non professional services and other agreements.
 - b.** That the MBTA and its contractors and suppliers shall not discriminate on the basis of race, color, national origin, religion, age, sex or disability in the award or performance of DOT assisted contracts.

To that end, MBTA contractors shall take affirmative action, including all necessary and reasonable steps to Disadvantaged Business Enterprises to compete for and perform contracts. This policy shall be implemented throughout each of the MBTA's departments and subdepartments and will

become a part of all appropriated MBTA public relations and advertising efforts.

- 2.2 The Department of Organizational Diversity will report periodically to the General Manager on the progress of the DBE Program.

3.0 DEPARTMENTAL RESPONSIBILITIES

- 3.1 Each department or departmental head is responsible for the implementation and review of the DBE program in their department. Individuals responsible for the implementation will be held accountable through the regular performance evaluation process.
- 3.2 Each department head or their designee will be responsible for monitoring and reporting DBE utilization on a quarterly basis in their department.

4.0 DESIGN AND CONSTRUCTION DEPARTMENT RESPONSIBILITIES

- 4.1 The Project Manager for each project will be responsible for the following:
 - a. Establishing procedures consistent with the policies of the MBTA's Department of Organizational Diversity to assume responsible implementation of the DBE policy and acting as the Design and Construction Department's Liaison with the Department of Organizational Diversity on DBE issues.
 - b. Acting as the Design and Construction Department's Liaison with all MBTA departments involved in capital programs of expansion and modernization as they relate to the DBE compliance.

5.0 PERCENTAGE GOALS

5.1 Overall Project and Individual Contract Goals

- a. Project and individual contract goals are determined by the procedures set forth in the MBTA's Methodology of Setting Goals for DBE Participation.
- b. Individual contract goals can vary considerably depending on the nature of the work to be performed and the availability of the DBEs to perform such work. Thus, the aggregate level of DBE participation during any given period will be determined by the number of contracts that are awarded during that time.
- c. The MBTA's individual contract goals will include sufficient DBE participation to meet the MBTA's project goals. The MBTA has established an overall DBE goal of 16% of funds for all contracts.

- d. Contract goals will also be incorporated into contract language and bid specifications' and will continue to be a part of the MBTA's advertising efforts in various newspapers such as the Dodge Bulletin, Bay State Banner, City Record, El Mundo, CIM Journal, etc.
- e. The MBTA has established overall departmental DBE goals of 16% for services/consultants for professional services.

5.2 Construction Contracts

- a. The MBTA requires each prime contractor who has fifty or more employees and a contract of \$50,000 or more to submit a written program.
- b. Each prime contractor shall require each subcontractor who has fifty or more employees and a subcontract of \$50,000 or more to submit their written affirmative action compliance program for each of its establishments.
- c. A necessary prerequisite to the development of a satisfactory affirmative action program is the identification and analysis of problem areas inherent in minority and female employment and evaluation of opportunities for utilization of minorities and female personnel.
- d. The Contractor's program should address steps to guarantee equal employment opportunity keyed to the problems and needs of minorities and women including, when there are deficiencies, the development of specific goals and timetables for the prompt achievement of full and equal employment opportunity.
- e. The Contractor shall also address affirmative action compliance program job classification, including a table of job classifications.

This table should include, but need not be limited to, job titles, principal duties (and auxiliary duties, if any), rates of pay' and, where more than one rate of pay applies because of length of time in the job or other factors, the applicable rates.

The affirmative action compliance program shall be signed by an executive official of the contractor.

6.0 DBE PROGRAM FOR PROFESSIONAL SERVICES

- 6.1 The Materials and Design and Construction departments shall actively seek, compile, maintain and update a list of disadvantaged and women-owned and controlled firms. This list shall not be limited to the SOMBA's DBE Directory and new entries on this shall be forwarded to the Manager of Contract Compliance.

- 6.2 The Director of each department shall forward a complete list of all contracting and consultant opportunities within each department to the Manager of Contract Compliance on a regular and timely basis for publication.
- 6.3 The Manager of Contract Compliance shall assist in planning the DBE utilization activities of each department. The goal of these activities is to increase the department's use of DBEs in all of its contracting and consulting activities.
- 6.4 The Department of Organizational Diversity shall participate in the consultant selection process in each department as set by the MBTA guidelines.
- 6.5 All contracts for consulting, printing or design services which qualify for award through methods other than those set out in the MBTA's consultant selection guidelines on competitive bidding shall be responsible to the MBTA's efforts to increase the use of DBEs.
- 6.6 All potential contractors for such contracts shall be notified by the Director of each department, in all advertisements, of the MBTA's desire to meet such a goal and shall be encouraged to use minority/female subconsultants and subcontractors in an effort to aid the MBTA in meeting said DBE goal.
- 6.7 The goal set further above shall be cumulative for the dollar value of all contracts and shall not necessarily be the goal of each contract.
- 6.8 The Director of Organizational Diversity shall receive regular reports from each department with regard to the implementation of this portion of the plan and shall ensure compliance recommendations which shall be forwarded to the General Manager.

7.0 DBE AND ORGANIZATIONAL DIVERSITY COMPLIANCE PROGRAM CONSULTANT SELECTION PROCESS

- 7.1 The MBTA's consultant selection process includes procedures that encourage the utilization of disadvantaged consulting firms in joint ventures or as consultants and requires EEO/AA compliance by all other firms doing business with the MBTA.
- 7.2 One of these procedures is the designation of the Director for Organizational Diversity, or designee, as a permanent member of all consultant selection committees.

8.0 MAINTENANCE OF RECORDS AND REPORTS

- 8.1 The Department for Organizational Diversity receives quarterly DBE utilization reports from all departments. The departments compile this information on a monthly basis.
- 8.2 The Department for Organizational Diversity maintains an internal Quarterly Departmental DBE Utilization Report that shows the total number and dollar amount of awards and further delineates those awards made to DBE firms on the basis of number, dollar, amount and percent of total dollars. These percentages are compared to the departmental goals.

- 8.3 There are weekly, quarterly and monthly reporting requirements for contractors and DBEs on MBTA projects. DBEs submit reports to the prime contractor.
- 8.4 Prime contractors are responsible for furnishing the Department for Organizational Diversity with their reports as well as the DBE reports.
- 8.5 The Department for Organizational Diversity monitors goals and activities on all projects to determine whether, and the extent which, percentage goals are met or exceeded. Careful and continued monitoring on a project by project basis includes workforce utilization, contract awards and amendments, payment schedules and DBE participation.
- 8.6 A monthly activity report must be submitted with all payment requisitions. A Certificate of Completion by DBE firms must be signed by both the prime contractor and the DBE subcontractor after completion of work by DBE firm. (See Exhibit 9.1)

9.0 ESTABLISHING A PERCENTAGE GOAL FOR CONSTRUCTION CONTRACTS

- 9.1 Exhibits 9.2, 9.3, 9.4 and 9.5 illustrate how to establish and obtain approval for DBE participation (percentage goals) for a construction contract.
 - a. Memo from Director of Organizational Diversity (Exhibit 9.2)
 - b. Memo from Deputy Director of Design and Construction (Exhibit 9.3)
 - c. Letter from Consultant (Exhibit 9.4)
 - d. Estimated DBE Participation (Exhibit 9.5)

**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
CERTIFICATE OF COMPLETION BY DBE FIRM**

CONTRACT # _____ DATE _____

BY _____
DBE FIRM

CONTRACT NAME _____

PRIME CONTRACTOR _____

DESCRIPTION OF WORK

PERCENT OF TOTAL PRICE _____

Total amount to date from Prime Contractor \$ _____

Total amount due from Prime Contractor \$ _____

I hereby certify, under pains and penalty that all information provided herein is complete and accurate and is in compliance with the terms of the agreement

GENERAL CONTRACTOR

DBE CONTRACTOR

BY _____ BY _____

TITLE _____ TITLE _____

DATE _____ DATE _____

COMPLIANCE MONITOR _____ DATE _____

**THIS FORM SHOULD BE SUBMITTED TO THE RESIDENT ENGINEER,
ORGANIZATIONAL DIVERSITY AND CONTRACT ADMINISTRATION AT
COMPLETION OF WORK BY EACH DBE FIRM ON THE PROJECT.**

d/COMDBE

Memo from Director for Organizational Diversity

To: Chief of Engineering and Construction
From: Director of Organizational Diversity
Re: Recommendation for Disadvantaged Business Enterprises
Participation Goal for Contract No. _____
Project Name

Purpose

The purpose of this memorandum is to obtain the Chief of Engineering and Construction's approval to include a special provision establishing a goal for DBE participation in the above contract.

Discussion

This request for a goal is consistent with the policy of the MBTA "to insure that disadvantaged business enterprises have the maximum opportunity to participate in all of its business activities through contracting, subcontracting, supplying, purchasing, leasing, professional services and other agreements" (Authority's Disadvantaged Women-Owned Business Enterprises Plan, No. 1, State of Policy).

We have reviewed the work on this contract that is likely to be subcontracted (as submitted by the Chief of Engineering and Construction) as well as the availability of DBE's to perform the work. Based on our review, we have determined that the DBE will be able to perform 18% of the work on this contract.

Recommendation

We, therefore, recommend the Chief of Engineering and Construction include a DBE goal as follows:

Project Title:
Contract No:

DBE Goal

To: Director of Engineering and Construction

From: Deputy Director of Design and Construction

Re: MBTA Contract No. _____,
Subcontractor/DBE Participation. _____
(Project Name)

The consultant and the Project Office have prepared a possible subcontractor/DBE participation breakdown for the above referenced project (see attachment). The percentage of possible DBE involvement is established at 18%. The goal of 18% is appropriate for this contract since the major portion of the contract work consists of bridge/ramp construction.

The possible DBE firms for the subcontracting items listed in the 89/90 SOMBA Minority and Women's Business Directory.

Concur:

Approved:

Director of Design or Construction

Director of Organizational Diversity

May 26, 1993

Architects Engineers Planners

Mr. James F. Wright, II, Project Manager
Massachusetts Bay Transportation Authority
MBTA South Station Project Office
720 Atlantic Avenue
P.O. Box 1225, GMF
Boston, Massachusetts 02205

Re: South Station Transportation Center - Phase IIB
MBTA Contract No. S6CN16: Interim Ramps
Final Cost Estimate: Estimated DBE Participation

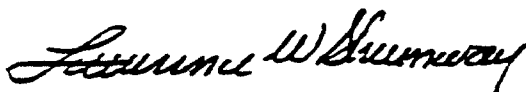
Dear Mr. Wright:

Transmitted for your information and consideration is a copy of the Final Cost Estimate with the Estimated DBE Participation and SIC Code Designations constituting part of the Pre-Bid Review Control Sheets (PRCS) for South Station Transportation Center - Phase IIB which is being constructed under MBTA Contract No. S6CN16: Interim Ramps. Please note that this cost estimate supersedes the cost estimate previously submitted due to changes in the basic assumptions regarding the Allowance items for the contract as previously discussed.

Should you have any questions on this matter or wish to discuss the estimate or accompanying breakdowns in more detail, we would be happy to meet with you at your convenience. We trust that this will be sufficient for your needs at this time. Should you require further assistance, please advise.

Very truly yours,

THE ARCHITECTS COLLABORATIVE, INC./
HOWARD NEEDLES TAMMEN & BERGENDOFF, A Joint Venture



Lawrence W. Shumway
Project Manager

Enclosures

cc: Mr. D.W. Ryan, MBTA
Mr. G. N. Moneyhun, TAC/ENTB
Mr. D.R. McGonagie, TAC/ENTB

data\wp\stc\stccodes.lwr

46 Brattle Street
Cambridge, MA 02138
868-4200

SOUTH STATION TRANSPORTATION CENTER - PHASE IIB
MBTA CONTRACT NO. INTERIM RAMPS
ESTIMATED DBE PARTICIPATION

SAMPLE

ITEM NUMBER	ITEM DESCRIPTION	UNIT	QUANTITY	UNIT PRICE (C)	AMOUNT (C)	SIC CODES	EST. % DBE PARTICIPATION	EST. VALUE \$
0130.110	FIELD OFFICE	LG	1			1941, 1794, 2929, 3211, 5231, 5231, 7349	0	0
0130.411	MAINTAIN & PROTECT RA TRAFFIC	AL	1			4011, 9221, 9229	0	0
0130.430	TRAFFIC OFFICES SERVICES	AL	1			9221	0	0
0130.442	MASS. PKB TRAFFIC MAINTENANCE	AL	1			9221	0	0
0140.015	STREET SWEETING	AL	1			1639, 3991	0	0
0140.021	STREET CLEANING	HR				1639, 3991	100	35,000
0160.042	TEST - VOLATILE ORGANIC COMPOUNDS	BA				7397, 8911	0	0
0160.044	TEST - PC/STRENGTH ANALYSIS	BA	19			8397, 8911	0	0
0160.045	TEST - FLASH POINT	BA	19			7397, 8911	0	0
0160.046	TEST - REACTIVITY	BA	19			7397, 8911	0	0
0160.047	TEST - CONDUCTIVITY	BA	19			7397, 8911	0	0
0160.053	TEST - PETROLEUM HYDROCARBONS	BA	122			7397, 8911	0	0
0160.054	TEST - TOLUENE CHLOR. LEACHING PROCEDURE	BA	10			7397, 8911	0	0
0160.057	TEST - TOTAL METAL	BA				7397, 8911	0	0
0160.058	TEST - POLYNUCLEAR AROMATIC HYDROCARBONS	BA				7397, 8911	0	0
0160.063	TOTAL PETROLEUM HYDROCARBONS - FINGERPRINTING	BA				7397, 8911	0	0
0170.500	MOBILIZATION	LG	1			7931, 5311, 5903, 6331, 6399, 7312, 7333	20	60,000
0211.401	REPAIR EXISTING UTILITIES	LG	1			1611, 1623, 1794	100	2,000
0211.416	BOSTON GAS UTILITY RELOCATION	AL	1			1799, 4923	0	0
0211.710	REMOVE & REPLACE PASSENGER STATION PLATFORMS	LG	1			1639, 1771, 1791, 3449	10	2,100

May 27, 1993

SECTION 10

FLAGGING SERVICES

1.0 OVERVIEW

Flagging services are required whenever construction activity is performed on or near MBTA subway, light rail, or commuter rail right of way. The Project Manager is responsible for budgeting and arranging for flagging services with the appropriate operating personnel.

1.1 Project Manager Responsibilities

The Project Manager will:

- Meet with the appropriate Superintendent of Operations to prepare estimate of flagging services required during life of the Project.
- Prepare budget estimate for flagging services to include in the Authorized Budget and Schedule.
- Follow procedures for obtaining flagging services as described below.
- Compare the flagging budget versus actual expenditures to ensure that Project will be managed to Budget.
- Assure that non-MBTA personnel who request right of way access attend safety training.

1.2 Prepare Estimate of Flagging Services

During Preliminary Design, the Project Manager meets with the Superintendent of Transportation for all transit or light rail lines that will be affected by the Project. If the Project involves work on or near a commuter rail line, the PM also meets with the Director of Railroad Operations. During these meetings, the Project Manager:

- Explains the scope of the Project.
- Reviews appropriate Design drawings and the project management plan.
- Identifies work that will require flagging protection for access to the right-of-way.
- Estimates Revenue Hour Flagging versus Non-Revenue Hour Flagging requirements.
- The Project Manager and the appropriate Superintendent agree to a Flagging Services Plan for the Project. This Plan is provided to the Chief Operating Officer for review.

1.3 Budget Estimate for Flagging Services

Based upon the Flagging Services Plan, the Project Manager prepares a budget for flagging services. The PM reviews the requirements and costs of Revenue Hour versus Non-Revenue Hour Flagging in calculating this budget estimate. The PM must:

- Obtain approval from the Chief Operating Officer for the Flagging budget.
- Include the approved Flagging budget with the request for the Authorized Budget and Schedule for the Project.

1.4 Managing the Flagging Budget

After the Flagging Budget is approved with the Authorized Budget and Schedule, the Project Manager is responsible for managing the Project to budget. Although MBTA personnel provide Flagging services, it is a real cost of the Project and should be monitored to ensure consistency with budget. Project Managers keep Flagging costs within budget by:

- Adhering to the Flagging Services Plan prepared during Project design.
- Arranges for Flagging Services by following the procedures set forth below.
- Monitors actual expenditures versus budget in the Flagging Service Plan.

If deviations from the initial Flagging Services Plan are required or if Flagging expenditures will exceed the Flagging Budget, the Project Manager meets with the appropriate Operations Superintendent to develop an action plan to control Flagging costs and complete the Project within budget. Should additional Flagging costs be unavoidable, the Project Manager and Operations Superintendent develop a revised Flagging Services Plan and Budget. The PM identifies the need for a revised Flagging budget as soon as practical on the Project Status Report. The Project Manager then requests an amendment to the Authorized Budget as set forth in the Authorized Budget and Schedule procedure.

2.0 TRANSIT AND LIGHT RAIL

There are two types of flagging services for transit and light rail construction work: Revenue Hour Flagging and Non-Revenue Hour Flagging Services.

2.1 Revenue Hour Flagging (5:30 A.M. to 1:00 A.M.)

- a. These services are arranged and coordinated with the office of the Superintendent of Transportation for each line (Red 222-4533; Orange 222-5370; Blue 222-5532; and Green 222-5982).

- b. The Project Manager is required to arrange for flagging services that have been identified in the project budget as a separate line item.
- c. The Budget Analyst should identify a method of payment to pay for the flagging services either by Force Account or Bill for Collection method. Once the method of payment has been identified and the areas established, then flagging services may be procured.
- d. Under the Force Account method, the Subway Operations Project Coordinator completes the TRS form. Under the bills for collection method, the Budget Analyst is responsible for compiling the paperwork.
- e. Once the method of payment has been identified, the Project Manager may arrange for flagging services. Subway Operations requires that flagging requests be made by 10:00 a.m. of the previous day. Request for flagging must be made directly to each line.
- f. If flagging services are requested for a Monday, the Line must be notified the previous Friday by 10:00 a.m.
- g. The minimum hours for flagging services during revenue hours are three hours with the majority of the work done on an overtime basis.

2.2 Non Revenue Hour Flagging

- a. Non revenue services are arranged and coordinated with the Engineering and Maintenance Department, Office of Plant Inspector, located at 500 Arborway.
- b. Procedures are similar to that for revenue hours with the following exceptions.
 - o The night Track Master must be notified between the hours of 7:00 to 10:00 P.M of the night the work will be performed.
 - o The minimum work hours are 7 hours as the night flagging shift must report at 12:00 A.M., begin work at 1:00 A.M., and remain on duty until service is resumed.

2.3 Rules for Trainpersons and other Employees of the Heavy Rail Lines

Rules Manual (Subway Operations)

- a. The flagging operations-rights of way access special order #00-80, (Exhibit 10.1) which is part of the MBTA's rules for trainpersons is included as an example only and will not be updated in this procedure. This order is updated periodically, therefore, the Project Manager should assure that the latest rules are used by contacting Subway Operations.
- b. The Rules for Trainpersons manual provides uniform methods and procedures to be used in establishing protection for MBTA employees and others engaged in work on or adjacent to tracks or ways to ensure the safe passage of MBTA vehicles. This manual is also updated periodically, therefore, the PM should assure that the latest rules are enforced.

3.0 COMMUTER RAIL

- 3.1 The Project Manager should also refer to Maintenance and Protection of Railroad Traffic available from the Railroad Operations and 49 CFR 214 for rules applying to roadway worker protection. Key points of roadway worker protection listed in 49 CFR 214 have been included in Exhibit 10.2, however, the Project Manager is cautioned to refer to 49 CFR 214 for any changes or updates.
- 3.2 Flagging services may be required if there is work being performed on MBTA Commuter Rail property or within fifty feet of the railroad tracks. Whenever there is a chance of equipment fouling the tracks within fifteen feet of the center line of the track, a flagman is also required. An example would be a crane operating a swing or boom.
- 3.3 How to obtain flagging services:

For most of the Commuter Rail lines, contact the Area Construction Engineer, Amtrak at 222-3620 fourteen days in advance of the work. The following exceptions have their individual procedures.

- o Framingham Line - Contact: CSXT, 783-6242
- o Shore Line (Boston to Providence) -
Contact: Amtrak, 1-203-773-6013

If there are any general flagging questions, contact the MBTA Engineering section of the Railroad Operations Department at 222-6176 for assistance.

SUBWAY OPERATIONS SPECIAL ORDER #00-80
(Cancels and Supersedes Special Order #98-114)

**TO: ALL PERSONNEL ACCESSING THE RIGHT- OF-
WAY (Operations, Maintenance, Construction, and Contract
Forces)**

**SUBJECT: FLAGGING OPERATIONS-RIGHT OF WAY
ACCESS**

All personnel are reminded of the importance of adhering to safety procedures and rules for flagging operations. In order to protect life and property; whenever any activity, construction or otherwise is being performed on the right-of-way, all parties involved must abide by proper flagging and operating procedures. Additionally, it is the primary responsibility of all persons accessing the right-of-way to protect themselves from all hazards, including moving trains, interlocking switches, live overhead catenary wire and live third rail. In this regard, the following procedures **MUST** be adhered to during revenue service hours:

PROCEDURES FOR ACCESS

- Contact the Operations Control Center Dispatcher (by radio or telephone)... inform the dispatcher the reason for access and provide precise information regarding their whereabouts. All personnel **MUST** call off to the dispatcher upon clearing the right-of-way.
- Any work activity that requires flagging protection shall be placed on the protect list. This shall not apply to personnel on foot performing routine maintenance activities.
- At a minimum, personnel must be equipped with an orange safety vest. At least one member of each party must be equipped with a portable radio. Personnel must be equipped with a flashlight when in darkness. For activity involving more than personnel on foot, or which would hinder a person's ability to protect themselves from hazards, flagging personnel with a full complement of flagging equipment is necessary. **NOTE:** non-MBTA employees require an MBTA Flagperson to access the right-of-way at all times. **See Required Equipment, Page 6.**
- All personnel accessing the right-of-way shall be responsible to monitor the radio so that they are aware of any additional hazards on the right-of-way, especially adverse train movement. Personnel shall notify the dispatcher of any hazards of which they become aware or if their activity places themselves or others at risk.
- Any non-MBTA person requesting right-of-way access must first attend MBTA Safety Department sponsored safety awareness training program prior to scheduling such access. Qualified personnel will be issued a certification card and an identifying sticker for their hard hat.

FLAGGING PROTECTION

For construction activity within ten (10) feet of center line of track

- At least one Flagperson must possess a portable radio.
- A portable trip must be installed on the affected track five hundred (500) feet in advance of the work crew (except on the Light Rail Lines).
- Orange cones must be placed at fifty (50) foot intervals one thousand (1000) feet in advance of work crew (1200 feet in advance of the crew on the Light Rail Lines). The first cone must contain a yellow flag.
- 1 Flagperson must be 500 ft. in advance of the work area.
- Flagperson #1 stops the oncoming train with a cone with a red flag in between running rails and a red flag held across the tracks, whether work crew is clear or not. Heavy Rail Flagpersons must have a portable trip set up adjacent to cone with the red flag.
- Flagperson #2 will be positioned with the first person working in the crew.
- Flagperson #1 will not remove cone with red flag from between the running rails until s/he makes visual contact with Flagperson #2 and receives a proceed signal, thus ensuring that all workers and equipment are at a sufficient distance from the right of way to allow safe train movement. Flagperson #1 will then give the proceed signal to train/car with yellow flag.
- As soon as the train/car is clear of the area of Flagperson #1, s/he will immediately return the cone with a red flag to it's position between the running rails ready to stop the next train/car (on the Heavy Rail Lines, the portable trip must be installed at this juncture).
- If, due to line of sight issues, visual contact between the two Flagpersons is not possible, a sufficient number of Flagpersons must be provided to establish visual contact from person to person. Note: The train/car stopped by Flagperson #1 should not be released beyond that point until all Flagpersons involved in the detail have given the signal to proceed.
- Flagpersons may use air horns to contact each other and to signal members of the work crew. However, these audible signals **SHALL** never be used instead of visual proceed signals.
- All visual signals given to other Flagpersons, motorpersons and streetcar motorpersons **MUST** be given with the appropriate color flag (Red-Stop; Yellow-Proceed; Green -Proceed at restricted speed).
- The slow zone must be defined with a yellow flag or lantern at the first cone, and with a green resume signal (green flag or lantern) beyond the work crew. The green resume signal will be placed at least six (6) car lengths beyond the work crew on the Red, Orange, and Blue Lines and at least three (3) car lengths beyond the work crew on the Green Line.

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Due to extensive conflict with safe train operations in both directions, contractors are discouraged from working in the dummy area (middle of two tracks) during regular service hours... any such work will require authorization of the appropriate line supervisor and only after proper flagging protection is established in both directions.

- **Note: Due to increased stopping distances associated with slippery rail conditions, contractor access will not be allowed within ten (10) feet of center line of track under adverse weather conditions. Officials are responsible to monitor right-of-way activities and cancel work details accordingly.**

For construction activity beyond ten (10) feet of center line of track:

- Orange safety cones must be placed at fifty (50) foot intervals five hundred (500) feet in advance of work area on the Red, Orange, Blue Lines, and seven hundred (700) feet in advance of work area on the Green Line.
- A portable trip (Red, Orange, and Blue Lines) is not a necessary requisite for activity in areas beyond 10 feet from the center line of track. However, if in the interest of safety a Supervisor/Official deems it appropriate, a portable trip must be installed five hundred (500) feet in advance of the work area, along with a second Flagperson and additional safety cones with a yellow flag or lantern one thousand (1000) feet in advance of the work crew. Supervisors/Officials may require additional personnel/equipment for flag sites should they determine it necessary to ensure the safety of employees/contractors. An example of this may occur when heavy equipment is working adjacent to the right-of-way.
- At least one Flagperson equipped with a safety vest and red and yellow flags must remain with work crews at all times.

For "personnel on foot".

- Personnel on foot who are not remaining in a stationary location or performing construction activity do not require orange cones or portable trips.
- Personnel on foot are required to always walk in the adverse direction of train travel and remain constantly vigilant for oncoming trains.
- Private contractors or engineers on foot do require safety vests as well as properly equipped accompanying Flagpersons at all times.
- **Flagpersons shall be responsible to ensure all cones are removed from the work area upon completion of the construction activity. Cones shall never be left in place after a flagging detail's cessation. Any Flagperson (s) or Official who has been determined to have left cones in place after a detail has been completed will be subject to discipline under the Authority's discipline policy for inherently safety related offenses.**

TRACKWALKERS/SIGNAL DEPARTMENT PERSONNEL RESPONSIBILITIES

- Systemwide Maintenance and Improvement (SMI) personnel performing a repair activity which hinders their ability to protect themselves must work in crews of at least two persons. During such times that their work activities hinder their ability to protect themselves, one member of the crew shall be responsible for flagging oncoming trains. If another maintenance worker is unavailable, contact the OCC Dispatcher via radio and request a Subway Operations Official to the scene or arrange to have service stopped in the affected area.
- Personnel on foot are required to always walk in the adverse direction of train travel and remain constantly vigilant for oncoming trains.
- No work activity shall be allowed on the right-of-way unless adequate precautions are in place to protect the work crew or individual from oncoming trains.

OFFICIAL'S RESPONSIBILITIES

- Officials must demonstrate a constant vigilance with due regard for proper flagging procedures within their area of responsibility. Periodic train rides will be required to perform this activity. Any deficiencies or violations must result in the cessation of work activities until such time as a Transportation Supervisor can come to the area, to make a determination on how work may proceed safely.
- Officials must properly supervise and instruct Flagpersons in their duties. Any rules violations observed by officials regarding flagging operations must be reported as soon possible to the Transportation Superintendent's Office.
- Officials may be assigned to provide flagging protection for MBTA maintenance personnel when emergency repairs are required along the right-of-way.

LINE SUPERVISOR'S RESPONSIBILITIES

- Line Supervisors will maintain a proper supply of flagging equipment. Requests for Flagpersons to protect non-MBTA personnel will require a detailed explanation of the type of activity being performed in order that appropriate protection may be established. This appropriate protection includes the appropriate number of Flagpersons being assigned to the detail. Line Supervisors will also ensure that contractors have attended the Authority's safety awareness training module. In addition, they must determine that they have been provided a valid function number open to their area for flagging.
- Whenever a flagging detail requires three Flagpersons, an Official must be assigned to supervise activities. Thus, the detail will consist of an Official and two Flagpersons.
- Assignments for hiring flagging should begin in the Train Attendant's classification, going then to Motorpersons, Yard Motorpersons, and Officials (General Rating) in that order as each classification is exhausted.

- Contractors not represented by MBTA construction staff may also require right-of way permits or insurance and, therefore, should be referred to SMI for guidance.

DISPATCHER'S RESPONSIBILITIES

The Dispatcher is responsible to monitor operations for conformance to this Special Order. Any reports of violations must be promptly reported to an appropriate Line Supervisor. In addition, the dispatcher must:

- Maintain an accurate list of all personnel on the right-of-way and their whereabouts.
- Announce "on air" the current protect list at least every twenty (20) minutes. This protect list shall include all construction or work activities that require flagging protection. It shall not include personnel on foot performing right of way inspections in non-tunnel areas. These personnel must protect themselves from oncoming trains and walk facing traffic in non-tunnel areas where personal protection is required.
- In the event an emergency repair must be made along the right-of-way and no flagging protection is available, the dispatcher must restrict train movement in the affected area in order to provide adequate protection to the work crew.
- Prior to authorizing any adverse train movement, the dispatcher must inform all personnel in the vicinity of such train movement.

HAND, FLAG AND LANTERN SIGNAL AND SAFETY CONES

When signals are given by Flagpersons:

SIGNAL	ACTION
Red flag or red lighted lantern:	Stop
Green flag or green lighted lantern	Proceed
Yellow flag or yellow lighted lantern	Proceed with Caution (10 MPH)
Moving the hand, flag or lighted lantern to and from across the track:	Stop
A flag, cone, florescent work bag or lighted lantern of any color, placed on the track between the running rails, or in the center of the traveled part of a way:	Stop
Waving the hand above the head:	All Right
Moving the hand, flag or lighted lantern up and down:	Go Ahead

A red flag or lighted red lantern must never be used to give the "go ahead" signal.

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A yellow flag, safety cone or a "men working" sign by day or a yellow lighted lantern in subways and tunnels or at other places during the hours of darkness, placed outside and to the right of running rails shall indicate that the speed of all vehicles must be reduce to no more than 10 MPH until a point is reached where a green flag or green lighted lantern is displayed outside and to the right of the track or way in the direction of travel (Note: At times circumstances dictate that cones, lanterns or signs are placed to the left of the running rail. Anyone operating a vehicle must be mindful of this practice).

Employees engaged in flagging work must provide themselves with and use proper flags or lighted lanterns on the rail lines, portable trip stops (Heavy Rail Lines only) and, on surface lines, a sound-making warning device. Flags or lanterns must not be attached to signals or to signal masts.

REQUIRED EQUIPMENT

Employees engaged in flagging must provide themselves with a whistle or air horn for signal purposes and the proper flags or lighted lanterns (red, yellow, and green). Flagpersons must also have safety cones, portable trip stops (except on the light rail lines), a rule book and must wear the required safety vest. A single Flagperson must be in possession of a portable radio. When more than one Flagperson is assigned to a crew at least one Flagperson in that crew must have a portable radio.

All construction safety standards at construction sites must be conformed to by Flagpersons. This may require additional protective gear at heavy construction sites be properly used. In some cases, hard hats, safety shoes and hearing protection devices will be required.

SUMMARY

It is the intent of this Special Order to provide clear and concise operating procedures for right-of-way access during revenue service hours. It is understood that in the event of an emergency or extenuating circumstances, it may be necessary to notify the dispatcher that personnel are on the right-of-way and are in exception to some aspect of this Special Order. In doing so, every effort will be made to abide by the spirit of this Special Order and provide the highest level of safety possible.

Since transit operations and construction activity may pose inherent conflicts with one another, safety is not solely provided for under the umbrella of one rule or a collection of rules. Rather, in the end, safety depends on the good judgment and a proper attention to duty by each and every one of us.


Michael S. Francis
Deputy Chief Operating Officer/
Director of Subway Operations

KEY POINTS OF ROADWAY WORKER PROTECTION

FEDERAL RAILROAD ADMINISTRATION 49 CFR 214

- A railroad's on-track safety program must be reviewed and approved by the FRA. (214.307)
- The effective date is June 1, 1996. All Amtrak employees will be trained on the new standard by this date. (214.305)
- The employer is responsible for the understanding and compliance of requirements by its employees. (214.311 line 141-143)
- Employers must establish a system of monitoring effectiveness of training. (214.303, line 110-111, RU-5)
- The responsible employee in charge is to ensure a job briefing is held, and protection is provided, prior to fouling the track. (215.315, line 160-162)
- The employee has the right and responsibility to refuse any directive to violate on-track safety rules. (214.311, line 144-146)
- The FRA will not recognize any train approach warning other than watchman/lookout. (214.327, line 415-416, SA-16)
- Clear all tracks at least fifteen seconds before a train reaches your location. (214.333, line 352-354)
- Minimum track center measurement will rise from twenty-two to twenty-five feet to be considered an adjacent track. (To be verified, page SA-19, line 491-497 and DEFINITIONS, line 4, RU-1)
- Trains will be required by federal regulation to sound their horn when approaching or operating around roadway work groups. (214.335, line 372-375, RU-14)
- "Effective Securing Devices" (switch locks, switch point spikes, etc.) must be tagged with a suitable tag. (DEFINITIONS, RU-1, line 20-25, and SA-1, line 18-27)
- All roadway workers who are designated to provide on-track safety for roadway work groups must be qualified on the content and application of the operating rules of the railroad pertaining to the establishment of working limits (NORAC). (214.349, RU-18, line 464-465)
- All roadway workers who are designated to provide on-track safety for roadway work groups will be required by law to demonstrate proficiency by means of a recorded examination. (214.349, RU-18, line 470-471)
- Separate minimum training requirements have been established for the following group: Roadway workers-214.341, Lone workers-214.343, Watchman/lookout-214.345, Flagman-214.347, Roadway worker who supplies on-track safety for roadway work groups-214.349, operators of roadway maintenance machines-214.351



SECTION 11

PROFESSIONAL SERVICES CONTRACTS

1.0 Amendments

1.1 General

- a. No design contract shall exceed five (5) years from the date of award. If the five (5) year limit is to be exceeded, then a waiver for a specific duration with detailed supporting documentation must be submitted to the Chief of Engineering and Construction and the AGM.
- b. Prior to proceeding with an Amendment, a third party independent cost analysis of the Consultant Services shall be performed.
- c. All Task Order Contracts shall be limited to the dollar values and contract duration they were approved for at the time of Contract award. This procedure may be waived only with written approval by the Chief and the AGM of the respective departments.

1.2 Reasons for:

- a. Completion of Initial Work Phase(s)
- b. Additional work on project outside basic Scope of Work
- c. Need to meet State and Federal Guidelines
- d. Accessibility and Environmental Issues
- e. Change in Project Scope
- f. Time Extension (Note: Deputy Directors of Design and Construction may sign "No \$" Time Extensions in six month increments to prevent a non active contract from closing out.)

1.3 Procedures for Supplemental Amendments

- a. MBTA determines that additional work is required.
- b. Scope of work and schedule developed by A/E and Project. Project and Contract Administration negotiate cost (labor rates, overhead, profit, direct expenses, technical evaluation prepared).
- c. Fee Summary.
- d. Funding is identified. Budget approved.
- e. Full Discussion.
- f. Technical Evaluation.
- g. Authorization is obtained utilizing the Staff Summary procedure.
- h. Letter Contract/Notice to Proceed issued.
- i. All pre-audits completed by Contract Administration.
- j. Contract documents finalized, executed by parties and distribution made.

2.0 HOW TO PREPARE A FEE SUMMARY ANALYSIS (EXHIBIT 11.1)

- Step 1.** From the basic 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 subconsultants 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.

3.0 HOW TO PREPARE A CONSTRUCTION PHASE SERVICE ANALYSIS

- Step 1.** From the basic contract or Supplemental 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 subconsultants 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.

4.0 PROCEDURES FOR PREPARING A STAFF SUMMARY

- 4.1** A staff summary is the MBTA's procedure for submitting recommendations for important actions or approval by the General Manager or Board of Directors. It is also used as a basic document or transmittal to forward papers, studies, reports, etc.
- 4.2** In the Design and Construction Department, staff summaries are used to transmit information, but most often to recommend action on contract awards, professional services awards, and changes to the contract (change orders and Amendments). Staff summaries are required for the approval of Amendments by the following:
 - a.** Assistant General Manager (AGM) for amendments between \$35,000 and \$100,000 (amount subject to change).

- b. General Manager (GM) for amendments between \$100,000 and \$500,000.
 - c. The Board, with signature by the General Manager, for amendments \$250,000 and over.
- 4.3 The staff summary should be complete and be capable of standing alone. It should present the necessary information for the General Manager or Board of Directors to make a sound judgement and decision.
- 4.4 The staff summary should be prepared on a 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.

However, it should not include transmittals, buckslips 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. Staff summaries, which require Board approval, must be submitted to Contract Administration at least forty-five days prior to the scheduled Board meeting.

5.0 FORMAT AND PRESENTATION

5.1 Heading

- a. **To** For staff summaries directed to the General Manager, routing should be: "1" "GM".
- b. **For** Indicate by number what action should be taken. The numbers in this block relate directly to the numbers shown in the "TO" block.
- c. **From** Name and telephone number of author, which must be the Project Manager's or the person who can best discuss the details of the requested action. (Project Managers should be prepared to answer questions regarding the proposal at all times and should be aware of what has been written in the staff summary sheets.)
- d. **Subject** Indicate subject in clear and concise terms. The date should be the date the action was completed by the author and not the date approved and signed by the department head.

- e. **Implications** Check appropriate boxes – “Capital Budget” and/or “Other”. Next to “Other” type “Within Project Budget” or “Bond”, depending how the recommended action will be funded.

5.2 Body – The body of the staff summary should consist of the following key paragraphs in the order stated.

- a. **Purpose** – To inform the GM and/or the Board of Directors of the objective of the proposed action. This paragraph should normally be one sentence, beginning, “The purpose of this staff summary is to request...”

For professional service contracts, execution of all awards and Amendments must contain the phrase, “...subject to resolution of pre-audit findings and finalization of cost negotiations”.

- b. **Discussion** – The discussion should contain the information essential for the GM and Board to act on the recommendation. The first sentence of the discussion should stress the reason and benefit of the action to the system and riders. It should be written in simple language, address all the major concerns of the staff summary and attempt to answer all questions which the GM or Board could have regarding this action. The last paragraph of the discussion must always contain the approved DBE language noting the DBE involvement in the action and in the overall contract.

- c. **Financial Impact** – The source of funding for the action should be described in this section. The percentage of State and Local funding should be identified in percent and dollar amount. Do not include Grant numbers, Work Order numbers or MAC codes.

This section should also indicate any impact, including positive impacts on or future operating budgets. The author should not reiterate the phrase, “This action has no impact on present or future operating budgets...” if there are obvious impacts.

For example, a construction contract resulting in a new service would definitely have future impact on operating costs, as would the reconstruction/replacement of older track or facilities that require frequent repair.

- d. **Alternatives** – Never state that there are no alternatives. State what the consequences would be of not approving the action and how it would affect the riding public if the work were not done.
- e. **Recommendations** - This paragraph should summarize the most desirable course of action (“It is concluded that...”) and

recommend specifically that the GM and/or Board take that action ("Therefore, it is recommended that..."). A "Proposed Vote" to direct the recommended action should be prepared and included for Board action only and appear directly behind the signature page of the staff summary.

- f. **Signature** – A summary sheet will be signed by the Project Manager and appropriate approvals.
- g. **A Full Discussion**, including additional background, reasons for the action, discussion and related actions or information (if applicable), must be inserted as an enclosure immediately following the cover sheets, or if a Board action, following the "Vote". It should be clear, concise, convincing and without unnecessary detail. A **Technical Evaluation** and typewritten **Amendment Summary Analysis** are required for all professional service staff summaries. These all appear before Tab A.

5.3 Enclosures should be separated and labeled by Tab and generally consists of the following:

a. For Construction Contract Awards

Tab A - Proposed Vote
Tab B - Full Discussion – Description of Work
Tab C - Certified Tabulation of Bids
Tab D - Design Engineer's Recommendation
Director for Organizational Diversity
Recommendations
Legal Opinions
Any Other Appropriate Recommendations
Tab E - Minority Contractor Participation

Note: Budget sheets must be attached to pink routing sheet.

b. For Professional Services Awards

Tab A - Scope of Work/Cost Proposal
Tab B - Consultant Selection Committee Recommendation

d. For Change Orders

Tab A - Cost Proposal

e. For Amendments

Tab A - Scope of Work/Cost Proposal

5.4 Coordination – The coordination section shows the departments and individuals that have concurred with the action. Concurrence is required by the General Counsel, Director of Organizational Diversity and the Director of Planning, as well as heads of departments affected by the action. The “Staff Summary Routing Sheet” Exhibit 11-10, should be used to record concurrence signatures and routing.

5.5 Recommend Approval and Approved

- a. Staff summaries for **approval by the General Manager** should be recommended by the Deputy Director, Director of Design or Construction, Deputy General Manager and Chief Financial Officer and AGM of Design and Construction.
- b. Staff summaries for **approval by the Board of Directors** should also be recommended by the AGM of Design and Construction, Deputy General Manager and Chief Financial Officer and approved by the General Manager.

Signature lines: RECOMMEND APPROVAL: and APPROVAL:

5.6 Copies – Staff summaries for the Board of Directors: the original plus ten (10) copies are required.

Staff summaries for signature by the General Manager, AGM of Design and Construction, and DODC: the original plus five (5) copies are required.

6.0 WRITING A FULL DISCUSSION

6.1 When writing a Full Discussion a clear description of the project and scope of work is required. Explain why the additional work is needed or why a time extension is required or why any other course of action is required for approval of the request. The full discussion must include the Phase # as follows:

- Phase I – Feasibility studies, conceptual design, preliminary design to 15%, environmental remediation, EIR borings, etc.
- Phase II, 15% - 30% Design
- Phase III, 30% - 60% Design
- Phase IV, 60% -100% Final Design
- Phase V, Construction Phase Services

6.2 General background information is helpful regarding the history of the contract.

6.3 A financial history of the contract is mandatory and should be included in the first paragraph. The dollar value to date of the subject phase must be stated including the estimated dollar values of total design. For example, when awarded, how many Amendments authorized and

present authorized contract value. However, it is not necessary to describe every previous Amendment approved.

- 6.4** The full discussion should include every aspect of why an Amendment is needed, including whether the amendment was anticipated at time of award, and if not, why it is needed now. For instance, if additional design services are needed, clearly state why. If there is a change in the scope, explain why and how it will benefit the project from a design and cost savings point of view. Under time extensions, the number of days must be included (the Budget Analyst can ascertain the exact days from CMS).
- 6.5** A Disadvantaged Business Enterprises (DBE) paragraph, which includes a DBE history with correct percentages for the entire contract to date as well as for the individual Amendment (if applicable), should also be included.
- 6.6** The Full Discussion should also include a Contract Projection statement (i.e., how many Amendments are planned for what cost before contract closeout can be initiated).

It should be written in non-technical language so that the Board of Directors, as well as others, who do not have an engineering or construction background will understand the request.

A brief benefit of the action should be described which explains the operational impacts (i.e., future service and operating costs, on time performance reliability, lost revenues, etc.).

- 6.7** Full discussions should be carefully read for accuracy and proofread for typographical errors. It should be signed by the Project Manager.

7.0 PROCESSING AMENDMENTS UP TO \$50,000

- 7.1** The processing of supplemental agreements for the AGM of Design and Construction's authorization and signature does not require use of the Staff Summary procedure. All Amendments up to \$50,000 shall be submitted to the Superintendent of Administration and Finance for processing with a package that includes the following:

- Notice to Proceed
- Scope of Work
- Technical Evaluation
- Full Discussion
- Exhibit 11.1
- Budget Sheet (Supplemental Summary Analysis)
- Record of Negotiation (Exhibit 11.7)
- Contract Overview (Exhibit 11.8)
- Amendment Input Form Exhibit 11.9

- 7.2** For Amendments up to \$25,000, the Deputy Director of Design and Construction and the Superintendent of Administration and Finance must be sure that the Budget Analyst has signed off on the budget sheet and that the Deputy Director of Design and Construction – Contracts has been consulted as to limitation on the delegation of authority (10% rule) before the Deputy Director of Design and Construction signs the authorization letter.

After authorizing, the above mentioned package should be forwarded to Deputy Director of Design and Construction – Contracts, by the Superintendent of Administration and Finance for execution in CMS.

- 7.3** For Amendments up to \$35,000, the Superintendent of Administration and Finance must be sure that the Deputy Director of Design and Construction and the Budget Analyst have signed off on the budget sheet and that the Deputy Director of Design and Construction – Contracts has been consulted as to limitation on the delegation of authority (10% rule) before signing. The Director of Design or Construction or Chief of Engineering and Construction sign the authorization letter.

After authorizing, the above mentioned package should be forwarded to the Deputy Director of Design and Construction – Contracts by the Superintendent of Administration and Finance for execution in CMS

- 7.4** For Amendments up to \$50,000 requesting AGM of Design and Construction signature, the above mentioned package must be transmitted from the Deputy Director of Design and Construction, using an interoffice memorandum. The memo must have concurrence lines for the Deputy Director of Design and Construction - Contracts, and for funding, the Deputy Director of Design and Construction-Administration.

8.0 GUIDELINES FOR TECHNICAL EVALUATION

- 8.1** Although project participation for professional services procurement encompasses many facets and areas of responsibility, particular emphasis is made to the Technical Evaluation.
- 8.2** This evaluation is a technical and engineering analysis of the reasonableness of the negotiated estimates for labor effort, payroll rates, and labor classifications to be utilized, allowance for contingencies and the necessity for concurrence of direct costs (travel, per diem, out pocket expenses). All of which should relate to the nature, complexity and duration of each of the proposed contract work tasks. This evaluation is an integral and key component of the procurement process, the importance of which cannot be over emphasized.

- 8.3** The document must be prepared by an individual with sufficient background and related experience and is fully knowledgeable of the proposed project activities. Once the scope of work is finalized, this evaluation should be developed and incorporated into the staff summary or other authorization action as appropriated.
- 8.4** The following are some suggestions to follow and items, which should be addressed. The evaluation may be expanded or reduced depending upon the nature and magnitude of the proposed work.
- a.** Include a brief but accurate narrative describing the work to be accomplished. State project objectives.
 - b.** Evaluate reasonableness of the proposed level of effort, distribution of man-hours and professional disciplines for each of the proposed work tasks.
 - c.** Review the reasonableness of the estimated labor effort for those services which have been categorized as "special" (i.e., outside the scope of design services such as planning and feasibility studies, soils investigations and survey, photogrammetry, full time construction supervision and environmental impact statements). As a guideline in making the distinction between "basic" and "special" or "other" services see, "A Guide for the Engagement of Engineer's Services, American Society of Civil Engineers (ASCE)" (Exhibit 11.2).
 - d.** Review the distribution of labor effort for conceptual and preliminary design, final design and construction phase services.
 - e.** Identify those individuals who are principals with the consultant and who propose to incur charges for their services under the contract. Review the necessity, technical nature and level of effort of proposed input.
 - f.** Review the necessity for and magnitude of direct expenses; such as travel, per diem, personnel relocations, printing, telephone, special instrumentation requirements, police and flagging services and computer usage.
 - g.** Review the scope, labor categories, level of effort and direct expenses as they relate to the proposed work tasks for each subconsultant.
 - h.** Evaluate reasonableness of projected schedules for completion of each work phase including those for phases, which may be authorized at a later date.

- i. Review interface of schedules with other MBTA design and construction projects, if applicable.
- j. Identify those portions of the work effort to be subcontracted to or performed by disadvantaged business enterprises.
- k. State the preliminary estimated construction cost of the work to be designed, if applicable.
- l. Read carefully for accuracy and proofread for typographical errors.
- m. The Project Manager or their supervisor in the chain of command must sign the Technical Evaluation.

9.0 PAYMENT PROCEDURES

- 9.1 For a consultant to be paid, a standard invoice form (ENG 180) must be completed. See Exhibit 11.3 for instructions for preparation of a standard invoice for professional services. (Sample Standard Invoice, Exhibit 11.5).
- 9.2 The consultant submits a Standard Invoice for Professional Services for payment to the Contract Auditor, Contract Administration Office. Each request for payment must include a recapitulation sheet, claim settlement and a summary of subconsultants/DBE participation form.
- 9.3 Each payment request for professional services is reviewed to ensure:
 - a. Compliance with the terms and conditions of the contract.
 - b. Allowability and accuracy of labor rate, labor hours, direct expenses, subconsultant charges and fee charges.
 - c. Verification that "accrued billing to date" for all charges is in line with the percentage of contract completion.
- 9.4 Once the Contract Auditor has approved the payment request, two copies are sent to the Project Manager with a Voucher Routing Control sheet attached.
- 9.5 The Project Manager is responsible for verifying that the work and hours completed is correct and that the consultant has performed the work.
- 9.6 The Project Manager also reviews all direct expenses and subconsultant charges for applicability.
- 9.7 After the Project Manager approves payment, the Program Controller identifies the appropriate work order number(s) and funding to pay the invoice. A computerized payment is printed from the CMS system.

- 9.8** The authorized Project Manager and Deputy Director of Design and Construction sign both the CMS vouchers and the Voucher Routing Control sheet.
- 9.9** One complete voucher payment set is returned to the Contract Auditor's office for further processing and submittal to Accounts Payable in the Treasurer-Controller's Department for payment. The other copy is retained for project office files. The recapitulation sheet and claim settlement is reviewed by the Project Manager to verify project status.
- 9.10** It is the Contract Auditor's responsibility (not the Project Office) to coordinate the transmittal to Accounts Payable for timely payment for professional services.

10.0 CLOSEOUT PROCEDURES

10.1 Procedures

- a.** All future final payment invoices must be accompanied by a Closeout Report (Exhibit 11.4) which is prepared by the Project Manager and approved by the cognizant Deputy Director.
- b.** A printout of all Amendments must be attached to the closeout recommendation.
- c.** A letter from the consultant must be included stating there are no outstanding claims.

10.2 Summary of Items to be Included in Report

- a.** Specific Design and Construction Department objectives and procedures have been met.
- b.** The terms of the contract scope of services and costs were compiled with and the objectives accomplished.
- c.** The contract was carried out in an economical and efficient manner.
- d.** The quality of professional services and cooperation provided by each consultant supports their selection for future contracts.
- e.** The contract was carried out in compliance with MBTA and FTA procedures and regulations.
- f.** The contract records are complete and organized for easy future access by the Design and Construction Department and internal and external auditors.

- g.** Certification that there are no “errors or omissions” for which the MBTA should pursue credit to the contract.

If questions arise concerning the appropriate closeout procedure, the Contract Auditor in Contract Administration should be contacted. A representative in the MBTA’s Audit Services Department can also be contacted for specific closeout information. (See Exhibit 11.4 for sample memo accompanying a Design Contract Closeout Report).

10.3 Consultant Performance Evaluation Rating

At the conclusion of the design services contract or the construction phase services contract, the PM shall perform an evaluation of the consultant’s performance. Exhibit 11.6, Consultant Performance Evaluation Rating Sheet, shall be completed.

Example of Fee Summary

Step 1	Basic Contract (Phase 1A &1B Services)	
	Prime Basic Hours	
	Direct Labor and Overhead	\$ 135,362.00
	10% Fixed Fee	\$ 13,536.00
		\$ 148,898.00
Step 2	3% Subconsultants	\$ 3,700.00
Step 3		
Step 4		\$ 152,598.00
	Supplemental Agreement No. 9	
	Final Design Services Direct Labor/Overhead	
	<u>Subconsultants</u>	
	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
Step 5	Prime	\$ 660,861.00
	10% Fixed Fee	\$ 66,086.00
		\$ 726,947.00
	3% Subconsultants	\$ 7,032.00
	Total for Design	\$ 773,979.00
Step 6	Construction Estimate	\$34,400,000.00
	6% Design Line	\$ 2,064,000.00
	Total Basic Contract Hours	\$ 152,598.00
	S. A. No. 9 Basic Contract Hours	\$ 732,979.00
		\$ 886,577.00
Step 7	2.6% of Construction Estimate	\$ 886,577.00

CONSULTING ENGINEERING A GUIDE FOR ENGAGEMENT OF ENGINEERING SERVICES (American Society of Civil Engineers)

Section II Classification of Engineering Services

General

The needs for professional engineering services vary and the consulting engineering firms that meet these needs vary in organizational structure, size and capability. Many consulting engineering firms provide comprehensive, diversified services to the client, while other firms specialize in areas of engineering, such as geotechnical or structural and provide their services to a prime engineer, architect or owner. Few consulting engineering firms are qualified to provide complete service for all projects and the use of associate consulting professionals to provide specialized services is common.

The services provided by consulting engineers can be grouped into two broad categories:

1. Consultations, investigations and reports.
2. Services for construction projects.

Professional services provided under both categories frequently require supplementary engineering support services.

Consultations, Investigations, and Reports

These services deal primarily with collecting, interpreting, and reporting information, together with formulating conclusions and making recommendations. Typical services in this category are:

Preliminary and Feasibility Investigations and Reports: These services usually precede the authorization of a capital project and may involve extensive investigations, analyses of conditions, and comparisons of several possible plans. These studies may include the broad areas of developing master plans for long-range capital improvement programs; preparation of land development plans, urban plans, and regional plans; the investigation of environmental conditions and preparation of environmental impact statements, with subsequent planning to improve or maintain existing conditions. Such planning often requires coordination of the work of many engineering and non-engineering disciplines.

Appraisals, Valuations and Rate Studies: These services may include investigations and analyses of existing conditions, capital and operating costs, overhead, costs of financing and revenues as needed to evaluate property or to recommend establishment of prospective rates.

Assistance in Financial Matters: The consulting engineer may be engaged by a client who is planning to issue bonds, particularly revenue bonds, to finance a capital project. The scope of services may include an evaluation of capabilities of existing and proposed facilities to meet present and projected future needs, statements of

probable construction costs, and an estimate of annual revenue requirements and a determination of appropriate rates to provide this income. The consulting engineer may also act as the responsible agent to certify that certain terms and conditions of the bond issues are carried out.

Materials Engineering and Equipment Tests: These services include tests of materials and equipment under established codes and standards, specialized examination of equipment and materials used in construction and industry, and other inspections and monitoring required by a client.

Direct Personal Service: This includes services such as assistance in preparation for legal proceedings, appearances before courts or commissions to render opinion and conclusions, and investigations of technical matters where specialized engineering knowledge, experience and judgement are required.

Additional Services: These services can vary to suit special needs of the client and can include such diverse activities as:

- Environmental Evaluations
- Forensic Engineering for structural and other failures
- Geotechnical Engineering
- Operational Assistance
- Process Design, Pilot Studies, Computer Modeling
- Safety Engineering
- Survey Engineering
- Toxic and Hazardous Wastes Evaluations
- Representing Municipal or Private Entities in Projects Proposed for Privatization

Services for Construction Project: Professional engineering services are required for each of six typical phases of a construction project.

The same consulting engineer preferably furnishes all basic services, although at times services in various phases are furnished by different engineers or by the client. The basic services are supplemented by additional services, which may be provided by the client, a specialized engineer or the consulting engineer.

BASIC SERVICES FOR CONSTRUCTION PROJECTS

1. **Study and Report Phase:** Analysis of the client's needs, conceptual opinions of probable construction cost.
2. **Preliminary Design Phase:** Preparation of final design criteria, preliminary drawings, outline specifications, and preliminary opinions of probable construction cost.
3. **Final Design Phase:** Preparation of design drawings, specifications, opinions of probable construction cost and other contract documents.

4. **Bidding or Negotiating Phase:** Assistance to the client with the bidding or negotiating process for construction of the proposed facility.
5. **Construction Phase:** Preparation of record drawings and assistance to the client in start-up and operation of the facility.
6. **Operation Phase**

STUDY AND REPORT PHASE

This phase involves determination of project scope, and economic and technical evaluation of feasible alternatives. The services performed during this phase may include:

1. Reviewing available data and consulting with the client to clarify and define the client's requirements for the project.
2. Advising the client as to the necessity of providing or obtaining from others additional data or services and assisting the client in obtaining such data and services. These additional services may include photogrammetry, reconnaissance surveys, property surveys, topographic survey, geotechnical investigations and consultations, compilation of hydrological data, traffic studies, materials engineering, assembly of zoning, deed and other restrictive land use information and environmental assessments and impact statements.
3. Identifying and analyzing requirements of governmental authorities having jurisdiction to approve the design of the project and participating in consultations with such authorities.
4. Providing analyses of the client's needs, planning surveys, comparative evaluations of prospective sites and solutions.
5. Providing a general economic analysis of the client's requirements applicable to various alternatives.
6. Preparing a report presenting alternative solutions available to the client with the consulting engineer's findings and recommendations. The report may contain schematic layouts, sketches, conceptual design criteria with appropriate exhibits to indicate clearly the considerations involved (including applicable requirements of governmental authorities having jurisdiction) and the consulting engineer's conceptual opinion of probable costs for the project.

PRELIMINARY DESIGN PHASE

This phase of project development is usually undertaken only after the client has approved the preliminary design phase material. The basic services for the final design phase may include:

1. Preparing construction drawings and specifications showing the character and extent of the project based on the accepted preliminary design documents.

2. Preparing and furnishing to the client a revised opinion of probable total project costs based on the final drawings and specifications.
3. Furnishing the necessary engineering data required to apply for regulatory permits from local, state, or federal authorities. This is distinguished from and does not include detailed applications and supporting documents for government grant-in-aid or planning grants that would be furnished as additional services as described later in this section.
4. Preparing basic documents related to construction contracts for review and approval by the client (and the client's legal and other advisor). These may include contract agreement forms, general conditions and supplementary conditions, invitations to bid, instructions to bidders, insurance and bonding requirements, and preparation of other contract related documents.
5. Furnishing to the client a specified number of copies of drawings, specifications, and other contract documents.

BIDDING OR NEGOTIATING PHASE

Services under this phase may include:

1. Assisting the client in advertising for and obtaining bids or negotiating proposals for each separated prime construction contract, maintaining a record of prospective bidders to whom bidding documents have been issued, attending pre-bid conferences, and receiving and processing of deposits for bidding documents.
2. Issuing addenda as appropriate to interpret, clarify or expand the bidding documents.
3. Assisting the client in determining the qualifications and acceptability of perspective contractors, subcontractors and suppliers.
4. Consulting with and advising the client as to the acceptability of alternate materials and equipment proposed by the prospective contractors when substitution prior to the award of contracts is allowed by the bidding documents.
5. Attending the bid opening, preparing bid tabulation sheets, and providing assistance to the client in evaluating bids or proposals and in assembling and awarding contracts for construction, materials, equipment and services.

CONSTRUCTION PHASE

Services under this phase involve consulting and advising the client during construction and are usually those associated with service as the client's representative. Since most consulting engineers are unwilling to assume the responsibilities associated with full construction phase services without providing regular resident services at the site, such services are usually included in a basic service and may comprise.

1. Reviewing, for compliance with design concepts, shop and erection drawings submitted by the contractors.
2. Reviewing laboratory, shop and mill test reports on materials and equipment.

3. Visiting the project site at appropriate intervals as construction proceeds to observe and report on the progress and the quality of the executed work.
4. Providing services during construction by a full time Resident Project Engineer or representative and by support staff as required, to provide more assurance that the construction is accomplished in satisfactory conformance to the design drawings, specifications, and other contract documents.
5. Issuing instructions from the client to the contractors, issuing necessary interpretations and clarifications of contract documents, preparing change orders requiring special inspections and testing of the work and making recommendations as to acceptability of the work.
6. Preparing sketches required to resolve problems due to actual field conditions encountered.
7. Determining amounts of progress payments due, based on degree of completion of the work, and recommending issuance of such payments by the client.
8. Observing and assisting performance tests and initial operation of the project.
9. Preparing record drawings from information submitted by the contractor.
10. Making a final Inspection and reporting on completion of the project, including recommendations concerning final payments to contractors and release of retained percentages.

OPERATION PHASE

At the completion of construction, the consulting engineer may, as a basic service, assist in the start-up of project operations. The consulting engineer may be commissioned to prepare a manual for both operation and maintenance requirements. He may also provide assistance for adjusting and balancing equipment, identifying deficiencies and assisting in obtaining corrections, and performing inspection prior to the end of the project warranty period. The consulting engineer may assist in operator training, setting up job classifications and salaries, organizing the purchase of supplies, developing charts for recording operational data, and observing and reporting on project operations.

ADDITIONAL SERVICES FOR CONSTRUCTION PROJECT

Additional services required during the study, design, construction, and operation phases of a construction project may include investigations, reports and activities beyond the scope of the basic services.

These services, many of which are also listed earlier in this section under the category "Consultations, Investigations, and Reports," may relate to the client's decisions as to the feasibility, scope, and location of the project. The research, compilation of engineering

data, and acquisition of property may involve professional specialists in engineering and other fields. Additional services not provided by the consulting engineer often are negotiated with other firms or individuals by the consulting engineer acting on behalf of the client. Typical examples include:

1. Geotechnical Engineering – includes test borings, sampling, analysis and recommendations.
2. Studies, tests, and process determinations to establish design criteria for water and wastewater treatment facilities.
3. Land surveys, establishment of boundaries and monuments, preparation of easement descriptions, and related computations and drawings.
4. Engineering and topographic surveys for design and construction.
5. Mill, shop or laboratory inspections of the materials and equipment.
6. Furnishing additional copies of reports, construction drawings, specifications, and other documents as required for bidding and construction beyond the number specified in the Basic Services Agreement.
7. Extra travel and subsistence as defined by the Agreement for Engineering Services.
8. Value Engineering – including review of the work of other engineers, either within the same organization in other firms, to determine whether a proposed solution is optimum and, if not, to suggest a better approach for meeting the project's functional and financial criteria.
9. Redesign to reflect changes requested by the client or necessitated by the client's acceptance of substitutions proposed by the contractor.
10. Assistance to the client as an expert witness in litigation in connection with the project or in hearings before approving and regulatory agencies.
11. Final investigations involving detailed consideration of operations, maintenance, and overhead expenses, preparation of final rate schedules, and earning and expense statements, appraisals, valuations, and material audits or inventories required for certification of force account construction performed by the client or for extra work done by the contractor.
12. Preparation of detailed applications and supporting documents for government grants or advances for public works projects.
13. Plotting, computing, and filing of subdivision plots, staking of lots, and other land planning and partitioning activities.
14. Preparation of environmental assessment and impact statements and other assistance to the client in connection with public hearings.

15. Extra design effort to meet special conditions such as earthquakes, hurricanes, tornadoes, or blast, or to satisfy abnormal tolerances, along with associated dynamic analysis or testing.
16. Assistance in managing a project by acting as the first representative of the client in the selection, engagement, observation of, and approvals of the work of architects, other engineers, contractors and subcontractors, contacts with governmental agencies to obtain permits and documents, and other services related to project development.
17. Assessment of the completed project's ability to meet its design intent relative to capacity, maintainability, operability, and reliability.
18. Project peer review.

ENGINEERING SUPPORT SERVICES

The professional services described above frequently require engineering support services. Geotechnical engineering, for example, frequently requires services such as taking soil and rock borings, excavating test pits, sampling and identifying soil and earth materials, field and laboratory tests, and geophysical measurements and observations. These services in general civil practice may involve data gathering, land and construction surveying, and drafting and other data gathering activities for specialized purposes. Although some of these tasks are normally accomplished by persons who are not engineers, the procurement of adequate and correct data usually requires professional judgement and guidance. Since soundness of any engineering decision is dependent upon the accuracy and suitability of data obtained in field and laboratory investigations, these supporting services must be under the guidance of the consulting engineer whose decisions will be based upon that data.

**Instructions for preparation of Standard Invoice
for Professional Services (Form ENG- 180)**

1. Company name and address (Note: payment will be mailed to the address shown).
2. MBTA Contract Number
3. Date of Contract
4. Effective Date of Contract
5. Completion Date (Provided completion date is shown in contract or time frame can be determined).
6. Invoice Number
7. Date of Invoice
8. Payment Request Number (Note: invoices must be numbered consecutively beginning with Number 1)
9. Percentage of contract work completed as of the last day of invoice period.
10. Contract Title
11. Date of first day of invoice period
12. Date of last day of invoice period
13. Brief description of services performed during invoice period.
14. Code or item number applicable to the functions of work to be performed, furnished by Contract Administration (Contract Auditor-222-5825)
15. Contract amount applicable to the number shown in the code column.
16. Accrued billings to date including amount billed as shown under this billing.
17. Accrued Retainage
18. Contract Balance
19. Amount billed this billing
20. Retainage this billing

- 21. Amount requested this billing
- 22-28 Inclusive – post totals for each column.
- 29. Authorized signature only.
- 30. Title of person signing invoice.
- 31. Date signed.
- 32-34. Inclusive – for final billing only. Check boxes and completes the same as 29-31. (Note: do not complete 32 to 34 unless requesting final payment including balance of retainage, if any).

Required Backup Detail (in duplicate)

- 1. Invoices which include requests for payment based upon payroll (multiplier, billing rate of CPFF) shall be accompanied by detailed payroll records which must include names, classifications and hours worked on a daily basis.
- 2. Invoices which include requests for payment for out-of-pocket expenses, travel, subsistence or other reimbursable amount as provided under the terms of the contract shall be in sufficient detail and shall be accompanied by copies of paid invoices where applicable.
- 3. Each invoice shall be accompanied by appropriate data, which establishes a realistic percentage of contract completion and comparison with fee earned. This may be exhibited by extracts of completed PERT activity bar charts or progress reports based upon design phases weighted accordingly.
- 4. **TYPE ALL ENTRIES (NO CARBON PAPER REQUIRED – NCR FORM)**

Sample Design Closeout Report

To: Deputy Director of Design & Construction, Contracts

From: Project Manager

Re: MBTA Contract No. () – Design Closeout Report

Please be advised that this project office is finalizing all necessary documentation to closeout the above mentioned design contract. Attached to this closeout report is the final payment package for Charles T. Main Co., Inc. consultant for engineering services for six standby layover facilities.

Charles T. Main Co., Inc., provided the MBTA with the necessary engineering services for the overall design for new construction of electric layover facilities throughout the MBTA's commuter rail system. Although this electrical expertise greatly enhanced their firm's capabilities as a reliable electrical design firm, they lack the ability to properly design the track and signal items related to a layover facility. They should be considered in the future, if they elect to utilize a strong railroad type designer to supplement their design team.

All tasks described in this contract with Charles T. Main Co., Inc. are complete. The contract objectives and requirement have been met.

The design team has followed the procedures of the Design and Construction Directorate. All contract services and costs were in compliance with the terms of the contract and the objectives were accomplished.

The project staff is satisfied that the services provided in this contract were carried out in the most efficient and economical manner. This consultant displayed quality professional service and cooperated with the MBTA's Railroad Operations Department to compile a complete set of bid documents. I would recommend this consultant for future contracts if they strengthen their railroad design area.

This contract was carried out in compliance with all applicable MBTA and FTA procedures and regulations. Contract records are complete and organized for easy future access at the project office archives for the Design and Construction and Internal Audit Departments.

There are errors and omissions for which the MBTA should pursue a credit to the Contract.

Project Manager

STANDARD INVOICE FOR PROFESSIONAL SERVICES

Exhibit 11.5

FROM:	CONTRACT NO.
	DATE
	EFFECTIVE DATE
	COMPLETION DATE
TO: MASSACHUSETTS BAY TRANSPORTATION AUTHORITY CONSTRUCTION DIRECTORATE 10 PARK PLAZA BOSTON, MASSACHUSETTS 02116 ATTN: ASST. DIRECTOR OF CONSTRUCTION/ CONTRACT ADMINISTRATION	INVOICE NO.
	DATE
	PAYMENT REQUEST NO.
	TOTAL CONTRACT WORK COMPLETED

CONTRACT TITLE:

INVOICE PERIOD		DESCRIPTION OF SERVICES PERFORMED
FROM	TO	

[illegible]

CERTIFICATION

TOTAL AMOUNT REQUESTED ▶

I hereby certify, under the penalties of perjury, that this accounting represents a true and complete statement of services rendered, and that said services have been properly authorized in writing by the Authority and have been performed in accordance with the terms of this contract to and including the date indicated, to the best of my knowledge and belief.

Authorized Signature: _____ Title: _____ Date: _____

FOR FINAL BILLING ONLY ☐

This final billing represents total charges for costs incurred and receipt of the total amount requested will release and forever discharge the MBTA from any and all claims arising from or in connection with this contract.

Authorized Signature: _____ Title: _____ Date: _____

MBTA USE ONLY

AREA _____	WORK ORDER NO. & AM'T	REMARKS:
_____	\$ _____	
_____	\$ _____	
_____	\$ _____	

**MASSACHUSETTS BAY TRANSPORTATION AUTHORITY
DESIGN & CONSTRUCTION DIRECTORATE
CONSULTANT PERFORMANCE EVALUATION RATING SHEET**

PREAMBLE

The Consultant Performance Evaluation Rating Report is required to be submitted twice each year for the duration of the design contract.

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: _____ **FIRM:** _____

CONTRACT TITLE _____

Interim Report _____ **Final Report** _____ **Contract Ceiling Price \$** _____

Rating Period: January 1-June 30, 20____ **or July 1-December 31, 2001 (circle one)**

At what % design is project currently at _____ **%**

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 there a good work plan in place?

Is 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/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?
 - Note: A written comment must be provided which discusses the consultant's adherence to the project design schedule.

d. Financial

-
- Are invoices submitted on a regular basis that are complete and accurate?
 - Is design level consistent with invoicing?
 - Are invoices for Contract/SA's being segregated properly to allow for timely payments?

Total

Average Rating for Category (Total of a thru d divided by 4)

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, laws, 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

Average Rating for Category (Totals of a thru d divided by 4)

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 recommendation well supported?

b. Budget Conformance _____

Have alternatives, if necessary, been considered to stay within the design and construction budget? A written comment must be provided which discusses the consultant's adherence to the project budget.

c. Quality of work. _____

Is the data submitted accurate?

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 requirements?

Total

Average Rating for Category (Total of a thru d divided by 4)

Comments (required for unsatisfactory)

A black and white micrograph showing a single cell. The cell has a large, dark, circular nucleus containing a smaller, lighter-colored nucleolus. The cytoplasm is filled with numerous small, dark granules, likely ribosomes.



Prepared By: _____ **Date** _____

MBTA Project Manager

CONSULTANT RESPONSE (CONCURRENCE OR EXCEPTION):

[illegible]

Reviewed by: _____

Consultant Principal **Date**

MASSACHUSETTS BAY TRANSPORTATION AUTHORITY

PROFESSIONAL SERVICES - RECORD OF NEGOTIATIONS (Page 1)

CONTRACT/AMENDMENT# _____

DESCRIPTION _____

INITIAL CONSULTANT ESTIMATE \$ _____

SPECIFIC COST OR WORK ELEMENTS QUESTIONED BY THE PROJECT:

1. _____

2. _____

3. _____

4. _____

5. _____

CONSULTANT'S RESPONSE TO MBTA'S QUESTIONS:

1. _____

2. _____

3. _____

4. _____

5. _____

FINAL RESOLUTION:

THIS CONTRACT/AMENDMENT HAS BEEN REVIEWED WITH THE CONSULTANT,
AND TH ORIGINAL COST OF \$ _____, AND ALL SUCCEEDING SUBMITTAL
COSTS OF \$ _____, \$ _____, \$ _____ \$ _____, & \$ _____

HAS BEEN NEGOTIATED TO \$ _____

(FOR EACH ADDITIONAL SUBMITTAL, PLEASE USE FORM ON PAGE 2)

SIGNED: PROJECT MANAGER

DATE

PROFESSIONAL SERVICES - RECORD OF NEGOTIATIONS (Page 2)

CONTRACT/AMENDMENT# _____

DESCRIPTION _____

SUBMITTAL NO. _____ **ESTIMATE \$** _____ **DECREASE \$** _____

ADDITIONAL SPECIFIC COST OR WORK ELEMENTS QUESTIONED BY THE PROJECT:

1. _____
2. _____
3. _____
4. _____
5. _____

CONSULTANT'S RESPONSE TO MBTA'S ADDITIONAL QUESTIONS:

1. _____
2. _____
3. _____
4. _____
5. _____

FINAL RESOLUTION:

SIGNED: PROJECT MANAGER

DATE

CONTRACT OVERVIEW

TO: CONTRACT ADMINISTRATION

DATE: _____

CONTRACT: _____

_____ DBE PARTICIPATION PERCENTAGE THIS ACTION

_____ DBE PARTICIPATION PERCENTAGE TO DATE

_____ AMENDMENT/CO NUMBER

_____ PERCENTAGE OF WORK COMPLETED

_____ BASE CONTRACT VALUE

_____ TOTAL AUTHORIZATION TO DATE

_____ SHORT SYNOPSIS _____

AMENDMENT INPUT FORM

To produce an Amendment, the following information is required for input into the CMS System:

CONTRACT: _____ AMENDMENT#: _____ W/O#: _____

SUBJECT: _____ AMOUNT: _____

TYPE: F TRANSFER OF FUNDS
 N NEW CONTRACT
 S SUPPLEMENT/AMENDMENT
 T TIME
 X REJECTED CLAIM
 Z NET \$0 ADJUSTMENT

AUTHORIZED BY:

1. <\$25,000 Director
2. <\$50,000 Chief of D&C
3. <\$100,000 Asst.GM
4. <\$500,000 GM
5. >\$500,000 BOD
6. General Counsel

SCOPE OF WORK: _____

TIME EXTENSION: _____ days DURATION: _____ days

STAFF SUMMARY ROUTING SHEET

(GM & AGM Actions)

Contract:

	Date Received	Date Signed	Date Returned to CA
Contract Administration Staff Summary Coordinator:			N.A.
Chief of Engineering & Construction:			
AGM for Design & Construction:			
Organizational Diversity:			
Operations:			
Legal:			
Other Concurrence:			
Budget:			
General Manager:			
Final Distribution:			N.A.

Any Additional Comments:

SECTION 12

RECORDS STORAGE AND RETENTION

1.0 GENERAL

- 1.1** The PM shall develop a records index for the Project. The index should be kept separately from files and be easily accessible.
- 1.2** The index should be cross-referenced for access into certain sections of any particular file.
- 1.3** All files should be labeled by contract title, number and clearly identifiable.
- 1.4** Files should be numbered and always kept in order.
- 1.5** Retention Period -There are no statutes indicating how long to keep project files as they relate to claims and lawsuits. The MBTA Legal Department suggests that project files should be kept at least seven (7) years, if the project is federally funded. The seven-year guideline is an FTA requirement. However, it is suggested that certain files should be kept indefinitely, particularly if there were/are problems with the design or actual construction of a project. It is the responsibility of the PM to designate those records which require extended retention. Exhibit 12.1 is provided for guidance in establishing a project file and retention periods for records.
- 1.6** Resident Engineer files must be kept with the project files after contract closeout and should contain complete field records; including Inspector diaries, accident reports, mylars, etc.

After contracts are closed out, files should be stored in an area for easy retrieval of information, if required. The PM shall transfer records to the records retention facility as determined by the Document Control Manager.

- 1.7** When purging files, duplicates may be discarded. However, it is extremely important to keep copies of inter-office correspondence, telephone correspondence and any written material. If a claim or lawsuit occurs, a complete "paper trail" many times can save the MBTA thousands of dollars.

2.0 INSTRUCTIONS FOR PREPARING AN ARCHIVE BOX FOR STORAGE

- 2.1** You Should Have:

- a. All items packed in Archive Boxes. Archive boxes are available from Central Stores, under serial number 024-41-035.
- b. One Exhibit 12.2, Document Control Catalog Tag form for each archive box for storage.

2.2 Registering and Labeling the Box

- a. Complete the portions of Exhibit 12.2, Document Control Catalog Tag down to the "Box ID" line. This line is to be completed by the Document Control Manager. Boxes should be numbered sequentially and generally follow the outline of Exhibit 12.1.
- b. Sign the "Signature/Identified by" block.
- c. Make a copy of Exhibit 12.2 for your own records.

2.3 The Move – Please notify the Document Control Manager when boxes are ready to be moved. Have Exhibit 12.2 ready with the boxes to be delivered.

PROJECT FILING INDEX/MASTER RECORDS LIST

Exhibit 12.1

SECTION	DESCRIPTION	CUSTODIAN	RETENTION PERIOD
1.	CONTRACT DOCUMENTS		
1.1	Original Contract	Contract Administration	7 yrs
1.1.1	Contract Change Orders	" "	7 yrs
1.1.1.1	Change Order No. 1	" "	7 yrs
1.1.1.2	Change Order No. 2	" "	7 yrs
1.1.1.3	" etc.		
1.2	Notice to Proceed (Original)	Contract Administration	7 yrs
1.3	Original Contract Drawings (in racks)	Resident Engineer	7 yrs
1.3.1	Revised Contract Drawings	" "	7 yrs
1.3.2	" etc.		
1.4	Original Contract Specifications	Contract Administration	7 yrs
1.4.1	Revised Contract Specifications	" "	7 yrs
1.4.2	" etc.		
1.5	Submittal Log	Resident Engineer	7 yrs
1.5.1	Submittal No. 1	" "	7 yrs
1.5.2	Submittal No. 2	" "	7 yrs
1.5.3	Submittal No. 3	" "	7 yrs
1.5.4 thru x	Submittal No.'s as needed	" "	7 yrs
1.6	Shop Drawing Log	Resident Engineer	Lifetime
1.6.1	Shop Drawing No. 1	" "	Lifetime
1.6.2	Shop Drawing No. 2	" "	Lifetime
1.6.3	" etc.		
1.7	Permits	Resident Engineer	3 yrs
1.7.1	Fire/Burn Permit	" "	3 yrs
1.7.2	Excavation Permit	" "	3 yrs
1.7.3	" etc.		
1.8	Resolution Report Log	Resident Engineer	7 yrs
1.8.1	Resolution Report No. 1	" "	7 yrs
1.8.2	Resolution Report No. 2	" "	7 yrs
1.8.3	" etc		
1.9	Contract Facilities Turnover	Resident Engineer	3 yrs
1.9.1	Key Turnover	" "	3 yrs
1.9.2	Operations Manuals Turnover	" "	Warrantee Period
1.9.3	Spare Parts Lists	" "	Lifetime

PROJECT FILING INDEX/MASTER RECORDS LIST

Exhibit 12.1

SECTION	DESCRIPTION	CUSTODIAN	RETENTION PERIOD
1.9.4	Warranties and Guarantees	Resident Engineer	Warrantee Period
1.9.5	As-Builts	Design Dept.	Lifetime
1.10	Real Estate, Easements, and Right of Way	Real Estate	Lifetime
1.11	Contractor/Subcontractor/Vendor Performance Evaluation	Contract Administration	3 yrs
2.	CORRESPONDENCE		
2.1	Letters, MBTA to Contractor (Subcontractors via Contractor)	Originator	3 yrs
2.2	Letters, Contractor to MBTA	Recipient	3 yrs
2.3	Letters, Sub/Suppliers to MBTA	Recipient	3 yrs
2.4	Misc. Corres.(External) to MBTA	Recipient	3 yrs
2.5	Misc. Corres. (External) from MBTA	Originator	3 yrs
2.6	Misc. Corres./Memos (Internal) to Project	Originator	3 yrs
2.7	Misc. Corres./Memos (Internal) from Project	Originator	3 yrs
2.8	Speed Letters, to Contractor	Resident Engineer	7 yrs
2.9	Memos to File	Resident Engineer	3 yrs
3.	INSPECTION		
3.1	Daily Inspector's Reports	Resident Engineer	7 yrs
3.2	Inspection Reminders and Log	Resident Engineer	7 yrs
3.2	Other Inspection (Flagman, Traffic, etc.) Logs	Resident Engineer	3 yrs
3.3	Resident Engineer's Daily Reports	Resident Engineer	7 yrs
3.4	Monthly Reports	Resident Engineer	7 yrs
3.5	Calculation Book	Resident Engineer	7 yrs
3.6	Cost Control Ledger	Resident Engineer	7 yrs
3.7	Concrete Logs	Resident Engineer	7 yrs

PROJECT FILING INDEX/MASTER RECORDS LIST

Exhibit 12.1

SECTION	DESCRIPTION	CUSTODIAN	RETENTION PERIOD
3.7.1	Delivery Tickets	" "	7 yrs
3.7.2	Placement Requests	" "	7 yrs
3.7.3	Precast Inspection Reports	" "	7 yrs
3.7.4	Preplacement Inspection Reports	Resident Engineer	7 yrs
3.8	Grout Log	Resident Engineer	7 yrs
3.8.1	Test Reports	" "	7 yrs
3.8.2	Grout Inspection Reports	" "	7 yrs
3.9	Shotcrete Logs	Resident Engineer	7 yrs
3.9.1	Shotcrete Inspection Reports	" "	7 yrs
3.10	Rebar Inspection Reports	Resident Engineer	7 yrs
3.11	Rock Anchor Tests/Inspection Reports	Resident Engineer	7 yrs
3.12	Soils Tests/Inspection Reports	Resident Engineer	7 yrs
3.13	Asphalt Tests/Inspection Reports	Resident Engineer	7 yrs
3.14	Structural Tests/Inspection Reports	Resident Engineer	7 yrs
3.15	Architectural Tests/Inspection Reports	Resident Engineer	7 yrs
3.16	Mechanical Systems Tests/Inspection Reports	Resident Engineer	7 yrs
3.17	Electrical Systems Tests/Inspection Reports	Resident Engineer	7 yrs
3.18	Other Equipment Tests/Inspection Reports	Resident Engineer	7 yrs
3.19	Contractor Equipment Inspections (Cranes, etc.)	Resident Engineer	3 yrs
3.20 to 3.30	Other Tests/Inspection Reports	Resident Engineer	7 yrs
3.31	Open Items List	Resident Engineer	3 yrs
4.	SAFETY		
4.1	Contractor Safety Plan	Resident Engineer	7 yrs
4.2	Contractor Safety Inspections Reports	Resident Engineer	7 yrs
4.3	Contractor's Tool Box Meetings	Resident Engineer	7 yrs
4.4	Material Safety Data Sheets (MSDS)	Resident Engineer	7 yrs

PROJECT FILING INDEX/MASTER RECORDS LIST**Exhibit 12.1**

SECTION	DESCRIPTION	CUSTODIAN	RETENTION PERIOD
4.5	Accident Reports	Resident Engineer	7 yrs
4.6	MBTA Safety Inspection Reports	Safety Department	3 yrs
4.7	Safety Open Items List	Safety Department	7yrs
4.8 to 4.x	Other Safety Items	Safety Department	7 yrs
5.	ENVIRONMENTAL		
5.1	Contractors Environmental Plan	Resident Engineer	7 yrs
5.2	" " Insp. Reports	Resident Engineer	7 yrs
5.3	MBTA Environ. Insp. Reports	Environmental Dept.	7 yrs
5.4	Environmental Open Items List	Environmental Dept.	7 yrs
5.5 to 5.x	Other Environmental Items	Resident Engineer	7yrs
6.	MEETINGS		
6.1	Pre-Bid Conference	Project Manager	Contract Closeout
6.2	Pre-Construction Mtg and Minutes	Project Manager	Contract Closeout
6.3	MBTA/Contractor Mtg and Minute	Resident Engineer	7 yrs
6.4	Misc. Meetings and Minutes	Resident Engineer	7 yrs
7.	PHOTOGRAPHS		
7.1	Contractor Submitted Photos (Albums and Logs)	Resident Engineer	7 yrs
7.2	MBTA Photos	Resident Engineer	7 yrs
8.	COSTS, PAYMENT & SCHEDULES		
8.1	Contractor's schedules	Resident Engineer	3 yrs
8.2	Contractor's Schedule of Values	Resident Engineer	3 yrs
8.3	Cost Tracking/Estimate at Completion	Resident Engineer	3 yrs
8.4	Pay Requests	Resident Engineer	7 yrs
8.4.1	Pay Requests Sub Elements	Resident Engineer	7 yrs

PROJECT FILING INDEX/MASTER RECORDS LIST**Exhibit 12.1**

SECTION	DESCRIPTION	CUSTODIAN	RETENTION PERIOD
8.5	(at RE discretion) B&E Reports	Resident Engineer	7 yrs
8.6 to 8.x	As needed	Resident Engineer	
9. FORWARD	As Needed	Resident Engineer	

Document Control Catalog Tag



MBTA

500 Arborway, Jamaica Plain, Ma.

Date: _____

Description/Contents: _____

Contract/Job#

Prints _____ Drawings _____ Manuals/Specs. _____

Misc. Files _____

Please check one:

Project/Line:

Box ID:

** (This will be for the label ID#)

Other/Location:

Signature/Identified by: _____

Note* (Be as descriptive as possible. Attach this to the box for Archiving Storage)

SECTION 13

VALUE ENGINEERING PROGRAM

1.0 OVERVIEW

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. This Project Management procedure discusses the roles of the Project Manager and senior managers with respect to Value Engineering.

The Project Manager (PM) recommends to the MBTA Value Engineering Coordinator (in the Design and Construction Department) whether to refer a Project for Value Engineering. Value Engineering is either performed by the MBTA VE Consultant or by a consultant hired by the Project Manager. The MBTA guidelines for the Value Engineering Program are included.

1.1 Referring Projects to Value Engineering

As set forth in the Value Engineering Program description below, the Project Manager recommends a Project for VE if:

- the Project's Conceptual or Authorized Budget exceeds \$2 million, or
- VE is likely to yield cost savings in excess of the cost of VE.

The Project Manager makes the recommendation for VE to the MBTA Value Engineering Coordinator. As set forth in the Value Engineering Program, the Value Engineering Coordinator decides to either proceed or defer the VE study. Upon such decision, the Value Engineering Coordinator notifies the Project Manager and the Capital Management Group.

To maximize savings from Value Engineering, the PM should make the VE recommendation as early in the Design process as possible, making every effort to refer Projects prior to the 30% Design Review. The PM may recommend additional VE studies for a Project as the Design progresses.

As set forth in the Value Engineering Program description, once a construction contract for a Project has been awarded, the PM requests Value Engineering proposals from the Contractor. After the Project

Manager, Construction Manager (if retained), and Value Engineering Coordinator review these proposals, cost savings of accepted proposals are shared 50% with the Contractor and/or Construction Manager, exclusive of overhead and profit and 50% with the MBTA (See Exhibit 13.2 for example).

1.2 Modifications to VE Process with Construction Manager

If the MBTA retains a Construction Manager for a Project, one of the duties of the CM is to conduct Value Engineering. Except in unusual circumstances approved by the Capital Management Group, the Construction Manager will utilize its own VE staff or consultant rather than the MBTA Value Engineering Consultant. The Project Manager's role is to ensure that the CM performs Value Engineering during the design and construction process and that the MBTA Value Engineering Coordinator participates in VE studies for the Project.

The Construction Manager contract will stipulate how Value Engineering savings are shared among the MBTA, CM, and Contractor, with the provision that the MBTA will receive at least 50% of the savings.

2.0 INTRODUCTION

A Value Engineering (VE) Program is established within the Massachusetts Bay Transportation Authority (MBTA) for the specific purpose of obtaining safe, efficient and maintainable transit facilities at the lowest life cycle cost of ownership within the VE guidelines of the Federal Transit Administration (FTA) grant programs dealing with facility construction. In addition, a VE study to of an MBTA Bond funded project can provide an opportunity to improve the effectiveness and efficiency of MBTA construction projects.

Value Engineering is a proven management technique to examine the total life cycle cost of owning and operating a facility. VE is an effective part of the design process and has the added advantage of returning more than the program typically costs in reduced construction expenditures.

FTA requires the application of value engineering techniques on all grant funded capital projects that:

- a. involve the construction of a new fixed guideway segment, or extension of an existing guideway, for use by bus or rail;
- b. rehabilitate or modernize an existing fixed guideway or segment of

guideway pursuant to a funding agreement with FTA; or

- c. the Administrator determines is major.

In addition, the MBTA can conduct a VE study on any MBTA capital project that meets the dollar threshold found in Paragraph 5.0 of this Section.

The program is consultant based and will be implemented without the addition of MBTA staff, except for the assignment of a VE Coordinator to facilitate the flow of information and act as a moderator and point of contact for a VE consultant.

3.0 DEFINITIONS

- 3.1 **MBTA Value Engineering (VE) Program** - Under the direction of the AGM of Design and Construction and directly administered by the MBTA VE Coordinator, the Value Engineering program is the application of VE principles and VE review, by VE Teams or through Value Engineering Change Proposals (VECP), to MBTA capital projects. VE will be applied throughout the planning, design and construction process with the ultimate goal of developing cost effective projects. The VE program may include lines, stations and systems projects.
- 3.2 **Value Engineering (VE)** is defined per FTA Order 9004.1 as the systematic application of recognized techniques which identify the function of a product or service, establish a value for that function and provide the necessary function reliably at the lowest overall cost. In all instances the required function should be achieved at the lowest possible life-cycle cost consistent with requirements for performance, maintainability, safety and aesthetics.
- 3.3 **MBTA VE Coordinator** - The MBTA VE Coordinator is responsible for the overall coordination and facilitation of the VE Program; is the primary contact to FTA on Value Engineering issues; and coordinates the activities of the VE Consultant.
- 3.4 **Value Engineering Consultant** - The VE Consultant is an independent consulting firm under contract to the MBTA to perform VE studies. The consultant shall have appropriate DBE representation by either a joint venture or subcontractor relationship. Additionally, the consultant shall be fully experienced in conducting VE studies and familiar with VE methodology.
- 3.5 **Value Engineering Team** - A VE Team conducts the value engineering review. The team will be multi-disciplinary, consist of from five to eight

persons and include experienced engineers and trained value engineering practitioners. The VE team will have approximately the same number of professional engineering disciplines as are performing work in the original design. The team will be structured so there is appropriate expertise to evaluate the major components anticipated.

- 3.6 **Value Engineering Team Leader** - The VE Team Leader shall be an experienced professional engineer or architect who holds the designation of Certified Value Specialist (CVS) from the Society of American Value Engineers.
- 3.7 **Design Team** - The Design Team will be staff of the MBTA or a design consultant specifically engaged in the production of a project design submittal.

4.0 TYPES OF PROJECTS TO VALUE ENGINEER

The Value Engineering program is structured to include facility construction, maintenance, and systems projects with anticipated budgets exceeding \$2,000,000 or those which may yield a return on investment (ROI) of at least 5 to 1 based upon the potential VE savings versus the cost to conduct the VE study. Projects with budgets below \$2,000,000 will be considered for a VE study if a reasonable ROI can be realized.

Specific VE studies on the MBTA design standards may be incorporated within the context of an individual station, line or systems VE study. In this way, standard criteria may undergo the VE process within the constraints of a particular project. An effective value engineering program should be free to "challenge everything." The goal to be achieved is the construction of efficient, durable maintainable facilities at the lowest total life cycle cost of ownership. The VE Team will be encouraged to investigate all feasible areas of the project design or design standards.

5.0 WHEN TO CONDUCT STUDIES

In the design phase, two VE studies will be considered. These VE studies will proceed concurrently with the design review process after the Project Definition submittal for line and station type projects. Because of the complexity of the designs, a second full five day, 40-hour VE study may be conducted on "station" projects. A second VE study would also be optional for "line" type projects. Systems projects may be considered for a VE study at the "preliminary" submittal phase. A study will be consecutive work days in a location free from interruptions. Due to the restricted schedule of all projects, a three week duration for the VE process will be maintained.

During construction, VE proposals may be submitted by the contractor. These proposals must be based on sound study; not impair the essential function or characteristic of the work; and not require an unacceptable time extension for construction completion. These VE proposals will be reviewed by the MBTA staff and cost savings of accepted proposals will be shared 50% with the contractor and 50% with the MBTA.

6.0 STUDY METHODOLOGY

Value Engineering Methodology encompasses a "new look" by a second team approach which objectively analyzes a system, its functional purpose, and its interface with other systems to achieve the required functions at the least cost commensurate with its useful life. The prime purpose of this analysis is not to fault or tear down the original design, but rather to determine if the function is actually worth the cost. A comprehensive functional team study to identify high cost, low worth or low value items is essential to an organized VE approach.

The basic questions asked during a value engineering study are:

- a. What is the system/item?
- b. What does it do (what is the basic function)?
- c. What must it do?
- d. What does it cost?
- e. What is the item worth?
- f. What else will do the same, or better job?
- g. What does that alternative cost?

Before the Value Engineering Methodology can be applied, potentially "high cost and low worth" items must be isolated. This identification process is the "art" of the value engineering approach. To find those few items out of some thousand construction items is not easy. This task can be facilitated by using a number of techniques such as cost modeling, bar graphs, functional analysis and previous historical cost data. The Value Engineering Team will follow the Five-Step Job Plan throughout the workshop.

7.0 VALUE ENGINEERING SELECTION

The Value Engineering Consultant will be given a brief description of the project, scope of work and a request for proposal from the Value Engineering Coordinator. The proposal is received by the MBTA and negotiated by the MBTA's Contract Administration Office.

Under the direction of the Value Engineering Coordinator, the VE Consultant shall select the proposed team members for the value engineering study. A typical VE Team consists of five to eight experienced registered engineers and architects; knowledgeable in the design of rapid transit systems and the Value Engineering Methodology.

After approval of the Value Engineering Team and contract negotiations, the VE Consultant will be given a Task Order and Notice-to-Proceed on a specific Value Engineering Team Study.

An MBTA station project, for example, would require the following Value Engineering Team members:

1. Value Engineering Team Leader (Certified Value Specialist)
2. Assistant VE Team Leader or Transportation Expert
3. Senior Architect
4. Senior Structural Engineer
5. Senior Mechanical Engineer
6. Senior Electrical Engineer or Controls Specialist
- 7.. Senior Civil Engineer
8. Senior Cost Engineer
9. MBTA VE Coordinator
10. Department of Capital Management Staff Member

Resumes of the proposed value Engineering Team members will be sent to the MBTA VE Coordinator for review and approval. The MBTA may reject any proposed VE Team members. The team members should have at least ten years of applicable design and construction experience. Team members with creative approaches, strong backgrounds and a willingness to "challenge everything" are most often successful in the value engineering arena.

The make up of the Value Engineering Team should be hand selected by the Value Engineer Team Leader and reviewed by the MBTA VE Coordinator and be tailored for the specific project at hand. Each project will require the specialized expertise of an array of disciplines and should contain the same number of disciplines as the project design team. For example, a tunneling project may require two geotechnical engineers, a structural engineer, civil engineer, electrical engineer, mechanical engineer but no architect.

For each assignment, the Value Engineering Team make up should assure, as a minimum, that 16% of expended funds will be received by a Disadvantage

8.0 VALUE ENGINEERING STUDY

The Value Engineering Study will be conducted over a three week period concurrently with the MBTA plan review on the schematic or preliminary submittal. The study generally consists of:

- a. a five day 40-hour Value Engineering Team Workshop (Week No.1);
- b. followed by preparation of a Draft Value Engineering Report (Week No. 2);
- c. a Value Engineering Resolution (Week No. 3); and
- d. preparation of a final Value Engineering Report.

The Value Engineering study will be accomplished using a functional analysis approach and will not be limited by the design criteria and the design data. As a rule, 80% of the cost of any facility or component is contained in only 20% of the parts. These standard components or design criteria are a substantial portion of the overall cost of a rail line, station, or systems control project. The true value engineering concept will be followed in the performance of the study. The key distinguishing features separating the value engineering "Five Step Job Plan Approach" from the general or normal design review procedures, economic studies and other cost reduction techniques are functional analyses, use of creativity to develop sound multiple alternatives and the principle of maintaining the quality needed by the user.

8.1 The Five Step Job Plan

- a. **Information Phase** - For information gathering and identification of high cost-low worth functions. Define and analyze design, evaluate function and establish worth. The original design team is required to present the Value Engineering team with a 3-4 hour overview of the project approach and the design solutions proposed.
- b. **Creative (Speculative) Phase** - For brainstorming the generation of alternative ideas for merit and separating needs from desires. List basic alternate ideas for development of firm proposals. Between one hundred (100) and one hundred and fifty (150) ideas are typically generated during the creative phase.
- c. **Analysis (Judgment/Judicial) Phase** - For evaluating and judging each alternative idea for merit and separating needs from desires. List basic advantages/disadvantages, compare, evaluate, refine and select best alternative ideas for development of firm proposals.

- d. **Development Phase** - Fully develop and summarize best alternative ideas using accurate and realistic costs. Develop "before" and "after" cost comparisons with net savings, appropriate sketches, and calculations establishing the basic feasibility of the idea. Discard alternatives that prove to be not cost effective or of low value. Calculate present worth of life cycle cost savings including any maintenance or energy savings utilizing standard present worth methods, a 40-year life cycle and a 10% discount factor for the calculations. All energy savings recommendations must be approved by the Engineering and Maintenance and Design Departments.
- e. **Presentation Phase** - Prepare an informal presentation to the design team, VE Coordinator and appropriate MBTA staff on the last day of the five day Value Engineering Workshop and present each specific value engineering proposal justifying and defending developed proposals. After the Value Engineering Workshop is concluded, the VE Consultant will prepare the draft VE Report and a formal Value Engineering Resolution meeting will be scheduled by the VE Coordinator. The VE Resolution meeting will be held several days following submittal of the draft VE Report.

8.2 Value Engineering Workshop - The Value Engineering Workshop is a part of the overall VE Study process and consists typically of a five day 40-hour session. The VE Workshop is preceded by a one-week period of preparation by the Value Engineering Team Leader and selected VE Team Members. Following the VE Workshop is a one-week report preparation period that culminates with submittal of the Draft VE Report and the VE Resolution meeting.

8.3 Draft Value Engineering Report - The Draft Value Engineering Report is submitted by the VE Consultant within one week following completion of the VE Workshop. All proposals and their respective original and proposed detailed estimates shall be documented in this report. Where clarification is deemed appropriate, the proposal shall be supported by sketches, drawings, descriptions, interface by systems, specifications and catalog data to permit thorough evaluation by the MBTA and the design staff. The draft report should be organized into an Executive Summary, Introduction, VE Proposal Summary List, Individual Proposals by Design Discipline and Value Engineering Methodology Worksheets.

The minimum requirements for the Draft Value Engineering Report are:

- a. Table of Contents
- b. Executive Summary
- c. Summary of Potential Cost Savings by Discipline

- d. Brief Description of Each Proposal with Summary of Potential Savings
- e. Brief Description of Project and Project Design Criteria
- f. One Site Plan
- g. Budget Estimate Summary Sheet
- h. Value Engineering Cost Model/Bar Chart
- i. Each Individual Value Engineering Proposal, including a "before" and "after" Cost Estimate, Life Cycle Cost Savings, Sketches, and a Discussion of the Advantages/Disadvantages
- j. Criteria Modifications Recommended by the Value Engineering Team
- k. Complete Five Step Job Plan Worksheets
- l. Resume of each Value Engineering Team Member

A total of six copies of each Value Engineering Report should be submitted to the MBTA to allow for the design team and staff's review and comment.

8.4 Value Engineering Resolution Meeting - The Value Engineering Resolution Meeting is a formal forum consisting of the VE Team Leader, selected VE Team Members, MBTA VE Coordinator, selected Design Team Members, MBTA Project Manager and other MBTA staff as appropriate.

The meeting should be held several days following submittal of the Draft VE Report. At this meeting, each value engineering proposal will be thoroughly discussed and either accepted, rejected or placed for further review. Decisions require the cooperation of the MBTA staff, design team, and the VE Team. Key members from these groups will come together for the VE Resolution Meeting to discuss and carefully weight the acceptability of each proposal to meet the functional requirements of the project at the lowest possible life cycle cost while maintaining the end goal of operating a safe, efficient rapid transit system. Figure No. 1 identifies the proposed MBTA decision making process in the Value Engineering program.

The following steps are taken in the Value Engineering Proposal Resolution process:

- 1. After distribution of the Draft Value Engineering Report by the MBTA Value Engineering Coordinator to staff and to the Project Design Team, the Resolution Meeting is held with the MBTA Project Manager, Project Design Team, and the Value Engineering Team Leader. The Resolution Meeting may take approximately four hours on basic projects and up to eight hours on more complex projects.

2. **Rejected Value Engineering Proposals** are eliminated at the Resolution Meeting, but specific records as to the reasons for rejection and who rejected the proposal are recorded by the Value Engineering Team Leader and included into the Value Engineering Report. The MBTA Division Directors will have the opportunity to review all rejected VE proposals to ensure that potentially viable items are not being unduly eliminated.
3. **Accepted Value Engineering Proposals** are included in the Value Engineering Report and become implemented items for incorporation into the project design. The MBTA management may confirm the outcome of the Value Engineering Resolution Meeting or may ask that an idea be further reviewed by the Value Engineering Team for a specific technical issue.
4. Some Value Engineering proposals may require **further development** or analysis by the Value Engineering Team. These items will be returned to the VE Team with a request for a written response. Upon completion of the analysis, the proposal will be routed back for final acceptance or rejection.
5. **Unresolved issues** may be elevated to either the Director of Design and Construction or the AGM of Design and Construction for resolution if an acceptable compromise cannot be reached at the Resolution Meeting between the VE Team, MBTA Project Manager and the Project Design Team. Every effort will be made to resolve every value engineering proposal at the Resolution meeting.

8.5 Value Engineering Report - Within one week following the Value Engineering Resolution Meeting, the VE Consultant prepares minutes of the meeting and produces the final VE Report. The VE Report documents the outcome of the study and contains a summation of those items that were either accepted or rejected by the MBTA and the Design Team. The report shall be complete and final in all respects with all proposals resolved and listed as either accepted or rejected.

A copy of the FTA "Value Engineering Project Report" form, (Exhibit 13.2) will be included in the VE Report and may be sent to FTA for their records.

Six copies of the VE Report will be submitted. One copy may be transmitted to FTA for their file and audit process. A sample final VE Report of a non MBTA project is included (Exhibit 13.3).

The **final VE Report** should contain the following minimum information:

- a. All information contained in the Draft VE Report
- b. Minutes of the VE Resolution Meeting
- c. List of Attendees at the VE Resolution Meeting
- d. Any proposals modified as a result of the Resolution Meeting
- e. Complete summary of the results of the total VE Study

The VE Consultant Task Order is complete and the outcome of the study becomes a part of the permanent project record.

10.0 PROGRAM RESPONSIBILITIES

The value engineering process is most effective when the VE Team, MBTA, and the Project Design Team work in close coordination. Support from the Design Team is important since the VE Team only has a brief period of three weeks to become familiar with the project, generate a number of creative ideas and develop the most promising proposals.

The Design Team will be invited to attend the first day of the VE Study and present a brief 3-4 hour overview of the project requirements, problems and design solutions reached by the Design Team. At this time, the VE Team members are encouraged to ask questions of the designers on technical issues and problem areas.

The MBTA VE Coordinator, and possibly other personnel, will attend the VE study for the entire week to assist the VE Team in gathering data, identifying potential design criteria modifications and to add technical knowledge to the VE process. Also, outside construction contractors and suppliers may be invited to attend the VE study at specific times. The specific responsibilities of the participants in a VE study are as follows.

10.1 MBTA VE Coordinator Responsibilities

1. Review the design schedule to identify upcoming station, line or systems design projects.
2. Identify those projects with a construction value greater than \$2,000,000 that may require value engineering.
3. Either proceed or defer the value engineering study.
4. Identify the length of the VE Workshop; if other than a standard 40-hour VE Workshop is needed.
5. Identify and coordinate with the VE Consultant the proposed VE Team disciplines required for each specific study. The Study Team would generally be comprised of a minimum of five and a maximum of eight

team members.

6. Develop a schedule for the Value Engineering Study.
7. Arrange for the Design Team to be present on the first and last day of the VE Workshop.
8. Review the Draft VE Report, distribute to others and schedule the formal VE Resolution Meeting.
9. Distribute notices and attend the VE Resolution Meeting and assist in the evaluation of each value engineering proposal.
10. Coordinate with the Design Team, staff and the VE Consultant to resolve any outstanding questions after the VE Resolution Meeting.
11. Assist the Project Manager in directing the Design Team to proceed with all accepted value engineering proposals.

10.2 Design Team Responsibilities

1. The Design Team will present a 3-4 hour overview of the total project to the VE Team on the first day of the workshop. This presentation should be given by the Design Manager and each of the project discipline designers.
2. On the last day of the VE Workshop, the full Design Team will return for an informal briefing by the VE Team on the findings of the study and an overview of each value engineering proposal developed during the week. This briefing typically lasts three hours. This briefing is chaired by the VE Team Leader and is designed to be informational in nature. The VE Team Leader will characterize the event of the week and highlight areas of high cost, results of cost modeling, cost/work ratios developed, any functional analysis conducted during the week and briefly present each value engineering proposal.
3. Attend the one day VE Resolution Meeting with the full design team and be prepared to discuss and resolve all value engineering proposals.
4. Incorporate all accepted value engineering proposals into the design as directed.

Value Engineering Decision Plan

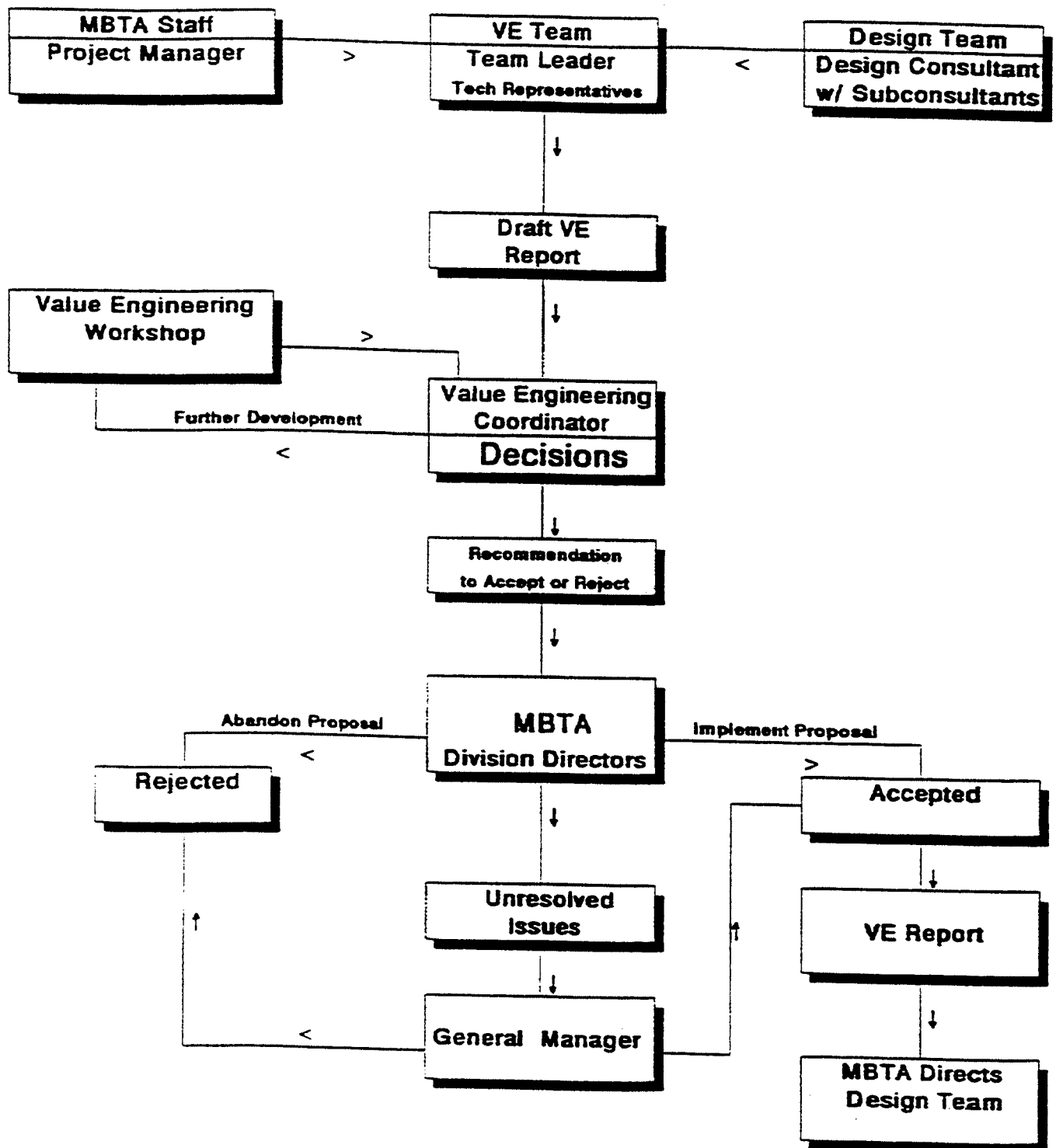


Figure 1

November 2000

**Value Engineering Calculations
Change Order No.**

	Example Calculation
Value Engineering Proposal	330,570
Less: Allowance Adjustments*	<u>(14,730)</u>
Subtotal	315,840
Less: 6% Profit	<u>(17,878)</u>
Subtotal	297,962
Add Back Allowances	<u>14,730</u>
Applicable to Apportionment	<u><u>312,692</u></u>
50% Apportionment MBTA	156,346
6% Profit on Unit Items	17,878
Credit to MBTA Contract	174,224
Contractor Apportionment	156,346
 Total Value Engineering	 <u><u>330,570</u></u>

* Assumes O/H and profit not included in Allowance calculation, per specs.; also, no Lump Sum items included in this value engineering credit.

SECTION 14 AUDITS

1.0 CONSULTANT CONTRACTS – PRE AUDITS

- 1.1.** In accordance with FTA Circular 4220.1D, Cost Analysis Requirement, Contract Administration (CA) manages the consulting CPAs who perform pre-audits on all consultant contract cost proposals to determine whether they are fair and reasonable. The pre-audit scope covers prime consultant and subconsultants direct labor rates, overhead rates, other direct expenses and fixed fees. The consulting CPAs do not assess the reasonableness of the consultant's direct labor hours. That assessment is the responsibility of the Project Manager.
- 1.2.** When a pre-audit results in adjustments to a cost proposal, Contract Administration presents them to consultants, resolves any issues, and obtains concurrence before issuing a pre-audit report.
- 1.3.** The pre-audit report includes a summary of the cost proposal and any adjustments with an opinion on the reasonableness of the accepted costs. Reports are issued to the AGM of Design and Construction and the Project Manager. When adjustments are required, Contract Administration obtains revised cost proposals before contracts or supplemental agreements are executed.

2.0 CONSULTANT CONTRACTS - POST-AUDITS (UNDER CONTRACT ADMINISTRATION)

- 2.1** Contract Administration manages the CPA's 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 will review these billings as opposed to their actual costs for a project.
- 2.2** 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.
- 2.3** 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.

3.0 CONSULTANT CONTRACTS – INCURRED COST AUDITS (UNDER AUDIT SERVICES DEPARTMENT)

- 3.1** When preparing its annual audit plan, the Audit Services Department (ASD) assesses consultant contracts in process and selects approximately 7-10 contracts with billings in excess of \$ 1 million for audit. ASD designs its audit coverage so those consultants with high dollar value contracts are audited at least once during a three to four year cycle as resources permit. These audits are most always performed by firms from ASD's CPA Pool. They are performed under the direction of ASD and in compliance with generally accepted auditing standards.
- 3.2** When audits result in adjustments, auditors review them with consultants, resolve issues and reach concurrence before audit reports are issued. Reports include a summary of costs billed, audit adjustments and, as adjusted costs; an opinion is rendered on the reasonableness of adjusted costs and their compliance with Federal Acquisition Regulation Part 31 – Cost Standards. They also include recommendations about collecting excess payments made to consultants.

Reports are distributed to the General Manager, the AGM of Design and Construction, the Project Manager and the Deputy Director of Design and Construction, Contracts.

4.0 CONSULTANT AND CONSTRUCTION CONTRACT CLAIMS

- 4.1** The Legal Department is responsible for settling claims and the Project Office and Audit Services Department assists Legal with assessing their reasonableness.
- 4.2** Consultant engineers assist with the evaluation of construction contract claims.
- 4.3** Firms from the ASD CPA Pool are often used to audit claims, under ASD's direction, and in compliance with generally accepted auditing standards.
- 4.4** Audit objectives include determining whether:
- a.** Bases for claim cost proposals are consistent with claim conditions allowed by Legal and the Project Office.
 - b.** Costs are supported by accounting record evidence.

- c. Costs are in compliance with contract terms and Federal Acquisition Regulation (FAR) Part 31 – Cost Standards.
- 4.5 When audit adjustments are required, auditors present them to the claimants, resolve issues, and reach concurrence (subject to Legal's approval) prior to issuing audit reports.
- 4.6 A summary of claim costs with adjustments accompanies reports, which include opinions on the supportability of as adjusted claim costs.
- 4.7 Reports are distributed to the General Counsel, the General Manager, the AGM of Design and Construction, the Project Manager and the Deputy Director of Design and Construction, Contracts.

5.0 CONSTRUCTION CONTRACT CHANGE ORDERS

- 5.1 When preparing its annual plan, the Audit Services Department identifies several high cost change orders to be audited. Audit objectives include determining whether:
 - a. Services are outside the contract scope; and
 - b. Proposed costs are based on contract terms and in agreement with Federal Acquisition Regulation Cost Standards.
- 5.2 Audits are performed by ASD or by firms from its CPA Pool in compliance with generally accepted auditing standards.
- 5.3 The Auditors resolve audit issues and obtains contractor's concurrence on adjustments prior to issuing audit reports.
- 5.4 A summary of costs proposed, with adjustments, accompany the reports and also includes opinions on the reasonableness of adjusted costs and their compliance with contract terms and the FAR Cost Standards. Recommendations on payment of related bills or collecting excess payments are also included in the report.
- 5.5 Reports are distributed to the General Manager, the AGM of Design and Construction, the Project Manager and the Deputy Director of Design and Construction, Contracts.

CONTRACT ADMINISTRATION

(An Overview)

1.0 DOCUMENTS/PROCEDURES

- 1.1** MBTA Bidding & Contract Requirements and Division 1 – General Requirements
- 1.2** MBTA Standard Specifications for Construction
- 1.3** UMTA Circular 4220.1D – Third Party Contract Guideline (for contracts receiving FTA grant assistance)
- 1.4** Federal Acquisition Regulations, Part 31 – Contract Cost Principles and Procedures
- 1.5** Other Applicable MBTA Policies and Procedures Governing Contract Authorization, Format and Subsequent Execution Activities

2.0 STAFF ASSIGNMENTS

2.1 Professional Services – Procurement

- a.** Administers Consultant Selection Process
- b.** Serves on Selection Committee
- c.** Coordinates and Participates in Contract Negotiations
- d.** Reviews Award Authorization Documentation
- e.** Develops and Updates Standard Contract Language
- f.** Prepares Basic Contract/Supplemental Agreement Language and Award Correspondence
- g.** Prepares and Processes Documents for Execution and Distribution

2.2 Professional Services – Payments

- a.** Develops and implements billing procedures and auditing methods for processing and payment of consultant contract billing.
- b.** Audits and reviews monthly consultant contract payments, ensuring that bills are in conformance with contract proposals and Federal Acquisition Regulations.
- c.** Performs periodic checks and field audits at construction sites to ensure that field office personnel are adhering to proper recordkeeping procedures.
- d.** Prepares activity and miscellaneous status reports as required.

2.3 Professional Services – Pre-audits

- a. Supervises the work performed by the consulting CPAs that perform pre-audit of consultant cost proposals.
- b. Prepares pre-audit reports detailing findings and recommendations.
- c. Reviews these findings and recommendations with the consultants concerned for agreement and concurrence. Obtains written concurrence from the Consultants before reports are issued.
- d. Responsible for providing instructions and general guidance to staff auditor in assigned areas.

2.4 Professional Services – Post-Audits (Under Contract Administration)

Contract Administration is responsible for:

- a. Supervising the work performed by the consultant CPA's who perform "Agreed Upon Procedures" post-audits of consultant costs.
- b. Reviewing and negotiating the post-audit report findings and recommendations with the consultants for agreement and concurrence.
- c. Providing instructions and general guidance to the auditors in assigned areas.

2.5 Construction Specifications/Bidding Documents

- a. Administers pre-bid review of construction contract specifications. Coordinates with designer and in house project staff.
- b. Develops and edits Standard Contract Language, Supplemental Provisions, Notice to Bidders, Bid Instructions, Bid Price Schedules, Federal and State Regulatory Clauses and Addenda.
- c. Coordinates, reviews, and meets with Architect/Engineer and in house staff on construction contract specifications.
- d. Prepares and assembles bidding documents for printing and contract advertisement.

2.6 Construction Contracts – Competitive Bidding Process

- a. Administers the competitive bidding process for construction contract procurement.
- b. Administers pre-qualification procedures for construction contract bidding on contracts exceeding estimates of one million dollars.
- c. Issues bidding documents and addenda. Pre-bid conference.
- d. Receives bids and presides at bid openings.
- e. Prepares bid packages for in house review and concurrence, including Labor Relations, Organizational Diversity, Engineering and Maintenance, Railroad Operations and Consultants.
- f. Reviews construction staff summary awards; prepares Notices of Award; Notices to Proceed and handles Execution of Contracts.

2.7 Construction/Professional Services – Authorization Documentation

- a. Advises Design and Construction project office with respect to the requirements for preparation of authorization documentation.
- b. Reviews, coordinates and processes staff summary contract authorization documentation for Construction Contract Awards; Extra Work Orders, Change Orders, Consultant/Architect/Engineer Contract Awards and Supplemental Agreements.
- c. Coordinates the execution and distribution process for Construction Change Orders.

2.8 Construction Contract Payments

- a. Reviews and processes contract payments:
 - Partial and final estimates
 - Prepayments for material purchased
 - Release of retainage
 - Claims and subcontractor demands
 - Force account and interagency agreements
- b. Reviews, analyzes and enters in CMS bid management and payment subsystems:
 - Executed Change Orders
 - Settlement of Claims

- Balance and Excess Reports
- c. Prepares, analyzes and edits bid comparisons, contract tabulation, bid price schedules, contract status and payment reports.

COORDINATION WITH THE OFFICE OF TRANSPORTATION ACCESS

1.0 RECOMMENDATIONS

- 1.1** The Project Manager should be aware of the need for an accessibility subcontractor to be a component of all design teams (per an existing agreement with Design and Construction).
- 1.2** The Project Manager should be familiar with the Americans' with Disabilities Act Accessibility Guidelines (ADAAG), the Massachusetts Architectural Access Board Regulations (MAABR) and the MBTA Guide to Access. Copies of each can be obtained from the Office Transportation Access (OTA) or Planning Departments.
- 1.3** Where State and Federal codes differ, the more stringent of the regulations should be adhered to as the MBTA is a recipient of State and Federal funding.
- 1.4** The Project Manager should direct the project design team to prepare a path of travel documents as part of the design submitted or as a separate submission to OTA and Planning staff.
- 1.5** The Project Manager should be informed that a presentation before the MBTA's Access Advisory Committee (AACT) must be given at some point during the design stage.
- 1.6** If situations arise where the Project Manager believes a State or Federal variance may be needed for some accessibility component of the work to be done, OTA and Planning staff should be notified as soon as possible.
- 1.7** If any questions arise regarding interpretation of accessibility requirements, the OTA office should be contacted to attend one of the monthly construction access meetings held at OTA to clarify the issue.
- 1.8** Project Managers should be aware that employee areas are now required under the ADA to be made accessible, except areas that are technically infeasible.
- 1.9** Per an existing agreement with Design and Construction, Project Managers are required to purchase a Telecommunication Display Device (TDD) as part of the construction contract.

Exhibit 14.1A

- 1.10** A Project Manager should be aware that notification systems need to be developed between Railroad Operations and Transportation staff when both parties have agreed that a station is accessible.

**MBTA GLOSSARY OF
CONSTRUCTION TERMS**
(Relating to tunnel and other infrastructure construction)

Access connection:	A roadway or facility providing access to or exit from an arterial highway.
Backfill:	Material used in refilling a trench or other excavation or the process of such refilling.
Ballast:	Gravel or crushed stone laid in a railroad bed to support the track structure.
Bascule Bridge:	A bridge with a moving span, a drawbridge.
Boat Section:	A reinforced concrete, watertight wall and slab, open to the surface, that is designed to contain a roadway or rail bed, or serve as a foundation to support a structure.
Boring, drill hole:	A hole, approximately 2-4" in diameter, drilled into the earth to study the subsurface geology and water conditions. May also refer to a hole made in wood or metal for the insertion of bolts or other fasteners used in construction.
Caisson:	Watertight chamber, usually made of wood or steel sheeting, used in construction work under water or as a foundation.
Cast-in-place:	Concrete formed and cast in its final location.
Cofferdam:	A temporary structure built to keep earth and water from entering an excavation so that work may be done under dry conditions.
Conduit:	A natural or artificial channel, such as a waterpipe, canal or aqueduct, for carrying fluids. Also used to carry electrical wires and cables.
Cover (fill):	Piece of land artificially raised to a required level, such as an embankment. Also refers to the material used.

Exhibit 14.1B

Crushed stone:	Rock broken to specific size for use in making concrete or a road base.
Culvert:	A large underground pipe or tunnel containing a stream or sewer.
Cut:	An excavation.
Cut-and-cover tunnel:	A tunnel construction process in which a trench is excavated from the surface, the tunnel structure built, the site covered, and the surface restored or "decked over" to permit street and other surface activity (often while construction continues beneath the surface).
Decking:	A cover over an excavated area or the form upon which concrete for a slab is placed. Also refers to the floor or roof slab itself.
Dewatering:	Removing water by pumping, drainage, or evaporation.
Floating slab:	A method of cushioning the train track structure to reduce the noise and vibration transmitted to the tunnel and surrounding area.
Footing:	A foundation for a column or a wall.
Foundation:	The entire substructure below the first floor or frame of a building or other structure, including the footings upon which the structure is set.
Haul Road:	A temporary road built off of the local street system and along or leading to/from a construction project site to provide a means for moving equipment, excavated material, etc.
Immersed Tube:	A method of tunnel construction which involves building tunnel sections (tubes) on land, launching and floating them on water to their designated site, and the lowering them in place.

Invert:	Lowest visible inside surface or floor of a pipe or tunnel.
Lagging:	In a trench or tunnel, the horizontal planking placed against the walls to prevent the earth from caving in.
Load bearing walls:	Supporting walls, capable of bearing their own weight, as well as other weight of a building or structure.
Muck:	Excavated material or a material to be excavated from a tunnel.
Mud slab:	A 2-6" layer of concrete placed below the structural concrete floor or footing over soft, wet soil.
Open Cut:	A method of excavation in which the working area is kept open (used to distinguish from cut-and-cover or tunneling work).
Overburden:	Excess soil mantle found directly over a deposit of rock, sand or gravel.
Pile:	Column of wood, steel or concrete, usually less than 24" in diameter, driven or jacked into the ground to support a load for a structure, etc.
Pile Cap:	Slab, usually of reinforced concrete, covering the tops of a group of piles for the purpose of tying them together, and to support the load of the structure, etc.
Portal:	An opening into a tunnel at ground level.
Pre-cast concrete:	Concrete that is cast and cured in other than its final position.
Right-of-way:	In general, the strip of land over, or under, which a road, railroad, transit line, utility or other "public" line passes.
Settling basin:	A containment basin to permit the settlement of debris or sediment, which has been carried through the pipe, channel or other form of conduit.
Slurry wall Construction:	A method of constructing an underground support wall for a tunnel or other structure that provides a minimum of excavation

and disturbance to the existing ground surface and adjacent structures. Two shallow concrete guidewalls are placed, and a trench is excavated between the two walls. A special clay mixture, called slurry, is piped into the trench to replace the soil and hold the trench open as excavation continues to the desired depth. Reinforcing is usually placed in the trench and concrete poured through a pipe to the bottom of the trench (tremie), displacing the slurry, which is pumped into storage tanks for reuse.

Soldier piles or beams: Steel beams driven into the ground around a site before excavation. Between these, horizontal members (lagging) are placed to create a retaining wall as the earth is removed.

Transverse grade beam: A horizontal structure that spans between excavation support walls, providing load bearing support and underpinning for overhead structure.

Underpinning: A permanent or temporary support system to provide strength and reinforcement to a building or structure to prevent settlement caused by adjacent construction.

Sources:

Construction Dictionary: A Handbook of Construction Terms & Tables, published by the National Association of Women in Construction, Phoenix, AZ 1966, 1968.

Going Underground, published by Bechtel, Inc. and David A. Crane & Partners for the MBTA, 1978.

Resident Engineers Manual, published by the MBTA.

HAZARDOUS WASTE MANIFEST MANAGEMENT

1.0 GENERAL

- 1.1 The manifest is the Federal/State document used by a hazardous waste transporter when hauling the waste anywhere off the property of a Generator.
- 1.2 The manifest is used as a tracking document to prove when, where, and how much hazardous waste left the place of generation and when, where, and how much arrived at the disposal site.
- 1.3 Manifests from the State where the waste is deposited should be used.
- 1.4 The MBTA, as Generator, by law is responsible for supplying the manifest and its accuracy.
- 1.5 Detailed requirements regarding recordkeeping and reporting is found in 40 CFR 265.70 through 265.77.

2.0 COMPLETING THE MANIFEST (Exhibit 14.1)

- 2.1 The manifest should be prepared by the environmental consultant (except for the Resident Engineer's signature), or the MBTA Environmental Management Unit (EMU) can assist project personnel.
 - a. Address each numbered item.
 - b. Ensure all eight copies are readable.
 - c. If a section is left blank, verify that it should be left blank.
 - d. There are two parts to a manifest; the **"white"** (Federal) items required by EPA and DOT and **"shaded"** (State) items. The Federal items, numbered 1 through 20, are on all manifests. The shaded items, numbered A through K, in many cases differ from State to State.
 - e. Print or type so that all copies are legible.

2.2 Federal Section

1. Generator's EPA number and manifest document number. If the site EPA number is unknown call the MBTA Environmental Management Unit.
2. Page 1 of _____ (do not leave blank – the State wants to know if a continuation sheet is being used.)
3. Generator name and mailing address.
 - Generator name should be: MBTA/Site Name
 - Generator mailing address should be: EMU, Ten Park Plaza, Room 6720, Boston, MA 02116
4. Generator's telephone number should be two numbers:
 - EMU – (617) 222-3126)
 - Project Manager of the site
- 5-15 These items should be completed by the Consultant with the assistance of the Transporter. If no Environmental Consultant is available, the EMU should be contacted.
16. Generator representative's name, typed or printed, signature and date. Resident Engineer or Inspector should sign manifest as representative of MBTA.
- 17-20 These items should be completed and signed by the individual who is to receive custody of the waste at the time custody is transferred.

2.3 State Section

These items vary in some degree from State to State. If there is any question about this shaded section of the manifest, follow the direction on the back of the manifest. These are the State items required for all New England states.

- | | |
|------------------|--|
| Item A | Preprinted number |
| Item B | Stat Gen. Id – is the street address of the Generator's pickup location. |
| Items C-F | Must be completed by Transporter upon pickup. |
| Item G | No entry required by New England states. |

Item H-K Must be completed by the Consultant. If no Environmental Consultant is available, contact MBTA, Environmental Management Unit.

3.0 DOCUMENTATION AND CUSTODY OF MANIFEST

- 3.1 The manifest must be signed by the recipient of the hazardous waste at each change in custody.
- 3.2 **Construction Projects** – The Resident Engineer or Inspector at a project site shall be responsible for signing manifests when custody is given to the Transporter and for maintaining the Generator copies (3 and 8) of the manifest in the project files.
- 3.3 A work copy should be made of Copy 3 of the manifest and another photocopy should be forwarded to the Environmental Management Unit.

4.0 ROUTING THE HAZARDOUS WASTE MANAGEMENT

4.1 Routing

- Copies 1 & 2** **Destination and Generator Site:** mailed by the Treatment, Storage and Disposal Facility (TSDF) to the States.
- Copy 3** **Generator completed copy:** mailed by TSDF back to the Project Manager of the waste, who must keep it and attach it to Copy 8. If this copy is not returned within 45 days, the Resident Engineer must send an "Exception Report" to the Massachusetts state government, return receipt requested.
- Copy 4** **TSDF copy:** TSDF keeps this copy for its records.
- Copy 5** **Transporter 1:** Transporter keeps this copy for his records.
- Copy 6** **Destination State:** Resident Engineer mails this copy to the State government where the designated facility (TSDF) is located. The Resident Engineer must send this copy within five (5) working days.

Copy 7 **Generator State:** Resident Engineer delivers this copy to the Environmental Management Unit who will forward it to appropriate regulatory agencies.

Copy 8 **Generator:** When the Resident Engineer has completed the required information and transfers the waste to the Transporter, a copy is retained for record purposes.

- 4.2** Copies 3 and 8 must be kept on file by the Generator for three years. They should be kept together in a safe place and working copies of them should be made, if needed.
- 4.3** If an exception is filed because Copy 3 was not returned to the Generator within the 45 day limit, send the report to the Massachusetts State Government, return receipt requested. If this occurs, the Project Manager should contact the Environmental Management Unit, who will assist in providing documentation.
- 4.4** Copy 8 should be photocopied and the photocopy forwarded to the MBTA Environmental Management Unit, along with confirmation that copies 6 and 7 have been forwarded to the appropriate State agencies.

The original must be maintained in the project records for the required three years. The MBTA Environmental Management Unit will keep the copy on file for the required three years.

Note: The Project Manager is responsible for all aspects of the manifest. While it may actually be filled out by the Resident Engineer, Consultant or Contractor, the Project Manager will ensure that it is done correctly and promptly.

PUBLIC MEETINGS

1.0 SCHEDULING

- 1.1** Using a Notice of Meeting, submit meeting purpose and date to the Coordinator of Local and Community Affairs and Intergovernmental Relations Department, with copies to the AGM of Design and Construction, and the Press Secretary, a minimum of ten days prior to the meeting.
- 1.2** All meeting notices, leaflets etc. must be reviewed and approved by the Communications Department. A reasonable turnaround time must be planned to ensure proper public notification.
- 1.3** Requests to attend outside meetings must be reported to the Intergovernmental Relations Department immediately. When attending such meetings, written material which has not received prior approval cannot be distributed.
- 1.4** A summary listing the issues raised and the results of the meeting must be sent to the AGM of Design and Construction no later than one week after the meeting. A copy of the "Meeting Attendance" sheet must also be submitted.

STATE BUILDING CODE ENFORCEMENT

1.0 GENERAL

- 1.1 The MBTA is required by State statute to comply with the Massachusetts State Building Code (MSBC) for construction contracts (Exhibit 14.5).
- 1.2 State Building Inspectors, under the Massachusetts Department of Public Safety (MDPS) are charged with permitting and plan review.
- 1.3 For all code requirement meetings with the Massachusetts Department of Public Safety, Elevator and Escalator Board, Board of State Examiners and Plumbers and Gas Fitters or other code enforcement or safety boards, the Force Account and Utility Coordinator is responsible for assisting the various project offices in order that permits and, where applicable, variances are secured.

It is the Project Manager's responsibility to assure that all required permits, variances, etc. are obtained from the proper jurisdictions.

- 1.4 The first coordination effort should start after the MBTA departments have reviewed and commented on 30% plans and specifications. The coordination effort usually occurs at the 90% plan review stage.
- 1.5 The 6th Edition of the State Building Code, under Section 1705, requires a structural testing and inspection to be implemented during the construction phase and monitored by a Structural Engineer of Record (SER). This is required in order to obtain a building permit and the final Certificate of Occupancy.

This program needs to be developed in conjunction with the contract specifications by the architect/structural engineer and approved by the State Building Inspector.

- 1.6 The QA Department, working with the State Building Officials, has developed a generic program that may be used as a guide by the Structural Engineer of Record. The final program must be approved by the Project Manager, Quality Assurance, prior to submitting it along with an application, to the State Building Official for issuance of the Building Permit.
- 1.7 The Force Account & Utility Coordinator will work with the Project Office to coordinate the approval of the structural program and obtaining the required permits and certificates.

Force Account Control Questionnaire MBTA Personnel

The Federal Transit Administration recognizes four factors which justifies the use of a force account to perform capital improvements in lieu of the preferred use of private sector contractors. Therefore, this questionnaire is established to cover these four areas and to serve as a source document and guide for Project Managers requesting force account approvals. Any requests for force account approvals must be submitted to the Force Account Committee based on the following factors.

1. **Cost:** The grantee can show that it is more cost effective, considering the total impact to the project to do the work by force account.

	Yes	No	N/A
Did the project complete an analysis comparing The present value of the task being completed By force account to that of a private contractor?	_____	_____	_____
Did the project reflect the following costs:			
a. Cost of preparing documents?	_____	_____	_____
b. Cost of administration and Inspection?	_____	_____	_____
c. Cost of labor, materials and equipment (specialized)?	_____	_____	_____
d. Cost of Overhead?	_____	_____	_____
e. Profit for private contract?	_____	_____	_____
f. Unit prices in lieu of c, d, and e above, if applicable?	_____	_____	_____
Did the project contact the appropriate operating department to insure that the labor force will be available to perform the force account work?	_____	_____	_____
Did the project estimate the midpoint of construction in calculating the present value of the work to be performed?	_____	_____	_____
Is there any difference in the time for completion of the work to be performed between force account and private sector contract?	_____	_____	_____

Exhibit 14.2

If so, an estimate of the value of the lost use of the capital improvement should be included in the present worth of calculation. For example, if the end product of the work is to replace leased facilities, then the cost of the leased facilities for the time interval is to be taken into account in the cost estimate.

	Yes	No	N/A
2. Exclusive Expertise – The work can only be accomplished in house. If no private sector contractor has the expertise to perform the work, has the project determined the equivalent of sole source justification?	_____	_____	_____
3. Union Agreement – Force account work is required by labor agreement If the work has to be performed by force account because of Union Agreement, did the project obtain a citation from the labor agreement?	_____	_____	_____
4. Safety and Efficiency – Contracting the work should have an adverse impact on the safety of the public or the efficiency of the transit operations. Did the project receive a statement by the transit operators' safety officer if the work is to be performed by force account because it would be detrimental to public safety if performed by private contractors?	_____	_____	_____
5. Other FTA Requirements – Has the appropriate information been included in letter to FTA stating reasons for using force account, as outlined above? Has the page number(s) of the grant been included in letter to FTA which would indicate that the work was part of the approved grant?	_____	_____	_____

Exhibit 14.2

Is there enough money in the line item so that
this force account effort can be approved?

Yes

No

N/A

If not, have the appropriate budget revisions
been requested to adhere to the above?

Grant Number: _____

Force Account Work Order Number: _____

Signature

Date: _____

**MBTA Community Planning
Meeting Notification Form**

.....

Meeting Date:

Time:

Organization:

Meeting Location:

Purpose/Objective:

.....

Organization/Agency:

Contact Person

Telephone:

.....

MBTA Attendee:

Department:

Project Title:

Other Comments:

THE MASSACHUSETTS STATE BUILDING CODE**116.2 Registered architectural and engineering services**

116.2.1 Design: All plans, computations and specification involving new construction, alterations, repairs, expansions or additions or change in use or occupancy of existing buildings shall be prepared by or under the direct supervision of a Massachusetts registered professional architect or engineer and shall bear his or hers original signature and seal or by the legally recognized professional performing the work. Signature and seal shall signify that the plans, computations and specifications meet the applicable provisions of the code and all accepted engineering practices.

116.2.2 Architect/engineer responsibilities during Construction: The registered architect and registered professional engineer who have prepared plans, computations and specifications or the registered architects/professional engineers who have been retained to perform construction phase services, shall perform the following tasks for the portion of the work for which they are directly responsible:

1. Review for conformance to the design concept, shop drawings, samples and other submittals which are submitted by the contractor in accordance with the requirements of the construction documents.
2. Review and approval of the quality control procedures for all code-required controlled materials.
3. Be present at intervals appropriate to the stage of construction to become generally familiar with the progress and quality of the work and to determine, in general, if the work is being performed in a manner consistent with the construction.

116.2.3 Structural Tests and Inspections: Structural test and inspections shall be provided in accordance with Section 1705 of the Code.

116.2.4 Tests and Inspection of Non Structural Systems: Tests and inspections of non-structural systems shall be performed in accordance with applicable engineering practiced standards or reference standards listed in Appendix A of the Code.

116.3 Construction contractor services: The actual construction of the work shall be the responsibility of the general contractor as identified on the approved building permit and shall involve the following:

1. Execution of all work in accordance with the approved construction documents.

2. Execution and control of all methods of construction in a safe and satisfactory manner in accordance with all applicable local, state, and federal statutes and regulations.

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SECTION 15

USE OF CONSTRUCTION MANAGERS

1.0 OVERVIEW

The most important goal of the MBTA's capital program managers is to deliver Projects on time, on budget, and as scoped. A second goal is to reduce the overall cost of Projects in the program, thereby increasing the program's capacity. For larger and more complex Projects, retention of a Construction Manager makes achievement of these goals significantly more likely. Construction Managers bring a variety of resources to the design and construction phases of Project development that are generally unavailable to in-house staff.

Immediately following a decision to include a Project in the Five Year Plan, the AGM of Design and Construction makes a recommendation to the Capital Management Group (CMG) whether to retain a Construction Manager (CM) for the Project and, if such a recommendation is made, when to retain the CM. Use of a CM is most appropriate for Projects that are unusually complex, including most system enhancement and expansion Projects, or that are estimated to cost in excess of \$5-\$10 million. The greatest savings are generally achievable through early retention of a CM.

Based on the determination of the CMG, the Project Manager (PM) drafts an RFP. The PM then reviews the draft with his/her supervisors to confirm the allocation of responsibilities between the CM and PM, with the Sponsor Department to confirm the description of Project scope, and with Contract Administration and Counsel for approval as to form.

If a CM is retained, the CM supervises day-to-day design and construction and monitors Project costs and schedule. The PM manages the CM. In order for this relationship to work, it is critical that there is a clear and defined alliance between the CM and the PM and that each of their responsibilities is clearly articulated.

- The CM provides expertise in management, coordination, reporting, reviewing, estimating, supervision/inspection and other necessary services to the Authority. The CM provides these services over the duration of its retention, such that the project remains within scope, schedule and budget; that coordination is accomplished, as necessary, among the Authority, Consultant, Contractor and other governmental entities; that quality construction is achieved at reasonable cost in accordance with all safety and building codes; and that claims are minimized.
- 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. Furthermore, the PM manages all Authority internal operations, including ensuring the participation of the Authority's operating departments in design review and handling relations with the community. The PM remains responsible for achievement of the Authorized Budget and Schedule.

2.0 DECISION TO RETAIN A CM

Immediately following a decision to include a Project in the Five Year Plan, the AGM of Design and Construction makes a recommendation to the CMG whether to retain a CM for the Project. The AGM of Design and Construction's recommendation is made after considering the following questions:

- Are total estimated Project costs in excess of \$5-\$10 million?
- Do current and projected departmental workload argue for retention of a CM?
- Is the project design unusually complex such that it requires a rigorous application of value engineering and innovative approaches to obtain a cost-effective alternative?
- Does scope development represent a relatively significant challenge when compared to routine projects?
- Is the construction multi-phased, or does it require intricate staging, materials flow schedules, etc.?
- Is the project driven by needs other than routine system reinvestment?

The AGM of Design and Construction's recommendation also states when a CM should be retained. Options include any defined point in time prior to achievement of 30% design or any of the post-30% design milestones. In general, CMs are retained prior to achievement of the 30% design milestone to assist in preparation of the Authorized Budget and Schedule to which the PM will be held accountable.

The CMG reviews and modifies or approves the AGM of Design and Construction's recommendation at the next scheduled CMG meeting following receipt of the recommendation. Based on the CMG's decision, the AGM of Design and Construction directs the PM to draft a Request for Proposals for retention of a CM for the Project.

3.0 RFP FOR CM

CM's are retained per the Consultant Selection procedure. The PM drafts the RFP for retention of a CM based on the following key considerations:

- accurate description of the scope of the Project, to be reviewed with the PM's Deputy Director and the Sponsor Department
- accurate description of the scope of the CM's responsibilities (described below), to be reviewed with the PM's Deputy Director
- determination of any incentive structures provided the CM to ensure achievement of the Authorized Budget and Schedule (respondents may be asked to propose incentive structures or the RFP may suggest an incentive structure based on previous Authority experience), to be reviewed with the PM's Deputy Director, Contract Administration and Counsel
- adherence to Authority contracting practice, to be reviewed with Contract Administration
- After the PM has drafted the RFP and made any modifications suggested by the reviewing entities, the PM submits the draft RFP to the AGM of Design and Construction for approval. Following approval by the AGM of Design and Construction, Contract Administration issues the RFP.

4.0 ALLOCATION OF RESPONSIBILITY BETWEEN THE CM AND PM

The RFP must describe the allocation of responsibilities between the PM and CM as the Project will actually be managed. In general, project management responsibilities are allocated as follows.

4.1 Project Manager Responsibilities

- Ensure achievement of the Authorized Budget and Schedule.
- Convene and chair weekly meetings with the CM and other project participants as necessary to review each week's accomplishments and ask the CM for clarification if there is any doubt as to a particular course of action.
- Manage all internal coordination, including ensuring that the operating departments participate in the design reviews.

- Manage all community outreach activities.
- Chair all of the major design submission meetings (30%, 60%, 90% and 100%) and clearly articulate the Authority's position if there is a disagreement.
- Carefully review 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.
- Lead design consultant and contractor procurement processes. This includes writing the RFP and managing the design consultant selection process (in consultation with other Authority personnel).
- Periodically review the CM's file system to ensure that daily journals are written and that records of events are maintained.
- Review, and when authority exists, either approve or deny CM recommendations for such change orders, scope change, design modifications, etc. If approval is required from other Authority staff, ensure that the recommendation is routed to that individual and follow-up on the subsequent recommendation.
- Review and approve the CM's design and construction management plans, paying careful attention to the organizational and reporting arrangements.
- Lead weekly 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.
- Review and approve all invoices submitted both by the CM and by the design consultant and contractor via the CM.
- Update monthly Project Status Reports.
- Ensure that a comprehensive punch list is completed and that each item on the list is addressed to the Authority's satisfaction.
- Hold 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.
- Review the CM's performance after the CM has completed all contractual obligations and submit the evaluation to Contracts Administration.

Contracts Administration will provide an evaluation form and guidelines.

4.2 Construction Manager's Responsibilities

- Create a Project Management/Coordination Plan that identifies how the entire project, from design through closeout, will be orchestrated.
- Review and analyze the MBTA's preliminary Project scope of work, paying particular attention to missing or extraneous details. Provide a preliminary Project budget and schedule.
- Assist the MBTA in the design consultant selection process.
- Coordinate the design review process (30%, 60%, 90% and 100%) with the Consultant and MBTA. Closely monitor the design throughout the entire design process, paying particular attention to cost and schedule escalation. Identify the causes of and determine how to minimize or avoid such escalation.
- Coordinate participation of other agencies on an as needed basis.
- Review and approve Consultant's invoices for consistency with budget and schedule and certify that work has been accomplished satisfactorily.
- Review all requests and recommendations for scope changes. Provide a detailed analysis of such requests that identifies the effects on cost and schedule, constructability and level of service. Submit a recommendation to the PM with supporting rationale.
- Assist the MBTA with the bidding process and all related procurement issues.
- Organize and run a pre-construction "kick-off" meeting with the MBTA, Consultant and Contractor.
- Prepare a Construction Management Plan that identifies how the CM will coordinate construction activities and all other supplementary activities detailed in the Construction Phase.
- Organize and run regular meetings with the PM, Contractor and Consultant to provide construction updates, discuss problems and generally coordinate the construction process.
- Implement and maintain a tracking system to provide timely and accurate schedules and progress and cost updates to the MBTA.

- Monitor 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.
- Maintain on site a Superintendent and staff, the size of which should be commensurate with level of construction activity, to perform daily walk-throughs of the construction site.
- Develop and update a record-keeping system of all construction activities, including daily logs. Manage the process of shop drawing and submittal review and expedite distribution and routing of all such materials to ensure timely turn around.
- Prepare and submit to the PM an independent cost estimate of proposed changes and a complete explanation and justification of the need for the change. Prepare all paperwork required for approval of the Change Order.
- Develop and maintain a cost effective and timely quality assurance (QA) program.
- Review and verify all requests for payments submitted by the Contractor. In all cases, submit recommendation concerning approvals or disapprovals to the PM within five (5) business days from receipt of payment request.
- Prepare the Punch List(s) that documents all items of work that are incomplete or that need correction, provide a monetized value for each item and monitor the work to ensure that all Punch List(s) items have been completed by the Contractor to the satisfaction of the PM prior to final payment.
- Maintain a claims register indicating the current status of each claim, its ultimate resolution and its impact on the Project budget and schedule.
- Coordinate 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 supervise equipment removal and site clean-up.

SECTION 16

PROJECT MANAGER RESPONSIBILITIES

1.0 OVERVIEW

In order to provide the MBTA with the most effective and efficient management of capital Projects, Project Managers must understand their roles and responsibilities. Similarly, MBTA senior managers must understand what is expected of Project Managers. This description of the Project Manager's responsibilities defines the mutual expectations of senior managers and Project Managers regarding the role of the Project Manager in pre-design, design, construction and procurement.

The Project Manager is the individual within Design and Construction, Operations or Planning who has inception-to-completion responsibility for Project management according to specifications, in a timely manner, and within budget. The Project Manager 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 responsible to perform a construction cost evaluation at each one of the design phase (30%, 60%, 90%, 100%) submissions. The evaluation will determine the accuracy of the estimate.

2.0 RESPONSIBILITIES DURING CONCEPTUAL DESIGN (0% - 30%)

The AGM of Design and Construction, the Chief Operating Officer or the Director of Planning assigns a Project Manager as set forth in the Project Initiation procedure. The first responsibility of the Project Manager is to meet with the Sponsor Department and any other internal or external parties with detailed knowledge about the Project, and to develop a Conceptual Budget and Schedule, as set forth in the Authorization of Budget and Schedule procedure. During Conceptual Design, the Project Manager's responsibilities include the following:

- Preparing and revising the monthly Project Status Report and keeping the Project in as close compliance as possible with the Conceptual Budget and Schedule.
- Reporting variances between estimated and Conceptual Budget and

Schedule to his/her superiors and/or to the Capital Management Group as required in the Authorization of Budget, Change Order Approval, or Project Status Report procedures.

- Complying with the requirements of any necessary environmental approval processes.
- Convening and chairing all project meetings with representatives of the Sponsor Department, Budget Department, Office of Capital Management, Design & Construction, Real Estate Acquisition, Operations, Planning and consultants. Setting 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/Coordination 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.
- Drafting the RFP to retain a Consultant Services for the Project (if necessary) as set forth in the Consultant Selection procedure.
- Discussing with the AGM of Design & Construction whether a Construction Manager will be retained for the Project.
- Drafting the RFP to retain a Construction Manager for the Project (if necessary) as set forth in the Use of Construction Managers procedure.
- 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 the 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 in accordance with the Design Review procedure.
- Reviewing and approving the cost estimates and schedule projections contained in design submittals. Directing designers to design to budget.
- Reviewing all proposed Scope Changes and Change Orders and approving such changes in accordance with the Authorization of Budget and Change Order procedures.

3.0 RESPONSIBILITIES DURING PRELIMINARY AND FINAL DESIGN

In order to advance a Project beyond 30% design, the Project Manager requests an Authorized Budget and Schedule as set forth in the Authorization of Budget Procedure. The Project Manager's responsibilities during Preliminary and Final Design include:

- Complying with the requirements of any necessary environmental approval processes.
- Participating in cost negotiation with, contract supplements with, and/or reselection of a designer.
- Preparing and revising the monthly Project Status Report and ensuring compliance with the Authorized Budget and Schedule. Providing timely notification to supervisors and the Office of Capital Management of any potential scope, schedule, or budget issues (i.e., ensuring no unnecessary surprises).
- Reporting variances between estimated and Authorized Budget and Schedule to his/her superiors and/or to the Capital Management Group as required in the Authorization of Budget, Change Order Approval, or Project Status Report procedures.
- Convening and chairing all project meetings with representatives of the Sponsor Department, Budget Department, Office of Capital Management, Design & Construction, Operations, Planning, Real Estate Acquisition and consultants. Setting meeting agendas and approving meeting minutes.
- Directing and facilitating communication and negotiation among Project participants.

- Maintaining the Project File.
- Creating/updating a Project Management/Coordination Plan that identifies how the Project will be managed from Design through Closeout.
- Reviewing and approving payment requisitions.
- Serving on the Selection Committee for any additional outside consultants.
- Monitoring Real Estate requirements and acquisition as set forth in the Real Estate Acquisition procedure.
- Overseeing the review of design submittals, including the 60%, 90%, and 100% Design Reviews in accordance with the Design Review procedure.
- Reviewing and approving the cost estimates and schedule projections contained in design submittals. Directing designers to design to budget.
- Working with the designer, the PM's supervisors, and other relevant parties within the MBTA or in the community to keep the Project within budget and schedule.
- Recommending the Project for Value Engineering and supervising the Value Engineering process as set forth in the Value Engineering procedure.
- Managing all community outreach activities.
- Reviewing and seeking approval for any unavoidable changes as set forth in the Authorized Budget, Change Order, and Project Status Report procedures.
- Identifying impacts to operations, developing mitigation of service alternatives, and obtaining accurate cost estimates of operating impacts. These impacts should be identified in the monthly Project Status Reports.

4.0 RESPONSIBILITIES DURING CONSTRUCTION PROCUREMENT

The Project Manager's responsibilities during Construction Procurement, from Advertisement through Contract Award include:

- Assisting Contracts Administration and/or Purchasing with all aspects of the advertisement, bid, and award process. Ensuring timely submittal of

documents to keep the procurement process on schedule.

- Reviewing the bid documents and identifying discrepancies among bidders and potential design errors and omissions.
- Approving or requesting approval of amendments to the Authorized Budget and Schedule as set forth in the Authorization of Budget and Schedule procedure.

5.0 RESPONSIBILITIES DURING CONSTRUCTION IMPLEMENTATION

Once a Project has been awarded, the Project Manager's responsibilities during Construction include:

- Convening and chairing 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.
- If the Authority has retained a Construction Manager (CM) for the Project, assuming the following responsibilities set forth in the Use of Construction Manager procedure.
- Ensuring achievement of the Authorized Budget and Schedule.
- Updating monthly Project Status Reports.
- Convening and chairing weekly meetings with the CM, Contractor, Design Consultant, and other project participants as necessary to review each week's accomplishments and ask the CM for clarification 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.

- a. Reviewing and approving the CM's construction management plans, paying careful attention to the organizational and reporting arrangements.
 - b. Leading weekly site inspections with the CM paying careful attention to safety issues, the integrity of the construction, and conformance with the design specifications.
 - c. Reviewing and approving all invoices submitted by the CM and by the Design Consultant and Contractor via the CM.
- If the Authority has not retained a Construction Manager for the Project, assuming the following additional responsibilities:
 - a. Preparing a Construction Management Plan that identifies how the PM will coordinate construction activities and all other supplementary activities detailed in the Construction Phase.
 - b. Organizing and chairing regular weekly meetings with Contractor, Design Consultant, and other Project participants to provide construction updates, discuss problems and coordinate the construction process.
 - c. 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.
 - d. Supervising the Resident Engineer, Inspectors, and other field staff necessary to perform daily walk-throughs of the construction site.
 - e. Developing and updating a record-keeping system of all construction activities, including daily logs. Managing the process of shop drawing and submittal reviewing and expediting the distribution and routing of all such materials to ensure timely turn around.
 - f. Preparing all paperwork required for approval of Change Orders.
 - g. Developing and maintaining a cost effective and timely quality assurance (QA) program.
 - h. Reviewing and approving all invoices submitted by the Design Consultant and Contractor.

- i. Maintaining the Claims Register indicating the current status of each claim, its ultimate resolution and its impact on the Project budget and schedule.

6.0 RESPONSIBILITIES DURING CLOSEOUT

The Project Manager's responsibilities during the Closeout phase of a Project include:

- Preparing the Punch List(s) that documents all items of work that are incomplete or that need correction, provide 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.
- 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 supervise equipment removal and site clean-up.
- Holding a final meeting with the CM (if retained) and other Project participants following the post-construction phase to review the project and identifying any issues that might create problems in the future.
- Reviewing the performance of the Design Consultant, CM, and Contractor after all contractual obligations are completed and submitting the evaluation to Contracts Administration as set forth in the Contractor Evaluation procedure.

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Section 17

Force Account Process

1.0 General

The following procedures, effective retroactively to January 1, 2002, cover all project force account proposals in excess of \$250,000. A project is defined as a single concentrated effort, under the direction of one or more project managers, to maintain, improve or expand one or more MBTA facility or right-of-way segments, regardless of the type or number of funding sources for the project. Accordingly, segmenting projects into different phases or contracts does not relieve the project of the requirement to adhere to these new procedures.

The primary tool that the MBTA will use to document cost containment efforts and adherence to these new procedures is the Force Account Plan (FAP). The FAP will guide MBTA personnel through the force account development and implementation process and provide specific documentation required at key stages during the design process.

1.1 INTERNAL FORCE ACCOUNT

- A. An Internal Force Account provides for work performed by MBTA forces such as the Systemwide Improvements. The work is authorized by the Project Manager via a TRS Work Order form.
- B. The decision to use Force Account labor must be justified on the basis of cost savings, exclusive expertise of the performing department, safety and efficiency of operation, and any related Union agreements.
- C. Federal Transit Administration (FTA) prior approval is required if the estimated cost of the Force Account work is greater than \$10,000,000.
- D. The request to FTA must include the Force Account Questionnaire (Exhibit 5.2) and the TRS Forms.
- E. Once the work is authorized, the performing department is responsible for completion of the task on schedule and within budget.

1.2 EXTERNAL FORCE ACCOUNT

- A. An External Force Account provides for work performed by an outside agency where the basis for payment is actual cost of labor, material, equipment and services.
- B. Outside agencies include railroad (Amtrak, CRX, Bay Colony), when the need arises from railroad operating agreements and associated FTA regulations; public agency (Massachusetts Highway Department, Executive

Office of Transportation and Construction, etc.); and utilities (Steam, Electric, Telephone, etc.) although utility work is usually done under construction contract line item

- C. An External Force Account is a third-party agreement, the original of which must be approved/signed by the General Manager according to the MBTA's standards for delegation of authority.
- D. The project should use the staff summary procedures. Concurrence is required from the Legal Department, which also provides approval as to form on the approved original agreement. The project is encouraged to contact Legal early for review/assistance in drafting the agreement. Contract Administration review is not required on the staff summary, but should be provided with a copy.
- E. Once executed, the Project Manager is responsible for managing the agreement through daily reports of labor, equipment and material, process payments and the terms and conditions of the agreement.

2.0 Design Phase Requirements

2.1 30% Design

At this stage, much is already known about the scope of the project and the impact it will have on MBTA operations. As a result, this is a critical time for determining the construction sequencing to be used and the basic elements of force account that will be required in carrying out the project. As the project reaches the 30% design stage, and before final design is initiated, the Project Manager will:

- Identify all departments potentially impacted by the construction project and form a "Force Account Committee" (FAC) for the project. This group shall be comprised of upper-level, policy-level managers from those affected departments who are empowered to make decisions on construction-related service and safety issues.
- Provide a detailed overview of the project design, seek specific input from the FAC to ensure that all operational impacts and construction support requirements are considered and evaluate alternative methods of construction that may produce cost-savings. The FAC should use the "Force Account Checklist" (Exhibit 5.1) as a guide in evaluating various cost-saving initiatives to be used.
- Explore options for construction methods/sequencing that will affect the level of force account required for the project. The decision on which method will be used shall be determined through a quantitative analysis of construction and force account savings offered by each alternative, which are then weighed

against operational/safety impacts. This analysis should be documented and available for review by senior management.

- Provide briefings and seek input from political and community representatives (where applicable). The goal of this briefing would be to “sell the project” and obtain “buy-in” on a proposed method of construction that will allow the project to be built at the most reasonable cost. The briefing would explain any temporary inconveniences that the project may cause, while emphasizing that the ultimate benefits of the project far outweigh the temporary inconvenience.
- Coordinate with all departments to prepare a Preliminary Force Account Plan (PFAP) for the project. Specifics of what needs to be included in the PFAP are covered under “*Elements Required In A Force Account Plan*” (Exhibit 5.2). At this point, a spreadsheet estimating force account costs, by department, is required. Although no work order forms are required at the 30% stage, each department is expected to provide a worksheet, signed by the department head, that provides a “best estimate” based on the proposed construction schedule and methodology. Also, if the project scope calls for work to be performed by internal forces in cases where a 3rd party contractor could also be used, an independent cost analysis, along with other justification, must be provided (see Exhibit 5.3).

The PFAP will be signed by all responsible departments and submitted to the Budget Department for review and comparison with approved funding within the budget. Once signed by the Budget Department, the project will be allowed to proceed to the final design stage.

2.2 60% Design

Additional review of the PFAP should take place by the 60% design stage. At this point (sooner if necessary), the Project Manager will reconvene the FAC to provide an update on the project and identify any issues that need to be resolved in order to complete design. Any proposed changes to the original PFAP should be discussed and analyzed to assess the impact on overall force account costs. If these changes result in a significant cost increase over the PFAP (20% or more), a revised PFAP should be developed and submitted to the Budget Department for review. Also, at this point, the project manager or consultant must provide operating personnel with a detailed project schedule so that more accurate force account estimates can be developed.

2.3 90% Design

In moving from 60% to 90% design, all schedule, phasing and constructability issues should be resolved. During this phase, the project manager and FAC should meet as necessary to assess the validity of the PFAP and make changes as necessary. Any additional costs or cost-saving initiatives not previously outlined

in the PFAP should be incorporated into the PFAP. Once the 90% design level is reached, the scope of the project should be locked in and all operational impacts addressed.

At this point, all force account adjustments and cost savings should be documented and presented in a final FAP (See Attachment B). The FAP must identify the individuals responsible for developing the force account cost estimates for each department and the person in each department responsible for monitoring and controlling costs. Each person must be in at least a management-level position to ensure accountability. This establishes contact points within each department to make sure that regular communication is maintained during the project. This is a key element of the revised procedure.

The FAP will be signed by all responsible departments and submitted to the Budget Department for review and comparison with approved funding within the budget. Depending on the overall level of force account involved and funding available within the project budget, the Budget Department may convene a "Senior Management Committee" to review the FAP and determine whether force account is being provided at an appropriate level and/or in the most cost-efficient manner. The Senior Management Committee will include representatives from the following departments as necessary:

Design & Construction-Director	Subway Operations-Superintendent
Bus Operations-Superintendent	Operations Support-Superintendent
SMI – Director	Operations Planning-Director
Safety Department-Director	Budget-Deputy Director-Capital

The Committee, as a group, will determine whether additional modifications to the FAP are warranted. If so, the Committee will forward its recommendations to the responsible project manager for incorporation into a revised FAP. The revised plan will then be forwarded to the Budget Department for final review and approval. The Pre-Bid Control Sheet will be amended to include the *Force Account Plan* and the *Force Account Checklist* as documents that will be required prior to advertisement (note that Budget Department signoff will still be required prior to project advertisement). Force Account work orders will be approved by the Budget Office once the notice-to-proceed for the contract(s) has been issued.

Based on the above, it is important that the project manager allow sufficient time within the design phase of the project for the development and review of the FAP. As a rule, the final FAP should be available for Budget Department and/or Committee review at least four weeks prior to the proposed advertising date.

3.0 Coordination

Once construction/procurement commences, regular review and communication between all individuals identified in the force account plan is critical to the ultimate success of the force account effort. On major projects, coordination meetings should take place at least

twice monthly; on smaller projects, once monthly. This could be accomplished as part of the regular project progress meetings. In addition, significant issues may require that the original FAC be reconvened. It is the responsibility of the Project Manager to ensure that meetings are held and that significant issues are brought to the attention of the FAC in a timely manner.

Note: any changes in project schedule, construction methodology or project staffing that negatively impact the approved force account plan must be reviewed by the original FAC and may be referred to the General Manager for approval. Also, any contractor-requested changes to the scope, schedule or phasing of the project must include documentation and independent analysis showing that the overall cost impact on the project (not just the construction budget) is neutral or positive.

On major projects, before construction commences, the project manager will identify a "Force Account Coordinator" specifically for the project. This individual should be totally familiar with the operational impacts of the project, including work rules, special orders, right-of-way access, etc. and will act as liaison between the project and the operating departments throughout the construction period. This individual is primarily responsible for:

- Site access
- Flagging coordination (Operations and SMI)
- Busing coordination
- Power off/on
- Night orders
- Right-of-way cleanup
- Test train
- Manpower/cost control
- Meeting coordination (monthly/bi-weekly)
- Work order availability

4.0 Cost Control

- 4.1** The approved FAP sets the budget ceiling for the force account effort and outlines the various elements of support that can be charged to the project. Element (department) budgets cannot be adjusted without Budget Department approval and the overall force account budget cannot be exceeded unless a revised FAP is submitted that outlines the necessity of the extra costs and the manner in which they will be funded. (See paragraphs 4.3 and 4.4 below).
- 4.2** Each department must review charges against force account work orders on a regular basis. The Budget Department will distribute reports to both Construction and Operations personnel on a monthly basis that detail all force account work orders (by department, by project), including budget, expended, percent expended, etc. It is the responsibility of the project manager to review these costs both independently and with Operations personnel at each progress/force account coordination meeting.

- 4.3** Force Account Adjustments - increases to departmental force account budgets will only be allowed to the extent that the overall force account ceiling is not being exceeded and that a corresponding decrease in another departmental budget is feasible. Documentation must be submitted that explains the reasons for the requested increase (including justification that the costs already incurred were unavoidable) and provides an assurance that the department(s) whose budget is being reduced will not require additional funding at any time during the remainder of the project. Written concurrence from that department would be required as part of the adjustment request. If this assurance cannot be made, then a formal, revised FAP must be developed and submitted. It is important that the timing of the formal revision be such that adequate time is allowed for Budget Department review so that the provision of support services is not interrupted.
- 4.4** Force Account Amendments - if it appears that overall force account funding will not be sufficient to complete the project, the project manager should develop an action plan to identify what additional funds are needed (revised FAP) and where the funds will come from. Additional funding would normally be sought through either a project budget revision, if excess funds were available in contingency or other project line items, or through a Capital Funding Request, submitted to the Capital Management Group CMG). Again, it is important that the timing of the formal revision/ capital funding request be such that adequate time is allowed for Budget Department/CMG review so that the provision of support services is not interrupted.
- 4.5** Through regular monitoring of costs by all departments involved in the force account effort, any potential funding issues should be identified and resolved well before funds become depleted. Consequently, force account overruns will not be allowed. In the absence of a workable plan to secure additional funds for the force account effort, the Budget Department will close force account work orders that have reached the 100% expended level, informing both the project manager and affected operating departments. The project manager must take action (outlined above) well before funds are exhausted to ensure that the provision of support services is not interrupted. Any charges that continue to be coded to these work orders after they are closed will be transferred back to the originating department.

5.0 Exhibits

- 5.1 Force Account Checklist**
- 5.2 Elements Required In A Force Account Plan (FAP)**
- 5.3 Force Account Control Questionnaire**

Force Account Checklist

Before the PFAP/FAP is prepared, a number of cost saving initiatives should be evaluated in order to ensure that the force account effort is carried out in the most efficient manner. This evaluation should take place during the planning and design stages of the project, and be fully discussed at the FAC meetings. The "Force Account Checklist" below has been developed to assist project managers and the FAC in developing innovative ways to minimize force account costs. While not all-inclusive, and recognizing that not all initiatives are applicable to all projects, nonetheless this checklist should serve as a guiding document in evaluating different cost-saving initiatives. This checklist is required as part of the FAP. All cost-saving measures that are being employed, as well as those that are not, should be fully explained in the cover letter accompanying the FAP.

Force Account Checklist	Reviewed (Y/N)	Applicable (Y/N)	Savings (Y/N)	If N/A, State Reason
Planning & Design:				
Construction staging/milestones				
Contractor Shifts				
Diversions				
Location/work area				
Site Access				
Advance contractor review				
Manual (temporary) crossovers				
Construction barriers				
Contract language				
Power process				
Temporary Facilities				

Exhibit 5.1

Staffing:	Reviewed (Y/N)	Applicable (Y/N)	Savings (Y/N)	If N/A, State Reason
"Pick Work" versus overtime.				
FTE versus TSP				
"Light Duty" personnel				
Operations Coordinator				
Operating Personnel (non-capital).				
Signage/flyers				
Non-duplication of duties.				
Appropriate substitute service				
Project-specific special orders				
Specific power procedures.				
Operations cost savings.				
Cost Estimate:				
Cost Analysis Completed (for work In lieu of contractor)				
All force account elements included				
All savings initiatives reflected				
Appropriate fringe benefit rates				
Performing department signatures				

Explanation of Checklist Items**Planning & Design Approach –**

All reasonable steps should be taken, during the design phase, to minimize the level of busing, flagging and power support required during construction. Specific areas that should be considered include:

Exhibit 5.1

1. Construction staging – on projects involving more than one location, can a “centralized staging area” be identified? Can the project make use of existing storage yards? This should be done before the contract is bid, and the location identified in the contract documents.
2. Contractor shifts- can the work be accomplished during off-peak or non-revenue hours?
3. Diversions – is it more cost-effective to shut the line down and complete the work more quickly or to keep the line operational and utilize flagging, power shut-offs, etc.? Weekday versus nighttime versus weekend diversions? Can this project take advantage of an existing diversion on another project? Conversely, can Operations/SMI take advantage of the shutdown on this project to complete necessary maintenance (cost efficiency)?
4. Location – if not directly on the right-of-way, can a project be staged/built so as not to interfere with revenue service?
5. Site access – can controlled work-zone blocks be used? Can the contractor and support personnel be “locked into” specific, limited areas to reduce flagging, power requirements (crossover switches)?
6. Manual (temporary) crossovers - should be considered in all cases.
7. Barriers – in lieu of flagmen, segregate the construction zone from patrons through the use of construction barriers. Should be considered in all cases.
8. Strong contract language – contractor (or subcontractor) must have specific expertise to complete work. This is especially important with regard to track and signal work. Contractor must complete work satisfactorily with minimal MBTA involvement. Contractor should not expect that MBTA would provide Operations/SMI personnel to correct deficient work, unless it is solely at the contractor’s expense. Specs should spell out MBTA labor rates (including overhead) for providing support in this regard.
9. Power process – there should be a standard “power kill” procedure outlined in the contract language. How and when the power will be isolated (power dispatcher at OCC, power linemen at j-boxes, section by section, etc.) Specs should make it clear that contractor requests for additional measures (racking breakers, grounding, etc) would be at contractor expense.
10. Temporary facilities – can temporary facilities be erected to serve the public while construction takes place?

Staffing Approach –

All reasonable steps should be taken, during the design phase, to ensure that MBTA personnel are used efficiently, with no duplication of responsibilities or excess coverage. Specific areas that should be considered include:

1. "Pick Work" versus overtime.
2. FTE's versus TSP's.
3. Use of "light duty" dedicated personnel.
4. Use of operations coordinator in lieu of supervisory personnel. Use of operating personnel paid through the operating budget where straight-time labor can be utilized.
5. Use of signage and flyers, rather than supervisory personnel, to direct patrons. Justification for the use of supervisory personnel required, especially where more than one department is involved.
6. Non-duplication or overlap of duties. Coordinate flagging between Operations and SMI personnel. Regular review of flagging levels required.
7. Provide "less robust" busing during shutdowns. Consider longer headways where demand for service is marginal. Tailor service levels to existing ridership. Plan for weekly review of service level during construction.
8. Use of special orders specific to the project:
 - Specific power procedures. Develop phasing/staging of work zones during design to be compatible with power sections to minimize power off-on costs. Use only one power lineman to control work zone. Also, can existing night crews be used for power off-on to avoid the "five hour minimum" shift? Can "emergency" crews be used?
 - Make work rules "site specific" rather than general (i.e. only one motorman on the site for all high rail equipment rather than one for each).
8. Document Operations savings during shutdowns and credit the project, or utilize existing personnel to provide support during shutdown.

Cost Estimate –

1. Does the cost estimate reflect all savings initiatives identified in the "Design" and "Staffing" review?
2. Does the cost estimate cover all elements of force account required and for the duration of the project? Are inflation/wage increases factored in?
3. Does the cost estimate include the appropriate fringe benefits? Current FY2003 rates are given below.

Fringe Benefits-straight time

66.40% of straight-time labor

Fringe Benefits-overtime

11.05% of overtime labor

Note: the FAP should not include G&A/overhead costs. These costs are administrative in nature and therefore not chargeable to the force account effort. However, the ability of the overall project budget to absorb these costs will be evaluated by the Budget Office when reviewing the FAP.

4. In cases where the MBTA elects to use in-house forces to complete work that could be accomplished through a 3rd party contractor (bid process), the project manager must complete a "Force Account Questionnaire" (FAQ) in support of that decision (see Attachment C). The FAQ is a "checklist" that outlines the rationale behind the decision to use in-house forces. That rationale must be explained in further detail in either the transmittal letter accompanying the FAP or on a separate attachment. Although cost is not the only factor in the decision process, in all cases a detailed analysis will be required that compares in-house versus contracted cost. This depth of this analysis will vary depending on the scope of work and the cost estimate involved. In cases where the cost is substantial (greater than \$500K), an independent cost estimate will usually be required.

Elements Required In A Force Account Plan (FAP)

After meeting with the FAC at the 30% design level, the project manager should gather together all departmental cost estimates and other documentation needed to develop the PFAP (see below). Once complete, the PFAP should be circulated within the FAC for review and comment (a FAC meeting can be called to formally review the PFAP if required). Once reviewed, the project manager should forward the PFAP to the Budget Office for approval to enter final design.

This process is repeated again at the 90% design level, when the final FAP is developed and submitted for approval.

Listed below are the major elements required in a FAP. Please note that the Force Account Questionnaire is required only in those cases where the MBTA is performing work in lieu of a private vendor/contractor.

1. Transmittal Letter – signed by the appropriate project manager and the Departmental Director and addressed to the Deputy Budget Director.
2. Project Overview – can be included as part of the transmittal letter or as a separate attachment. Includes the following:
 - General overview of the project scope, including schedule, funding sources, etc.
 - What work, if any, is being performed through force account that could also be done through the competitive bid process (Force Account Questionnaire required)
 - What specific elements of force account support are necessary, why and for how long? Fully describe each department's role in completing the project.
 - Most importantly, what steps have been taken, through the FAC group or otherwise, to ensure that force account is carried out in the most efficient manner, both operationally and from a cost perspective? What specific actions will be taken to minimize force account costs on the project, with specific information provided (i.e. use of construction barriers versus flagmen, weekend shutdowns with double-contractor shifts, use of light duty or existing operating personnel, etc.)
3. Force Account Checklist – documents the cost-saving initiatives incorporated into the project design and in the use of support staff. Also provides a checklist to ensure that all cost elements and required signatures are included in the FAP.
4. Force Account Questionnaire (FAQ) – required where work being done through force account could be provided through a private contractor. Examples would include power cable/pole installation, track/tie installation, miscellaneous construction, Amtrak flagging, etc. The Force Account Questionnaire is not required for support activities which fall under the exclusive expertise of the MBTA, such as flagging, power off/on, substitute busing, etc.
5. Summary of Force Account Costs – separate spreadsheet summarizing force account

costs (including applicable fringe benefit costs), schedule and duration for each department. Also indicates the management-level employee(s) within each operating department responsible for coordinating the force account effort.

6. Departmental Cost Summary – detailed cost and schedule information, including number of employees required, hourly rates, timing and duration of support services, etc. Must be signed by the appropriate division manager/superintendent. A spreadsheet format may be used in lieu of traditional “TRS” forms as long as all applicable information is provided. A monthly breakdown of costs must be provided for the duration of the project or for the period of support, whichever is applicable. Note: monthly costs should not be “straight-lined” unless departmental support is continuous and level-staffed.
7. Miscellaneous Documentation – any other documentation available to support the use of force account or to better explain cost estimates, savings initiatives, etc.

Force Account Control Questionnaire MBTA Personnel

The Federal Transit Administration recognizes four factors that justify the use of a force account to perform capital improvements in lieu of the preferred use of private sector contractors. Therefore, this questionnaire has been established to cover these four areas and to serve as a source document and guide for Project Managers requesting force account approvals. Any requests for force account approvals must be submitted to the Force Account Committee based on the following factors.

1. **Cost:** The grantee can show that it is more cost effective, considering the total impact to the project, to do the work by force account.

	Yes	No	N/A
Did the project complete an analysis comparing the cost of the task when completed by force account in lieu of a private contractor?	_____	_____	_____
Did the project assess the following costs?			
a. Cost of preparing documents?	_____	_____	_____
b. Cost of administration and inspection?	_____	_____	_____
c. Cost of labor, materials and equipment (including specialized tools, etc.)?	_____	_____	_____
d. Cost of Overhead?	_____	_____	_____
e. Profit for private contractor?	_____	_____	_____
f. Unit prices in lieu of c, d, and e above, if applicable?	_____	_____	_____
Did the project contact the appropriate operating departments to insure that the labor force will be available to perform the force account work?	_____	_____	_____
Did the project estimate the midpoint of construction in calculating the present value of the work to be performed?	_____	_____	_____
Is there any difference in the time for completion of the work to be performed between force account and private sector contract?	_____	_____	_____
If so, an estimate of the value of the lost use of the capital improvement (i.e. station, facility) should be included in the calculation.			

2. **Exclusive Expertise** - The work can only be accomplished in house.

Exhibit 5.3

Yes No N/A

If no private sector contractor has the expertise to perform the work, has the project completed the equivalent of a sole source justification?

3 **Union Agreement** - Force account work is required by labor agreement.

If the work must be performed by force account due to Union Agreement, did the project obtain a citation from the specific labor agreement?

4 **Safety and Efficiency** - Contracting the work would have an adverse impact on public or employee safety or the efficiency of transit operations.

Did the project receive a statement by the transit operators' safety officer stating that the work must use force account because it would be detrimental to public/employee safety if performed by private contractors?

5. Other FTA Requirements

Has the appropriate information been documented in a letter to FTA stating the reasons for using force account, as outlined above?

Has the page number(s) of the grant been included in the letter to FTA which would indicate that the work was part of the approved grant?

Are there sufficient funds in the line item so that this force account effort can be approved?

If not, has the appropriate budget revision been requested to adhere to the above?

Grant/Project Number: _____

Force Account Work Order Number(s): _____

Project Manager Signature

Date: _____



