CONSTRUCTION CONTRACT
CHANGE ORDER GUIDELINES
FOR COSTS AND
SUPPORTING DOCUMENTS
INDEX

DESCRIPTION

PARTS

I. General Contractor’s Proposal

II. Subcontractor Proposal

III. Consultant Approval Letter

IV. Project Office Explanation of Necessity

V. Record of Negotiations and Independent Cost Estimate

VI. General Information
change order guidelines

tabs

a. recapitulation charts, cost/price analysis sheet, mbta timesheet
b. blue book equipment rate calculation sheet/sample
c. mbta equipment description form
d. contractor’s change order check list
e. worker’s compensation rates/classification examples/sample insurance company letter
f. bond letter from contractor’s bonding co.
g. certificate of current cost and pricing
h. sample of calculation sheet for suta, futa and fica
i. section 01150, measurement and payment, 1.5-b, negotiated profit
j. profit calculation summary chart/sample
k. extra work order request and sample letter
l. contractor signature receipt form
m. contract overview dbe participation form
n. cms change order input form
o. letter instructions and template for writing explanation of necessities (eon)/sample
p. sample record of negotiations (ron)/sample
q. change order analysis check-off sheet for mbta staff and change order or cqv content check-off
GUIDELINES FOR COSTS AND SUPPORTING DOCUMENTATION

The following guidelines are intended to improve and expedite the processing of change orders by outlining the general contractor, consultant, and project requirements. The guidelines are composed of information found in Division I General Requirements and requirements of State and Federal audits and suggestions submitted by various projects. The final change order package must present a clear scope of work, a cost proposal from the contractor, an independent cost estimate (except time and material) and a cost analysis that demonstrates how the final price was established, providing clear definition of the elements of cost and the rates applied.

PART I. GENERAL CONTRACTOR'S PROPOSAL AND INDEPENDENT COST ESTIMATE

Once the scope has been identified and agreed upon by the Project, the MBTA project manager requests a cost proposal from the contractor. The proposal should be prepared by an individual with sufficient background and related experience, who is fully knowledgeable of the proposed project activities, Division I of the Contract and the MBTA Change Order Guidelines. Prior to receipt of the Contractor’s Proposal the Resident Engineer must develop an Independent Cost Estimate (ICE) of the same scope of work. The ICE may be developed by the Resident, by the Resident using other in-house resources or the Resident may ask the Design Consultant for assistance. (See PART I.H and PART III.B) The ICE must be in sufficient detail (Recap Sheet and LEM Sheet and profit calculation) to allow for comparison to the anticipated Contractor Proposal.

The General Contractor's proposal is to include:

A. **A Cover Letter** (See TAB-A) - containing the following information:
   - The cover letter must be on company letterhead. It must state the total estimated cost, date of proposal and must have the signature of a person authorized to sign for the Company.
   - It must contain the scope of work to be accomplished.
   - Any impact to ongoing work.
   - Reason for time extension, if one is required, explaining how the extension will affect the Contract milestones or completion date by its impact upon the critical path. Include schedule analysis with time extension request.
   - *Note: A cover letter is also required from each subcontractor included in the prime contractor’s proposal. The subcontractor’s cover letter must include all of the same categories of information listed above.*

B. **A Recapitulation Chart** - from the contractor and subcontractors with backup to support the following:
   1. **Cost Data** - Cost/Price Analysis Sheet (See TAB-A)
      (a). Labor
         i. Labor hours shall relate to the specific task being performed. Signed MBTA daily reports of labor equipment and material shall be provided with the contractor’s proposal if the work is complete or any portion of the work has been started on a Time and Materials basis (see TAB-A for MBTA Daily Report). Labor and fringe rates must be supported in each change order with local union labor rate sheets on union letterhead. If the Contractor is non-union, non-union prevailing wage rates shall be used and rate sheets are to be provided by the Contractor with each change order.
ii. Direct Labor hours shall mean labor hours estimated or actually expended in performing the required work exclusive of all supervisory labor. Working Foremen are allowed. No allowance is to be made for General Superintendent, General Foreman, nonworking Foreman or non-working Union Stewards. Compensation for these indirect costs are considered covered in the 10% overhead allowance.

iii. For purposes of calculating overhead on a recapitulation chart using non-union prevailing wage, 10% of the full material and equipment cost and 10% of 65% of the labor cost will be added for overhead, to account for fringes included in the labor rate. Overhead should not be applied to fringes. This adjustment is not meant to reduce the amount paid for labor. It is meant to reduce the overhead mark-up on fringe costs that are lumped into the prevailing wage rate and to put prevailing wage and union contractors on a level playing field. A recapitulation chart for prevailing wage cost calculations is included, see TAB A.

(b). Materials

i. Direct material costs represent those costs to be paid by the contractor to suppliers without contractor markup or taxes.

ii. For those procurements involving furnishing and delivery of substantial quantities of equipment or manufactured products, such as but not limited to, signals and communication systems and electronic components, prices should be based on established catalog or market prices, supported by appropriate certifications that the prices quoted are as low as “the prices the supplier would charge other customers for delivery in the same geographical area”.

iii. MBTA requires supporting documentation for all material costs. Paid invoices are required if the material has been paid for. Unpaid invoices are required if available and the material has not been paid for. Vendor quotations should be provided if material has not been paid for and there is no invoice. All invoices and quotations must be on company letterhead and dated. If the vendor provides a discount, the discount must be shown on the cost supporting documentation and offered to the MBTA. Proposed cost of material must be supported and accurate to the extent possible at the time of final negotiations. Material costs must be shown on the proposal Cost Price Analysis Sheet (TAB-A).

In some cases Contractors have established costing rates for materials that are incidental to the work such as forming costs per cubic yard for concrete sidewalks. In these cases (and on forward pricing only) the Contractor may use this method of pricing without providing material invoices or quotations. If the Contractor chooses to use this pricing method, it must clearly demonstrate to the MBTA Resident Engineer and or the Project Manager that the pricing is fair and reasonable. This will only be allowed on a case by case basis and only with prior approval by the Project Manager.
(e). Equipment

i. Equipment hours proposed must compare with the task being performed.

ii. Payment for equipment cost shall be calculated as outlined in Division I, Contract Section 01150 para. 1.5 C.

iii. Non-ownership Equipment - Rental equipment paid invoices are required if available unpaid invoices are required if available and the rental has not been paid for. Quotations are acceptable back-up documentation when there is no invoice.

iv. Contractor-Owned/Subcontractor-Owned Equipment - Forms listed below shall be used to determine the rate (or other forms acceptable to the MBTA):

- Blue Book Equipment Rate Calculation Sheet. (See TAB-B)
- MBTA Equipment Description Form. (See TAB-C)

- No allowance is to be made for the use of small tools, manual equipment, or buildings. Small tools are defined as items having a replacement value less than $500.

- Contractor Owned equipment cost will be based on the actual in-use time required for extra work. An allowance may also be made for equipment on standby at the Blue Book standby rate, which is 25% of the rate for equipment in use. If a foreman’s truck is proposed by the contractor and it is actually used, the equipment rate shall be calculated by including half of the proposed hours at an operational rate and half of the hours at the standby rate. Special cases may be considered if warranted. Note: If a foreman works on a job and does not use a truck, no truck should be paid for. It is not automatic.

C. Contractor’s Change Order Check List (See TAB-D)

Contractor’s Change Order Check-Off List must be filled out and included with each change order.

D. Letter from Insurance Company Substantiating Worker’s Compensation Rate (See TAB-E)

The Contractor’s and/or Subcontractor’s Proposal must include a letter from its Insurance Company or Agent substantiating the contractor’s Worker’s Compensation rate or rates. The Worker’s Compensation rate should match the type of work being performed.

E. Letter Substantiating the Contractor’s Bond Rate (See TAB-F)

The Contractor’s Proposal must include a letter from its Insurance Company or Agent substantiating it’s Bond Rate, Line 10 of Recapitulation Sheet. Note: Only the prime contractor is allowed to bond the work. Subcontractors are not allowed to charge bond.

F. Certificate of Current Cost and Pricing

For Change Orders with a negotiated value of $250,000.00, dollars or more the Contractor is to submit a “Certificate of Current Cost and Pricing”. (See TAB-G and Part VI-B)
G. **SUTA, FUTA and FICA Rates** (See TAB-H)

SUTA, FUTA and FICA rates are to be calculated by the prime contractor and the subcontractors using the rate sheet provided in (TAB-H). This rate sheet is to be included with each change order proposal. These calculations are to be updated at the beginning of each calendar year. Alternatively, the MBTA Cost Estimator and a contractor may negotiate a single rate for all three (3) costs to be used in proposals for a calendar year. **Note:** A normal combined rate should run between 9.5% and 12.5%. Also note that the recapitulation sheet under Tab A has been modified to separate SUTA, FUTA and FICA from Workers Compensation. This was done because SUTA, FUTA and FICA are applied to all direct labor costs and Workers Compensation is only applied to straight time labor costs. **Note:** If a Contractor or Subcontractor does not submit a FICA, FUTA, SUTA rate calculation the Project may still accept the proposal and process the Change Order, however, the Project’s analysis of the proposal should carry a combined rate no greater than 10%. If the Contractor wants more than that, it must support its rates.

H. **Profit Calculation Chart**

Profit is to be negotiated as outlined in Measurement and Payment; Section 01150, 1.5, B 3. (See TAB-I & J)

Note: Regarding risk factors in the profit calculation. Risk factors run between .03 for low risk and .08 for high risk. Time and Material change orders and change orders for completed work are low risk and should be given a risk factor of .03. Forward priced change orders carry a higher degree of risk and should have a risk factor between .04 and .08. A profit calculation sheet must be included with each change order.

I. **Independent Cost Estimate (ICE)**

1. An Independent Cost Estimate (ICE) is required for ALL change orders regardless of nature or size. The only exception to this requirement is on Time and Material Change Orders where daily time sheets are filled out and signed off by both the MBTA and the Contractor. Development of the ICE is the responsibility of the Resident Engineer. If the Resident Engineer determines that he or she has the in-house resources to develop the ICE, the ICE should be produced in-house. If resources are not available in-house, the Resident Engineer has the option of requesting assistance from the Design Consultant. The Design Consultant’s Construction Phase Services requirement has been modified to include the requirement to develop an ICE if requested. If the Resident Engineer determines that the Design Consultant may have a conflict of interest in doing an ICE, the Resident must utilize a different professional estimating firm.

2. The ICE must (when possible) be developed prior to receipt of the Contractor’s Proposal and should not include pricing input from the Contractor. If the ICE cannot be developed prior to receipt of the Contractor’s Proposal, the Project should make every effort to have an independent resource that has not seen the Proposal prepare the ICE. The ICE must include sufficient detail so as to allow comparison of Labor, Equipment Material and Rates with quantities and rates proposed by the Contractor. **The ICE is to be used as a tool when analyzing the Contractor’s Proposal and during negotiation. Differences between the ICE and the Contractor’s Proposal and the final settlement should be documented in the Record of Negotiation.** (See TAB P). Contract Administration has developed a template for an ICE in excel format that is available on request.
PART II. SUBCONTRACTOR PROPOSAL

A signed, priced and dated cover letter from the subcontractor, on company letterhead, and a recapitulation chart with supporting cost data must be provided by all subcontractors in the same format as the prime contractor is required to submit. See PART I.

PART III. CONSULTANT RESPONSIBILITIES: DESIGN APPROVAL LETTER AND ICE REQUIREMENTS

A. Design Consultant’s Approval Letter shall include: A statement indicating that they have reviewed the proposed changes to plans and specifications and confirmation that the change is consistent with respect to the intent of the design. The letter should also address any anticipated impact to schedule, and confirmation that the work is necessary and not already part of the Contract. An attesting letter is required for each change. The attesting letter should not address the price of the change or the reasonableness of any Contractor-provided.

B. Design Consultant ICE Responsibilities: At the request of the Authority, the Design Consultant will prepare an Independent Cost Estimate (ICE) for changes to the plans and specifications. The ICE is to be prepared prior to receipt of the Contractor’s Proposal (when possible) and shall be provided in the same format and detail as required in the MBTA’s published Change Order Guidelines (Recapitulation sheet and Labor, Equipment and Material Sheet and profit calculation only). (Note: The ICE is not an analysis of the Contractor’s proposal. It is an independent estimate done prior to viewing the Contractor’s proposal.)

C. The ICE is to be provided to the Resident Engineer and the Project Manager in electronic excel format, in enough detail to be useful as a cost analysis and negotiating tool and linked so that adjustments to Rates, Labor, Equipment or Material details will result in a corresponding price modification on the Recapitulation Sheet. Labor, fringe and other variable rates must be applicable to the Contractor and Trade doing the job and the time frame when the work will be done. The acceptable Excel spread sheet format is available from MBTA Contract Administration and has been provided to all of the Design Firms that the MBTA is currently doing business with. Training on the use of this spread sheet is available upon request through the MBTA Cost Estimator. Training is available to both in house MBTA employees and Design Firms engaged in pricing of change order work. If your Design Firm is not providing ICES in this format, request that they do so.

D. Negotiation Meeting/Adjustments - When/If requested, the Consultant shall attend negotiation meetings between the MBTA and the Contractor and be prepared to discuss the ICE and any differences between the ICE and the Contractor’s proposal. If requested by the Resident Engineer or Project Manager, provide written documentation of the differences and reasons for any adjustments necessary to reach a fair and reasonable price.

Note: The Design Consultant is required to provide a requested ICE within 14 working days of a request as Part of their Construction Phase Services Contract.
PART IV. PROJECT OFFICE EXPLANATION OF NECESSITY (EON) (See TAB-O)

Explanation of Necessity should include:

A. **Scope of Work** - A detailed discussion on the scope of work to be performed and the reason the extra work is required. Also, a statement as to whether the work falls within the scope and intent of the Contract or if it is considered out of scope.

B. **Cost Review Statement** - A statement on the project office’s review of the estimated cost of the change and if the project office agrees with the cost, and whether the cost has been reviewed by the project and consultant (as applicable) and found to be fair and reasonable.

C. **E or O Statement** - A statement whether this change should be considered for further review as a possible design error or omission.

D. **Necessity of Work** - A statement that the work is not included in the contract scope or unit prices as awarded, but is necessary for the satisfactory completion of the intended scope or the contract. This work does bear a reasonable subsidiary relation to the full execution of the work originally described in the contract. If Change Order is Time and Material, an explanation of why this contracting method was used must be provided in the EON or RON. If Change order is out of scope/sole source, it must include a letter of justification from the Project Manager. FTA Circula 4220.1F provides guidance as to when a sole source procurement is justified.

E. **Time Extensions** – An extra work order or change order should include a statement addressing any additional time, if any, that is agreed upon by the Contractor, Project, and the Engineer that may be required for the completion of the contract by reason of this extra work order or change order. The reasoning provided should be clearly show that a time extension is required, that it is a direct result of the change and which contract milestones the change will impact.

F. **Disadvantaged Business Enterprise** - DBE information - (See TAB-O), item V, in Template for EON

G. **Recommendations** - Recommendation - (See TAB-O), item VI in Template for EON

H. **Instruction Guidance** - See instructions and template for writing Explanation of Necessity (EON) sheets. (TAB-O).
PART V. RECORD OF NEGOTIATIONS

The Record of Negotiation (RON) and Independent Cost Estimate (TAB-P)/analysis sheet shall be completed and attached as the last pages of the change order supporting documentation. The RON should include:

- Contract Number
- Change Order number and Description
- Date and location of meetings
- MBTA, Contractor, Consultant and other staff in attendance
- Independent Cost Estimate from the Project or Consultant (except T&M COs)
- Specific cost or work elements questioned by the project
- Contractor’s response
- Final resolution and justification
- Proposed Cost and negotiated Cost with a clear description of the differences broken down by labor, equipment, material and final negotiated price with proper rates applied. These documents must show a clear path between the proposed price and the negotiated price with clear reasoning for the difference. The ICE differences should also be discussed. RON can and should reference the ICE and/or proposal analysis.
- Profit Calculation % agreed to by project/contractor
- A statement that the MBTA Project Manager or Resident Engineer who is signing the RON has reviewed the Contractor’s Proposal and that all required documents are included.
- Signature of Project Manager/ Resident Engineer

Note: The purpose of the RON is to clearly demonstrate that the Contractor’s proposal has been given a detailed review, that correct and proper rates were used in determining the price and that the final price is fair and reasonable. A statement that, “All Parties reviewed the Contractor’s Proposal and agreed with the price” is not a Record of Negotiations. There must be detail and explanation of differences.

PART VI. GENERAL INFORMATION

A. Extra Work Order Authorization Letters (EWOAL)- An Extra Work Order Authorization Letter is an order in writing issued by the MBTA to the Contractor prior to performing Extra Work, setting forth the scope of the Extra Work to be done, the basis of payment and any anticipated schedule adjustment. A signed copy of the Extra Work Order Letter should be included with the Change Order.

If a Change Order can be processed before it is necessary to start the work, an Extra Work Order Letter is not required.

If there is not enough time to issue a Change Order before the work must start, an EWOAL must be issued to formally authorize the contractor to proceed with the extra work. This letter and the supporting documents noted below, are to be routed to the MBTA Director of Contract Administration, the MBTA Cost Estimator and the Assistant General Manager, for review. Once review is complete the EWOAL will be signed by a person with the proper level of Contracting Authority in accordance with MBTA Board of Director Regulations.

- Extra Work Order Request Form (TAB-K)
- Consultant letter of recommendation with detailed analysis; if available.
- Cost Proposal cover letter from the contractor/subcontractors, if available
- Internal MBTA Estimate as basis of anticipated cost, if cost proposal is not available
- CMS Report CMS-CO-002 – CO SUMMARY ANALYSIS REPORT
Do not date the letter. This will be done when it is signed.
Do not recharacterize the Contractor’s Proposal. If it is an “Order of Magnitude Estimate” do not call it a “Not To Exceed” or “Lump Sum” in the Letter.

If the price is not agreed at the time the letter is processed, direct the Contractor to proceed on a Not To Exceed Basis and tell them to record their costs on an attached MBTA Time Sheet. Attach a time sheet and note it as an attachment on the letter. If the price is agreed, direct the Contractor to proceed on a Lump Sum Basis. No record of time is required. If the Contractor is directed to proceed on a Not to Exceed basis and a Lump Sum Change Order has not been issued by the time 75% of the Not to Exceed amount has been expended, the Project Manager and the Contractor shall review the scope of work and determine if additional funding authorization is required. If it is determined that the Not to Exceed amount will be overrun, and a Change Order cannot be executed before the Not to Exceed amount has been expended, a second EWOL is to be issued to increase the authorized amount to the necessary funding level. Both EWOLs must be included with the Change Order. This same logic and requirement also applies to Allowance Items. At 75% expenditure, the Project Manager and the Contractor should review the scope of work and determine if additional funding authorization is required. If it is determined that the Allowance amount will be overrun, and a Change Order cannot be executed before the Allowance amount has been expended, an EWOL is to be issued to increase the authorized amount to the necessary funding level.

Note: FTA does not allow Time and Material procurements unless there is no other practical method of procurement. If a Time and Material method is used, the RON must clearly state why.

Note: The Error or Omission language in the EWOLR has been modified. Please use the new EWOLR format when submitting future EWOLRs.

B. Certificate of Current Cost and Pricing For Change Orders with a negotiated value of $250,000.00, dollars or more the Contractor is to submit a “Certificate of Current Cost and Pricing” certifying that the costs for labor, equipment, material and services included in the final negotiated change order value are current and accurate as of the date of final negotiations with the Project. If there are differences in the cost of the work between those costs provided in any forward price proposal and actual costs at the time of negotiations, the Contractor is required to reveal those differences before or during negotiations and certify that all costs included in the final price are accurate and current as part of this certification process. (See TAB-G)

C. Price Documentation If the work is not complete when a final price agreement is reached it may be considered a forward priced agreement and issued as a lump sum. If actual costs have been incurred they should be used in the analysis of the final price. If the Contractor has submitted a forward price proposal, and at the time of negotiations the Contractor has more current information, that information must be provided to the Project and considered in reaching a final price. Those documents utilized should be noted and retained as supporting documentation to the Change Order. If the work is complete prior to reaching final agreement on price, the final price for the work must be based on actual cost and all cost records must be noted and retained as supporting documentation to the Change Order. Accurate time and material records must be maintained throughout the job to insure accurate accounting of cost for work that is done on a Not to Exceed Basis/Time and Materials.

D. MBTA Check-off Sheet It is required that the Project utilize the CHANGE ORDER ANALYSIS CHECK-OFF SHEET FOR MBTA STAFF (TAB-Q) in preparation of all change order documents. This checklist is to be filled out, signed and included directly after the routing sheet for each change order. A Change Order/CQV Content Check-Off Sheet is also included under (TAB-Q) to
assist with packaging of the Change Order. Documents in the Change Order should be in the order set forth in the Change Order/CQV Content Check-Off Sheet.

E. **Worker’s Compensation** - Contractors/sub-contractors must furnish a letter from their insurance agent or carrier which clearly establishes actual Worker’s Compensation rates for the work classification on each change order (See TAB-E) for examples of ranges of rates based on classification and example of an insurance letter.

Note: Worker’s compensation is not an allowable cost on the premium portion of an overtime hour or shift work compensation.

F. **SUTA, FUTA and FICA** - The project office must request that the contractor and its subcontractors fill out the form provided under TAB-H that provides calculations for SUTA, FUTA and FICA rates based on the Contractor’s prior years of experience. These rates may be adjusted if the Contractor can demonstrate that its business practices, rates or anticipated costs have changed significantly from the prior year. Contact Contract Administration for assistance if this becomes an issue. This sheet must be included with each change order. **In the event that the contractor does not provide a SUTA, FUTA, FICA calculation, the Project may use a combined rate for all three of 10% in its ICE and or proposal analysis. Use of a 10% rate for these costs is considered to be on the low end of what the final cost may be. Failure of the contractor to submit this document is not reason to delay processing of a change order. Use of the 10% rate in lieu of including a rate sheet from the Contractor is not considered a violation of procedure.**

G. **Labor Cost and Fringe Benefits** - The Contractor must provide local union agreements on union letterhead in support of proposed labor and fringe rates. These agreements must indicate the cost per hour for each trade showing what the total package includes. Applicable rates must be provided with each Change Order. Note: A breakout of Fringe Benefits is not required for non-union contractors paying Prevailing Wage. They are to provide non-union Prevailing Wage rate sheets only.

H. **Time Extensions** - The Contractor must clearly demonstrate in a format acceptable to the Project, that the change order will impact contract milestones and/or the contract completion date due to impact upon the critical path.

I. **Extra Work** - Work that is requested from outside agencies and or in-house departments should be in writing and included in the Change Order or Extra Work Order document.

J. **Credits** - The value of a credit to the Authority will be determined in the same manner as described in payments for extra work Contract Section 01150, para. 1.5 B. The amount bid by the Contractor to do work that is to be credited has no bearing on the value of the credit. The credit should be for the actual value of the work. (leave them like you found them) Swapping of work that is to be a credit for extra work must be documented and must only be done using the change order process and the proper contracting authority.

K. **Change Order Form** - Change order Form 3 pages shall be consecutively numbered 1 of ? and 2 of ? etc. The balance of the documentation provided with the change order shall also be consecutively numbered and readable starting again with number 1 of ? etc. The “Scope of Work” in the form 3 must provide enough detail to clearly describe the work by word or by reference to supporting documents, sketches, drawings and/or responses to RFIs. References to the Contractor’s Proposal in the change order should be avoided. The Scope must provide a location for the work and the quantity to be provided. The Form 3 is the change order and it must be able to stand alone; if necessary in a court of law.

L. **CMS Change Order Input** - The project office is to complete CMS change order input (TAB-N) excluding work order numbers which is coordinated by the Change Order Coordinator.
For all proposed Change Orders, see table below for authorization standards.

M. **Authorization Level** - Prior to submittal for approval and processing, an extra work order letter or change order must be reviewed for compliance with the limitations of contracting authority as provided by the Regulations of the MBTA Board of Directors. Any extra work order or change order with a value that exceeds $1,000,000 must go to the Board of Directors for approval.

N. **Change Order Authorization Levels:**

<table>
<thead>
<tr>
<th>CHANGE ORDER COST</th>
<th>WITHIN AUTHORIZED BUDGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; $25,000</td>
<td>• Director</td>
</tr>
<tr>
<td></td>
<td>• Director of Construction</td>
</tr>
<tr>
<td></td>
<td>• Director of Design and Planning</td>
</tr>
<tr>
<td></td>
<td>• Chief for Engineering and Construction</td>
</tr>
<tr>
<td>$25,000 - $250,000</td>
<td>• Assistant General Manager for Design and Construction</td>
</tr>
<tr>
<td></td>
<td>• Chief Operating Officer</td>
</tr>
<tr>
<td>$250,000 - $1,000,000</td>
<td>• General Manager</td>
</tr>
<tr>
<td>&gt; $1,000,000</td>
<td>• Board of Directors</td>
</tr>
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The above Change Order Authorization Levels are the only levels of Authorization allowed by the Authority.
RECAPITULATION CHART FOR NON-UNION CONTRACT

Change Order No. ________

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<thead>
<tr>
<th>No.</th>
<th>Description of Work</th>
<th>Amount</th>
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<tbody>
<tr>
<td>1.</td>
<td>Labor (Supply Adequate Backup)</td>
<td>$______</td>
</tr>
<tr>
<td>2.</td>
<td>Material (Supply Adequate Backup)</td>
<td>$______</td>
</tr>
<tr>
<td>3.</td>
<td>Equipment (Supply Adequate Backup)</td>
<td>$______</td>
</tr>
<tr>
<td></td>
<td><strong>3A. Subtotal (Lines 1+2+3)</strong></td>
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<tr>
<td>4.</td>
<td>Overhead (10% of Lines 2 &amp; 3 + (10% of line 1 x .65)</td>
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<tr>
<td>5.</td>
<td>Payroll Taxes on Labor (FICA, FUTA SUTA) x (Line 1)</td>
<td>$______</td>
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<td></td>
<td>**5A. Worker’s Compensation (applied to ST Labor only)</td>
<td>$______</td>
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<td></td>
<td><strong>6A. Subtotal (Lines 3A+4+5+5A+6)</strong></td>
<td>$______</td>
</tr>
<tr>
<td>7.</td>
<td>Profit @ _____%* of Line 6A</td>
<td>$______</td>
</tr>
<tr>
<td></td>
<td><strong>7A. Subtotal (Lines 6A+7)</strong></td>
<td>$______</td>
</tr>
<tr>
<td>8.</td>
<td>Subcontractor’s Total</td>
<td>$______</td>
</tr>
<tr>
<td>9.</td>
<td>10% of Line 8</td>
<td>$______</td>
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<tr>
<td></td>
<td><strong>9A. Subtotal (Lines 7A+8+9)</strong></td>
<td>$______</td>
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<tr>
<td>10.</td>
<td>Bond @_____% of Line 9A (Prime Contractor only)</td>
<td>$______</td>
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<tr>
<td>11.</td>
<td><strong>GRAND TOTAL (Lines 9A+10)</strong></td>
<td>$______</td>
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INSURANCE & PAYROLL TAX:
(LINE 5 and 5A)

Included Items:**
Federal FICA %
Federal Unemployment %
State Unemployment %
(SUTA)
Total %
(Line 5 = above rate X all wages in line 1)

Health, Wealth & Benefits

<table>
<thead>
<tr>
<th>Trade</th>
<th>Hours</th>
<th>Rate</th>
<th>Total</th>
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<td>$</td>
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</tr>
<tr>
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<td>$</td>
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<td>Operation/Oiler</td>
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<td>$</td>
<td>$</td>
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<tr>
<td>Carpenter</td>
<td>$</td>
<td>$</td>
<td>$</td>
</tr>
</tbody>
</table>

Total $
RECAPITULATION CHART FOR NON-UNION CONTRACT

CONTRACT NO.: A45CN02 SOUTH BRIDGES
GENERAL CONTRACTOR: JOE’S BRIDGE BUILDING CO.
SUBCONTRACTOR: N/A
DESCRIPTION OF WORK: REMOVE BRIDGE SUPPORT AT MP 2

1. Labor (Supply Adequate Backup) $ 1,248
2. Material (Supply Adequate Backup) $ 45.75
3. Equipment (Supply Adequate Backup) $ 283.52
3A. Subtotal (Lines 1+2+3) $ 1,577.27
4. Overhead (10% of Lines 2 & 3 + (10% of line 1 x .65) $ 114.05
5. Payroll Taxes on Labor (FICA, FUTA SUTA) x (Line 1) $ 132.29
5A. Worker’s Compensation (applied to ST Labor only) $ 87.96
6A. Subtotal (Lines 3A+4+5+5A+6) $ 1,911.59
7. Profit @ ___5.5___%* of Line 6A $ 105.14
7A. Subtotal (Lines 6A+7) $ 2,016.73
8. Subcontractor’s Total $ 0
9. 10% of Line 8 $ 0
9A. Subtotal (Lines 7A+8+9) $ 2,016.77
10. Bond @ .73% of Line 9A (Prime Contractor only) $ 14.72
11. GRAND TOTAL (Lines 9A+10) $ 2,031.45

INSURANCE & PAYROLL TAX:
(LINE 5 and 5A)

<table>
<thead>
<tr>
<th>Included Items: **</th>
<th>Hours</th>
<th>Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal FICA</td>
<td>7.54</td>
<td>$</td>
<td>$</td>
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<tr>
<td>Federal Unemployment</td>
<td>.1</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>State Unemployment (SUTA)</td>
<td>2.96</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>10.6</td>
<td>$</td>
<td>$</td>
</tr>
</tbody>
</table>
(Line 5 = above rate X all wages in line 1)

<table>
<thead>
<tr>
<th>Trade</th>
<th>Hours</th>
<th>Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laborer</td>
<td>24</td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Welder</td>
<td></td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Operation/Oiler</td>
<td></td>
<td>$</td>
<td>$</td>
</tr>
<tr>
<td>Carpenter</td>
<td></td>
<td>$</td>
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<td>$</td>
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</tr>
<tr>
<td>Total</td>
<td>24</td>
<td>$</td>
<td>$</td>
</tr>
</tbody>
</table>

Worker’s Compensation 7.05%
(Line 5A = WC rate X straight time wages only)
RECAPITULATION CHART FOR UNION CONTRACT

| Change Order No.: | 
|-------------------|---|
| CONTRACT NO.:     | 
| GENERAL CONTRACTOR: | 
| SUBCONTRACTOR:    | 
| DESCRIPTION OF WORK: | 

1. Labor (Supply Adequate Backup) $__________
2. Material (Supply Adequate Backup) $__________
3. Equipment (Supply Adequate Backup) $__________

3A. Subtotal (Lines 1+2+3) $__________

4. Overhead (10% of Line 3A) $__________

5. Insurance & Payroll Taxes on Labor (FICA, FUTA, SUTA) x (Line 1) $__________
5A. Worker’s Compensation (applied to ST Wages only) $__________


6A. Subtotal (Lines 3A+4+5+5A+6) $__________

7. Profit @ ____%* of Line 6A $__________

7A. Subtotal (Lines 6A+7) $__________

8. Subcontractor’s Total $__________

9. 10% of Line 8 $__________

9A. Subtotal (Lines 7A+8+9) $__________

10. Bond @_____ % of Line 9A (Prime Contractor only) $__________

11. GRAND TOTAL (Lines 9A+10) $__________

INSURANCE & PAYROLL TAX:
(LINE 5 and 5A)

| Health, Wealth & Benefits | 
|---------------------------|---|---|---|
| Trade                     | Hours | Rate | Total |
| Laborer                  | $     | $    | $     |
| Welder                    | $     | $    | $     |
| Operation/Oiler          | $     | $    | $     |
| Carpenter                | $     | $    | $     |

Worker’s Compensation %.
(Line 5A = WC rate X straight time wages only)
RECAPITULATION CHART FOR UNION CONTRACT

CONTRACT NO.: A45CN02 SOUTH BRIDGES
GENERAL CONTRACTOR: JOE’S BRIDGE BUILDING CO.
SUBCONTRACTOR: N/A
DESCRIPTION OF WORK: REMOVE BRIDGE SUPPORT AT MP 2

1. Labor (Supply Adequate Backup) $ 480.80
2. Material (Supply Adequate Backup) $ 45.75
3. Equipment (Supply Adequate Backup) $ 283.52

3A. Subtotal (Lines 1+2+3) $ 810.07

4. Overhead 10% of Lines 1, 2 & 3 $ 81.01
5. Payroll Taxes on Labor (FICA, FUTA SUTA) x (Line 1) $ 50.96
5A. Worker’s Compensation (applied to ST Labor only) $ 33.90

6A. Subtotal (Lines 3A+4+5+5A+6) $ 1,297.54

7. Profit @ _5.5___%* of Line 6A $ 71.36

7A. Subtotal (Lines 6A+7) $ 1,368.90

8. Subcontractor’s Total $ 0
9. 10% of Line 8 $ 0

9A. Subtotal (Lines 7A+8+9) $ 1,368.90

10. Bond @ .73___% of Line 9A (Prime Contractor only) $ 9.99

11. GRAND TOTAL (Lines 9A+10) $ 1,378.89

INSURANCE & PAYROLL TAX:
(Line 5 and 5A)

Included Items:**
Federal FICA 7.54 %
Federal Unemployment .1 %
State Unemployment 2.96 %
(SUTA)
Total 10.6 %
(Line 5 = above rate X all wages in line 1)

Worker’s Compensation 7.05 %
(Line 5A = WC rate X straight time wages only)

Health, Wealth & Benefits

<table>
<thead>
<tr>
<th>Trade</th>
<th>Hours</th>
<th>Rate</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Laborer</td>
<td>16</td>
<td>$20.10</td>
<td>$321.60</td>
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<tr>
<td>Welder</td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Operation/Oiler</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Carpenter</td>
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</tbody>
</table>

Total 16 $321.60

* Projects with Negotiable Profit Section 01150, 1.05, B., 1, 2, 3, should supply Profit Calculation Summary Chart with Recapitulation Chart. (See TAB-J)
COST/PRICE ANALYSIS SHEET

CONTRACTOR/SUBCONTRACTOR NAME: ________________________________

PROJECT: __________________________________________________________

CONTRACT NO.: ____________________________________________________

DESCRIPTION: ______________________________________________________

<table>
<thead>
<tr>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
<th>LABOR</th>
<th>EQUIPMENT</th>
<th>MATERIAL</th>
<th>SUBCONTRACTOR COSTS</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>QUAN.</td>
<td>UNIT</td>
<td>U.P.</td>
<td>TOTAL</td>
<td>U.P.</td>
</tr>
<tr>
<td>RENTAL RATE*</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>BLUE BOOK**</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DATE: __________

May 2012
ABC Construction Company

Massachusetts Bay Transportation Authority
500 Arborway
Jamaica Plain, MA 02130

Attention: MBTA Personnel
Senior Project Manager

Reference: Name of Project
Contract No. XXCNXX

Subject: Chip Motor Niche for Elevator No. 3. Change Order #22-24

Dear Mr. :

We herewith submit our cost proposal in the amount of $36,414.18 to furnish all labor, material, and equipment to chip a niche for the Elevator No. 3 door closure mechanism.

The scope of work includes all labor, material and equipment necessary to perform the following items of work:

- Hand chip a concrete niche approximately 3.0' wide x 5.0' long x 18” deep.
- Construct a working platform necessary to complete all work.
- Disposal of all demolition material.
- Patch all rough surfaces.
- Relocate and electrical outlet.
- Provide safety as needed.

In addition, the work described interrupted the installation of Elevator No. 3 for a period of two weeks. ABC Construction is requesting a 28-day time extension to the contract, since it will affect the CPM, extending the completion date from Month Day, Year to Month Day, Year.

None of the extra work, referenced above, will be assigned to a D.B.E. subcontractor since the work involved does not require the services of a previously-approved D.B.E. subcontractor.

Very truly yours,

ABC Construction Company

Signature

John Doe
Job title

Attachments

cc:
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY DAILY REPORT
LABOR, MATERIAL & EQUIPMENT

DATE:  

CONTRACT NO:  

CONTRACTOR  

REPORT NO: 

IMPORTANT: THIS FORM MUST BE SUBMITTED NO LATER THAN THE DAY FOLLOWING THE DATE THE WORK WAS PERFORMED.  

THE FOLLOWING WORK WAS PERFORMED THIS DATE REQUIRING USE OF THE LABOR FORCE, MATERIALS, EQUIPMENT, SPECIAL FORCES AND SERVICES LISTED BELOW:

DRSCRIPTION OF WORK:  

CERTIFIED CORRECT BY:  

DATE:  

CONTRACTOR’S REPRESENTATIVE  

LABOR AND EQUIPMENT

<table>
<thead>
<tr>
<th>NAME</th>
<th>CRAFT</th>
<th>CLASS</th>
<th>HOURS</th>
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<td>STD</td>
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<td>OT</td>
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<td>STD</td>
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</table>

MATERIALS, SPECIAL FORCES AND SERVICES

<table>
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<tr>
<th>QTY</th>
<th>UNIT</th>
<th>DESCRIPTION</th>
</tr>
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<tbody>
<tr>
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</tr>
</tbody>
</table>

FOR MBTA USE ONLY:

HOURS VERIFIED BY: __________________________  APPROVED BY: ___________________

MBTA INSPECTOR  RESIDENT ENGINEER

20 of 78  May 2012
MBTA CONTRACT NO:____________________________ DATE: ________________________

CONTRACTOR:____________________________

SUBJECT: RENTAL BLUE BOOK RATE FOR CONSTRUCTION EQUIPMENT CALCULATION SHEET

EQUIPMENT DESCRIPTION:____________________________

MAKE:____________________________

MODEL DESC:____________________________ MODEL YEAR:____________________

EQUIPMENT RATE CALCULATION:

1) MONTHLY RATE  ________________________

2) X-AREA ADJUSTMENT FACTOR
   (From regional adjustment map)
   ________________________

   SUBTOTAL ________________________

3) X AGE ADJUSTMENT FACTOR
   (From rate adjustment table)
   ________________________

   SUBTOTAL ________________________

4) X OVERHEAD ADJUSTMENT (1.00-_______)
   (From Rate Element Table)   (Indirect Cost)
   ________________________

   ADJUSTED MONTHLY RATE =
   ________________________

   DIVIDE BY MONTHLY EQUIPMENT HOURS = 176
   ________________________

   ADJUSTED HOURLY OWNERSHIP COST =
   ________________________

5) OPERATING COST$/HR = +
   ________________________

   ADJUSTED HOURLY RATE* =
   ________________________

   MBTA ADJUSTED FACTOR = X80%
   ________________________

   MBTA ADJUSTED HOURLY RATE =
   ________________________

   MBTA STANDBY RATE X 25% OF ADJUSTED RATE* =
   ________________________

SOURCE REFERENCE: EQUIPMENT WATCH BOOK VOL.1 ________________________

1) COPYRIGHT DATE SECTION PAGE
   ________________________

2) COPYRIGHT DATE SECTION PAGE
   ________________________

3) COPYRIGHT DATE SECTION PAGE
   ________________________

4) COPYRIGHT DATE SECTION PAGE
   ________________________

5) COPYRIGHT DATE SECTION PAGE
   ________________________

Calculations by: ________________________ Tel. # ________________________

Checked by MBTA: ________________________ Tel. # ________________________

THE ABOVE SHEET SHOULD BE COMPLETELY FILLED OUT

BLUE BOOK Vol. 1 by Equipment Watch Tel. 1-800-669-3282

May 2012
## MBTA CONTRACT NO: XXCN01

**CONTRACTOR:** ABC Construction Company

**DATE:** __________________________

**SUBJECT:** RENTAL BLUE BOOK RATE FOR CONSTRUCTION EQUIPMENT -CALCULATION SHEET

**EQUIPMENT DESCRIPTION:** Portable Rotary Screw Air Compression

**MAKE:** Lindsay

**MODEL DESC:** Diesel, 185 CFM

**MODEL YEAR:** 2001

### EQUIPMENT RATE CALCULATION:

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
<th>Rate</th>
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</thead>
<tbody>
<tr>
<td>1)</td>
<td>MONTHLY RATE</td>
<td>655</td>
</tr>
<tr>
<td>2)</td>
<td>X-AREA ADJUSTMENT FACTOR (From regional adjustment map)</td>
<td>1.055</td>
</tr>
<tr>
<td></td>
<td><strong>SUBTOTAL</strong></td>
<td><strong>691.025</strong></td>
</tr>
<tr>
<td>3)</td>
<td>X AGE ADJUSTMENT FACTOR (From rate adjustment table)</td>
<td>0.998</td>
</tr>
<tr>
<td></td>
<td><strong>SUBTOTAL</strong></td>
<td><strong>689.64</strong></td>
</tr>
<tr>
<td>4)</td>
<td>X OVERHEAD ADJUSTMENT (1.00 - .06) (Indirect Cost)</td>
<td>0.94</td>
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<tr>
<td></td>
<td>ADJUSTED MONTHLY RATE</td>
<td>648.26</td>
</tr>
<tr>
<td></td>
<td>DIVIDE BY MONTHLY EQUIPMENT HOURS</td>
<td>176</td>
</tr>
<tr>
<td></td>
<td>ADJUSTED HOURLY OWNERSHIP COST</td>
<td>3.68</td>
</tr>
<tr>
<td>5)</td>
<td>OPERATING COST$/HR</td>
<td>6.1</td>
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<td></td>
<td>ADJUSTED HOURLY RATE*</td>
<td>9.78</td>
</tr>
<tr>
<td></td>
<td>MBTA ADJUSTED FACTOR</td>
<td>X80%</td>
</tr>
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<td></td>
<td>MBTA ADJUSTED HOURLY RATE</td>
<td>7.83</td>
</tr>
<tr>
<td></td>
<td>MBTA STANDBY RATE X 25% OF ADJUSTED RATE*</td>
<td>2.45</td>
</tr>
</tbody>
</table>

**SOURCE REFERENCE:**

1) COPYRIGHT DATE 1Q02 SECTION 3 PAGE 3
2) COPYRIGHT DATE 1Q02 SECTION 3 PAGE XIII
3) COPYRIGHT DATE 1Q02 SECTION 3 PAGE IV
4) COPYRIGHT DATE 1Q02 SECTION 3 PAGE VI
5) COPYRIGHT DATE 1Q02 SECTION 3 PAGE 3

Calculations by: **John Doe, ABC Construction Co, Project Manager**

Tel. # **617-123-4567**

Checked by MBTA: **James Smith, MBTA, Resident Engineer**

Tel. #: **2222**

**THE ABOVE SHEET SHOULD BE COMPLETELY FILLED OUT**

BLUE BOOK Vol. 1 by Equipment Watch  
Tel. 1-800-669-3282
TAB-C

MBTA EQUIPMENT DESCRIPTION FORM
MBTA EQUIPMENT DESCRIPTION FORM

<table>
<thead>
<tr>
<th>CONTRACTOR</th>
<th>CONTRACT NO.</th>
<th>(ENTER N/A WHERE “NOT APPLICABLE”)</th>
</tr>
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<tbody>
<tr>
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</table>

**EQUIPMENT DESCRIPTION**

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<tr>
<th>MODEL</th>
<th>SERIES</th>
<th>MANUFACTURER</th>
<th>YEAR OF MANUFACTURER (MODEL YEAR)</th>
<th>YEAR OF PURCHASE</th>
<th>CONDITION PURCHASED (NEW, USED)</th>
<th>EQUIPMENT PURCHASE PRICE</th>
<th>MAJOR OVERHAUL COST (OPTIONAL)</th>
<th>FUEL TYPE (GAS, DIESEL, ELECTRIC)</th>
<th>HORSEPOWER VEHICLE</th>
<th>GROSS VEHICLE WEIGHT</th>
<th>CAPACITY (CY OR TONS)</th>
<th>CRAWLER OR WHEEL TYPE</th>
<th>TIRE COST OR TIRE TYPE SIZE (FRONT)</th>
<th>TIRE COST OR TIRE TYPE SIZE (REAR)</th>
<th>FOUR WHEEL OR TWO WHEEL DRIVE</th>
<th>OTHER DATA**</th>
<th>REGISTRATION#</th>
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<tbody>
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<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**CARRIER DESCRIPTION***

* On a separate sheet list amount(s) and Year(s) of major overhaul costs as shown by Company accounting records. Indicate whether costs were capitalized or expended.

** Other data important to equipment identification such as Boom Range, Hydraulic or Mechanical, Self Propelled or Truck-Mounted, etc

*** Show data for carrier in next column.

The above information is supported by company documents available for audit by MBTA (except as noted below)

Signature________________________________________ Date__________________________
Title______________________________________________

THE ABOVE SHEET MAY BE REQUIRED WHEN REQUESTED BY THE PROJECT OFFICE
CONTRACTOR’S CHANGE ORDER CHECK LIST
INCLUDE WITH PRIME AND SUBCONTRACTOR CHANGE ORDER PROPOSALS

CONTRACTOR OR SUBCONTRACTOR: ____________________________
CONTRACT NO.: __________ CHANGE ORDER NO.: __________ DATE: ____________________________

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>If this CO was done on a T&amp;M basis, have you included daily timesheets signed by an authorized company rep. and an MBTA inspector, resident or PM. If this CO is a completed or partially completed T&amp;M, that has been negotiated to a lump sum, are the timesheets included to the extent they were produced?</td>
</tr>
<tr>
<td>2.</td>
<td>Did you include a signed and dated extra work order letter? (Not required if C.O is executed before work begins or work is T&amp;M.)</td>
</tr>
<tr>
<td>3.</td>
<td>Has the most recent MBTA Recap Sheet been used by both Prime and Subcontractors?</td>
</tr>
<tr>
<td>4.</td>
<td>Are the labor and fringe rates supported with current-local Union or Non-Union Rate Sheets and are the sheets included with the proposal? Must be on local union or agency letterhead.</td>
</tr>
<tr>
<td>5.</td>
<td>Did you and your subs include priced and dated cover letters, filled out and signed by authorized representatives of your respective companies?</td>
</tr>
<tr>
<td>6.</td>
<td>Did you include all required material price support: paid invoices (required if available), unpaid invoices or quotes if paid invoices are not available?</td>
</tr>
<tr>
<td>7.</td>
<td>Are equipment rates supported with blue book rate calculations or rental invoices?</td>
</tr>
<tr>
<td>8.</td>
<td>Did you insure that all non-working or General Foreman hours are not charged as a direct cost?</td>
</tr>
<tr>
<td>9.</td>
<td>Is the working Laborer Foreman being paid more than union rate?</td>
</tr>
<tr>
<td>10.</td>
<td>If foreman is paid more than union rate has a waiver been requested and approved? If not you must use union rate or prevailing wage if non-union.</td>
</tr>
<tr>
<td>11.</td>
<td>Has prime and sub supported its Worker’s Compensation rate with an up to date letter from insurer?</td>
</tr>
<tr>
<td>12.</td>
<td>Did prime and/or sub charge Workers Compensation on overtime premium?</td>
</tr>
<tr>
<td>13.</td>
<td>Have you provided support for your bond rate? (Prime only)</td>
</tr>
<tr>
<td>14.</td>
<td>Did you or your sub. apply profit to bond?</td>
</tr>
<tr>
<td>15.</td>
<td>Is the work being bonded by more than one contractor? (Not allowed. Prime only.)</td>
</tr>
<tr>
<td>16.</td>
<td>Is the profit calculation included for you and your subs? (Note: T&amp;M and or completed work is low risk .03.)</td>
</tr>
<tr>
<td>17.</td>
<td>Have you provided support for FICA, FUTA and SUTA? This should be based on prior year’s actual experience. Total wages divided into total payment.</td>
</tr>
<tr>
<td>18.</td>
<td>If you included a credit, has it been priced in the same manner as you would price an increase in cost?</td>
</tr>
<tr>
<td>19.</td>
<td>If the negotiated value is over $250,000, have you included a Certificate of Current Cost and Pricing?</td>
</tr>
</tbody>
</table>

Note: Each contractor requesting payment for a change order must fill out and sign this check-off list and include it with each proposal.

Signature of Contractor’s project manager ____________________________

THIS CHECK LIST IS DESIGNED TO EXPEDITE THE CHANGE ORDER PROCESS BY REDUCING ERRORS AND TIME CONSUMING MULTIPLE REQUESTS FOR REQUIRED DOCUMENTATION. IT ALSO SHOULD RESULT IN FASTER CO TURN AROUND AND PAYMENT TO THE CONTRACTOR.
TAB-E

WORKERS COMPENSATION RATES
CLASSIFICATION EXAMPLES
SAMPLE INSURANCE COMPANY LETTER
<table>
<thead>
<tr>
<th>Classification Description</th>
<th>code #</th>
<th>1994</th>
<th>1995</th>
<th>1996</th>
<th>1998</th>
<th>1999</th>
<th>% Change</th>
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</thead>
<tbody>
<tr>
<td>Automatic Sprinkler Installation</td>
<td>5188</td>
<td>10.98</td>
<td>8.52</td>
<td>8.17</td>
<td>6.55</td>
<td>5.81</td>
<td>-11.30%</td>
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<tr>
<td>Boiler Installation</td>
<td>3726</td>
<td>29.75</td>
<td>22.02</td>
<td>10.05</td>
<td>15.25</td>
<td>11.88</td>
<td>-22.10%</td>
</tr>
<tr>
<td>Building Moving</td>
<td>5703</td>
<td>64.62</td>
<td>49.03</td>
<td>38.83</td>
<td>31.11</td>
<td>22.80</td>
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<td>5222</td>
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<td>5.73</td>
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<td>Excavation and grading of land</td>
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<td>10.72</td>
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<td>5.91</td>
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<td>5146</td>
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<td>Gas/water mains construction</td>
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<td>8.79</td>
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<td>-18.66%</td>
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<td>Glaziers away from shop</td>
<td>5462</td>
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<td>16.78</td>
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<td>20.53</td>
<td>16.07</td>
<td>12.87</td>
<td>11.96</td>
<td>-7.07%</td>
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<td>87.09</td>
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<td>64.68</td>
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<td>76.27</td>
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<td>87.09</td>
<td>80.76</td>
<td>64.68</td>
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<tr>
<td>Iron/steel shop structural</td>
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<td>11.92</td>
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<td>-20.89%</td>
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<td>3.72</td>
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## CONSTRUCTION INDUSTRY CLASSIFICATIONS
### WORKERS COMPENSATION RATE COMPARISON

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<th>1994</th>
<th>1995</th>
<th>1996</th>
<th>1998</th>
<th>1999</th>
<th>% Change</th>
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<td>Irrigation or drainage systems</td>
<td>6229</td>
<td>13.48</td>
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<td>10.72</td>
<td>8.59</td>
<td>5.91</td>
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<td>Insulation work &amp; drivers</td>
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<td>28.15</td>
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<td>22.23</td>
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<td>Jetty or breakwater construction</td>
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<td>33.70</td>
<td>24.95</td>
<td>18.55</td>
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<td>Lathing</td>
<td>5443</td>
<td>23.40</td>
<td>17.32</td>
<td>14.02</td>
<td>11.23</td>
<td>8.84</td>
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<td>Masonry NOC</td>
<td>5022</td>
<td>33.79</td>
<td>30.21</td>
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<td>Millwright NOC</td>
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<td>Mobile crane &amp; hoisting service</td>
<td>9534</td>
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<td>Oil or gas pipeline construction</td>
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<td>Painting/decorating- interior</td>
<td>5474</td>
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<td>11.97</td>
<td>9.04</td>
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<td>71.13</td>
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<td>Pile driving</td>
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<td>41.16</td>
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<td>23.70</td>
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<td>Railroad construction</td>
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<td>Roofing built up including yard</td>
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<td>67.48</td>
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<td>Salesmen- outside</td>
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<td>0.63</td>
<td>0.53</td>
<td>0.43</td>
<td>0.33</td>
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<td>Salvage operation no wrecking</td>
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<td>47.58</td>
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<td>44.44</td>
<td>35.59</td>
<td>22.99</td>
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<td>Sand or gravel digging</td>
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<td>18.77</td>
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<td>37.67</td>
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<td>20.74</td>
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<td>15.72</td>
<td>-5.42%</td>
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<td>Sign manufacturer &amp; erection</td>
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<td>14.68</td>
<td>14.47</td>
<td>11.47</td>
<td>7.72</td>
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<td>Sheet metal work shop/outside</td>
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<td>-27.63%</td>
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<td>Snow plowing and street cleaning</td>
<td>9402</td>
<td>10.42</td>
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<td>6.81</td>
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<td>Sprinkler Installation &amp; Drivers</td>
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<td>10.98</td>
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<td>8.17</td>
<td>6.55</td>
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<td>Street/road paving or repaving</td>
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<td>8.25</td>
<td>-18.88%</td>
</tr>
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<td>Telephone/telegraph fire alarm</td>
<td>7601</td>
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<td>15.86</td>
<td>15.64</td>
<td>12.52</td>
<td>10.54</td>
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<td>Tile/stone or terrazzo interior work</td>
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<td>16.46</td>
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<td>Trucking men NOC</td>
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<td>Tunneling not pneumatic</td>
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<td>24.31</td>
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<td>Wallboard installation</td>
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<td>13.95</td>
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<td>-26.59%</td>
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<td>Welding or cutting NOC</td>
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<td>23.56</td>
<td>19.90</td>
<td>16.63</td>
<td>13.32</td>
<td>9.69</td>
<td>-27.25%</td>
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<td>Wrecking/demolition of buildings</td>
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<td>75.62</td>
<td>62.87</td>
<td>50.36</td>
<td>34.86</td>
<td>-30.78%</td>
</tr>
</tbody>
</table>

May 2012
Date March 4, 2012

ABC Construction Company
71 Park Plaza
Smallville, MA 12345

Reference: Worker’s Compensation Premium Rates

Dear Sir or Madam:

Please be advised that the following represent rates of premium per $100.00. These are effective rates. Experience Modification Factors and any credits have been included in the premium rates shown.

Worker’s Compensation (C.N.A.) $12.00

Should you have any further questions, please don’t hesitate to contact me.

Sincerely,

XYZ Insurance Company

Gregory Smith
Vice President
March 4, 2012

J. F. Barletor
55 Lewis St.
Hobkington, Ma. 00114

Attention: Mr. P. F. Flinn, President

Ref: XYZ Insurance Co. Updated Performance and Payment Bond Rates

Dear Mr. Flinn:

In response to your request for pricing for Performance and Payment Bond, AK BONDING CO. can offer you the following:

<table>
<thead>
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<th>Contract Amount</th>
<th>Normal Highway Const.</th>
<th>High Hazard Road Const.</th>
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<tr>
<td>First 2,500M</td>
<td>$6.50/Thousand</td>
<td>$7.80/ Thousand</td>
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<tr>
<td>Next 2,500M</td>
<td>$6.00/Thousand</td>
<td>$7.30/ Thousand</td>
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<tr>
<td>Next 2,500M</td>
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<td>Next 12,000M</td>
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<td>Next 22,500M</td>
<td>$5.00/Thousand</td>
<td>$6.10/ Thousand</td>
</tr>
</tbody>
</table>

Please note that XYZ Insurance Co. reserves the sole and exclusive right to determine High Hazard Road Const. conditions.

If you have any questions on the above, please contact my office.

Sincerely,

Henry Ford
Managing Director

AK BONDING CO.
1 Boston Place
Suite 69
Boston, Ma. 02216
Certificate of Current Cost and Pricing

I __________________________ do hereby certify that I am an officer of the Company for __________________________ Corporation, that I am authorized to sign for the Company, that I, or my authorized representatives have reviewed all costs and pricing data provided by said Company to the MBTA for the purpose of establishing a value for Change Order __________________ on MBTA Contract ________________ and that all cost and pricing are current and accurate as of the date of final price negotiations on __________________.
TAB-H

SAMPLE OF CALCULATION SHEET FOR SUTA, FUTA AND FICA
PAYROLL TAXES FOR CHANGE ORDERS

CONTRACT __________________________________________________________

CONTRACTOR______________________________  CO ______ DATE _______

GROSS WAGES FROM PRIOR YEAR       SUTA PAYMENTS FROM PRIOR YEAR _______

$_________________________  $_____________________

SUTA RATE = __________________% OF GROSS WAGES

GROSS WAGES FROM PRIOR YEAR       FUTA PAYMENTS FROM PRIOR YEAR
YEAR________

$_________________________  $_____________________

FUTA RATE = __________________% OF GROSS WAGES

GROSS WAGES FROM PRIOR YEAR       FICA PAYMENTS FROM PRIOR YEAR
YEAR ________

$_________________________  $_____________________

FICA RATE = __________________% OF GROSS WAGES

PRIOR YEARS EXPERIENCE TO BE USED IN CALCULATING CHANGE ORDER COSTS FOR FOLLOWING YEAR.

Note: The above calculations may be adjusted if the Contractor can demonstrate that its business practices, rates or anticipated costs have changed significantly from the prior year. Contact Contract Administration, for assistance if this becomes an issue.
SECTION 01150
MEASUREMENT AND PAYMENT

1.1 DESCRIPTION OF WORK

A. Work Included: This Section specifies the general requirements for Measurement and Payment.

B. Provisions of this Section are augmented by the measurement and payment provisions for specific classifications of construction, materials, and services as specified in the applicable sections of these Standard Specifications, the Contract Specifications and as listed in the Bid Form for a specific contract.

1.2 MEASUREMENT OF QUANTITIES

A. Quantities of various items of work provided shall be determined, for purposes of payment, by the Engineer; and by the Contractor for purposes of the certification(s) of work provided that are required by the provisions of Article 1.06.

B. Upon the completion of Work and before final payment is made the Engineer will make final measurement to determine quantities of various items of work performed, as the basis for final settlement. Measurements will be made according to United State standard units of measurement.

C. Method of measurement and computations to be used in determination of quantities of material furnished and of work provided under the Contract will be those methods generally recognized as conforming to good engineering practice.

D. Unless otherwise specified, the following shall apply:

1. Longitudinal measurements for area computations will be made horizontally and transverse measurements will be the neat dimensions shown on the Drawings or ordered in writing by the Engineer. Deductions will not be made for individual fixtures having an area of 9 square feet or less.

2. Structures will be measured according to neat lines indicated or as ordered in writing, unless otherwise specified. Concrete and masonry will be measured and accurately computed by dividing the work into simple geometrical figures and adding their volumes.

3. Items which are measured by the linear foot, such as guardrail, underdrains, and the like, will be measured parallel to the base or foundation upon which such structures are placed, unless otherwise indicated or specified.

4. In computing volumes of excavation, embankment or borrow, methods utilizing electronic computation, planimeters or other accepted engineering procedures having general acceptance in the engineering profession will be used. When measurement is based on cross sectional area, average end area method will be used.

5. Allowance will not be made for surfaces laid over a greater area than those indicated, or for any material moved from outside the area of cross section and lines shown on the Drawings except when specifically authorized by the Engineer.

6. The term "gauge" when used in connection with the measurement of plates, will mean the U.S. Standard Gauge, except that when reference is made to the measurements of galvanized or aluminum sheets used in the manufacture of corrugated metal pipe, metal place culverts and arches, metal cribbing and
corrugated aluminum pipe, the term "gauge" will mean that specified in AASHTO Designations M36, M167, M196 or M197.

7. When the term "gauge" refers to the measurement of wire, it will mean the wire gauge specified in AASHTO Designation M32.

8. The term "pound" when used in the measurement or payment of any material or work, will mean 16 ounces avoirdupois, based on computed or scale weight.

9. The term "ton" when used in the measurement or payment of any material or work, will mean the short tone consisting of 2,000 pounds avoirdupois. When applicable, materials measured in pounds will be converted to tons.

10. Materials which are specified for measurement by weight shall be weighed on standard scales furnished by and at the expense of the Contractor. Such scales shall be sealed at the expense of the Contractor as often as is necessary to insure their accuracy. A sworn weigher to be compensated by the Contractor shall weigh materials required to be weighed as above provided. Weighing of such materials may be witnessed by the Engineer. If materials are shipped by rail or trucks, the car weights or quarry weights may be accepted but scales shall be used as above, if so directed. Weight slips shall be provided for each shipment of material weighed. Each weight slip shall be signed by the sworn weigher. Weight slips will be countersigned on delivery by the Engineer and no weight slip not so countersigned will be included for payment under the Contract.

11. When requested by the Contractor and approved by the Engineer in writing, material specified to be measured by the cubic yard may be weighed and such weights will be converted to cubic yards for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Engineer and shall be agreed to by the Contractor before such method of measurement to pay quantity is used.

12. Bituminous materials, where specified to be paid for separately, will be measured for payment by the gallon, or by the ton and converted to gallons.

13. Bitumen delivered in tank trucks or tank feeders shall be weighed on scales and the volume computed on the basis of a current tabulation of "Weights per Gallon of Bituminous Materials," as approved by the Authority.

   a. Provisions for weighing bitumen shall conform to the requirements of Article 1.2 D.10 above.

   b. Bitumen delivered in tank cars, when not actually weighed, shall be measured by volume at loading temperature, and this quantity converted to the volume at the applying temperature. Coefficient of expansion or contraction per degree F shall be .00035 for asphalt, .00025 for asphaltic emulsions, .0004 for cutback asphalt and .0003 for tar.

   c. In no case shall the total number of gallons of bituminous material for any car be in excess of the United States Interstate Commerce Commission's rating for the car, plus the expansion based on the volumetric change between the loading and the specific application temperature.

   d. Only the quantity of bituminous material actually placed in the Work and accepted will be considered in determining the amount due the Contractor.

14. Where specified to be paid for separately, portland cement will be measured by the bag or barrel as
indicated. A bag of cement shall contain 94 pounds net and shall be considered equal to 1 cub foot. A barrel of cement shall weigh 376 pounds net.

15. Timber will be measured by the 1,000 feet board measure (M.F.B.M.) actually incorporated in the structure. Measurement will be based on nominal widths and thicknesses and the extreme length of each piece.

16. The term "each," when used as an item of payment, such as project markers, right-of-way monuments, and the like, will mean complete payment for the work prescribed for that item.

17. The term "lump sum," when used as an item of payment, will mean complete payment for the work prescribed for that portion of the Contract work under the item, or all work prescribed in the Contract, as the case may be.

18. When a complete structure or structural unit (in effect, "lump sum" work) is specified as the unit of measurement, the unit will be construed to include all necessary fittings and accessories.

19. The Quantities may be sown on the Contract Drawings for items for which lump sum is the method of measurement. If shown, the quantities are approximate and are shown for estimating purposes only.

20. The term "complete in place," when used in the measurement and payment provisions, means the completion of the contract item, including the furnishing of all materials, equipment, tools, labor and work incidental thereto, unless otherwise specified.

21. Rental of equipment will be measured by hours of actual working time and necessary traveling time of the equipment within limits of the Contract or between the source of supply and contract site (but not exceeding 100 miles) except when special conditions or other agreements make some other method of measurement desirable and is specified. (Also see Article 1.4B of this Section 01150)

22. When standard manufactured items are specified such as fence, wire, plates, rolled shapes, culvert pipe, and the like, and these items are identified by gauge, unit weight, section dimensions, or other measurements, such identification will be considered to be nominal weights or dimensions. Unless more stringently controlled by tolerances in cited specifications, manufacturing tolerances established by the industries involved will be accepted.

1.3 SCOPE OF PAYMENTS

A. The Authority will pay and the Contractor shall receive and accept the compensation as provided in the Schedule of Prices, in full payment for furnishing all materials, labor, tools and equipment and for performing all work contemplated and embraced under the Contract; also for all loss or damage arising out of the nature of the Work, or from the action of the elements (except as specified in General Conditions Article 5.21), or from any unforeseen difficulties or obstructions which may arise or be encountered during the prosecution of the Work (except as set forth in General Conditions Article 2.09) until its final approval by the Authority, and for all risks of every description connected with the prosecution of the Work; also for all expenses incurred by or in consequence of the suspension or discontinuance of the said prosecution of the Work (except as provided in General Conditions Article 6.7), and for any infringement of patent, trademark or copyright, and for completing the Work in an acceptable manner according to the Contract Documents.

B. Payment of any current estimate, or any retained percentage shall in no way constitute an acknowledgment of the acceptance of the Work or in no way or degree prejudice or affect the obligation of the Contractor, at his own cost and expense, to repair, correct, renew or replace any defects and imperfections in the construction of, or in the strength of, or quality of materials used in or about the construction of the Work under Contract and its appurtenances, as well as damages due or attributable to such defects; which defects, imperfections or damages shall have been discovered on or before the expiration of the one year guaranty period specified in General
Conditions Article 2.08. The Engineer shall be the sole judge of such defects, imperfections, or damages and the Contractor shall be liable to the Authority for failure to correct the same as provided herein. (Also see General Conditions Article 5.24.)

C. If the "measurement and payment" clause in the Construction Specifications relating to any price in the Bid Form requires that said price cover and be considered compensating for certain work or material essential to the item, this same work or material will not also be measured or paid for under any other pay item which may appear elsewhere in the Specifications.

D. Except as specifically provided otherwise, no separate payment will be made for any work in fulfillment of the requirements of these Division 1, General requirements nor of the respective Specifications relating thereto, and all cost thereof shall be included in the various prices bid or the pay items scheduled in the Bid Form.

1.4 COMPENSATION FOR ALTERED QUANTITIES

A. When the accepted quantities of work are less than the estimated quantities set forth in the Contract, and whether or not there have been any changes in plans, the Contractor shall accept as payment in full, so far as contract items are concerned, payment at the original contract prices for the accepted quantities of work done. No allowance or other adjustment except as provided in Subsection 2.5 of Section 00700 shall be made for any increased expense, loss of expected reimbursement, or loss of anticipated profits suffered or claimed by the Contractor resulting either directly from such alterations or indirectly from unbalanced allocation among the contract items of overhead expense on the part of the Contractor and subsequent loss of expected reimbursements therefore or from any other cause except the said payment for the actual quantity done at the original contract unit price.

B. When the accepted quantities of work reach 75% of the quantities in the Bid Form and the Contractor anticipates that known work will require a quantity of units in excess of the units in the bid, the Contractor shall notify the Authority that additional quantities of work will be required, and submit a proposed cost to complete the work in excess of the bid units. If the Authority is in agreement, an Extra Work Order Authorization Letter (EWOAL) will be issued to the Contractor for a not to exceed amount to cover the anticipated overrun. After 100% of the units in the bid have been expended, the Contractor will proceed on a time and materials basis, or as directed in the EWOAL, until such time as a final lump sum can be negotiated for the extra work scope. Under no circumstance shall the Contractor expend more than 100% of the bid units without an EWOAL. Once agreement is reached a Change Order will be issued in accordance with SECTION 01150 – MEASUREMENT AND PAYMENT - SECTION 1.5 – PAYMENT FOR EXTRA WORK.

C. The Contractor is obligated to bid work in a responsive and responsible manner. Prices proposed for the work must be realistic. During the bid evaluation process, bids that are weighted with unrealistically high values for work at the beginning of the Contract and/or bids that carry unrealistically high or low unit prices may be considered nonresponsive or nonresponsible.

1.5 PAYMENT FOR EXTRA WORK

A. Payment for work for which there is a unit price provided for in the Contract.

1. Where the Contract contains a unit price for work and the Engineer orders Extra Work for work of the same kind as other work contained in the Contract and it is provided under similar physical conditions, the Contractor shall accept full and final payment at the Contract unit prices for the accepted quantities of Extra Work done.

2. No allowance will be made for any increased expenses or any damages whatsoever.
B. Payment for work or materials for which no price is contained in the Contract.

1. If the Engineer directs, the Contractor shall submit promptly in writing to the Engineer an offer to do the required work on a lump sum or unit price basis, as specified by the Engineer. Unless otherwise directed, the stated price shall be divided so as to show that it is the sum of: (a) estimated cost of direct labor, materials, and the use of equipment, plus 10 percent of this total for overhead; (b) actual cost of Workmen’s Compensation and Employer’s Liability Insurance, Health, Welfare and Pension Benefits, Social Security deductions, and Employment Security Benefits and such additional fringe benefits which the Contractor is required to pay as a result of Union Labor Agreements and/or is required by authorized governmental agencies; (c) a reasonable percent of the total (a) and (b) shall be negotiated for profit utilizing the procedure outlined under this Article, paragraph B.3; (d) the estimated proportionate cost of surety bonds.

2. Unless an agreed lump sum and/or unit price is obtained from above and is so stated in an Extra Work Order the Contractor shall accept as full payment for work or materials for which no price agreement is contained in the Contract an amount equal to the following: (a) the actual cost for direct labor, material (less value of salvage, if any) and use of equipment (see below), plus 10 percent of this total for overhead; (b) actual cost of Workmen’s Compensation and Employer’s Liability Insurance, Health, Welfare and Pension Benefits, Social Security deductions, and Employment Security Benefits and such additional fringe benefits which the Contractor is required to pay as a result of Union Labor Agreements and/or is required by authorized governmental agencies; (c) a reasonable percent of the total (a) and (b) shall be negotiated for profit utilizing the procedure outlined under this Article, paragraph B.3; (d) the estimated proportionate cost of surety bonds. The actual cost of use of equipment (except small tools and manual equipment) will be the actual and necessary expenses of such equipment, power and fuel for the same, and a reasonable rental for the same as determined by the Engineer.

3. A reasonable percent of the total (a) and (b) for Items 1 and 2 above shall be negotiated for profit on each Extra Work Order utilizing the following weighted guidelines:

(a) Breakdown:

**Profit Calculation Summary Chart**

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>WEIGHT</th>
<th>RATE</th>
<th>PROFIT</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>(W)</td>
<td>(R=)</td>
<td>VALUE</td>
</tr>
<tr>
<td></td>
<td>FACTOR</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1. Degree of Risk</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>General Issues of Concern</td>
<td>10</td>
<td>x</td>
<td>=</td>
</tr>
<tr>
<td>Labor Productivity</td>
<td>15</td>
<td>x</td>
<td>=</td>
</tr>
<tr>
<td>Pricing</td>
<td>15</td>
<td>x</td>
<td>=</td>
</tr>
<tr>
<td>Availability of Materials</td>
<td>5</td>
<td>x</td>
<td>=</td>
</tr>
<tr>
<td>2. Relative Difficulty of Work</td>
<td>15</td>
<td>x</td>
<td>=</td>
</tr>
<tr>
<td>3. Size of Job</td>
<td>15</td>
<td>x</td>
<td>=</td>
</tr>
<tr>
<td>4. Period of Performance</td>
<td>15</td>
<td>x</td>
<td>=</td>
</tr>
<tr>
<td>5. Subcontracting</td>
<td>10</td>
<td>x</td>
<td>=</td>
</tr>
<tr>
<td>TOTAL</td>
<td>100</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
(b) Based on the Factors for each Work Order, the Weight (W) for each Factor shall have a Rate Factor (R) from .03 to .08 as indicated below. The Profit Value (V) shall be obtained by multiplying the Rate Factor (R) by the Weight (W). The sum of the Profit Value column represents the fair and reasonable profit percentage as determined by the Factors of the particular Extra Work Order.

**DEFINITION OF PROFIT RATE FACTORS**

1. **Degree of Risk:**

   Where the Work associated with an Extra Work Order involves no risk to the Contractor, or the degree of risk is very small, the Rate Factor should be .03; as the degree of risk increases, the Rate Factor should be increased up to a maximum of .08. The Degree of Risk has been determined to include but not limited to the following major factors:

   a) General Issues of Concern
   b) Labor Productivity
   c) Pricing
   d) Availability of Materials

2. **Relative Difficulty of the Work involved:**

   If the modified Work is most difficult and complex the Rate Factor should be .08 and should be proportionately reduced to .03 on the simplest of jobs.

3. **Size of job:**

   If the sum of the modified Work (direct costs) is not in excess of 5% of the base Contract work or $25,000, the Rate Factor shall be .08. Work greater than 10% of the base Contract Work or $50,000 shall have a Rate Factor of .03. Work estimated between 5% ($25,000) and 10% ($50,000) shall be proportionately rated from .08 to .03.

4. **Period of performance:**

   A change during the early phases of a contract shall have a Rate Factor of .03 and should be proportionately increased to .08 as the period of impact approaches the substantial completion. Additionally, the Rate Factor shall be >.03 for a time extension less than 10 days to a defined Milestone and as the potential time extension to a defined Milestones increases the Rate Factor shall also proportionately increase to .08.

6. **Subcontracting:**

   The Rate Factor shall be inversely proportional to the amount of subcontracting. Where 66 percent or more of the Work is to be subcontracted, the Rate Factor shall be .08 and where 90% to 100% of the Work is performed by the Contractor’s own forces the Rate Factor shall be .03. If the amount of subcontracting is estimated between 11% and 65% of the Work, the Rate Factor shall be proportionately rated from .08 to .03.

7. **Other Terms:**

   a. The term "direct labor" shall mean the labor actually expended in performing the required work exclusive of all supervisory labor.

   b. No allowance will be made for general superintendence and the use of small tools, manual equipment, or buildings.
c. For extra work performed by a subcontractor under this Article, paragraph B.2. above the Contractor shall accept as full payment therefore an amount equal to the following: (a) the subcontractor's cost computed as described above plus (b) an additional 10 percent of such costs. Said subcontractor's cost must be reasonable and approved by the Engineer.

d. The Contractor shall, when requested by the Engineer, furnish itemized statements of the cost of the work ordered and give the Engineer access to accounts, bills, and vouchers relating thereto, and unless the Contractor shall furnish such itemized statements, access to accounts, bills and vouchers, the Contractor shall not be entitled to payment for which such information is sought by the Engineer.

C. Equipment Rates

In the event there arises the need for determination of costs for use of equipment as part of "actual costs" or "cost of performance" or "damages" under General Conditions, Section 00700, Articles 2.9, 5.19, 6.7; Section 01150, Measurement and Payment, Articles 1.03 and/or 1.05; or under Chapter 30 of the Massachusetts General Laws, such costs for use of equipment shall be established in accordance with the following:

1. "Construction equipment" as used herein means equipment in sound workable condition, either owned or controlled by the Contractor or the subcontractor at any tier, or obtained from a commercial rental source, and furnished for use under the Contract.

2. Allowable hourly ownership and operating costs for Contractor-owned or subcontractor-owned equipment shall be determined as follows:

   a. Actual cost data from the Contractor's accounting and operating records shall be used whenever such data can be determined for hourly ownership and operating costs for each piece of equipment, or groups of similar serial or series equipment. Actual costs shall be limited to booked costs of the annual accounting period or periods during which the equipment was utilized on the Contract, and will not include estimated costs not recorded and identifiable in the Contractor's formal accounting records. The Contractor shall afford Authority auditors full access to all accounting, equipment usage, and other records necessary for development or confirmation of actual hourly cost rates for each piece of equipment, or groups of similar serial or series equipment. The Contractor's refusal to give such full access shall invalidate any request or claim for payment of the equipment costs. When costs cannot be determined from the Contractor's records, hourly equipment cost rates may be determined under "b." below.

   b. When the Engineer ascertains that it is not practicable to determine actual equipment cost rates or elements thereof from the Contractor's records, hourly equipment cost rates or elements shall be determined by the use of rate schedules or the formula developed from the "Rental Rate Blue Book" (Volume 1) published by Equipment Watch:

      (1) Hourly rates shall be developed by dividing monthly rates by 176 hours per month (the "weekly," "hourly" and "daily" rates listed in the "Blue Book" will not be used);

      (2) Rates shall in all cases be adjusted by application of Rate Adjustment Tables (machine age adjustment) plus adjustment to eliminate Equipment Overhead plus Regional Adjustment; and

      (3) Rates shall be further reduced by 20 percent to eliminate duplicate and excessive costs, except that the rates shall instead be reduced by 75 percent to determine
standby rates.

The number of hours to be paid for shall be the number of hours that the equipment is actually used on a specific force account activity. The "current revisions" to the Blue Book will be used in establishing rates. The "current revision" applicable to specific force account work will be the "current revision" as of the first day of work performed on that force account work and that rate will apply throughout the period the force account work is being performed. In all cases, the Engineer reserves the right to utilize, in preference to Blue Book rates, equipment cost rates based upon actual costs per accounting records or hybrid rates as described above.

c. In those cases where a 10 percent additive for overhead is to be superimposed on the equipment costs provided in Section 00700, Article 2.9, and Section 01150, Article 1.5, equipment cost rates determined under (a) and (b) shall exclude any overhead costs such as equipment insurance, licenses or taxes. The 10 percent additive shall compensate the Contractor for all overhead costs, including equipment overhead, general superintendence, small tools, manual equipment, field overhead and central office overhead. Where the 10 percent overhead additive is not applicable, overhead items clearly related to equipment, (equipment insurance, licenses, taxes), shall be included in the equipment rates; provided, however, that such costs shall be identified and eliminated from any other direct or indirect costs or damages payable by the Authority under the Contract. No element of profit shall be allowable in equipment cost rates for Contractor-owned equipment; it being understood that a reasonable percent of profit in accordance with Article 1.5, Paragraph B, Item 3 will be superimposed upon equipment costs when called for by the Contract.

3. Reasonable hourly costs of renting equipment are allowable subject to Contractor production of auditable records supporting actual costs incurred, provided further that:

a. Costs such as fuel, lubricants, and minor or running repairs incident to operating such rented equipment that are not included in the rental rate are allowable.

b. Costs incident to major repair and overhaul of rental equipment are not allowed.

c. Charges for equipment leased or rented from any division, subsidiary organization under common control, or business under common ownership, ordinarily will be reimbursable to the extent that they do not exceed the actual costs of ownership and operating costs determined as in "2.," above. Rental cost of equipment leased or rented from any division, subsidiary, affiliate of the Contractor under common control, or business under common ownership, that has an established practice of renting out the same or similar equipment to unaffiliated parties, shall be allowed at rates higher than actual ownership and operating costs, provided that the Contractor furnishes the Authority adequate documentation, including the rental and usage records for the same or similar equipment items, demonstrating a reasonable likelihood that the equipment would have been rented out if not used on this Contract, and that the rental rates charged are consistent with rates charged to unaffiliated parties and going market rates. Rental costs under a sale and leaseback arrangement will be allowable only up to the amount the Contractor would be allowed if the Contractor retained title.

4. Equipment cost rates determined in "2." and "3." above shall be exclusive of labor cost of equipment operators. Such costs shall be reimbursable subject to Contractor production of auditable payroll and other records sufficient for determination of hours, pay rates, and reimbursable fringe costs as defined in Section 00700, Article 2.9 and above.

5. Except in cases of unit price or lump sum extra work orders approved by the Engineer before the work is done, actual reimbursable hours of equipment usage and operator time must be adequately
documented by the Contractor's field and office records maintained during performance of the work in a manner acceptable to the Engineer. Failure of the Contractor to so maintain time records which adequately segregate added equipment hours caused by extra work required by the Engineer, or caused by other Authority actions cited in the Contractor's claim for damages, from other equipment time worked on the Contract, when maintenance of such records would have been feasible, shall constitute a cardinal omission of the Contractor, invalidating any claim for equipment cost reimbursement.

D. Payment for specialized engineering services which may be required in the performance of extra work and which is not otherwise provided for in the Contract shall be for actual costs to be incurred that comply with the standards of the Federal Acquisition Regulations, Part 31, including (a) direct labor based on hours worked on the Contract at the hourly rates paid; (b) overhead costs based on audited financial statements and other data as may be required by the Authority; (c) ten percent of the total of (a) and (b); and (d) other direct expenses related to the Contract.

1.6 OMITTED ITEMS

A. Should any item or items of Contract work be determined unnecessary for the proper completion of the Work, the Authority may, upon written notice to the Contractor, eliminate such item or items from the Contract and allowance will not be made for such items so eliminated in making final payment to the Contractor, except for such actual work as shall be done and materials purchased, including the cost of moving in and out the special equipment necessary for work on the eliminated item or items, prior to notification of the elimination of such item or items. The amount of the credit to the Authority shall be determined in a similar manner as described above for payments for extra work.

1.7 PARTIAL PAYMENTS

A. Monthly, the Engineer will make an estimate in writing of the total amount of the work done to the date of such estimate and the value thereof, including advance payments on materials stores or on hand but not yet incorporated in the Work which may be made as provided in Article 1.7 of this Section. The Authority will retain the following from these payments:

1. Five percent of the approved amount of the payment to secure satisfactory performance of the Contract Work.

2. An amount sufficient to cover claims it has against the Contractor.

3. An amount sufficient to cover all demands for direct payment filed by subcontractors under Chapter 30 Section 39F of the General Laws of the Commonwealth.

4. Five percent of the value of all items to be planted in the ground.

The Authority will pay monthly to the Contractor while carrying on the work the balance not retained as hereinbefore provided. No such estimates or payment shall be required to be made when, in the Engineer's judgment, the work is not proceeding in accordance with the provisions of the Contract, or when in his judgment the total value of the work done since the last estimate amounts to less than $500.00.

B. The Authority may, at its option, after 50 percent of the Work has been completed and (1) if the work is proceeding in accordance with the approved CPM Construction Plan submitted under Section 01300 Article 1.02 and (2) is being performed in accordance with the Specifications and the Contract, not retrain the 5 percent to secure satisfactory performance of the Contract Work as provided in Article 1.7A of this Section 01150 on any subsequent payments. However, if the Authority does not retain these monies, it will reimpose this 5 percent retainage on all subsequent payments should the Contractor fail to maintain progress in accordance with the Contract and approved schedule or fail to execute the Work as required by the Specifications and Contract.
Retainages withheld under Articles 1.6A (2) and (3) will remain in effect throughout the Contract Work period as detailed therein. Retainage withheld under Article 1.06A (4) for plantings will be retained until Final Acceptance (Article 1.09).

C. Partial payments will be made on lump sum contracts, and on lump sum items of a contract if the Contractor requests partial payment of such an item, in accordance with a schedule of the quantities and unit prices for the major components of a lump sum contract or of the lump sum items of a contract, to be submitted by the Contractor and approved by the Engineer prior to making partial payments for such contract or for such items. For lump sum contracts, this schedule of major components shall approximate the activities shown on the CPM Construction Plan required by Section 01300 Article 1.2. Each component part shall be considered as including all its concomitance so that the total cost listed for the components is the contract cost for the item. Approval of the schedule by the Engineer shall not be considered as a guarantee to the Contractor that the quantities shown on the schedule are the approximate quantities actually included in the lump sum items. The schedule is only for the purpose of estimating partial payments, and it shall not affect the contract terms in any way.

D. The Contractor shall certify in writing on forms approved by the Authority that the work for which payment is included in the estimate in question, has in fact been done.

E. Whenever the Work is substantially complete, the Authority may, if it considers the amount retained to be in excess of the amount adequate for its protection, at its discretion, release to the Contractor all or a portion of such excess amount and may cause the Contractor to be paid, temporarily or permanently, from time to time, such portion of the reserve as it deems prudent.

F. When the first partial payment estimate is prepared, the Contractor shall submit to the Engineer a cash drawdown forecast indicating the estimated amount of each partial payment by month, projected through completion of the project. The Contractor shall, with each succeeding partial payment estimate, submit updated cash drawdown forecasts to the Engineer. The forecast is for the purpose of estimating cash requirements.

G. Massachusetts Bay Transportation Authority-Statement of Payment to Subcontractors Form is included at the end of this Section 01150. It must be completed and signed by authorized contractor representative and submitted to the Authority with each payment request.

1.8 PAYMENT FOR MATERIALS STORED OR ON HAND

A. When requested in writing by the Contractor, allowances may be made on partial payments for certain materials stored or on hand, but not incorporated in the Work, subject to the following terms and conditions.

B. Upon presentation to the Engineer by the Contractor of copies of paid invoices, advance payments may be made for acceptable reinforcing steel, structural steel, piles, culvert pipe, guard rail, track rails, precast prestressed concrete members, costly machinery items, and other similar nonperishable materials purchased expressly for the Work and delivered on or in the approved storage places at the site, but which materials are not considered as erected or complete in place under the items of the Contract, and for which partial payment would not otherwise be made until such materials and items were erected or complete in place.

C. The amount to be included in the estimate will be the value of the materials as shown by the certified copies of paid invoices including transportation and handling costs. However, the Engineer reserves the right to limit payment for such materials when such payment is based upon a standard unit of measure. When contract payments are made on the basis of estimated quantities, payment for material stores or on-hand may be limited to an amount not to exceed the value of ninety percent of the estimated contract quantity.

D. Before any advance on materials is made as hereinbefore provided, the Authority will require, as security for the incorporation of the materials in the Work, documents from the Contractor transferring to the Authority the absolute legal title to such materials.
E. However, the transfer of title and the partial payment for such materials shall not in itself constitute acceptance of same nor void the right to reject material subsequently found unsatisfactory as provided in General Conditions Article 4.4, nor in any way relieve the Contractor of his responsibility for satisfactorily furnishing and placing the material in the Work in accordance with the terms of the Contract.

F. In the event any of such material subsequently becomes lost, stolen, impaired, or damaged, the monetary value of the lost, stolen, impaired, or damaged material as may have been paid for in a current estimate will be deducted from the next estimate, and no further payment will be made therefore until such material has been satisfactorily replaced in accordance with Specification requirements.

G. If it is impossible due to lack of area on the site or other valid reason, the Contractor may request in writing permission from the Engineer to store materials off the site and still have the materials paid for as materials on hand and the Engineer may approve payment; however, no advance payment for material stores off the site will be made until written approval of the Engineer has been given. This request will state the reason for the request, location of proposed storage site, and methods that will be employed to insure that material is properly protected and will be used on the particular Contract. The amount to be included in the estimate for materials stores off the site will be limited to 80 percent of the value of the materials as shown by the certified copies of paid invoices including transportation and handling costs.

H. In the case of property not owned or controlled by the Authority, the Contractor shall also lease, or procure a lease, free from encumbrances to the Authority, such lease to be in a form approved by the Authority and to contain provisions for the protection and indemnification by the Contractor of the Authority, its employees and agents, against all claims by reason of such lease or by reason of anything done or permitted in or upon the leased sites. The Contractor shall also take such steps as the Authority may require for the purpose of security and assuring to the Authority the control of such materials, particularly the right to enter upon the property, take possession of such materials and use the same.

1. No advance payment for materials stores or on-hand, but not incorporated in the work, will be made in an estimate when the value therefore amounts to less than $10,000 per contract bid item and represents the value of at least fifty percent of the estimated quantity involved as shown in the contract or as determined by the Engineer.

2. Deductions at rates and in amounts which are equal to the advance payments will be made under the appropriate Contract pay items in estimates as the materials are incorporated in the Work.

1.9 SEMI-FINAL ESTIMATE

A. A semi-final estimate may be made, at the discretion of the Authority, under the following conditions:

1. If, after final inspection has been made, there are any payments or Extra Work items that are in dispute between the Contractor and the Authority, either as to the quantity or value of work provided thereunder, such items or claims may be excluded from the final estimate, and payment for such disputed items may be deferred until such time as agreement has been reached between the Contractor and the Authority or until such claim has been adjudicated. In such case, a semi-final estimate shall be prepared within a period of 65 days after substantial completion of the Contract Work covering the value of Work provided and retained percentage on items of the Contract that are not in dispute and with disputed items or claims excluded but subject to deduction and retention of a sum sufficient to satisfy any and all outstanding claims or liens that have been duly filed by subcontractors and materialmen against the Contractor, or to cover amount of such claims or liens that may have been paid by the Authority directly to others for the Contractor's account (see General Conditions Article 5.17), and subject to deduction and retention from such payment any other amounts to be deducted and retained in accordance with the terms of the Contract. The existence of a dispute between the Contractor and the Authority as to any payment item or items shall not be considered a valid reason for delaying preparation of a semi-final estimate as provided herein.
2. In the event the Contract has been substantially completed and the Contract has been opened to public use by order of the Authority, but final acceptance of the Work is subject to delay because of minor uncompleted items which do not impair the usefulness of the Contract, a semi-final estimate shall also be prepared within a like period of 65 days after the Contract has been substantially completed and placed in public use. Such semi-final estimate shall include an intimate of the value of all Work provided in accordance with the terms of the Contract, including the amount of retained percentage withheld by the Authority from previous periodic payments, but excluding (a) the same deductions and retainage sufficient to cover subcontractors and materialmen's claims and other amounts to be deducted and retained in accordance with the terms of the Contract, as provided by the first paragraph of this Article; (b) an amount equal to the estimated value of the work remaining to be performed and (c) any items or claims for extra Work, or parts thereof, that may be in dispute; and payment for such excluded items or portions thereof, may be deferred until such remaining work has been satisfactorily completed, or in the case of disputed items or claims until such time as agreement has been reached thereon or such claims have been adjudicated.

1.10 FINAL ACCEPTANCE AND FINAL PAYMENT

A. When all of the physical work covered by the Contract has been substantially completed (see General Conditions Article 3.11), the Authority will inform the Contractor in writing the date of such final acceptance upon which date the Contractor's responsibility shall cease except as provided in his bond and as provided in General Conditions Articles 2.8 and 5.24.

B. The Engineer shall, as soon as practicable after the satisfactory completion of the Contract, make a final estimate of the amount of work done thereunder and value of such work. Within 65 days from and after the date the Work has been accepted by the Engineer, the Authority will forward to the Contractor a copy of the final estimate or semi-final estimate, as stipulated in Chapter 30 section 39G of the General Laws of the Commonwealth, which will include an agreement form for the Contractor's acceptance. After such acceptance has been filed with the Engineer, payments of the entire sum will be made, so found to be due thereunder after deducting therefrom all previous payments and all amounts to be kept and all amounts to be retained under the provisions of the Contract. All prior partial estimates and payments will be subject to correction in the final estimate and payment. If within six months from the date the final estimate is forwarded to the Contractor, the Contractor has not filed a valid (as determined by the Engineer) written reason(s) for not accepting final estimate, final estimate will be considered acceptable to the Contractor and payment of final estimate made.

C. Acceptance by the Contractor of the final payment shall operate as and will be a release to the Authority and every member, agent, and employee thereof, from all claim and liability to the Contractor for anything done or furnished for, or relating to, the Work, or for any act or neglect of the Authority or of any person relating to or affecting the Work, except the claim against the Authority for the remainder if any there be, of the amounts kept or retained to satisfy liens or claims pending against the Contractor.

END OF SECTION
TAB-J

PROFIT CALCULATION SUMMARY CHART/SAMPLE
## Profit Calculation Summary Chart

**CONTRACT NO:**

**GENERAL CONTRACTOR:**

**SUBCONTRACTOR:**

**DESCRIPTION:**

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>WEIGHT (W)</th>
<th>RATE FACTOR (R=.03 to .08)</th>
<th>PROFIT VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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<td></td>
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<tr>
<td>1. Degree of Risk</td>
<td></td>
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</tr>
<tr>
<td>General Issues of Concern</td>
<td>10</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Labor Productivity</td>
<td>15</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Pricing</td>
<td>15</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>Availability of Materials</td>
<td>5</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>2. Relative Difficulty of Work</td>
<td>15</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>3. Size of Job</td>
<td>15</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>4. Period of Performance</td>
<td>15</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td>5. Subcontracting</td>
<td>10</td>
<td>x</td>
<td></td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>100</strong></td>
<td></td>
<td></td>
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</tbody>
</table>

**COMMENTS:**

______________________________________________________________________________
______________________________________________________________________________
______________________________________________________________________________

Note: Profit calculations for Not to Exceed, T&M or for completed work carry no risk and should be at the lowest end of the scale at 03.
### Profit Calculation Summary Chart

**CONTRACT NO:** XXCNXX  
**GENERAL CONTRACTOR:** ABC Construction Company  
**SUBCONTRACTOR:**  
**DESCRIPTION:** Change Order No. XX

<table>
<thead>
<tr>
<th>FACTOR</th>
<th>WEIGHT</th>
<th>RATE</th>
<th>PROFIT FACTOR</th>
<th>PROFIT VALUE</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>(W)</td>
<td>(R=.03 to .08)</td>
<td></td>
</tr>
</tbody>
</table>

1. **Degree of Risk**  
   - General Issues of Concern  
     - 10 x 0.05 = 0.50  
   - Labor Productivity  
     - 15 x 0.07 = 1.05  
   - Pricing  
     - 15 x 0.05 = 0.75  
   - Availability of Materials  
     - 5 x 0.03 = 0.15  

2. **Relative Difficulty of Work**  
   - 15 x 0.04 = 0.60  

3. **Size of Job**  
   - 15 x 0.08 = 1.20  

4. **Period of Performance**  
   - 15 x 0.04 = 0.60  

5. **Subcontracting**  
   - 10 x 0.03 = 0.30  

**TOTAL**  
100 x 0.03 = 5.15

**COMMENTS:**

Note: Profit calculations for Not to Exceed, T & M or for completed work carry no risk and should be at the lowest end of the scale at 0.3.
TAB-K

EXTRA WORK ORDER REQUEST
AND SAMPLE LETTER
MBTA
EXTRA WORK ORDER REQUEST

<table>
<thead>
<tr>
<th>CONTRACT TITLE:</th>
<th></th>
</tr>
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<tbody>
<tr>
<td>CONTRACT NO:</td>
<td>CHANGE ORDER NO</td>
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<tr>
<td>CHANGE ORDER TITLE:</td>
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<tr>
<td>SCOPE OF EXTRA WORK</td>
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<table>
<thead>
<tr>
<th>ANTICIPATED COST:</th>
<th>FIRM QUOTE</th>
<th>INTERNAL EST.</th>
<th>CONSULTANT EST.</th>
<th>ANTICIPATED SCHEDULE IMPACT:</th>
</tr>
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</table>

<table>
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<tr>
<th>REASON FOR EXTRA WORK</th>
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<thead>
<tr>
<th>REASON THIS CANNOT WAIT FOR A FORMAL CHANGE ORDER:</th>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>HAS THIS WORK STARTED:</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>PROJECT MANAGER RECOMMENDS ERROR/OMISSION REVIEW:</th>
<th>YES</th>
<th>NO</th>
</tr>
</thead>
<tbody>
<tr>
<td>IF YES, PROJECT SHOULD NOTIFY CONSULTANT THAT THIS WORK IS BEING REVIEWED AS POSSIBLE ERROR OR OMISSION.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**ATTACHMENTS (Check if attached):**

- EXTRA WORK ORDER LETTER (FOR SIGNATURE) (Do not date)
- CMS REPORT CMS-CO-002 - CO SUMMARY ANALYSIS REPORT
- CMS REPORT CMS-CO-012 - ACTION LIMIT SUMMARY
- CONTRACTOR PROPOSAL (IF AVAILABLE)
- CONSULTANT ESTIMATE (IF AVAILABLE)
- INTERNAL ESTIMATE (IF BASIS OF ANTICIPATED COST.)
- MBTA TIME MATERIAL AND EQUIPMENT DAILY REPORT (letter attachment)

<table>
<thead>
<tr>
<th>PROJECT MANAGER:</th>
<th>DATE:</th>
</tr>
</thead>
</table>
EXTRA WORK ORDER REQUEST

CONTRACT TITLE: REPAIRS TO STATION XYZ

CONTRACT NO: 12354  CHANGE ORDER NO. 4  DATE 9/20/09

CHANGE ORDER TITLE: Additional PVC Conduit

SCOPE OF EXTRA WORK: Furnish necessary labor equipment and material to install 50’ of 2 inch. PVC conduit and associated wire along the top of the east wall of station XYZ between construction stations 153 and 157, in accordance with the response to RFI 97.

ANTICIPATED COST: $10,000  FIRM QUOTE_INTERNAL EST. X  CONSULTANT EST. ______  ANTIOPED SCHEDULE IMPACT: 0

REASON FOR EXTRA WORK: The contract design called for installation of overhead lighting at the top of the east wall at construction station 153. However, the design did not provide a power source for the lights. The nearest power source is at construction station 157, approximately 50’ away. In order to comply with the intent of the design, and provide necessary lighting in Station XYZ, 50’ of conduit and associated wire must be run between the power source and the installed lighting.

REASON THIS CANNOT WAIT FOR A FORMAL CHANGE ORDER: This work is one of the last issues preventing the contractor from installing ceiling tiles and will delay completion if not authorized as soon as possible.

HAS THIS WORK STARTED: YES  NO

PROJECT MANAGER RECOMMENDS ERROR/OMISSION REVIEW: YES  x  NO ______

ATTACHMENTS (Check if attached):
X EXTRA WORK ORDER LETTER (FOR SIGNATURE)
X CMS REPORT CMS-CO-002 - CO SUMMARY ANALYSIS REPORT
X CMS REPORT CMS-CO-012 - ACTION LIMIT SUMMARY
____ CONTRACTOR PROPOSAL (IF AVAILABLE)
____ CONSULTANT ESTIMATE. (IF AVAILABLE)
X INTERNAL ESTIMATE (IF BASIS OF ANTICIPATED COST.)
X MBTA TIME MATERIAL AND EQUIPMENT DAILY REPORT

PROJECT MANAGER: XXXXXXX  DATE: July 12, 2012
Attention: Bernard Doherty, Project Manager


Dear Mr. Doherty:

Reference is made to your proposal dated December 9, 2009, to relocate a 4” water line that leads into the track #11 car wash bay, a 3” existing sprinkler system for the pit sprinkler fire protection system, three (3) 1” electrical conduits, and one (1) 1” fire alarm conduit for a lump sum amount of $148,532.69. You are hereby authorized to proceed with the following scope of work for a not to exceed amount of $150,000

**SCOPE OF WORK:** Furnish the necessary labor, material and equipment to relocate a 4” water line that leads into the track #11 car wash bay, a 3” existing sprinkler system for the pit sprinkler fire protection system, three (3) 1” electrical conduits, and one (1) 1” fire alarm conduit. Work will also include upgrades to the existing electrical system.

All work is to be performed on a Time and Materials basis. All labor, materials and equipment must be documented on the attached MBTA Daily Report and signed off by an MBTA Inspector no later than one day after the work is accomplished to be considered for payment. It is the Authority’s intent to negotiate a Lump Sum Change Order for this work at the earliest possible date. MBTA Daily Reports may be discontinued after negotiations are complete.

**BASIS OF PAYMENT:**
Payment will be made in accordance with Division 1, Section 01150, Subsection 1.5 (B) of the General Requirements.

**TIME EXTENSION:**
A 60 day extension has been requested by the S & R Construction, and will be considered during change order negotiations. S & R Construction must provide schedule analysis during negotiations that clearly demonstrates the need for a contract extension for it to be considered.

Sincerely,

Edmond F. Hunter
Assistant General Manager
for Design and Construction

---

S & R Construction Enterprises
185 South Main Street
P. O. Box 509
Newton, New Hampshire 03858
Massachusetts Bay Transportation Authority

CONTRACTOR SIGNATURE RECEIPT FORM

DATE:

CONTRACT:

MBTA PROJECT MANAGER:

RE: COPY OF MBTA CONSTRUCTION CONTRACT CHANGE ORDER GUIDELINES FOR COST AND SUPPORTING DOCUMENTATION.

RECEIVED BY: ________________________________________________

TITLE: _______________________________________________________

COMPANY: __________________________________________________

DATE: _______________________________________________________

CC: R Morrison
TAB-M

CONTRACT OVERVIEW DBE PARTICIPATION FORM
CONTRACT OVERVIEW DBE PARTICIPATION

TO: CONTRACT ADMINISTRATION

DATE: _________________________

CONTRACT: _________________________

_______ DBE PARTICIPATION PERCENTAGE THIS ACTION

_______ DBE PARTICIPATION PERCENTAGE TO DATE (INCLUDING THIS ACTION)

_______ CHANGE ORDER NUMBER

_______ PERCENTAGE OF WORK COMPLETED

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

**CONTRACT:**

**GRANT #**

**FUNDING TYPE (State or Federal)**

**WORK ORDER #**

**SUBJECT:**

**AMOUNT:**

**BRIEF DESCRIPTION:**

**AUTHORIZATION LEVEL:**

1. <$25,000 Director
2. <$250,000 Asst. GM
3. <$1,000,000 GM
4. >$1,000,000 BOD
5. General Counsel

**TIME EXTENSION:** _     _ ______

**DAILY VALUE:** ________________________

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

**TYPE (Select Only One):**
1. EXTRA WORK
2. TRANSFER FUNDS
3. OTHER
4. SUPPLEMENT
5. TIME
6. REJECTED CLAIM

**SUM TYPE (Select Only One):**
1. LUMP SUM
2. TIME & MATERIALS
3. SUM NOT TO EXCEED
4. SUBJECT TO AUDIT
5. NO VALUE CHANGE
6. ESTIMATED AMOUNT

**PREPARED BY:**

**EXTRA WORK ORDER DATE:**

**LESSONS LEARNED:**
TAB-O

INSTRUCTIONS AND TEMPLATE FOR WRITING EXPLANATION OF NECESSITIES (EON)/SAMPLE
Instructions
For
Writing Explanation of Necessity
(EON)

The EON contains four basic sections: 1.) General/Introductory Info of the contract and extra work; 2.) Detailed Discussion of the proposal, scope of work; 3.) DBE participate discussion; and 4.) The Project Office recommendation on the proposed extra work. The following items, template and sample EON provide guidance on writing the EON along with the format that is required for the EON. The EON needs to provide sufficient discussion so that the required approvers of the extra work are able to understand the reasons the extra work is required and the general details of the extra work order proposed.

ITEM I
Give Contract number and a brief description of the work involved in the contract and the location of the project site. The information in this paragraph should remain the same for any EON written within the duration of this contract.

ITEM II
State the nature of the Change Order “lump sum” or Time and Material/Not to Exceed and the amount of the Change Order. If an extension of time is requested, indicate how many calendar days and critical path impact, if appropriate. If this work is out of scope and sole source, justification for going sole source must be provided.

ITEM III
Briefly describe the extra work in the Change Order. If the extra work is shown on sketches, add to the description “in accordance with Sketch Nos. X, Y, Z”.

ITEM IV
**DISCUSSION** *
Describe what Section of the Contract Plans and Specifications are being changed. State in full detail the exact purpose of the Change Order and the reason for the extra work. Include numbers of any sketches or drawings that are to be referenced. The first sentence of the discussion should start with, “The Contract Documents require”. Finish this sentence than explain what is different in the Change Order.

ITEM V
Provide the DBE information shown on the attached template for EON. This format should be used except for minor deviation to suit Change Orders conditions. Select the appropriate 2nd sentence based on contract DBE requirements.

ITEM VI
**RECOMMENDATION**
This recommends that the Change Order be approved. Use language as shown on the attached template for Explanation of Necessity (EON).

ITEM VII
Indicate who requested the work and whether or not it is the result of design error or omission.

ITEM VIII
State whether or not there should be an extension of time caused by this action. If there is an extension of time involved, indicate how many calendar days and how the extension affects the critical path (CPM) of the project.

Include: “This time extension was reviewed by the Project Office and the Design Engineer,____, and was determined to be fair and reasonable”.

* Instructions for the wording related to “Reallocation of Funds” and “Time and Materials”, see Template for Explanation of Necessity ITEM IV. -Discussion
ITEM I
MBTA Contract No._________ involves the construction of __________________________________________
________________________________________
________________________________________
______, Massachusetts.

ITEM II
This Change Order in the _______________ amount of $__________________________ will authorize extra work described as follows: (if an extension of time is requested indicate how many calendar days)

ITEM III
Furnish the necessary labor, material and equipment to __________________________________________
________________________________________
________________________________________

ITEM IV
DISCUSSION:
Included as part of Contract No.____________________________________________________________
________________________________________
________________________________________
________________________________________
ITEM V

DBE PARTICIPATION:
The DBE participation goal to be maintained throughout the life of this contract, is at least ________% of the total contract price.

*Under Change Order No._______, there should be no DBE participation associated with this work because the work involved in this action did not require the services of previously approved DBE subcontractors.

OR

**Under this Change Order No._______, a total amount of $_______ has been allocated to DBE firms. Upon execution of the Change Order No._______, and estimated total amount of $_______ has been allocated to DBE firms under this contract.

However, to date, an estimated total amount of $____________ has been allocated to the DBE firms under this contract.

*To be used when there is no DBE participation.
**To be used with DBE participation

ITEM VI

RECOMMENDATION:
The Contractor’s cost proposal in the lump sum (or estimated) amount of $_______ to perform this extra work was reviewed by the Project Office (and the Design Engineer if applicable), _____________________________.
The cost was determined to be fair and reasonable and the work necessary to successfully complete the project. Therefore, it is recommended that this Change Order be approved in the lump sum (or not to exceed) amount of $_______.
The extra work was requested by the designer and should be reviewed as a potential design error or omission. The Designer has been put on notice that this work will be reviewed as a possible design error or omission.

ITEM VII

This extra work was requested by ____________________________ and should or should not be reviewed as a potential design error or omission. (if potentially an error or omission add) The Designer has been put on notice that this work will be reviewed as a possible design error or omission.

ITEM VIII

There is no extension of the contract completion date involved in this action.

OR

The contract completion date should be extended ____________ calendar days from ________ (original or last approved completion date) to ________ (new completion date). Give reason for the extension of time. Since the work entailed in completing the scope of work of this Change Order is on the Contract’s critical path and its impact has been demonstrated by the Contractor, the Design/Engineer and the Project Office have determined that the requested ____________ calendar day extension of time is fair and reasonable.

______________________________
Signature
Name
Title

May 2012
MASSACHUSETTS BAY TRANSPORTATION AUTHORITY  
CONTRACT NUMBER XXCNXX  
CHANGE ORDER REQUEST NO. XX  
EXPLANATION OF NECESSITY  

Massachusetts Bay Transportation Authority (MBTA) Contract No. XXCNXX provides for the relocation of the Green Line between Haymarket Station and Causeway Street. Included is the construction of a temporary viaduct structure above Haverhill Street to accommodate (on an interim basis) the Green Line service and the Massachusetts Highway Department’s Ramp RC. When completed, the temporary viaduct/highway ramp will permit the Central Artery/Tunnel (CA/T) Project to demolish an existing highway ramp, thereby permitting the CA/T Project to proceed with their mainline construction in the area; and will allow the MBTA to construct a “super platform” station as a part of this contract. When complete, the super platform station will serve the inbound Orange Line and Green Line on either side of a common platform. Outbound Green Line service will be relocated to the mezzanine level.

This Change Order No. XX in the lump sum amount of $36,414.18 will authorize extra work described as follows and will impact the critical path by extending the contract by twenty-eight (28) calendar days.

Furnish the necessary labor, material and equipment to: (1) chip a niche for the door closure mechanism at Elevator No.3 and (2) extend the conduit for relocation DC Switch B/803 as indicated in field memo No. XX.

Discussion
Included as part of Contract No. XXCNXX, is the addition of an elevator No. 3 and relocation of DC Switch B/803 as shown on drawings. The MBTA requires the motor, which opens the doors, to be mounted higher on the cab roof to avoid unwanted entry into the elevator. Therefore, a niche approximately 3.0’ wide x 5.0’ long x 18” deep was chipped out of the roof slab above Elevator 3. The works also involves construction of a platform, demo, disposal of material and relocation on an electrical conduit as indicated in field memo No. XX.

The second part of this action requires the installation of six new conduit cables in Room PO13. However, in order to install the conduits, an existing switch had to be relocated approximately 3 feet back from the area shown on the original contract drawings E00 and E01.

The contractor has requested two (2) fourteen calendar day time extensions for all remaining milestones for each of these actions for a total of twenty-eight (28) calendar days, which will extend the contract completion date from November 6, 2000 to December 4, 2000.

Disadvantaged Business Enterprise Participation
The DBE participation goal to be maintained throughout the life of this contract, including any adjustment, is at least nineteen percent (19%) of the total adjusted contract price. To date, an estimated total of $14,585,133.30 or 14.18% percent of the total adjusted contract price of $103,654,114.88 has been allocated to DBE firms under this contract. This deficient compliance is due to the fact the one of the originally identified DBE firms was “graduated” from the DBE program and decertified by SOMWBA.
(Explanation of Necessity - continued)

**Recommendation**

The contractor’s cost proposal in the lump sum amount of $36,414.18 to perform extra work was reviewed by the Project Office and the Design Engineer Parson Brinckerhoff Quade and Douglas, Inc./Seeyle Stevenson value & Knecht Inc. (PB/SS A joint venture). The cost was determined to be fair and reasonable and the work necessary to successfully complete the project. Therefore, it is recommended that this Change Order No. XX be approved in the lump sum amount of $36,414.18.

The extra work was requested by the designer and should be reviewed as a potential design error or omission. The Designer has been put on notice that this work will be reviewed as a possible design error or omission.

The contract completion date will be extended twenty-eight (28) calendar days from November 6, 2000 to December 4, 2000 because it will affect the critical path of the project. Since the work entailed is completing the scope of work of this change order and is on the critical path and its impact demonstrated by the Contractor, the Design/Engineer and the Project Office have determined that the requested twenty-eight (28) calendar days extension of time is fair and reasonable.

______________________________
Name
Resident Engineer/Project Manager
TAB-P

SAMPLE RECORD OF NEGOTIATIONS FOR CHANGE ORDERS (RON)
RECORD OF NEGOTIATIONS (RON)

CHANGE ORDERS

CONTRACT NO.: CHANGE ORDER NO.: 

DESCRIPTION: 

DATE OF MEETING: 

ATTENDEES: 

MBTA: 

CONTRACTOR: 

CONSULTANT: 

OTHER: 

SPECIFIC COST OR WORK ELEMENTS QUESTIONED BY PROJECT: 

CONSULTANT’S INDEPENDENT COST ESTIMATE (ICE) OR (ENGINEER’S (ICE)): 

CONTRACTOR’S RESPONSE: 

FINAL RESOLUTION WITH JUSTIFICATION: 

Use additional pages as required.

THIS CHANGE ORDER HAS BEEN REVIEWED WITH THE CONTRACTOR AND THE ORIGINAL COST OF $___________ HAS BEEN RENEGOTIATED TO $___________

The person signing this RON has reviewed the Contractor’s Proposal and ascertained that all required documents have been provided.

PROFIT CALCULATION AGREED TO BY PROJECT/CONTRACTOR: ___________%

DATE: ________________

Project Manager/Resident Engineer

INCLUDE AS ATTACHMENTS TO THE RON:

1. THE CONTRACTOR’S AND SUBCONTRACTOR’S ORIGINAL COST PROPOSAL RECAPS AND LABOR, EQUIPMENT AND MATERIAL BREAKDOWNS.
2. THE DETAILED ICE SHOWING THE FINAL NEGOTIATED VALUE AND PROFIT CALCULATION.


THIS DOCUMENT AND SUPPORTING DATA SHOULD BE INCLUDED AT THE END OF EACH CHANGE ORDER.
RECORD OF NEGOTIATIONS (RON)
CHANGE ORDERS

CONTRACT NO.: XXCNXX CHANGE ORDER NO.: 1
DESCRIPTION: Furnish and install six (6) Von Dupin Series 88 RM type devices as indicated in Field Memo #1A
DATE OF MEETING: September 19, 2009

ATTENDEES
MBTA: John Smith-Resident Engineer, Barry King Inspector
CONTRACTOR: ABC Construction Company, Rick Clark Project Manager
CONSULTANT: Douglas Man, AIA
OTHER: Jack McDonald, SMI

SPECIFIC COST OR WORK ELEMENTS QUESTIONED BY PROJECT: On 9/8/09 the Contractor submitted a cost proposal for this work in the amount of $8,548.68. MBTA’s Mr. Smith questioned the proposed labor and material charges, the SUTA rate being too high, Worker’s Compensation being charged on overtime and Apprentices being charged as Journeymen. The Subcontractor also charged bond after the Prime Contractor had bonded the entire job. Mr. Smith presented the Contractor with an ICE that demonstrated reasonable cost after the adjustments and corrections were made. Mr. Smith’s proposed adjusted cost was $8,000,000

CONSULTANT INDEPENDENT COST ESTIMATE (ICE) (ENGINEER’S ICE) Original ICE was $7,900

CONTRACTOR’S RESPONSE: Upon further review Mr. Clark reduced the labor and material costs by 20hrs and $100 respectively and agreed with the rate adjustments. At this point Mr. Clark’s price was so close to Mr. Smith’s adjusted cost that he agreed to do the work for $8,000.

FINAL RESOLUTION WITH JUSTIFICATION: Based on the above negotiation, the final cost of $8,000 was deemed fair and reasonable by both parties. Supporting documentation is provided on the attached, revised ICE.

THIS CHANGE ORDER/WORK ORDER HAS BEEN REVIEWED WITH THE CONTRACTOR AND THE ORIGINAL COST OF $8,548.68 HAS BEEN RENEGOTIATED TO $8,000

The person signing this RON has reviewed the Contractor’s Proposal and ascertained that all required documents have been provided.
PROFIT CALCULATION AGREED TO BY PROJECT/CONTRACTOR: 5.4 %

John Smith, R.E. DATE: 06/15/12
Project Manager/Resident Engineer Signature

INCLUDE AS ATTACHMENTS TO THE RON:
1. THE CONTRACTOR’S AND SUBCONTRACTOR’S ORIGINAL COST PROPOSAL RECAPS AND LABOR, EQUIPMENT AND MATERIAL BREAKDOWNS.
2. THE DETAILED ICE SHOWING THE FINAL NEGOTIATED VALUE AND PROFIT CALCULATION.

NOTE: THE ICE MUST SHOW A DETAILED BREAKDOWN OF LABOR, EQUIPMENT AND MATERIAL, WITH PROPER RATES AND MARKUPS APPLIED TO OBTAIN THE FINAL CHANGE ORDER VALUE. THE PROJECT’S FINAL AGREEMENT MAY CONSIST OF A MARKED UP COPY OF THE CONTRACTOR’S PROPOSAL, A MARKED UP COPY OF THE CONSULTANTS ESTIMATE OR A DETAILED SPREAD SHEET ANALYSIS.

THIS DOCUMENT AND SUPPORTING DATA SHOULD BE INCLUDED AT THE END OF EACH CHANGE ORDER.
**MBTA CHANGE ORDER ANALYSIS**

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**EQUIPMENT CALCULATIONS**

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**EQUIPMENT CALCULATIONS**

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TAB-Q

CHANGE ORDER ANALYSIS CHECK LIST FOR MBTA STAFF
AND
CHANGE ORDER OR CQV CONTENT CHECK LIST
CHANGE ORDER ANALYSIS CHECK-OFF SHEET FOR MBTA STAFF

Contract No. _____________  Change Order No. _____________
Contractor/Subcontractor _____________________________________

1. Do the EON, Staff Summary and Change Order match as to Lump Sum or Not to Exceed? ________
2. Has a signed and dated Extra Work Order letter been included with the change order if required? ________
3. Has the Contractor and its Subcontractors used the MBTA recap sheet? 2012 version. ________
4. Are the labor and fringe rates supported with current LOCAL Union Rate Sheets or Non-Union prevailing wage rate sheets, and are they included with the proposal? Note: If Union, must be Local Union letterhead. ________
5. Is the itemized cost/price analysis sheet attached to the recap sheet? ________
6. Are material charges supported with paid invoices (T & M); or quotes (fwd. price) ________
7. Are “Contractor Owned equipment” rates supported with current Blue Book Calculations? ________
8. Is rented equipment supported with quotes and/or invoices? ________
9. Is the working Foreman being paid more than the Union rate? ________
10. If a Foreman is paid more than the Union rate, has a waiver been signed by a Director and included? ________
11. Have the Contractors supported their Worker’s Compensation rates with letters from their insurer? Letters must be current. ________
12. Did the Contractor charge Worker’s Compensation on the premium portion of overtime labor costs? ________
13. Has the contractor provided support for its Bond rate? ________
14. Is Bond being charged only by the Prime Contractor? ________
15. Is it clear that profit was not charged on Bond costs? ________
16. Is the profit calculation included? (If work is T&M or nearly complete, risk should be low!) ________
17. Has the contractor and its subs provided support for their FICA, FUTA & SUTA? ________
18. Does the Record of Negotiations include an ICE, place, date, people involved, differences, conclusions and a spreadsheet showing the final settlement? ________
19. Did you include the Design Consultants Ltr.? ________
20. Did the Prime and subs include signed and dated cover letters that include their proposed price? ________
21. If the change order includes a credit, has it been priced in the same manner as an increase would be priced? ________
22. Does the CO include the Contractor’s original proposal cover letter, recap and LEM sheet and enough information to demonstrate how the final price was determined? ________
23. Does the Form 3 “Description of Proposed Change” clearly describe the work either by word or by reference to detailed documents, drawings, RFI responses etc.? Is it numbered 1 of ?, 2 of ?? ________
24. If this CO is a T&M or a T&M that has been converted to a Lump Sum, are the time sheets included with the CO package? ________
25. If this change is over $250,000.00. Is a Certificate of Current Cost and Pricing included with the change? ________

MBTA Project Manager: _______________________________________ Date: __________________
Signature

This Check-off list is designed to expedite the change order process by reducing errors and time consuming multiple requests for required documentation. It also should result in more accurate pricing faster change order turn around and payment to the Contractor.
# Massachusetts Bay Transportation Authority

## CHANGE ORDER OR CQV CONTENT CHECKLIST

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<th>CONTRACT</th>
<th>DIRECTOR:</th>
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<td>AMOUNT:</td>
<td>ACTION:</td>
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### For Change Orders:
- O ROUTING SLIP- SIGNED (Green – DOC, AGM) or (Pink – GM, BOD)
- O CONTRACT OVERVIEW SHEET
- O CONTRACT DIRECTION FORM – SIGNED (EXCEPT FOR TIME EXTENSIONS & CQVs)
- O CMS-CO-002 SIGNED
- O CMS-CO-004: SCOPE OF WORK – CHANGE ORDERS
- O CMS-CO-012: SUMMARY OF CONSTRUCTION CONTRACT ACTIONS
- O CMS-CO-001: FORM 3s – SIGNED - (EXCEPT FOR CQVs) – 3 Originals
- O EXPLANATION OF NECESSITY – SIGNED – WITH JUSTIFICATION OF PROCUREMENT METHOD; SOLE SOURCE, T&M, ETC. (EXCEPT FOR CQVs)
- O EXTRA WORK ORDER LETTER - SIGNED (IF REQUIRED) - (EXCEPT FOR CQVs)
- O CONTRACTOR’S COST PROPOSAL WITH RECAPITULATION CHART & LEM SHEET- (Original & Revised)
- O CONSULTANT APPROVAL LETTER - (EXCEPT FOR CQVs)
- O RECORD OF NEGOTIATION – SIGNED – WITH ATTACHED ANALYSIS SHEET (LABOR, MATERIALS, EQUIPMENT & SUBCONTRACTORS: SUTA, FUTA, WORKERS COMP, PROFIT CALCULATION, BLUE BOOK RENTAL RATES, ETC.) - (EXCEPT FOR CQVs)
- O INDEPENDENT COST ESTIMATE - (EXCEPT FOR TIME EXTENSIONS, T&M COs, INCREASES TO ALLOWANCE ITEMS & CQVs) SIGNED BY PROJECT MANAGER
- O CERTIFICATE OF CURRENT COST AND PRICING- (LUMP SUM & T&M COs $250,000 OR GREATER)
- O PROJECT MANAGER’S CHECKLIST-(EXCEPT FOR TIME EXTENSIONS & CQVs)
- O CONTRACTOR’S CHECKLIST - (EXCEPT FOR CQVs)

### For Construction Quantity Variances CQVs - Same as CO but include the following:
- O CMS CQV REPORT – (CMS-CO-007 CQV Report - Signed)
- O CMS-CO-013 (Form 3b - CQV)- SIGNED
- O EXPLANATION OF OVER/UNDERRUNS (Prepared by R/E)
- O EXPLANATION OF LINE ITEMS EXCEEDING 25% (MBTA Required to Report to Contract Admin)
- O CONSULTANT REVIEW OF LINE ITEMS (over and under runs)

### For Staff Summaries:
- O STAFF SUMMARY (Required for $1,000,000 plus Change Orders or CQVs)
- O TABS A, B, & / or C : W/ VOTING PAGE, CMS-CO-012 AND CONTRACTOR’S PROPOSAL WITH RECAP SHEET for COs or CMS Form 3b with Overrun/Under run Explanations for CQVs.
- O COMMENTS: 

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May 2012