MBTA CHANGE ORDER GUIDELINES AND PROCEDURES
CONSTRUCTION CONTRACT
CHANGE ORDER GUIDELINES
FOR COSTS AND
SUPPORTING DOCUMENTS

1993
Revision #1 - 04/1997
Revision #2 - 07/2002
Revision #3 - 03/2008
Revision #4 - 02/2010
Revision #5 - 11/2010
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GUIDELINES FOR COSTS AND SUPPORTING DOCUMENTATION

The following guidelines are intended to improve and expedite the processing of change orders by outlining the general contractors, consultants, 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 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:

1. 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.
2. It must contain the scope of work to be accomplished.
3. Any impact to ongoing work.
4. 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.
5. 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.

Note: A copy of the Prime Contract’s Proposal Cover Letter must be forwarded to the Director of Contract Administration at the same time as the complete proposal is sent to the Project Manager.

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

   1. 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 (see TAB-A). 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,
prevailing wage rates shall be used and prevailing wage rate sheets are to be provided by the Contractor with each change order. For purposes of calculating overhead (10% mark-up on Labor, Equipment and Material) for a prevailing wage contractor, the labor cost is to be reduced by 35% to account for elements of fringe costs that are lumped into the prevailing wage rates. 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.

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, non-working Foreman or non-working Union Stewards.

iii. For purpose of calculating overhead on a recapitulation chart using 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. 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 upon 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 or 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, dated and signed by a representative of the company authorized to sign. 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).

(c) 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 material 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. **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 .05 and .08. A profit calculation sheet must be included with each change order and for each contractor or subcontractor.

D. **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. The Contractor must also provide a letter from the Chief Financial Officer of the company, certifying that the rates are accurate. 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. This document must be signed by an individual in the company who is authorized to sign for the company. **Note:** A normal combined rate should run between 9% and 12%. 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.

E. **Letter from Insurance Company Substantiating Worker’s Compensation Rate** (See Tab-G)

The Contractor’s and/or Subcontractor’s Proposal must include a letter from its Insurance Company or Agent substantiating the contractor’s Workmen’s Compensation rate or rates.
F. **Letter Substantiating the Contractor’s Bond Rate** (See TAB-A)

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

G. **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.

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

1. An Independent Cost Estimate (ICE) is required for ALL change orders regardless of nature or size. 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.

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. 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)**

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

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 possibly) 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 Union 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.

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.

PART IV. PROJECT OFFICE EXPLANATION OF NECESSITY (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.

B. **Cost Analysis 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&O Statement** - A statement whether this change is a result of 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. If Change order is out of scope/sole source, it must include a letter of justification from the Project Manager.

E. **Time Extensions** - The extra work order or change order as issued should include a statement of additional time, if any, that is agreed upon by the Contractor, Project, and the Engineer required for the completion of the contract by reason of this extra work order or change order, and no other time allowance due to the performance of the work covered by such extra work order or change order should be allowed. The time extension should be clearly shown that a time extension should actually affect the contract milestones or completion dates by its impact upon the critical path or bar chart schedule.

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 a Project or Consultant Independent Cost Estimate (TAB-P) 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
- 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.
- Profit Calculation % agreed to by project/contractor
- 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 copy of the Extra Work Order Letter should be included with the Change Order.

If a Change Order can be processed before the changed work is started, an Extra Work Order Letter is not required.

If there is not enough time to issue a Change Order, 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 Director of Construction, for review. Once review is complete the EWOAL will be signed by a person with proper Contracting Authority.

- Extra Work Order Request Form (TAB-E)
- Extra Work Authorization letter (Sample TAB-E)
- Consultant letter of recommendation with detailed analysis; if available.
- Cost Proposal 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
- CMS Report CMS -CO-012 – Action Limit Summary
- MBTA DAILY REPORT LABOR, MATERIAL & EQUIPMENT (TAB-A)
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, direct the Contractor to proceed on a Not To Exceed Basis and tell them to record their costs on an attached MBTA Time Sheet.
If the price is agreed, direct the Contractor to proceed on a Lump Sum Basis. No record of time is required.

B. **Certificate of Current Cost and Pricing**  For Change Orders with a negotiated value of $250,000.00, dollars or more (pluses and minuses added as pluses), 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-F)

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.

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-G) 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.

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 Prevailing Wage rate sheets only.
**Change Order Guidelines**

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 2 and 2 of 2. The balance of the documentation provided with the change order shall also be consecutively numbered and readable starting again with number 1 of ?. 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 RFIs. 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 META Board of Directors. Any extra work order or change order with a value that exceeds $500,000 must go to the Board of Directors for approval. Also, after the accumulated value of change orders that are non-board authorized exceeds 7% of the Contract Award value, all follow-on change orders with a value greater than $50,000.00 must be approved by the Board.

**Change Order Authorization Levels:**

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<thead>
<tr>
<th>CHANGE ORDER COST</th>
<th>WITHIN AUTHORIZED BUDGET</th>
</tr>
</thead>
<tbody>
<tr>
<td>$&lt; 25,000</td>
<td>• Director of Design</td>
</tr>
<tr>
<td></td>
<td>• Director of Construction</td>
</tr>
<tr>
<td></td>
<td>• Director of Planning</td>
</tr>
<tr>
<td>$25,000 - $50,000</td>
<td>• Chief for Engineering and Construction</td>
</tr>
<tr>
<td>$50,000 - $100,000</td>
<td>• Assistant General Manager for Design and Construction</td>
</tr>
<tr>
<td></td>
<td>• Chief Operating Officer</td>
</tr>
<tr>
<td>$100,000 - $500,000</td>
<td>• General Manager</td>
</tr>
<tr>
<td>$&gt; 500,000</td>
<td>• Board of Directors</td>
</tr>
</tbody>
</table>

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The above Change Order Authorization Levels are the only levels of Authorization allowed by the Authority. In the past, individuals in the field without contracting authority have used Credits for unperformed bid work, unused Unit Prices and/or Allowances to pay for unrelated extra work. This practice (of horse trading) is not only not allowed, it is against the law. It is a misappropriation of Authority/State/Federal funds and no matter how good the intention, it is against the law. Individuals who choose to do this, expose themselves to serious Authority/State/Federal penalties.
RECAPITULATION CHART FOR PREVAILING WAGE CONTRACT

<table>
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<th>Description of Work</th>
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<tbody>
<tr>
<td>Labor (Supply Adequate Backup)</td>
<td>$ ________</td>
</tr>
<tr>
<td>Material (Supply Adequate Backup)</td>
<td>$ ________</td>
</tr>
<tr>
<td>Equipment (Supply Adequate Backup)</td>
<td>$ ________</td>
</tr>
<tr>
<td><strong>Subtotal (Lines 1+2+3)</strong></td>
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<tr>
<td>Overhead (10% of Lines 2 &amp; 3 + (10% of line 1 x .65))</td>
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</tr>
<tr>
<td>Payroll Taxes on Labor (FICA, FUTA SUTA) x (Line 1)</td>
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</tr>
<tr>
<td>Worker's Compensation (applied to ST Labor only)</td>
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<tr>
<td>Health, Welfare &amp; Benefits on Labor</td>
<td>$ ________</td>
</tr>
<tr>
<td><strong>Subtotal (Lines 3A+4+5+5A+6)</strong></td>
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<tr>
<td>Profit @ ____%* of Line 6A</td>
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</tr>
<tr>
<td><strong>Subtotal (Lines 6A+7)</strong></td>
<td>$ ________</td>
</tr>
<tr>
<td>Subcontractor's Total</td>
<td>$ ________</td>
</tr>
<tr>
<td>10% of Line 8</td>
<td>$ ________</td>
</tr>
<tr>
<td><strong>Subtotal (Lines 7A+8+9)</strong></td>
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<tr>
<td>Bond @____% of Line 9A (Prime Contractor only)</td>
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<tr>
<td><strong>GRAND TOTAL (Lines 9A+10)</strong></td>
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INSURANCE & PAYROLL TAX:
(LINE 5 and 5A)

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<tr>
<td>Federal FICA</td>
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<tr>
<td>Federal Unemployment</td>
<td>________%</td>
<td></td>
</tr>
<tr>
<td>State Unemployment (SUTA)</td>
<td>________%</td>
<td></td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td>________%</td>
<td></td>
</tr>
<tr>
<td><strong>(Line 5 = above rate X all wages in line 1)</strong></td>
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| Worker’s Compensation | ________% |
| **(Line 5A = WC rate X straight time wages only)** |

**Health, Welfare & Benefits**

<table>
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<th>Trade</th>
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<th>Rate</th>
<th>Total</th>
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<tbody>
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<td>Laborer</td>
<td>$</td>
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</tr>
<tr>
<td>Welder</td>
<td>$</td>
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</tr>
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<td>Operation/Oiler</td>
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<td>$</td>
</tr>
<tr>
<td>Carpenter</td>
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<tr>
<td><strong>Total</strong></td>
<td>$</td>
<td>$</td>
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# Recapitulation Chart

**Contract No.:**

**General Contractor:**

**Subcontractor:**

**Description of Work:**

<table>
<thead>
<tr>
<th></th>
<th>Description</th>
<th>Amount</th>
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<tbody>
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<td>1</td>
<td>Labor (Supply Adequate Backup)</td>
<td>$4,000</td>
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<tr>
<td>2</td>
<td>Material (Supply Adequate Backup)</td>
<td>$3,500</td>
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<tr>
<td>3</td>
<td>Equipment (Supply Adequate Backup)</td>
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<td>3A</td>
<td>Subtotal (Lines 1+2+3)</td>
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<tr>
<td>4</td>
<td>Overhead (10% of Line 3A)</td>
<td>$950</td>
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<td>5</td>
<td>Insurance &amp; Payroll Taxes on Labor (FICA, FUTA, SUTA) x (Line 1)</td>
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<tr>
<td>5A</td>
<td>Worker’s Compensation (applied to ST Wages only)</td>
<td>$1,500</td>
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<tr>
<td>6</td>
<td>Health, Welfare &amp; Benefits on Labor</td>
<td>$1,200</td>
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<td>6A</td>
<td>Subtotal (Lines 3A+4+5+5A+6)</td>
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<td>7</td>
<td>Profit @ ____%* of Line 6A</td>
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<td>7A</td>
<td>Subtotal (Lines 6A+7)</td>
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<td>8</td>
<td>Subcontractor’s Total</td>
<td>$16,225</td>
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<td>9</td>
<td>10% of Line 8</td>
<td>$1,622.50</td>
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<tr>
<td>9A</td>
<td>Subtotal (Lines 7A+8+9)</td>
<td>$19,467.50</td>
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<td>10</td>
<td>Bond @ ____% of Line 9A (Prime Contractor only)</td>
<td>$1,946.75</td>
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<tr>
<td>11</td>
<td>Grand Total (Lines 9A+10)</td>
<td>$21,414.25</td>
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## Insurance & Payroll Tax: (Lines 5 and 5A)

**Included Items:**

- Federal FICA
- Federal Unemployment
- State Unemployment
- State Unemployment (SUTA)

**Total**

**Health, Welfare & Benefits**

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<th>Rate</th>
<th>Total</th>
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</thead>
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<td>Operation/Oiler</td>
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<tr>
<td>Carpenter</td>
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*Projects with Negotiable Profit Section 01150, 1.05, B., 1, 2, 3, should supply Profit Calculation Summary Chart with Recapitulation Chart. (See TAB-G)*

---

14 of 74
# COST/PRICE ANALYSIS SHEET

CONTRACTOR/SUBCONTRACTOR NAME: 

PROJECT: 

DATE: 

CONTRACT NO.: 

DESCRIPTION: 

<table>
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<tr>
<th>DESCRIPTION</th>
<th>QUANTITY</th>
<th>LABOR</th>
<th>EQUIPMENT</th>
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<th>SUBCONTRACTOR COSTS</th>
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<td>U.P.</td>
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<td>RENTAL RATE*</td>
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<tr>
<td>BLUE BOOK**</td>
<td></td>
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Nov. 2010
September 04, 2009

RECAPITULATION CHART

CONTRACT NO.: xxx2589
GENERAL CONTRACTOR: XYZ Corp
SUBCONTRACTOR:
DESCRIPTION OF WORK: Dig up the Road

1. Labor (Supply Adequate Backup) $500
2. Material (Supply Adequate Backup) $200
3. Equipment (Supply Adequate Backup) $300

3A. Subtotal $1,000

4. Overhead (10% of Line 3A) $100
5. Insurance & Payroll Taxes on Labor $53.38
5A. Worker’s Compensation (applied to ST Wages only) $77.75

6A. Subtotal $1,531.13

7. Profit @ 5.5%* of Line 6A $84.21

7A. Subtotal $1,615.34

8. Subcontractor’s Total $600

9. 10% of Line 8 $60

9A. Subtotal $2,275.34

10. Bond @ 8% of Line 9A (Prime Contractor only) $18.20

11. GRAND TOTAL $2,293.54

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

Included Items:**
Federal FICA 7.60 %
Federal Unemployment .75 %
State Unemployment 3 %
(SUTA)
Total 10.675 %
(Line 5 = above rate X all wages in line 1)

Worker’s Compensation 15.55 %
(Line 5A = WC rate X straight time wages only)

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</tbody>
</table>

* Projects with Negotiable Profit Section 01150, 1.05, B., 1, 2, 3, should supply Profit Calculation Summary Chart with Recapitulation Chart. (See TAB-G)
**Percentages used for FICA, FUTA and SUTA should be based on previous years experience. (See TAB-E)
DATE September 10, 2009

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 time and material cost proposal 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: ________________

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:

DESCRIPTION OF WORK:

CERTIFIED CORRECT BY: ___________________________ DATE: ________________

CONTRACTOR’S REPRESENTATIVE

LABOR AND EQUIPMENT

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<tr>
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MATERIALS, SPECIAL FORCES AND SERVICES

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</table>

FOR MBTA USE ONLY:

HOURS VERIFIED BY: ___________________________ APPROVED BY: ___________________________

MBTA INSPECTOR

RESIDENT ENGINEER

Nov. 2010
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 (100-_______)
   (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

Nov. 2010
MBTA CONTRACT NO: ___________ XCN01 ___________ DATE: ______________

CONTRACTOR: ABC Construction Company

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:

1) MONTHLY RATE 655

2) X AREA ADJUSTMENT FACTOR (From regional adjustment map) 1.055

3) X AGE ADJUSTMENT FACTOR (From rate adjustment table) 0.998

4) X OVERHEAD ADJUSTMENT (1.00-.36) (From Rate Element Table) (Indirect Cost) 0.94

ADJUSTED MONTHLY RATE = 648.26

DIVIDE BY MONTHLY EQUIPMENT HOURS = 176

ADJUSTED HOURLY OWNERSHIP COST = 3.68

5) OPERATING COST$/HR = + 6.1

ADJUSTED HOURLY RATE* = 9.78

MBTA ADJUSTED FACTOR = X80%

MBTA ADJUSTED HOURLY RATE = 7.83

MBTA STANDBY RATE X 25% OF ADJUSTED RATE* = 2.45

SOURCE REFERENCE: EQUIPMENT WATCH BOOK VOL. 1

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

Nov. 2010
TAB-C

MBTA EQUIPMENT DESCRIPTION FORM
MBTA EQUIPMENT DESCRIPTION FORM

CONTRACTOR ______________________________

CONTRACT NO. ______________________________

(ENTER N/A WHERE "NOT APPLICABLE"

EQUIPMENT DESCRIPTION

MODEL

SERIES

MANUFACTURER

YEAR OF MANUFACTURER

(MODEL YEAR)

YEAR OF PURCHASE

CONDITION PURCHASED

(NEW, USED)

EQUIPMENT PURCHASE PRICE

MAJOR OVERHAUL COST

(OPTIONAL)

FUEL TYPE

(GAS, DIESEL, ELECTRIC)

HORSEPOWER VEHICLE

GROSS VEHICLE WEIGHT

CAPACITY (CY OR TONS)

CRAWLER OR WHEEL TYPE

TIRE COST OR TIRE TYPE

SIZE (FRONT)

TIRE COST OR TIRE TYPE

SIZE (REAR)

FOUR WHEEL OR

TWO WHEEL DRIVE

OTHER DATA**

REGISTRATION#

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
TAB-D

CONTRACTOR’S CHANGE ORDER CHECK LIST
CONTRACTOR’S CHANGE ORDER CHECK LIST
INCLUDE WITH PRIME AND SUBCONTRACTOR CHANGE ORDER PROPOSALS

| CONTRACTOR OR SUBCONTRACTOR: ____________________________ |
| CONTRACT NO.: _______ CHANGE ORDER NO.: _______ DATE: _______ |

1. If this is a “not to exceed” C.O, include original daily timesheets signed by an authorized company rep. And an MBTA inspector, resident or pm. If this is a completed or partially completed T&M, and a lump sum has been negotiated, timesheets are still required but only to the extent they were produced.

2. Include a signed and dated extra work order letter. Not required if C.O is executed before work begins.

3. The MBTA Recap Sheet must be used by both prime and sub.

4. Are the labor and fringe rates supported with current-local- Union Rate Sheets and are the sheets included with the proposal? Must be on local union letterhead.

5. Did you and your subs include priced and dated cover letters, filled out and signed by authorized representatives of your respective companies? If work is complete, paid invoices or if not paid, unpaid invoices are preferred.

6. Material price support: paid invoices (required if available), unpaid invoices or quotes if paid invoices are not available.

7. Are equipment rates supported with blue book rate calculations or rental invoices?

8. Were non-working or general foreman’s hours charged as a direct cost?

9. Is the working foreman being paid more than union rate?

10. 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. These waivers should be signed prior to the start of the work.

11. Has prime or sub supported its Worker’s Compensation rate with an up to date letter from insurer?

12. Did prime or sub charge workmen’s comp on overtime premium?

13. Have you provided support for your bond rate?

14. Did you or your sub. apply profit to bond?

15. Is the work being bonded by more than one contractor?

16. Is the profit calculation included for you and your subs? Note: T&M and or completed work is low risk .03.

17. 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 – certified.

18. If you included a credit, has it been priced in the same manner as you would price an increase in cost?

19. If the negotiated value is over $250,000, have you included a Certificate of Current Cost and Pricing

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.
MBTA
EXTRA WORK ORDER REQUEST

CONTRACT TITLE: ____________________________________________________________

CONTRACT NO: ______________ CHANGE ORDER NO ______ DATE ____________

CHANGE ORDER TITLE: _______________________________________________________________________________________________________

SCOPE OF EXTRA WORK _______________________________________________________________________________________________________

ANTICIPATED COST: $______________ FIRM QUOTE __________ INTERNAL EST. ______

CONSULTANT EST. _______ ANTICIPATED SCHEDULE IMPACT: ______

REASON FOR EXTRA WORK _______________________________________________________________________________________________________

REASON THIS CANNOT WAIT FOR A FORMAL CHANGE ORDER: _______________________________________________________________________

HAS THIS WORK STARTED: YES __ NO __

CONSULTANT POSITION: AGREES WITH WORK SCOPE: YES ____________ NO __

DO NOT HOLD UP F-WORL WAITING FOR CONSULTANT'S RESPONSE.

AGREES THAT WORK IS: ERROR, OMISSION __ NO POSITION __________
(MUST BE FOLLOWED UP WITH POSITION LETTER IN CHANGE ORDER)

ATTACHMENTS (Check if attached):

____ EXTRA WORK ORDER LETTER (FOR SIGNATURE)
____ 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

PROJECT MANAGER: ______________________________ DATE: ________________

Nov. 2010
MBTA
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. ___ ANTICIPATED SCHEDULE IMPACT: ___

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 X

CONSULTANT POSITION: AGREES WITH WORK SCOPE: YES X NO ___ DO NOT HOLD UP EWOL WAITING FOR CONSULTANT'S RESPONSE.

AGREES THAT WORK IS: ERROR OMISSION ___ NO POSITION X (MUST BE FOLLOWED UP WITH POSITION LETTER IN CHANGE ORDER)

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 IMIT 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: X XXXXX DATE: SEPT. 21, 2009
S & R Construction Enterprises
185 South Main Street
P. O. Box 509
Newton, New Hampshire 03858

Attention: Bernard Doherty, Project Manager

RE: MBTA Contract No. S10CN02 Change Order No. 10
   Orient Heights Car Yard and Maintenance Facility Reconstruction - Phase II


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.

BASIS OF PAYMENT: Payment will be made in accordance with Division 1, Section 01150, Subsection 1.5 (B) (2) 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,

Richard A Davey
General Manager

Massachusetts Bay Transportation Authority, Ten Park Plaza, Boston, MA 02116-3974
TAB-F

CERTIFICATE OF CURRENT COST AND PRICING
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 ____________________.
## Construction Industry Classifications

### Workers Compensation Rate Comparison

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<td>11.05</td>
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<tr>
<td>Carpentry Dwellings</td>
<td>5651</td>
<td>18.14</td>
<td>15.46</td>
<td>15.25</td>
<td>12.21</td>
<td>11.05</td>
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<td>Ceiling Installation</td>
<td>5020</td>
<td>17.08</td>
<td>12.64</td>
<td>10.42</td>
<td>8.35</td>
<td>5.67</td>
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<tr>
<td>Cleaner- debris removal</td>
<td>5610</td>
<td>36.11</td>
<td>29.57</td>
<td>23.48</td>
<td>18.81</td>
<td>12.15</td>
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<tr>
<td>Clerical/Administrative</td>
<td>8810</td>
<td>0.33</td>
<td>0.30</td>
<td>0.28</td>
<td>0.22</td>
<td>0.18</td>
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<td>Concrete/cement work</td>
<td>5221</td>
<td>24.08</td>
<td>17.85</td>
<td>16.79</td>
<td>13.45</td>
<td>9.81</td>
<td>-27.06%</td>
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<td>Concrete construction- bridges</td>
<td>5222</td>
<td>34.25</td>
<td>25.33</td>
<td>18.84</td>
<td>15.10</td>
<td>10.19</td>
<td>-32.52%</td>
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<td>Concrete construction NOC</td>
<td>5213</td>
<td>45.04</td>
<td>41.94</td>
<td>39.38</td>
<td>31.54</td>
<td>22.12</td>
<td>-29.87%</td>
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<td>Concrete private residences</td>
<td>5215</td>
<td>15.81</td>
<td>14.06</td>
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<td>10.17</td>
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<td>Conduit construction</td>
<td>6325</td>
<td>22.56</td>
<td>18.53</td>
<td>13.78</td>
<td>11.04</td>
<td>7.13</td>
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<td>Contractors executive supervision</td>
<td>5606</td>
<td>6.77</td>
<td>4.99</td>
<td>4.43</td>
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<td>Contractors permanent yard</td>
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<td>9.93</td>
<td>7.95</td>
<td>5.91</td>
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<td>Door, door frame or sasherection</td>
<td>5102</td>
<td>24.66</td>
<td>20.53</td>
<td>16.07</td>
<td>12.87</td>
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<td>Drilling NOC</td>
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<td>23.82</td>
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<td>15.51</td>
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<td>Drivers NOC</td>
<td>7380</td>
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<td>9.29</td>
<td>8.70</td>
<td>6.90</td>
<td>5.54</td>
<td>-19.71%</td>
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<tr>
<td>Electric light or power line</td>
<td>7538</td>
<td>15.79</td>
<td>15.86</td>
<td>15.64</td>
<td>12.52</td>
<td>10.54</td>
<td>-15.81%</td>
</tr>
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<td>Electrical wiring within buildings</td>
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<td>7.52</td>
<td>6.70</td>
<td>6.14</td>
<td>4.92</td>
<td>3.69</td>
<td>-25.00%</td>
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<td>Elevator erection or repair</td>
<td>5160</td>
<td>9.92</td>
<td>8.13</td>
<td>7.16</td>
<td>5.73</td>
<td>4.47</td>
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<tr>
<td>Excavation and grading of land</td>
<td>6217</td>
<td>13.48</td>
<td>12.35</td>
<td>10.72</td>
<td>8.59</td>
<td>5.91</td>
<td>-31.20%</td>
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<td>Fence construction- metal</td>
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<td>19.52</td>
<td>16.16</td>
<td>12.98</td>
<td>10.40</td>
<td>9.17</td>
<td>-11.83%</td>
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<tr>
<td>Furniture(fixture) installation NOC</td>
<td>5146</td>
<td>20.20</td>
<td>16.69</td>
<td>14.47</td>
<td>11.59</td>
<td>8.01</td>
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<tr>
<td>Gas/water mains construction</td>
<td>6319</td>
<td>13.94</td>
<td>13.23</td>
<td>10.98</td>
<td>8.79</td>
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<td>-18.66%</td>
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<tr>
<td>Glaziers away from shop</td>
<td>5462</td>
<td>26.31</td>
<td>20.13</td>
<td>16.78</td>
<td>13.44</td>
<td>9.92</td>
<td>-26.19%</td>
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<tr>
<td>Iron/brass/bronze work</td>
<td>5102</td>
<td>24.66</td>
<td>20.53</td>
<td>16.07</td>
<td>12.87</td>
<td>11.96</td>
<td>-7.07%</td>
</tr>
<tr>
<td>Iron or steel erection</td>
<td>5040</td>
<td>85.62</td>
<td>87.09</td>
<td>80.76</td>
<td>64.68</td>
<td>50.78</td>
<td>-21.49%</td>
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<tr>
<td>Iron or steel erection &lt; 2 stories</td>
<td>5059</td>
<td>76.27</td>
<td>80.63</td>
<td>79.51</td>
<td>63.67</td>
<td>46.56</td>
<td>-26.87%</td>
</tr>
<tr>
<td>Iron or steel metal bridges</td>
<td>5040</td>
<td>85.62</td>
<td>87.09</td>
<td>80.76</td>
<td>64.68</td>
<td>50.78</td>
<td>-21.49%</td>
</tr>
<tr>
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<td>5057</td>
<td>76.27</td>
<td>80.63</td>
<td>79.51</td>
<td>63.67</td>
<td>46.56</td>
<td>-26.87%</td>
</tr>
<tr>
<td>Iron/steel shop structural</td>
<td>3030</td>
<td>24.31</td>
<td>17.87</td>
<td>15.04</td>
<td>11.92</td>
<td>9.43</td>
<td>-20.89%</td>
</tr>
<tr>
<td>Iron/steel shop ornamental</td>
<td>3040</td>
<td>23.13</td>
<td>19.73</td>
<td>15.40</td>
<td>12.22</td>
<td>12.89</td>
<td>-5.48%</td>
</tr>
<tr>
<td>Iron/steel shop decorative</td>
<td>3041</td>
<td>9.51</td>
<td>6.83</td>
<td>5.42</td>
<td>4.29</td>
<td>3.72</td>
<td>-13.29%</td>
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</table>
### Construction Industry Classifications

**Workers Compensation Rate Comparison**

<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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<tbody>
<tr>
<td>Irrigation or drainage systems</td>
<td>6229</td>
<td>13.48</td>
<td>12.35</td>
<td>10.72</td>
<td>8.59</td>
<td>5.91</td>
<td>-31.20%</td>
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<tr>
<td>Insulation work &amp; drivers</td>
<td>5479</td>
<td>26.43</td>
<td>28.15</td>
<td>27.26</td>
<td>22.23</td>
<td>18.24</td>
<td>-17.95%</td>
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<tr>
<td>Jetty or breakwater construction</td>
<td>6005</td>
<td>33.70</td>
<td>24.95</td>
<td>18.55</td>
<td>14.86</td>
<td>9.61</td>
<td>-35.33%</td>
</tr>
<tr>
<td>Landscape gardening</td>
<td>0042</td>
<td>11.58</td>
<td>10.13</td>
<td>8.98</td>
<td>7.10</td>
<td>5.61</td>
<td>-20.99%</td>
</tr>
<tr>
<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>
<td>-21.28%</td>
</tr>
<tr>
<td>Masonry NOC</td>
<td>5022</td>
<td>33.79</td>
<td>30.21</td>
<td>29.03</td>
<td>23.25</td>
<td>17.55</td>
<td>-24.52%</td>
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<tr>
<td>Millwright NOC</td>
<td>3724</td>
<td>12.13</td>
<td>9.46</td>
<td>8.23</td>
<td>6.60</td>
<td>6.11</td>
<td>-7.42%</td>
</tr>
<tr>
<td>Mobile crane &amp; hoisting service</td>
<td>9534</td>
<td>20.07</td>
<td>14.86</td>
<td>12.61</td>
<td>10.10</td>
<td>6.65</td>
<td>-34.16%</td>
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<tr>
<td>Oil or gas pipeline construction</td>
<td>6233</td>
<td>41.76</td>
<td>30.88</td>
<td>22.96</td>
<td>18.40</td>
<td>11.89</td>
<td>-35.38%</td>
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<tr>
<td>Painting/decorating- interior</td>
<td>5474</td>
<td>19.43</td>
<td>18.22</td>
<td>14.95</td>
<td>11.97</td>
<td>9.04</td>
<td>-24.48%</td>
</tr>
<tr>
<td>Painting metal bridges</td>
<td>5037</td>
<td>85.62</td>
<td>72.11</td>
<td>71.13</td>
<td>56.96</td>
<td>65.14</td>
<td>-14.36%</td>
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<td>Pile driving</td>
<td>6003</td>
<td>41.16</td>
<td>39.30</td>
<td>29.58</td>
<td>23.70</td>
<td>17.59</td>
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<td>Plastering NOC</td>
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<td>11.02</td>
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<td>Plumbing NOC</td>
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<td>6.80</td>
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<td>Railroad construction</td>
<td>7855</td>
<td>27.51</td>
<td>29.27</td>
<td>26.12</td>
<td>20.92</td>
<td>16.79</td>
<td>-19.74%</td>
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<tr>
<td>Roofing built up including yard</td>
<td>5547</td>
<td>50.06</td>
<td>42.85</td>
<td>38.47</td>
<td>30.82</td>
<td>23.72</td>
<td>-23.04%</td>
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<td>Roofing NOC</td>
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<td>85.62</td>
<td>68.41</td>
<td>67.48</td>
<td>54.04</td>
<td>39.96</td>
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<tr>
<td>Salesmen- outside</td>
<td>8742</td>
<td>0.72</td>
<td>0.63</td>
<td>0.53</td>
<td>0.43</td>
<td>0.33</td>
<td>-23.26%</td>
</tr>
<tr>
<td>Salvage operation no wrecking</td>
<td>5705</td>
<td>47.58</td>
<td>50.63</td>
<td>44.44</td>
<td>35.59</td>
<td>22.99</td>
<td>-35.40%</td>
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<tr>
<td>Sand or gravel digging</td>
<td>4000</td>
<td>10.71</td>
<td>8.12</td>
<td>8.12</td>
<td>6.44</td>
<td>5.57</td>
<td>-13.51%</td>
</tr>
<tr>
<td>Sewer construction</td>
<td>6306</td>
<td>19.10</td>
<td>18.77</td>
<td>16.46</td>
<td>13.18</td>
<td>10.21</td>
<td>-22.53%</td>
</tr>
<tr>
<td>Shaft sinking</td>
<td>6252</td>
<td>37.67</td>
<td>27.69</td>
<td>20.74</td>
<td>16.62</td>
<td>15.72</td>
<td>-5.42%</td>
</tr>
<tr>
<td>Sign manufacturer &amp; erection</td>
<td>9552</td>
<td>16.29</td>
<td>14.68</td>
<td>14.47</td>
<td>11.47</td>
<td>7.72</td>
<td>-32.69%</td>
</tr>
<tr>
<td>Sheet metal work shop/outside</td>
<td>5538</td>
<td>19.82</td>
<td>15.44</td>
<td>13.20</td>
<td>10.57</td>
<td>7.65</td>
<td>-27.63%</td>
</tr>
<tr>
<td>Snow plowing and street cleaning</td>
<td>9402</td>
<td>10.42</td>
<td>9.33</td>
<td>8.59</td>
<td>6.81</td>
<td>5.67</td>
<td>-16.74%</td>
</tr>
<tr>
<td>Sprinkler Installation &amp; Drivers</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>Street/road paving or repaving</td>
<td>5506</td>
<td>27.28</td>
<td>22.00</td>
<td>16.36</td>
<td>13.11</td>
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</tr>
<tr>
<td>Street/road subsurface work</td>
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<td>13.47</td>
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<td>Street/road rock excavation</td>
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<td>14.86</td>
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<td>-35.33%</td>
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<tr>
<td>Swimming pool construction</td>
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</tr>
<tr>
<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>
<td>-15.81%</td>
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<tr>
<td>Tile/stone or terrazzo interior work</td>
<td>5348</td>
<td>20.73</td>
<td>17.60</td>
<td>16.46</td>
<td>13.18</td>
<td>10.48</td>
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<tr>
<td>Truckmen NOC</td>
<td>7219</td>
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<td>13.55</td>
<td>11.87</td>
<td>9.41</td>
<td>7.38</td>
<td>-21.57%</td>
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<tr>
<td>Tunneling not pneumatic</td>
<td>6251</td>
<td>55.04</td>
<td>40.79</td>
<td>30.34</td>
<td>24.31</td>
<td>15.7</td>
<td>-35.42%</td>
</tr>
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<td>Wallboard installation</td>
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<td>20.46</td>
<td>20.06</td>
<td>17.42</td>
<td>13.95</td>
<td>10.24</td>
<td>-26.59%</td>
</tr>
<tr>
<td>Welding or cutting NOC</td>
<td>3365</td>
<td>23.56</td>
<td>19.90</td>
<td>16.63</td>
<td>13.32</td>
<td>9.69</td>
<td>-27.25%</td>
</tr>
<tr>
<td>Wrecking/demolition of buildings</td>
<td>570i</td>
<td>85.62</td>
<td>75.62</td>
<td>62.87</td>
<td>50.36</td>
<td>34.86</td>
<td>-30.78%</td>
</tr>
</tbody>
</table>
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.

<table>
<thead>
<tr>
<th>Description</th>
<th>Rate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Worker’s Compensation (C.N.A.)</td>
<td>$32.00</td>
</tr>
</tbody>
</table>

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

Sincerely,

Gregory Smith
Vice President

XYZ Insurance Company
PAYROLL TAXES FOR CHANGE ORDERS

CONTRACT ________________________________

CONTRACTOR ________________________  CO __ DATE ______

GROSS WAGES FROM PRIOR YEAR        SUTA PAYMENTS FROM PRIOR YEAR 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.
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 ton 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 cubic 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 shown 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.

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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 vary from 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. Alteration of plans or of character of work involving Supplemental Agreements or Extra Work Orders as provided in Subsections 2.2 and 2.3 of Section 00700 will be paid for at the prices for such items set forth therein. If prices cannot be agreed upon, the Contractor shall proceed with the performance of the work on a force account basis in accordance with the provisions of Subsection 1.5B of this Section 01150.

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 a Supplemental Agreement or 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 operating 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>FACTOR VALUE</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(R=.03 to .08)</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><strong>TOTAL</strong></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.

5. 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.

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

5. No allowance will be made for general superintendence and the use of small tools, manual equipment, or buildings.
6. 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.

7. 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 retain 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 hereinafter 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:**

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<th>PROFIT</th>
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<td>(W)</td>
<td>(R=.03 to .08)</td>
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<td>=</td>
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<tr>
<td><strong>3. Size of Job</strong></td>
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<tr>
<td><strong>5. Subcontracting</strong></td>
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<td><strong>TOTAL</strong></td>
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**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:** XXCNXXX  
**GENERAL CONTRACTOR:** ABC Construction Company  
**SUBCONTRACTOR:**  
**DESCRIPTION:** Change Order No. XX

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**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.
1.1 DESCRIPTION

A. This Section specifies the general requirements for Measurement and Payment in accordance with Standard Specifications Division I - General Requirements Section 01150 except as modified herein.

1.5 PAYMENT FOR EXTRA WORK

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.
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

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Nov. 2010
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 OR SUPPLEMENTAL AGREEMENT

60 of 74 No. 2010
CMS CHANGE ORDER INPUT FORM

TO PRODUCE A CHANGE ORDER, THE FOLLOWING INFORMATION IS REQUIRED FOR INPUT INTO THE CMS SYSTEM:

CONTRACT: ______________ CO#: _________ WORK ORDER #: _______________________

SUBJECT: ___________________________ AMOUNT: ___________________________

BRIEF DESCRIPTION: ___________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

____________________________________________________________________________

AUTHORIZATION LEVEL:

1. >$25,000 Dir. Of Construction
2. <$25,000 AGM
3. <$100,000 GM
4. <$500,000 BOD

TIME EXTENSION: ___________________________ DAILY VALUE: ___________________________

CATEGORY: TYPE: SUM TYPE:

1. DES OMISSION E. EXTRA WORK A. LUMP SUM
2. DES ERROR F. TRANSFER FUNDS B. TIME & MATERIALS
3. UNEXP. FLD. Cond. O. OTHER C. SUM NOT TO EXCEED
4. OVER/UNDER S. SUPPLEMENT D. SUBJECT TO AUDIT
5. CHANGE OF SCOPE T. TIME E. NO VALUE CHANGE
6. WORK BY OTHERS X. REJECTED CLAIM F. ESTIMATED
7. CREDIT
8. CLAIM
9. DESIGN REVISION (CLAIMS ONLY)
10. NET $0 ADJUSTMENT

PREPARED BY: ___________________________ EXTRA WORK ORDER DATE: _________________________
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. ________ is
_________________________ ____________________________
_________________________ ____________________________
_________________________ ____________________________

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Nov. 2010
ITEM V

DBE PARTICIPATION:
The DBE participation goal to be maintained throughout the life of this contract, is at least ________ percent (____ %) 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 $ (____ %) of the total adjusted contract price 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 estimated) amount of $ ___________.

ITEM VII

This extra work was requested by ________________ and is not the result of a design error or omission.

OR

This extra work as requested by ________________ and is the result of design error and/or omission. The costs associated with the design error/omission should be addressed before the design contract is closed out.

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

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Nov. 2010
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, 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.
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 MBTA and is not the result of 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
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/WORK ORDER HAS BEEN REVIEWED WITH THE CONTRACTOR AND THE
ORIGINAL COST OF $ ____________________________ HAS BEEN RENEGOTIATED TO
$ ____________________________

PROFIT CALCULATION AGREED TO BY PROJECT/CONTRACTOR: ________________%

Project Manager/Resident Engineer

DATE: ____________________________

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.

NOTE: THE PROJECT’S 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 SHOULD BE ATTACHED TO LAST PAGE 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 $8,000.00.

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

PROFIT CALCULATION AGREED TO BY PROJECT/CONTRACTOR: 5.4 %

Project Manager/Resident Engineer Signature DATE: 06/15/10

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.

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 CONSULTANT’S ESTIMATE OR A DETAILED SPREAD SHEET ANALYSIS.

THESE DOCUMENTS SHOULD BE ATTACHED TO LAST PAGE OF EACH CHANGE ORDER.
## MBTA Change Order Analysis

### Prime Contractor

**Change # 0**

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**Total Overtime Labor**

**Total Labor**

### Equipment Calculations

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### Material

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**Total**

### Change # 0

**Total**

**Provide Reasons for Difference between Proposal and Offer Below**

---

**Provide Reasons for Difference between Proposal and Offer Below**

---

**Nov. 2010**
**SUBCONTRACTOR COST CALCULATION**

**SUBCONTRACTOR**

**CONTRACT #** 0  **CHANGE #** 0  **TOTAL** 0.113

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<th>FRINGE</th>
<th>PAYROLL</th>
<th>OHIO</th>
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<td>TAXES</td>
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**OVERTIME BELOW THIS LINE**

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**EQUIPMENT CALCULATIONS**

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**MATERIAL**

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**SUBCONTRACTOR**

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Provide reasons for difference between proposal and offer below.

Nov. 2010
TAB-Q

CHANGE ORDER ANALYSIS CHECK LIST FOR MBTA STAFF
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?

3. Has the Contractor and its Subcontractors used the MBTA recap sheet? 2009 version.

4. Are the labor and fringe rates supported with current LOCAL Union Rate Sheets, and are they included with the proposal? Note: 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 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 Director and AGM?

11. Have the contractors supported their Workmen’s Comp rates with letters from their insurer? Letters must be current.

12. Did the contractor charge Workmen’s Comp on the premium portion of overtime labor costs?

13. Has the contractor provided support for its Bond rate?

14. Is Bond being charged by more than one contractor for the same work?

15. Did the contractor apply profit on Bond? (Not Allowed)

16. Is the profit calculation included for both the prime and the subs? If work is T&M or nearly complete, risk should be low!

17. Has the contractor and its subs provided support for their FICA, FLUTA & 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. and analysis and/or Proj. Mgr. analysis?

20. Did the Prime and subs include signed and dated cover letters that include their 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 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? Is it numbered 1 of 2, 2 of 2?

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.

Nov. 2010