

# **MSBA ACCELERATED REPAIR PROGRAM**

**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
68 WAVERLEY AVENUE  
WATERTOWN, MA 02472**

## **CONTRACT DOCUMENTS**

**November 23, 2016**

**Prepared For:**

**Watertown Public Schools  
30 Common Street  
Watertown, MA 02472**

**Prepared By:**

**Gale Associates, Inc.  
163 Libbey Parkway  
P.O. Box 890189  
Weymouth, MA 02189-0004**

**GALE JN 830680**

**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

**TABLE OF CONTENTS**

	<u>Page No.</u>
Title Sheet	
Table of Contents	
<b><u>BIDDING REQUIREMENTS</u></b>	
Invitation to Bid .....	1
Information for Bidders .....	2-6
Bidder’s Certification Regarding Bids Based on Payment of Prevailing Wages.....	7
Certificate as to Corporate Bidder .....	8
Certificate of Good Faith (Non-Collusion) and Tax Compliance.....	9
Certificate of Vote .....	10
Certificate of Dumping Facilities .....	11
General Bid Form .....	12-14
Masonry Sub-Bid Form.....	15-17
<b><u>CONTRACT FORMS</u></b>	
Standard Form of Agreement Between Owner and Contractor	
AIA Document A101, 2007 Edition .....	1-7
Form of Sub-Contract.....	1-3
Contractor’s Guarantee .....	4-5
<b><u>CONDITIONS OF THE CONTRACT</u></b>	
Standard Form of Agreement Between Owner and Contractor .....	1-1 – 1-7
Wage Rate Information .....	1-32
<b><u>DIVISION 1 - GENERAL REQUIREMENTS</u></b>	
Summary of Work	
Section 01 11 00.....	01 11 00-1 – 01 11 00-11
Unit Prices	
Section 01 22 00.....	01 22 00-1 – 01 22 00-4
Shop Drawings and Submittals	
Section 01 30 00.....	01 30 00-1 – 01 30 00-8
Temporary Facilities	
Section 01 50 00.....	01 50 00-1 – 01 50 00-3
Weather Protection and Materials Storage	
Section 01 63 00.....	01 63 00-1 – 01 63 00-4
Project Close-Out	
Section 01 70 00.....	01 70 00-1 – 01 70 00-2
Exterior Enclosure Commissioning	
Section 01 81 00.....	01 81 00-1 – 01 81 00-12

**DIVISION 2**

Selective Building Demolition  
Section 02 41 19..... 02 41 19-1 – 02 41 19-7  
Asbestos Abatement – Non Friable Window Sealants  
Section 02 82 00..... 02 82 00-1 – 02 82 00-19  
Lead Based Paint Associated Renovation  
Section 02 83 19..... 02 83 19-1 – 02 83 19-8

**DIVISION 3**

\*Concrete Repairs and Replacement  
Section 03 30 00..... 03 30 00-1 – 03 30 00-11

**DIVISION 4**

Masonry (**FILED SUB-BID REQUIRED**)  
Section 04 21 00..... 04 21 00-1 – 04 21 00-19

**DIVISION 5 – NOT USED**

**DIVISION 6**

Rough Carpentry  
Section 06 10 00..... 06 10 00-1 – 06 10 00-4  
Cellular PVC Trim  
Section 06 60 00..... 06 60 00-1 – 06 60 00-3

**DIVISION 7 – NOT USED**

**DIVISION 8**

Metal Window and Curtain Walls  
Section 08 50 00..... 08 50 00-1 – 08 50 00-19  
Translucent Wall Panels  
Section 08 95 00..... 08 95 00-1 – 08 95 00-8

**DIVISION 9**

Acoustical Ceilings  
Section 09 53 00..... 09 53 00-1 – 09 53 00-5

**DIVISION 10-22 – NOT USED**

**DIVISION 23**

Mechanical/Electrical General Requirements  
Section 23 00 00..... 23 00 00-1 – 23 00 00-3

\*To be included with the Masonry Filed Sub-Bid

**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

**TABLE OF CONTENTS**

**SUPPLEMENT INFORMATION**

Building Enclosure Commissioning Testing Procedures and Plan

**CONTRACT DRAWINGS**

G100	Cover Sheet
G101	Lay Down Plan and Notes
A201	East, South and West Elevations
A202	North, West and Hidden Elevations
A203	Window Schedule
A251	Masonry Repairs East, South and West Elevations
A252	Masonry Repairs North, West and Hidden Elevations
A301	Wall Section & Details, Typical Classroom – Existing Conditions
A302	Wall Section & Details, Typical Classroom – New
A501	Window Details
A502	Window Details
A503	Window Details

**LEGAL NOTICE  
TOWN OF WATERTOWN  
INVITATION TO BID**

**NOTICE TO CONTRACTORS:**

**SEALED BIDS FOR: Watertown Middle School Windows Replacement Project**

SCOPE: Watertown Middle School: remove and replace existing windows and the associated work in the A wing. Approximate scope area 2,100 square feet.

All Bidders shall clearly identify the submittal as a bid endorsed with the name and address of the bidder, and the complete project title: **Watertown Middle School Windows Replacement Project** on the outside and inside envelopes. Each bid must be secured by an accompanying deposit of 5% of the total bid price. Deposits shall be in the form of a bid bond, certified check, treasurer's check or cashier's check payable to Town of Watertown. Bid deposits will be returned in accordance with current bidding statutes. All bids are subject to the provisions of Massachusetts General Laws, Chapter 149, Chapter 306 of the Acts of 2004 (OSHA 10) and Chapter 149, Section 26 to 27H (Wage Rates).

**ALL SUBCONTRACTOR BIDS:**

The Town of Watertown, Massachusetts, will receive Masonry File Sub-Bids until 1:00 p.m. on Wednesday, December 14, 2016 at the Town of Watertown Purchasing Department, 149 Main Street, Watertown, MA, 02472, at which time all sealed File Sub-Bid bids will be publicly opened and read aloud.

Bidders are required to submit a Certificate of Qualifications from DCAMM in the category of **Masonry** along with an update statement DUE AT THE TIME OF BID.

**ALL GENERAL CONTRACTOR BIDS:**

The Town of Watertown, Massachusetts, will receive General Bids until 1:00 p.m. on Wednesday, December 21, 2016 at the Town of Watertown Purchasing Department, 149 Main Street, Watertown, MA, 02472, at which time all sealed General bids will be publicly opened and read aloud.

Bidders are required to submit a Certificate of Qualifications from DCAMM in the category of **Windows** along with an update statement DUE AT THE TIME OF BID.

The Town reserves the right to waive any informality or to reject any and all bids if it be in the public interest to do so. Plans, specifications and contract documents will be available for viewing after 9:00 a.m. on WEDNESDAY, November 23, 2016, Monday – Friday 8:30 a.m. – 5:00 p.m., and are available at the Town of Watertown, Purchasing Department, 149 Main Street, Watertown, MA, 02472, [purchasing@watertown-ma.gov](mailto:purchasing@watertown-ma.gov).

Additional Information: Subsequent to Award: Contractor must be capable of securing a Performance and Payment Bond in the amount of 100% of the contract price. This work is subject to payment of prevailing wage rates for the classified work and OSHA 10 training of all employees working on the site, which is contained in the contract. The Town of Watertown is exempt from sales tax, for which reason, bidders should not include sales tax in figuring or in reference to any bid. There will be no charge for the Building Permit.

**Bidders are hereby notified an optional site briefing is scheduled for Wednesday, November 30, 2016, starting at 1 p.m. at the Watertown Middle School, 68 Waverly Avenue, Watertown, MA**

**Town of Watertown  
Raeleen Parsons, Purchasing Agent**

**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

**INFORMATION FOR BIDDERS**

1. Access to Buildings to Inspect Existing Conditions Before Bidding

Access to the Building is to be obtained by contacting:

Contact: James Carter, School Principal  
Email: james.carter@watertown.k12.ma.us  
Address: 68 Waverley Avenue, Watertown, MA  
Telephone: (617) 926-7783

A pre-bid meeting has been scheduled on **November 30, 2016 at 1:00 p.m.** All interested bidders are urged to attend. Access at other times may be limited.

2. Preparation of Bids

Bids must be submitted on the prescribed form. All blank spaces must be filled in, either in ink or typewritten, both in words and figures. Each General Bid shall include all documents listed in Items 14 and 15 of the INFORMATION FOR BIDDERS.

Each bid must be submitted in a sealed envelope bearing on the outside the name of the bidder, bidders address, the name of the project for which the bid is submitted, and the date and time of scheduled opening.

See the INVITATION TO BID for dates, times and places for General Bid and Sub-Bid openings.

3. General Bid Deposit

Each General Bid must be accompanied by a bid deposit in the form of a Bid Bond, cash or certified check, or treasurer's or cashier's check, issued by a responsible bank or trust company, payable to the Town of Watertown in the amount of at least 5% of the total Bid price. The Bid deposit will be retained from the three lowest responsible and eligible bidders until a Contract is executed. Bidders other than the three lowest will have bid deposits returned within five (5) days.

4. Drawing and Specifications

Bid Forms and Contract Documents will be available for pick-up Monday – Friday 8:30 a.m. – 5:00 p.m. at the Town of Watertown Purchasing Department, 149 Main Street, Watertown, MA 02472 or can be requested electronically by emailing [purchasing@watertown-ma.gov](mailto:purchasing@watertown-ma.gov). Documents are available starting on **November 23, 2016**.

5. Bid Deposit

In the event that a successful bidder should fail or refuse to execute and deliver the Contract and Bonds required within five (5) days after issuance of the Contract by the Owner, he shall forfeit to the Owner as liquidated damages his bid deposit.

6. Laws and Regulations

The bidder's attention is directed to the fact that all applicable Federal laws, State laws, municipal by-laws, and the rules and regulations of all authorities having jurisdiction over the construction of the work shall apply to the Contract throughout, and they will be deemed to be included in the Contract the same as though written out in full.

7. Conditions of the Contract Areas

Each bidder must inform himself fully of the conditions relating to the scope of work, project site conditions and employment of labor thereon. Failure to do so will not relieve the successful bidder of his obligation to furnish all labor, materials and equipment necessary to carry out the provisions of the contract work scope. Insofar as possible, the Contractor must not interfere with the normal operations of the building.

8. Obligation of Bidder

At the time of opening of the bids, each bidder will be presumed to have inspected the site of the work and to have read and become familiar with the Contract Documents (including all addenda), as well as all statutes, by-laws and regulations affecting his bid. Failure by omission of any bidder to inspect the site and/or to examine any form, instrument or document shall in no way relieve any bidder from any obligation in respect to his bid.

9. Bonds

The successful bidder shall be required to furnish a 100% Performance Bond and 100% Payment Bond from a surety company approved by the Owner. The Contractor will pay the premium and include the fee in his bid.

10. Permits

All building permits for installation of the work will be obtained and paid for by the Contractor.

11. Award

The Owner reserves the right to reject any or all bids, if it be in the public interest to do so, and to act upon the bids and make its award in any lawful manner. Notice of intent to enter into contract will be given to the lowest responsible and eligible bidder within thirty (30) days, Saturdays, Sundays and legal holidays excluded, after the opening of the bids. The Contractor is required to hold his bid for a period of thirty (30) days, Saturdays, Sundays and legal holidays excluded. The notice of intent shall be binding until a contract to perform work is issued. Project award is contingent upon the Owner's funding of the work.

12. Time of Completion and Work Hours

The Contractor shall commence work within 10 days of receipt of written notice to proceed from the Owner, unless otherwise ordered in writing by the Owner.

It is the intent of this project for the installation of the work to commence as soon as all materials and procedures are approved by the Owner and Engineer. Milestone dates are as follows:

- i. **Commence Mobilization for Mock-Up:** June 1, 2017
- ii. **Anticipated Last Day of School:** June 27, 2017
- iii. **Anticipated Summer Construction Schedule Begins:** June 28, 2017
- iv. **Anticipated Summer Construction Schedule Ends:** August 31, 2017
- v. **Anticipated First Day of School (Teachers):** September 1, 2017
- vi. **Substantial Completion:** October 28, 2017
- vii. **Final Completion:** November 18, 2017

The building will be occupied and in use from June 1 through the last day of school, anticipated to be June 27, 2016, and again from the first day of school, anticipated to be September 1, 2017, through Final Completion. **Summer Construction Schedule** is defined as working days between the last day of school (anticipated June 27, 2017) and the first day of school (anticipated September 1, 2017). Full scale mobilization may occur no earlier than the start of the Summer Construction Schedule. All work shall be performed Monday through Friday during the designated hours stated below unless previously coordinated and approved by the Owner. The following work schedule will apply:

1. Work performed during non-Summer Construction Schedule days must be performed after School hours, which are defined as between 2:30 PM to 11:00 PM unless otherwise specified or approved.
2. Work performed during Summer Construction Schedule days may be performed between 7:00 AM to 4:00 p.m. unless otherwise specified or approved.
3. **Critical areas** must be substantially complete during the Summer Construction Schedule. Critical areas include all windows at the 1<sup>st</sup> and 2<sup>nd</sup> floors. Basement windows can be installed outside of the Summer Construction Schedule.
4. Work may be performed on weekends, with prior approval of the Owner the between the hours of 8:00 AM to 4:30 PM.
5. While school is in session no deliveries shall be made to the site prior to 9:00 AM and no deliveries shall be made on weekdays between the hours of 2:30 PM and 4:00 PM.

The bidder shall submit a proposed construction schedule as part of its bid package, and the Contractor shall be required to update the final approved schedule weekly during construction.

13. Liquidated Damages - Construction:

**Liquidated damages** will be assessed if **Final Completion** is not achieved by **November 18, 2017**. Final Completion shall be determined after the Contractor certifies in writing completion of all remaining items noted on the Architect/Engineer or Owner's punch list prepared following the date of substantial completion. Refer to school schedule for anticipated holiday and early release days. The liquidated damages will be in the amount of \$1,000.00 per calendar day. The \$1,000.00 per calendar day is a minimum damage figure to compensate the Owner for administrative costs in the event of delay and shall not limit in any way the liability of the Contractor for damages, in excess of \$1,000.00 per day for other non-administrative damages, in particular the costs of all architectural, engineering, and inspection services and damages for breach of contract, and the Owner reserves the right to recover such damages.

14. Required Submissions with Bids

The following documents are to be submitted with each bid. Failure of a bidder to make all required submissions may cause the Owner to consider the bid unacceptable.

- a. Bid Form
- b. Bid Bond
- c. Conflict of Interest Certification
- d. Certificate as to Corporate Bidder, if bidder is incorporated.
- e. Division of Capital Asset Management Certificate of Eligibility
- f. Contractor Qualification Update Statement
- g. Certificate of Good Faith (Non-Collusion) and Tax Compliance
- h. Certificate of Vote
- i. Prevailing Wage Documents
- j. Proposed Construction Schedule

15. Additional Bid Submission Requirements Related to Prevailing Wage Requirements:

The bidders shall provide the document on the following page with their bids. All bids shall be accompanied by the Bidder's certification regarding payment of prevailing wage rates in the form herein.

16. CORI Forms

Each employee of the General Contractor or Sub-Contractors that will be present on the project site during the school year must fill out a CORI form at Watertown's Central Register and present in person the form with a valid and legal picture identification card to the authorized CORI representative at the school for a criminal background check to be performed. Each employee must also be fingerprinted at an approved facility (IdentoGo).

**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

**BIDDER'S CERTIFICATION REGARDING  
BIDS BASED ON PAYMENT OF PREVAILING WAGES**

In accordance with the requirements of G.L.c.149, §27B, the Contractor shall submit, and shall require all of its sub-contractors required to keep a record of hours and wages paid to laborers employed on the project to submit to the awarding authority, on a weekly basis, copies of such records. All such weekly submissions shall be accompanied by the following certification:

The undersigned bidder hereby certifies, under the pains and penalties of perjury, that the foregoing bid is based upon the payment to laborers to be employed on the project of wages in an amount no less than the applicable prevailing wage rates established for the project by the Massachusetts Department of Labor and Workforce Development. The undersigned bidder agrees to indemnify the awarding authority for, from and against any loss, expense, damages, actions or claims, including any expense incurred in connection with any delay or stoppage of the project work, arising out of or as a result of (1) the failure of the said bid to be based upon the payment of the said applicable prevailing wage rates or (2) the failure of the bidder, if selected as the Contractor, to pay laborers employed on the project the said applicable prevailing wage rates.

DATED: \_\_\_\_\_ NAME OF BIDDER: \_\_\_\_\_

BY: \_\_\_\_\_

NAME: \_\_\_\_\_

TITLE: \_\_\_\_\_

**CERTIFICATE AS TO CORPORATE BIDDER**

**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

I \_\_\_\_\_, certify that I am the \_\_\_\_\_ of the Corporation named as bidder in the attached Bid Form; that \_\_\_\_\_, who signed said Bid Form on behalf of the bidder was then \_\_\_\_\_ of said Corporation; that I know his/her signature hereto is genuine and that said Bid Form was duly signed, sealed and executed for and in behalf of said Corporation by authority of its governing body.

(Corporate Seal)

By: \_\_\_\_\_  
Name - Type or Print

\_\_\_\_\_  
Signature

This Certificate must be completed where Bidder is a Corporation and should be so completed by its Clerk. In the event that the Clerk is the person signing the Bid on behalf of the Corporation, this certificate must be completed by another Officer of the Corporation.

**CERTIFICATE OF GOOD FAITH (NON-COLLUSION) and TAX COMPLIANCE**

**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

Pursuant of M.G.L. Ch. 62C, Sec. 49A, I certify under the pains and penalties of perjury that the contractor/consultant has complied with all laws of the Commonwealth of Massachusetts relating to taxes, reporting of employees and contractors, and withholding and remitting child support.

The undersigned certifies under penalties of perjury that this bid has been made and submitted in good faith and without collusion or fraud with any other person. As used in this certification, the word "person" shall mean any natural person, business, partnership, corporation, union, committee, club, or other organization, entity or group of individuals.

\_\_\_\_\_  
Name of Person Signing Bid (Please Print)

\_\_\_\_\_  
Signature of Person Signing Bid

\_\_\_\_\_  
Company

**CERTIFICATE OF VOTE (required if Contractor is a Corporation)**

**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

I, \_\_\_\_\_, hereby certify that I am duly qualified and Acting Secretary of \_\_\_\_\_ and I further certify that a meeting of the Directors of said Company, duly called and held on \_\_\_\_\_, at which all Directors were present and voting, the following vote was unanimously passed:

Voted to authorize and empower the person signing the Bid Certification Sheet on behalf of the Corporation. I further certify that the above vote is still in effect and has not been changed or modified in any respect.

BY: \_\_\_\_\_  
(Secretary of Corporation)

**CERTIFICATE OF DUMPING FACILITIES**

**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

Date \_\_\_\_\_

I, \_\_\_\_\_

certify that the within named Contractor has dumping facilities available at \_\_\_\_\_

\_\_\_\_\_

and use of such facilities during the term of the contract will comply with Federal, State and local requirements.

\_\_\_\_\_  
Signature of Authorized Representative of Contractor

\_\_\_\_\_  
Name and Address of Contractor

\_\_\_\_\_  
Signature of Authorized Representative of Disposal Facility

\_\_\_\_\_  
Name and Address of Disposal Facility

\_\_\_\_\_

**GENERAL BID FORM**  
**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

Date: \_\_\_\_\_, 2014

To: Town of Watertown – The Awarding Authority

A. The undersigned (hereinafter called the Contractor) proposes to furnish all labor, equipment and materials required for the **Window Replacement and Associated Work at the Watertown Middle School in Watertown, Massachusetts** in accordance with the accompanying Plans and Specifications prepared by Gale Associates, Inc., of Weymouth, Massachusetts, for the amounts listed in Item C below, subject to additions and deductions in accordance with the terms of the Specifications, it being understood that the Awarding Authority (hereinafter called the Owner) will be the sole judge as to acceptance of Bids and Contract Award.

B. This bid includes addenda numbered:

<u>Number</u>	<u>Date</u>
_____	_____
_____	_____
_____	_____
_____	_____

C. **BASE BID:**

The proposed total contract amount to perform all work described in and in accordance with the Contract Document is:

\_\_\_\_\_ Dollars (\$ \_\_\_\_\_)

The Base Bid includes the Following Sub-Bid:

Name of Sub-Bidder	Sub-Bid Amount	Bonds Required Yes/No
Masonry _____	Base Bid \$ _____	_____

- D. The undersigned agrees that if selected as the Contractor, he will within five (5) days, Saturdays, Sundays and legal holidays excluded, after presentation thereof by the Awarding Authority, execute a Contract in accordance with the terms of this General Bid and furnish a Performance Bond and Payment Bond, each of a surety company qualified to do business under the laws of the Commonwealth and satisfactory to the Awarding Authority, and each in the sum of 100% of the Contract Price, the premiums for which are to be paid by the Contractor and included in the Contract Price, provided, however, that if there is more than one (1) surety company, the surety companies shall be jointly and severally liable.
- E. The undersigned Bidder proposes to provide all labor and materials necessary to complete the work, as specified in the Contract Documents, and as is reasonably expected due to existing conditions and required construction, within the completion time specified in the Contract Documents
- F. The undersigned hereby certifies that he is able to furnish labor that can work in harmony with all other elements of the labor employed, or to be employed on the work, and that he will comply fully with all laws and regulations applicable to awards made subject to Chapter 149, Section 44A. The undersigned further certifies under the penalties of perjury that this bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.
- G. The undersigned hereby certifies that all employees to be employed at the worksite will have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and regulations applicable to awards made subject to section 44A.
- H. The undersigned further certifies under penalty of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of Section 29F of Chapter 29, or any other applicable debarment provisions of any other chapter of the General Laws or any rule or regulation promulgated thereunder.
- I. The Contractor hereby certifies, under the pains and penalties of perjury, that the foregoing bid is based upon the payment to laborers to be employed on the project of wages in an amount no less than the applicable prevailing wage rates established for the project by the Massachusetts Department of Labor and Workforce Development. The undersigned bidder agrees to indemnify the Awarding Authority for, from and against any loss, expense, damages, actions or claims, including any expense incurred in connection with any delay or stoppage of the project work, arising out of or as a result of (1) the failure of the said bid to be based upon the payment of the said applicable prevailing wage rates or (2) the failure of the bidder, if selected as the contractor, to pay laborers employed on the project the said applicable prevailing wage rates.
- J. The Contractor hereby further certifies that the undersigned has examined the documents relating to the existing building(s).

- L. The Contractor acknowledges the stringent requirements of the Owner with respect to the Contract Time for the Work and Portions thereof, and recognizes that the construction schedule may require that work proceed on an accelerated basis. The Bidder therefore agrees that the Work of his own forces shall be performed on an overtime and/or double-shift basis, if and to the extent necessary in order that the construction schedule be met. Neither overtime nor double-shift work shall be grounds for any claims for additional compensation to the Bidder. None of the requirements herein shall be construed as relieving the Bidder of his responsibility to conduct his operations in conformance with local ordinances or requirements established by the Owner or the Commonwealth.

\_\_\_\_\_  
Company Name

\_\_\_\_\_  
Address

By: \_\_\_\_\_  
(Name of Authorized Signature)

Title: \_\_\_\_\_

Signature: \_\_\_\_\_

NOTE: Form shall be sealed if Bidder is a Corporation.

MASONRY WORK SUB-BID FORM

**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

TO: ALL GENERAL BIDDERS EXCEPT THOSE EXCLUDED:

A. The undersigned proposes to furnish all labor and materials required for completing, in accordance with the Contract Documents, all the work specified in Section No. 03 30 00 – Concrete Repairs and Replacement and Section No. 04 21 00 – Masonry of the Specifications and in any plans specified in such Section, prepared by Gale Associates, Inc., for **Window Replacement and Associated Work at the Watertown Middle School in Watertown, Massachusetts.**

B. This Sub-Bid includes the following addenda:

\_\_\_\_\_  
\_\_\_\_\_

C. The proposed Sub-Bid Amount to perform all Base Bid work in accordance with the Contract Documents is:

\_\_\_\_\_ Dollars (\$\_\_\_\_\_).

D. This Sub-Bid:

\_\_\_\_\_ May be used by any General Bidder except: \_\_\_\_\_  
\_\_\_\_\_.

\_\_\_\_\_ May be used by the following General Bidder only:  
\_\_\_\_\_

(To exclude General Bidders, insert an “x” on one line only and fill in blank following line. Do not answer G if no General Bidders are excluded.

E. The undersigned agrees that, if he/she is selected as a Sub-Bidder, he/she will, within five days, Saturdays, Sundays and legal holidays excluded, after presentation of a Subcontract by the General Bidder selected as the General Contractor, execute with the terms of the General Contract, and if requested so to do in the General Bid by such General Bidder, who shall pay the premiums thereof, furnish Performance and Payment Bonds of Surety Company qualified to do business under the laws of the Commonwealth and satisfactory to the Owner each in the full sum of the Sub-Contract price.

**SUB-BID FORM**

Page 2 of 3

- F. The names of all persons, firms and corporations furnishing to the undersigned labor or labor and materials for the class or classes, or part thereof, of work for which the provisions of the section of the Specifications for this Sub-Trade require a listing in this paragraph, (including the undersigned if customarily furnished by persons on his/her own payroll and in the absence of a contrary provision in the Specifications), the name of each such class or work, or part thereof, and the bid price for each such class of work of part thereof are:

<u>Name</u>	<u>Class of Work</u>	<u>Bid Price</u>
_____	_____	_____
_____	_____	_____

(Do not give bid price for any class or part thereof furnished by the undersigned.)

- G. The undersigned agrees that the above list of Bids to the undersigned represents bona fide Bids based on herein before described Plans, Specifications and Addenda, and that, if the undersigned is awarded the Contract, they will be used for the work indicated at the amounts stated, if satisfactory to the Awarding Authority.
- H. The undersigned further agrees to be bound to the General Contractor by the terms of the hereinbefore described Plans, Specifications (including all general conditions stated herein) and Addenda, and to assume toward him all the obligations and responsibilities that he/she, by those documents, assumes toward the Owner.
- I. The undersigned offers the following information as evidence of his/her qualifications to perform the work as bid upon according to all the requirements of the plans and specifications.

1. How long have you been in business under present business name? \_\_\_\_\_ years.
2. Ever failed to complete any work awarded? \_\_\_\_\_
3. List one or more recent buildings with name and telephone numbers of General Contractor and Architect on which you served as Sub-Contractor for work of similar character as required for the above-named building.

<u>Building Type</u>	<u>Architect</u>	<u>General Contractor</u>	<u>Contract Amount</u>
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____
_____	_____	_____	_____

4. Bank reference \_\_\_\_\_

**SUB-BID FORM**

Page 3 of 3

- J. The undersigned hereby certifies that he/she is able to furnish labor and can work in harmony with all other elements of labor employed or to be employed on the work and that he/she will comply fully with all laws and regulations applicable to awards of subcontracts subject to Section Forty-Four F.
- K. The undersigned further certifies under penalties of perjury that this sub-bid is in all respects bona fide, fair and made without collusion or fraud with any other person. As used in this subsection the word "person" shall mean any natural person, joint venture, partnership, corporation or other business or legal entity.
- L. The undersigned further certifies under penalties of perjury that the said undersigned is not presently debarred from doing public construction work in the Commonwealth under the provisions of Section 29F of Chapter 29, or any other applicable debarment provisions of any other Chapter of the General Laws or any rule or regulation promulgated thereunder.

Date \_\_\_\_\_

\_\_\_\_\_  
(Name of Sub-Bidder)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Business Address)

\_\_\_\_\_  
(City and State) (Zip Code)

Note: If the Bidder is a corporation, indicate state of incorporation under signature and affix corporate seal; if a partnership, give full names and residential addresses of all partners; and if an individual, give full residential address if different from business address.

Prior to submitting bid, make sure all spaces are completed. If spaces are not applicable to Sub-Bid fill in N.A.

**FAILURE TO COMPLETE THIS BID FORM, OR ANY PORTIONS THEREOF, IN ALL RESPECTS MAY CAUSE IT TO BE REJECTED UNDER LAW.**

# DRAFT AIA® Document A101™ – 2007

## Standard Form of Agreement Between Owner and Contractor where the basis of payment is a Stipulated Sum

**AGREEMENT** made as of the « » day of « » in the year « »  
(In words, indicate day, month and year.)

**BETWEEN** the Owner:  
(Name, legal status, address and other information)

« »« »  
« »  
« »  
« »

and the Contractor:  
(Name, legal status, address and other information)

« »« »  
« »  
« »  
« »

for the following Project:  
(Name, location and detailed description)

«Master A101-2007»  
« »  
« »

The Architect:  
(Name, legal status, address and other information)

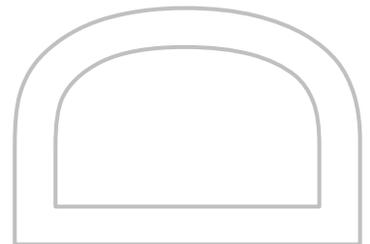
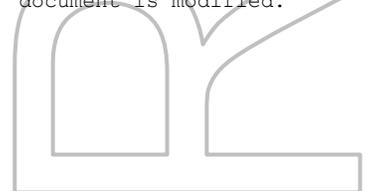
« »« »  
« »  
« »  
« »

The Owner and Contractor agree as follows.

**ADDITIONS AND DELETIONS:**  
The author of this document has added information needed for its completion. The author may also have revised the text of the original AIA standard form. An *Additions and Deletions Report* that notes added information as well as revisions to the standard form text is available from the author and should be reviewed.

This document has important legal consequences. Consultation with an attorney is encouraged with respect to its completion or modification.

AIA Document A201™-2007, General Conditions of the Contract for Construction, is adopted in this document by reference. Do not use with other general conditions unless this document is modified.



**ELECTRONIC COPYING** of any portion of this AIA® Document to another electronic file is prohibited and constitutes a violation of copyright laws as set forth in the footer of this document.

## TABLE OF ARTICLES

- 1 THE CONTRACT DOCUMENTS
- 2 THE WORK OF THIS CONTRACT
- 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION
- 4 CONTRACT SUM
- 5 PAYMENTS
- 6 DISPUTE RESOLUTION
- 7 TERMINATION OR SUSPENSION
- 8 MISCELLANEOUS PROVISIONS
- 9 ENUMERATION OF CONTRACT DOCUMENTS
- 10 INSURANCE AND BONDS

### ARTICLE 1 THE CONTRACT DOCUMENTS

The Contract Documents consist of this Agreement, Conditions of the Contract (General, Supplementary and other Conditions), Drawings, Specifications, Addenda issued prior to execution of this Agreement, other documents listed in this Agreement and Modifications issued after execution of this Agreement, all of which form the Contract, and are as fully a part of the Contract as if attached to this Agreement or repeated herein. The Contract represents the entire and integrated agreement between the parties hereto and supersedes prior negotiations, representations or agreements, either written or oral. An enumeration of the Contract Documents, other than a Modification, appears in Article 9.

### ARTICLE 2 THE WORK OF THIS CONTRACT

The Contractor shall fully execute the Work described in the Contract Documents, except as specifically indicated in the Contract Documents to be the responsibility of others.

### ARTICLE 3 DATE OF COMMENCEMENT AND SUBSTANTIAL COMPLETION

**§ 3.1** The date of commencement of the Work shall be the date of this Agreement unless a different date is stated below or provision is made for the date to be fixed in a notice to proceed issued by the Owner.

*(Insert the date of commencement if it differs from the date of this Agreement or, if applicable, state that the date will be fixed in a notice to proceed.)*

« »

If, prior to the commencement of the Work, the Owner requires time to file mortgages and other security interests, the Owner's time requirement shall be as follows:

« »

**§ 3.2** The Contract Time shall be measured from the date of commencement.

**§ 3.3** The Contractor shall achieve Substantial Completion of the entire Work not later than « » ( « » ) days from the date of commencement, or as follows:

*(Insert number of calendar days. Alternatively, a calendar date may be used when coordinated with the date of commencement. If appropriate, insert requirements for earlier Substantial Completion of certain portions of the Work.)*

« »

Portion of Work

Substantial Completion Date

, subject to adjustments of this Contract Time as provided in the Contract Documents.

(Insert provisions, if any, for liquidated damages relating to failure to achieve Substantial Completion on time or for bonus payments for early completion of the Work.)

<< >>

**ARTICLE 4 CONTRACT SUM**

**§ 4.1** The Owner shall pay the Contractor the Contract Sum in current funds for the Contractor's performance of the Contract. The Contract Sum shall be << >> (\$ << >> ), subject to additions and deductions as provided in the Contract Documents.

**§ 4.2** The Contract Sum is based upon the following alternates, if any, which are described in the Contract Documents and are hereby accepted by the Owner:

(State the numbers or other identification of accepted alternates. If the bidding or proposal documents permit the Owner to accept other alternates subsequent to the execution of this Agreement, attach a schedule of such other alternates showing the amount for each and the date when that amount expires.)

<< >>

**§ 4.3** Unit prices, if any:

(Identify and state the unit price; state quantity limitations, if any, to which the unit price will be applicable.)

Item	Units and Limitations	Price Per Unit (\$0.00)
------	-----------------------	-------------------------

**§ 4.4** Allowances included in the Contract Sum, if any:

(Identify allowance and state exclusions, if any, from the allowance price.)

Item	Price
------	-------

**ARTICLE 5 PAYMENTS**

**§ 5.1 PROGRESS PAYMENTS**

**§ 5.1.1** Based upon Applications for Payment submitted to the Architect by the Contractor and Certificates for Payment issued by the Architect, the Owner shall make progress payments on account of the Contract Sum to the Contractor as provided below and elsewhere in the Contract Documents.

**§ 5.1.2** The period covered by each Application for Payment shall be one calendar month ending on the last day of the month, or as follows:

<< >>

**§ 5.1.3** Provided that an Application for Payment is received by the Architect not later than the << >> day of a month, the Owner shall make payment of the certified amount to the Contractor not later than the << >> day of the << >> month. If an Application for Payment is received by the Architect after the application date fixed above, payment shall be made by the Owner not later than << >> (<< >>) days after the Architect receives the Application for Payment. (Federal, state or local laws may require payment within a certain period of time.)

**§ 5.1.4** Each Application for Payment shall be based on the most recent schedule of values submitted by the Contractor in accordance with the Contract Documents. The schedule of values shall allocate the entire Contract Sum among the various portions of the Work. The schedule of values shall be prepared in such form and supported by such data to substantiate its accuracy as the Architect may require. This schedule, unless objected to by the Architect, shall be used as a basis for reviewing the Contractor's Applications for Payment.

§ 5.1.5 Applications for Payment shall show the percentage of completion of each portion of the Work as of the end of the period covered by the Application for Payment.

§ 5.1.6 Subject to other provisions of the Contract Documents, the amount of each progress payment shall be computed as follows:

- .1 Take that portion of the Contract Sum properly allocable to completed Work as determined by multiplying the percentage completion of each portion of the Work by the share of the Contract Sum allocated to that portion of the Work in the schedule of values, less retainage of « » percent ( « » %). Pending final determination of cost to the Owner of changes in the Work, amounts not in dispute shall be included as provided in Section 7.3.9 of AIA Document A201™–2007, General Conditions of the Contract for Construction;
- .2 Add that portion of the Contract Sum properly allocable to materials and equipment delivered and suitably stored at the site for subsequent incorporation in the completed construction (or, if approved in advance by the Owner, suitably stored off the site at a location agreed upon in writing), less retainage of « » percent ( « » %);
- .3 Subtract the aggregate of previous payments made by the Owner; and
- .4 Subtract amounts, if any, for which the Architect has withheld or nullified a Certificate for Payment as provided in Section 9.5 of AIA Document A201–2007.

§ 5.1.7 The progress payment amount determined in accordance with Section 5.1.6 shall be further modified under the following circumstances:

- .1 Add, upon Substantial Completion of the Work, a sum sufficient to increase the total payments to the full amount of the Contract Sum, less such amounts as the Architect shall determine for incomplete Work, retainage applicable to such work and unsettled claims; and  
(Section 9.8.5 of AIA Document A201–2007 requires release of applicable retainage upon Substantial Completion of Work with consent of surety, if any.)
- .2 Add, if final completion of the Work is thereafter materially delayed through no fault of the Contractor, any additional amounts payable in accordance with Section 9.10.3 of AIA Document A201–2007.

§ 5.1.8 Reduction or limitation of retainage, if any, shall be as follows:

*(If it is intended, prior to Substantial Completion of the entire Work, to reduce or limit the retainage resulting from the percentages inserted in Sections 5.1.6.1 and 5.1.6.2 above, and this is not explained elsewhere in the Contract Documents, insert here provisions for such reduction or limitation.)*

« »

§ 5.1.9 Except with the Owner's prior approval, the Contractor shall not make advance payments to suppliers for materials or equipment which have not been delivered and stored at the site.

## § 5.2 FINAL PAYMENT

§ 5.2.1 Final payment, constituting the entire unpaid balance of the Contract Sum, shall be made by the Owner to the Contractor when

- .1 the Contractor has fully performed the Contract except for the Contractor's responsibility to correct Work as provided in Section 12.2.2 of AIA Document A201–2007, and to satisfy other requirements, if any, which extend beyond final payment; and
- .2 a final Certificate for Payment has been issued by the Architect.

§ 5.2.2 The Owner's final payment to the Contractor shall be made no later than 30 days after the issuance of the Architect's final Certificate for Payment, or as follows:

« »

## ARTICLE 6 DISPUTE RESOLUTION

### § 6.1 INITIAL DECISION MAKER

The Architect will serve as Initial Decision Maker pursuant to Section 15.2 of AIA Document A201–2007, unless the parties appoint below another individual, not a party to this Agreement, to serve as Initial Decision Maker.

(If the parties mutually agree, insert the name, address and other contact information of the Initial Decision Maker, if other than the Architect.)

<< >>  
<< >>  
<< >>  
<< >>

**§ 6.2 BINDING DISPUTE RESOLUTION**

For any Claim subject to, but not resolved by, mediation pursuant to Section 15.3 of AIA Document A201–2007, the method of binding dispute resolution shall be as follows:

(Check the appropriate box. If the Owner and Contractor do not select a method of binding dispute resolution below, or do not subsequently agree in writing to a binding dispute resolution method other than litigation, Claims will be resolved by litigation in a court of competent jurisdiction.)

[ << >> ] Arbitration pursuant to Section 15.4 of AIA Document A201–2007

[ << >> ] Litigation in a court of competent jurisdiction

[ << >> ] Other (Specify)

<< >>

**ARTICLE 7 TERMINATION OR SUSPENSION**

**§ 7.1** The Contract may be terminated by the Owner or the Contractor as provided in Article 14 of AIA Document A201–2007.

**§ 7.2** The Work may be suspended by the Owner as provided in Article 14 of AIA Document A201–2007.

**ARTICLE 8 MISCELLANEOUS PROVISIONS**

**§ 8.1** Where reference is made in this Agreement to a provision of AIA Document A201–2007 or another Contract Document, the reference refers to that provision as amended or supplemented by other provisions of the Contract Documents.

**§ 8.2** Payments due and unpaid under the Contract shall bear interest from the date payment is due at the rate stated below, or in the absence thereof, at the legal rate prevailing from time to time at the place where the Project is located.

(Insert rate of interest agreed upon, if any.)

<< >> % << >>

**§ 8.3** The Owner’s representative:  
(Name, address and other information)

<< >>  
<< >>  
<< >>  
<< >>  
<< >>  
<< >>

**§ 8.4** The Contractor’s representative:  
(Name, address and other information)

<< >>  
<< >>  
<< >>  
<< >>

<< >>  
<< >>

§ 8.5 Neither the Owner's nor the Contractor's representative shall be changed without ten days written notice to the other party.

§ 8.6 Other provisions:

<< >>

## ARTICLE 9 ENUMERATION OF CONTRACT DOCUMENTS

§ 9.1 The Contract Documents, except for Modifications issued after execution of this Agreement, are enumerated in the sections below.

§ 9.1.1 The Agreement is this executed AIA Document A101–2007, Standard Form of Agreement Between Owner and Contractor.

§ 9.1.2 The General Conditions are AIA Document A201–2007, General Conditions of the Contract for Construction.

§ 9.1.3 The Supplementary and other Conditions of the Contract:

Document	Title	Date	Pages

§ 9.1.4 The Specifications:

*(Either list the Specifications here or refer to an exhibit attached to this Agreement.)*

<< >>

Section	Title	Date	Pages

§ 9.1.5 The Drawings:

*(Either list the Drawings here or refer to an exhibit attached to this Agreement.)*

<< >>

Number	Title	Date

§ 9.1.6 The Addenda, if any:

Number	Date	Pages

Portions of Addenda relating to bidding requirements are not part of the Contract Documents unless the bidding requirements are also enumerated in this Article 9.

§ 9.1.7 Additional documents, if any, forming part of the Contract Documents:

- 1 AIA Document E201™–2007, Digital Data Protocol Exhibit, if completed by the parties, or the following:

<< >>

- 2 Other documents, if any, listed below:

*(List here any additional documents that are intended to form part of the Contract Documents. AIA Document A201–2007 provides that bidding requirements such as advertisement or invitation to bid, Instructions to Bidders, sample forms and the Contractor's bid are not part of the Contract*

Documents unless enumerated in this Agreement. They should be listed here only if intended to be part of the Contract Documents.)

<< >>

**ARTICLE 10 INSURANCE AND BONDS**

The Contractor shall purchase and maintain insurance and provide bonds as set forth in Article 11 of AIA Document A201–2007.

(State bonding requirements, if any, and limits of liability for insurance required in Article 11 of AIA Document A201–2007.)

**Type of insurance or bond**

**Limit of liability or bond amount (\$0.00)**

This Agreement entered into as of the day and year first written above.

\_\_\_\_\_  
**OWNER** (Signature)

\_\_\_\_\_  
**CONTRACTOR** (Signature)

<< >><< >>

\_\_\_\_\_  
(Printed name and title)

<< >><< >>

\_\_\_\_\_  
(Printed name and title)



**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

**FORM OF SUB-CONTRACT**

THIS AGREEMENT made this \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_ by and between

\_\_\_\_\_

a corporation organized and existing under the laws of \_\_\_\_\_

a partnership consisting of or an individual doing business as \_\_\_\_\_

hereinafter called the "Contractor", and \_\_\_\_\_

a corporation organized and existing under the laws of \_\_\_\_\_

a partnership consisting of or an individual doing business as \_\_\_\_\_

hereinafter called the "Subcontractor".

WITNESSETH that the Contractor and the Subcontractor for the considerations hereafter named, agree as follows:

1. The Subcontractor agrees to furnish all labor and materials required for the completion of all work specified in Section No. \_\_\_\_\_, of the Specifications for the work specified in said section and the plans referred to therein and \_\_\_\_\_, for **Window Replacement and Associated Work at the Watertown Middle School in Watertown, Massachusetts..**, as prepared by Gale Associates, Inc., for the sum of: \_\_\_\_\_ Dollars (\$ \_\_\_\_\_).

Contractor agrees to pay the Subcontractor said sum for said work.

- (a) The Subcontractor agrees to be bound to the Contractor by the terms of the Contract Documents (including all General Conditions stated therein and Addenda No. \_\_\_\_\_ and \_\_\_\_\_), and to assume to the Contractor all the obligations and responsibilities that the Contractor by those documents assumes to the Town of Northbridge, hereinafter called the Owner, except to the extent that provisions contained herein are by their terms or by law applicable only to the Contractor.

- (b) The Contractor agrees to be bound to the Subcontractor by the terms of the hereinbefore described documents and to assume to the Sub-Contractor all the obligations and responsibilities that the Owner by the terms of the hereinbefore described documents assumes to the Contractor, except to the extent that provisions contained therein are by their terms or by law applicable only to the Owner.
2. The Contractor agrees to begin, prosecute and complete the entire work specified by the Owner in an orderly manner so that the Subcontractor will be able to begin, prosecute and complete the work described in the Subcontract; and, in consideration thereof, upon notice from the Contractor, either oral or in writing, the Subcontractor agrees to begin, prosecute and complete the work described in this Subcontract in an orderly manner and with due consideration to the date or time specified by the Owner for the completion of the entire work.
  3. The Subcontractor agrees to furnish to the Contractor within a reasonable time after the execution of this Subcontract, evidence of workmen's compensation insurance as required by law and evidence of public liability and property damage insurance of the type and in limits required to be furnished to the Owner by the Contractor.
  4. The Contractor agrees that no claim for services rendered or materials furnished by the Contractor to the Subcontractor shall be valid unless written notice thereof if given by the contractor to the Subcontractor during the first ten (10) days of the calendar month following that in which the claim originated.
  5. This Agreement is contingent upon the execution of this Agreement the day and year first above written.

SEAL:

ATTEST:

\_\_\_\_\_  
(Name of Subcontractor)

By: \_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Signature)

SEAL:

ATTEST: \_\_\_\_\_  
\_\_\_\_\_  
(Name of Contractor)

By: \_\_\_\_\_  
(Name)

\_\_\_\_\_  
(Title)

\_\_\_\_\_  
(Signature)

\_\_\_\_\_

**CONTRACTOR'S GUARANTEE**

**WINDOW REPLACEMENT AND ASSOCIATED WORK AT THE  
WATERTOWN MIDDLE SCHOOL  
WATERTOWN, MA**

WHEREAS \_\_\_\_\_  
(Contractor)

of \_\_\_\_\_  
(Address)

herein called "the Contractor" has completed construction of the following project:

Owner: \_\_\_\_\_

Address of Owner: \_\_\_\_\_

Title of Project: \_\_\_\_\_

Location: \_\_\_\_\_

Date of Completion: \_\_\_\_\_

Date Guarantee Expires: \_\_\_\_\_

Whereas, at the inception of such work the Contractor agreed to guarantee the construction against faulty materials or workmanship for a limited period and subject to the conditions set forth in the Contract Documents:

Now, therefore, the Contractor hereby guarantees, subject to the conditions herein set forth, that during a period of two (2) years from the date of completion of said construction, it will, at its own cost and expense, following receipt of written notice, make or cause to be made such repairs to said construction resulting solely from faults or defects in materials or workmanship performed by or through the Contractor as may be necessary to maintain the construction in defect-free condition.

This guarantee is made subject to the following conditions:

Specifically excluded from this guarantee is any and all damage caused by the following lightning, hailstorm or other unusual phenomena of the elements; defects or failure of materials not installed by the Contractor; faulty construction other than that installed by or for the Contractor; or fire.

1. This guarantee runs in favor of Owner only and is not transferable.

Additional Conditions: This Guarantee is in addition to all other legal and specified Warranties and Guarantees required in the project's Contract Documents for materials, systems and performance of the manufacturer or supplier.

In Witness Whereof, this instrument has been duly executed this \_\_\_\_\_ day of \_\_\_\_\_, 201\_\_.

\_\_\_\_\_  
Name of Contractor

By: \_\_\_\_\_  
Authorized Signature

(Seal)

Title: \_\_\_\_\_

NOTE: Form shall be sealed if Contractor is a Corporation.

END OF SECTION

**TABLE OF CONTENTS**

**GENERAL CONDITIONS**

<b>PAR.</b>	<b>TITLE</b>	<b>PAGE</b>
1.01	CONTRACTOR'S WORK.....	1-1
1.02	EXAMINATION OF SITE.....	1-1
1.03	INTENT OF SPECIFICATIONS.....	1-1
1.04	IMPLIED AND OTHER REQUIREMENTS.....	1-1
1.05	CONTRACTOR'S SIGNATURE.....	1-1
1.06	REJECTION.....	1-1
1.07	TIME ALLOWANCE.....	1-1
1.08	DELAYS.....	1-2
1.09	MATERIALS.....	1-2
1.10	EQUIPMENT.....	1-2
1.11	LABOR & INSURANCE.....	1-3
1.12	UTILITIES.....	1-3
1.13	SAFETY PRECAUTIONS.....	1-3
1.14	STORAGE.....	1-3
1.15	POWER OF TOWN OF WATERTOWN REPRESENTATIVE....	1-3
1.16	INSPECTION.....	1-3
1.17	SALVAGE.....	1-4
1.18	CLEANING UP.....	1-4
1.19	ACCEPTANCE.....	1-4
1.20	PAYMENT.....	1-4
1.21	CHANGES IN WORK.....	1-4
1.22	ADDENDA.....	1-5
1.23	NON-DISCRIMINATION ARTICLE.....	1-5
1.24	ANTI-BOYCOTT COVENANT.....	1-5
1.25	EXECUTIVE ORDER NO. 195.....	1-5
1.26	BID SECURITY.....	1-5/1-6
1.27	PERFORMANCE BOND(100%).....	1-6
1.28	MATERIAL BOND(100%).....	1-6
1.29	PAYROLL RECORDS.....	1-6
1.30	OSHA REQUIREMENTS.....	1-6/1-7
1.31	TAX EXEMPTION NUMBER.....	1-7

## **SECTION I GENERAL CONDITIONS**

NOTE: ATTENTION IS DIRECTED TO THE STANDARD PRINTED FORM OF PROPOSAL OF WHICH THESE GENERAL CONDITIONS ARE HEREBY MADE A PART.

### **1.01 CONTRACTOR'S WORK**

All work to be done as indicated in these specifications and/or plans, or reasonably implied in or on either, shall be done by the Contractor unless specified to be done by others.

### **1.02 EXAMINATION OF SITE:**

Each bidder should visit the Town of Watertown, become fully acquainted with the existing conditions there relating to construction and labor, and should become fully informed as to the facilities involved and the difficulties and restrictions attending the performance of the Contract. The bidder should thoroughly examine and become familiar with the Technical Specifications, and all other documents. Bidders must satisfy themselves of the accuracy of the estimated quantities in the bid schedule by examination of the site and a review of the contract documents.

### **1.03 INTENT OF SPECIFICATIONS**

It is the intention of this specification to delineate a first class piece of work, which when completed, shall present a finished appearance without any indication of careless or inferior material or workmanship. Except where hereinafter otherwise specified, materials and workmanship shall comply with the material manufacturer's most recent specification.

### **1.04 IMPLIED AND OTHER REQUIREMENTS**

Should any work or material be required or any compliance with laws of the Commonwealth which is not detailed in the specifications or on the plans either directly or indirectly, but, which is nevertheless necessary for the proper carrying out of the intent thereof, the Contractor is to understand the same to be implied and required, and shall perform all such work, furnish any such material, and comply with any such laws as fully as if they were particularly delineated or described. The Contractor must cooperate and coordinate with Town of Watertown Authorities regarding work to be done to properly execute this contract.

### **1.05 CONTRACTOR'S SIGNATURE**

The Contractor's signature, in ink, on the bid proposal form will be held as evidence that he/she has familiarized himself/herself with all requirements for proper execution of the project.

### **1.06 REJECTION**

The Town of Watertown reserves the right to reject any and all bids, if it deems it is to the best interest of the Town of Watertown.

### **1.07 TIME ALLOWANCE**

The work shall commence on the date specified in a written order from the Town of Watertown as the date for such beginning, and shall be completed on or before   -   calendar days from the date of said order. Liquidated damages are assessable at the rate of \$ 00.00 per day beyond the contract completion date. Assessment of liquidation damages, or a portion thereof, may be waived by the Town of Watertown if the Contractor submits evidence satisfactory to the Town of Watertown that the work has not been completed by the time specified because of delays caused solely by conditions beyond the control of the Contractor.

**1.08 DELAYS**

The authorized representative of the Town of Watertown may delay the commencement of the work, or any part thereof, due to unforeseen circumstances or conditions which have a bearing on the work required under this contract or for any other reason if it is deemed to be in the best interest of the Town of Watertown to do so. The Contractor shall have no claim for damages on account of such delay, but shall be entitled to so much additional time in which to complete the whole or any portion of the work required under this contract as the Town of Watertown shall certify, in writing, to be just.

**1.09 MATERIALS**

**.1 Preference in Supplies and Materials**

Your attention is directed to the provision of Chapter 7, Section 22 amended by Chapter 353 of the Acts of 1933 of the General Laws, which reads as follows: “ Section 22, Clause 17” a preference in the purchase of supplies and materials other consideration being equal, in favor: first of supplies and materials within the Commonwealth; the second, of supplies and materials manufactured and sold elsewhere within the United States.

**.2 Or Equal**

The words “or equal” are understood to follow the name of any maker, vendor, or proprietary product used in these specifications to define the materials or articles required and are understood to mean any materials or articles which in the opinion of the Town of Watertown is at least equal in quality, durability, appearance and perform at least equally the functions imposed by the general design.

**.3 Department Inspection and Tests**

Any material to be used and in the work may be tested or inspected at any time by the Town of Watertown and may be rejected if it fails to comply with specified tests, or if it shall appear not to be first quality material or workmanship.

**.4 Unsatisfactory Materials**

All materials furnished and used shall be new and of best quality available. Any material not meeting the approval of the Town of Watertown will be rejected and shall be removed from the Town of Watertown grounds by the Contractor, at no expense to the Town of Watertown.

**1.10 EQUIPMENT**

The Contractor shall furnish all tools, materials, labor and equipment required to do and to complete all work required for the satisfactory completion of the contract.

**1.11 LABOR & INSURANCE**

All workman employed on this contract shall not be paid less than the minimum wage rate for this area as designated by the Department of Labor & Industries, Commonwealth of Massachusetts. The Contractor shall furnish, and keep in force for the life of this contract Workman's Compensation Insurance for all workers employed on the job (Chapter 149 G.L. Section 34 A) Contractor's Protective Public Liability and Property Damage Liability Insurance must be maintained at the Contractor's expense during the life of the contract. The contractor shall not commence work on this contract until proof of compliance has been furnished to the Town of Watertown on both Worker's Compensation and Public Liability Insurance. The Contractor shall take out and maintain Insurance and Contractor's Protective Public Liability and Property Damage Liability Insurance in accordance with the contract terms in not less than the following amounts.

<u>General Liability</u>		<u>Property Damage</u>	
<u>Bodily Injury</u>		<u>Combined Single Limit</u>	
<u>Each Person</u>	<u>Each Occurrence</u>	<u>Each Person</u>	<u>Aggregate</u>
<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$1,000,000</b>	<b>\$2,000,000</b>

**1.12 UTILITIES**

Water, light, heat and electric energy for construction purposes will be furnished by the Town of Watertown at the nearest existing service outlets of such characteristics as are in existence and in such amounts as can be made available without hampering the operations of the Town of Watertown. Wasteful use or other abuse of this privilege will be grounds for discontinuance.

**1.13 SAFETY PRECAUTIONS**

The Contractor shall take all precautions to safeguard the health and well-being of all workmen and all others rightfully on the Town of Watertown premises who may be affected by work done under this contract. He shall similarly safeguard Town of Watertown property.

All safety laws and regulations of the Commonwealth of Massachusetts, applicable to work performed under this contract, shall be adhered to.

**1.14 STORAGE**

The Contractor shall confine his/her apparatus, the storage of materials, and the operations of his/her workmen, to the limits prescribed by the Town of Watertown and shall not unreasonably encumber the premises with his materials.

**1.15 POWER OF DEPARTMENT OR TOWN OF WATERTOWN REPRESENTATIVE**

The Town of Watertown shall have the power to reject all work or material which does not conform to this contract; to direct the application of additional work-force increased or diminished; and to decide questions, which arise between the parties, relative to the execution of the work.

**1.16 INSPECTION**

Official representatives of the Town of Watertown shall have the right to inspect the workmanship and materials and all other aspects of the work, at any time.

**1.17 SALVAGE**

All salvageable materials, fixtures or equipment removed by the Contractor shall remain the property of the Town of Watertown and shall be removed to locations as designated by the representative, unless ownership is specifically designated herein as being the Contractor's.

**1.18 CLEANING UP**

The Contractor shall, as directed by the Town of Watertown or Town of Watertown's Authorities, remove from the Town of Watertown property, at his own expense, all temporary structures, rubbish and waste materials, resulting from his operations.

**1.19 ACCEPTANCE**

The work shall be inspected for acceptance by the Town of Watertown's representative promptly upon receipt of notice in writing that the work is ready for such inspection.

**1.20 PAYMENT**

Payments will be made within thirty (30) days from receipt of invoice.

**1.21 CHANGES IN WORK**

The Town of Watertown may order changes in the work within the scope of the contract, including but not limited to, changes in: (a) the plans and specifications; (b) in the method or manner of performance of the work; (c) in the Town's buildings, equipment materials, services or site; (d) in the schedule for performance of work. The Town of Watertown may direct the Contractor to perform any change order work and the Contractor shall immediately do any and all work required to effect the change in contract. Whenever a change in work is ordered, and said change will cause an equitable adjustment in the Contractor's cost, the Contractor may request an equitable adjustment in the contract price. A request for such an adjustment shall be in writing and shall be submitted by the Contractor to the Department before commencement of the pertinent work or as soon thereafter as possible. The Department and the Contractor shall by negotiation agree upon an equitable adjustment in the contract price before commencement of pertinent work or as soon as thereafter as possible. If no agreement is reached, the Contractor may appeal within thirty days as set forth in G.L. Chapter 149.

**1.22 ADDENDA**

Questions during the bidding period, regarding the accompanying plans and /or specifications, shall be submitted in triplicate to the Town of Watertown Purchasing Department, at least eight (8) days before the bid opening. The Town of Watertown Purchasing Department will prepare addenda on or about the three days prior to the bid opening, containing interpretations of all questions raised, which in the opinion of the Town of Watertown Purchasing Department require interpretation. All bidders of record will receive the addenda by email or fax.

### 1.23 NON-DISCRIMINATION ARTICLE

During the performance of this contract, the Contractor, for himself/herself, his/her assignees and successors in interest (hereinafter referred to as the "Contractor"), agrees as follows:

1. **In connection with performance of work:** under this contract, the Contractor agrees not to discriminate against any employee or applicant for employment because of race, color, religious creed, national origin, age, ancestry, sex, physical or mental handicap. The aforesaid provisions shall include, but not be limited to, the following: employment upgrading, demotion, or transfer; recruitment or recruitment advertising; layoff or termination; rates of pay or other forms or compensation; conditions or privileges or employment; and selection for training; including apprenticeship. The Contractor agrees to post hereafter in conspicuous places, available for employees and applicants for employment, notices to be provided by the Massachusetts Commission against Discrimination setting forth the provisions of the fair employment practice law of the Commonwealth.
2. **Compliance with Requirement:** The Contractor shall comply with the provisions of the Governor's Code of Fair Practices dated July 20, 1970, and Chapter 151B as amended, of the non-discrimination laws of the Commonwealth which are herein incorporated by reference and made part of this contract.
3. **Non-Discrimination:** The Contractor, in the performance of all work after award, and prior to completion of the contract work, shall not discriminate on grounds of practices or in the selection or retention of sub-contractors, and in the procurement of materials and rental of equipment.

### 1.24 ANTI-BOYCOTT COVENANT

The Contractor warrants, represents and agrees that during the time the contract is in effect, neither it nor any affiliated company, as hereinafter defined, participates in or cooperates with any international boycott, as defined in Section 999(b) (3) and (4) of the Internal Revenue Code of 1954, as amended, or engages in conduct declared to be unlawful by Section 2 of Chapter 151E, Massachusetts General Laws. If there shall be a breach in the warranty, representation and agreement contained in this paragraph, then without limiting such other rights as it may have, the Town of Watertown shall be entitled to rescind this contract. As used herein, affiliated company shall be any business entity of which at least 51% of the ownership interest of the Contractor, or which directly or indirectly owns at least 51% of the ownership interests of the Contractor.

### 1.25 EXECUTIVE ORDER NO. 195

The Governor or his designee, the secretary of Administration and Finance, and the State Auditor, or his designee, shall have the right at reasonable times and upon reasonable notice to examine the books, records, and other compilations of data of the Contractor(s) and Sub-Contractor(s) which pertain to the performance of the provisions and requirements of this proposed contract.

### 1.26 BID SECURITY

The bid must be accompanied by a **Bid Bond, or a Certified Check on, or a Treasurer's or Cashier's Check issued by a responsible bank or trust company, payable to the Town of Watertown, in the amount of five (5) percent of bid. No other form of bid security will be accepted.**

## **1.26 Bid Security Continued**

**All such bid deposits, except those of the three lowest responsible and eligible bidders, will be returned within five (5) days, Saturdays, Sundays, and legal holidays excluded, after the opening of proposals thereof. All remaining bid deposits will be returned upon the execution of delivery of the performance bond and the payment bond, or if no award is made, upon the expiration of thirty (30) days after the opening of bids, therefore, unless forfeited by failure to obtain the aforementioned bond.**

### **1.27 PERFORMANCE BOND**

A bond, with an approved surety company as surety, for the full amount of the contract, will be required for the faithful performance of the contract. The bond must be furnished within ten (10) working days after the date of receipt by the Contractor of the notification, by the Purchasing Department, of the award of the contract. In case of the failure of the bidder to furnish the bond within the said time, the Town may, at its option, determine that the bidder has abandoned the contract, and thereupon the proposal and acceptance shall be null and void. The bond shall remain in force & effect, for the full amount, for one (1) year from the date of acceptance of the work.

### **1.28 MATERIAL BOND**

A bond, with an approved surety company as surety, for **100% of the contract**, will be required as security for payment of laborers, material-men and others. This bond must be furnished at the time the performance bond is, within ten (10) working days after the date of receipt by the Contractor of the notification by the Watertown Purchasing Department of award of the contract. This bond shall remain in force and effect for a period of 120 days from the date of acceptance of the work. (Chapter 149, Section 29 and Chapter 30, Section 39A of the General Laws).

### **1.29 PAYROLL RECORDS**

Department of Labor and Industries requires that employers submit weekly payroll records to the Town of Watertown for all employees who have worked on the project. Employers must preserve these records for three years. Forms will be provided with prevailing wage rate schedule.

### **1.30 OSHA REQUIREMENTS CHAPTER 306 of the ACTS of 2004**

The contractor shall comply with the requirements of the Occupational Safety and Health Act and the Construction Safety Act of 1969, and Chapter 306 of the Acts of 2004 which are incorporated hereby by reference and all standard and regulations promulgated by the governmental and regulatory bodies responsible for administration thereof. The Contractor shall be responsible for compliance with such Acts, standards and regulations by its officers, agents, and employees, Subcontractors, Sub-subcontractors, suppliers and materialman. All employees at the worksite shall have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work.

**1.30 OSHA REQUIREMENTS CHAPTER 306 of the ACTS of 2004 continued**

The Contractor and all Subcontractors shall furnish documentation of successful completion of said course with the first certified payroll report for each employee. The Contractor and all Subcontractors shall comply fully with all laws and regulations subject to M.G.L. Section 144 and Section 44F. The Contractor shall indemnify and hold harmless the Town of Watertown from any and all fines, costs and expenses, including but not limited to reasonable attorney's fees, incurred by the Town of Watertown due to the Contractor's violation of such Acts, standards and/or regulations. Certificates of completion will be submitted along with first payment requisition and/or certified payroll.

**1.31 TAX-EXEMPTION NUMBER**

The successful bidder will be provided with a tax-exempt number in accordance with the provisions of G.L. Chapter 64H, Section 6 for the purchase of materials and supplies to be used or incorporated in the performance of this contract for the Town of Watertown.

**END OF SECTION**



**THE COMMONWEALTH OF MASSACHUSETTS  
EXECUTIVE OFFICE OF LABOR AND WORKFORCE DEVELOPMENT  
DEPARTMENT OF LABOR STANDARDS**

**Prevailing Wage Rates**

**As determined by the Director under the provisions of the  
Massachusetts General Laws, Chapter 149, Sections 26 to 27H**

RONALD L. WALKER, II  
Secretary

WILLIAM D MCKINNEY  
Director

CHARLES D. BAKER  
Governor

KARYN E. POLITO  
Lt. Governor

**Awarding Authority:** Town of Watertown

**Contract Number:**

**City/Town:** WATERTOWN

**Description of Work:** Replace Middle School Windows and related area work.

**Job Location:** 68 Waverly Avenue

Information about Prevailing Wage Schedules for Awarding Authorities and Contractors

- This wage schedule applies only to the specific project referenced at the top of this page and uniquely identified by the “Wage Request Number” on all pages of this schedule.
- An Awarding Authority must request an updated wage schedule from the Department of Labor Standards (“DLS”) if it has not opened bids or selected a contractor within 90 days of the date of issuance of the wage schedule. For CM AT RISK projects (bid pursuant to G.L. c.149A), the earlier of: (a) the execution date of the GMP Amendment, or (b) the bid for the first construction scope of work must be within 90-days of the wage schedule issuance date.
- The wage schedule shall be incorporated in any advertisement or call for bids for the project as required by M.G.L. c. 149, § 27. The wage schedule shall be made a part of the contract awarded for the project. The wage schedule must be posted in a conspicuous place at the work site for the life of the project in accordance with M.G.L. c. 149 § 27. The wages listed on the wage schedule must be paid to employees performing construction work on the project whether they are employed by the prime contractor, a filed sub-bidder, or any sub-contractor.
- All apprentices working on the project are required to be registered with the Massachusetts Department of Labor Standards, Division of Apprentice Standards (DLS/DAS). Apprentice must keep his/her apprentice identification card on his/her person during all work hours on the project. An apprentice registered with DAS may be paid the lower apprentice wage rate at the applicable step as provided on the prevailing wage schedule. **Any apprentice not registered with DLS/DAS regardless of whether or not they are registered with any other federal, state, local, or private agency must be paid the journeyworker's rate for the trade.**
- The wage rates will remain in effect for the duration of the project, except in the case of multi-year public construction projects. For construction projects lasting longer than one year, awarding authorities must request an updated wage schedule. Awarding authorities are required to request these updates no later than two weeks before the anniversary of the date the contract was executed by the awarding authority and the general contractor. For multi-year CM AT RISK projects, awarding authority must request an annual update no later than two weeks before the anniversary date, determined as the earlier of: (a) the execution date of the GMP Amendment, or (b) the execution date of the first amendment to permit procurement of construction services. Contractors are required to obtain the wage schedules from awarding authorities, and to pay no less than these rates to covered workers. The annual update requirement is not applicable to 27F “rental of equipment” contracts.
- Every contractor or subcontractor which performs construction work on the project is required to submit weekly payroll reports and a Statement of Compliance directly to the awarding authority by mail or email and keep them on file for three years. Each weekly payroll report must contain: the employee’s name, address, occupational classification, hours worked, and wages paid. Do not submit weekly payroll reports to DLS. A sample of a payroll reporting form may be obtained at <http://www.mass.gov/dols/pw>.
- Contractors with questions about the wage rates or classifications included on the wage schedule have an affirmative obligation to inquire with DLS at (617) 626-6953.
- Employees not receiving the prevailing wage rate set forth on the wage schedule may report the violation to the Fair Labor Division of the office of the Attorney General at (617) 727-3465.
- Failure of a contractor or subcontractor to pay the prevailing wage rates listed on the wage schedule to all employees who perform construction work on the project is a violation of the law and subjects the contractor or subcontractor to civil and

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
<b>Construction</b>						
(2 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	08/01/2016	\$33.25	\$10.91	\$10.08	\$0.00	\$54.24
	12/01/2016	\$33.25	\$10.91	\$10.89	\$0.00	\$55.05
(3 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	08/01/2016	\$33.32	\$10.91	\$10.08	\$0.00	\$54.31
	12/01/2016	\$33.32	\$10.91	\$10.89	\$0.00	\$55.12
(4 & 5 AXLE) DRIVER - EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	08/01/2016	\$33.44	\$10.91	\$10.08	\$0.00	\$54.43
	12/01/2016	\$33.44	\$10.91	\$10.89	\$0.00	\$55.24
ADS/SUBMERSIBLE PILOT <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$88.29	\$9.80	\$19.23	\$0.00	\$117.32
For apprentice rates see "Apprentice- PILE DRIVER"						
AIR TRACK OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.60	\$7.45	\$13.80	\$0.00	\$57.85
	12/01/2016	\$37.60	\$7.45	\$13.80	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
ASBESTOS REMOVER - PIPE / MECH. EQUIPT. <i>HEAT &amp; FROST INSULATORS LOCAL 6 (BOSTON)</i>	06/01/2016	\$32.90	\$11.50	\$7.10	\$0.00	\$51.50
	12/01/2016	\$33.90	\$11.50	\$7.10	\$0.00	\$52.50
	06/01/2017	\$34.90	\$11.50	\$7.10	\$0.00	\$53.50
	12/01/2017	\$35.90	\$11.50	\$7.10	\$0.00	\$54.50
	06/01/2018	\$36.90	\$11.50	\$7.10	\$0.00	\$55.50
	12/01/2018	\$37.90	\$11.50	\$7.10	\$0.00	\$56.50
	06/01/2019	\$38.90	\$11.50	\$7.10	\$0.00	\$57.50
	12/01/2019	\$39.90	\$11.50	\$7.10	\$0.00	\$58.50
	06/01/2020	\$40.90	\$11.50	\$7.10	\$0.00	\$59.50
	12/01/2020	\$41.90	\$11.50	\$7.10	\$0.00	\$60.50
ASPHALT RAKER <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
ASPHALT/CONCRETE/CRUSHER PLANT-ON SITE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BACKHOE/FRONT-END LOADER <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
BARCO-TYPE JUMPING TAMPER <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
BLOCK PAVER, RAMMER / CURB SETTER <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.60	\$7.45	\$13.80	\$0.00	\$57.85
	12/01/2016	\$37.60	\$7.45	\$13.80	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
BOILER MAKER <i>BOILERMAKERS LOCAL 29</i>	01/01/2016	\$41.62	\$6.97	\$16.21	\$0.00	\$64.80
	01/01/2017	\$42.92	\$6.97	\$16.21	\$0.00	\$66.10

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - BOILERMAKER - Local 29**

**Effective Date - 01/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$27.05	\$6.97	\$10.54	\$0.00	\$44.56
2	65	\$27.05	\$6.97	\$10.54	\$0.00	\$44.56
3	70	\$29.13	\$6.97	\$11.35	\$0.00	\$47.45
4	75	\$31.22	\$6.97	\$12.16	\$0.00	\$50.35
5	80	\$33.30	\$6.97	\$12.97	\$0.00	\$53.24
6	85	\$35.38	\$6.97	\$13.78	\$0.00	\$56.13
7	90	\$37.46	\$6.97	\$14.59	\$0.00	\$59.02
8	95	\$39.54	\$6.97	\$15.40	\$0.00	\$61.91

**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	65	\$27.90	\$6.97	\$10.54	\$0.00	\$45.41
2	65	\$27.90	\$6.97	\$10.54	\$0.00	\$45.41
3	70	\$30.04	\$6.97	\$11.35	\$0.00	\$48.36
4	75	\$32.19	\$6.97	\$12.16	\$0.00	\$51.32
5	80	\$34.34	\$6.97	\$12.97	\$0.00	\$54.28
6	85	\$36.48	\$6.97	\$13.78	\$0.00	\$57.23
7	90	\$38.63	\$6.97	\$14.59	\$0.00	\$60.19
8	95	\$40.77	\$6.97	\$15.40	\$0.00	\$63.14

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

BRICK/STONE/ARTIFICIAL MASONRY (INCL. MASONRY WATERPROOFING)	08/01/2016	\$50.76	\$10.18	\$19.22	\$0.00	\$80.16
BRICKLAYERS LOCAL 3 (WALTHAM)	02/01/2017	\$51.33	\$10.18	\$19.22	\$0.00	\$80.73

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - BRICK/PLASTER/CEMENT MASON - Local 3 Waltham**

**Effective Date - 08/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.38	\$10.18	\$19.22	\$0.00	\$54.78
2	60	\$30.46	\$10.18	\$19.22	\$0.00	\$59.86
3	70	\$35.53	\$10.18	\$19.22	\$0.00	\$64.93
4	80	\$40.61	\$10.18	\$19.22	\$0.00	\$70.01
5	90	\$45.68	\$10.18	\$19.22	\$0.00	\$75.08

**Effective Date - 02/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.67	\$10.18	\$19.22	\$0.00	\$55.07
2	60	\$30.80	\$10.18	\$19.22	\$0.00	\$60.20
3	70	\$35.93	\$10.18	\$19.22	\$0.00	\$65.33
4	80	\$41.06	\$10.18	\$19.22	\$0.00	\$70.46
5	90	\$46.20	\$10.18	\$19.22	\$0.00	\$75.60

**Notes:**

---

**Apprentice to Journeyworker Ratio:1:5**

<b>BULLDOZER/GRADER/SCRAPER</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
<b>CAISSON &amp; UNDERPINNING BOTTOM MAN</b> <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2016	\$36.95	\$7.45	\$14.00	\$0.00	\$58.40
	12/01/2016	\$37.95	\$7.45	\$14.00	\$0.00	\$59.40
For apprentice rates see "Apprentice- LABORER"						
<b>CAISSON &amp; UNDERPINNING LABORER</b> <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2016	\$35.80	\$7.45	\$14.00	\$0.00	\$57.25
	12/01/2016	\$36.80	\$7.45	\$14.00	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
<b>CAISSON &amp; UNDERPINNING TOP MAN</b> <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2016	\$35.80	\$7.45	\$14.00	\$0.00	\$57.25
	12/01/2016	\$36.80	\$7.45	\$14.00	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
<b>CARBIDE CORE DRILL OPERATOR</b> <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
<b>CARPENTER</b> <i>CARPENTERS -ZONE 2 (Eastern Massachusetts)</i>	09/01/2016	\$38.08	\$9.80	\$16.82	\$0.00	\$64.70
	03/01/2017	\$39.05	\$9.80	\$16.82	\$0.00	\$65.67
	09/01/2017	\$40.06	\$9.80	\$16.82	\$0.00	\$66.68
	03/01/2018	\$41.06	\$9.80	\$16.82	\$0.00	\$67.68
	09/01/2018	\$42.10	\$9.80	\$16.82	\$0.00	\$68.72
	03/01/2019	\$43.13	\$9.80	\$16.82	\$0.00	\$69.75

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - CARPENTER - Zone 2 Eastern MA**

**Effective Date - 09/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.04	\$9.80	\$1.63	\$0.00	\$30.47
2	60	\$22.85	\$9.80	\$1.63	\$0.00	\$34.28
3	70	\$26.66	\$9.80	\$11.93	\$0.00	\$48.39
4	75	\$28.56	\$9.80	\$11.93	\$0.00	\$50.29
5	80	\$30.46	\$9.80	\$13.56	\$0.00	\$53.82
6	80	\$30.46	\$9.80	\$13.56	\$0.00	\$53.82
7	90	\$34.27	\$9.80	\$15.19	\$0.00	\$59.26
8	90	\$34.27	\$9.80	\$15.19	\$0.00	\$59.26

**Effective Date - 03/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.53	\$9.80	\$1.63	\$0.00	\$30.96
2	60	\$23.43	\$9.80	\$1.63	\$0.00	\$34.86
3	70	\$27.34	\$9.80	\$11.93	\$0.00	\$49.07
4	75	\$29.29	\$9.80	\$11.93	\$0.00	\$51.02
5	80	\$31.24	\$9.80	\$13.56	\$0.00	\$54.60
6	80	\$31.24	\$9.80	\$13.56	\$0.00	\$54.60
7	90	\$35.15	\$9.80	\$15.19	\$0.00	\$60.14
8	90	\$35.15	\$9.80	\$15.19	\$0.00	\$60.14

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

CEMENT MASONRY/PLASTERING BRICKLAYERS LOCAL 3 (WALTHAM)	01/01/2016	\$46.44	\$10.90	\$18.71	\$1.30	\$77.35
--	------------	---------	---------	---------	--------	---------

**Apprentice - CEMENT MASONRY/PLASTERING - Eastern Mass (Waltham)**

**Effective Date - 01/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.22	\$10.90	\$12.21	\$0.00	\$46.33
2	60	\$27.86	\$10.90	\$13.71	\$1.30	\$53.77
3	65	\$30.19	\$10.90	\$14.71	\$1.30	\$57.10
4	70	\$32.51	\$10.90	\$15.71	\$1.30	\$60.42
5	75	\$34.83	\$10.90	\$16.71	\$1.30	\$63.74
6	80	\$37.15	\$10.90	\$17.71	\$1.30	\$67.06
7	90	\$41.80	\$10.90	\$18.71	\$1.30	\$72.71

**Notes:**  
Steps 3,4 are 500 hrs. All other steps are 1,000 hrs.

**Apprentice to Journeyworker Ratio:1:3**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
CHAIN SAW OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
CLAM SHELLS/SLURRY BUCKETS/HEADING MACHINES <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$45.23	\$10.00	\$15.15	\$0.00	\$70.38
	12/01/2016	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	06/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63
	12/01/2017	\$48.48	\$10.00	\$15.15	\$0.00	\$73.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
COMPRESSOR OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$30.40	\$10.00	\$15.15	\$0.00	\$55.55
	12/01/2016	\$31.27	\$10.00	\$15.15	\$0.00	\$56.42
	06/01/2017	\$31.96	\$10.00	\$15.15	\$0.00	\$57.11
	12/01/2017	\$32.65	\$10.00	\$15.15	\$0.00	\$57.80
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DELEADER (BRIDGE) <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

**Effective Date - 07/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.23	\$7.85	\$0.00	\$0.00	\$33.08
2	55	\$27.75	\$7.85	\$3.66	\$0.00	\$39.26
3	60	\$30.28	\$7.85	\$3.99	\$0.00	\$42.12
4	65	\$32.80	\$7.85	\$4.32	\$0.00	\$44.97
5	70	\$35.32	\$7.85	\$14.11	\$0.00	\$57.28
6	75	\$37.85	\$7.85	\$14.44	\$0.00	\$60.14
7	80	\$40.37	\$7.85	\$14.77	\$0.00	\$62.99
8	90	\$45.41	\$7.85	\$15.44	\$0.00	\$68.70

**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.71	\$7.85	\$0.00	\$0.00	\$33.56
2	55	\$28.28	\$7.85	\$3.66	\$0.00	\$39.79
3	60	\$30.85	\$7.85	\$3.99	\$0.00	\$42.69
4	65	\$33.42	\$7.85	\$4.32	\$0.00	\$45.59
5	70	\$35.99	\$7.85	\$14.11	\$0.00	\$57.95
6	75	\$38.56	\$7.85	\$14.44	\$0.00	\$60.85
7	80	\$41.13	\$7.85	\$14.77	\$0.00	\$63.75
8	90	\$46.27	\$7.85	\$15.44	\$0.00	\$69.56

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

DEMO: ADZEMAN <i>LABORERS - ZONE 1</i>	12/01/2015	\$35.50	\$7.45	\$13.55	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						

<b>Classification</b>	<b>Effective Date</b>	<b>Base Wage</b>	<b>Health</b>	<b>Pension</b>	<b>Supplemental Unemployment</b>	<b>Total Rate</b>
DEMO: BACKHOE/LOADER/HAMMER OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2015	\$36.50	\$7.45	\$13.55	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: BURNERS <i>LABORERS - ZONE 1</i>	12/01/2015	\$36.25	\$7.45	\$13.55	\$0.00	\$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: CONCRETE CUTTER/SAWYER <i>LABORERS - ZONE 1</i>	12/01/2015	\$36.50	\$7.45	\$13.55	\$0.00	\$57.50
For apprentice rates see "Apprentice- LABORER"						
DEMO: JACKHAMMER OPERATOR <i>LABORERS - ZONE 1</i>	12/01/2015	\$36.25	\$7.45	\$13.55	\$0.00	\$57.25
For apprentice rates see "Apprentice- LABORER"						
DEMO: WRECKING LABORER <i>LABORERS - ZONE 1</i>	12/01/2015	\$35.50	\$7.45	\$13.55	\$0.00	\$56.50
For apprentice rates see "Apprentice- LABORER"						
DIRECTIONAL DRILL MACHINE OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
DIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$58.86	\$9.80	\$19.23	\$0.00	\$87.89
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER TENDER (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$63.06	\$9.80	\$19.23	\$0.00	\$92.09
For apprentice rates see "Apprentice- PILE DRIVER"						
DIVER/SLURRY (EFFLUENT) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$88.23	\$9.80	\$19.23	\$0.00	\$117.26
For apprentice rates see "Apprentice- PILE DRIVER"						
DRAWBRIDGE OPERATOR (Construction) <i>ELECTRICIANS LOCAL 103</i>	03/01/2016	\$46.17	\$13.00	\$16.39	\$0.00	\$75.56
For apprentice rates see "Apprentice- ELECTRICIAN"						
ELECTRICIAN <i>ELECTRICIANS LOCAL 103</i>	03/01/2016	\$46.17	\$13.00	\$16.39	\$0.00	\$75.56

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - ELECTRICIAN - Local 103**

**Effective Date - 03/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$18.47	\$13.00	\$0.55	\$0.00	\$32.02
2	40	\$18.47	\$13.00	\$0.55	\$0.00	\$32.02
3	45	\$20.78	\$13.00	\$12.34	\$0.00	\$46.12
4	45	\$20.78	\$13.00	\$12.34	\$0.00	\$46.12
5	50	\$23.09	\$13.00	\$12.71	\$0.00	\$48.80
6	55	\$25.39	\$13.00	\$13.07	\$0.00	\$51.46
7	60	\$27.70	\$13.00	\$13.44	\$0.00	\$54.14
8	65	\$30.01	\$13.00	\$13.81	\$0.00	\$56.82
9	70	\$32.32	\$13.00	\$14.18	\$0.00	\$59.50
10	75	\$34.63	\$13.00	\$14.55	\$0.00	\$62.18

**Notes:**  
App Prior 1/1/03; 30/35/40/45/50/55/65/70/75/80

**Apprentice to Journeyworker Ratio:2:3\*\*\***

ELEVATOR CONSTRUCTOR	01/01/2016	\$54.53	\$14.43	\$14.96	\$0.00	\$83.92
ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2017	\$55.86	\$15.28	\$15.71	\$0.00	\$86.85

**Apprentice - ELEVATOR CONSTRUCTOR - Local 4**

**Effective Date - 01/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.27	\$14.43	\$0.00	\$0.00	\$41.70
2	55	\$29.99	\$14.43	\$14.96	\$0.00	\$59.38
3	65	\$35.44	\$14.43	\$14.96	\$0.00	\$64.83
4	70	\$38.17	\$14.43	\$14.96	\$0.00	\$67.56
5	80	\$43.62	\$14.43	\$14.96	\$0.00	\$73.01

**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$27.93	\$15.28	\$0.00	\$0.00	\$43.21
2	55	\$30.72	\$15.28	\$15.71	\$0.00	\$61.71
3	65	\$36.31	\$15.28	\$15.71	\$0.00	\$67.30
4	70	\$39.10	\$15.28	\$15.71	\$0.00	\$70.09
5	80	\$44.69	\$15.28	\$15.71	\$0.00	\$75.68

**Notes:**  
Steps 1-2 are 6 mos.; Steps 3-5 are 1 year

**Apprentice to Journeyworker Ratio:1:1**

ELEVATOR CONSTRUCTOR HELPER	01/01/2016	\$38.17	\$14.43	\$14.96	\$0.00	\$67.56
ELEVATOR CONSTRUCTORS LOCAL 4	01/01/2017	\$39.10	\$15.28	\$15.71	\$0.00	\$70.09

For apprentice rates see "Apprentice - ELEVATOR CONSTRUCTOR"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
FENCE & GUARD RAIL ERECTOR <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
FIELD ENG.INST.PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2016	\$41.37	\$10.00	\$15.15	\$0.00	\$66.52
	05/01/2017	\$42.25	\$10.00	\$15.15	\$0.00	\$67.40
	11/01/2017	\$42.98	\$10.00	\$15.15	\$0.00	\$68.13
	05/01/2018	\$43.69	\$10.00	\$15.15	\$0.00	\$68.84
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.PARTY CHIEF-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2016	\$42.82	\$10.00	\$15.15	\$0.00	\$67.97
	05/01/2017	\$43.71	\$10.00	\$15.15	\$0.00	\$68.86
	11/01/2017	\$44.44	\$10.00	\$15.15	\$0.00	\$69.59
	05/01/2018	\$45.16	\$10.00	\$15.15	\$0.00	\$70.31
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIELD ENG.ROD PERSON-BLDG,SITE,HVY/HWY <i>OPERATING ENGINEERS LOCAL 4</i>	11/01/2016	\$21.98	\$10.00	\$15.15	\$0.00	\$47.13
	05/01/2017	\$22.51	\$10.00	\$15.15	\$0.00	\$47.66
	11/01/2017	\$22.93	\$10.00	\$15.15	\$0.00	\$48.08
	05/01/2018	\$23.36	\$10.00	\$15.15	\$0.00	\$48.51
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FIRE ALARM INSTALLER <i>ELECTRICIANS LOCAL 103</i>	03/01/2016	\$46.17	\$13.00	\$16.39	\$0.00	\$75.56
For apprentice rates see "Apprentice- ELECTRICIAN"						
FIRE ALARM REPAIR / MAINTENANCE / COMMISSIONING <i>ELECTRICIANS LOCAL 103</i>	03/01/2016	\$34.63	\$13.00	\$14.55	\$0.00	\$62.18
For apprentice rates see "Apprentice- TELECOMMUNICATIONS TECHNICIAN"						
FIREMAN (ASST. ENGINEER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$36.71	\$10.00	\$15.15	\$0.00	\$61.86
	12/01/2016	\$37.75	\$10.00	\$15.15	\$0.00	\$62.90
	06/01/2017	\$38.59	\$10.00	\$15.15	\$0.00	\$63.74
	12/01/2017	\$39.42	\$10.00	\$15.15	\$0.00	\$64.57
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
FLAGGER & SIGNALER <i>LABORERS - ZONE 1</i>	06/01/2016	\$20.50	\$7.45	\$13.80	\$0.00	\$41.75
	12/01/2016	\$20.50	\$7.45	\$13.80	\$0.00	\$41.75
For apprentice rates see "Apprentice- LABORER"						
FLOORCOVERER <i>FLOORCOVERERS LOCAL 2168 ZONE 1</i>	03/01/2016	\$42.13	\$9.80	\$17.62	\$0.00	\$69.55

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - FLOORCOVERER - Local 2168 Zone I**

**Effective Date - 03/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.07	\$9.80	\$1.79	\$0.00	\$32.66
2	55	\$23.17	\$9.80	\$1.79	\$0.00	\$34.76
3	60	\$25.28	\$9.80	\$12.25	\$0.00	\$47.33
4	65	\$27.38	\$9.80	\$12.25	\$0.00	\$49.43
5	70	\$29.49	\$9.80	\$14.04	\$0.00	\$53.33
6	75	\$31.60	\$9.80	\$14.04	\$0.00	\$55.44
7	80	\$33.70	\$9.80	\$15.83	\$0.00	\$59.33
8	85	\$35.81	\$9.80	\$15.83	\$0.00	\$61.44

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

<b>FORK LIFT/CHERRY PICKER</b>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
<i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>GENERATOR/LIGHTING PLANT/HEATERS</b>	06/01/2016	\$30.40	\$10.00	\$15.15	\$0.00	\$55.55
<i>OPERATING ENGINEERS LOCAL 4</i>	12/01/2016	\$31.27	\$10.00	\$15.15	\$0.00	\$56.42
	06/01/2017	\$31.96	\$10.00	\$15.15	\$0.00	\$57.11
	12/01/2017	\$32.65	\$10.00	\$15.15	\$0.00	\$57.80

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>GLAZIER (GLASS PLANK/AIR BARRIER/INTERIOR SYSTEMS)</b>	07/01/2016	\$39.96	\$7.85	\$16.10	\$0.00	\$63.91
<i>GLAZIERS LOCAL 35 (ZONE 2)</i>	01/01/2017	\$40.91	\$7.85	\$16.10	\$0.00	\$64.86

**Apprentice - GLAZIER - Local 35 Zone 2**

**Effective Date - 07/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.98	\$7.85	\$0.00	\$0.00	\$27.83
2	55	\$21.98	\$7.85	\$3.66	\$0.00	\$33.49
3	60	\$23.98	\$7.85	\$3.99	\$0.00	\$35.82
4	65	\$25.97	\$7.85	\$4.32	\$0.00	\$38.14
5	70	\$27.97	\$7.85	\$14.11	\$0.00	\$49.93
6	75	\$29.97	\$7.85	\$14.44	\$0.00	\$52.26
7	80	\$31.97	\$7.85	\$14.77	\$0.00	\$54.59
8	90	\$35.96	\$7.85	\$15.44	\$0.00	\$59.25

**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.46	\$7.85	\$0.00	\$0.00	\$28.31
2	55	\$22.50	\$7.85	\$3.66	\$0.00	\$34.01
3	60	\$24.55	\$7.85	\$3.99	\$0.00	\$36.39
4	65	\$26.59	\$7.85	\$4.32	\$0.00	\$38.76
5	70	\$28.64	\$7.85	\$14.11	\$0.00	\$50.60
6	75	\$30.68	\$7.85	\$14.44	\$0.00	\$52.97
7	80	\$32.73	\$7.85	\$14.77	\$0.00	\$55.35
8	90	\$36.82	\$7.85	\$15.44	\$0.00	\$60.11

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

HOISTING ENGINEER/CRANES/GRADALLS	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
OPERATING ENGINEERS LOCAL 4	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - OPERATING ENGINEERS - Local 4**

**Effective Date - 06/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$24.33	\$10.00	\$0.00	\$0.00	\$34.33
2	60	\$26.54	\$10.00	\$15.15	\$0.00	\$51.69
3	65	\$28.75	\$10.00	\$15.15	\$0.00	\$53.90
4	70	\$30.96	\$10.00	\$15.15	\$0.00	\$56.11
5	75	\$33.17	\$10.00	\$15.15	\$0.00	\$58.32
6	80	\$35.38	\$10.00	\$15.15	\$0.00	\$60.53
7	85	\$37.60	\$10.00	\$15.15	\$0.00	\$62.75
8	90	\$39.81	\$10.00	\$15.15	\$0.00	\$64.96

**Effective Date - 12/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$25.01	\$10.00	\$0.00	\$0.00	\$35.01
2	60	\$27.29	\$10.00	\$15.15	\$0.00	\$52.44
3	65	\$29.56	\$10.00	\$15.15	\$0.00	\$54.71
4	70	\$31.84	\$10.00	\$15.15	\$0.00	\$56.99
5	75	\$34.11	\$10.00	\$15.15	\$0.00	\$59.26
6	80	\$36.38	\$10.00	\$15.15	\$0.00	\$61.53
7	85	\$38.66	\$10.00	\$15.15	\$0.00	\$63.81
8	90	\$40.93	\$10.00	\$15.15	\$0.00	\$66.08

**Notes:**

**Apprentice to Journeyworker Ratio:1:6**

HVAC (DUCTWORK) SHEETMETAL WORKERS LOCAL 17 - A	11/01/2016	\$43.40	\$10.70	\$23.07	\$2.32	\$79.49
	02/01/2017	\$44.50	\$10.70	\$23.07	\$2.32	\$80.59
	08/01/2017	\$45.60	\$10.70	\$23.07	\$2.32	\$81.69
	02/01/2018	\$46.75	\$10.70	\$23.07	\$2.32	\$82.84

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (ELECTRICAL CONTROLS) ELECTRICIANS LOCAL 103	03/01/2016	\$46.17	\$13.00	\$16.39	\$0.00	\$75.56
--	------------	---------	---------	---------	--------	---------

For apprentice rates see "Apprentice- ELECTRICIAN"

HVAC (TESTING AND BALANCING - AIR) SHEETMETAL WORKERS LOCAL 17 - A	11/01/2016	\$43.40	\$10.70	\$23.07	\$2.32	\$79.49
	02/01/2017	\$44.50	\$10.70	\$23.07	\$2.32	\$80.59
	08/01/2017	\$45.60	\$10.70	\$23.07	\$2.32	\$81.69
	02/01/2018	\$46.75	\$10.70	\$23.07	\$2.32	\$82.84

For apprentice rates see "Apprentice- SHEET METAL WORKER"

HVAC (TESTING AND BALANCING -WATER) PIPEFITTERS LOCAL 537	09/01/2016	\$50.19	\$9.70	\$18.14	\$0.00	\$78.03
	03/01/2017	\$51.19	\$9.70	\$18.14	\$0.00	\$79.03

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

HVAC MECHANIC PIPEFITTERS LOCAL 537	09/01/2016	\$50.19	\$9.70	\$18.14	\$0.00	\$78.03
	03/01/2017	\$51.19	\$9.70	\$18.14	\$0.00	\$79.03

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
HYDRAULIC DRILLS LABORERS - ZONE 1	06/01/2016	\$36.60	\$7.45	\$13.80	\$0.00	\$57.85
	12/01/2016	\$37.60	\$7.45	\$13.80	\$0.00	\$58.85
For apprentice rates see "Apprentice- LABORER"						
INSULATOR (PIPES & TANKS) HEAT & FROST INSULATORS LOCAL 6 (BOSTON)	09/01/2016	\$45.09	\$11.75	\$14.20	\$0.00	\$71.04
	09/01/2017	\$47.09	\$11.75	\$14.20	\$0.00	\$73.04
	09/01/2018	\$49.34	\$11.75	\$14.20	\$0.00	\$75.29
	09/01/2019	\$51.84	\$11.75	\$14.20	\$0.00	\$77.79

**Apprentice - ASBESTOS INSULATOR (Pipes & Tanks) - Local 6 Boston**

**Effective Date - 09/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$22.55	\$11.75	\$10.45	\$0.00	\$44.75
2	60	\$27.05	\$11.75	\$11.20	\$0.00	\$50.00
3	70	\$31.56	\$11.75	\$11.95	\$0.00	\$55.26
4	80	\$36.07	\$11.75	\$12.70	\$0.00	\$60.52

**Effective Date - 09/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$23.55	\$11.75	\$10.45	\$0.00	\$45.75
2	60	\$28.25	\$11.75	\$11.20	\$0.00	\$51.20
3	70	\$32.96	\$11.75	\$11.95	\$0.00	\$56.66
4	80	\$37.67	\$11.75	\$12.70	\$0.00	\$62.12

**Notes:**

Steps are 1 year

**Apprentice to Journeyworker Ratio:1:4**

IRONWORKER/WELDER IRONWORKERS LOCAL 7 (BOSTON AREA)	09/16/2016	\$44.05	\$7.80	\$20.85	\$0.00	\$72.70
	03/16/2017	\$44.65	\$7.80	\$20.85	\$0.00	\$73.30

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - IRONWORKER - Local 7 Boston**

**Effective Date - 09/16/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$26.43	\$7.80	\$20.85	\$0.00	\$55.08
2	70	\$30.84	\$7.80	\$20.85	\$0.00	\$59.49
3	75	\$33.04	\$7.80	\$20.85	\$0.00	\$61.69
4	80	\$35.24	\$7.80	\$20.85	\$0.00	\$63.89
5	85	\$37.44	\$7.80	\$20.85	\$0.00	\$66.09
6	90	\$39.65	\$7.80	\$20.85	\$0.00	\$68.30

**Effective Date - 03/16/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$26.79	\$7.80	\$20.85	\$0.00	\$55.44
2	70	\$31.26	\$7.80	\$20.85	\$0.00	\$59.91
3	75	\$33.49	\$7.80	\$20.85	\$0.00	\$62.14
4	80	\$35.72	\$7.80	\$20.85	\$0.00	\$64.37
5	85	\$37.95	\$7.80	\$20.85	\$0.00	\$66.60
6	90	\$40.19	\$7.80	\$20.85	\$0.00	\$68.84

**Notes:**

\*\* Structural 1:6; Ornamental 1:4

**Apprentice to Journeyworker Ratio:\*\***

JACKHAMMER & PAVING BREAKER OPERATOR	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
LABORERS - ZONE 1	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
LABORER	06/01/2016	\$35.85	\$7.45	\$13.80	\$0.00	\$57.10
LABORERS - ZONE 1	12/01/2016	\$36.85	\$7.45	\$13.80	\$0.00	\$58.10

**Apprentice - LABORER - Zone 1**

**Effective Date - 06/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$21.51	\$7.45	\$13.80	\$0.00	\$42.76
2	70	\$25.10	\$7.45	\$13.80	\$0.00	\$46.35
3	80	\$28.68	\$7.45	\$13.80	\$0.00	\$49.93
4	90	\$32.27	\$7.45	\$13.80	\$0.00	\$53.52

**Effective Date - 12/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$22.11	\$7.45	\$13.80	\$0.00	\$43.36
2	70	\$25.80	\$7.45	\$13.80	\$0.00	\$47.05
3	80	\$29.48	\$7.45	\$13.80	\$0.00	\$50.73
4	90	\$33.17	\$7.45	\$13.80	\$0.00	\$54.42

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

LABORER: CARPENTER TENDER LABORERS - ZONE 1	06/01/2016	\$35.85	\$7.45	\$13.80	\$0.00	\$57.10
--	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

LABORER: CEMENT FINISHER TENDER LABORERS - ZONE 1	06/01/2016	\$35.85	\$7.45	\$13.80	\$0.00	\$57.10
	12/01/2016	\$36.85	\$7.45	\$13.80	\$0.00	\$58.10

For apprentice rates see "Apprentice- LABORER"

LABORER: HAZARDOUS WASTE/ASBESTOS REMOVER LABORERS - ZONE 1	12/01/2015	\$35.50	\$7.45	\$13.55	\$0.00	\$56.50
--	------------	---------	--------	---------	--------	---------

For apprentice rates see "Apprentice- LABORER"

LABORER: MASON TENDER LABORERS - ZONE 1	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

LABORER: MULTI-TRADE TENDER LABORERS - ZONE 1	06/01/2016	\$35.85	\$7.45	\$13.80	\$0.00	\$57.10
	12/01/2016	\$36.85	\$7.45	\$13.80	\$0.00	\$58.10

For apprentice rates see "Apprentice- LABORER"

LABORER: TREE REMOVER LABORERS - ZONE 1	06/01/2016	\$35.85	\$7.45	\$13.80	\$0.00	\$57.10
	12/01/2016	\$36.85	\$7.45	\$13.80	\$0.00	\$58.10

This classification applies to all tree work associated with the removal of standing trees, and trimming and removal of branches and limbs when the work is not done for a utility company for the purpose of operation, maintenance or repair of utility company equipment. For apprentice rates see "Apprentice- LABORER"

LASER BEAM OPERATOR LABORERS - ZONE 1	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

MARBLE & TILE FINISHERS BRICKLAYERS LOCAL 3 - MARBLE & TILE	08/01/2016	\$38.78	\$10.18	\$17.78	\$0.00	\$66.74
	02/01/2017	\$39.24	\$10.18	\$17.78	\$0.00	\$67.20

**Apprentice - MARBLE & TILE FINISHER - Local 3 Marble & Tile**

**Effective Date - 08/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.39	\$10.18	\$17.78	\$0.00	\$47.35
2	60	\$23.27	\$10.18	\$17.78	\$0.00	\$51.23
3	70	\$27.15	\$10.18	\$17.78	\$0.00	\$55.11
4	80	\$31.02	\$10.18	\$17.78	\$0.00	\$58.98
5	90	\$34.90	\$10.18	\$17.78	\$0.00	\$62.86

**Effective Date - 02/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.62	\$10.18	\$17.78	\$0.00	\$47.58
2	60	\$23.54	\$10.18	\$17.78	\$0.00	\$51.50
3	70	\$27.47	\$10.18	\$17.78	\$0.00	\$55.43
4	80	\$31.39	\$10.18	\$17.78	\$0.00	\$59.35
5	90	\$35.32	\$10.18	\$17.78	\$0.00	\$63.28

Notes:

**Apprentice to Journeyworker Ratio:1:3**

MARBLE MASONS, TILELAYERS & TERRAZZO MECH	08/01/2016	\$50.80	\$10.18	\$19.22	\$0.00	\$80.20
BRICKLAYERS LOCAL 3 - MARBLE & TILE	02/01/2017	\$51.37	\$10.18	\$19.22	\$0.00	\$80.77

**Apprentice - MARBLE-TILE-TERRAZZO MECHANIC - Local 3 Marble & Tile**

**Effective Date - 08/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.40	\$10.18	\$19.22	\$0.00	\$54.80
2	60	\$30.48	\$10.18	\$19.22	\$0.00	\$59.88
3	70	\$35.56	\$10.18	\$19.22	\$0.00	\$64.96
4	80	\$40.64	\$10.18	\$19.22	\$0.00	\$70.04
5	90	\$45.72	\$10.18	\$19.22	\$0.00	\$75.12

**Effective Date - 02/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.69	\$10.18	\$19.22	\$0.00	\$55.09
2	60	\$30.82	\$10.18	\$19.22	\$0.00	\$60.22
3	70	\$35.96	\$10.18	\$19.22	\$0.00	\$65.36
4	80	\$41.10	\$10.18	\$19.22	\$0.00	\$70.50
5	90	\$46.23	\$10.18	\$19.22	\$0.00	\$75.63

Notes:

**Apprentice to Journeyworker Ratio:1:5**

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
MECH. SWEEPER OPERATOR (ON CONST. SITES) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MECHANICS MAINTENANCE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
MILLWRIGHT (Zone 1) <i>MILLWRIGHTS LOCAL 1121 - Zone 1</i>	04/01/2015	\$37.64	\$9.80	\$16.21	\$0.00	\$63.65
<b>Apprentice - MILLWRIGHT - Local 1121 Zone 1</b>						
<b>Effective Date - 04/01/2015</b>						
Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	55	\$20.70	\$9.80	\$4.48	\$0.00	\$34.98
2	65	\$24.47	\$9.80	\$13.36	\$0.00	\$47.63
3	75	\$28.23	\$9.80	\$14.18	\$0.00	\$52.21
4	85	\$31.99	\$9.80	\$14.99	\$0.00	\$56.78
<b>Notes:</b>						
Steps are 2,000 hours						
<b>Apprentice to Journeyworker Ratio:1:5</b>						
MORTAR MIXER <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
OILER (OTHER THAN TRUCK CRANES,GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$22.41	\$10.00	\$15.15	\$0.00	\$47.56
	12/01/2016	\$23.06	\$10.00	\$15.15	\$0.00	\$48.21
	06/01/2017	\$23.57	\$10.00	\$15.15	\$0.00	\$48.72
	12/01/2017	\$24.09	\$10.00	\$15.15	\$0.00	\$49.24
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OILER (TRUCK CRANES, GRADALLS) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$26.29	\$10.00	\$15.15	\$0.00	\$51.44
	12/01/2016	\$27.04	\$10.00	\$15.15	\$0.00	\$52.19
	06/01/2017	\$27.64	\$10.00	\$15.15	\$0.00	\$52.79
	12/01/2017	\$28.25	\$10.00	\$15.15	\$0.00	\$53.40
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
OTHER POWER DRIVEN EQUIPMENT - CLASS II <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
PAINTER (BRIDGES/TANKS) <i>PAINTERS LOCAL 35 - ZONE 2</i>	07/01/2016	\$50.46	\$7.85	\$16.10	\$0.00	\$74.41
	01/01/2017	\$51.41	\$7.85	\$16.10	\$0.00	\$75.36

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PAINTER Local 35 - BRIDGES/TANKS**

**Effective Date - 07/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.23	\$7.85	\$0.00	\$0.00	\$33.08
2	55	\$27.75	\$7.85	\$3.66	\$0.00	\$39.26
3	60	\$30.28	\$7.85	\$3.99	\$0.00	\$42.12
4	65	\$32.80	\$7.85	\$4.32	\$0.00	\$44.97
5	70	\$35.32	\$7.85	\$14.11	\$0.00	\$57.28
6	75	\$37.85	\$7.85	\$14.44	\$0.00	\$60.14
7	80	\$40.37	\$7.85	\$14.77	\$0.00	\$62.99
8	90	\$45.41	\$7.85	\$15.44	\$0.00	\$68.70

**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.71	\$7.85	\$0.00	\$0.00	\$33.56
2	55	\$28.28	\$7.85	\$3.66	\$0.00	\$39.79
3	60	\$30.85	\$7.85	\$3.99	\$0.00	\$42.69
4	65	\$33.42	\$7.85	\$4.32	\$0.00	\$45.59
5	70	\$35.99	\$7.85	\$14.11	\$0.00	\$57.95
6	75	\$38.56	\$7.85	\$14.44	\$0.00	\$60.85
7	80	\$41.13	\$7.85	\$14.77	\$0.00	\$63.75
8	90	\$46.27	\$7.85	\$15.44	\$0.00	\$69.56

**Notes:**  
Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (SPRAY OR SANDBLAST, NEW) *	07/01/2016	\$41.36	\$7.85	\$16.10	\$0.00	\$65.31
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	01/01/2017	\$42.31	\$7.85	\$16.10	\$0.00	\$66.26

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - New**

**Effective Date - 07/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.68	\$7.85	\$0.00	\$0.00	\$28.53
2	55	\$22.75	\$7.85	\$3.66	\$0.00	\$34.26
3	60	\$24.82	\$7.85	\$3.99	\$0.00	\$36.66
4	65	\$26.88	\$7.85	\$4.32	\$0.00	\$39.05
5	70	\$28.95	\$7.85	\$14.11	\$0.00	\$50.91
6	75	\$31.02	\$7.85	\$14.44	\$0.00	\$53.31
7	80	\$33.09	\$7.85	\$14.77	\$0.00	\$55.71
8	90	\$37.22	\$7.85	\$15.44	\$0.00	\$60.51

**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.16	\$7.85	\$0.00	\$0.00	\$29.01
2	55	\$23.27	\$7.85	\$3.66	\$0.00	\$34.78
3	60	\$25.39	\$7.85	\$3.99	\$0.00	\$37.23
4	65	\$27.50	\$7.85	\$4.32	\$0.00	\$39.67
5	70	\$29.62	\$7.85	\$14.11	\$0.00	\$51.58
6	75	\$31.73	\$7.85	\$14.44	\$0.00	\$54.02
7	80	\$33.85	\$7.85	\$14.77	\$0.00	\$56.47
8	90	\$38.08	\$7.85	\$15.44	\$0.00	\$61.37

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (SPRAY OR SANDBLAST, REPAINT)	07/01/2016	\$39.42	\$7.85	\$16.10	\$0.00	\$63.37
PAINTERS LOCAL 35 - ZONE 2	01/01/2017	\$40.37	\$7.85	\$16.10	\$0.00	\$64.32

**Apprentice - PAINTER Local 35 Zone 2 - Spray/Sandblast - Repaint**

**Effective Date - 07/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.71	\$7.85	\$0.00	\$0.00	\$27.56
2	55	\$21.68	\$7.85	\$3.66	\$0.00	\$33.19
3	60	\$23.65	\$7.85	\$3.99	\$0.00	\$35.49
4	65	\$25.62	\$7.85	\$4.32	\$0.00	\$37.79
5	70	\$27.59	\$7.85	\$14.11	\$0.00	\$49.55
6	75	\$29.57	\$7.85	\$14.44	\$0.00	\$51.86
7	80	\$31.54	\$7.85	\$14.77	\$0.00	\$54.16
8	90	\$35.48	\$7.85	\$15.44	\$0.00	\$58.77

**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.19	\$7.85	\$0.00	\$0.00	\$28.04
2	55	\$22.20	\$7.85	\$3.66	\$0.00	\$33.71
3	60	\$24.22	\$7.85	\$3.99	\$0.00	\$36.06
4	65	\$26.24	\$7.85	\$4.32	\$0.00	\$38.41
5	70	\$28.26	\$7.85	\$14.11	\$0.00	\$50.22
6	75	\$30.28	\$7.85	\$14.44	\$0.00	\$52.57
7	80	\$32.30	\$7.85	\$14.77	\$0.00	\$54.92
8	90	\$36.33	\$7.85	\$15.44	\$0.00	\$59.62

**Notes:**  
Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER (TRAFFIC MARKINGS)	06/01/2016	\$35.85	\$7.45	\$13.80	\$0.00	\$57.10
LABORERS - ZONE 1	12/01/2016	\$36.85	\$7.45	\$13.80	\$0.00	\$58.10

For Apprentice rates see "Apprentice- LABORER"

PAINTER / TAPER (BRUSH, NEW) *	07/01/2016	\$39.96	\$7.85	\$16.10	\$0.00	\$63.91
* If 30% or more of surfaces to be painted are new construction, NEW paint rate shall be used. PAINTERS LOCAL 35 - ZONE 2	01/01/2017	\$40.91	\$7.85	\$16.10	\$0.00	\$64.86

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PAINTER - Local 35 Zone 2 - BRUSH NEW**

**Effective Date - 07/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.98	\$7.85	\$0.00	\$0.00	\$27.83
2	55	\$21.98	\$7.85	\$3.66	\$0.00	\$33.49
3	60	\$23.98	\$7.85	\$3.99	\$0.00	\$35.82
4	65	\$25.97	\$7.85	\$4.32	\$0.00	\$38.14
5	70	\$27.97	\$7.85	\$14.11	\$0.00	\$49.93
6	75	\$29.97	\$7.85	\$14.44	\$0.00	\$52.26
7	80	\$31.97	\$7.85	\$14.77	\$0.00	\$54.59
8	90	\$35.96	\$7.85	\$15.44	\$0.00	\$59.25

**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.46	\$7.85	\$0.00	\$0.00	\$28.31
2	55	\$22.50	\$7.85	\$3.66	\$0.00	\$34.01
3	60	\$24.55	\$7.85	\$3.99	\$0.00	\$36.39
4	65	\$26.59	\$7.85	\$4.32	\$0.00	\$38.76
5	70	\$28.64	\$7.85	\$14.11	\$0.00	\$50.60
6	75	\$30.68	\$7.85	\$14.44	\$0.00	\$52.97
7	80	\$32.73	\$7.85	\$14.77	\$0.00	\$55.35
8	90	\$36.82	\$7.85	\$15.44	\$0.00	\$60.11

**Notes:**  
Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PAINTER / TAPER (BRUSH, REPAINT)	07/01/2016	\$38.02	\$7.85	\$16.10	\$0.00	\$61.97
PAINTERS LOCAL 35 - ZONE 2	01/01/2017	\$38.97	\$7.85	\$16.10	\$0.00	\$62.92

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PAINTER Local 35 Zone 2 - BRUSH REPAINT**

**Effective Date - 07/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.01	\$7.85	\$0.00	\$0.00	\$26.86
2	55	\$20.91	\$7.85	\$3.66	\$0.00	\$32.42
3	60	\$22.81	\$7.85	\$3.99	\$0.00	\$34.65
4	65	\$24.71	\$7.85	\$4.32	\$0.00	\$36.88
5	70	\$26.61	\$7.85	\$14.11	\$0.00	\$48.57
6	75	\$28.52	\$7.85	\$14.44	\$0.00	\$50.81
7	80	\$30.42	\$7.85	\$14.77	\$0.00	\$53.04
8	90	\$34.22	\$7.85	\$15.44	\$0.00	\$57.51

**Effective Date - 01/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$19.49	\$7.85	\$0.00	\$0.00	\$27.34
2	55	\$21.43	\$7.85	\$3.66	\$0.00	\$32.94
3	60	\$23.38	\$7.85	\$3.99	\$0.00	\$35.22
4	65	\$25.33	\$7.85	\$4.32	\$0.00	\$37.50
5	70	\$27.28	\$7.85	\$14.11	\$0.00	\$49.24
6	75	\$29.23	\$7.85	\$14.44	\$0.00	\$51.52
7	80	\$31.18	\$7.85	\$14.77	\$0.00	\$53.80
8	90	\$35.07	\$7.85	\$15.44	\$0.00	\$58.36

**Notes:**

Steps are 750 hrs.

**Apprentice to Journeyworker Ratio:1:1**

PANEL & PICKUP TRUCKS DRIVER <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	08/01/2016	\$33.08	\$10.91	\$10.08	\$0.00	\$54.07
	12/01/2016	\$33.08	\$10.91	\$10.89	\$0.00	\$54.88
PIER AND DOCK CONSTRUCTOR (UNDERPINNING AND DECK) <i>PILE DRIVER LOCAL 56 (ZONE 1)</i> For apprentice rates see "Apprentice- PILE DRIVER"	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07
PILE DRIVER <i>PILE DRIVER LOCAL 56 (ZONE 1)</i>	08/01/2015	\$42.04	\$9.80	\$19.23	\$0.00	\$71.07

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - PILE DRIVER - Local 56 Zone 1**

**Effective Date - 08/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.02	\$9.80	\$19.23	\$0.00	\$50.05
2	60	\$25.22	\$9.80	\$19.23	\$0.00	\$54.25
3	70	\$29.43	\$9.80	\$19.23	\$0.00	\$58.46
4	75	\$31.53	\$9.80	\$19.23	\$0.00	\$60.56
5	80	\$33.63	\$9.80	\$19.23	\$0.00	\$62.66
6	80	\$33.63	\$9.80	\$19.23	\$0.00	\$62.66
7	90	\$37.84	\$9.80	\$19.23	\$0.00	\$66.87
8	90	\$37.84	\$9.80	\$19.23	\$0.00	\$66.87

**Notes:**

**Apprentice to Journeyworker Ratio:1:3**

PIPEFITTER & STEAMFITTER PIPEFITTERS LOCAL 537	09/01/2016	\$50.19	\$9.70	\$18.14	\$0.00	\$78.03
	03/01/2017	\$51.19	\$9.70	\$18.14	\$0.00	\$79.03

**Apprentice - PIPEFITTER - Local 537**

**Effective Date - 09/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.08	\$9.70	\$7.50	\$0.00	\$37.28
2	45	\$22.59	\$9.70	\$18.14	\$0.00	\$50.43
3	60	\$30.11	\$9.70	\$18.14	\$0.00	\$57.95
4	70	\$35.13	\$9.70	\$18.14	\$0.00	\$62.97
5	80	\$40.15	\$9.70	\$18.14	\$0.00	\$67.99

**Effective Date - 03/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$20.48	\$9.70	\$7.50	\$0.00	\$37.68
2	45	\$23.04	\$9.70	\$18.14	\$0.00	\$50.88
3	60	\$30.71	\$9.70	\$18.14	\$0.00	\$58.55
4	70	\$35.83	\$9.70	\$18.14	\$0.00	\$63.67
5	80	\$40.95	\$9.70	\$18.14	\$0.00	\$68.79

**Notes:**  
 \*\* 1:3; 3:15; 1:10 thereafter / Steps are 1 yr.  
 Refrig/AC Mechanic \*\*1:1;1:2;2:4;3:6;4:8;5:10;6:12;7:14;8:17;9:20;10:23(Max)

**Apprentice to Journeyworker Ratio:\*\***

PIPELAYER LABORERS - ZONE 1	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

PLUMBERS & GASFITTERS PLUMBERS & GASFITTERS LOCAL 12	09/01/2016	\$51.69	\$11.32	\$15.46	\$0.00	\$78.47
	03/01/2017	\$52.69	\$11.32	\$15.46	\$0.00	\$79.47

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - PLUMBER/GASFITTER - Local 12**

**Effective Date - 09/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$18.09	\$11.32	\$5.74	\$0.00	\$35.15
2	40	\$20.68	\$11.32	\$6.49	\$0.00	\$38.49
3	55	\$28.43	\$11.32	\$8.73	\$0.00	\$48.48
4	65	\$33.60	\$11.32	\$10.23	\$0.00	\$55.15
5	75	\$38.77	\$11.32	\$11.72	\$0.00	\$61.81

**Effective Date - 03/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$18.44	\$11.32	\$5.74	\$0.00	\$35.50
2	40	\$21.08	\$11.32	\$6.49	\$0.00	\$38.89
3	55	\$28.98	\$11.32	\$8.73	\$0.00	\$49.03
4	65	\$34.25	\$11.32	\$10.23	\$0.00	\$55.80
5	75	\$39.52	\$11.32	\$11.72	\$0.00	\$62.56

**Notes:**

\*\* 1:2; 2:6; 3:10; 4:14; 5:19/Steps are 1 yr  
Step4 with lic\$58.50 Step5 with lic\$65.36

**Apprentice to Journeyworker Ratio:\*\***

PNEUMATIC CONTROLS (TEMP.) <i>PIPEFITTERS LOCAL 537</i>	09/01/2016	\$50.19	\$9.70	\$18.14	\$0.00	\$78.03
	03/01/2017	\$51.19	\$9.70	\$18.14	\$0.00	\$79.03

For apprentice rates see "Apprentice- PIPEFITTER" or "PLUMBER/PIPEFITTER"

PNEUMATIC DRILL/TOOL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35

For apprentice rates see "Apprentice- LABORER"

POWDERMAN & BLASTER <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.85	\$7.45	\$13.80	\$0.00	\$58.10
	12/01/2016	\$37.85	\$7.45	\$13.80	\$0.00	\$59.10

For apprentice rates see "Apprentice- LABORER"

POWER SHOVEL/DERRICK/TRENCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PUMP OPERATOR (CONCRETE) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

PUMP OPERATOR (DEWATERING, OTHER) <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$30.40	\$10.00	\$15.15	\$0.00	\$55.55
	12/01/2016	\$31.27	\$10.00	\$15.15	\$0.00	\$56.42
	06/01/2017	\$31.96	\$10.00	\$15.15	\$0.00	\$57.11
	12/01/2017	\$32.65	\$10.00	\$15.15	\$0.00	\$57.80

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
READY MIX CONCRETE DRIVERS after 4/30/10 (Drivers Hired After 4/30/2010) <i>TEAMSTERS LOCAL 25b</i>	07/01/2016	\$28.03	\$8.23	\$9.31	\$0.00	\$45.57
	05/01/2017	\$28.18	\$8.23	\$9.72	\$0.00	\$46.13
	07/01/2017	\$28.18	\$8.48	\$9.72	\$0.00	\$46.38
READY-MIX CONCRETE DRIVER <i>TEAMSTERS LOCAL 25b</i>	07/01/2016	\$29.33	\$8.23	\$9.31	\$0.00	\$46.87
	05/01/2017	\$29.48	\$8.23	\$9.72	\$0.00	\$47.43
	07/01/2017	\$29.48	\$8.48	\$9.72	\$0.00	\$47.68
RECLAIMERS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
RESIDENTIAL WOOD FRAME (All Other Work) <i>CARPENTERS -ZONE 2 (Residential Wood)</i>	04/01/2015	\$25.25	\$9.80	\$16.82	\$0.00	\$51.87
RESIDENTIAL WOOD FRAME CARPENTER ** ** The Residential Wood Frame Carpenter classification applies only to the construction of new, wood frame residences that do not exceed four stories including the basement. <i>CARPENTERS -ZONE 2 (Residential Wood)</i> As of 9/1/09 Carpentry work on wood-frame residential WEATHERIZATION projects shall be paid the RESIDENTIAL WOOD FRAME CARPENTER rate.	04/01/2015	\$25.30	\$7.00	\$6.31	\$0.00	\$38.61

**Apprentice - CARPENTER (Residential Wood Frame) - Zone 2**

**Effective Date - 04/01/2015**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	60	\$15.18	\$7.00	\$0.00	\$0.00	\$22.18
2	60	\$15.18	\$7.00	\$0.00	\$0.00	\$22.18
3	65	\$16.45	\$7.00	\$6.31	\$0.00	\$29.76
4	70	\$17.71	\$7.00	\$6.31	\$0.00	\$31.02
5	75	\$18.98	\$7.00	\$6.31	\$0.00	\$32.29
6	80	\$20.24	\$7.00	\$6.31	\$0.00	\$33.55
7	85	\$21.51	\$7.00	\$6.31	\$0.00	\$34.82
8	90	\$22.77	\$7.00	\$6.31	\$0.00	\$36.08

**Notes:**

**Apprentice to Journeyworker Ratio:1:5**

RIDE-ON MOTORIZED BUGGY OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
ROLLER/SPREADER/MULCHING MACHINE <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
ROOFER (Inc.Roofer Waterproofing &Roofer Damproofg) ROOFERS LOCAL 33	08/01/2016	\$41.11	\$11.00	\$13.00	\$0.00	\$65.11
	02/01/2017	\$42.26	\$11.00	\$13.00	\$0.00	\$66.26
	08/01/2017	\$43.36	\$11.00	\$13.00	\$0.00	\$67.36
	02/01/2018	\$44.51	\$11.00	\$13.00	\$0.00	\$68.51
	08/01/2018	\$45.61	\$11.00	\$13.00	\$0.00	\$69.61
	02/01/2019	\$46.76	\$11.00	\$13.00	\$0.00	\$70.76

**Apprentice - ROOFER - Local 33**

**Effective Date - 08/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$20.56	\$11.00	\$3.44	\$0.00	\$35.00
2	60	\$24.67	\$11.00	\$13.00	\$0.00	\$48.67
3	65	\$26.72	\$11.00	\$13.00	\$0.00	\$50.72
4	75	\$30.83	\$11.00	\$13.00	\$0.00	\$54.83
5	85	\$34.94	\$11.00	\$13.00	\$0.00	\$58.94

**Effective Date - 02/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$21.13	\$11.00	\$3.44	\$0.00	\$35.57
2	60	\$25.36	\$11.00	\$13.00	\$0.00	\$49.36
3	65	\$27.47	\$11.00	\$13.00	\$0.00	\$51.47
4	75	\$31.70	\$11.00	\$13.00	\$0.00	\$55.70
5	85	\$35.92	\$11.00	\$13.00	\$0.00	\$59.92

**Notes:** \*\* 1:5, 2:6-10, the 1:10; Reroofing: 1:4, then 1:1  
Step 1 is 2000 hrs.; Steps 2-5 are 1000 hrs.

**Apprentice to Journeyworker Ratio:\*\***

ROOFER SLATE / TILE / PRECAST CONCRETE ROOFERS LOCAL 33	08/01/2016	\$41.36	\$11.00	\$13.00	\$0.00	\$65.36
	02/01/2017	\$42.51	\$11.00	\$13.00	\$0.00	\$66.51
	08/01/2017	\$43.61	\$11.00	\$13.00	\$0.00	\$67.61
	02/01/2018	\$44.76	\$11.00	\$13.00	\$0.00	\$68.76
	08/01/2018	\$45.86	\$11.00	\$13.00	\$0.00	\$69.86
	02/01/2019	\$47.01	\$11.00	\$13.00	\$0.00	\$71.01

For apprentice rates see "Apprentice- ROOFER"

SHEETMETAL WORKER SHEETMETAL WORKERS LOCAL 17 - A	11/01/2016	\$43.40	\$10.70	\$23.07	\$2.32	\$79.49
	02/01/2017	\$44.50	\$10.70	\$23.07	\$2.32	\$80.59
	08/01/2017	\$45.60	\$10.70	\$23.07	\$2.32	\$81.69
	02/01/2018	\$46.75	\$10.70	\$23.07	\$2.32	\$82.84

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - SHEET METAL WORKER - Local 17-A**

**Effective Date - 11/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.36	\$10.70	\$5.24	\$0.00	\$33.30
2	40	\$17.36	\$10.70	\$5.24	\$0.00	\$33.30
3	45	\$19.53	\$10.70	\$10.31	\$1.22	\$41.76
4	45	\$19.53	\$10.70	\$10.31	\$1.22	\$41.76
5	50	\$21.70	\$10.70	\$11.21	\$1.31	\$44.92
6	50	\$21.70	\$10.70	\$11.46	\$1.32	\$45.18
7	60	\$26.04	\$10.70	\$13.02	\$1.49	\$51.25
8	65	\$28.21	\$10.70	\$13.93	\$1.59	\$54.43
9	75	\$32.55	\$10.70	\$15.74	\$1.77	\$60.76
10	85	\$36.89	\$10.70	\$17.05	\$1.94	\$66.58

**Effective Date - 02/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$17.80	\$10.70	\$5.24	\$0.00	\$33.74
2	40	\$17.80	\$10.70	\$5.24	\$0.00	\$33.74
3	45	\$20.03	\$10.70	\$10.31	\$1.24	\$42.28
4	45	\$20.03	\$10.70	\$10.31	\$1.24	\$42.28
5	50	\$22.25	\$10.70	\$11.21	\$1.32	\$45.48
6	50	\$22.25	\$10.70	\$11.46	\$1.33	\$45.74
7	60	\$26.70	\$10.70	\$13.02	\$1.51	\$51.93
8	65	\$28.93	\$10.70	\$13.93	\$1.61	\$55.17
9	75	\$33.38	\$10.70	\$15.74	\$1.79	\$61.61
10	85	\$37.83	\$10.70	\$17.05	\$1.97	\$67.55

**Notes:**  
Steps are 6 mos.

**Apprentice to Journeyworker Ratio:1:4**

SIGN ERECTOR PAINTERS LOCAL 35 - ZONE 2	06/01/2013	\$25.81	\$7.07	\$7.05	\$0.00	\$39.93
--	------------	---------	--------	--------	--------	---------

**Classification**

**Effective Date    Base Wage    Health    Pension    Supplemental Unemployment    Total Rate**

**Apprentice - SIGN ERECTOR - Local 35 Zone 2**

**Effective Date - 06/01/2013**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$12.91	\$7.07	\$0.00	\$0.00	\$19.98
2	55	\$14.20	\$7.07	\$2.45	\$0.00	\$23.72
3	60	\$15.49	\$7.07	\$2.45	\$0.00	\$25.01
4	65	\$16.78	\$7.07	\$2.45	\$0.00	\$26.30
5	70	\$18.07	\$7.07	\$7.05	\$0.00	\$32.19
6	75	\$19.36	\$7.07	\$7.05	\$0.00	\$33.48
7	80	\$20.65	\$7.07	\$7.05	\$0.00	\$34.77
8	85	\$21.94	\$7.07	\$7.05	\$0.00	\$36.06
9	90	\$23.23	\$7.07	\$7.05	\$0.00	\$37.35

**Notes:**  
Steps are 4 mos.

**Apprentice to Journeyworker Ratio:1:1**

SPECIALIZED EARTH MOVING EQUIP < 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	08/01/2016	\$33.54	\$10.91	\$10.08	\$0.00	\$54.53
	12/01/2016	\$33.54	\$10.91	\$10.89	\$0.00	\$55.34
SPECIALIZED EARTH MOVING EQUIP > 35 TONS <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	08/01/2016	\$33.83	\$10.91	\$10.08	\$0.00	\$54.82
	12/01/2016	\$33.83	\$10.91	\$10.89	\$0.00	\$55.63
SPRINKLER FITTER <i>SPRINKLER FITTERS LOCAL 550 - (Section A) Zone 1</i>	10/01/2016	\$55.48	\$8.52	\$17.05	\$0.00	\$81.05
	03/01/2017	\$56.48	\$8.52	\$17.05	\$0.00	\$82.05

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - SPRINKLER FITTER - Local 550 (Section A) Zone 1**

**Effective Date - 10/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.42	\$8.52	\$8.55	\$0.00	\$36.49
2	40	\$22.19	\$8.52	\$8.55	\$0.00	\$39.26
3	45	\$24.97	\$8.52	\$8.55	\$0.00	\$42.04
4	50	\$27.74	\$8.52	\$8.55	\$0.00	\$44.81
5	55	\$30.51	\$8.52	\$8.55	\$0.00	\$47.58
6	60	\$33.29	\$8.52	\$10.05	\$0.00	\$51.86
7	65	\$36.06	\$8.52	\$10.05	\$0.00	\$54.63
8	70	\$38.84	\$8.52	\$10.05	\$0.00	\$57.41
9	75	\$41.61	\$8.52	\$10.05	\$0.00	\$60.18
10	80	\$44.38	\$8.52	\$10.05	\$0.00	\$62.95

**Effective Date - 03/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	35	\$19.77	\$8.52	\$8.55	\$0.00	\$36.84
2	40	\$22.59	\$8.52	\$8.55	\$0.00	\$39.66
3	45	\$25.42	\$8.52	\$8.55	\$0.00	\$42.49
4	50	\$28.24	\$8.52	\$8.55	\$0.00	\$45.31
5	55	\$31.06	\$8.52	\$8.55	\$0.00	\$48.13
6	60	\$33.89	\$8.52	\$10.05	\$0.00	\$52.46
7	65	\$36.71	\$8.52	\$10.05	\$0.00	\$55.28
8	70	\$39.54	\$8.52	\$10.05	\$0.00	\$58.11
9	75	\$42.36	\$8.52	\$10.05	\$0.00	\$60.93
10	80	\$45.18	\$8.52	\$10.05	\$0.00	\$63.75

**Notes:** Apprentice entered prior 9/30/10:  
40/45/50/55/60/65/70/75/80/85  
Steps are 850 hours

**Apprentice to Journeyworker Ratio:1:3**

<b>STEAM BOILER OPERATOR</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>TAMPERS, SELF-PROPELLED OR TRACTOR DRAWN</b> <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17

For apprentice rates see "Apprentice- OPERATING ENGINEERS"

<b>TELECOMMUNICATION TECHNICIAN</b> <i>ELECTRICIANS LOCAL 103</i>	03/01/2016	\$34.63	\$13.00	\$14.55	\$0.00	\$62.18
--	------------	---------	---------	---------	--------	---------

**Classification**

**Effective Date   Base Wage   Health   Pension   Supplemental Unemployment   Total Rate**

**Apprentice - TELECOMMUNICATION TECHNICIAN - Local 103**

**Effective Date - 03/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	40	\$13.85	\$13.00	\$0.42	\$0.00	\$27.27
2	40	\$13.85	\$13.00	\$0.42	\$0.00	\$27.27
3	45	\$15.58	\$13.00	\$11.52	\$0.00	\$40.10
4	45	\$15.58	\$13.00	\$11.52	\$0.00	\$40.10
5	50	\$17.32	\$13.00	\$11.79	\$0.00	\$42.11
6	55	\$19.05	\$13.00	\$12.06	\$0.00	\$44.11
7	60	\$20.78	\$13.00	\$12.34	\$0.00	\$46.12
8	65	\$22.51	\$13.00	\$12.62	\$0.00	\$48.13
9	70	\$24.24	\$13.00	\$12.90	\$0.00	\$50.14
10	75	\$25.97	\$13.00	\$13.17	\$0.00	\$52.14

**Notes:**

**Apprentice to Journeyworker Ratio:1:1**

TERRAZZO FINISHERS	08/01/2016	\$49.70	\$10.18	\$19.22	\$0.00	\$79.10
BRICKLAYERS LOCAL 3 - MARBLE & TILE	02/01/2017	\$50.27	\$10.18	\$19.22	\$0.00	\$79.67

**Apprentice - TERRAZZO FINISHER - Local 3 Marble & Tile**

**Effective Date - 08/01/2016**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$24.85	\$10.18	\$19.22	\$0.00	\$54.25
2	60	\$29.82	\$10.18	\$19.22	\$0.00	\$59.22
3	70	\$34.79	\$10.18	\$19.22	\$0.00	\$64.19
4	80	\$39.76	\$10.18	\$19.22	\$0.00	\$69.16
5	90	\$44.73	\$10.18	\$19.22	\$0.00	\$74.13

**Effective Date - 02/01/2017**

Step	percent	Apprentice Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
1	50	\$25.14	\$10.18	\$19.22	\$0.00	\$54.54
2	60	\$30.16	\$10.18	\$19.22	\$0.00	\$59.56
3	70	\$35.19	\$10.18	\$19.22	\$0.00	\$64.59
4	80	\$40.22	\$10.18	\$19.22	\$0.00	\$69.62
5	90	\$45.24	\$10.18	\$19.22	\$0.00	\$74.64

**Notes:**

**Apprentice to Journeyworker Ratio:1:3**

TEST BORING DRILLER	06/01/2016	\$37.20	\$7.45	\$14.00	\$0.00	\$58.65
LABORERS - FOUNDATION AND MARINE	12/01/2016	\$38.20	\$7.45	\$14.00	\$0.00	\$59.65

For apprentice rates see "Apprentice- LABORER"

Classification	Effective Date	Base Wage	Health	Pension	Supplemental Unemployment	Total Rate
TEST BORING DRILLER HELPER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2016	\$35.92	\$7.45	\$14.00	\$0.00	\$57.37
	12/01/2016	\$36.92	\$7.45	\$14.00	\$0.00	\$58.37
For apprentice rates see "Apprentice- LABORER"						
TEST BORING LABORER <i>LABORERS - FOUNDATION AND MARINE</i>	06/01/2016	\$35.80	\$7.45	\$14.00	\$0.00	\$57.25
	12/01/2016	\$36.80	\$7.45	\$14.00	\$0.00	\$58.25
For apprentice rates see "Apprentice- LABORER"						
TRACTORS/PORTABLE STEAM GENERATORS <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$43.81	\$10.00	\$15.15	\$0.00	\$68.96
	12/01/2016	\$45.04	\$10.00	\$15.15	\$0.00	\$70.19
	06/01/2017	\$46.03	\$10.00	\$15.15	\$0.00	\$71.18
	12/01/2017	\$47.02	\$10.00	\$15.15	\$0.00	\$72.17
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
TRAILERS FOR EARTH MOVING EQUIPMENT <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	08/01/2016	\$34.12	\$10.91	\$10.08	\$0.00	\$55.11
	12/01/2016	\$34.12	\$10.91	\$10.89	\$0.00	\$55.92
TUNNEL WORK - COMPRESSED AIR <i>LABORERS (COMPRESSED AIR)</i>	06/01/2016	\$48.08	\$7.45	\$14.40	\$0.00	\$69.93
	12/01/2016	\$49.08	\$7.45	\$14.40	\$0.00	\$70.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - COMPRESSED AIR (HAZ. WASTE) <i>LABORERS (COMPRESSED AIR)</i>	06/01/2016	\$50.08	\$7.45	\$14.40	\$0.00	\$71.93
	12/01/2016	\$51.08	\$7.45	\$14.40	\$0.00	\$72.93
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2016	\$40.15	\$7.45	\$14.40	\$0.00	\$62.00
	12/01/2016	\$41.15	\$7.45	\$14.40	\$0.00	\$63.00
For apprentice rates see "Apprentice- LABORER"						
TUNNEL WORK - FREE AIR (HAZ. WASTE) <i>LABORERS (FREE AIR TUNNEL)</i>	06/01/2016	\$42.15	\$7.45	\$14.40	\$0.00	\$64.00
	12/01/2016	\$43.15	\$7.45	\$14.40	\$0.00	\$65.00
For apprentice rates see "Apprentice- LABORER"						
VAC-HAUL <i>TEAMSTERS JOINT COUNCIL NO. 10 ZONE A</i>	08/01/2016	\$33.54	\$10.91	\$10.08	\$0.00	\$54.53
	12/01/2016	\$33.54	\$10.91	\$10.89	\$0.00	\$55.34
WAGON DRILL OPERATOR <i>LABORERS - ZONE 1</i>	06/01/2016	\$36.10	\$7.45	\$13.80	\$0.00	\$57.35
	12/01/2016	\$37.10	\$7.45	\$13.80	\$0.00	\$58.35
For apprentice rates see "Apprentice- LABORER"						
WASTE WATER PUMP OPERATOR <i>OPERATING ENGINEERS LOCAL 4</i>	06/01/2016	\$44.23	\$10.00	\$15.15	\$0.00	\$69.38
	12/01/2016	\$45.48	\$10.00	\$15.15	\$0.00	\$70.63
	06/01/2017	\$46.48	\$10.00	\$15.15	\$0.00	\$71.63
	12/01/2017	\$47.48	\$10.00	\$15.15	\$0.00	\$72.63
For apprentice rates see "Apprentice- OPERATING ENGINEERS"						
WATER METER INSTALLER <i>PLUMBERS &amp; GASFITTERS LOCAL 12</i>	09/01/2016	\$51.69	\$11.32	\$15.46	\$0.00	\$78.47
	03/01/2017	\$52.69	\$11.32	\$15.46	\$0.00	\$79.47
For apprentice rates see "Apprentice- PLUMBER/PIPEFITTER" or "PLUMBER/GASFITTER"						

Additional Apprentices Information:

Minimum wage rates for apprentices employed on public works projects are listed above as a percentage of the pre-determined hourly wage rate established by the Commissioner under the provisions of the M.G.L. c. 149, ss. 26-27D. Apprentices ratios are established by the Division of Apprenticeship Training pursuant to M.G.L. c. 23, ss. 11E-11L.

All apprentices must be registered with the Division of Apprenticeship Training in accordance with M.G.L. c. 23, ss. 11E-11L.

All steps are six months (1000 hours.)

Ratios are expressed in allowable number of apprentices to journeymen or fraction thereof, unless otherwise specified.

\*\* Multiple ratios are listed in the comment field.

\*\*\* APP to JM; 1:1, 2:2, 2:3, 3:4, 4:4, 4:5, 4:6, 5:7, 6:7, 6:8, 6:9, 7:10, 8:10, 8:11, 8:12, 9:13, 10:13, 10:14, etc.

\*\*\*\* APP to JM; 1:1, 1:2, 2:3, 2:4, 3:5, 4:6, 4:7, 5:8, 6:9, 6:10, 7:11, 8:12, 8:13, 9:14, 10:15, 10:16, etc.

**SUMMARY OF WORK**

**SECTION 01 11 00**

**PART 1 - GENERAL**

**1.1 PROJECT DESCRIPTION**

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools and appliances necessary for the proper completion of the work in their respective Section(s), as required in the Specifications, in accordance with good construction practice, and as required by the materials manufacturer, as amended. The work under all Sections generally includes, but is not limited to, the following:

- A. Supply all necessary chutes, disposal facilities, transportation and labor necessary to dispose of all demolished materials, dirt, and debris off-site in a legal dumping area. The Contractor shall obtain all permits necessary to transport and dispose of all materials, rubbish and debris affected by their scope of work.
- B. Supply all shoring and protection necessary to protect the building areas, building systems and landscape areas. Provide temporary overhead protection at doorways where work is anticipated above.
- C. Provide 6' high temporary fencing around set-up and storage locations. Set-up and lay down areas must be within areas designated by the Town. Set-up and lay down areas should be sufficient for all trades to have adequate area to store materials and equipment. Fencing must be secure and weighted or anchored to the ground.
- D. Due to the amount of work required at most window openings temporary protection of the opening will be required. Temporary protection must be weather tight and secure at the end of each day. The Contractor is responsible for temporary protection of all window openings until the new windows are installed. Temporary protection shall include plywood and plastic sheeting.
- E. Remove existing aluminum window systems, and all associated hardware at all designated openings including all glass, fasteners, flashings, sealants, clips, jamb and column covers, wood stools and wood blocking, down to the cast stone, limestone, brick masonry and steel framing substrates. Temporarily support and protect all permanent book shelves and radiators. Report all areas of structurally unsound or deteriorated structural framing to remain to the Owner and Engineer. The existing window glazing sealant has been found to contain asbestos, refer to Section 02 82 00 - Asbestos Abatement – Non-Friable Window Sealants.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

- F. The steel columns and lintels are assumed to be coated with paint containing lead that exceeds the EPA and OSHA thresholds. This paint is required to be removed in accordance with Section 02 83 19 – Lead-Based Paint Associated Renovation.
- G. Remove and dispose of exterior mounted security screens and associated hardware.
- H. Repair any interior finishes designated to remain but damaged during demolition or any other construction activities, including ceilings, flooring, shelving, and plaster.
- I. Permanent, built-in counters exist where designated on the Contract Drawings. Protect counters during window removal and replacement.
- J. Install wood blocking, plywood and shims as required to prepare the openings for the new windows as shown on the Contract Drawings.
- K. Remove, store, and reinstall ceiling tiles and tracks that are installed against windows to access full height of windows as required.
- L. Install metal anchors, angles, mullions and clips at all window locations to properly support and anchor the new assemblies.
- M. Install new thermally improved, double glazed aluminum windows and curtain wall frames and associated sealants. Provide tinted and obscure glass at designated locations. Provide insulated panels and louvers at all designated locations within window frames. Cut insulated panels to allow penetrations; seal around penetrations. Install heavy duty insect screens to all operable units.
- N. Connect new louvers to existing duct work. Temporarily support duct work during removal and replacement of panels and windows systems. Install duct work blank-off panels if necessary to accommodate replacement louver configuration
- O. Install sheet metal flashings at the heads and jambs of windows. Install sheet metal pan flashings and hook strips at all window sills.
- P. Install new thermally broken, high impact translucent panels in the gymnasium and where indicated on the Contract Drawings.
- Q. Remove and dispose of existing window shades and associated hardware. Install roll down shades at all locations where existing shades are present
- R. Provide new PVC interior trim, stools, and column covers.
- S. Removal of ceramic tile within bathrooms as required to remove and replace window system. Remove only as much tile as necessary and replace tile with PVC trim.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

- T. Modify partition walls as required to extend wall to back side of new window mullion and provide sound proof transition.
- U. Install new exterior mounted vandal screens in designated locations.
- V. Temporarily support existing interior mounted conduits attached to wood sills and jambs during the work. Re-secure to new PVC sills.
- W. Temporarily support conduits that extend through window frames during the window removal, relocate conduits through new window metal panel.
- X. Obtain independent third party testing agency to perform window testing during the commissioning and testing phase of the project.
- Y. Fabricate and provide project sign (4 feet by 8 feet, minimum) for display at the project site. A template/sample of the sign is provided in Specification Section 01 50 00 – Temporary Facilities.
- Z. Coordinate with Masonry Sub-Contractor for preparation of window opening to receive new windows and curtain walls.

**Masonry Sub-Contractor**

- A. Drill brick sill and install threaded, headed anchor bolts and epoxy adhesives at brick sills for wood blocking attachment.
- B. Perform miscellaneous brick and cast stone repairs as indicated on the Contract Drawings, including brick replacement, repointing, and cast stone repair or replacement. Additional repairs may be performed on a Unit Price basis.
- C. Remove and replace deflected or excessively corroded steel lintels and install throughwall flashings on a Unit Price basis.
- D. Provide mortar parge coat at brick and terra cotta jamb substrates on a Unit Price basis.
- E. Perform masonry cleaning to remove algae growth from façade at locations designates on Contract Drawings.
- F. Repair cast stone sills and heads as required at locations designated on the Contract Drawings.
- G. Replace cast stone sill designated on the Contract Drawings. Remove and replace brick masonry units surrounding sill to perform replacement procedures.

- H. Remove and replace cracked brick masonry units around security screens and fasteners, while security screens are removed, at locations designated on the Contract Drawings.
- I. Prime and paint exposed surfaces of existing steel lintels to remain above window openings.

**Window Sub-Contractor**

1.2 **SPECIAL PROJECT CONDITIONS**

- A. The Contractor is hereby made aware that the paint on the steel columns and lintels is believed to contain lead. Remove lead paint from steel columns and lintels designated to remain in accordance with Section 02 83 19 – Lead-Based Paint Associated Renovation.
- B. The Contractor is hereby made aware that the interior glazing caulk within the aluminum windows contains asbestos. Remove asbestos containing materials in accordance with Section 02 82 00 – Asbestos Abatement – Non-Friable Window Sealants.
- C. The Contractor is hereby made aware that the asphalt waterproofing on the inside of the limestone and cast stone surrounding the window is assumed to contain asbestos. This asphalt waterproofing was not found within 6 inches of the window opening and is not anticipated to be disturbed for the scope of this project. In the case that disturbing this asphalt waterproofing becomes necessary to complete the scope of this project, remove the asbestos containing materials in accordance with Section 02 82 00 – Asbestos Abatement – Non-Friable Window Sealants.

1.3 **PROJECT CONDITIONS**

- A. The Owner's Representative shall review the Contractor's work schedule submittal prior to the start of any work on this project. The Contractor's work schedule shall clearly define the location and type of work to be performed each day during the Contract such that the Owner can arrange to control occupancy in the building area affected by each day's work. It shall be the responsibility of the Contractor to provide the Owner with 48 hours' minimum notice if his work locations for each day are different from the schedule and to update any changes into the schedule.
- B. The Contractor is hereby placed on notice that accurate record drawings, outlining the actual repairs and renovation work will be required at the completion of this project. The intent of the record drawings is to outline areas of repairs that have been performed, as well as provide a future work plan for other potential renovations that will be required for each elevation. The Contractor will be required to present the draft record drawing set at each of the project meetings to confirm the documentation is being completed. The Contractor will be required to submit

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

the documents to the Designer at the completion of the project for review and final submission to the Owner.

- C. The Contractor shall provide a full-time English speaking project superintendent to coordinate the daily construction, daily clean-up and discuss procedures with the building occupants.
- D. The Contractor shall supply, install and maintain all barriers, over head protection, warning lines, lighting and personnel required to segregate the work area(s) and to prevent damage to the buildings, their occupants, adjacent buildings and surrounding landscaped and paved areas. Refer to Contract Drawings for minimum overhead protection locations. All applicable OSHA and D.L.I. requirements shall be observed by the Contractor.
  - 1. The General Contractor shall be responsible for the overall safety of the job site, all workers and the public.
  - 2. Each Sub-Contractor shall be responsible for the safety of each Sub-Contractor's workers, the public and the project site as it relates to their specific scope of work.
- E. The Building and site will be occupied and in use during construction. The Contractor shall take all necessary precautions to create as little disturbance or disruption to the building and their occupants as possible during the course of the work. No loud noise, radios, etc. will be allowed on the job site.
- F. The Contractor shall be professional and courteous to all residents and the general public. Any employee acting non-professional, or presents lewd comments will be removed permanently from the site.
- G. Mechanical and electrical disconnection, extension, rerouting and reconnection may be required in order to install the new work. This work shall be the responsibility of the Contractor and shall be performed by licensed tradesmen in accordance with applicable codes and standards. Should disconnection of electrical conduits be required, a licensed electrician will be responsibly for applying for, obtaining, and receiving a final signature for all electrical permits.
- H. An adequate number of skilled workmen who are trained and experienced in the necessary crafts and are completely familiar with the specified requirements and the methods needed for proper performance of the work of each trade shall be provided.
- I. Schedule and execute all work without exposing the interior of the building to the effects of inclement weather. Protect the building, their contents and occupants against such risks, and repair/replace all work-related damage to the satisfaction of the Owner.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

- J. Temporary weather protection shall consist of plywood and plastic sheeting which is to be installed in the openings where windows have been removed. Integrity of the temporary plywood and plastic sheeting shall be verified each day.
- K. The Contractor shall be responsible for obtaining all required permits. This shall include, but not be limited to, building, fire, and dumping. The Contractor shall be responsible for all police and fire details as required to properly complete the work. This shall include the redirection of traffic during the removal and storage of materials from transportation vehicles.
- L. Materials shall not be stored on the roof areas. Roof areas shall be protected while work overhead is being performed.
- M. The Owner requires the Contractor to conform to all requirements of this specification as well as those of the system manufacturer.
- N. All materials and workmanship shall be of the best construction practice. Refer to the requirements of the manufacturer and these specifications for handling and installation of all materials.
- O. Protect the adjacent buildings, roof areas, and site areas not included in the construction. The Contractor shall replace or repair all building or site components damaged as a result of the construction to the satisfaction of the Owner, at no additional cost to the Owner.
- P. Supply all labor, equipment, tools, appliances, shoring, supports or other items required to properly support, elevate and protect fixtures, equipment, and facilities affected by the work and to properly install the work.
- Q. Remove only as many window components and associated assemblies as can be completely replaced and/or made weather tight each day, including all flashing work.
- R. A disposal plan shall be submitted by the Contractor (for Owner and Engineer's approval) outlining all techniques to be used for the transportation of materials to ground level.
- S. Supply all necessary disposal facilities, transportation and labor necessary to dispose of all demolished materials, dirt and debris off-site in a legal dumping area. The Contractor shall obtain all permits necessary to transport and dispose of all materials, rubbish and debris.
- T. Parking shall be within designated parking locations while School is in summer recess. While School is in session the contractor and all sub-contractors must park off-site to make room for School staff.

1.4 PRECONSTRUCTION CONFERENCE

- A. A Preconstruction Conference will be held with the Owner, Engineer, Contractor and all involved trades to discuss all aspects of the project. The Contractor's Foreman or field representative will attend this Conference. The Conference will not be held until all shop drawings and submittals have been received and reviewed by the Owner and the Engineer.

1.5 CONSTRUCTION SCHEDULE

- A. The Owner shall review the Contractor's Construction Schedule prior to the start of any work. After defining the location(s) of the work progress, the Owner shall notify the building tenants within the work area to allow for the proper coordination of the work. It shall be the responsibility of the Contractor to supply the Owner with written notice, 48 hours in advance, if his work location(s) for a workday differs from the schedule. The Contractor shall submit the original schedule in accordance with Section 01 30 00 - Shop Drawings and Submittals, and shall update his Construction Schedule and submit a copy **each week** to the Owner for review.
- B. Preliminary construction schedule must be submitted for review within 20 days of notice of award to the Contractor. After conclusion of Submit and updated and revised construction schedule within 20 days of the Preconstruction Schedule.**
- C. Areas of the buildings contained in this contract are sensitive to noise and disruption. The Contractor shall coordinate construction in these areas to minimize disturbance. The Contractor must notify the Owner in advance for review of any construction work that will cause excessive noise.

1.6 TIME OF COMPLETION AND WORK HOURS

- A. The Contractor shall commence work within 10 days of receipt of written notice to proceed from the Owner, unless otherwise ordered in writing by the Owner.
- B. It is the intent of this project for the installation of the work to commence as soon as all materials and procedures are approved by the Owner and Engineer. Milestone dates are as follows:
1. **Commence Mobilization for Mock-Up:** June 1, 2017
  2. **Anticipated Last Day of School:** June 27, 2017
  3. **Anticipated Summer Construction Schedule Begins:** June 28, 2017
  4. **Anticipated Summer Construction Schedule Ends:** August 31, 2017

5. **Anticipated First Day of School:** September 1, 2017
6. **Substantial Completion:** October 28, 2017
7. **Final Completion:** November 18, 2017

The building will be occupied and in use from June 1 through the last day of school, anticipated to be June 27, 2016, and again from the first day of school, anticipated to be September 1, 2017, through Final Completion. **Summer Construction Schedule** is defined as working days between the last day of school (anticipated June 27, 2017) and the day before the first day of school (anticipated August 31, 2017). Full scale mobilization may occur no earlier than the start of the Summer Construction Schedule. All work shall be performed Monday through Friday during the designated hours stated below unless previously coordinated and approved by the Owner. The following work schedule will apply:

1. Work performed during non-Summer Construction Schedule days must be performed after School hours, which are defined as between 2:30 PM to 11:00 PM unless otherwise specified or approved.
2. Work performed during Summer Construction Schedule days may be performed between 7:00 AM to 4:00 p.m. unless otherwise specified or approved.
3. **Critical areas** must be substantially complete during the Summer Construction Schedule. Critical areas include all windows at the 1<sup>st</sup> and 2<sup>nd</sup> floors. Basement windows can be installed outside of the Summer Construction Schedule.
4. Work may be performed on weekends, with prior approval of the Owner the between the hours of 8:00 AM to 4:30 PM.
5. While school is in session no deliveries shall be made to the site prior to 9:00 AM and no deliveries shall be made on weekdays between the hours of 2:30 PM and 4:00 PM.
6. School personnel/custodial staff shall be present while weekend work is performed by the Contractor.

The bidder shall submit a proposed construction schedule as part of its bid package, and the Contractor shall be required to update the final approved schedule weekly during construction.

1.7 MOCK-UP SCHEDULE

- A. Full removal and replacement of two (2) windows, minimum, including all trim, sealant, and ceiling installation, shall be performed prior to full commencement of the Summer Construction Schedule. Mock-up installations shall include at least one (1) basement window and one (1) first floor window of the Owner's choice.
- B. Mock-ups shall commence no earlier than June 1, 2017 and shall be complete no later than the last day of school, anticipated for June 27, 2017. All work shall be performed after school hours, as stated above.
- C. Abatement procedures for the mock-up shall remove all waste and signage from the site once abatement is complete. Once the Summer Construction Schedule begins, the abatement subcontractor may fully remobilize.
- D. Mock-up windows must be approved by the Owner and the Engineer prior to full commencement of work.

1.8 LIQUIDATED DAMAGES - CONSTRUCTION

**Liquidated damages** will be assessed if **Final Completion** is not achieved by **November 17, 2017**. Final Completion shall be determined after the Contractor certifies in writing completion of all remaining items noted on the Architect/Engineer or Owner's punch list prepared following the date of substantial completion. Refer to school schedule for anticipated holiday and early release days. The liquidated damages will be in the amount of \$1,000.00 per calendar day. The \$1,000.00 per calendar day is a minimum damage figure to compensate the Owner for administrative costs in the event of delay and shall not limit in any way the liability of the Contractor for damages, in excess of \$1,000.00 per day for other non-administrative damages, in particular the costs of all architectural, engineering, and inspection services and damages for breach of contract, and the Owner reserves the right to recover such damages.

1.9 DIMENSIONS AND QUANTITIES

- A. All dimensions and quantities shall be field-verified by the Contractor. The Contract Documents have been compiled from various sources, and may not reflect the actual field conditions at the time of construction.
- B. The Contractor is cautioned to take all necessary precautions and make all necessary investigations to properly supply, fabricate and install the proposed work.
- C. The Owner will not consider unfamiliarity with the project as a basis for any additional compensation.
- D. The general nature, quantity and distribution of the various work items are shown on the Contract Drawings.

#### 1.10 GUARANTEES

Refer to the various technical sections for additional warranty information.

##### A. Contractor Guarantee

Upon completion of the work, and prior to final payment, the Contractor shall submit a Guarantee of his work to be free from defect in materials and workmanship. This Guarantee shall be for a period of two (2) years, and shall be signed by a Principal of the Contractor's firm, and sealed if a corporation.

##### B. Sub-Contractor Guarantee

Upon completion of the work, and prior to final payment, each sub-Contractor shall submit a Guarantee of his work to be free from defect in materials and workmanship. This Guarantee shall be for a period of two (2) years, and shall be signed by a Principal of each sub-Contractor's firm, and sealed if a corporation.

##### C. Curtain Wall Manufacturer's Warranty

Manufacturer's two (2) year warranty against defective materials or workmanship, including non-compliance with applicable specification requirements and industry standards, which results in premature failure of the windows, finish, factory glazed glass, or parts outside of normal wear. Defective components will be repaired or replaced by the Manufacturer at no cost to the Owner. The warranty shall include the following:

1. Curtain Wall manufacturer's ten (10) year guarantee on insulated glazing units.
2. Curtain Wall manufacturer's ten (10) year guarantee on painted finishes.

D. Refer to the technical sections for additional warranty items which may be required for other components specified in these documents.

#### 1.11 INDEMNIFICATION AND WAIVER OF LIENS

A. Beginning with the second Application for Payment and thereafter, the Contractor, and suppliers, shall submit an Indemnification and Waiver of Liens for the construction period covered by the previous application.

#### 1.12 CORI FORMS

A. Each employee of the Contractor that will be present on the project site during school days must be approved by the Town of Watertown prior to accessing the site. Approval requirements include filling out a CORI form at Watertown's Central Office and having an approved agency (IdentoGO) conduct fingerprinting. A form of identification must be provided when applying at the Central Office and when

fingerprinting. Note that the Town of Watertown's CORI representative will conduct a criminal background check. Any employee who has not been approved by the Town of Watertown's CORI representative will not be allowed at the project site. Allow three (3) weeks for fingerprinting and CORI checks to be approved.

- B. The CORI representative will provide the Contractor with identification for each employee of the Contractor that are cleared and authorized to be on site.
- C. No employee of the Contractor shall have any contact with any student at any time while on school premises.

#### 1.13 COMMISSIONING AND TESTING

##### Curtain Wall Testing (Performed by Independent Testing Agency obtained by Window Sub-Contractor)

- A. The Window Contractor shall perform testing in accordance with Section 01 81 00 – Exterior Enclosure Commissioning.
- B. If the tested fenestration product fails to comply with the project requirements the Contractor shall perform testing of additional fenestration products at no additional cost to the Owner.
- C. The Contractor shall include the cost of performing the test, all required and associated preparation work, and all required reports as noted in the test standards.
- D. The Contractor shall include commissioning process requirements and activities in all subcontracts or equipment purchases.
- E. The Contractor shall ensure the cooperation and participation of all trades and manufacturers of equipment or systems to be commissioned.
- F. The Contractor shall attend all commissioning team meetings.

#### PART 2 – PRODUCTS

NOT USED.

#### PART 3 – EXECUTION

NOT USED.

END OF SECTION

**UNIT PRICES**

**SECTION 01 22 00**

**PART 1 - GENERAL**

1.1 **GENERAL**

- A. Examine all other Sections of the Specifications for requirements that affect work of this Section whether or not such work is specifically mentioned in this Section.
- B. Coordinate work with that of all other trades affecting, or affected by work of this Section. Cooperate with such trades to assure the steady progress of all work under the Contract.

1.2 **DESCRIPTION OF WORK**

This Section contains instructions and references other Contract Documents that relate to Unit Prices. The Owner may elect certain aspects of the work, whose quantities cannot be determined at this time, to be performed or deleted by the Contractor. If such work items are elected, the Contract price will be adjusted by the Unit Price amount shown for each item in the Bid Forms.

- A. A Unit Price is an amount proposed by Bidders and stated on the Bid Form as a price per unit of measurement for materials or services that will be **added to or deducted** from the Contract Sum by Change Order in the event the estimated quantities of Work required by the Contract Documents are increased or decreased.
- B. The Bidders shall submit with their Bids, prices for the performance of Unit Price work. The general scope of the Unit Price work is defined within this section.
- C. The successful Bidder shall coordinate related work and modify or adjust adjacent work as necessary to ensure that work affected by each Unit Price Item is complete and fully integrated into the project.
- D. The specific quantities of Unit Price Work included in the Base Bid are provided herein. This applies to items whose exact quantities are unknown but are anticipated to exist, for example, deteriorated roof decking.
- E. The Unit Prices requested herein shall include a pro-rata share of all costs for materials, labor, equipment costs, overhead, profit, and applicable taxes.
- F. Where not otherwise specified, Unit Prices cover net costs and credits to the Owner for executing authorized changes in the Work. No separate adjustments are made for labor, materials, transportation, handling, storage, overhead, profit, or other related work expenses.

- G. If unit price quantities vary greater than twenty (20) percent above the amounts carried in the Base Bid, the Owner reserves the right to re-negotiate lower unit price costs. The Contractor will be required to notify the Owner once they approach this limit as the work progresses.

### 1.3 SCOPE OF WORK

- A. The Unit Prices for items of Work, as set forth in the Schedule of Unit Prices, shall be used to determine adjustments to the Contract Amount when changes in the Work involving said items are made in accordance with the Contract Documents.
- B. Materials, methods of installation, and definitions of terms set forth under the various Unit Price items in the Schedule of Unit prices shall be as indicated in the Contract Documents.
- C. The successful Bidder shall coordinate related work and modify or adjust adjacent work as necessary to ensure that work affected by each Unit Price Item is complete and fully integrated into the project.

### 1.4 APPLICABILITY OF UNIT PRICES

- A. Prior to commencing removal or replacement of materials set forth in the schedule of Unit Prices, the Contractor shall notify the Owner in sufficient time to permit proper inspection and measurements to be taken. Only quantities that have been approved in writing by the Owner will be considered in the determination of adjustments to the Contract Sum.
- B. Unit Price Work includes providing and installing all accessories and appurtenant work necessary to properly execute the Unit Price Work.
- C. Performance of work not required by the Contract Documents, or which is not authorized by Change Order or Field Order, whether or not such work is set forth hereunder as a Unit Price item, shall not be considered cause for extra payment. The Contractor will be held fully responsible for such unauthorized work, including the performance of all corrective measures required by the Owner.

### 1.5 VERIFICATION OF UNIT PRICE QUANTITIES

The following minimum procedures must be included by the Contractor for each of the indicated unit repair items for the duration of the project:

- A. Measurement and Payment: Refer to individual Specification Sections for work that requires establishment of unit prices and estimated quantities. Methods of measurement and payment for unit prices and estimated quantities are as follows:
  - 1. For work covered by scheduled quantities, notify the Owner and Engineer a minimum of 24 hours in advance of the performance of such work.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

2. Document such work in writing, identifying type of work, quantity and location of work. Submit documentation on Contractor's letterhead.
  3. All documentation of work covered by scheduled quantities will be subject to verification and approval by the Owner and Engineer.
  4. In order to be considered for payment, documentation for work covered by scheduled quantities shall be submitted within one month of performance of such work. Requests for payment of such work submitted more than one month after the work has been performed will not be accepted.
  5. Only documentation signed and verified by the Contractor, Trade, and the Owner's Representative will be considered valid. Documentation not signed by all these parties will be considered invalid.
- B. The Contractor shall contact the Owner and Engineer if a Unit Price quantity is anticipated to be reached prior to exceeding that quantity. No additional costs will be awarded to the Contractor for additional Unit Price Work without written approval from the Owner and/or Engineer.
- C. The Contractor must provide safe, adequate, and ample access to the Owner and Engineer for verification of the Unit Price Work throughout the course of construction.
- D. The Contractor is required to track and record actual placed and completed Unit Price Work throughout the course of construction, and submit a breakdown to the Owner and Engineer on a weekly basis or as requested. The breakdown shall include the following for each Unit Price item:
1. Completed quantity to date
  2. Remaining quantity to date
  3. Percentage of total quantity remaining

1.6 SCHEDULE OF UNIT PRICES

The following unit prices as defined in the specifications are designated for items of work on the basis of unknown quantities or quantities estimated by the Designer. These unit prices will be used to add or to deduct from the dollar amounts shown, depending on whether the actual amount is greater or less than the estimated amount. UNIT PRICES GIVEN HEREIN SHALL BE FOR ADDITIONAL WORK ONLY. DECREASED WORK SHALL BE AT THE "ADD" PRICE LESS FIFTEEN PERCENT (15%).

The unit prices listed below shall be included by the Contractor under the appropriate Base Bid Scope of Work. The Contractor's Schedule of Values will carry each item under the bid amount selected for this project. Should the unit price work not be performed on this project, the total amount, or remaining amount if portions of unit price work are performed, shall be credited to the Owner.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

**Note: This page must be submitted with the General Bid and Sub-Bid Forms. All work on this form pertains to the Masonry Filed Sub-Bidders scope of work.**

Section	Item	Additional Quantity Carried	Unit of Measure	Unit Price Dollars/Cents	Total Amount Dollars/Cents
03 30 00	Epoxy injection of cracked cast stone surrounding openings	10	Linear Feet	\$ _____	\$ _____
04 21 00	Remove and replace individual cracked/spalled brick masonry units surrounding openings	20	Units	\$ _____	\$ _____
04 21 00	Repoint deteriorated mortar joints surrounding openings	20	Square Feet	\$ _____	\$ _____
04 21 00	Removed and replace deflected steel lintels and install throughwall flashings	25	Linear Feet	\$ _____	\$ _____
04 21 00	Provide mortar parge coat at brick or terra cotta substrates	200	Square Feet	\$ _____	\$ _____

PART 2 – PRODUCTS

NOT USED.

PART 3 – EXECUTION

NOT USED.

END OF SECTION

I:\830680\02 Design\specs\830680 01 22 00 Unit Prices.docx

**SHOP DRAWINGS AND SUBMITTALS**

**SECTION 01 30 00**

**PART 1 - GENERAL**

**1.1 SCOPE**

The following submittals will be required of all construction materials and systems:

- A. List of materials stating manufacturer's name and address, as well as material trade name and manufacturer's designation.
- B. Shop Drawings.
- C. Samples.
- D. Catalog Data.
- E. Manufacturer's Instructions.
- F. Contractor's Schedule as it affects the contracted completion date and sequence of construction.
- G. Material Safety Data Sheets (MSDS).

**1.2 TIME OF SUBMITTALS**

The following submittals are required during the various phases of the Contract. Each submittal item shall have the technical section and paragraph number clearly indicated. All submittal items without the proper designations will be returned and will not be reviewed.

- A. Contract Submissions: The Contractor shall provide a digital copy of the following submittals to the Engineer:
  - 1. Complete Materials List.
  - 2. Manufacturer's Technical Literature as selected.
  - 3. Manufacturer's Instructions.
  - 4. Catalog Data ("SPEC-DATA" Sheets).
  - 5. Material Safety Data Sheets (MSDS).
  - 6. Required samples of materials of construction.
  - 7. Shop Drawings.

8. Construction Schedule as submitted during bid stage, updated if necessary.
  9. Certificates as approved Applicator by Manufacturer.
  10. List of proposed storage facilities and their location(s).
  11. Proposed location(s) of dumpsters.
  12. Schedule of Values.
- B. **Weekly Submissions:** At the end of each weekly period during construction, the Contractor shall submit an updated construction schedule and unit price breakdown which will show the status of the work with respect to the schedule, anticipated completion date and unit price work due to date. A list of all completed work is also required.
- C. Prior to start of construction, the Contractor is to provide the Owner with copies of all building permits, etc.

### 1.3 SHOP DRAWINGS

- A. Original Submittal: One (1) reproducible copy and one (1) print copy of all shop drawings shall be submitted for approval within ten (10) days of Award of Contract. In lieu of prints the Contractor may provide all shop drawings in electronic format for review if acceptable to the Owner and Owners Representative.
- B. Shop drawings for all aspects of this project shall be submitted. The shop drawings shall include existing conditions, all applicable dimensions, new products to be installed, locations, etc.
- C. Resubmittal: When a resubmittal is required, the original transparency so indicating will be returned to the Contractor. After revision of the original, one (1) new reproducible copy and one (1) print copy shall be submitted for review.
- D. Review: The above procedure shall be repeated until approval is obtained. The original reproducible copy of the reviewed shop drawing will be returned to the Contractor, at which time the Contractor shall make prints in sufficient numbers for the Engineer and the Contractors use.
- E. Shop drawings of an engineering nature shall be sent directly to the Engineer for review, with a copy of the transmittal and one (1) print sent to the Owner.
- F. Transmittal: All reproducibles shall be transmitted rolled in mailing tubes and not folded.

- G. Changes on the submitted shop drawings that deviate from the Design Drawings must be brought to the Owners and Designers attention in writing prior to review. Changes must be clearly visible on the shop drawings in the form of written notation, ballooning or highlighting the intended change. A written description for the proposed change must also be included and submitted on company letterhead. Changes to drawings and details not submitted in accordance with these requirements will not be recognized as an approved deviation from the Design of Record. Construction repairs, renovations or replacements required as a result of shop drawing and submittal deviations that are not documented in accordance with these requirements are subject to removal and/or replacement by the Contractor, at the sole cost of the Contractor.

#### 1.4 SUBMITTALS

- A. Submittals: Digital copies of submittals and (2) copies of samples, unless otherwise specified, of each item for which samples or submittals are required shall be furnished for review. All submittals for a specific trade or subcontractor shall be submitted at one time, within one package. Submittal packages will only be reviewed if complete with all submittals for specific trade. The Engineer must indicate that no exception is taken prior to delivery of the materials to the project site. Such samples and submittals shall be representative of the actual material proposed for use in the project and of sufficient size or type to demonstrate design, color, texture and finish when these attributes will be exposed to view in the finished work.
- B. Resubmittals: All rejected samples or submittals will be returned and all resubmittals shall be provided in the same manner as original submittals.
- C. Catalog Data: Each submittal shall have all pertinent data contained therein that is applicable to the item submitted for review, adequately and permanently designated.
- D. Manufacturer's Instructions: Where in these Specifications an item is called to be installed in accordance with the manufacturer's directions, specifications or recommendations, the Contractor shall furnish the Engineer with a digital copy of said directions, specifications or recommendations, before the item is installed.
- E. Certificates and Guarantees: Certificates of performance, treatment and conformance to specified standards shall be submitted prior to initiating work on the project. Copies of all guarantees required on the project shall be submitted for review as to form.
- F. OSHA Requirements: All employees to be employed at the worksite must have successfully completed a course in construction safety and health approved by the United States Occupational Safety and Health Administration that is at least 10 hours in duration at the time the employee begins work and who shall furnish documentation of successful completion of said course with the first certified payroll report for each employee; and that he will comply fully with all laws and

regulations applicable to awards made subject to the Massachusetts General Laws, Chapter 149, Section 44A.

- G. Hazardous Material Requirements: Asbestos containing materials were found at window glazing caulk. Removal and disposal of the ACM will be required to install the new windows. Lead paint was found at the original wood window frames and trim which are designated to remain. A removal and disposal plan must be submitted which includes the anticipated approved location for ACM disposal.

#### 1.5 RECORD DRAWINGS

The Contractor shall provide a copy of all Contract Drawings showing as-built conditions and any Contract changes to the Owner at the completion of the project and prior to submission of the Final Application for Payment.

#### 1.6 SAMPLES

- A. Original Submittal: Two (2) samples, unless otherwise specified, of each item for which samples are required shall be furnished for approval. Approval shall be obtained prior to delivery of the materials to the project site. Such samples shall be representative of the actual material proposed for use in the project and of sufficient size to demonstrate design, color, texture and finish when these attributes will be exposed to view in the finished work.
- B. Resubmittal: All rejected samples will be returned upon request, and any or all resubmittals shall consist of two (2) new samples.
- C. Review: Upon approval by the Engineer, one sample so noted will be returned and the remainder will be retained by the Engineer until completion of the work. When requested, all approved samples will be returned for installation, provided their identity is maintained in an approved manner until final acceptance of the project.
- D. Important specific samples are specified in Technical Sections of the Specifications. The Contractor is cautioned to quickly provide specified samples.
- E. Each submittal item shall have the technical section and paragraph number clearly indicated. All submittal items without the proper designations will be returned and will not be reviewed.

#### 1.7 CATALOG DATA

- A. Submittals: Digital copies of catalog data are required for the original submittal and each subsequent resubmittal along with shop drawings. Following review, one (1) digital one copy will be returned with its status noted. If approved, such additional copies may be requested by the Engineer and shall be furnished without additional cost.

- B. Data: Each submittal shall have all pertinent data contained therein that is applicable to the item submitted for review, adequately and permanently designated.

## 1.8 IDENTIFICATION

- A. Data: All submittals for review shall have the following identification data, as applicable, contained thereon or permanently adhered thereto:
1. Project name and location.
  2. Engineer's name.
  3. Subcontractor's, Vendor's and/or Manufacturer's name and address.
  4. Product Identification. (It is important that the specific product intended for use is indicated on manufacturer's literature).
  5. Shop drawing title, drawing number, revision number and date of drawing and revision.
  6. Applicable Contract Drawings and Specification Section numbers.
- B. Catalog Data: Each separate catalog, brochure or single page submitted shall have the identification required hereinbefore.
1. Catalogs or brochures submitted containing multiple items for approval need the identification on the exterior and on each specific item clearly circled, flagged or otherwise identified.
  2. In the event that one or more of the multiple items are not approved in any submittal, the additional copies required will not be requested until all items are approved.
- C. Space: Vacant space approximately two and one-half inches wide by four inches high shall be provided adjacent to the identification data to receive the Engineer's status stamp on the shop drawings.

## 1.9 CONTRACTOR'S RESPONSIBILITY

- A. Representation: By his submittal of any shop drawing or catalog data, the Contractor thereby represents that he has determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers and similar data, or will do so, and that he has checked and coordinated each item with other applicable approved shop drawings and the Contract requirements. Certification shall appear on each shop drawing stating that the Contractor has made this check. All drawings without this certification will be returned without examination.

- B. Deviations: Approval of shop drawings, samples or catalog data by the Engineer shall not authorize any deviation from the requirements of the Contract Documents, nor shall such approval relieve the Contractor from responsibility for errors or omissions therein. If the shop drawings deviate, or are intended to deviate from the Contract Documents, the Contractor shall so advise the Engineer in writing at the time the shop drawings are submitted, stating the difference between the Contract requirements and that denoted by the shop drawings. A brief explanation of the purpose for the change shall also accompany the deviated shop drawings.
- C. Prohibitions: No portion of the work requiring a shop drawing, sample or catalog data shall be started, nor shall any materials be fabricated or installed, prior to the approval of such item.
- D. Review: Project work, materials, fabrication and installation shall conform with approved shop drawings, applicable samples and catalog data.
- E. Failure to submit shop drawings in ample time for review, approval and resubmission (if required) prior to the commencement of construction shall not affect the completion date of the Contract.

1.10 CONTRACTOR'S CONSTRUCTION SCHEDULE, GENERAL

- A. Procedures: Comply with procedures required by the Owner, OPM, Designer or the MSBA.
- B. Time Frame: Extend schedule from date established for commencement of the Work or the Notice to proceed to date of Final Completion.
  - 1. Contract completion date shall not be changed by submission of a schedule that shows an early completion date, unless specifically authorized by Change Order. Refer to Section 01 11 00 – Summary of Work, Paragraph 1.6 for anticipated start dates, submittal dates, and milestone schedules that will require completion.
  - 2. Contractor shall indicate specific review/inspection dates which may require the Designer's attention to proceed on a critical path.
- C. Activities: Treat each elevation as a separate numbered activity for each principal element of the Work. Comply with the following:
  - 1. Activity Duration: Define activities so no activity is longer than 20 days, unless specifically allowed by the Owner, Designer and OPM.

2. Procurement Activities: Include procurement process activities for long lead items and major items, requiring a cycle of more than 60 days, as separate activities in schedule. Procurement cycle activities include, but are not limited to, submittals, approvals, purchasing, fabrication, and delivery.
  3. Submittal Review Time: Include review and resubmittal times. Coordinate submittal review times in Contractor's Construction Schedule with Submittals Schedule.
  4. Substantial Completion: Indicate completion in advance of date established for Substantial Completion, and allow time for Owner, OPM, Designer's and administrative procedures necessary for certification of Substantial Completion.
- D. Milestones: Include milestones indicated in the Contract Documents in schedule, including, but not limited to, the Notice to Proceed, interim milestones indicated below, Substantial Completion, and Final Completion.
1. Window ordering and delivery date
  2. Start of demolition and abatement operations at each elevation
  3. Completion of window and curtain wall installation
  4. Completion of ceilings installation
  5. Completion of new interior trim, patch repairs, and painting
  6. Project substantial completion
  7. Completion of removal of all site fencing, protection, equipment, materials and site restoration activities
- E. Contract Modifications: For each proposed contract modification and concurrent with its submission, prepare a time-impact analysis to demonstrate the effect of the proposed change on the overall project schedule.

#### 1.11 PRELIMINARY CONSTRUCTION SCHEDULE

- A. Bar-Chart Schedule: Within 20 days of written notice to proceed or contract award, submit preliminary horizontal bar-chart-type construction schedule prior to the Preconstruction conference.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line. Outline significant construction activities for the duration of construction

1.12 CONTRACTOR'S CONSTRUCTION SCHEDULE, GANTT CHART

- A. Gantt-Chart Schedule: Submit a comprehensive, fully developed, horizontal Gantt-chart-type, Contractor's Construction Schedule within 20 days of the Preconstruction meeting. Base schedule on the Preliminary Construction Schedule and whatever updating and feedback was received since the start of Project.
- B. Preparation: Indicate each significant construction activity separately. Identify first workday of each week with a continuous vertical line.
  - 1. For construction activities that require 3 months or longer to complete, indicate an estimated completion percentage in 20 percent increments within time bar.

PART 2 – PRODUCTS

NOT USED.

PART 3 – EXECUTION

NOT USED.

END OF SECTION

I:\830680\02 Design\specs\830680 01 30 00 Shop Drawings and Submittals.doc

**TEMPORARY FACILITIES**

**SECTION 01 50 00**

**PART 1 - GENERAL**

1.1 **GENERAL**

All work in this Section to be provided by the General Contractor unless stated otherwise.

1.2 **STORAGE FACILITIES**

See Section 01 63 00, Weather Protection and Materials Storage.

1.3 **SANITARY FACILITIES**

Sanitary facilities shall be provided as required by local and state statute. They are to be provided by the Contractor and located at Owner approved locations.

1.4 **BARRIERS**

- A. The Contractor shall install temporary fencing, warning lines, barriers and the like, as required, to segregate the construction areas from existing facilities, occupants and the public.
- B. All Contractors are required to conform to OSHA requirements and all local, state and federal safety regulations.
- C. The Contractor shall provide guard lights on all barriers and all lighting necessary to prevent vandalism of work and storage areas. The Owner is not responsible for Contractor's losses due to damage or theft by vandals.

1.5 **PORTABLE LIFTS**

Portable lifts and machinery required for the proper and expeditious prosecution and progress of the work shall be furnished, installed, operated, and maintained in a safe condition by the General Contractor and each Sub-Contractor. Each Sub-Contractor shall provide and operate their own lift to perform the work.

Portable lifts will only be allowed to be stored on site during the Summer Construction Schedule.

1.6 **UTILITIES**

- A. Electrical service will be provided to the Contractor free of charge by the Owner through electrical outlets if operable. Use shall be limited to construction hours. The Owner reserves the right to charge the Contractor for excessive electrical service usage (i.e., wasteful usage). Should charges be considered, the Owner will notify the Contractor in writing of his intent, 48 hours in advance. Should the

Contractor require greater electrical service than is provided by existing service the Contractor will provide generators at no additional cost to the Owner.

- B. Water for construction purposes will be provided to the Contractor free of charge by the Owner through exterior water spigots if operable. The Owner reserves the right to charge the Contractors for excessive or wasteful use. Should charges be considered, the Owner will notify the Contractor in writing of his intent, 48 hours in advance. Drinking water shall be provided by the Contractor.
- C. All other utilities required will be provided by the Contractor.
- D. Plumbing, heating, and electrical work, including reinstallation of equipment and other work to be performed by the Contractor, shall be carried out without interference to the building's normal operation. Where work requires interruption of service, the Contractor shall make advance arrangements with the Owner for dealing with such interruption.

#### 1.7 RUBBISH

- A. The Contractor shall supply adequate covered receptacles for waste, debris and rubbish.
- B. All receptacles must be immediately removed from the site when full. Should, for any reason, receptacle removal not be possible on any given day, the Contractor shall move the receptacle away from the building to an area on site designated by the Owner. All receptacles will be tarped and securely covered over at the end of each work day.
- C. The grounds in the area of the receptacle must be cleaned prior to moving the receptacle to another location on the project. Disposal shall be off-site in a legal dump intended for that use.
- D. The receptacles shall be located in areas designated by the Owner. Receptacles shall not remain adjacent to the building overnight. Receptacles may be subjected to relocation during the Summer Construction Schedule. Refer to the Contract Drawings for anticipated receptacle locations.

#### 1.8 CLEAN-UP

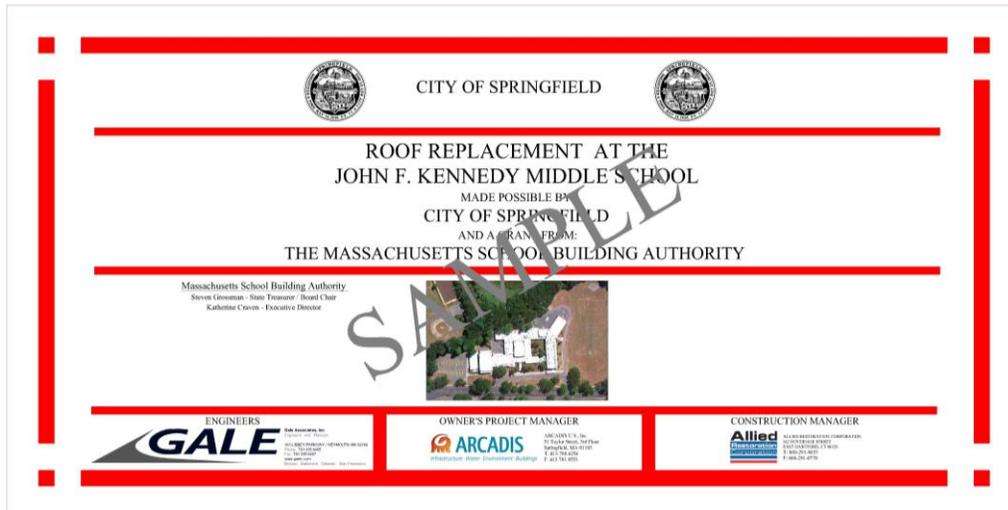
- A. Site clean-up shall be complete and to the satisfaction of the Owner. Site clean-up shall be performed daily.
- B. All building (interior and exterior), landscape and parking areas shall be cleaned of all trash, debris, and dirt caused by or associated with the work.
- C. All landscape areas damaged or littered due to the work shall be raked clean and reseeded if required.
- D. All paved areas shall be swept clean of debris daily.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

- E. All areas stained, dirtied, discolored or otherwise damaged due to the work shall be cleaned, restored or replaced as required.

1.9 SIGNS

- A. If requested by Owner the Contractor shall conspicuously post a project sign at ground level. This sign shall designate the project entrance. Only one (1) entry may be used by the Contractor. The entry location shall be as directed by the Owner.
- B. The Contractor shall install adequate signage to inform facility users of any changes to existing conditions or construction areas.
- C. The Contractor shall also construct a project sign in accordance with MSBA Regulation, 963 CMR 2.00, which states that sign must be at least 4' tall x 8' wide. The sign must be visible from a primary road way and contain the following: "This Project funded in part by the Massachusetts School Building Authority." Please note that the view provided below is a sample and project information may change or require an update. Contractor to provide small scale graphic illustration of the sign for review and approval prior to final construction.



PART 2 – PRODUCTS

NOT USED.

PART 3 – EXECUTION

NOT USED.

END OF SECTION

**WEATHER PROTECTION AND MATERIALS STORAGE**

**SECTION 01 63 00**

**PART 1 - GENERAL**

**1.1 GENERAL**

- A. The Contractor shall take the necessary precautions and provide all equipment, materials and labor necessary to adequately protect the Contract Area, previous construction, the buildings, their contents and occupants, surrounding landscaped and paved areas from damage due to the construction or inclement weather during construction.
- B. No storage on or within the building will be allowed without prior authorization from the Owner and Engineer.
- C. The Contractor shall provide all access to the work. Staging and other access shall be provided until new work has been accepted by the Owner.
- D. Refer to the American Architectural Manufacturer's Association (AAMA) Design Guidelines, and the Brick Industry Association (BIA) manual for additional information.

**1.2 WEATHER PROTECTION**

- A. Weather protection shall mean the temporary protection of that work adversely affected by moisture, wind, heat and cold by covering, patching, sealing, enclosing, ventilating, cooling and/or heating. This protection shall be provided for all work areas, the buildings and their contents, trafficked adjacent areas, and all construction materials and accessories.
- B. The Contractor shall be responsible for protecting the Work from moisture in order to prevent the growth of fungus, bacteria, and other biological contaminants. Remove and replace work that has been wet for 24 hours or more, or that shows evidence of biological growth due to the presence of moisture.
- B. The cost of heat, fuel and power necessary for proper weather protection shall be the responsibility of the Contractor.
- C. Installation of weather protection shall comply with all safety regulations, including provisions for adequate ventilation and fire protection devices.

### 1.3 FIRE PROTECTION

- A. The Contractor shall provide all necessary temporary fire protection for the buildings, building contents and materials during construction. The Contractor shall provide incombustible protective blankets where necessary to protect surfaces or building contents from damage.
- B. At no time shall any combustibles be stored inside the building. All adhesives, caulks and cleaning solvents shall be stored well away from the building in a method approved by local fire officials.
- C. Should any cutting, burning or welding be necessary, the Contractor shall provide a fire watch. This watch will continue during the operations and for four hours minimum after completion of the work.
- D. At no time shall open flames be present around adhesives, caulks or cleaning solvents as they will readily ignite. Rags soaked with cleaning solvents shall not be discarded in the dumpsters, but shall be stored in a metal receptacle and removed from the site daily.
- E. The Contractor shall be required to comply with all local fire codes and shall obtain all permits necessary from the local fire department and provide one (1) copy to the Engineer.
- F. The Contractor shall provide recently tested, fully charged fire extinguishers around the storage area, rubbish receptacle and two (2) within 100 feet of the work area or as specifically required by the Local Fire Department.

### 1.4 MATERIAL STORAGE

- A. All materials shall be stored in trailers on site or brought to the site daily. Storage trailers will be allowed in the location(s) designated by the Owner during the Summer Construction Schedule only. Material storage trailers will not be allowed during the academic school year. All flammable substances cannot be stored on the roof or in the building and must be brought to the site daily. Limited non-flammable material storage may be allowed on the roof with prior written approval by the Owner and Engineer. Limited use of interior space for storage will be allowed in locations approved by the Owner during the academic school year.
- B. In the event that materials are exposed to the elements, they shall be marked as unacceptable and immediately removed from the site. They may not be used.

- C. The Contractor will be required to provide additional tarps or canvas covers over any materials that may be stored with the Owner's permission at the site. The Contractor will not be permitted to rely on the manufacturer's shrink wrap material as the sole source of weather protection. These covers are to be adequately ballasted and secured to prevent wind uplift.
- D. Protect all existing and new wood stored on site to prevent moisture absorption. Use tarps over the wood pile (top, sides and bottom) elevated on pallets (one side lower to shed water).

#### 1.5 NOTIFICATION

- A. If, during the Contract period, the Contractor is notified of insufficient weather protection, he shall, within 24 hours, properly restore the weather protection and repair or replace any damaged unprotected materials and systems.
- B. Should the Contractor not effect immediate repair or replacement when notified, the Owner shall have the proper protection installed at the Contractor's expense. The Contractor is responsible for all damages to the building as a result of leaks.

#### 1.6 MANUFACTURER'S INFORMATION

- A. The manufacturers of all the materials shall supply written instructions concerning the storage and handling of all supplied materials, including sealants, and accessories. The manufacturer shall also provide information concerning storage and handling of flammable or volatile materials.
- B. Storage facilities shall be acceptable to the manufacturer and conform to his written requirements concerning temperature, humidity, ventilation and the like.
- C. The "shelf-life" of materials shall be provided with the date of manufacture of all perishables, including volatiles, caulking and mastics.
- D. The Contractor shall supply a copy of all manufacturer's written instructions to the Owner and Engineer as outlined in Section 01 30 00 - Shop Drawings and Submittals. The Contractor shall comply with all storage and handling requests and instructions of the manufacturer.

#### 1.7 CONTRACTOR PARKING

- A. Contractors will not be allowed to park in the school's parking lot while school is in session. The Contractors will be responsible for locating their own parking. Any citations or fees incurred from parking will be the responsibility of the Contractor.
- B. During the Summer Construction Schedule, the Contractors will be allowed to utilize the school's parking lot.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

PART 2 – PRODUCTS

NOT USED.

PART 3 – EXECUTION

NOT USED.

END OF SECTION

I:\830680\02 Design\specs\830680 01 63 00 Weather Protection.doc

**PROJECT CLOSE-OUT**

**SECTION 01 70 00**

**PART 1 - GENERAL**

When the project is established to be substantially complete, preparations will be made to close out the project. The preparations are as follows:

1.1 **PUNCH LIST**

- A. After the project is determined to be substantially complete, a representative of the Engineer and Owner will tour the project and compile a "punch list" of minor unsatisfactory conditions. The Contractor shall notify the Engineer when the first punch list is requested to be performed. A copy of this list will be sent to the Contractor and he shall then correct the unsatisfactory conditions. When all items on the list have been corrected, the Contractor shall notify the Engineer and Owner's representative and a re-inspection will be made by that representative.
- B. Minor "punch list" items shall be only those items which have been installed and are functional, requiring cosmetic repair or cleaning which do not affect the integrity of the system. Any work specified within the Contract Documents which has not been performed, or has been performed in a non-conforming manner to the Contract Documents shall not be defined as minor "punch list" items, and must be performed or corrected as appropriate in order to achieve substantial completion.
- C. Should additional reinspections be required due to punch list items which are reported to be complete but are not completed or improperly completed, the costs of these reinspections will be assessed to the Contractor.

1.2 **MANUFACTURER'S INSPECTION**

- A. After the reinspection by the Engineer and Owner's representative, the material manufacturer's representative, if applicable, will be required to tour the site. The representative shall determine if the materials have been installed as required by the manufacturer.
- B. Any items the representatives determine were not so installed shall be reinstalled so as to comply with the manufacturer's intended use. The manufacturer shall forward a copy of the list of all items determined to be not installed as intended by the manufacturer to the Engineer. Final issuance of the Contractor's payment will not be released until the manufacturer's inspection letter has been forwarded to the Engineer.
- C. Costs associated with all manufacturer inspections shall be the responsibility of the Contractor.

1.3 GUARANTEES

- A. When both the Engineer and Owner's representative and the manufacturer's representative agree that the Contractor has performed according to the Specifications, and has installed the materials to the satisfaction of the manufacturer, the Contractor shall petition the manufacturer for the materials warranty. The Contractor's Guarantee shall be signed by the Contractor. He shall forward this guarantee to the Owner and provide one (1) copy for the Engineer.
- B. The Contractor will be required to provide lien releases for his work. The Contractor shall then forward his guarantee covering the construction to the Owner and provide one (1) copy for the Engineer.

1.4 RETAINAGE RELEASE

When all guarantees, certifications and requested lien releases have been received, the Owner shall release to the Contractor the project retainage and any other monies retained by the Owner to guarantee project completion.

1.5 DOCUMENTS REQUIRED FROM THE CONTRACTOR PRIOR TO FINAL PAYMENT

Documents will be electronically submitted to the Engineer for review. Upon final review by the Engineer, the Contractor shall submit two (2) copies of all close-out documents to the Town of Watertown, each set in individual binders. A CD or flash drive including all documents shall be included with each binder. These items include, but are not limited to:

- A. All applicable manufacturer's warranties.
- B. Contractor's two (2) year guarantee.
- C. Executed Punch List Inspection letter.
- D. Consent of Surety Company to Final Payment.
- E. Contractor's Affidavit of Release of Liens.
- F. Contractor's Affidavit of Payment of Debts and Claims.
- G. Final Application and Certificate for Payment.
- H. Completed waste shipment records and dumping manifests.
- I. As-Built Drawings.
- J. Other documents which may be specifically required by the Town of Watertown, MSBA or the Engineer.

PART 2 – PRODUCTS  
NOT USED.

PART 3 – EXECUTION  
NOT USED.

END OF SECTION

**EXTERIOR ENCLOSURE COMMISSIONING**

**SECTION 01 81 00**

**PART 1 – GENERAL**

**1.1 IN GENERAL**

- A. The General Conditions of the Contract for Construction and the General Requirements are hereby made part of this specification.

**1.2 SUMMARY**

- A. Commissioning is the systematic process of assuring by third-party design review, testing, documentation, and training from the design through construction, acceptance, and warranty phases that new Roofing and Window Systems perform independently and interactively in accordance with the design intent and design documentation. The independent third-party Commissioning Agent for this project is the Thompson & Lichtner Company. This section relates to the work associated with the building enclosure elements being commissioned with the involvement of the independent third-party Commissioning Agent. The requirements of this section are intended to supplement the other specification sections.
- B. Commissioning shall be used to verify the following for building enclosure elements:
  - 1. Completeness and functional performance according to design intent and Owner's operational needs prior to occupancy.
  - 2. Documented performance provided by the installed building enclosure elements, deficiencies found, and corrective actions taken.
- C. The designers and installing contractors retain their full contract document responsibilities in providing a finished and fully functional facility. Commissioning does not take away from or reduce these responsibilities.
- D. Commissioning requires active project team involvement and participation to deliver effective and successful results for all concerned. Provide labor and project management required to support the commissioning process.
- E. This section is intended to supplement other sections of the construction contract and shall be read in conjunction with Division 1 – General Requirements and Division 8 – Openings.

- F. Completion of functional testing shall be accomplished as a prerequisite for substantial completion.
- G. All guarantees and warranties shall not begin until final acceptance of the systems and equipment by the Owner. Acceptance requires, at a minimum, complete systems commissioning.
- H. Commissioning Tasks
  - 1. Review of Construction Documents pertaining to the exterior enclosure.
  - 2. Preparation of these specifications.
  - 3. Review of submittals and Requests for Information.
  - 4. Periodic observation of work in progress pertaining to the exterior enclosure.
  - 5. Witnessing of window and door system testing.

### 1.3 SYSTEM DESCRIPTION

- A. Systems to be commissioned with the involvement of the independent third party Commissioning Agent:
  - 1. Window & Door Assemblies

### 1.4 COMMISSIONING TEAM

- A. Commissioning Team:
  - 1. Owner's Project Manager or designee.
  - 2. Operations & Maintenance Personnel
  - 3. Architect / Design Consultants
  - 4. Construction Manager/General Contractor
  - 5. Commissioning Coordination Supervisor
  - 6. Contractors
  - 7. Owner's Commissioning Agent
- B. Commissioning Coordination Supervisor: The Construction Manager/ General Contractor shall assign a Commissioning Coordination Supervisor with five (5) years of experience with the coordination of disciplines of construction. The coordinator's responsibilities include:
  - 1. Attendance at commissioning coordination meetings.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

2. Planning and coordination of commissioning activities.
  3. Preparation and provision of Building Enclosure Element installation quality control checklists to the Commissioning Coordination Supervisor.
  4. Review of field function performance testing procedures for building enclosure elements to be commissioned.
  5. Incorporation of commissioning activities into project scheduling.
  6. Assurance of presence of manufacturers' technical representatives during commencement of installation and closeout. For roofing and waterproofing, presence also during the middle of the production period.
  7. Compile and submit required documentation.
  8. Review of work in the field to assure that the Work is in compliance with the contract drawings and specifications, manufacturers' requirements for the products being used, and other requirements of the project.
  9. Coordination with the Commissioning Agent, Independent Testing Agencies, and other parties to assure that required inspections and tests are performed.
  10. Addressing corrective actions and performance of retesting.
  11. At Completion of Project:
    - a. Compilation of Project Warranty and Maintenance Documentation.
    - b. Compilation and submission of Commissioning Documentation.
    - c. Verification of compliance with these specifications.
- C. Contractor / Installer Representative: Each of the Contractors shall assign a person responsible for communications with the Construction Manager / General Contractor's Commissioning Coordination Supervisor. Responsibilities include:
1. Attend commissioning coordination meetings.
  2. Communication with Commissioning Coordination Supervisor.

3. Review of field function performance testing procedures for building enclosure elements to be commissioned.
4. Perform functional performance tests directed by the Commissioning Agent and included in the project documents.
5. Address corrective actions and perform retesting.
6. Compile Project Warranty and Maintenance Documentation
7. Compile and submit commissioning documentation

1.5 SUBMITTALS

- A. Construction Manager / General Contractor shall submit the name of person(s) assigned as Commissioning Coordination Supervisor within (2) weeks of the contract award. Construction Manager / General Contractor shall submit the following information for each assigned Commissioning Representative:

Company Name  
Name  
Title  
Years of Experience  
Phone Number  
E-Mail Address

- B. Each Contractor shall submit the name of person(s) assigned as representatives to Commissioning Team within (2) weeks of contract award. Construction Manager / General Contractor shall submit the following information for each assigned Commissioning Representative:

Company Name  
Name  
Title  
Years of Experience  
Phone Number  
E-Mail Address

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

- C. Submit a list of required submittals to the Commissioning Agent. Commissioning Agent will identify submittals relevant to systems being commissioned for which Construction Manager/General Contractor shall provide copies to commissioning agent for commissioning agent to review submittals concurrent with submission to the Architect for review.
- D. Qualifications: Submit qualifications of testing agencies being provided by the Contractor.
- E. Master Construction Schedule: Incorporate all commissioning milestones into the Master Construction Schedule. Provide monthly schedule updates.
  - 1. Provide Commissioning Agent time line schedule for construction of various building enclosure elements including preparation of mockups and schedule for coordination meetings.
  - 2. Provide Commissioning Agent proposed schedule for testing to be completed to allow Commissioning Agent to witness testing.
  - 3. Submit functional performance test schedule to Commissioning Agent at least two (2) weeks prior to the start of testing.
  - 4. Unless specified otherwise, provide a minimum two-day notice to the Commissioning Agent for specified functional performance tests to be witnessed.
- F. Submit a copy of Requests for Information (RFI), Architectural Supplemental Instructions (ASI) and Change Orders (CO) pertaining to the exterior enclosure to Commissioning Agent for information only.
- G. Submit blank Quality Control/Quality Assurance Inspection Forms to Commissioning Agent for review. Submit a list of Functional Performance Tests to be performed by Owner's Independent Testing Agency and schedule tests as required.
- H. Submit attendance log of manufacturers' technical representatives during installation.
- I. Reports of Testing Agencies Provided by the Contractor: Agencies shall submit a written report of each inspection, test, or similar service through the Contractor. Each report shall be accompanied by a written certification stating that the Testing Agency certifies the reports are accurate to the best of their knowledge

and belief. Submit reports to Commissioning Agent and to other parties as requested. Written reports of each inspection, test, or similar service shall include, but are not limited to, the following:

1. Date of issue, project name, and number.
  2. Name, address, and telephone number of testing agency.
  3. Dates and locations of samples and tests or inspections.
  4. Names of individuals making the inspection or test.
  5. Designation of the Work and test methods.
  6. Ambient conditions at the time of sample taking and testing.
  7. Description of mock-ups and their components.
  8. Description of modifications, if any, to mock-ups.
  9. Locations of air, water, and vapor barrier/retarder connections between different assemblies and sub-assemblies.
  10. Identification of products and specification sections.
  11. Test results and an interpretation of test results.
  12. Comments or professional opinion on whether inspected or tested Work complies with Contract Document requirements.
  13. Recommendations on retesting.
  14. Name and signature of inspector/tester/laboratory technician.
- J. At closeout, submit binders with three copies of all items listed in this SUBMITTALS paragraph.

1.6 INSTALLATION GUIDELINES, TEST DATA, MAINTENANCE MANUALS, AND WARRANTIES

- A. Refer to individual sections for maintenance manual and warranty requirements.
- B. In addition to the submittal requirements of individual sections, submit one digital copy of the manufacturers' installation guidelines, laboratory test data, maintenance manuals and warranties for the systems listed in 1.3 above.
- C. Product Safety / Data Manual: In addition to the requirements of individual sections, provide digital copies of a manual containing product data sheets for all products installed in the project. Manuals shall be arranged in the Division / Section CSI format as indicated in the Table of Contents of this project manual.
- D. Architect acceptance of warranties shall be a prerequisite to approval of final payment.

PART 2 – PRODUCTS

NOT USED.

PART 3 - EXECUTION

3.1 COORDINATION AND ASSISTANCE TO THE COMMISSIONING AGENT

- A. Assign Commissioning Coordination Supervisor (see 1.5 for submittal requirements).
- B. Include Commissioning Agent on material submittals (see 1.5 for details).
- C. Review the commissioning requirements.
- D. Request clarifications as needed. Include Commissioning Agent in correspondence.
- E. Provide safe and full access for Commissioning Agent or their representative to make observations of the work in progress during the course of the project.
- F. Provide Commissioning Agent full access to inspection and test reports on building enclosure elements by various agencies retained by the Contractor or Owner.

3.2 COMMUNICATION

- A. OPM or Contractor through its Commissioning Coordination Supervisor shall forward to the Commissioning Agent via the Architect a list and schedule of specified contractor's functional performance tests.
- B. Unless specified otherwise, provide a minimum one week notice to the Commissioning Agent for specified functional tests to be witnessed.
- C. Submit Contractors' test reports to the Commissioning Agent and Architect within one week of the completion of each test.

3.3 PRETESTING INSPECTION AND ACCEPTANCE BY MANUFACTURER

- A. Prior to the scheduled start of functional performance tests of production or completed work, verify completion of all punch list work and obtain written acceptance of completed work by the manufacturer to confirm readiness for

testing. Additionally, inspect both the new work and the adjacent construction to confirm the integrity of the building components and substrates prior to the scheduled start of functional performance tests.

- B. Functional performance testing on a system shall not commence until this system is documented ready for testing by the installer and manufacturer. Time lost and costs incurred (including the cost of the Commissioning Agent) due to a false start of functional performance testing because of inaccurate, incomplete, and/or untruthful field data shall be paid for by the installing Contractor(s) providing the erroneous data.

### 3.4 FUNCTIONAL PERFORMANCE TESTS

- A. Fenestration shall be tested by a Third Party Independent Testing Agency retained by the Owner in accordance with the requirements of the Technical Sections for these items of work. Building enclosure elements other than fenestration shall be tested by the Installer or Contractor's testing agency in accordance with the requirements of the Technical Sections for these items of work.
- B. All testing criteria will be provided by the Architect based on recommendations of the Commissioning Agent. All testing should be performed in accordance with AAMA, ASTM or FM Global Standard Test Methods for the assembly being tested.
- C. Provide input into the master scheduling process with regards to timing and duration of the functional performance tests. The master scheduling process will include the designation of Contractor personnel required to perform the functional performance tests and coordination of deferred testing due to season.
- D. Provide labor, equipment, materials, and assistance to the testing agency or their representatives for field testing of building enclosure elements including but not limited to sealants, flashings and other materials as deemed appropriate by the Commissioning Agent.
- E. Provide personnel and equipment as required to perform the functional performance tests being witnessed by the Commissioning Agent, including retesting required due to corrective actions required.
- F. Provide personnel and equipment as required to perform the functional performance tests being witnessed by the Commissioning Agent, including retesting required due to corrective actions required.

G. Responsibilities for Testing:

1. The Owner will provide inspections, tests, and quality control services specified to be provided by the Owner. Costs for these services are not included in the Contract Sum.
  - a. The Owner will employ and pay for the services of an Independent Third-Party Independent Testing Agency, testing laboratory or other qualified firm to perform these services.
2. Tests and Inspections by the Contractor: Tests and inspections not explicitly assigned to the Owner are the Contractor's responsibility. Unless otherwise indicated, engage an Independent Third-Party Independent Testing Agency. Perform quality-control services required of the Contractor by authorities having jurisdiction, whether specified or not.
  - a. The Owner will furnish the Contractor with names, addresses, and telephone numbers of testing agencies engaged by the Owner and a description of the types of testing and inspecting they are engaged to perform.
  - b. The Contractor shall not employ the same entity engaged by Owner, unless agreed to in writing by Owner.

H. Where quality-control services are indicated as the Contractor's responsibility, submit a certified written report, in duplicate, of each quality-control service.

I. Prior to the Commissioning Agent attending any field testing, the following requirements must be met in advance:

1. Contractor(s) responsible for installing components to be tested are to review assemblies scheduled for field testing to verify their completion and suitability for testing. Once this is determined, the responsible Contractor is to indicate in writing that the assembly is 100% complete and ready for testing. This documentation is to be distributed to the Team, including the Commissioning Agent in advance.
2. The responsible installer is to be present for any field testing performed.

3. If the testing agent anticipates deviating from the standard test methods for any assemblies, the deviations are to be submitted and approved by all parties involved, including the Owner's Project Manager, Architect, Contractor, installer and Commissioning Agent prior to the testing being performed.

J. Test Pressures

1. Air leakage tests shall be performed per ASTM E 783 at 6.24 pounds per square foot with a maximum of 0.06 cfm/sf leakage.
2. Water leakage tests shall be performed per ASTM E 1105 at 8 pounds per square foot.

K. Scope

1. Test mockup.
2. Test one window at the lower floor and one each of the big windows and the narrow windows at the upper two floors as follows: first unit in and at 50% through construction.

3.5 CONDITIONS FOR TESTING

- A. Access to the exterior and to the interior surfaces of the windows, electrical connections, and water connections for hoses located near the windows shall be provided by the Contractor.
- B. All exterior sealant installations at the window perimeters shall have been completed and allowed to cure for 72 hours prior to the start of testing.
- C. Interior finishes shall not be installed at the window test locations until after the tests are completed, or, if already in-place, such finishes should be removed. Any damage to paint and wall surfaces resulting from the attachment of the test chamber is to be repaired by the Contractor. Perimeter caulking beads shall have been installed and allowed to cure for a minimum of 72 hours prior to the field testing of the window.
- D. During winter weather conditions, ambient and surface temperatures must be 40°F and above to conduct testing. Exterior tenting and heating, if required, shall be provided by the Contractor.

3.6 CORRECTIVE ACTIONS

- A. Perform corrective actions for resolution of deficiencies found during all periods of construction and testing.
- B. Corrective work and retesting shall continue until all deficiencies identified have been corrected to the satisfaction of the Owner.
- C. Retesting: The Contractor is responsible for paying for retesting where results of inspections, tests, or other quality-control services prove unsatisfactory and indicate noncompliance with Contract Document requirements, regardless of whether the original test was the Contractor's responsibility. There shall be no charges to the Owner for retest of the systems that do not pass the functional performance requirements during commissioning testing.
  - 1. The cost of retesting construction, revised or replaced by the Contractor, is the Contractor's responsibility where required tests performed on original construction indicated noncompliance with Contract Document requirements.
  - 2. All retesting shall employ the Inspection and Testing Agency who performed the original tests.
  - 3. Testing shall be repeated until compliance is demonstrated.
  - 4. Field testing shall be repeated at the original location of the failed test until compliance is demonstrated.
  - 5. For field samples, in addition to retesting of the original failed test, two additional tests at new locations selected by Design Professional of similar scope as original field sample shall be provided.
  - 6. Continue field retesting and adding new field tests until compliance is achieved on first attempt of additional test.

3.7 WARRANTY

- A. Warranty period begins at final acceptance of completed work by the Owner, including the end of functional testing.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

- B. Attend scheduled warranty review meeting nine months after substantial completion.
- C. Assist with planning the satisfactory resolution of warranty problems and committing the necessary resources to follow through with achieving the activities planned. Complete any unfinished performance verification.

END OF SECTION

I:\830680\02 Design\specs\830680 01 81 00 Cx Specifications.docx

**SELECTIVE BUILDING DEMOLITION**

**SECTION 02 41 19**

**PART 1 - GENERAL**

**1.1 IN GENERAL**

- A. The General Conditions and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.
- B. Refer to Division 1, Sections 01 11 00 – 01 81 00 for additional information.

**1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Asbestos Abatement – Non-Friable Window Sealants – Section 02 82 00
- B. Lead Based Paint Associated Renovation – Section 02 83 19
- C. Metal Window and Curtain Walls – Section 08 50 00
- D. Translucent Wall Panels – Section 08 95 00
- E. Mechanical/Electrical General Requirements – Section 23 00 00

**1.3 SCOPE OF WORK**

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools and appliances necessary for the proper completion of the work as required in the specifications, in accordance with good construction practice and as shown on the Contract Drawings. The work under this section generally includes the following:

- A. Supply all necessary chutes, disposal facilities, transportation and labor necessary to dispose of all demolished materials, dirt, and debris off-site in a legal dumping area. Each Contractor or Sub-Contractor shall provide their own dumpsters and handle and dispose of their own debris. The Contractor shall obtain all permits necessary to transport and dispose of all materials, rubbish and debris affected by their scope of work.
- B. Supply all shoring and protection necessary to protect the building areas, building systems and landscape areas.
- C. Portable lift access shall be provided by the General Contractor to complete their work. Each Sub-Contractor will be required to provide their own portable lift or hoist to complete their work.
- D. Due to the amount of work required at most window openings temporary protection of the opening will be required. Temporary protection must be weather tight and secure at the end of each day. The Contractor is responsible for temporary protection for all window openings and openings at floor levels until such time as the windows are installed.

- F. Remove and replace existing interior and exterior window perimeter sealants and caulking from all window frames. The existing sealants associated with the window glazing have been found to contain asbestos; remove and dispose of the windows in accordance with Section 02 82 00 - Asbestos Abatement – Non-Friable Window Sealants.
- G. Remove existing aluminum window systems and all associated hardware at all designated openings including all glass, fasteners, flashings, clips, jamb, head, sill and mullion covers, and wood blocking, down to the cast stone, terra cotta and brick masonry substrates. Temporarily support and protect all permanent shelving, counters, and radiators. Report all areas of structurally unsound or deteriorated structural framing to remain to the Owner and Engineer. The structural steel framing at the window mullions have been found to contain lead; remove and dispose of the doors in accordance with Section 02 83 19 - Lead Based Paint Associated Renovation.
- H. Remove and dispose of existing window shades and associated hardware.
- I. Removal of ceramic tile within bathrooms as required to remove and replace window system. Remove only as much tile as necessary and replace tile with PVC trim.
- P. Provide miscellaneous mechanical disconnections including at unit ventilators and ductwork connected to louvers within the window units. Coordinate with the Owner's electrician for temporary removal of electrical conduits mounted to the existing jamb or sill substrates adjacent to the window frames which will be disturbed during window and trim removal and replacement work.
- Q. Remove and dispose of existing louvers within windows and metal wall panels. Temporarily support ductwork during window removal and replacement procedures.
- T. Remove existing metal or wood studs and cut back plaster or drywall at partition walls that abut new window systems as necessary to install new windows in designated locations.

#### 1.4 DEFINITIONS

- A. Remove: Detach items from existing construction and legally dispose of them off-site, unless indicated to be removed and salvaged or removed and reinstalled.
- B. Remove and Salvage: Detach items from existing construction and deliver them to Owner.
- C. Remove and Reinstall: Detach items from existing construction, prepare them for reuse, and reinstall them where indicated.

- D. Existing to Remain: Existing items of construction that are not to be removed and that are not otherwise indicated to be removed, removed and salvaged, or removed and reinstalled.

#### 1.5 SUBMITTALS

- A. Schedule of Selective Demolition Activities: Indicate detailed sequence of selective demolition and removal work, with starting and ending dates for each activity, interruption of utility services, use of elevator and stairs, and locations of temporary partitions and means of egress.
- B. Predemolition Photographs: Show existing conditions of adjoining construction and site improvements, including finish surfaces that might be misconstrued as damage caused by selective demolition operations. Submit before Work begins.

#### 1.6 QUALITY ASSURANCE

- A. Demolition Firm Qualifications: An experienced firm that has specialized in demolition work similar in material and extent to that indicated for this Project.
- B. Regulatory Requirements: Comply with governing EPA notification regulations before beginning selective demolition. Comply with hauling and disposal regulations of authorities having jurisdiction.
- C. Standards: Comply with ANSI A10.6 and NFPA 241.
- D. Predemolition Conference: Conduct conference at Project site with Architect/Engineer and Owner.

#### 1.7 PROJECT CONDITIONS

- A. Owner will occupy portions of building immediately adjacent to selective demolition area. Conduct selective demolition so Owner's operations will not be disrupted.
- B. Conditions existing at time of inspection for bidding purpose will be maintained by Owner as far as practical.
  - 1. Before selective demolition, Owner will remove the following items:
    - a. Personal objects at Classrooms and offices.
    - b. Desks and chairs
  - 2. Before selective demolition, any permanent furniture, such as countertops and cabinets, shall be protected during the work by the Contractor.

3. Before selective demolition, the Contractor will relocate from the work area all classroom furniture and boxes packed by the Owner, to temporary classroom locations.
- C. Notify Architect of discrepancies between existing conditions and Drawings before proceeding with selective demolition.
- D. Hazardous Materials: It is not expected that hazardous materials other than what is noted will be encountered in the Work.
  1. If additional materials suspected of containing hazardous materials are encountered, do not disturb; immediately notify Architect and Owner.
- E. Storage or sale of removed items or materials on-site is not permitted.
- F. Utility Service: Maintain existing utilities indicated to remain in service and protect them against damage during selective demolition operations.
  1. Maintain fire-protection facilities in service during selective demolition operations.

## PART 2 - PRODUCTS

NOT USED.

## PART 3 - EXECUTION

### 3.1 EXAMINATION

- A. Verify that utilities have been disconnected and capped.
- B. Survey existing conditions and correlate with requirements indicated to determine extent of selective demolition required.
- C. Inventory and record the condition of items to be removed and reinstalled and items to be removed and salvaged.
- D. When unanticipated mechanical, electrical, or structural elements that conflict with intended function or design are encountered, investigate and measure the nature and extent of conflict. Promptly submit a written report to Engineer.
- E. Engage a professional engineer to survey condition of building to determine whether removing any element might result in structural deficiency or unplanned collapse of any portion of structure or adjacent structures during selective demolition operations.

- F. Survey of Existing Conditions: Record existing conditions by use of preconstruction photographs.
- G. Perform surveys as the Work progresses to detect hazards resulting from selective demolition activities.

### 3.2 PREPARATION

- A. Site Access and Temporary Controls: Conduct selective demolition and debris-removal operations to ensure minimum interference with roads, streets, walks, walkways, adjacent classrooms/interior spaces and other adjacent occupied and used facilities.
  - 1. Comply with requirements for access and protection specified in Division 01 Section "Temporary Facilities."
- B. Temporary Facilities: Provide temporary barricades and other protection required to prevent injury to people and damage to adjacent buildings and facilities to remain.
- C. Temporary Shoring: Provide and maintain shoring, bracing, and structural supports as required to preserve stability and prevent movement, settlement, or collapse of construction and finishes to remain, and to prevent unexpected or uncontrolled movement or collapse of construction being demolished.

### 3.3 SELECTIVE DEMOLITION

- A. General: Demolish and remove existing construction only to the extent required by new construction and as indicated. Use methods required to complete the Work within limitations of governing regulations and as follows:
  - 1. Do not leave the interior of the building exposed at anytime. The building interior at envelope removal locations shall be completely protected during demolition operations.
  - 2. Neatly cut openings and holes plumb, square, and true to dimensions required. Use cutting methods least likely to damage construction to remain or adjoining construction. Use hand tools or small power tools designed for sawing or grinding, not hammering and chopping, to minimize disturbance of adjacent surfaces. Temporarily cover openings to remain.
  - 3. Cut or drill from the exposed or finished side into concealed surfaces to avoid marring existing finished surfaces.
  - 4. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain portable fire-suppression devices during flame-cutting operations.
  - 5. Locate selective demolition equipment and remove debris and materials so as not to impose excessive loads on supporting walls, floors, or framing.

6. Dispose of demolished items and materials promptly.
7. Materials containing asbestos or lead shall be removed by the designated abatement contractor. Refer to related specification sections.
8. Items to be removed and disposed of include, but may not be limited to, the following:
  - a. Existing window systems, hardware, clips, blocking, glazing and sealants.
  - b. Existing louvers contained within window systems.
  - c. Existing interior window treatments and associated hardware.
  - d. Existing lead based paint and asbestos containing materials in accordance with hazardous material abatement specifications

B. Removed and Salvaged Items:

1. Clean salvaged items.
2. Pack or crate items after cleaning. Identify contents of containers.
3. Store items in a secure area until delivery to Owner.
4. Transport items to Owner's storage area designated by Owner.
5. Protect items from damage during transport and storage.

C. Removed and Reinstalled Items:

1. Clean and repair items to functional condition adequate for intended re-use. Paint equipment to match new equipment.
2. Pack or crate items after cleaning and repairing. Identify contents of containers.
3. Protect items from damage during transport and storage.
4. Reinstall items in locations indicated. Comply with installation requirements for new materials and equipment. Provide connections, supports, and miscellaneous materials necessary to make item functional for use indicated.
5. Items to be removed and reinstalled include the following:
  - a. Acoustical ceiling tile and track adjacent to window frames.
  - b. Existing conduits mounted next to windows frames.
6. Items to be removed and provided to the Owner include the following:
  - a. Air conditioning units

- D. Existing Items to Remain: Protect construction indicated to remain against damage and soiling during selective demolition. When permitted by Owner, items may be removed to a suitable, protected storage location during selective demolition and cleaned and reinstalled in their original locations after selective demolition operations are complete.

### 3.4 DISPOSAL OF DEMOLISHED MATERIALS

- A. General: Except for items or materials indicated to be recycled, reused, salvaged, reinstalled, or otherwise indicated to remain Owner's property, remove

demolished materials from Project site and legally dispose of them in an EPA-approved landfill.

- B. Burning: Do not burn demolished materials.
- C. Disposal: Transport demolished materials off Owner's property and legally dispose of them.

### 3.5 CLEANING

- A. Clean adjacent structures and improvements of dust, dirt, and debris caused by selective demolition operations. Return adjacent areas to condition existing before selective demolition operations began.

END OF SECTION

i:\830680\02 design\specs\830680 02 41 19 selective demo.doc

**ASBESTOS ABATEMENT – NON-FRIABLE WINDOW SEALANTS**

**SECTION 02 82 00**

**PART 1 - GENERAL**

**1.1 IN GENERAL**

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this section of the specifications.
- B. Equality of material, article, assembly or system other than those named or described in this Section shall be determined in accordance with the provisions of Article IV of the CONTRACT AND GENERAL CONDITIONS.
- C. The Massachusetts Department of Environmental Protection has developed a revised asbestos regulation (310 CMR 7.15 (11), June 2014) that addresses the work practices for the removal and disposal of non-friable asbestos-containing window glazing and/or caulking in a manner different from the normal requirements for abatement of other types of asbestos containing materials (310 CMR 7.15 (7)). The policy is valid if the window glazing/caulk materials are removed, handled, and disposed without any visible emissions into the ambient air.

**1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Selective Building Demolition – Section 02 41 19
- B. Rough Carpentry – Section 06 10 00
- C. Metal Windows and Curtain Walls – Section 08 50 00

**1.3 SCOPE OF WORK**

- A. This Section specifies the minimum work practice requirements for the removal, containment, recovery and disposal of asbestos containing materials including but not limited to:
  - window glazing sealant
  - window and frame.

and all associated waste generated as a result of selective activities as needed to perform the Work of the Contract. Work includes but is not limited to the following:

1. All work to be the responsibility of the Asbestos Abatement Sub-Contractor.
2. Remove all asbestos-containing window glazing sealants along with the entire window from the Watertown Middle School to facilitate the replacement

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

of the window system. Also coordinate to disconnect and remove existing lighting, light switches, security systems, shelving and all other materials (if any) mechanically attached or otherwise connected to the existing windows. Refer to the drawings for additional information.

3. Coordinate with the General Contractor to ensure adequate protection for all persons and property, and maintenance of weather tight conditions during construction. Methods of protection will be reviewed and accepted by the Owner.
  4. Take precautions and provide all necessary controls required to ensure that pieces, flakes, dust, etc. will not enter other parts of the building or be released to the environment.
  5. Perform all work area clean-up as required by this Section.
- B. The Contractor, or Subcontractor, must have a current Massachusetts DLS Asbestos Contractor's License and meet other qualification requirements specified herein.
- C. Contractor is required to remove, contain, recover and dispose of all windows, window glazing sealant, and associated waste as called out in these specifications. The Contractor shall provide all services to perform the Work as follows:
1. Isolate work areas daily or as otherwise required with temporary staging/scaffolding and containment barriers as required to completely contain materials within the removal areas.
  2. Prepare existing surfaces for removal as specified herein.
  3. Remove all window systems with associated asbestos-containing glazing sealants.
  4. Properly dispose of the existing window systems and sealants contaminated by ACM.
  5. Recover all debris generated within the containment system or regulated work zone and appropriately package according to applicable regulations.
  6. Thoroughly clean each work area prior to the end of each shift and prior to each containment break down. The Owner will schedule, coordinate, and pay for a certified MA Project Monitor to perform daily monitoring, final visual inspections and any necessary final clearance air sampling to ensure that all debris has been removed prior to breakdown of each containment system. A written report of the inspection and acceptance for occupancy shall be provided to the Owner and Designer for the records.
  7. Remove all temporary containment system structures as directed by the Project Monitor.

8. Provide temporary weather and access containment at each window opening which shall be kept in place until the other trades initiate their work. The abatement contractor shall be responsible for the initial weather proofing, and for building securement until the other trades initiate their work. The Window Abatement Contractor or General Contractor will be responsible for all remaining weather/access protection upon completion of the abatement procedures.
  9. All asbestos containing material / residue generated as a result of the Work shall be removed from the work and shall be properly containerized for transport. The asbestos containing debris shall be considered a Special Waste.
- D. The following generator information shall be used on all waste stream documents, disposal facility waste profile forms, asbestos disposal facility letters of waste acceptance and Material Shipping Records.
1. Mailing Address - [Obtain from The Owner]
  2. Contact Name and Telephone Number – The Contractor shall be responsible for typing The Owner name and title onto all disposal facility waste profile forms and material shipping records.
- E. The Owner is the generator and will sign all material shipping records.
- F. Provide facility letters of initial acceptance for all asbestos containing material, addressed to The Owner. The initial letters, which shall be submitted to The Owner, must identify the contaminated material.
- G. Provide facility letters of final acceptance for all contaminated material, addressed to The Owner, prior to loading and shipment.
- H. Qualifications of Contractor
1. Contractor performing the Work of this Section (“Contractor”) shall be a Contractor licensed to perform asbestos abatement operations in the Commonwealth of Massachusetts. Contractor shall submit license numbers and proof of licensure.
  2. Submit the name and location of at least 3 projects performed by the Contractor, in the Commonwealth of Massachusetts, of a similar size and scope. The scope of work for the projects listed shall demonstrate the Contractor’s ability to perform Selective Demolition/Renovation.
- I. The Contractor shall possess and maintain throughout the project insurance in the kinds and amounts as stated in General Conditions, and a Certificate including a \$1,000,000.00 Excess Liability policy for asbestos abatement.

- J. Work must be performed in sequential phases. Inspection and approval of each phase by Owner's Project Monitor, and the Owner and/or Engineer must be sought and gained before proceeding to further work. Any reasonable delay caused by this requirement will not constitute a basis for claim against the Owner or the Engineer.

#### 1.4 SEQUENCE OF WORK

- A. The following is a typical sequence of work that the Asbestos Abatement Contractor shall adhere to during asbestos abatement work. The Engineer may authorize deviations from this typical sequence based upon the specific conditions encountered during the project.
1. Asbestos Abatement Contractor shall post all required signage.
  2. Asbestos Abatement Contractor shall install work place engineering controls and establish a restricted work area during the removal and disposal of all ACM as described in 1.3 Scope of Work of this section. The removal of the window system and associated asbestos containing sealants must be conducted in a regulated work area (mini-containment) with critical barriers over the interior window well.
  3. Asbestos Abatement Contractor shall deploy polyethylene sheeting along the ground and floor surfaces adjacent to windows to be removed.
  4. Asbestos Abatement Contractor shall prepare the Work Area(s) for regulated work area removal (mini-containment) as applicable and as specified and described in this Section.
  5. Asbestos Abatement Contractor shall construct a three-stage Decontamination Facility to be used as a remote Decontamination Facility for the removal of the asbestos-containing sealant.
  6. Owner's Project Monitor shall inspect and approve all work area preparations before permitting Asbestos Abatement Contractor to begin removal work.
  7. Asbestos Abatement Contractor shall remove and dispose of window system and asbestos-containing sealants as indicated in this section.
  8. Asbestos Abatement Contractor shall decontaminate the work areas upon completion of removal.
  9. Owner's Project Monitor shall perform final visual inspections to assure that no visible debris or asbestos fibers exist in the work areas or inside the school.

1.5 JOB CONDITIONS

- A. The Asbestos Abatement Contractor shall extend full cooperation to the Owner, Architect and Engineer in all matters involving the use of the Owner's facilities. At no time shall the Asbestos Abatement Contractor cause, or allow to be caused, conditions that may cause risk or hazard to the general public. The facility's water and electrical utilities are generally operable.
- B. Bids shall not be based solely on the information provided. Contractors are required to make their own estimates of the amount of material to be removed, decontaminated, cleaned, and disposed. Bids and cost of the work to be performed shall be based on the Contractor's own estimate of the work required.
- C. Bidders shall confirm all quantities and items during the Pre-Bid walkthrough, including the amount of materials to be removed. The Bidders are responsible to review and confirm all quantities and field conditions, including locations of all ACM and debris, surface area, lengths, widths, cross-sections, thickness, composition of layers, substrate composition, etc., prior to the submission of bids. The Engineer, Architect, and Owner will not be responsible for errors or omissions and/or charges for extra work arising from any bidder's failure to become familiar with the existing conditions of the site conditions, requirements of the work and the results to be produced. By submitting a bid, the bidder further agrees that the descriptions contained herein and on the drawings, (i.e., quantities, descriptions, locations, areas, etc.) are adequate and that the bidder will perform all the work required and produce the required results. No claims for extra payment due to incorrect quantities will be considered.

1.6 TRAINING AND QUALIFICATIONS

- A. Worker Training: All asbestos abatement workers who work on this project shall be provided training, at a minimum, the 32-hour required training for asbestos contractor workers, per 453 CMR 6.00, and maintain current DLS Asbestos Worker licenses.
- B. Site Supervisor Training and Qualifications: Asbestos Abatement Contractor shall provide at a minimum one Site Supervisor, who shall be the OSHA competent person, and whose responsibilities shall include coordination, safety, security, and execution of all phases of the ACM removal project. The Site Supervisor will not be used as an asbestos removal worker, and will be assigned full-time to the project. The Site Supervisor shall be fully qualified in all aspects of asbestos abatement practices and procedures, and shall have successfully completed a 40-hour Asbestos Contractor Supervisor training course accredited by the Commonwealth of Massachusetts. The Supervisor shall maintain a current DLS Asbestos Supervisor license and have completed at least 3 projects similar in scope to this project.
- C. CPR/First Aid Training: At least one person who is certified in CPR and Emergency First Aid by an appropriate authority should be on-site at all times.

1.7 REGULATORY SUBMITTALS

A. Asbestos Abatement Contractor shall notify the following agencies in appropriate manner and place of impending work, and shall provide evidence that notifications have been or will be made at the pre-construction conference:

1. U. S. Environmental Protection Agency, Region 1
2. Massachusetts Department of Environmental Protection  
Division of Air and Hazardous Materials
3. Massachusetts Division of Labor Standards  
Asbestos Control Unit  
Boston, Massachusetts
4. City of Watertown, Board of Health
5. Environmental, Health and Safety Department, City of Watertown
6. Other state or local agencies as required by law or ordinance

These notices shall be sent at least 10 working days in advance of the commencement of the work with copies provided to the Owner.

B. Permits: Asbestos Abatement Contractor shall be responsible for securing all necessary permits for asbestos-related work, including removal, hauling, disposal, fire, materials, usage, or any other permits required to perform the specified work. Asbestos Abatement Contractor shall be responsible for all fees involved in securing permits to perform the work in this Contract.

1.8 SAFETY CONSIDERATIONS

A. This project is subject to compliance with Public Law 91-596, "Occupational Safety and Health Act of 1970" (OSHA), with respect to all Rules and Regulations pertaining to construction, including Volume 36, Numbers 75 and 105, of the Federal Register, as amended, and as published by the U. S. Department of Labor.

B. In addition to any detailed requirements of this Specification, Asbestos Abatement Contractor shall at his own cost and expense comply with all laws, ordinances, rules, and regulations of federal, state, regional, and local authorities regarding handling and storing asbestos waste material.

C. Asbestos Abatement Contractor is responsible for using safe procedures to avoid electrical hazards. All extension cords and power tools used within the work area shall be attached to Ground Fault Circuit Interrupters (GFCI).

- D. Asbestos Abatement Contractor will maintain fire extinguishers (Class A, B, and C) ready for immediate use and distribute them throughout the work area and in and about any flammable temporary structures for the duration of the project.
- E. Internal combustion engines shall not be operated within the buildings. Gasoline or other flammable liquids shall not be stored in the buildings. Flammable liquids shall not be dispensed or handled within the building.
- F. Asbestos Abatement Contractor is required to either provide their own generator to supply all of their power needs during abatement, or make suitable arrangements with the General Contractor for a source of electrical power.

#### 1.9 SECURITY

- A. Owner will provide specific access as required during the project to the Asbestos Abatement Contractor and personnel assigned to the project. Asbestos Abatement Contractor shall be responsible for the security of the section of the building involved in the abatement project. It will also be the Contractor's responsibility to allow only authorized personnel into the work area, and to secure all assigned entrances and exits at the end of the workday.
- B. Any person entering or leaving the contained areas must sign the Contractor's bound log book and enter the date and time. The log book must be located immediately outside the entrance to the Decontamination Facility at all times, and be open for inspection by the Owner and the Engineer.

#### 1.10 REFERENCES

- A. The following references are cited as applicable publications:
  - 1. U.S. Environmental Protection Agency  
CFR Title 40, Part 61, Subparts A and M, National Emission Standards for Hazardous Air Pollutants (NESHAP); Asbestos NESHAP Revision; Final Rule, and 40 CFR Part 763, Subpart G
  - 2. U.S. Department of Labor; Occupational Safety and Health Act of 1970 (Particular attention is drawn to the Asbestos Regulations: 29 CFR Part 1926.1001, and the Respirator Regulations; 29 CFR Part 1910.134 and the Hazard Communication Program, CFR Title 29, Part 1910.1200).
  - 3. U.S. Department of Transportation regulations, 49 CFR Parts 172 and 173.
  - 4. All Commonwealth of Massachusetts laws, regulations and standards, including the regulations 453 CMR 6.00 "The Removal, Containment or Encapsulation of Asbestos" and 310 CMR 7.15 "Asbestos", 18.00 and 19.00 and MGL Chapter 21E.

- B. All regulations of these and other governing agencies in their most recent versions are applicable. Note that MA DEP Regulation 310 CMR 7.15 was revised in 6/2014. This Specification refers to many requirements found in these references, but in no way intends to cite or reiterate all provisions therein or elsewhere. It is the Asbestos Abatement Contractor's responsibility to know, understand, and abide by all such regulations and common practices. Other provisions contained in these references may from time to time during the execution of this Contract be enforced by Owner at his own discretion.

#### 1.11 SUBMITTALS

- A. The Asbestos Abatement Contractor is required to provide two copies of the following Asbestos Abatement Pre-Job Submittals at the Pre-Construction Conference. These Submittals must be reviewed and approved by the Engineer prior to the commencement of work.
1. Copies of all notifications, permits, applications, licenses, and like documents required by federal, state, or local regulations obtained or submitted in proper fashion.
  2. Copies of medical records as required by OSHA or a notarized statement by examining medical doctor that such examinations took place, and when, for each employee to be used on Project.
  3. Record of successful respiratory fit test performed by a Competent Person as defined by OSHA, within the previous six months, for each employee to be used on Project.
  4. Copies of Contractors Current DLS license and copies of each supervisor's and workers' current DLS license.
  5. Certificate of Insurance with Owner and Engineer as additionally insured parties.
  6. Proposed respiratory program for employees throughout all phases of the Work, including make, model, and NIOSH approval numbers of respirators to be used.
  7. Written description of all procedures, methods, or equipment proposed to be utilized by Asbestos Abatement Contractor that differ from the Specification, including manufacturers' specifications for any equipment not specified for use in the Specification.
  8. Proposed electrical safeguards to be implemented, including but not limited to location of transformers, GFCI outlets, lighting, etc., necessary to safely perform the Work, including a description of an electrical hazards safety plan for common practices in the work area.

9. A list of all equipment to be used on-site, by make and model, including generator, negative air pressure equipment, HEPA vacuums, water atomizing devices, etc.
  10. Chain of command of responsibility at the Work Site, including supervisors, foremen, and competent person, and means for contacting them.
  11. Proposed emergency plan and route of egress from work areas in the event of fire or injury, including the name and telephone number of nearest medical assistance center.
  12. Asbestos Abatement Contractor's testing laboratory, NIOSH PAT proficiency testing results, and certification in the Commonwealth of Massachusetts.
  13. Material Safety Data Sheets on encapsulants, sealers, and any other potentially hazardous materials to be used on the project.
  14. Name and address of waste hauler and disposal site.
- B. The Asbestos Abatement Contractor is required to submit the following documents prior to submitting requisition for final payment:
1. Waste disposal receipts acknowledging disposal of all waste material from the project, indicating delivery date, quantity, and appropriate signature of the disposal site's authorized representative.
  2. A copy of the daily entry-exit log book.
  3. All personal monitoring and final clearance results as required by OSHA or EPA and elsewhere in this Section.

#### 1.12 TEMPORARY SERVICES

- A. Water, lighting and other utilities, are generally available in this building and will be provided by the Owner. Where existing utilities of the facility are not adequate or cannot be used, the Asbestos Abatement Contractor is responsible for providing alternative sources, the cost of which is to be included in the bid price. Any use of the facility's utilities shall be coordinated through the General Contractor, Engineer and Owner.
1. Water Service  

Existing water service connections are limited but may be used where available and permitted by Owner. Where connections are not available, Asbestos Abatement Contractor shall provide tie-ins to existing lines and provide all lines necessary for water distribution with the work performed

by a licensed plumber. Asbestos Abatement Contractor shall restore all water utilities to original condition.

2. Electrical Service

- a. General: Electrical service shall comply with applicable NEMA, NECA, and UL standards and governing regulations for materials and layout of temporary electrical service.
- b. Temporary Power: Asbestos Abatement Contractor shall provide a generator and all temporary service connections from Contractor supplied power sources as required. Asbestos Abatement Contractor shall provide service (subpanel) with a minimum of 100 amp, two-pole circuit breaker, or fuse-disconnect. Subpanel and disconnect shall be sized and equipped to accommodate all electrical equipment required for completion of the work. All power connections and panel work shall be performed by a licensed electrician. All generators, fuel sources, electrical panels, cables and tie-in wiring shall be isolated from workers, building occupants and the public.
- c. Ground Fault Protection: Asbestos Abatement Contractor shall provide all receptacle outlets equipped with GFCI's and reset button for plug-in connection of equipment.
- d. Electrical Power Cords: Asbestos Abatement Contractor shall use only graded and grounded extension cords.

3. Lighting Service

Asbestos Abatement Contractor shall supply any necessary temporary lighting for all lighting requirements within each work area. Lighting is generally existent. All existing lighting within the work area shall be isolated, shut down, and protected by Asbestos Abatement Contractor. All temporary lighting within the work area shall be equipped with GFCI's at the source and every 40 foot length of temporary lighting cord or wiring. Asbestos Abatement Contractor shall provide lighting to the extent needed by the Project Monitor to perform final visual inspection.

PART 2 - MATERIALS

2.1 ABATEMENT MATERIALS AND EQUIPMENT

All material and equipment proposed to be used on this project shall be subject to the acceptance of the Engineer.

- A. Deliver all materials and equipment to the site in the original containers bearing the name of the manufacturer.
- B. All materials or equipment delivered to the site shall be unloaded, temporarily stored, and transferred to the work area in a manner that shall not interfere with the operations of the Engineer or the facility.
- C. Unloading and transfer routes must be approved in advance by the Engineer.
- D. Damaged or deteriorated materials may not be used and must be promptly removed from the premises.
- E. All materials, tools, and equipment must comply, at a minimum, with this specification, and relevant federal, state, and local codes.

## 2.2 MATERIALS, TOOLS, AND EQUIPMENT

- A. Respiratory Protection Equipment
  - 1. Air Purifying Respirators:
    - a. Respirator Bodies: Provide half-face or full-face type respirators. Equip full-face respirators with a nose cup or other anti-fogging device as would be appropriate for use in air temperatures less than 32 degrees Fahrenheit.
    - b. Filter Cartridges: Provide, at a minimum, HEPA type filters labeled with NIOSH and MSHA Certification for "Radionuclides, Radon Daughters, Dust, Fumes, Mists including Asbestos-Containing Dusts and Mists" and color coded in accordance with 29 CFR 1910.134. In addition, a chemical cartridge section may be added, if required, for solvents, etc., in use. In this case, provide cartridges that have each section of the combination canister labeled with the appropriate color code and NIOSH/MSHA Certification.
    - c. Non-permitted respirators: Do not use single use, disposable or quarter face respirators.
- B. Wetting Materials: For wetting prior to disturbance of asbestos-containing materials use either amended water or a removal encapsulant. The material must be odorless, non-flammable, non-toxic, non-irritating, and non-carcinogenic. It shall be applied as a mist using a low pressure sprayer recommended by the manufacturer.
  - 1. Amended Water: Provide water to which a surfactant has been added. Use a mixture of surfactant and water which results in wetting of the asbestos containing material and retardation of fiber release during

disturbance of the material equal to or greater than that provided by the use of one ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.

2. Removal Encapsulant: Provide a penetrating or bridging type encapsulant designed specifically for removal of asbestos containing material. Use a material which results in wetting of the asbestos-containing material and retardation of fiber release during disturbance of the material equal to or greater than that provided by water amended with one ounce of a surfactant consisting of 50% polyoxyethylene ester and 50% polyoxyethylene ether mixed with five gallons of water.
- C. Polyethylene Sheet: Provide flame resistant polyethylene film that conforms to requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6.0 mils thick, frosted or black as required by Engineer.
  - D. Duct Tape: Provide duct tape in 2" or 3" widths as indicated, with an adhesive which is formulated to aggressively stick to sheet polyethylene.
  - E. Spray Cement: Provide spray adhesive in aerosol cans which is specifically formulated to stick tenaciously to sheet polyethylene.
  - F. Waste Containers: For asbestos waste, provide 6 mil thick leak-tight polyethylene bags labeled with required EPA, DOT, OSHA labels. If the waste material contains sharp edges or may otherwise puncture polyethylene bags, provide drums or other closed containers for storage, transportation, and disposal.
  - G. Filters: Provide cascaded filter units on drain lines from showers or any other water source carrying asbestos contaminated water from the work area. Provide units with disposable filter elements as indicated below. Connect so that discharged water passes primary filter and output of primary filter passes through secondary filter.  
  
Primary Filter - Pass particles 20 microns and smaller  
  
Secondary Filter - Pass particles 5 microns and smaller.
  - H. Warning Signs and Labels: Shall comply with 29 CFR 1926.1101, and all other federal, state, or local codes and regulations.
  - I. Hand Power Tools: Shall be equipped with HEPA-filtered local exhaust ventilation if used to drill, cut into, or otherwise disturb ACM.
  - J. Brushes: All brushes shall have nylon bristles. Wire brushes are excluded from use due to their potential to shred asbestos fibers into small fibers.

- K. Vacuum Cleaning Equipment: Shall be industrial type designed for such use, equipped with High Efficiency Particulate Air (HEPA) filters. Separate dedicated vacuum cleaners shall be used for asbestos work and shall be clearly labeled as to their intended use. No other method will be permitted. Vacuuming equipment shall be Model GA72 or GA73 as manufactured by NILFISK of America, Inc.; Model CMP-1500-P as manufactured by Car-Mon Products, Inc.; equipment manufactured by J. D. Brophy, Inc. or an approved equal. The equipment shall be properly operated at all times and shall contain no air leaks. The Project Monitor will inspect all vacuuming equipment prior to its use, and may request verification of the efficiency of the filtration. Each vacuum cleaner shall be emptied and thoroughly cleaned (inside the work area) at the conclusion of the project.

### PART 3 - EXECUTION

#### 3.1 PRE-ABATEMENT SITE MEETING

- A. Site Meeting: Prior to performing any abatement work under this Section, the Asbestos Abatement Contractor shall identify one Site Supervisor, (or the official Contractor's Representative) for meeting at the site with the Engineer. The purpose of this meeting is to determine the following:
1. The results of estimates performed by the Asbestos Abatement Contractor for agreement on quantities of materials to be removed and review of the detailed plan and schedule for performing the required work.
  2. Location of on-site waste storage areas and waste removal sequencing.
  3. Asbestos Abatement Contractor access to the work areas, including approved doors.
  4. Availability of water and electrical services and toilet facilities at the work site.
  5. Location, size, manner of construction, and use of containment barriers, negative air units/exhausts, and Decontamination Facilities.
  6. Any other technical issues or logistical factors to minimize interference with facility operations and to facilitate Asbestos Abatement Contractor activities.

#### 3.2 WORK AREA PREPARATIONS

- A. The Asbestos Abatement Contractor shall prepare each work area as described in this Section. Preparation work shall be performed according to the following general sequence of procedures to ensure that proper containment and

protection systems are installed prior to any work that could generate airborne asbestos fibers.

- B. Erect critical barriers to seal all openings (e.g., interior of windows) into the building.
- C. Isolate all facility electrical systems in and traversing the work area, and provide temporary power and lighting systems with ground fault interrupt circuit protection for work areas (and affected non-work areas).
- D. After each work area has been prepared as specified in this Section, the Asbestos Abatement Contractor's Supervisor shall verify that the work area has been prepared in compliance with all regulations and this specification, and obtain the inspection of the Project Monitor. Any corrections to the work area preparation requested by the Project Monitor shall be made. No asbestos removal work shall begin until the work area preparation is acceptable to the Project Monitor.

### 3.3 WINDOW SYSTEM AND SEALANT/CAULKING REMOVAL

- A. This section pertains to an exterior removal method of the window system and associated asbestos-containing window sealants. The window systems and sealants shall be removed within a controlled work area by the Asbestos Abatement Contractor.
- B. Install warning tape and other necessary physical barriers adjacent to and/or below the work area outside the building to prevent accidental injury from falling objects and to establish a regulated work zone.
- C. Place 6-mil polyethylene sheeting a minimum of 15 feet out from the building beneath the windows on the exterior of the building.
- D. Seal the inside of the window with at least 2 layers of 6-mil polyethylene sheeting to form a critical barrier that prevents any migration of debris into the interior of the building.
- E. Construct a controlled work area on the floor/ground and/or the appropriately designed and constructed staging/scaffolding on the exterior surface of the building.
- F. Maintain equipment inside the immediate work area including, but not limited to, water source and HEPA vacuums.
- G. Workers shall wear disposable protective suits, respirators and additional personal protective equipment as needed during all abatement procedures.
- H. Follow procedures as described below for removal of window system and sealant/caulking materials:

1. Completely remove window system and sealant materials attached to it using manual wet methods in a way that avoids the creation of air emissions and permits collection of debris within the regulated work area.
  2. Thoroughly wet wipe and/or HEPA vacuum the work surface to ensure all caulking material is removed from the component or package entire component and sealant for disposal. Completely remove any sealant from any adjacent substrate.
  3. Package all waste material for legal and proper disposal.
- I. Perform air monitoring as describe in section 3.6 of this section.

### 3.4 FINAL VISUAL INSPECTION AND CLEARANCE

- A. After a thorough cleaning of the workspace, and if a high degree of cleanliness has been achieved, the Contractor shall notify the Project Monitor and Engineer that the workspace is ready for inspection and final testing. The Project Monitor, with the assistance of the Contractor, shall then visually inspect the workspace for the detection of any visible asbestos dust, residue or contamination. If the visual inspection reveals dust, residue or other signs of contamination, additional cleaning shall be conducted at no additional cost to the Owner. The visual inspection shall be repeated until no dust/debris is visible.
- B. The work area shall remain closed and sealed until visual clearance inspection is satisfactorily completed.

### 3.5 ASBESTOS WASTE DISPOSAL PROCEDURES

- A. The Asbestos Abatement Contractor shall package, label, and remove all asbestos waste from each work area in accordance with applicable regulations and as specified below. Packaging shall be accomplished in a manner that minimizes waste volume, but ensures waste containers shall not tear or break. Transportation to and disposal of the containerized waste at an approved asbestos landfill shall be the responsibility of the Contractor.
- B. Wastes are defined as window systems and all asbestos-containing or potentially contaminated materials or other items that have not been completely cleaned to the satisfaction of the Project Monitor while inside the work area, and must be removed from the job site. Asbestos wastes may include building materials, sealants, insulation, windows, debris, disposable clothing and protective equipment, plastic sheeting and tape, exhaust systems or vacuum filters, contractor equipment, or other materials designated by state or local authorities or the Project Monitor which have been potentially contaminated with asbestos and have not been fully cleaned inside the work area by vacuuming followed by thorough washing.

- C. **Waste Packaging:** All waste material shall be promptly placed in 6-mil polyethylene bags as it is generated. A sufficient number of waste bags shall be located in the immediate work area, and in the Equipment (Dirty) Room of the Decontamination Facility. Since the waste material may contain sharp edges or may otherwise puncture polyethylene bags, provide drums or other closed containers for storage, transportation, and disposal. The Contractor shall count or measure the volume of each filled container leaving the work area, and maintain a written record of such.
- D. **Waste Labeling:** Warning labels, having waterproof print and permanent adhesive in compliance with OSHA, EPA, NESHAPS, and U.S. Department of Transportation (DOT) requirements, shall be affixed to or printed on the sides of all waste bags or transfer containers.
- E. **Wetting of Waste:** A fine water spray shall be used to keep the top layers of waste in containers thoroughly wet at all times. When a waste bag is full, it shall be securely sealed with tape or another secure fastener.
- F. **Waste Container Decontamination and Removal Procedure:** The following procedures shall be followed whenever containers or equipment are removed from the work area:
1. The work area shall be considered a holding area only during the period of active waste transfer for the purpose of the loading of carts or drums. Storage of waste and carts (or drums) outside the work area is prohibited.
  2. External surfaces of contaminated containers and equipment shall be cleaned by wet cleaning and/or HEPA vacuuming in the work area.
  3. The cleaned containers of waste and equipment shall be placed in uncontaminated leak-tight plastic bags (or 6-mil sheeting if physical characteristics necessitate and permit) or double wrapped in polyethylene sheeting.
- G. **Waste Container Storage:** Sealed waste bags may be temporarily stored in the work area only until the time for final visual inspection. All waste bags shall be moved into an appropriate asbestos waste dumpster prominently identified and posted with signs, and waste containers shall be covered with polyethylene sheeting or otherwise protected from further contamination.
- H. **Waste Transportation and Disposal Regulations:** It is the responsibility of the Contractor to determine and insure that he is complying with: 1) the current waste handling regulations applicable to each work site; and 2) the current regulations for transporting and disposing waste at each ultimate asbestos disposal landfill. The Contractor must comply fully with these regulations; and with all U.S. Department of Transportation, State, local, and EPA requirements.

### 3.6 AIR MONITORING BY PROJECT MONITOR

- A. This paragraph describes air monitoring (Phase Contrast Microscopy, NIOSH Method 7400) carried out by the Owner's Project Monitor to verify that the building beyond the Work Area and the outside environment remains uncontaminated. This Section also sets forth airborne fiber levels both inside and outside the Work Area as action levels, and describes the action required by the Contractor if an action level is met or exceeded.
- B. All area sampling/analysis will be performed by the Owner's Project Monitor.
- C. The purpose of this air monitoring will be to detect faults in the work area isolation such as contamination of the building outside of the work area with airborne asbestos fibers, failure of filtration or rupture in the negative pressure system, etc. Should any of the above occur, the Asbestos Abatement Contractor shall immediately cease asbestos abatement activities until the fault is corrected. Work shall not recommence until authorized by the Project Monitor.
- D. Airborne Fiber Counts:
  - 1. Outside Work Area: If any air sample taken outside of the Work Area exceeds the established baseline of 0.01 f/cc, immediately and automatically stop all Work. If this air sample was taken inside the building and outside of the critical barriers around the Work Area, immediately erect new critical barriers as specified herein to isolate the affected area from the balance of the building. Erect Critical Barriers at the next existing structural isolation of the involved space (e.g., wall, ceiling, floor). Decontaminate the affected area in accordance with these Specifications. Respiratory protection shall be worn in affected area until area is cleared for re-occupancy. Leave Critical Barriers in place until completion of Work and ensure that the operation of the Work Area results in a flow of air from the balance of the building into the affected area. If the exit from the Clean Room of the personnel Decontamination Facility enters the affected area, establish a temporary Decontamination Facility consisting of a Shower Room and Changing Room as specified herein.

### 3.7 AIR MONITORING BY CONTRACTOR

- A. The Contractor shall perform air monitoring as required to meet OSHA requirements as outlined in 1926.1101 and 1910.134 for maintenance of Time Weighted Average (TWA) fiber counts and airborne concentrations for types of respiratory protection provided.
- B. The sampling person and analysis laboratory performing this work shall be an OSHA competent person.
- C. For asbestos air sample analysis, the laboratory shall be successfully participating in the AIHA/NIOSH Proficiency Analytical Testing (PAT) program and be certified by the Commonwealth of Massachusetts.

- D. Air sampling materials and equipment requirements are as follows:
1. Sampling for analysis by phase contract microscopy shall employ cellulose ester collection filters with 0.8 micron pore size or less. Cassettes shall be loaded with filters under clean laboratory conditions. A 5.0 micron pore-size cellulose ester backing filter shall be placed behind the collecting filter, followed by the cellulose support pad and the cassette base. A metal cowl or an electrically conductive cowl shall be used in conjunction with the sampling train.
  2. The filter assembly shall be upstream of all other components in the sampling train. An air flow measuring device (when used) shall be downstream of the filter and the pump assembly, or integral with the pump assembly.
  3. Sampling pumps shall supply constant flow.
  4. An air flow measuring/metering device shall be used, and shall be high quality rotometer, mass flow, dry gas meter or critical orifice. Measuring devices shall have a range of at least 1.5 times the desired flow rate and be readable to at least +/- 5% of the desired flow rate. These shall be calibrated against standards of higher accuracy before and after sampling. The calibrations shall be recorded.
- E. Numbers and frequencies of person air sampling shall be as required by OSHA regulations.
- F. Asbestos personal sampling shall be performed using the OSHA Reference Method (ORM).
- G. The Contractor shall use a pre-approved "chain-of-custody" form for all personal air samples he collects.
- H. Results of sample analysis shall be provided to the Engineer within twenty-four (24) hours of collection.
- I. The Contractor shall at no additional charge install and provide AC power for the Project Monitor to collect final air clearance samples as required herein.
- J. The Contractor shall also provide general surveillance at each work area to observe that the "no visible emissions" requirement of this Specification is enforced at each work area.

**Appendix A**

**Watertown Middle School Asbestos Containing Window Material**

Area/Location	Material	Estimated Quantity
Exterior Windows	Glazing Caulk	219 Windows

END OF SECTION

I:\830680\02 Design\specs\830680 02 82 00 ACM Abatement Removal.docx

**LEAD-BASED PAINT ASSOCIATED RENOVATION**

**SECTION 02 83 19**

**PART 1 - GENERAL**

**1.1 IN GENERAL**

- A. Attention is directed to the CONTRACT AND GENERAL CONDITIONS and all Sections within DIVISION 1 - GENERAL REQUIREMENTS, which are hereby made a part of this section of the specifications.
- B. Equality of material, article, assembly or system other than those named or described in this Section shall be determined in accordance with the provisions of Article IV of the CONTRACT AND GENERAL CONDITIONS.

**1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Selective Building Demolition – Section 02 41 19
- B. Asbestos Abatement – Non Friable Window Sealants – Section 02 82 00
- C. Rough Carpentry – Section 06 10 00
- D. Metal Windows and Curtain Walls – Section 08 50 00

**1.3 SCOPE OF WORK**

- A. This Section specifies the minimum work practice requirements for the removal, containment, recovery and disposal of limited lead based paint on structural steel components and associated waste generated as a result of selective renovation activities as needed to perform the Work of the Contract. Work includes but is not limited to the following:
  - 1. Disturb limited lead paint (corrosion inhibitor) on structural steel members during the removal of the window frames and the installation of the new window systems. The work is expected to be limited to the potential drilling of small holes (or other attachment technique) in the steel to facilitate attachment of the new window system to the structural members, and the intact removal of some lintels that exhibit significant corrosion. This activity may be conducted by the Contractor in accordance with the Lead in Construction Standard (29 CFR 1926.62). Since the building is not target housing or a child care facility (< 6 years of age), a Lead-safe Renovation Contractor is not required. Note that window systems are being initially removed by an asbestos abatement Contractor due to the presence of asbestos containing glazing compound (Section 028200).
  - 2. Prepare an initial employee exposure assessment, as appropriate.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

3. Utilize appropriate engineering controls such as a HEPA attachment on the drill (or other technique) used to advance the attachment penetration into the lead coated steel member.
  4. Conduct appropriate housekeeping with a HEPA vacuum to clean-up of all loose and flaking lead based paint in the work area.
  5. Collect and appropriately dispose of all accumulated lead containing debris (e.g. HEPA filter and lead dust) in a sealed impermeable bag or drum. This waste should be tested (TCLP) to confirm the absence or presence of a hazardous waste and disposed of as required by regulation.
  6. Coordinate with the General Contractor to ensure adequate protection for all persons and property, and maintenance of weather tight conditions during construction. Methods of protection will be reviewed and accepted by the Architect.
  7. Take precautions and provide necessary controls required to ensure that chips, flakes, dust, odors, smoke, etc., will not enter other parts of the building or be released to the environment.
  8. Perform all work area clean-up and disposal as required by this Section.
- B. The Contractor is hereby made aware that the corrosion inhibitor coating of the steel structural members impacted by the Work of this Contract is coated with regulated lead-based paint. Therefore, Work is to be performed in accordance with these Specifications and with Environmental Protection Agency (EPA, 40 CFR 745), Occupational Safety and Health Administration (OSHA, 29 CFR 1926.62), Department of Transportation (DOT), Massachusetts Department of Environmental Protection (DEP), and other state and local regulations. Wherever there is a conflict or overlap of the above references, the most stringent provisions apply.
- C. Contractor is required to remove, contain, and dispose of any removed lead-paint debris or component and associated waste as required by these regulations. The Contractor shall provide all services to perform the Work as follows:
1. Isolate the work areas daily or as otherwise required with temporary work area barriers as required to contain lead dust within the removal areas.
  2. Prepare the necessary penetrations or other disturbance of the lead coated steel as specified herein, and as required in other specification sections.
  3. Recover any lead debris collected during this operation in the work zone and appropriately package for disposal according to applicable regulations.

4. Thoroughly clean each work area (e.g., HEPA vacuum) prior to the end of each shift. The supervisor will perform visual inspections to assure that all debris has been removed from each work area.
  5. All lead paint residue and debris generated as a result of the Work shall be removed from the work area and shall be properly containerized during transport. The lead paint debris shall be considered a RCRA hazardous waste. However, note that it is likely that paint and steel debris will probably not be considered hazardous waste, but must be tested (TCLP) by the contractor to confirm that observation.
- D. The following generator information shall be used on any applicable waste stream documents, disposal facility waste profile forms, RCRA facility letters of waste acceptance and hazardous waste manifests.
1. U.S. EPA Identification Number – [Obtain from The Owner]
  2. Mailing Address - [Obtain from The Owner]
  3. Contact Name and Telephone Number – The Contractor shall be responsible for typing The Owner name and title onto all disposal facility waste profile forms and hazardous waste manifests.
  4. State Generator ID - [Obtain from The Owner]
  5. Facsimile Number - The Contractor shall be responsible for entering The Owner's facsimile number on to all Profiles, Manifests and Bills of Lading.
- E. The Owner is the generator and will sign all manifests and bills of lading.
- F. Provide facility letters of initial acceptance for all contaminated material, addressed to The Owner. The initial letters, which shall be submitted to The Owner, must identify the contaminated material.
- G. Provide facility letters of final acceptance for all contaminated material, addressed to The Owner, prior to loading and shipment.

#### 1.4 SUBMITTALS

- A. The Contractor shall submit to the Owner three copies of the following listed items within 10 Days after Notice to Proceed. No activities shall commence until these items are reviewed and accepted by The Owner, unless otherwise waived. Submittal data shall be in sufficient detail to enable The Owner to evaluate the Contractor's proposed work plans, methodologies, products and equipment for the purposes of determining conformity with the Contract Specifications. Each submittal item shall be identified with a cover page and/or transmittal sheet containing the listed submittal number.

1. The name and address of Contractor's waste cleanup lead testing laboratory(s) including certification(s) of NVLAP accreditation, listing of relevant experience in debris lead analysis,
2. The name and address of the disposal facility.

1.5 PROJECT COORDINATION

- A. The Contractor shall take all necessary protective action as required to protect occupants and workmen from hazards that occur as a result of the Work.

1.6 GENERAL APPLICABILITY OF CODES, REGULATIONS AND STANDARDS

- A. The Contractor shall comply with the requirements of the following regulations, and maintain a copy of each at the work site:
1. U.S. Department of Labor, OSHA Lead Regulations (CFR Title 29, Part 1926.62).
  2. U.S. Environmental Protection Agency, Hazardous Waste Regulations (CFR Title 40, Parts 260 - 268).
  3. All local ordinances, regulations, or rules pertaining to lead, including its storage, transportation and disposal.
  4. U.S. Department of Transportation regulations, 49 CFR Parts 172 and 173.

1.7 NOTIFICATIONS, PERMITS, AND LICENSES

- A. Licenses: Maintain current licenses as required by applicable state or local jurisdictions for the removal, transporting, disposal or other regulated activity relative to the Work of this Contract.

1.8 CONTRACTOR AND PERSONNEL QUALIFICATIONS

- A. Personnel Qualifications: All personnel of the Contractor involved with Selective Demolition should be trained in lead paint renovation. Personnel shall be thoroughly familiar with the standard operating procedures of the Contractor and all applicable regulations governing lead abatement Work. All personnel shall undergo the medical examinations required by OSHA.

PART 2 - MATERIALS

2.1 GENERAL REQUIREMENTS

- A. The Contractor shall deliver all materials and equipment to the site in the original containers bearing the name of the manufacturer, and details for proper storage and usage.

- B. Unloading and temporary storage sites and transfer routes must be reviewed and accepted in advance by The Owner.
- C. Damaged or deteriorated materials may not be used and must be promptly removed from the site.
- D. All materials, tools, and equipment must comply, at a minimum, with the Specification and relevant Federal, State and local codes.

## 2.2 MATERIALS, TOOLS, AND EQUIPMENT

- A. HEPA-Filtered Exhaust Attachments/Equipment: Supply the required number of air filtration attachments/units to the site in accordance with these Specifications.
- B. Vacuum Cleaning Equipment - Shall be industrial type designed for such use, equipped with High Efficiency Particulate Air (HEPA) filters. No other method will be permitted. Each vacuum cleaner shall be emptied and thoroughly cleaned after use.
- C. Respiratory Protection Equipment - Shall be NIOSH-approved, and shall comply with all provisions of 29 CFR 1926.62. A fit testing procedure and results of individual fit-tests shall be submitted to The Owner for acceptance for all passive air filtering respirators.
- D. Polyethylene Sheet - Provide flame resistant polyethylene film that conforms to the requirements set forth by the National Fire Protection Association Standard 701, Small Scale Fire Test for Flame-resistant Textiles and Films. Provide largest size possible to minimize seams, 6.0 mils thick as required, frosted or black as indicated.
- E. Warning Signs and Labels - Shall be located and comply with all Federal, State, and local codes and regulations.
- F. Waste Containers and Transportation - Shall be bags, drums, or other closed containers suitable for loading, temporary storage, transit, and unloading of contaminated waste without rupture, causing exposure to persons or emissions to the atmosphere. Transportation and disposal methods shall comply with the provisions of EPA Title 40; US Department of Transportation Regulations 49 CFR; and DEP Regulations 310 CMR 30.00; and with any hazardous or special waste regulations for temporary storage, transport, and disposal in the cities where the waste will be generated, stored, transported or disposed of.
- G. Ladders or Scaffolds or Lifts - Shall be OSHA-approved, and be of sufficient dimensions and quantities so that all work surfaces can be easily and safely accessed by The Owner, workers, and inspectors. Scaffold joints and ends shall be sealed with tape to prevent incursion of lead dust.

- H. Wet Scraping Tools – Flat and curved paint scrapers to remove peeling paint from metal components. Spray bottles and sponges attached to the scrapers to keep surface wet during scraping.
- I. Mechanical Removal Tools with HEPA Attachment – Power drill with integral HEPA Attachment.

### PART 3 - EXECUTION

#### 3.1 LEAD-BASED PAINT DISTURBANCE/REMOVAL REQUIREMENTS

##### A. Isolation of Work Areas

All lead work areas shall remain isolated from all other trades of the project and remain inaccessible to the public. Contractor shall monitor the access to the lead abatement work areas.

##### B. Work Procedures

In order to avoid possible exposure to dangerous levels of lead and to prevent possible contamination of areas outside the demarcated work area, work shall, at a minimum, follow the OSHA regulations, work practices and general guidelines listed below:

1. In areas where disturbance/removal of lead-coated material occurs, the Contractor shall cover the ground/floor with one layer of 6 mils polyethylene sheeting (slip-proof).
2. Polyethylene sheets shall be deployed below the surface to be abated to collect falling debris. Other alternative collection methods may be utilized with approval of the Engineer.
3. The worker shall create the necessary penetration or attachment alternative using a drill with a HEPA vacuum shroud or wet scraping technique, or other approved technique.
4. Before leaving the work area, the worker shall remove all visible contamination, debris and dust from the adjacent surfaces, with a HEPA vacuum.
5. Under no circumstances shall workers or supervisory personnel eat, drink, smoke, chew gum or chew tobacco in the work area.

#### 3.2 DISPOSAL OF WASTE MATERIALS

##### A. General

1. The requirements of applicable EPA Resource Conservation and Recovery Act (RCRA), MA DEP and DOT regulations shall be complied

with as well as applicable state waste plan requirements. During abatement, the Contractor shall not leave potential lead debris on the property, incinerate debris, dump waste by the road or dump waste in an unauthorized dumpster.

2. The following materials, at a minimum, shall be tested by Contractor and the results made available to Owner to determine whether or not they are to be classified as hazardous waste:
  - a. painted components,
  - b. HEPA filters, respirator cartridges;
  - c. paint dust, chips and debris.

3. In order to determine whether wastes are classified as non-hazardous solid or hazardous waste for the above listed materials, as defined under the Resource Conservation and Recovery Act, the Toxicity Characteristic Leaching Procedure (TCLP) must be performed. Representative samples shall be required of all material in Item 2. a. through c. above to be disposed. Representative sampling shall be at a minimum, one sample of each component to be disposed of. All sample analysis costs shall be borne by the Contractor.

If any of these samples are above the TCLP regulatory limits, Contractor shall dispose of all of that type of material as hazardous material. This cost shall be included in the base bid price.

4. Contractor shall submit written manifest or shipping record to Owner prior to removing any waste from site and shall submit complete manifest to Owner after waste is disposed at an approved landfill.
5. For waste disposal and classification purposes, the following documents are made applicable and part of this Section: 40 CFR 241, 257, 261, 262; and 49 CFR 172, 173, 178, and 179.

B. Disposal of Hazardous Waste (if any)

1. Contractor and transporting Contractor will be required to comply with the RCRA regulations and with all applicable state and local regulations.
2. Contractor shall comply with all EPA and DOT regulations for waste transportation and disposal.
3. Contractor shall place residues in appropriate durable, sealed containers.

C. Waste Containers. Contractor will comply with EPA and DOT regulations for containers.

D. Waste Transportation. If Contractor is not a certified hazardous waste transporter, a contract shall, as necessary, be entered into with a certified

transporter to move the waste. Transporter shall be at approval of Owner. Contractor shall require, if necessary, the certified hazardous waste transporter to fully comply with RCRA and DOT regulations.

- E. Prior to the removal of any hazardous waste (if found) the below listed information must be received in writing by the Owner for their review and approval. Once approval is received, the waste may be transported as required.
- a. Quantity of hazardous waste;
  - b. Type of waste materials;
  - c. Method of containerizing waste or waste treatment and appropriate licensing, certification and regulatory approvals;
  - d. Proposed waste hauler;
  - e. Proposed waste disposal site or landfill.
- F. Receipts from waste hauler and waste disposal site or landfill must be received and approved by the Owner prior to approval of completion of the applicable phase of work.
- G. Cost for Disposal of Hazardous Waste
1. The cost for the correct disposal of all waste of this project shall be included in the Total Base Bid, including all lead waste debris to be disposed as hazardous waste (if any).  
  
The cost for the disposal as hazardous waste shall include all fees, permits, labor, materials, profit, overhead, waste transfer costs, and all other costs incidental to hazardous disposal. Also included shall be the cost for all storage dumpsters, permit fees, transport, treatment (on-site or off-site), additional testing, and disposal fees.
  2. Contractor shall submit to its approved laboratory for testing, samples of each type of debris removed as part of the work of this project. Contractor's Total Base Bid shall include minimum requirements for testing of materials required by the disposal sites, hazardous and non-hazardous, and as referred to in this Section.
  3. However, it is likely that most lead waste from this operation will not be considered hazardous and not need to be disposed as hazardous waste. A credit to the owner will be necessary in this case.

END OF SECTION

**CONCRETE REPAIRS AND REPLACEMENT**

**SECTION 03 30 00**

**(This Section Filed Sub-Bid Required)**

**PART 1 - GENERAL**

**1.1 IN GENERAL**

- A. The General Conditions, and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.
- B. Refer to Division 1, Sections 01 11 00 – 01 81 00 for additional information.
- C. All work specified within this Section shall be the responsibility of the Masonry Sub-Contractor.

**1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Masonry – Section 04 21 00
- B. Metal Windows and Curtain Walls – Section 08 50 00

**1.3 SCOPE OF WORK**

In general, the Contractor shall supply all labor, equipment, staging, temporary protection, temporary heat if required, vacuums, generators, tools and appliances necessary for the proper completion of the work in this section.

- A. Repair spalled, cracked, or damaged concrete adjacent to the window openings as shown on the Contract Drawings. Perform additional concrete crack repairs on a unit price basis; refer to Section 01 22 00 – Unit Prices. Repair only the damages that will affect the quality of the fenestration installation and as approved by the Owner's representative.
- B. Demolish and replace cast stone sill designated on the Contract Drawings. Coordinate with Section 04 2 100 – Masonry to remove and replace brick surrounding cast stone sill to properly replace sill.
- C. Clean all areas affected by the work.

**1.4 SPECIAL JOB CONDITIONS**

- A. The Contractor shall utilize skilled and experienced specialty workers to perform the work.
- B. Materials that are at a temperature other than the recommended application temperatures of the manufacturer or applicable standard shall not be applied.

- C. Sound all cast stone elements designated for repair via an approved sounding technique prior to performing repairs.
- D. The Contractor shall provide all means, methods, equipment, etc. as necessary to achieve satisfactory surface moisture content for as long a duration as required for proper application and curing of the specified materials. Ambient temperature and relative humidity shall be measured and recorded on a daily basis and submitted to the Engineer each week.
- E. Cold Weather Application: No cast stone repair work shall be executed when the temperature in the work area has dropped below 45 degrees Fahrenheit. Consult the manufacturers of the materials for proper application and storage procedures
- F. Hot Weather Application – The Contractor shall keep the repair areas sufficiently moist at all times during the operations in accordance with the manufacturer's instructions. Discard all materials which have begun to set or is not used within specified set-time.
- G. Under no circumstances shall the Contractor remove existing materials and systems to the ground in an uncontrolled manner. Machinery or devices used shall be manufactured for this purpose. Adjacent building and property areas shall be protected from airborne debris.
- H. During removal operations, the Contractor is responsible for the containment of all dust, dirt, debris, overspray and run-off resulting from the work. The Contractor shall collect and contain all materials and repair any resulting damage to adjacent surfaces, site fixtures or personal property. Specific attention is drawn to the use of chemicals and cleaners.
- I. The Contractor shall use dust collection vacuums (HEPA vacuums) to limit airborne dust associated with grinding the existing mortar joints. All costs associated with additional power generators shall be the Contractor's responsibility.
- J. The Contractor shall engage an Engineer Registered in the state of Massachusetts to design all cast stone sections and attachments for all pieces that have been replaced.

#### 1.5 JOB CONDITIONS

- A. The Contractor shall supply, install and maintain all shoring, supports, barriers, protection, warning lines, lighting and personnel required to support the structure, fixtures and facilities affected by his work and segregate the work area(s) from pedestrian or vehicular traffic, as well as to prevent damage to the building, occupants and the surrounding landscaped and paved areas.
- B. It is the intent of these specifications to perform limited repairs to the exterior concrete elements, and that the designated repairs are to stabilize the substrates to allow attachment of the new fenestrations. The owner is aware that additional repairs at other façade locations are present.

- C. Coordinate the work in this section with the work by other trades to ensure the orderly progress of the work.
- D. Materials which have a temperature other than the application temperatures of the manufacturer shall not be applied.
- E. Under no circumstances shall the Contractor remove existing materials and systems to the ground in an uncontrolled manner. Machinery or devices used shall be manufactured for this purpose. Adjacent building and property areas shall be protected from airborne debris.
- F. During removal operations, the Contractor is responsible for the containment of all dust, dirt, debris, overspray and run-off resulting from the work. The Contractor shall collect and contain all materials and repair any resulting damage to adjacent surfaces, site fixtures or personal property. Specific attention is drawn to the use of chemicals and cleaners.

#### 1.6 SUBMITTALS

- A. Submittals shall be made in accordance with the General Conditions and Section 01 30 00 – Shop Drawings and Submittals.
- B. Submit all bond agent/anti-corrosive coating, repair mortar, and epoxy product technical data sheets to Engineer for all approval of use.
- C. Provide shop drawings indicated stone sizes, shapes, and anchoring. The Contractor shall verify all dimensions and coordinate the drawings with field conditions. The Contractor shall submit the shop drawings to the Engineer for approval.

#### 1.7 SAMPLES / MOCK-UPS

- A. The Contractor shall submit 12" x 12" samples for approval of Color and Texture. The sample shall include the approximate profile of a typical replacement unit for confirmation of site line profiles and configurations for discussion. The texture and color of the cured/cleaned sample shall be compared with a minimum of **three (3)** existing cast stone components for comparison. The Contractor shall submit as many samples as required to obtain approval from the Owner.

#### 1.8 DIMENSIONS AND QUANTITIES

All dimensions and quantities shall be determined or verified by the Contractor. Quantities to be carried under the base bid work have been shown on the Contract Drawings. Additional quantities have been carried under each item as Unit Price scopes of work. Refer to Section 01 22 00 – Unit Prices for additional information. The Contract Drawings have been compiled from various sources and may not reflect the actual condition at the moment of construction. The Contractor is cautioned to take all precautions and make all investigations necessary to install the proposed work. The Owner will not consider unfamiliarity with the job conditions as a basis for additional compensation.

1.9 QUALITY ASSURANCE

- A. The Cast Stone shall, as a minimum requirement, meet all standards for Architectural Precast Concrete set by the Precast/Prestressed Concrete Institute (PCI MNL-117) except where more stringent requirements are described herein.
- B. Where the requirements for Cast Stone described in this document differ from the minimum PCI Standards, the more stringent standards shall be followed.

1.10 CLEAN-UP

- A. Site clean-up shall be complete and performed daily to the satisfaction of the Owner.
- B. All building (interior and exterior), landscape and parking areas shall be cleaned of all trash, debris and dirt caused by, or associated with, the work.
- C. All trash and debris shall be completely removed from the site daily during the work and at the completion of the work. All debris shall be legally disposed of off-site.

PART 2 - MATERIALS

2.1 SALVAGED MATERIALS AND ITEMS

- A. All building materials, equipment and debris of whatever nature from the portions of the existing structure removed under this project and not designated to be reused or reinstalled shall become the property of the Contractor and legally disposed of off site. Verify which, if any, materials will require special disposal procedures.

2.2 CONCRETE REPAIR AND GROUT MATERIALS

- A. Repair mortar for concrete spall repairs shall be a polymer-modified portland cement based patch mortar. Mortar shall be color matched, fast-setting, non-sag for vertical and overhead surfaces such as Sika Top 123 plus as manufactured by the Sika Corporation, ThoRoc HB2 manufactured by ChemRex, Inc., Conpro Set manufactured by Conproco, or Engineer approved equal. Repair mortar shall be specifically formulated such that the fully cured, in place patch, matches the surrounding substrate. Final selection of repair mortar for concrete spall repairs shall be based on Owner's acceptance of color match.
- B. Reinforcing bar coating agent shall be a one-component moisture resistant zinc-rich epoxy material designed specifically for use as reinforcing bar protection. Coating agent shall be Masterprotect P8100AP as manufactured by BASF Master-Builders, Inc. Products of equal or greater material quality as manufactured by Conproco Corporation and Sika Corporation will be considered for acceptance.'
- C. Burlap for curing patches shall be heavy weight burlap cloth.
- D. Polyethylene for curing patches shall be 6 mil polyethylene plastic sheet.

- E. Duct tape for curing patches shall be completely strippable commercial duct tape.

### 2.3 EPOXY CRACK INJECTION MATERIALS FOR CONCRETE (vertical surfaces)

- A. Passive or structural cracks within concrete substrates shall be pressure injected with epoxy repair, utilizing the following materials:
1. Full depth cracks less than 1/16" width: Very low viscosity, moisture-tolerant epoxy injection adhesive such as Sikadur 52 by Sika Corp. or Engineer approved equal conforming to ASTM C-881 and AASHTO M-235. Viscosity alternates to be based upon required depth of travel and port spacing as determined in field to obtain full substrate adhesion, as approved by the Engineer.
  2. Cracks 1/16" to 1/4" in width: High modulus, low viscosity, high strength epoxy adhesive such as Sikadur 52 or Sikadur 35, Hi-Mod LV by Sika Corp. or Engineer approved equal conforming to ASTM C881 and AASHTO M-235. Viscosity alternates to be based upon required depth of travel and port spacing as determined in field to obtain full substrate adhesion, as approved by the Engineer.
  3. Cracks greater than 1/4" to 3/8" width: High modulus high strength epoxy adhesive extended with epoxy mortar sand such as Sikadur 31, Hi-Mod Gel by Sika Corp. or Engineer approved equal conforming to ASTM C-881 and AASHTO M-235. Viscosity alternates to be based upon required depth of travel and port spacing as determined in field to obtain full substrate adhesion, as approved by the Engineer.
  4. Epoxy Mortar Sand for extending epoxy: Clean, well-graded oven dried, passing 20-40 mesh with no fines and no moisture. Required to extend all epoxies when used in glue line widths exceeding their tolerable recommended values. Refer to manufacturer literature for maximum glue-line widths.
  5. Cap Seal and Port Binder: High modulus, high strength structural, very rapid curing smooth paste adhesive such as Sikadur 33 by Sika Corp. or Engineer approved equal.

### 2.4 CAST STONE REPLACEMENT UNITS

- A. It is the intent of this Specification Section to utilize products manufactured by the following:
1. Continental Cast Stone East Manufacturing Inc.
  2. Northern Design Precast, Inc.
  3. Or an alternative product may be submitted for compliance with the documents.

- B. The Contractor shall provide color and finish samples to match the existing stone. Samples shall be provided until a color and finish match is approved by the Owner.
- C. Exposed surfaces shall exhibit a coarse aggregate with rough surface finish similar to the texture of the existing. No bug holes or blow holes will be permitted, and all material shall be mixed in a mechanical mixer.
- D. The samples shall be approved by the Engineer before the manufacturer shall be required to proceed with the work.
- E. Compressive strength shall be in conformance with ASTM C 1194 and be a minimum of 6500 psi at 28 days.
- F. Absorption shall be in conformance with ASTM C 1195; 6% maximum by the cold water method, or 10% maximum by the boiling method at 28 days.
- G. Air Content shall be in conformance with ASTM C 173 or ASTM C 231 and shall be 4-8% for wet cast units exposed to a freeze thaw environment.
- H. Freeze thaw shall be in conformance with ASTM C 1364 with the **CPWL** not exceeding 5% after 300 cycles of freezing and thawing.
- I. Linear shrinkage shall be in conformance with ASTM C 426 and shall not exceed .065%.
- J. Cement shall be Portland Type I or III white/and or grey, in conformance with ASTM C150.
- K. Fine aggregates shall be carefully graded and washed as required to achieve desired texture and color, meeting ASTM C33, except for gradation. **Aggregate should be well graded with the nominal top size at the No. 8 sieve.**
- L. Coarse aggregates shall be carefully graded and washed and crushed as required to achieve desired texture and color, meeting ASTM C33.
- M. Cast stone elements shall be colored with approved pigmentation or dyes not to exceed 5% of the total weight of cementitious material and meeting ASTM C979, to achieve desired color.
- N. Air entrainment shall be 5-6% using admixture.
- O. Water shall be potable.

## 2.5 SUPPLEMENTAL REINFORCING STEEL

- A. All supplemental reinforcing steel shall be new deformed billet steel conforming to ASTM 615, Grade 60.

- B. All bars shall be cold bent in accordance to the proper radii established by the current ACI and CRSI specifications. Under no conditions shall heat be applied to the bars to obtain bends.

## 2.6 TOLERANCES

- A. Stone Dimensions - The numerically greater of plus or minus 1/8" in five (5) feet, 1/4" in twenty (20) feet or length/360.
- B. Setting tolerances - Plus or minus 1/8" out of plane from adjacent unit.
- C. Drip edges where required, shall be a minimum of 1/2" diameter and set back a minimum of 1/2" from the outside face of the stone.
- D. All reinforcement shall have a minimum of 1 1/2" stone cover.

## 2.7 ACCESSORY MATERIALS

- A. Fasteners for concrete spalls that exceed 1-1/2" in depth shall be minimum 1-1/2" long by 1/4" diameter drive pins in stainless steel sheaths as manufactured by Star, Rawl, or equal. Embedment into substrate shall be 1-1/4" minimum. It is recommended that stainless steel pins have through-holes at exposed ends to accept tie wire.
- B. Anchors for areas of deep spalls (>2" in depth), shall be AISI 304 or 316, stainless steel fully threaded rod with a minimum diameter of 3/16" and a minimum embedment of 2" into the original cast stone and patch repair or Dutchmen, or as required by the manufacturer, which ever is greater.
- C. Type 304 stainless steel or hot dip galvanized wire mesh to be wrapped around drive pins for concrete spalls that are in excess of 1-1/2" deep shall be a 2" x 2" grid mesh, 14 gage wire (minimum).
- D. Mesh for areas of deep spalls (>2" in depth), shall be stainless steel 1"x1" square, 10 gauge mesh.
- E. Burlap for curing patches shall be heavyweight burlap cloth.
- F. Polyethylene for curing patches shall be 6-mil polyethylene plastic sheet, or equal.
- G. Tie wire shall be annealed iron wire of not less than 16 gauge.
- H. Splice reinforcing steel reinforcing bar shall be ASTM A615 deformed uncoated #7 bar, Fy=60 ksi.

## 2.8 CAST STONE CLEANERS AND ACCESSORIES

- A. Cleaner for newly repaired or repointed cast stone shall be a cleaner specifically designated for removing mortar stains, dirt and carbon build-up. Cleaner shall be as manufactured by SureKlean, Deidrich Technologies, Arcal Chemical, Inc., or approved equal.
- B. Masking materials shall be commercially available masking or duct tape of appropriate width. Self adhesive materials shall be completely strippable, leaving no adhesive residue when removed.
- C. Plastic sheet for masking tape areas shall be 4 mil. thick minimum polyethylene sheet of appropriate size to cover the required areas.

### PART 3 - EXECUTION

#### 3.1 GENERAL WORKMANSHIP

- A. Do not deliver to site or install any material or system that has not been approved. Materials installed without approval may be required to be removed.
- B. The prepared concrete surface must be dry, clean and smooth. Provide dryers, if necessary, to dry surfaces prior to installing new work. Open flame devices shall not be used.
- C. Comply with the manufacturer's written instructions and these Specifications for all renovations and associated work.
- D. Partial or unmarked cans of materials cannot be used.

#### 3.2 CONCRETE SPALL REPAIRS

- A. Using hand and power tools (30 lb. Maximum chipping hammers) remove all areas of deteriorated, delaminating, debonded, spalled or otherwise damaged concrete from existing surfaces, as required to install the new work. Removal of deteriorated concrete and surface preparation shall be completed as recommended by the patching mortar manufacturer.
- B. Define all repair areas with 1/4" deep perimeter saw cut, maintaining a polygon area. Do not cut reinforcing steel which is to remain in place. Undercut or "key" in spall repair edges on at least two opposite sides to mechanically retain the repair. Cuts shall not overlap at corners.
- C. Prepare the surface of the existing concrete to receive the repair mortar. Provide a 1/8" minimum (ICRI-CSP-8) aggressive surface profile with fractured aggregate. Tool marks should be visible. Examine substrate for cracks and treat with specified crack repair procedure.
- D. Examine all reinforcing steel for corrosion and section loss. If section loss exceeds 10% of the cross-sectional area of the reinforcing bar, splice in new reinforcing steel as detailed on the Contract Drawings. Remove existing concrete 1" behind

reinforcing steel to allow for placement of repair mortar. Consult the Engineer prior to splicing new steel bars.

- E. Completely remove all dust, grease and other impurities via compressed air and wire brushes, chipping, grinding or other methods as required to achieve acceptable bonding surfaces. Dampen the existing surface area with clean potable water, to obtain saturated-surface-dry (SSD) conditions.
- F. Apply coating/bonding agent to all substrate surfaces and reinforcing steel as recommended by the repair mortar manufacturer.
- G. Install repair mortar to properly prepared areas to achieve a “wet-on-wet” application. Mix repair mortar in accordance with the material manufacturer’s instructions. Where multiple lifts of material are required, carefully score the top surface of each lift to produce a roughened surface for the next lift.
- H. Spall locations that exceed 1-1/2” depth shall have drive pins installed into the substrate. Drive pins shall be spaced 8” on center, with a minimum of 2 pins per spall. Wrap stainless steel wire or hot-dip galvanized wire about the base prior to installation to act as a reinforcement line upon installation of the patching materials.
- I. The concrete substrates require wetting with water prior to installing the bonding agent. Consult with the manufacturer’s instructions prior to initiating repairs.
- J. Finish the repairs flush with the existing surfaces. Insure that the surface, texture, profile and color of the repair areas match the surrounding walls. Do not feather edge repairs but install in 1/4” minimum applications, or as otherwise limited by each materials manufacturer’s limitations.
- K. Clean uncured materials off of undesired areas with a moist sponge or cloth immediately after application.
- L. Provide for proper cure of patch as recommended by the repair material manufacturer. At a minimum, curing shall consist of wet burlap placed over the repair area, continuously wetted to provide a constantly moist burlap and enclosed with polyethylene, duct taped to the adjacent surfaces. Curing materials shall remain in place for a minimum of 7 days.

### 3.3 EPOXY INJECTION REPAIRS

- A. Clean the existing crack and adjacent areas of all loose materials with high-pressure air to blow the crack clean.
- B. Cracks larger than 1/4” shall be routed or “veed” to accommodate insertion of entry ports. Drilling of cracks for injection ports must be accomplished using a vacuum attached swivel drill chuck.

- C. Install tape along perimeters of crack to limit the amount of surface sealer which contacts concrete. Spread surface sealer a minimum of 1/2" past the crack termination. The surface sealer shall have a uniform thickness of 1/8" minimum to 3/16" maximum.
- D. Inject water into cracks to pre-wet the bonding surfaces. While the interior bonding surfaces are still wet, inject grout until clearly visible at the next entry port indicating that crack void is filled to that point. Pressure of injections of grout shall not exceed 200 psi unless instructed otherwise by the Engineer.
- E. Immediately following injection at each entry port, plug port to prevent escape of injected grout.
- F. Repeat until crack void is completely filled. Confine any spills and collect with an absorbent material.
- G. Allow crack repair material to properly cure as recommended by the material manufacturer.
- H. Remove all strippable sealer, tape and associated residue from concrete surfaces, using sharp sided tools such as a putty knife or trowel.

#### 3.4 CAST STONE REPLACEMENT - GENERAL WORKMANSHIP

- A. All cast stone replacement on this project shall be wet cast units; dry tamping replacement will not be permitted.
- B. Utilize rotary mixers when fabricating all mortar. Be sure to maintain relative proportions of mortar materials to provide the texture and color to match the existing mortar. Mix all mortar for at least three (3) minutes and not more than five (5) minutes with the minimum amount of water to produce a workable consistency. The maximum amount of water to produce a workable consistency. The maximum allowable air content of cured mortar shall be 12% by volume. Retempering of mortars that have stiffened because of evaporation of water will be allowed in order to provide the proper consistency provided all mortar in a batch is utilized within two (2) hours of initial mixing.
- C. Do not leave any partially completed sections exposed to the elements overnight. Provide all devices (including heaters and insulation) necessary to maintain areas at the correct temperature and humidity for proper curing of mortar.
- D. Keep covers tight on all evaporative products to prevent premature curing.

#### 3.5 CAST STONE SETTING

- A. All cast stone shall be set by experienced masons, accurately and in accordance with the shop and setting drawings. Unless otherwise noted, every stone shall be set in a full bed of mortar, with all vertical joints flushed full. All anchors and dowels

shall be firmly placed and all anchor holes and dowel holes and similar holes completely filled with mortar or non-shrink grout.

- B. All anchors, dowels and other anchoring devices shall be furnished by the setting contractor as shown on the approved shop drawings using, whenever possible, standard building stone anchors commercially available in stainless steel Type 302 or 304. Minimum three (3) dowels shall be provided at stone into existing concrete foundation wall.
- C. When setting with mortar, all stones not thoroughly wet shall be drenched with clear water just prior to setting.
- D. Do not use pry bars or other equipment that could damage cast stone components.
- E. After stone has been set, all joints shall be raked to a minimum depth of 3/4" of 2.5 times the joint width from the face for pointing. The face of each stone shall then be sponged off to remove any splashed mortar or mortar smears.
- F. All stones shall be protected from splashing mortar or damage by other trades. Any foreign matter splashed on the stone should be removed immediately, following manufacturer's recommended procedures.

### 3.01 CAST STONE PATCHING AND CLEANING

- A. The repair of chipped or damaged cast stone shall be done only by mechanics skilled in this class of work, with material furnished by the Manufacturer and according to this direction.
- B. Before pointing, the face of the cast stone shall be scrubbed with a fiber brush, using soap powder and water and shall then be thoroughly rinsed with clean running water. Any mortar on the face of the cast stone shall be removed. No acids or prepared cleaners shall be used without the approval of the Cast Stone Manufacturer.

### 3.6 CLEAN-UP

Prior to acceptance of the masonry work covered in this section, the Contractor shall perform a thorough clean-up of the work site, building surfaces, landscaping, etc. Any plantings or other items damaged shall be repaired or replaced to the satisfaction of and at no additional cost to the Owner.

END OF SECTION

**MASONRY**

**SECTION 04 21 00**  
**(Filed Sub-Bid Required)**

**PART 1 - GENERAL**

**1.1 IN GENERAL**

- A. The General Conditions, and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.
- B. Refer to Division 1, Sections 01 11 00 – 01 81 00 for additional information.
- C. All work specified within this Section shall be the responsibility of the Masonry Sub-Contractor.

**1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Concrete Repairs – Section 03 30 00
- B. Metal Windows and Curtain Walls – Section 08 50 00

**1.3 FILED SUB-BIDS**

- A. Masonry is stipulated as a filed Sub-Bid under PART C of the GENERAL BID FORM.
- B. All Sub-Bids shall be submitted on the FORM FOR SUB-BID furnished by the Awarding Authority, as required by Section 44F of Chapter 149 of the General Laws, as amended.
- C. Sub-Bids must be filed with the Awarding Authority in a sealed envelope, at the time and date stipulated in the Advertisement.
- D. Specific information relating to sub-bidders is set forth in the Contract Documents, under the heading “NOTICE TO BIDDERS, Including Sub-Bidders” and the attention of sub-bidders is directed thereto.

**1.4 SCOPE OF WORK**

In general, the Contractor shall supply all labor, equipment, staging, temporary protection, temporary heat if required, vacuums, generators, tools and appliances necessary for the proper completion of the work in this section.

- A. Drill brick masonry sills and install threaded, headed anchor bolts and epoxy adhesives at brick sills to accept wood blocking. Coordinate with Section 06 10 00 – Rough Carpentry.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

- B. Cut and repoint designated brick masonry mortar joints as shown on the Contract Drawings. Perform additional repointing on a Unit Price basis.
- C. Remove and replace damaged, cracked or spalled brick masonry units as shown on the Contract Drawings. Remove and replace cracked brick masonry units around security screens and fasteners, while security screens are removed, at locations designated on the Contract Drawings. Perform additional brick masonry unit replacement on a Unit Price basis.
- D. Remove and replace deflected or excessively corroded steel lintels and install throughwall flashings on a Unit Price basis. Consult the Engineer and obtain written approval for lintel removal and replacement prior to performing work.
- E. Provide mortar parge coat at brick and terra cotta jamb substrates on a Unit Price basis. Consult the Engineer and obtain written approval prior to performing work.
- F. Prime and paint exposed surfaces of existing steel lintels to remain above window openings.
- G. Provide temporary protection to the existing building and ground surfaces to prevent damage due to the work.
- H. Provide all lifts, hoists and man power to locate new masonry and debris to the work areas and dumpsters.
- I. Clean all surfaces where all masonry renovations are performed.

1.5 JOB CONDITIONS

- A. The Contractor shall supply, install and maintain all shoring, supports, barriers, protection, temporary heat, warning lines, lighting and personnel required to support the structure, fixtures and facilities affected by his work and segregate the work area(s) from pedestrian or vehicular traffic, as well as to prevent damage to the building, occupants and the surrounding landscaped and paved areas.
- B. The Contractor shall use dust collection vacuums (HEPA vacuums) to limit airborne dust associated with grinding the existing mortar joints. All costs associated with additional power generators shall be the Contractor's responsibility.
- C. Coordinate the work in this section with the work by other trades to ensure the orderly progress of the work. All above roof line masonry repairs will be performed in conjunction with the window replacement.
- D. Materials which have a temperature other than the application temperatures of the manufacturer shall not be applied.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

- E. Cold Weather Application - (Applies only to rebuilding, no repointing shall be completed when air temperature is less than 40°F). The Contractor shall comply with the following cold weather masonry construction requirements at no change in contract price and provide all necessary heat:
1. The cold weather construction and protection requirements shall be closely followed.
  2. Construction materials shall be received, stored, and protected in ways that prevent water from entering the materials.
  3. If climatic conditions warrant, temperatures of construction materials should be measured. Frozen sand and wet masonry units must be thawed. Masonry units below 20°F must be heated above 20°F without overheating.
  4. Sufficient mortar ingredients should be heated to produce mortar temperatures between 40°F and 120°F. Every effort should be made to produce consecutive batches of mortar with the same temperatures falling within this range. The mortar temperature after mixing and before use should be above 40°F, maintainable either by auxiliary heaters under the mortar board or by more frequent mixing of mortar batches. Heated mortar on mortar boards should not become excessively hot (greater than 120°F).
  5. During below-normal temperatures, masonry should be placed only on sound unfrozen foundations. Masonry should never be placed on a snow or ice-covered surface, because of the danger of movement when the base thaws and the possibility of very little bond being developed between the mortar and the supporting surface.
  6. At the end of the day, the top surface of all masonry should be protected to prevent moisture, as rain, snow or sleet, from entering the masonry. This protection must cover the top surface and should extend a minimum of 2 feet down all sides of the masonry.

<u>WORK DAY TEMPERATURE</u>	<u>CONSTRUCTION REQUIREMENT</u>	<u>PROTECTION REQUIREMENT</u>
Above 40°F	<b>Normal masonry procedures.</b>	<i>Cover walls with plastic or canvas at end of work day to prevent water entering masonry.</i>
40°F - 32°F	<b>Heat mixing water to produce mortar temperatures between 40°F - 120°F.</b>	<i>Cover walls and materials to prevent wetting and freezing. Covers should be plastic or canvas.</i>
32°F - 25°F	<b>Heat mixing water and sand to produce mortar temperatures between 40°F - 120°F.</b>	<i>With wind velocities over 15 mph provide windbreaks during day and cover walls and materials at the end of the work day to prevent wetting and freezing. Maintain masonry above</i>

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

<u>WORK DAY TEMPERATURE</u>	<u>CONSTRUCTION REQUIREMENT</u>	<u>PROTECTION REQUIREMENT</u>
25°F - 20°F	<b>Mortar on boards should be maintained above 40°F.</b>	<i>freezing for 16 hours using auxiliary heat or insulated blankets.</i>
20°F - 0°F and below	<b>Heat mixing water and sand to produce mortar temperatures between 40°F - 120°F.</b>	<i>Provide enclosures and supply sufficient heat to maintain masonry enclosure above 32°F for 24 hours.</i>

Note: Construction requirements, while work is in progress, are based on *ambient* temperatures. Protections requirements, after masonry is placed, are based on *mean* daily temperatures.

- F. Hot Weather Application – The Contractor shall keep the areas being built sufficiently moist at all times during the operations. Mortar mixed and ready for application shall be used within one hour's time and continually remixed to prevent excessive evaporation of moisture from the mortar. Discard all mortar which has begun to set or is not used within two hours time. Water for tempering shall be available at all times.
- G. Under no circumstances shall the Contractor remove existing materials and systems to the ground in an uncontrolled manner. Machinery or devices used shall be manufactured for this purpose. Adjacent building and property areas shall be protected from airborne debris.
- H. All areas of existing brick masonry removed shall be replaced or made secure and weathertight during the same day. No building interiors, whether new or existing shall be left exposed to the weather at the end of each workday.
- I. During removal operations, the Contractor is responsible for the containment of all dust, dirt, debris, overspray and run-off resulting from the work. The Contractor shall collect and contain all materials and repair any resulting damage to adjacent surfaces, site fixtures or personal property. Specific attention is drawn to the use of chemicals and cleaners.
- J. The Contractor shall put silt debris protection within the adjacent roofing drains to collect masonry dust from entering the leader lines.
- K. Fully charged, inspected and approved fire extinguishers shall be on site at all times. No cutting, grinding or welding of any kind shall proceed without an approved fully charged fire extinguisher.
- L. The general nature, quantity and surface area of the various work items are shown on the Contract Drawings.
- M. The Contractor shall provide a dust proof site during the course of the work. Wet cutting methods, dust tight staging and enclosures as well as other methods shall be employed as necessary to meet this requirement.

1.6 ROOF PROTECTION

- A. The roof systems are required to be totally protected in the masonry repair work areas by installing a layer of rigid board insulation followed by a layer of plywood. Plywood shall be adequately ballasted to prevent wind uplift of the plywood and roof system. The Contractor is responsible for any damages to the existing roof systems.
- B. Install fire-rated tarpaulins secured with duct tape over all wall penetrations and over roof systems during brick masonry repair work and cleaning.
- C. The Contractor is responsible for the prompt repair of any damage to the roof systems resulting from the work at the project at no additional cost to the Owner.

1.7 DIMENSIONS AND QUANTITIES

All dimensions and quantities shall be determined or verified by the Contractor. The Contract Drawings have been compiled from various sources and may not reflect the actual condition at the moment of construction. The Contractor is cautioned to take all precautions and make all investigations necessary to install the proposed work. The Owner will not consider unfamiliarity with the job conditions as a basis for additional compensation.

1.8 SUBMITTALS

- A. Submittals shall be made in accordance with the General Conditions and Section 01 30 00, Shop Drawings and Submittals.
- B. The Contractor shall submit the following items with their submittal package.
  - 1. Methods of removal of materials
  - 2. Temporary protection procedures
  - 3. Staging/set-up procedures
  - 4. Program for containment of cleaning chemicals
- C. Submit a range of brick masonry units to match the existing color, size and texture.
- D. Proposed method of providing a dust proof site (dust removal) during masonry demolition work.
- E. Proposed method of protection for adjacent landscaping, pavement, walkways, site plantings, and related sitework from damage.

1.9 TEST AREAS

- A. Before full scale work is commenced, execute the following work for trial work areas to be reviewed by the Owner as to acceptability of color, texture and appearance match with the existing construction. Test areas will be at locations established by the Owner and Engineer:
  - 1. 5 individual brick masonry unit replacement
  - 2. 2 square feet of brick masonry repointing
- B. Prepare, install and cure all materials in accordance with these specifications and the manufacturer's instructions.
- C. Trial areas shall be repeated until acceptable results are obtained. The accepted work shall be a standard for all subsequent work. Areas of masonry repointing shall be allowed to weather for seven days prior to Owner acceptance.

1.10 UNIT PRICES

- A. The Contract Drawings designate specific known quantities of deteriorated masonry components. The Contractor shall carry the additional renovations under their contract amount in the event that additional deteriorated masonry is encountered, as listed in Section 01 22 00 – Unit Prices. Only those quantities approved by the Owner will be reimbursed.

1.11 CLEAN-UP

- A. Site clean-up shall be complete and performed daily to the satisfaction of the Owner.
- B. All roof, building (interior and exterior), landscape and parking areas shall be cleaned of all trash, debris and dirt caused by, or associated with, the work.
- C. All trash and debris shall be completely removed from the site daily during the work and at the completion of the work. All debris shall be legally disposed of off-site.

1.12 WARRANTY

Upon completion of the work and prior to final payment, the Contractor shall submit a Guarantee of his work to be free from defect in materials and workmanship. This Guarantee shall be for a period of two (2) years, and shall be signed by a Principal of the Contractor's firm, and sealed if a corporation. – Warranty should also include all work associated with Section 03 30 00, Concrete Repairs.

## PART 2 – MATERIALS

### 2.1 SALVAGED MATERIALS AND ITEMS

All building materials, equipment and debris of whatever nature from the portions of the existing structure removed under this project and not designated to be reused or reinstalled shall become the property of the Contractor and legally disposed of off site. The Contractor will be required to place all discarded materials in the appropriate rubbish receptacles for legal disposal by the Contractor.

### 2.2 ADHESIVE ANCHORS AND ACCESSORIES

- A. Injectable epoxy adhesive for use at brick sills shall be a high strength, two-part epoxy adhesive specifically designed for fastening into hollow brick masonry concrete, such as Hilti HIT-HY 70 Adhesive Anchor System.
- B. Plastic mesh screen tubes shall be sized to match the length and diameter of the specified anchor bolt and shall be Hilti HIT-SC Screen Tubes or as recommended by the epoxy adhesive manufacturer.
- C. Anchor bolts shall be 5/8" diameter, 10" length, galvanized headed anchor bolt such as Hilti HAS-E or as recommended by the epoxy adhesive manufacturer.

### 2.3 BRICK MASONRY

- A. Replacement brick masonry shall conform to ASTM C 216, Grade SW, Type FBS specifications. Brick shall match existing in size, configuration, color and texture. The majority of the brick masonry units appear to be 2-1/4" x 3-1/2" x 7-5/8" in dimension. However, these units vary and will require confirmation prior to ordering.
- B. All brick shall be submitted to the Owner for acceptability as to color and appearance match with the existing brick. The Contractor may be required to submit additional brick samples for approval. No brick shall be purchased or installed until approval by the Owner is obtained.

### 2.4 MORTAR

- A. Mortar for rebuilding and replacing brick masonry shall be Type N, conforming to ASTM C270 specifications and shall match the existing in color, texture and appearance. Mortar shall conform to Parts 8 and 11 E of the BIA Technical Notes.
- B. Mortar for tuck pointing shall be Type N, conforming to ASTM C270 specifications and shall match the existing in color, texture and appearance. Mortar shall be prehydrated and conform to Part 7 of the BIA Technical Notes.

- C. Portland cement shall be Type II (Type III may be used only if previously approved) conforming to ASTM C150, specifications.
- D. Hydrated lime shall conform to ASTM C207, Type S specifications.
- E. Sand shall conform to ASTM C144, amended as follows:

<b>Sieve Size</b>	<b>% Passing (By Weight)</b>
#4	100
#8	95-100
#16	70-100
#30	40-75
#50	20-40
#100	10-25
#200	0-10

- F. Tinting or coloring agent shall be added to the sand, lime cement to color the fully-cured, in-place mortar to match the physical and chemical characteristics and specified requirements of the Type N mortar.
- G. Admixtures - No admixtures shall be allowed.
- H. Water shall be clean, potable tap water.

## 2.5 MASONRY CLEANERS

- A. Cleaner for newly-installed brick masonry and repointing areas shall be Sure-Kleen 101 lime solvent by Pro-So-Co, Inc., Hydroclean HT 455 by Hydrochemical Techniques, Inc. 200 Lime Solvent as manufactured by Diedrich Technologies, or approved equal. The cleaner shall be specifically recommended by the manufacturers for the removal of stains and efflorescence from brick masonry.
- B. Masking materials shall be commercially available masking or duct tape of appropriate width. Self-adhesive materials shall be completely strippable, leaving no adhesive residue when removed.
- C. Plastic sheet for masking tape areas shall be 4 mils. thick minimum polyethylene sheet of appropriate size to cover the required areas.

## 2.6 WEEPS

- A. Baffles to be installed in full head joint weeps of brick masonry throughwall flashings shall be 3/8" x 2-1/2" x 3-3/8" baffle comprised of a bonded cellular material such as Wire Bond - Cell Vent, No. 3601 as manufactured by Masonry Reinforcing Corporation of America, Quadro-Vent by Hohmann & Barnard, Inc., Cell Vent by Dur-O-Wall, Inc. or approved equal.

2.7 THROUGHWALL FLASHING AND ACCESSORIES

- A. Tin-Zinc alloy coated copper shall be cold rolled sheet copper conforming to ASTM B-370, 16 oz. Tin-Zinc coating shall be applied by hot dip process to achieve a coating approximately 0.5 mils thick. Composition of the alloy shall be approximately 50-percent zinc and 50-percent tin. Sheet length shall be 8' maximum.
- B. Copper fabric flashing shall consist of a full 5 oz. copper sheet permanently bonded between two layers of textured, woven high tensile strength glass fabric with asphalt compound coating. Primers and mastic adhesive required for the proper installation of the fabric flashing shall be as specifically recommended by the fabric flashing manufacturer. Fabric flashings shall be as manufactured by York Manufacturing, Inc., Advanced Building Products, Inc., Sandell Manufacturing Company, Inc. or approved equal.
- C. All accessories, including but not limited to nails, screws and clip strips shall be copper, brass, stainless steel or galvanized steel and completely compatible with the surrounding metal to prevent galvanic reaction.
- D. Termination bar shall be 1/8" x 1" copper bar stock with pre-punched holes spaced at 6" on center.
- E. Fasteners for securing termination bar at top of throughwall flashing shall be 1" to 1-1/2" long drive pins with zinc alloy sheaths as manufactured by Star, Rawl, or approved equal.
- F. Rivets shall be 3/16" diameter copper.
- G. Solder for tin-zinc alloy coated copper shall be pure tin conforming to ASTM B32 or lead-free, high-tin.
- H. Sheet metal flashings shall be shop fabricated. All breaks, bends and hems shall be uniform, clean, straight lines.
  - 1. Flanges shall be 4" wide minimum.
  - 2. Drip edges shall be hemmed 3/4" wide and break at a 30° angle.
  - 3. All copper joints shall be soldered.
  - 4. Seams shall be formed of a single lock, crimped and soldered.
- I. Fabrication Schedule:
  - 1. 16 oz. Tin-Zinc Alloy Coated Copper
    - a. Throughwall Flashing

- J. Masonry anchors for use at throughwall flashing locations shall be stainless steel flexible anchor ties such as #345-BT Flexible Tie as manufactured by Hohmann & Barnard, Inc. or approved equal.

2.8 STEEL LINTELS AND ACCESSORIES

- A. New steel lintel to replace existing shall be of sufficient length to bear 8" minimum on masonry at each side of door opening or shall match the existing lintel length, if longer. Lintels shall be fabricated of ASTM A 36 steel.
- B. Anchors for connection of lintel to back-up concrete shall be ½" diameter stainless steel screen tube anchors with a minimum of 4 ½" embedment using HILTI HIT HY 70.
- C. Fasteners: Carbon steel hexagon bolts and screws, hexagon nuts, and flat washers. Bolts shall comply with ASTM A307
- D. Steel lintels shall receive a hot dip galvanized coating in accordance with ASTM A 123 Grade 100 specifications. Thickness of galvanized coating shall be 3.9 mils, with a weight of 2.30 oz/ft<sup>2</sup>.
  - 1. All steel fasteners other than stainless steel shall receive a hot dip galvanized coating in accordance with ASTM A 153 Class C specifications.
- E. Apply cold galvanizing compound to any exposed edges of lintels cut at the site. Cold galvanizing compound shall have 95% zinc content by weight such as the ZRC Cold Galvanizing Compound or approved equal. Compound shall be brush applied only and have a minimum dry film thickness of 4 mils. Two (2) coats of application are required.
- F. Size Requirements of Steel Lintel:  

Steel Lintel	5" x 3-1/2" x 3/8" (length as required to provide 8" of bearing at each end)
--------------	--

2.9 PRIMERS, PAINTS AND COATINGS

- A. All paint materials shall be products of a recognized reliable manufacturer and shall be of the best quality and grade (1st line) for each type. To establish a standard of quality, painting materials shall be supplied from the following manufacturers. Only top quality materials are to be used on the project. Where a question of quality occurs, the Contractor will submit an affidavit from the materials manufacturer stating the quality range of the product to be used, as compared to other top quality products made by that manufacturer.
  - 1. Tnemec Co. Inc.  
Primer: ST Typoxy Series N27  
Paint: Endure Shield Series 73

2. Rust Oleum  
Primer: 9100 Rust-O-Poxy High Performance  
Paint: 9700 Rust-O-Thane (semi-gloss)
  3. Dupont Coatings  
Primer: Corlar 25 P Epoxy Mastic  
Paint: Impron 333 Polyurethane Enamel
  4. Or approved equal
- B. Unspecified materials: All unspecified materials such as shellac, turpentine, or linseed oils shall be of the "best grade" or "first line" made by reputable, recognized manufacturers and shall bear the labels and be approved by the Engineer.
- C. Final color for all steel to be painted shall be selected by the Owner.

## 2.10 PAINT SCHEDULE

- A. Steel Lintels:
1. Primer  
Number of Coats: One, dry film thickness, 5-8 mils.
  2. Finish Coating  
Number of Coats: Two, with a dry film thickness of 2 mils

## PART 3 – EXECUTION

### 3.1 GENERAL WORKMANSHIP

- A. Follow all applicable local, state and federal requirements regarding construction of scaffolding and protection of the public safety. Specific reference should be made to OSHA Construction Safety Regulations.
- B. Set up of scaffolding or similar access and location of on-site storage areas shall be subject to review and approval by the Owner.
- C. Do not leave any partially completed sections exposed to the elements overnight. Provide all devices (including heaters and insulation) necessary to maintain areas at the correct temperature and humidity for proper curing of mortar.
- D. During freezing weather the Contractor shall protect all masonry with tarpaulins or other approved material. Masonry materials shall be stacked on platforms and covered, or stored in a manner acceptable to the Owner, to protect them from contact with soil and weather exposure. Materials with stained faces will not be used in the walls.
- E. No masonry work shall be executed when the temperature in the work area has dropped below 40 degrees F unless it is rising. The Contractor shall provide heat and maintain the temperature of masonry materials and protect the completed

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

work from freezing. Protection shall consist of heating and maintaining the temperature of masonry materials to at least 40 degrees F, but not more than 100 degrees F, and maintain an air temperature above 40 degrees F on both sides of completed masonry for a period of at least 72 hours.

- F. Keep covers tightly sealed on all evaporative products to prevent premature curing.
- G. The roof adjacent to masonry work must be protected with 1/2" minimum rigid insulation with plywood atop.
- H. All debris shall be transported to dumpsters, in locations approved by the Owner, at ground level by enclosed chute or crane and scaling bucket. Uncontrolled dropping of debris to ground level will not be permitted.
- I. During the removal of any existing component, the Contractor shall report to the Owner any areas of damaged, deteriorated or otherwise unsuitable framing, wood blocking, or wall materials uncovered during the work. Do not cover unacceptable areas until reviewed by the Owner and Engineer. Provide temporary protection to the area in question.
- J. Any wall areas opened for replacement shall receive the new system that day and shall be enclosed with masonry. Should rebuilding of masonry not be completed, temporary weather protection and shoring for the wall shall be provided by the Masonry Contractor at no additional charge to the Owner.
- K. If needed, the Contractor shall lay-up replacement brick masonry units plumb, level, and true to the lines and dimensions at the existing walls. Chipped or broken units shall not be used. If any such units are placed in the finished wall, they shall be removed and replaced with new units at no additional cost to the Owner.
- L. The removal and replacement of individual brick masonry units and locations of repointing are included in the Base Bid at the locations shown on the Contact Drawings, and as specified in the Unit Price Section. Only those additional brick masonry units designated by the Owner will be paid for at the Unit Price. The Contractor must confirm additional unit price items with the Owner prior to performing the work should compensation be desired. Adjacent bricks damaged or removed as a result of the work will be removed and replaced at no cost to the Owner.
- M. All shoring of the brick masonry components will be the responsibility, of the masonry Contractor. Maximum spacing of temporary shoring shall be 12" on center. Any damage as a result of insufficient shoring shall be repaired or replaced at no additional cost to the Owner.
- N. Refer to Brick Industry Association (BIA) technical notes for standard practice for masonry repointing, rebuilding and repair.

3.2 MASONRY STORAGE

Storage of all masonry shall be in the area designated by the Owner. All stored masonry units shall be covered.

3.3 ADHESIVE ANCHORS

- A. Drill into brick masonry 16" on center, minimum two per window opening. Drill holes shall be sufficient diameter to allow 5/8" rod, injectable adhesive and screen tubes.
- B. Install epoxy adhesive, screen tubes and bolts in accordance with the manufacturer's published installation instructions.

3.4 REMOVAL OF BRICK MASONRY

- A. Remove brick masonry units in the locations shown on the Contract Drawings. Use hand and power tools to remove masonry. Pneumatic demolition tools are not permitted.
- B. Remove maximum four (4) linear foot sections of masonry walls at a time, or as required to prevent deflection or displacement of the existing masonry to remain. Shore the sections as required to prevent displacement.
- C. Saw-cut surrounding mortar joints and remove the designated masonry units. Remove adjacent units as required. Provide temporary shoring and protection as necessary. All saw cutting to follow mortar joints in a saw tooth pattern so that there are no cut bricks. If a cut falls in the center of a brick length, then go to the next joint beyond for a natural appearance.
- D. Remove masonry units in a manner so as not to damage sound materials designated to remain.

3.5 STEEL LINTEL REPLACEMENT (Unit Price Work)

- A. Install required temporary protection to existing building components to remain.
- B. Install new hot dip galvanized steel lintels in the location designated on the Contract Drawings.
  - 1. Continuous lintels shall be secured to the concrete back-up beam with stainless steel screen tube anchors, at a maximum of 2' on center along the length of the lintel at 6" from the edges of the lintel.
  - 2. Lintels shall bear a minimum of 8" on masonry at ends of opening.

3.6 THROUGHWALL FLASHINGS (Unit Price Work)

- A. Fabricate new flashing and extend rear leg of flashing 8" minimum up the back of the wall. Where a steel lintel is present, extend rear leg of flashing 2" minimum up the back of the wall above the lintel. Secure the rear leg of the flashing to the back-up masonry wall with the specified fasteners and termination bar. Provide a full bead of sealant behind the flashing.
- B. Form the flashing to shed water. Provide 2" high end dams at limits of throughwall flashings. Provide completely watertight seams and overlaps. Rivet and solder end dam connections. End dams shall finish 2" high minimum.
- C. Overlap adjacent sections of flashing to be soldered 3" minimum. Rivet overlaps and completely envelope rivets in solder.
- D. Provide the finished profile for the exposed portion of the flashing as shown on the Contract Drawings.
- E. Install copper fabric flashing in a full bed of sealant over the vertical surface of the lintel or existing concrete masonry unit wall, and flashing. All seams shall be lapped 3" minimum and set in full bed of sealant. Secure copper fabric to concrete masonry unit wall with pre-punched termination bar at 12" on center. Extend fabric 1/2" minimum beyond the exterior face of the brick masonry wall face and 12" minimum up the back of the wall. Secure the copper fabric flashing to the backup wall with the specified fasteners and termination bar. Provide a bead of sealant at the top of the termination bar, tooled to shed water.

3.7 BRICK MASONRY REPLACEMENT

- A. Install weeps at base of new throughwall flashing at 24" on center, maximum. Weeps are to be set directly on the throughwall flashings without a bed of mortar. Should the weeps be set in the mortar bed, they shall be spaced at 16" on center, max.
- B. Reconstruct brickwork with new brick to follow the existing profile and configuration. All brick masonry shall be plumb, level and true to the lines and dimensions of existing wall. Chipped or broken units shall not be used. If any such units are placed in the finished wall they shall be removed and replaced with new units at no additional cost to the Owner.
- C. Provide supplemental anchors into the back-up wall at 16" on center both horizontally and vertically. Where anchors penetration throughwall flashings, seal fastener heads with mastic to provide a watertight assembly.
- D. The Contractor shall supply all jacks, shoring and temporary supports necessary to support brickwork above and adjacent to any area to assure proper installation of the work.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

- E. Wet all new and existing masonry units in the work area. Masonry shall be kept damp but without standing water.
- F. Utilize rotary mixers when fabricating all mortar. Be sure to maintain relative proportions of mortar materials to provide the texture and color to match the existing mortar. No anti-freeze compounds or other substances shall be added to the mortar. Mix all mortar for at least three (3) minutes and not more than five (5) minutes with the minimum amount of water to produce a workable consistency. The maximum allowable air content of cured mortar shall be 12% by volume. Retempering of mortars that have stiffened because of evaporation of water will be allowed in order to provide the proper consistency provided all mortar in a batch is utilized within two (2) hours of initial mixing.
- G. Set each brick in a full bed of mortar and build upward. Tool all joints to a concave profile. Fully butter all heads.
- H. Provide supplemental anchors into the back-up wall at 16" on center horizontally. Where anchors penetration throughwall flashings, seal fastener heads with mastic to provide a watertight assembly.
- I. Exercise extreme caution to avoid damaging the existing flashing.
- J. Work mortar into joints for complete width and depth. Consolidate and tool into joint using concave tooling equipment to completely fill the joint cavity to match the existing joint profile. Tool exposed joints slightly concave with a round or other suitable jointer when the mortar is thumbprint hard. For horizontal joints, jointers shall be at least 12 inches long for brickwork. Jointers shall be slightly larger than the width of the joint so that complete contact is made along the edges of the units, compressing and sealing the surface of the joint. Strike flush joints that will not be exposed. Tool vertical joints first. Brush joints to remove all loose and excess mortar. Horizontal joints shall be level; vertical joints shall be plumb and in alignment from top to bottom of wall.
- K. Set new masonry unit in full beds of mortar, top, bottom and sides. Utilize slate wedges as required to maintain mortar joint width. Masonry above throughwall flashings shall be set in full beds of mortar. Should new masonry set in mortar require removal due to un-level/plumb conditions, that masonry unit shall be removed from the work area, cleaned and allowed to dry prior to reinstallation.
- L. Provide full joint depth of new mortar. Strike off and tool joints to match existing joint configuration. Allow areas to fully cure prior to cleaning.
- M. Where brick masonry replacement occurs in areas to be repointed, rake back joints and repoint together with the wall area.

- N. Totally clean the areas of masonry rebuilding only after the rebuilding is completed and the mortar has been allowed to cure for 8 days minimum. Clean surfaces free of all dust, dirt and mortar stains as described in this section.

### 3.8 REPOINTING

- A. Any masonry unit damaged during the repointing process shall be replaced by the Contractor at no additional cost to the Owner. Repoint the deteriorated brick masonry mortar joints as designated on the Contract Drawings.
- B. Cut and point all brick masonry mortar joints designated to be repointed.
- C. Refer to Technical Notes, Section 7 of the Brick Industry Association concerning methods and materials for tuck pointing repairs.
- D. Remove existing mortar to a depth of at least  $\frac{3}{4}$ " in the areas to be repointed. Removal shall be accomplished using hand and power tools so as not to damage the existing brick. Remove both horizontal and vertical joints. Brush the joint clean of all loose mortar and dust and wet the exposed surface down with a light water spray. Keep exposed surface damp throughout procedure.
- E. Utilize rotary mixers when fabricating mortar. Be sure to maintain relative proportions of mortar materials to provide the texture and color to match the existing mortar. No antifreeze compounds or other substances shall be added to the mortar. Mix dry ingredients before adding water. Mix all mortar for at least 3 minutes and not more than 5 minutes with the minimum amount of water to produce a workable consistency. The maximum allowable air content of cured mortar shall be 12% by volume. Retempering of mortars that have stiffened because of evaporation of water will be allowed in order to provide the proper consistency, provided all mortar in a batch is utilized within 2 hours of initial mixing.
- F. Prehydrated mortar shall be used for tuck pointing of masonry. Add only a sufficient amount of water to produce a damp mass of such a consistency that it would retain its form when pressed into a ball with hands, but will not flow under a trowel. Allow mortar to stand for not less than 1 hour nor more than 2 hours. Be sure that the color and texture sample of the cured mortar has been viewed and approved by the Owner.
- G. Work mortar into prepared joints for complete width and depth. Consolidate and tool into joint using concave tooling equipment to completely fill the joint cavity and to match the existing joint profile. Repoint rebuilt masonry areas along with the existing. Repointed masonry shall be raked or concave as required to match the existing wall mortar joints.
- H. Protect areas of repointing from inclement weather during cure.
- I. Allow repointing areas to fully cure prior to masonry cleaning as described in this section.

### 3.9 MASONRY CLEANING

- A. Totally clean all repaired, or repointed masonry areas of all construction stains and excess mortar. Do not perform any cleaning until mortar joints and adjacent sealants are fully cured.
- B. Test the specified cleaners on a small area of masonry wall to determine compatibility with the masonry, window units, sealants, etc. Evidence of discoloration, metallic salts or other detritus shall be grounds for requiring the use of a substitute cleaner.
- C. The Contractor will be required to clean the masonry units with the minimum cleaning solution mix ratios as recommended by the cleaner manufacturer. Should the minimum dilution ratios not clean the masonry, the Contractor will be required to slightly decrease the dilution rates to clean the surfaces. It is recommended that the Contractor use care when performing the masonry repairs to prevent increasing the mixing solutions.
- D. Apply the cleaner at the manufacturer's recommended dilution rate and dwell duration. Pre-wet the wall if the manufacturer so recommends.
- E. Allow the cleaner to stand for the manufacturer's recommended dwell period while monitoring to ensure that the surface does not dry. Steel bristle wire brushes are not to be used.
- F. Rinse all cleaner from the wall with water applied at the manufacturer's recommended flow and pressure. High pressure washing equipment may be required. Coordinate activities so that the Architect may witness and approve a mock up cleaning with the use of the proper spray tip and high pressure equipment. Any acid neutralizing agent required by the manufacturer shall be applied as part of this rinse. Ensure that effluent does not accumulate at ground level, and fully rinse all effluent from sidewalks, streets and landscaping each day.
- G. The Contractor must provide sufficient site protection to prevent the cleaning effluent from draining into the adjacent storm drains. The Contractor will provide a narrative as to how the site protection will be performed.

### 3.10 PRIMING OF LINTELS

- A. Items not to be painted which are in contact with or adjacent to painted surfaces shall be removed or protected prior to surface preparation and painting operations.
- B. Clean all surfaces to be painted as required to remove dust and dirt. Prepare surface in accordance with SSPC-SPG or SSPC-SP11. Wipe down all steel with solvent to remove greases, oils, and dust.

- C. Prior to installing primer provide one coat of the specified cold galvanizing compound to the exposed surfaces of the metal to be painted. Apply compound to the manufacturer's recommendations and as required by the finish coat manufacturer. Apply primer to the previously prepared base metal in accordance with manufacturer requirements to a dry film thickness as listed in Part 2.

### 3.11 FINISH PAINTING OF LINTELS

- A. Surfaces to be painted shall be cleaned before applying paint or surface treatment. Oil and grease shall be removed with clean cloths and cleaning solvents prior mechanical cleaning. Cleaning solvents shall be of low toxicity with a flashpoint in excess of 100 degrees Fahrenheit. Cleaning shall be programmed so that dust and other contaminants will not fall on wet, newly painted surfaces.
- B. All surfaces shall be properly smoothed. All surfaces shall be properly prepared, clean and dry when a coating is applied. Any bare or abraded spots in base coats shall be touched up before next coat is applied.
- C. Carry water required to mixing area and dump all water materials outside the building in a refuse receptacle provided by the Contractor. Be accountable for any and all damage resulting from failure to observe the provisions of this Specification. Protection against fire shall be taken and all oil rags or waste must be removed from the building each day.
- D. Finishing materials shall be free from skins, lumps or any foreign matter when used, and shall be kept well stirred while being applied.
- E. Each coat of finish shall be evenly brushed out and allowed to dry before any subsequent coat is applied. Each coat shall be a different tint from that of the preceding coat and may be reviewed by the Owner before the next coat is applied. Finish coats shall be the exact shade and textures selected. The finished work shall be free from runs, sags, defective brushing and clogging of lines or angles. Drying time between coats or paint shall be in accordance with the manufacturer's labeled instructions. Spray painting will not be allowed. All materials shall be applied in accordance with manufacturer's recommendations.
- F. Repair brush marks, scratches, abrasions, and minor surface defects in coatings finish in accordance with manufacturer's printed instructions. Finish of repaired surfaces shall be uniform and free from blemishes and variations in color and surface texture.

3.12 CLEAN-UP

Prior to acceptance of the masonry work covered in this section, the Contractor shall perform a thorough clean-up of the work site, building surfaces, landscaping, etc. Any plantings or other items damaged shall be repaired or replaced to the satisfaction of and at no additional cost to the Owner.

END OF SECTION

i:\830680\02 design\specs\830680 04 21 00 masonry dgv comments.doc

**ROUGH CARPENTRY**

**SECTION 06 10 00**

**PART 1 - GENERAL**

**1.1 GENERAL PROVISIONS**

- A. The General Conditions and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.
- B. Refer to Division 1, Sections 01 11 00 – 01 81 00 for additional information.

**1.2 RELATED WORK SPECIFIED ELSEWHERE:**

- A. Selective Building Demolition – Section 02 41 19
- B. Asbestos Abatement – Non-Friable Window Sealants – Section 02 82 00
- C. Lead Based Paint Associated Renovation – Section 02 83 19
- D. Masonry – Section 04 21 00
- E. Cellular PVC Trim – Section 06 60 00
- F. Metal Window and Curtain Walls – Section 08 50 00
- G. Translucent Wall Panels – Section 08 95 00

**1.3 SCOPE OF WORK:**

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools and appliances necessary for the proper completion of the work in this Section, as required in the Specifications and in accordance with good construction practice. The work under this Section generally includes the following:

- A. Coordinate this work with all trades and sub-Contractors to provide orderly progress of the tasks.
- B. Install wood blocking, plywood and shims as required to prepare the openings for the new curtain wall frames. Note: All wood supporting new curtainwall, window and louvers and comes in contact with moisture shall be pressure treated wood.
- C. Coordinate with Section 04 21 00 – Masonry to install threaded, headed anchor bolts and epoxy adhesives at brick sills.
- D. Clean and restore all areas affected by the work.

**1.4 JOB CONDITIONS**

- A. All surfaces to receive the new wood blocking shall be thoroughly dry. Should surface moisture such as dew exist, the General Contractor shall provide the necessary equipment to dry the surface prior to application. Do not dry with open flames.

- B. Coordinate this work with the work described in other Sections of this Specification.
- C. Do not leave any newly installed wood blocking exposed. Cover and protect all newly installed wood daily with the new flashing system.
- D. Protect all existing and new wood stored on site to prevent moisture absorption. Use tarps over the wood pile (top, sides and bottom) elevated on pallets (one side lower to shed water).
- E. If delays in the project exceeding one (1) week are anticipated due to inclement weather (or due to any other condition), all wood shall be stored in weatherproof box trailers or storage sheds in locations to be designated by the Owner.

#### 1.5 SUBMITTALS

- A. Submittals shall be made in accordance with the General Conditions and Section 01 30 00 – Shop Drawings and Submittals.

### PART 2 - MATERIALS

#### 2.1 DIMENSIONAL LUMBER

- A. All dimensional lumber shall be construction grade Douglas Fir, Hem-Fir or Southern Yellow Pine, formed to the dimensions shown on the Detail Drawings and as required for proper installation of the new work.
- B. All woodwork shall have a maximum moisture content of 19% by weight on a dry weight basis. Kiln drying may be required to conform to maximum 19% moisture content. All wood supporting new curtainwall, window and louvers and comes in contact with moisture shall be pressure treated wood.

#### 2.2 PLYWOOD

- A. Plywood shall be APA Grade CD, Exterior, minimum 1/2" thick for wall systems, unless designated otherwise on the detail drawings.

#### 2.3 FASTENERS AND ANCHORS

- A. In general, all fasteners, anchors, nails, straps and other accessories shall be of stainless steel, galvanized steel or fluorocarbon coated steel. Galvanizing shall be hot dip in accordance with ASTM A153 Specifications. Electro-galvanized items shall not be used.
- B. Fasteners for securing wood blocking to wood blocking shall be galvanized annular threaded ring shank nails. Fasteners shall be of sufficient length to penetrate the receiving member 1-1/4" minimum, except full depth into plywood.

- C. Fasteners for securing wood blocking to concrete substrates shall be one piece fluorocarbon coated, ¼" diameter flat head anchors such as Rawl drives by the Rawl Plug Company or approved equal, with a minimum 1-1/2" embedment into the substrate.
- E. Fasteners for securing wood blocking to steel framing shall be ¼" diameter flat head type stainless steel self-tapping screws. Shank shall be of sufficient length to penetrate the substrate 1" minimum.

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Do not deliver to the site or install any material or system that has not been approved. Items installed without approval may be required to be removed.
- B. Prepared surfaces must be clean and dry. Fill, chip or grind as required to provide a smooth, uniform surface.
- C. All butt joints in woodwork shall be flush to provide a smooth, uniform line with no irregularities. Built-up blocking shall have butt joints staggered 4' minimum layer to layer. The minimum length of any individual piece of woodwork shall be 2'. All lengths of woodwork shall have a minimum of 2 fasteners.
- D. During removal and replacement of woodwork, the Contractor shall report to the Engineer any existing wood blocking designated to remain, or structural supports which are deteriorated or unsuitable. Do not cover unacceptable areas until reviewed by the Engineer, but provide temporary protection to the area in question.

#### 3.2 FASTENING OF WOODWORK

- A. Wood blocking to wood blocking connections shall be made using the specified nails spaced 12" on center maximum and staggered off the centerline of the woodwork being secured. Nails shall be of sufficient length to penetrate the receiving member 1-1/4" minimum.
- B. Wood blocking shall be secured to existing concrete or masonry substrates with the specified fasteners spaced 12" on center maximum staggered off the centerline of the member.
- C. Wood blocking shall be secured to existing steel with the specified fasteners spaced 12" on center maximum staggered off the centerline of the member and of sufficient length to penetrate the receiving member or substrate 5/8".

3.3 CLEAN-UP

Prior to acceptance of the wood work covered in this section and installation of masonry, and windows surrounding the newly installed rough carpentry, the Contractor shall perform a thorough clean-up of the work site, building surfaces, landscaping, etc.

END OF SECTION

I:\830680\02 Design\specs\830680 06 10 00 Rough Carpentry DGV COMMENTS.doc

**CELLULAR PVC TRIM**

**SECTION 06 60 00**

**PART 1 - GENERAL**

**1.1 IN GENERAL**

- A. The General Conditions, and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.
- B. Refer to Division 1, Sections 01 11 00 – 01 81 00 for additional information.

**1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Selective Building Demolition – Section 02 41 19
- B. Rough Carpentry – Section 06 10 00
- C. Metal Windows and Curtain Walls – Section 08 50 00

**1.3 SCOPE OF WORK**

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools and appliances necessary for the proper completion of the work in this Section, as required in the Specifications and in accordance with good construction practice. The work under this Section generally includes the following:

- A. Provide and install new PVC head trim, jamb trim, column covers, stools and aprons as detailed. Shim walls as necessary to provide a flush surface to receive new trim.
- B. Coordinate and verify sill and trim dimensions once windows are installed. Trim shall be sufficient width at all details to conceal scarring of removed components. Width of trim shall be consistent at each opening within a single room. Stool and apron trim width shall meet outside limits of jamb trim; notch stool trim around jamb trim. Coordinate all sealant with Metal Windows and Curtain Walls – Section 08 50 00.
- C. Clean and restore all areas affected by the work.

**1.4 JOB CONDITIONS**

- A. All surfaces to receive the new PVC shall be thoroughly dry. Should surface moisture such as dew exist, the Contractor shall provide the necessary equipment to dry the surface prior to application. Do not dry with open flames.
- B. Materials shall be delivered to the site in undamaged condition, stored off ground in fully covered, well ventilated areas and protected from extreme changes in temperature and humidity.

## 1.5 SUBMITTALS

- A. Shop Drawings and Submittals shall be made in accordance with the General Conditions and Section 01 33 00 – Shop Drawings and Submittals.
  - 1. Drawings showing special mill and PVC work items shall indicate materials and details of construction, methods of fastening, erection and installation.
  - 2. Samples shall be of sufficient size to show patterns, color ranges and types of the material proposed to be used.

## PART 2 - MATERIALS

### 2.1 PVC TRIM

- A. Interior cellular PVC stool and trim shall have a small cell microstructure and density of .55 grams/cm<sup>3</sup> tested in accordance with ASTM D 792 and having a tensile strength of at least 2,256 psi.
- B. PVC trim shall be routed and formed to the profile shown on the contract drawings or as required to fit the profile of the varying sill width. Wall trim will vary in size depending on location of interior furnishings. PVC paneling shall be sized to match the existing wood paneling.
- C. Cellular PVC shall be a color as selected by the Owner. Trim is not to be finished.

### 2.2 FASTENERS AND ADHESIVES

In general, all fasteners, anchors, nails, straps, and other accessories shall be of stainless steel or galvanized steel. Galvanizing shall be hot dip in accordance with ASTM A153 requirements. Electro-galvanized items shall not be used.

- A. Fasteners for securing PVC to wood connections shall be thin shank, blunt point, full round head stainless steel screws of sufficient length to provide minimum 1-1/2" embedment into wood blocking. Screws shall be as recommended by the cellular PVC manufacturer.
- B. Adhesives for making PVC to PVC connections shall be a PVC cement specifically recommended by the cellular PVC manufacturer.
- C. Sealant for application of countersunk screws shall be a polyurethane caulking recommended by the cellular PVC manufacturer.

### PART 3 - EXECUTION

#### 3.1 GENERAL

- A. Do not deliver to the site or install any material or system that has not been submitted to, reviewed and commented on by the Owner.
- B. Prepared surfaces must be clean and dry. Fill, chip or grind as required to provide a smooth, uniform surface.

#### 3.2 FASTENING OF PVC

- A. PVC-to-wood connections shall be made using thin shank screws countersunk within the PVC and embedded within the wood substrates 1-1/2". Screws shall be spaced 12" on center maximum and staggered off the centerline of the member being fastened. Fill all counter sunk holes with polyurethane adhesive, color to match PVC.
- B. PVC shall be installed with an 1/8" gap to allow for expansion and contraction of the material.

#### 3.3 STOOLS AND TRIM

- A. Verify dimensions of stool and trim as well as dimensions of existing equipment and fixtures integral for proper fit and alignment.
- B. Trim shall be sufficient width at all details to conceal scarring of removed components. Width of trim shall be consistent at each opening within a single room. Stool and apron trim width shall meet outside limits of jamb trim; notch stool trim around jamb trim.
- C. Make provisions for adequate support and proper fastening. Use concealed fastenings where practical.
- D. Form PVC to the profiles shown on the contract drawings. Width of PVC stool and wall trim may vary per window opening based on contours of existing construction and locations of interior furnishings. Contractor to field verify all stool and trim dimensions in the field.
- E. Abut top and edge surfaces in one true plane, with internal supports placed to prevent any deflection. Provide flush hairline joints in top units. Use adhesive to join all PVC pieces.
- F. Install new trim pieces to conceal gaps where trim abuts adjacent construction.

END OF SECTION

**METAL WINDOWS AND CURTAIN WALLS**

**SECTION 08 50 00**

**PART 1 - GENERAL**

**1.1 IN GENERAL**

- A. The General Conditions and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.
- B. Refer to Division 1, Sections 01 11 00-01 81 00 for additional information.

**1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Asbestos Abatement – Non-Friable Window Sealants – Section 02 82 00
- B. Lead Based Paint Associated Renovation – Section 02 83 19
- C. Selective Building Demolition – Section 02 41 19
- D. Concrete Repairs – Section 03 30 00
- E. Masonry – Section 04 21 00
- F. Rough Carpentry – 06 10 00
- G. Cellular PVC Trim – 06 60 00
- H. Mechanical/Electrical General Requirements – Section 23 00 00

**1.3 SCOPE OF WORK**

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools and appliances necessary for the proper completion of the work in this section, as required in the specifications and in accordance with good construction practice. The work under this section generally includes the following:

- A. Coordinate work within this Section with all other associated trades to perform work in an orderly fashion and to minimize temporary supports and weather protection.
- B. Install new metal flashings, air and vapor barriers, trim, cladding and sealants at window openings. Install silicone transition systems at sills, jambs and heads where designated on the Contract Drawings.
- C. Install metal anchors, angles, mullions and clips to properly support and anchor the new assemblies.
- D. Provide tinted glass at all elevations. Provide tempered glass at all basement level windows. Provide obscure glass at locations designated on the Contract Drawings.
- E. Install new thermally broken, aluminum curtain walls and window vents, in properly prepared openings.

- F. Install insulated panels and louvers where designated within the curtain wall systems. Cut insulated panels to allow penetrations; seal around penetrations.
- G. Coordinate with Section 08 95 00 – Translucent Wall Panels to install fiberglass translucent wall panels within properly prepared openings.
- H. Coordinate with Section 06 60 00 – Cellular PVC Trim for installation of interior PVC stools and trim at designated window openings.
- I. Coordinate with Section 23 00 00 – Mechanical/Electrical General Requirements for disconnection and reconnection of existing building mechanical systems and duct work.
- J. Install heavy duty insect screens at all operable units.
- K. Install vandalism security screens where designated on the Contract Elevations.
- L. Install roll down shades at all locations where existing shades are present.
- M. Clean and restore all areas affected by the work to the satisfaction of the Owner.

#### 1.4 JOB CONDITIONS

- A. It is the intent of this project to have the replacement windows comply as closely as possible with the Massachusetts State Building Code Stretch requirements. Limiting factor will be the existing window rough openings.
- B. The Contractor shall supply, install and maintain all shoring, supports, barriers, protection, temporary heat, warning lines, lighting and personnel required to support the structure, fixtures and facilities affected by his work and segregate the work area from pedestrian or vehicular traffic, as well as to prevent damage to the building, occupants and the surrounding landscaped and paved areas.
- C. Coordinate the work in this section with the work by other trades to ensure the orderly progress of the work.
- D. The Contractor shall supply ladders and other equipment required to access the work in this section.
- E. All surfaces to receive curtain wall assemblies shall be thoroughly dry. The substrate surfaces shall be swept and vacuumed clear of all debris. Should surface moisture such as dew exist, the Contractor shall provide the necessary equipment to dry the surfaces prior to the application of the materials. No open flames of any kind will be permitted on the subject project at any time.
- F. The Contractor shall utilize skilled and experienced specialty workers to install the work. Experienced trade workers shall be utilized for all aspects of the work.

- G. The Contractor shall be responsible for securing and protecting his equipment, materials and tools (as well as partially completed construction) from vandalism or abuse.
- H. Materials that have a temperature other than the application temperatures of the manufacturer shall not be applied.
- I. The Contractor, his workmen, all his suppliers and agents shall make every effort to work in harmony with the building occupants.
- J. Provide protection for the roof during installation of windows above roof. Removal of all debris and note all defects to the roof membrane prior to installing roof top protection. Notify Owner and Engineer of any defects observed.

1.5 SUBMITTALS

- A. Submittals shall be made in accordance with the General Conditions and Section 01 30 00 - Shop Drawings and Submittals.
- B. The Contractor shall submit the following items with their submittal package:
  - 1. Methods of removal of materials.
  - 2. Temporary protection procedures.
  - 3. Staging/set-up procedures.
- C. Curtain wall parts catalog shall be submitted by the Contractor detailing replacement parts and current prices.
- D. Samples standard and premium color samples of all sealants; note that there may be multiple sealant colors incorporated in the project.
- E. Submit shop drawings and color samples for metal curtain wall framing, and insulated panels.
- F. Submit technical data, including Certified Test reports for all referenced requirements. Test reports shall not be more than four (4) years old.
- G. The Contractor shall submit a full set of shop drawings for the installation of the new curtain walls which include all dimensions, sizes, existing conditions, materials to be removed, etc. Shop drawings for head, jamb and sills for each different existing condition shall be submitted.
- H. Shade Submittals – manufacturer’s standard color chart and shade options.

## 1.6 ROOF PROTECTION

- A. The roof systems are required to be totally protected in the window replacement work areas by installing a layer of rigid board insulation followed by a layer of plywood. Plywood shall be adequately ballasted to prevent wind uplift of the plywood and roof system. The Contractor is responsible for any damages to the existing or new roof systems.
- B. The Contractor is responsible for the prompt repair of any damage to the roof systems resulting from the work at the project at no additional cost to the Owner.

## 1.7 TEST AREAS

- A. Before commencing full-scale work, install two (2) sample windows curtain walls in finished openings for review by the Owner and Engineer. Installations shall conform to the Contract Documents and once accepted shall become a standard for all subsequent work on the project.
- B. Test areas shall be repeated until acceptable results are obtained and the accepted area shall be a standard for all subsequent work. Installation of test items shall be in conformance with all Contract Documents and shall use only submitted materials. After curing for seven days, the test areas shall be viewed, sampled and/or removed as directed by the Engineer to establish to his satisfaction the actual performance of the installed materials. Evidence of improper or unsatisfactory performance shall be grounds for rejection of any or all of the submitted materials.
- C. The Contractor shall test fenestration products for air leakage resistance and water penetration resistance as specified at various stages of the product installation. Refer to Section 01 81 00 – Exterior Enclosure Commissioning for additional information.

## 1.8 WARRANTIES

Upon substantial completion of the work and prior to final payment, all applicable manufacturer's guarantees for window frames and hardware including warranties shall be provided:

- A. Manufacturer's two (2) year warranty against defective materials or workmanship, including non-compliance with applicable specification requirements and industry standards, which results in premature failure of the windows, finish, factory glazed glass, or parts outside of normal wear. Defective components will be repaired or replaced by the Manufacturer at no cost to the Owner. The warranty shall include the following:
  - 1. Curtain wall manufacturer's 10-year guarantee on insulated glazing units.
  - 2. Curtain wall manufacturer's 10-year guarantee on painted finishes.

Shades: Warranted to the original Owner under normal and proper use to be free of manufacturing defects for manufacturer's standard time period.

- B. Starting date for all warranty periods to be the date of substantial completion of the project.
- C. Warranty shall include all work associated with Section 08 95 00, Translucent Wall Panels.

#### 1.9 PROTECTION OF WORK AND MATERIALS STORAGE

- A. Follow storage and handling requirements of the manufacturer.
- B. Glazing materials shall be delivered in the manufacturer's original unopened containers, leaving manufacturer's label intact.
- C. Any work damaged by the work under this Section shall be repaired by the Contractor at no expense to the Owner.

### PART 2 - MATERIALS

#### 2.1 CURTAIN WALLS, AND OPERABLE VENTS (METAL WINDOWS) - GENERAL

- A. It is the design intent to provide curtain wall assemblies with metal window operable vents for the replacement window systems.
- B. Standards: Except as otherwise indicated, requirements for aluminum windows and curtain walls terminology and standards of performance, and fabrication workmanship are those specified and recommended in AAMA WDMA/CSA 101/I.S. 2/A440-11, and applicable general recommendations published by AAMA and ANSI.
- C. All vertical mullions, frames, clips and securements shall be certified by the manufacturer to meet a 41 psf. wind load in accordance with the Massachusetts State Building Code, AAMA WDMA/CSA 101/I.S. 2/A440-11 and as required by the curtain wall manufacturer. Steel reinforcing of the aluminum frames may be required to meet the required design wind load. Certification of anchorage to all substrates shall also be provided. Certification shall be provided by a Registered Engineer.
- D. Performance and Testing: Except as otherwise indicated, comply with air infiltration tests, water resistance tests, and applicable load tests specified in AAMA WDMA/CSA 101/I.S. 2/A440-11 for type and classification of window units required in each case.
- E. All samples submitted for testing shall be full size per AAMA requirements. Reduced size test results will not be accepted.

- F. Testing: Where manufacturer's standard units comply with requirements and have been tested in accordance with specified tests, provide certification by manufacturer showing compliance with such tests.
1. Test reports shall be not more than four (4) years old.
  2. Sample submitted for tests shall be of manufacturer's standard construction and shall have been tested in accordance with ASTM 283-83. The sequence of tests shall be optional between manufacturer and the testing laboratory except that in all cases, the air infiltration test shall be performed before the water resistance test.
  3. All window vents and curtain walls shall meet or exceed the following performance requirements:
- G. Specific Performance Requirements: Curtain walls shall conform to specified ANSI/AAMA standards and the following, whichever are the more stringent:
1. Air Infiltration Test: The unit shall be subjected to an air infiltration test in accordance with ASTM E 283-91. Air infiltration shall not exceed .06cfm/ft<sup>2</sup> when tested at a pressure of 6.24 psf.
  2. Water Resistance Test: The glazed unit shall be mounted in its vertical position continuously supported around perimeter. The window unit shall be subjected to a water resistance lab test pressure of 15 psf, minimum, in accordance with ASTM E 331 and E547. There shall be no leakage at a static air pressure differential of 12 psf (575 Pa) as defined in AAMA 501. Refer to Section 01 81 00 – Exterior Enclosure Commissioning for field testing requirements.
  3. Condensation Resistance Factor: When tested to AAMA Specification 1503, the condensation resistance factor shall not be less than  $66_{\text{frame}}$  and  $60_{\text{glass}}$  (clear),  
or  
Condensation Index (I): when tested to CSA-A440-00, the Condensation Index shall not be less than  $68_{\text{frame}}$  and  $54_{\text{glass}}$  (clear).
  4. "U" Value Tests (Co-efficient of Heat Transfer): When tested to AAMA Specification 1503, the thermal transmittance (U-factor) shall not be more than the following:
    1. Fixed units: 0.38 BTU/hr./ft<sup>2</sup> /°F. per NFRC 100 for the entire assembly (combined glass and frame).
    2. Operable units: 0.45 BTU/hr./ft<sup>2</sup> /°F. per NFRC 100 for the entire assembly (combined glass and frame).

- H. Specific Performance Requirements: Architectural window (AW) projected windows shall conform to specified ANSI/AAMA standards and the following, whichever are the more stringent:
1. Air Infiltration Test (operable units): With the vent in a closed and locked position, the window shall be subjected to an air infiltration test in accordance with ASTM E 283 and AAMA/WDMA/CSA101/I.S.2/A440 or NFRC 400. Air infiltration shall not exceed .10 cfm/ft. when tested at a pressure of 6.24 psf.
  2. Water Resistance Test: The glazed unit shall be mounted in its vertical position continuously supported around perimeter. The window unit shall be subjected to a water resistance lab test pressure of 12 psf. minimum, in accordance with ASTM E 331 and E547. No water shall pass the interior face of the window frame and there shall be no leakage as defined in the test method. Refer to Section 01 81 00 – Exterior Enclosure Commissioning for field testing requirements.
  3. Condensation Resistance Factor: The window shall be tested in accordance with AAMA 1503.1 standards and test of thermal performance, and shall have a condensation resistance factor of no less than 52.
  4. "U" Value Tests (Co-efficient of Heat Transfer): Thermal Transmittance of Conduction with a 15 mph perpendicular dynamic wind: 0.45 BTU/hr/ft<sup>2</sup>/F

## 2.2 CURTAIN WALL

- A. Metal curtain walls shall be pressure glazed, extruded aluminum frame with thermal breaks. Nominal frame depth shall be 6" or as required by the curtain wall manufacturer per design requirements with the specified wind load and opening dimensions. Curtain walls shall have a nominal frame width of 2-1/4". Basis of design is 1600 Wall System as manufactured by Kawneer Company, Inc. The following manufacturers and systems may be submitted for review for alternative compliance with the documents for approval by the Architect:
1. EFCO Corporation – 5600 XTherm
  2. YKK Architectural Products – YCW 750 OGP
  3. or Approved equal
- B. Materials (Curtain wall and components):
1. Material Standard: Extruded Aluminum, ASTM B 221, 6063-T6 alloy and temper.
  2. Member Wall Thickness: Each framing member shall have a wall thickness sufficient to meet the specified structural requirements.
  3. Tolerances: Reference to tolerances for wall thickness and other cross-sectional dimensions of curtain wall members are nominal and in compliance with AA Aluminum Standards and Data.

- C. Accessories:
1. Fasteners: Where exposed, shall be Stainless Steel.
  2. Gaskets: Glazing gaskets shall comply with ASTM C 864 and be extruded of a silicone compatible EPDM rubber that provides for silicone adhesion.
  3. Perimeter Anchors: Aluminum. When steel anchors are used, provide protective barrier between steel material and aluminum material to prevent galvanic action.
  4. Thermal Barrier: Thermal separator shall be extruded of a silicone compatible elastomer that provides for silicone adhesion.
  5. Extruded Mullion caps: 2-1/4" width, depth and profiles as indicated on the Contract Drawings.
  6. Provide expansion sleeves/mullion splices to accommodate differential movement if required.
- D. The curtain walls shall be assembled in a secure and workmanlike manner to perform as herein specified. All frames shall be constructed with shear block corners. Vertical or horizontal frame members shall extend for the full window height or width without interruption. All frame joints shall be sealed with a non-hardening mastic to provide a watertight joint.
- E. Glazing installation and replacement: accommodate 1" insulated glazing; exterior glazed.

### 2.3 METAL WINDOWS

- A. Standard metal windows shall be factory wet glazed exterior and dry glazed interior with removal glass stops, extruded aluminum frame, operable units as detailed. All windows shall have self-contained structural thermal breaks in operable units.
- B. All aluminum sash components shall be extruded 6063-T5 alloy with a minimum wall thickness of .125" and a minimum frame depth of 2". The sashes shall incorporate perimeter flanges to be incorporated into the specified curtain wall assemblies. **The curtain walls and window vents shall be manufactured by a single source and window vents must be recommended by the curtain wall manufacturer for use with the specified curtain wall.**
1. Projected units shall meet or exceed designation AW-PG60-AP and as designated by AAMA WDMA/CSA 101/I.S. 2/A440-05. Operable units shall be of the configurations shown on the Contract Drawings.
- C. The windows shall be assembled in a secure and workmanlike manner to perform as herein specified. All frames shall be constructed with mortised and tendoned corners. Vertical frame members shall extend for the full window height without interruption. Vent frames shall have mitered corners with aluminum gusset blocks. Joints shall be hydraulically crimped and epoxy welded. All frame and vent joints shall be sealed with a non-hardening mastic to provide a watertight joint. Windows shall be equipped with baffled weeps as required to provide drainage for water.

- D. Thermal Break: The inside and outside faces of all sections shall be completely separated by a cast-in-place, high-strength, high-density polyurethane thermal break with a minimum tensile strength of 4000 psi and maximum thermal conductivity as noted in item 2.01.
- E. Limit stops of the sashes shall be 8" minimum, or as requested by the Owner. The Contractor shall confirm with the window manufacturer that 8" limit stops are available for the approved system and size criteria, and shall submit confirmation with window shop drawings.

#### 2.4 ACCESSORIES

- A. Insect screens for installation at all operable units shall be heavy duty security screen with powder coated .023 stainless steel mesh retained in aluminum frames. Screen frames shall be painted to match windows. Screens shall be secured to the windows with integral extrusions or mechanically attached clips so removal shall not be possible without hand tools. Install insect screens at all operable units, including where vandalism screens are designated to be installed.
- B. Vandalism screens for installation at windows designated on the Contract Drawings (in addition to insect screens) shall be heavy duty vandal-resistant security screen with powder coated .023 stainless steel mesh retained in steel frames which incorporate aluminum faceplates. Screens shall incorporate narrow sightline frames and high visibility infill. Finish of frames shall be powder coated to match new windows. Screen frames shall be secured to the brick jambs and window frames with integral extrusions or mechanically attached clips so removal shall not be possible without hand tools. The screens shall have operable sashes for maintenance, and shall have keyed access from the exterior for operation. The screens shall be enclosed on all four sides. Vandalism screens shall be manufactured by Kane Security Narrow Line Heavy Level 5 with operable side hinge. Model S-NR5-O, with aluminum frame with a 2 ½" sight line and a Roto-Lift Lock. An alternative product may be submitted for compliance with the documents.
- C. Insulation to fill voids surrounding curtain walls shall be single component, closed cell spray polyurethane, Class 1, low expansive foam (Class A). Spray polyurethane foam manufacturer shall provide approval for compatibility with specified silicone membrane and accessory components. The Contractor shall provide a letter from the manufacturer confirming the use of spray foam insulation will not void any curtain wall or window warranties.
- D. Insulation to fill voids in in surrounding construction shall be mineral wool. Mineral wool insulation shall be a non-combustible, lightweight, and water repellent made from basalt rock and slag. The insulation shall have low moisture sorption properties and a melting point of approximately 2150 degrees Fahrenheit.

## 2.5 FASTENERS

All screws, nuts, washers, bolts, rivets and other miscellaneous fastening devices incorporated in the project shall be of stainless steel except where noted below. Fasteners shall be as follows:

- A. Aluminum to aluminum fasteners shall be self-drilling, self-tapping screws, No. 14 of sufficient length to penetrate the receiving substrate by 5/8".
- B. Aluminum to wood fasteners shall be wood screws, No. 14, of sufficient length to penetrate the receiving substrate by 1-3/4".
- C. Fasteners for securing aluminum and wood blocking to concrete, brick masonry, and concrete masonry shall be Hex head type, 1/4" diameter, self-tapping masonry screws. Shank shall be of sufficient length to penetrate substrate 2" minimum.

## 2.6 FINISH

Finish for all exposed metal parts of new aluminum windows and curtain wall (frames, sash, vents and trim) shall be a Resin-Based Coating- Hylar 5000, or Kynar 500. Paint dry film thickness shall be not less than 1.0 mils +/- 0.2 mils. Surface preparation and coating shall conform to AAMA 2605 Specifications.

Colors shall be selected from the manufacturer's standard color chart by the Owner:

## 2.7 WINDOW HARDWARE

- A. All hardware component parts shall be heavy duty.
- B. Operable projected units shall be balanced on 4 bar heavy-duty stainless steel hinge assemblies. Brass slides with adjustable pressure screws shall be provided for precision adjustment. Hinges shall have adjustable limit stops. Adjustable limit stops shall be provided to all project in and out units and shall be set to provide a 45° angle of the operable unit, maximum, or otherwise designated by the Owner.
- C. Operable projected units shall be operated by one project-in cam handle for window units 24" in width or less. Units greater than 24" in width shall have two project-in cam handles each, Cam handles shall be manufactured of white bronze.
- D. Operable projected units in overhead locations shall be provided with one spring lock pole latch per unit. Provide two (2) poles per variation of window height. Cam handles with pole loop will not be accepted.

## 2.8 GLAZING

- A. Glass shall be sized to meet a 41 psf. load in accordance with the Massachusetts State Building Code and AAMA WDMA/CSA 101/I.S. 2/A440-11. Projected and fixed window units shall be factory glazed. Glass shall conform to the following: (Refer to Contract Drawings for specific glass type locations)
1. Annealed glass shall be clear, ¼” thick conforming to ASTM Specification C1036-85 Quality Q3 (glazing select). Glass shall have a pyrolytically applied low E coating on the number 3 surface.
  2. Tinted glass shall be ¼” thick heat strengthened in accordance with ASTM C1048 Kind HS and conforming to ANSI Z 97.1 specifications. Glass performance shall be Light Transmittance 42%, shading coefficient .46. Color shall be Grey.
    - a. Manufacturers: Glass shall be Pilkington/Libbey-Owens-Ford, or PPG, Oldcastle, or approved equal.
  3. Tempered glass for use at safety glazing locations and where shown on the Contract Drawings shall be ¼” thick conforming to the quality and strength requirements of ASTM Specification C1048 (kind FT). Tempered glass shall also conform to ANSI Z97.1 Specifications.
  4. Patterned or obscure glazing shall be ¼” thick provided at locations so designated on the Contract Drawings. Pattern to be selected by the Owner.
- B. Insulated glass units shall be comprised of the specified glass for a total thickness of 1". Insulated glass units shall be hermetically sealed and shall be IGCC-CBA rated and certified. IGCC number shall appear on the spacer of the insulated glass unit. All insulated glass units shall conform to ASTM E774-88 Class CBA Specifications.
1. Total thickness: 1" with ½" air space
  2. Air space: Argon filled
  3. Spacer: Spacer shall be constructed of a non-thermal bridging material.
  4. U-Value (summer): .33 maximum or as required by the manufacturer to achieve desired assembly u-factor.
  5. SHGC: .40
  6. Shading Coefficient: .71
  7. Primary Seal: Compressed polyisobutylene
  8. Secondary Seal: Silicone
  9. Insulated glass units shall be edge deleted at PIB seal

## 2.9 INSULATED PANELS

- A. Insulated shall be 1" thick, 2-sided aluminum-hardboard laminated insulated panels. Insulation shall be rigid isocyanurate foam. Aluminum facers shall be .040" thick with a finish to match the windows as specified in Paragraph 2.07 of this section.
- B. Panels shall have a pebble or smooth finish or as selected by the Owner. Panels shall be as manufactured by Mapes Architectural, PanelTech, Lurie Panels. An alternative product may be submitted for compliance with the documents.

## 2.10 FLASHING AND ACCESSORIES

- A. Sheet metal for exposed flashings shall be .032" and .040" thick painted or mill finish aluminum. Aluminum shall be finished on both surfaces as specified in Paragraph 2.6 of this Section.
- B. Sheet metal flashings shall be shop fabricated. All breaks, bends and hems shall be uniform, clean, straight lines.
  - 1. Drips shall be hemmed 3/4" wide and break at a 30° angle.
  - 2. Pan flashings shall turn up at the rear 1" minimum or have an end dam at the back and at the sides 3" minimum to form end dams.
- C. Fabrication Schedule:
  - 1. Aluminum, painted finish (.032")
    - a. Jamb Flashing
  - 2. Aluminum, painted finish (.040")
    - a. Sill Pan Flashing
    - b. Head Flashing
  - 3. Aluminum, mill finish (.040")
    - a. Hookstrip

## 2.11 SILICONE TRANSITION SYSTEM

- A. Silicone transition systems shall consist of preformed silicone strips specifically designed for sealing weather barrier membranes to adjacent curtain wall systems. Silicone strips shall contain one flat side and one ribbed side for enhanced adhesion. Provide pre-molded corners at sill-to-jamb transitions. Silicone strips shall be manufactured by Dow Corning, Tremco, Elbex. An alternative product may be submitted for compliance with the documents.
- B. Supplemental aluminum adaptors may be required to secure silicone strip into curtain wall glazing pockets. Provide as recommended by the silicone strip manufacturer.

- C. Silicone transition strips shall be embedded in silicone sealant as recommended by the silicone strip manufacturer.

## 2.12 SEALANT AND ACCESSORIES

- A. Exterior sealant for use as primary weather seal, unless otherwise recommended by the system manufacturer, shall be a one-part, neutral-cure, non-staining, low modulus, silicone sealant conforming to ASTM C 920, Type S, Grade NS, Class 50, Uses NT, M, G, A and O such as the SPECTREM 3 by Tremco, DOW CORNING 790 by Dow Corning, SIKASIL-WS90 by Sika Corporation, or approved equal.
- B. Interior caulking shall be one-part, odorless, neutral cure silicone compound as manufactured by Tremco, PRC, Pecora or approved equal.
- C. Color(s) shall be selected by the Owner from the approved manufacturer's premium color chart. More than one color may be selected by the Owner for separate window areas.
- D. Cleaners and primers shall be as recommended by the manufacturer of the caulking.
- E. Bond breaker tape shall be self-adhesive polyethylene tape as recommended by the sealant manufacturer.
- F. Backer rod shall be continuous length, bi-cellular or open cell polyethylene foam, as recommended by the sealant manufacturer. Backer rod shall be compressible, resilient, non-waxing, non-extruding and non-staining. Backer rod shall be of sufficient size to be compressed 30% of maximum joint width and shall be totally compatible with the sealant, primer and substrates. Backers shall conform to the requirements of ASTM C 962 - Type A, ASTM D 1622, ASTM D 1623 and ASTM D 5249.
- G. Masking material shall be commercially available masking tape of appropriate width or other material recommended by the sealant manufacturer. Self-adhesive masking materials shall be of low tack and completely strippable, leaving no adhesive residue behind when removed.

## 2.13 SHADES

Provide the following materials as manufactured by Walker Specialties Inc., of Boston, MA. An alternative product may be submitted for compliance with the documents.

- A. Rollers: Manual operating, chain drive, sunscreen roller shades with a bi-directional, wrap spring clutch. The system shall be capable of smoothly raising and lowering the shade precisely to any desired height, and maintaining that height with zero slippage. The roller shall be a minimum 1 1/2" extruded aluminum tube.

- B. Clutch: The clutch shall never require any adjustment, either upon installation or afterwards. Clutch may be mounted in either end of the roller tube. The clutch shall be made of high strength, fiberglass reinforced polyester and high carbon steel.
- C. Operating loop shall be #10 stainless steel plated bead chain. Chain length varies based on window and ceiling height, however shall stop at 5 feet above the finished floor surface.
- D. End plug shall be a unit consisting of an outside sleeve and a center shaft and shall be made of high strength, fiberglass-reinforced polyester. The outside sleeve shall be free to rotate on the center shaft.
- E. Hem Pocket: Aluminum flat bar 1" x 1/8" enclosed in heat sealed hem pocket. Side of hem pocket also sealed. Sewn hems will not be accepted.
- F. Fabric: Conforms to NFPA 701, UL214, ASTM E-84 and Boston Fire Dept. BFDIX-1. Fabric shall be 24% Polyester, 76% PVC on Polyester and meet the following:
  - 1. Openness Factor: Approx. 1%
  - 2. Mesh weight: 18 oz./yd.
  - 3. Breaking Strength: (lb) 400Warp, 120 Fill
  - 4. Stiffness (Mg) 800 Warp, 300 Fill
  - 5. Stretch: 1.0% Warp, 3.0% Fill
- G. Hardware and Brackets: Mounting brackets must be capable of mounting inside, outside or to the ceiling, with the clutch on either end of the roller. All brackets shall be made of 1/8" cadmium plated steel, universal type, for attachment of idle assembly and center support systems.
- H. Fascia: Fascia panel shall be installed to conceal the roller tube and mounting hardware, providing a clean, finished look. Fascia shall hook onto the top of the bracket and snap in place, remaining firmly attached. Fascia panel shall be made of approximately .062" extruded aluminum, painted with a high quality baked enamel finish. Color to be white. Fascia mounting brackets shall support both the roller tube and the fascia panel. They must be capable of mounting inside, outside or to the ceiling, with the clutch on either end of the roller. All fascia brackets shall be made of .070" steel, painted with a high quality finish to match the fascia panel.

## 2.14 RIGID INSULATION

- A. Provide 100 psi. rigid insulation as manufactured by Dow Inc. in jambs, sill and head conditions at all aluminum frames. The insulation should be cut and pressure fit in all frames.

## PART 3 - EXECUTION

### 3.1 IN GENERAL

- A. Do not deliver to site or install any material or system, which has not been reviewed and accepted for use on the project.
- B. Comply with the written instructions of the manufacturer and these specifications.
- C. All work shall be made weathertight and the building secure at the end of each day.
- D. Report any damaged or unsuitable areas to the Engineer or Owner's representative immediately.
- E. Do not cut any material with a solvent or dilutant unless approved by the Engineer in writing.
- F. Keep covers tightly sealed on all canned and evaporative products to prevent premature curing.
- G. Clean the demolished surface of all loose debris. Contractor shall provide a smooth even surface for the installation of the new systems and panel.
- H. Porous substrates shall be primed prior to installation of the window materials and accessories.
- I. The Contractor shall install all window systems plumb, level and true to the lines and dimensions of the existing wall.
- J. Perform all masonry and substrates repairs prior to the installation of the window materials and accessories. All masonry repairs shall be cured prior to window installation.

### 3.2 SILICONE TRANSITION INSTALLATION

- A. Install 1" wide min. continuous bead of sealant along building substrates to accept silicone strips. Install only as much sealant as can be used prior to skinning.
- B. Bed the silicone strip into the bonding sealant beads. Use a small seam roller to lightly press the silicone strip into the sealant and force sealant into grooves of strip.
- C. Install curtain wall frame as specified below. Install 3/8" wide min. continuous bead of sealant along leading edge of aluminum adaptor or within glazing pocket. Extend loose side of silicone strip into glazing pocket and bed in sealant.

### 3.3 FLASHING INSTALLATION

- A. Verify that all structural reinforcements have been made to each opening and have been approved by the Owner and/or Engineer.
- B. Install perimeter backer rod and sealant back seals at all cavity and masonry joint locations as shown on the Contract Drawings. Back seal shall be continuous and full width or height of the opening.
- C. Prior to installing flashings, install wood blocking, plywood and shims necessary for the proper installation of the flashings and windows. Wood blocking, plywood and shims shall be beveled and/or chamfered as required to provide solid support and to match existing conditions. Install continuous wood members with the specified fasteners spaced 12" on center maximum.
- D. Install flashings to all properly prepared window openings prior to installation of windows or insulated panels.
- E. Install silicone transition systems around perimeter of opening, as shown on the Contract Drawings.
- F. All metal flashings shall be shop fabricated. All bends, breaks and hems shall be clean straight lines. Form flashings to the shapes and configurations shown on the Contract Drawings.
- G. All metal head and jamb flashings are to be continuous, and are intended to drain down, onto the new sill flashings. Set flashings in a full bed of sealant. Secure metal flashings 8" on center using specified fasteners. Use the aluminum flashings to conceal the limits of existing window components that may not be fully removed (i.e. sealants, old fastener holes, etc.). All head flashings and cladding shall run continuous from jamb to jamb and shall overlap jamb flashings.
- H. All sill flashings shall turn up 1-1/2"-minimum at the glazing pocket of the curtain wall and 3"-minimum at end limits. Sill flashings shall run continuously across existing sills neatly trimmed and turned up at jamb locations. All seams shall be sealed and overlapped 3" minimum. Set flashings in a full bed of sealant. Install full bead of sealant between window frame and rear leg of flashing and between flashing and attachment angle. Jamb flashings shall similarly turn into the glazing pocket of the curtain wall.

### 3.4 CURTAIN WALL INSTALLATION

- A. Verify acceptable completion of substrate, blocking, and flashing prior to installing curtain walls.
- B. Aluminum curtain walls shall be installed per manufacturer's written requirements and as shown on the contract and shop drawings. Curtain walls shall be sized to allow 1/2" minimum between frames and jambs and heads.

- C. Install curtain wall systems plumb, level, and true to line, without warp or rack of frames with manufacturer's prescribed tolerances and installation instructions. Provide support and anchor in place.
1. Dissimilar Materials: Provide separation of aluminum materials from sources of corrosion or electrolytic action contact points.
  2. Glazing: Glass shall be outside glazed and held in place with extruded aluminum pressure plates anchored to the mullion using stainless steel fasteners spaced no greater than 9" on center.
  3. Water Drainage: Each light of glass shall be compartmentalized using joint plugs and silicone sealant to divert water to the horizontal weep locations. Weep holes shall be located in the horizontal pressure plates and covers to divert water to the exterior of the building.

### 3.5 INSULATED PANEL, GLAZING AND SASH INSTALLATION

- A. Install window vents in locations designated on the Contract Drawings. Glaze vents in accordance with the curtain wall and window manufacturer's written instructions.
- B. Install insulating glazing panels in the locations designated on the Contract Drawings. Glaze panels in accordance with the window manufacturer's written instructions.
- C. Install glazing's and panels to all curtain wall openings in accordance with the manufacturer's instructions.
- D. Where existing penetrations exist through the windows, cut the new panels to allow penetrations through panels. The cuts should be provide 1/4" max. space around penetration. Seal the interior and exterior edges of the penetration against the panels with the specified sealant.

### 3.6 SEALANT INSTALLATION

- A. Reseal corners and joints of glazing gaskets to provide continuous gasket at interior and exterior perimeters of glass.
- B. Install sealant at all curtain wall perimeters, interior and exterior, where shown on the Contract Drawings and as required for the proper completion of the work.
- C. Curtain wall sealant perimeter joints shall be 1/2" +/- 1/8", with a width-to-depth ratio at 2:1. Exterior fillet sealant joints shall provide bite at substrates 1/4" to 3/8".
- D. Clean and prime substrates in strict accordance with sealant manufacturer's requirements.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

- E. Precondition sealants to a temperature between 60 and 70 degrees F or as required by the manufacturer. Apply sealant to clean dry surfaces only when the ambient temperature is between 60 and 85 degrees F.
- F. Ensure all work by others occurring at sealant joint locations has been completed prior to the start of sealant installation.
- G. Clean all substrates to receive the joint sealant using the manufacturers recommended cleaners and surface preparation techniques.
- H. Ensure all existing sealants and other materials have been removed down to clean sound original substrates. Saw-cut, wire brush, chip, or grind as required to achieve suitable substrates for sealant installation.
- I. All bonding surfaces shall be cleaned with a minimum of two applications of solvent followed by wiping with clean white rags. Solvent shall be applied with brushes and wiped from substrate with rags while it is still wet. Additional application shall be performed if dirt remains after two applications until all dirt is removed.
- J. Joint primer shall be applied to all properly prepared, cleaned and dry substrates. Primer shall be approved by the sealant manufacturer for each substrate and shall be completely compatible with the existing materials and proposed sealants and accessories.
- K. Primer shall be applied prior to application of joint backer, bond breaker or sealant.
- L. Joint backer shall be installed in all joints as detailed. Joint backing shall be installed with approximately 30% compression at 70 degrees F. Do not stretch, twist, tear or puncture joint backing. Butt joint backings tightly at intersections.
- M. Joint backing shall be installed at the required depth so as not to exceed the joint width/depth ratio recommended for the sealant.
- N. Bond breaker tape shall be installed at locations where backer rod cannot be utilized to achieve the designated joint depth and where shown on the Contract Drawings. Sealant shall adhere only to the sides of the joint and not to the back so as to eliminate three- sided adhesion.
- O. Sealant shall have a minimum application life of three (3) hours after mixing.
- P. Unless otherwise required by the sealant manufacturer, the sealant shall be mixed for a period of 6 minutes minimum with a slow speed electrical drill and mixing paddle. The sides of the container shall be repeatedly scraped to ensure adequate mixing.

- Q. Sealant shall be applied to clean, dry, joints by knife, trowel, manual or air pressure caulking guns using proper nozzle sizes.
- R. Sealant shall be forced into the joint to completely fill the void and achieve full “wet-out” of the bonding surfaces. Force sealant into the joint and against the sides of the joint. Avoid pulling sealant from sides. All joint sealant shall be immediately tooled to assure full adhesion. Sealant shall be dry tooled, straight, uniform, smooth and neatly finished to the profiles detailed. No soaps, wetting of slicking agents will be allowed.
- S. Provide weep holes at sill locations spaced 24” on center as shown on the Contract Drawings

### 3.7 VANDALISM AND SECURITY SCREENS

- A. Verify that openings fit allowable tolerances and provide a solid anchoring surface.
- B. Exterior face of security screen shall align with the exterior brick face.
- C. Align screen plumb, square and true in a single plane. Anchor the screens to the brick jambs and brick sills at the exterior, and CMU jambs and sills and steel head at interior, with manufacturer recommended fasteners.
- D. If not fully enclosed by substrates, provide closure metal at perimeters.
- E. Test operation of screen from interior and keyed-access exterior. Adjust as necessary.
- F. Open screen to clean any debris from enclosed screen. Clean screen mesh and frame.

### 3.8 REPLACEMENT PARTS

The Owner shall be provided with the requested quantity of the following:

- 1. Twenty four (24) additional sets of all window hardware.
- 2. Twelve (12) vandalism screen keys
- 3. Two (2) additional insect screens for each standard size of operable window units. Standard sizes shall be any window type with quantities greater than 6.

END OF SECTION

**TRANLUSCENT WALL PANELS**

**SECTION 08 95 00**

**PART 1 - GENERAL**

**1.1 IN GENERAL**

- A. The General Conditions and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.
- B. Refer to Division 1, Sections 01 11 00 – 01 81 00 for additional information.

**1.2 RELATED WORK SPECIFIED ELESWHERE**

- A. Asbestos Abatement – Non-Friable Window Sealants– Section 02 82 00
- B. Lead Based Paint Associated Renovation – 02 83 19
- C. Selective Building Demolition – Section 02 41 19
- D. Concrete Repairs – Section 03 30 00
- E. Masonry – Section 04 21 00
- F. Rough Carpentry – 06 10 00
- G. Cellular PVC Trim – 06 60 00
- H. Metal Windows and Curtain Walls – 08 50 00
- I. Mechanical/Electrical General Requirements – Section 23 00 00

**1.3 SCOPE OF WORK**

In general, the Contractor shall supply all labor, materials, equipment, temporary protection, tools and appliances necessary for the proper completion of the work in this Section, as required in the Specifications, in accordance with good construction practice, and as required by the materials manufacturer, as amended. The work under this Section generally includes the following:

- A. Coordinate work within this Section with all other associated trades to perform work in an orderly fashion and to minimize temporary supports and weather protection.
- B. Install factory fabricated translucent panels to properly prepared window openings. Provide operable units and louvers at designated locations.
- C. Clean and restore all areas affected by the work. Repair damage to existing substrates affected by removal as specified in the various technical specification sections and to the satisfaction of the Owner.

#### 1.4 JOB CONDITIONS

- A. All surfaces to receive new flashings shall be thoroughly dry. Should surface moisture such as dew exist, the Contractor shall provide the necessary equipment to dry the surface prior to application. No open flames shall be permitted at any time.
- B. The Contractor shall remove only as much windows, flashing and associated components, as can be completely replaced in a given day's work, including all flashings and associated components as required to maintain the building in a watertight, secure condition throughout the duration of the project.
- C. The Contractor shall provide protection of sitework, plantings, landscaping, building surfaces and similar items to protect from damage. Items damaged as a result of the work in this section shall be repaired or replaced by the Contractor to the satisfaction of and at no additional cost to the Owner.
- D. The Contractor shall provide a full time superintendent during the translucent panel replacement.

#### 1.5 SUBMITTALS

- A. Provide a letter of approval from the translucent panel system manufacturer that the proposed system will achieve the specified warranty.
- B. Provide all manufacturer product and installation literature for approval.
- C. When requested, provide samples for each of the required exposed finishes.
- D. Manufacturer's literature for all fasteners and anchors as described under this section shall be submitted. Indicate sizes of fasteners to be used.
- E. Submit product test reports from a qualified independent testing agency. The results must indicate that the specified window panel system complies with the project performance requirements.
  - 1. Test reports required are:
    - a. Flame Spread and Smoke Developed (UL 723) – Submit UL Card
    - b. Burn Extent (ASTM D-635)
    - c. Color Difference (ASTM D-2244)
    - d. Abrasion/Erosion Resistance (ASTM D-4060)
    - e. Impact Strength (UL 972)
    - f. Bond Tensile Strength (ASTM C-297 after aging by ASTM D-1037)
- F. Submit a temporary site protection plan for the Owner to review and comment on.

## 1.6 QUALITY ASSURANCE

### A. Manufacturer's Qualifications

1. Material and products shall be manufactured by a company continuously and regularly employed in the manufacture of specified materials for a period of at least ten consecutive years and which can show evidence of those materials being satisfactorily used on at least six projects of similar size, scope and location. At least three of the projects shall have been in successful use for ten years or longer.
2. Panel system must be listed by the International Code Council – Evaluation Service (ICC-ES) which requires quality control inspections and fire, structural and water infiltration testing of sandwich panel systems by an approved agency.
3. Quality control inspections shall be conducted at least once each year and shall include manufacturing facilities, sandwich panel components and production sandwich panels for conformance with AC04 “Sandwich Panels” or AC177 “Translucent Fiberglass Reinforced Plastic (FRP) Faced Panel Wall, Roof and Skylight Systems” as regulated by the ICC-ES.

B. Installer’s Qualifications: Installation shall be by an experienced installer, which has been in the business of installing specified panel systems for at least two consecutive years and can show evidence of satisfactory completion of projects of similar size, scope and type.

C. Performance Requirements: The manufacturer shall be responsible for the engineering, configuration and fabrication of the complete panel systems.

1. Include structural analysis data signed and sealed by a qualified professional engineer registered in the Commonwealth of MA responsible for their preparation or the supervision of their preparation.
2. Standard panel system shall have less than 0.01 cfm/ft<sup>2</sup> air leakage by ASTM E 283 at 6.24 PSF (50 mph) and no water penetration by ASTM E 331 at 15 PSF; and, structural testing by ASTM E 330.

## 1.7 WARRANTY

A. Upon completion of the work and prior to final payment, the translucent wall panel manufacturer’s 10 year limited warranty shall be provided for the following conditions:

1. Delamination affecting structural strength.
2. Color change in excess of 8 Delta E units caused by normal weathering.

B. The translucent wall panel manufacturer’s 25 year limited warranty shall be provided against reinforcing fiberbloom.

- C. The translucent wall panel manufacturer's 10 year guarantee shall be provided for fading and chipping of painted finishes.

## PART 2 – MATERIALS

### 2.1 TRANSLUCENT PANELS AND ACCESSORIES

- A. Translucent panels shall be 2-3/4" thick, thermally broken, glass fiber reinforced polymer faced sandwich panels with integral aluminum grid core. Translucent panels shall be as manufactured by Vistawall, Inc., Major Industries, Inc., the Kalwall Corporation, or an alternative product may be submitted for compliance with the documents.
- B. Facing:
  - 1. General
    - a. The exterior face shall have a permanent glass veil erosion barrier to provide maximum long-term resistance to reinforcing fiber exposure. Plastic surface films are not acceptable.
    - b. Interior and exterior face colors shall be White.
    - c. Interior and exterior facers of the translucent wall panels to be high impact resistant (capable of withstanding a 230 ft.-lbs. impact force without fracture or tear).
- C. The translucent wall panels shall have a "U" factor of 0.23 and light transmission of 15%.
- D. Closure system shall be extruded 6063-T6 and 6063-T5 aluminum, that screw clamp-tite. All battens and perimeter closures to be supplied with 300 series stainless steel screws.
- E. Aluminum grid core shall be formed in the standard Shoji pattern with standard 12" x 24" nominal spacing.

### 2.2 SHEET METAL AND PREFORMED FLASHINGS

- A. Refer to Section 08 50 00 – Metal Windows and Curtain Walls.

### 2.3 SEALANT AND ASSESSORIES

- A. Refer to Section 08 50 00 – Metal Windows and Curtain Walls.

2.4 FASTENERS AND ANCHORS:

- A. Refer to Section 08 50 00 – Metal Windows and Curtain Walls.

2.5 FINISHES

- A. Finish for translucent panel frames and all exposed metal flashings shall be a Floropolymer Resin-Based Coating. Paint dry film thickness shall be not less than 1.0 mils +/- 0.2 mils. Surface preparation and coating shall conform to AAMA 2604 Specifications.

PART 3 - EXECUTION

3.1 GENERAL WORKMANSHIP

- A. Do not deliver to site or install any material or system that has not been approved. Materials installed without approval may be required to be removed.
- B. Examine the existing substrates, supporting structure and installation conditions. Do not proceed with window erection until all unsatisfactory conditions have been corrected.

3.2 FLASHING INSTALLATION

- A. Prior to installing flashings, install wood blocking, plywood and shims necessary for the proper installation of the flashings and windows. Wood blocking, plywood and shims shall be beveled and/or chamfered as required to provide solid support and to match existing conditions. Install continuous wood members with the specified fasteners spaced 12" on center maximum.
- B. Install flashings to all properly prepared window openings prior to installation of windows or insulated panels.
- C. All flashings shall be shop fabricated. All bends, breaks and hems shall be clean straight lines. Form flashings to the shapes and configurations shown on the Contract Drawings.
- D. All sill flashings shall turn up 1-1/2"-minimum at the backs and 3"-minimum at ends. Sill flashings shall run continuously across existing sills neatly trimmed and turned up at jamb locations. All seams shall be sealed and overlapped 3" minimum as indicated in the Contract Drawings. Set flashings over modified bitumen flashings. Work modified bitumen flashing into all substrates with a hard roller; prime all substrates in accordance with manufactures written instructions. Follow all manufactures written instructions for modified bitumen flashings. Install full bead of sealant between window frame and rear leg of flashing and between metal flashing and attachment angle.

- E. All head flashings and cladding shall run continuous from jamb to jamb and shall overlap jamb flashings. Set all head flashings in a full bed of sealant.

### 3.3 TRANSLUCENT PANEL INSTALLATION

- A. Panels shall be installed without forcing or distortion so that sills and heads are level and jambs are plumb. Frames shall be securely anchored into the supporting construction. Joints between metal frames and metal members shall be set in mastic of the type recommended by the panel manufacturer to provide completely watertight joints. Excess mastic shall be removed before hardening. Metal surfaces shall be cleaned and any staining or discoloring of the finish shall be restored or the unit replaced.
- B. Translucent panel frames shall be secured with the specified fasteners. The Contractor shall erect wall panel systems in strict accordance with approved shop drawings.
- C. Install head, jamb and sill members over full beds of sealant against masonry, concrete or sheet metal flashings. Secure members to existing construction with the specified fasteners spaced at 8 inches on center maximum.
- D. Set wall panels into receiver assemblies using manufacturer's supplied or approved sealant or sealant tape.
- E. Assemble frame systems as recommended by the panel manufacturer.

### 3.4 SEALANT INSTALLATION

- A. Install sealant at all translucent panel perimeters, interior and exterior, where shown on the Contract Drawings and as required for the proper completion of the work.
- B. Clean and prime substrates in strict accordance with sealant manufacturer's requirements.
- C. Precondition sealants to a temperature between 60 and 70 degrees or as required by the manufacturer. Apply sealant to clean dry surfaces only when the ambient temperature is between 60 and 85 degrees F.
- D. Ensure all work by others occurring at sealant joint locations has been completed prior to the start of sealant installation.
- E. Clean all substrates to receive the joint sealant using the manufacturers recommended cleaners and surface preparation techniques.
- F. Ensure all existing sealants and other materials have been removed down to clean sound original substrates. Saw-cut, wire brush, chip, or grind as required to achieve suitable substrates for sealant installation.

Window Replacement and Associated Work at the  
Watertown Middle School  
Watertown, MA  
Gale JN 830680

- G. All bonding surfaces shall be cleaned with a minimum of two applications of solvent followed by wiping with clean white rags. Solvent shall be applied with brushes and wiped from substrate with rags while it is still wet. Additional application shall be performed if dirt remains after two applications until all dirt is removed.
- H. Joint primer shall be applied to all properly prepared, cleaned and dry substrates. Primer shall be approved by the sealant manufacturer for each substrate and shall be completely compatible with the existing materials and proposed sealants and accessories.
- I. Primer shall be applied prior to application of joint backer, bond breaker or sealant.
- J. Joint backer shall be installed in all joints as detailed. Joint backing shall be installed with approximately 30% compression at 70 degrees F. Do not stretch, twist, tear or puncture joint backing. Butt joint backings tightly at intersections.
- K. Joint backing shall be installed at the required depth so as not to exceed the joint width/depth ratio recommended for the sealant.
- L. Bond breaker tape shall be installed at locations where backer rod cannot be utilized to achieve the designated joint depth and where shown on the Contract Drawings. Sealant shall adhere only to the sides of the joint and not to the back so as to eliminate three- sided adhesion.
- M. Two-part polyurethane sealant shall be thoroughly mixed including tinting agent in accordance with the manufacturer's printed instructions. Sealant shall have a minimum application life of three (3) hours after mixing.
- N. Unless otherwise required by the sealant manufacturer, the sealant shall be mixed for a period of 6 minutes minimum with a slow speed electrical drill and mixing paddle. The sides of the container shall be repeatedly scraped to ensure adequate mixing.
- O. Sealant shall be applied to clean, dry, joints by knife, trowel, manual or air pressure caulking guns using proper nozzle sizes.
- P. Sealant shall be forced into the joint to completely fill the void and achieve full "wet-out" of the bonding surfaces. Force sealant into the joint and against the sides of the joint. Avoid pulling sealant from sides. All joint sealant shall be immediately tooled to assure full adhesion. Sealant shall be dry tooled, straight, uniform, smooth and neatly finished to the profiles detailed. No soaps, wetting of slicking agents will be allowed.
- Q. Provide weep holes at sill locations spaced 24" on center as shown on the Contract Drawings.
- R. See Section 08 50 00 - Metal Windows and Curtain Walls for additional sealant requirements.

3.5 CLEAN-UP

- A. All floor and adjacent areas, both interior and exterior, damaged or stained by the installation of the window work shall be repaired and cleaned of all dust, debris and any other materials to the Owner's satisfaction.

END OF SECTION

I:\830680\02 Design\specs\830680 08 95 00 Translucent Wall Panels DGV COMMENTS.doc

**ACOUSTICAL CEILINGS**

**SECTION 09 53 00**

**PART 1 - GENERAL**

**1.1 IN GENERAL**

- A. The General Conditions and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.
- B. Refer to Division 1, Sections 01 11 00 – 01 81 00 for additional information.

**1.2 RELATED WORK SPECIFIED ELSEWHERE**

- A. Asbestos Abatement – Non-Friable Window Sealants – Section 02 82 00
- B. Metal Windows and Curtain Walls – Section 08 50 00

**1.3 SCOPE OF WORK**

In general, the General Contractor shall supply all labor, materials, equipment, temporary protection, tools and appliances necessary for the proper completion of the work in this Section, as required in the Specifications and in accordance with good construction practice. The work under this Section generally includes the following:

- A. Coordinate work within this Section with all other associated trades to perform work in an orderly fashion and to minimize temporary supports and weather protection.
- B. Install new ceiling track and vertical acoustical tiles to enclose ceiling space inboard of window systems. Cut tiles to fit behind window headers.
- C. Modify ceiling track location to top of curtain wall frame where indicated on the Contract Drawings.
- D. Install hangers where required to place ceiling tracks and tiles in specified locations.

**1.4 REFERENCES**

The publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by basic designation only.

**AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM)**

ASTM C 635                      Manufacture, Performance, and Testing of Metal Suspension Systems for Acoustical Tile and Lay-In Panel Ceilings

ASTM C 636 Installation of Metal Ceiling Suspension Systems for Acoustical Tile and Lay-In Panels

ASTM E 1264 Standard Classification for Acoustical Ceiling Products

ASTM E 84 Surface Building Characteristics of Building Material

CEILINGS AND INTERIOR SYSTEMS CONSTRUCTION ASSOCIATION (CISCA):

CISCA Code of Practices

#### 1.5 SUBMITTALS

The Sub-Contractor shall submit project literature and samples for the items listed in this section in accordance with Section 01 30 00 – Shop Drawings and Submittals.

- A. Data: Manufacturers data composed of catalog cuts, brochures, and product information.
- B. Samples: Submit samples in triplicate of each type of ceiling tile and suspension system. Sample size shall be minimum 6"x 6".
- C. Extra Tile: Provide (1) carton of each type of tile. Tile shall be delivered to the Owner's representative who will issue a signed receipt.
- D. Certificates: Submit manufacturer's certifications that the furnished materials meet or exceed the specification requirements

#### 1.6 DELIVERY AND STORAGE

- A. Materials shall be delivered to the site in the manufacturer's original unopened containers with brand name and type clearly marked.
- B. Materials shall be carefully handled and stored in dry, watertight enclosures. Immediately before installation, acoustical units shall be stored for not less than 24 hours at the same temperature and relative humidity as the space where they will be installed to assure temperature and moisture conditions.

#### 1.7 ENVIRONMENTAL REQUIREMENTS

- A. Environmental Requirements:
  - 1. Locate materials onsite at least 24 hours before beginning installation to allow materials to reach temperature and moisture content equilibrium.
  - 2. Maintain the following conditions in areas where acoustical materials are to be installed 24 hours before, during and after installation:

- a. Relative Humidity: 65 - 75%.
- b. Uniform Temperature: 55 - 70 degrees F

## 1.8 PERFORMANCE REQUIREMENTS

- A. Provide acoustical ceiling assembly designed and tested to provide surface burning characteristics (ASTM E84) as follows:
  - 1. Flamespread: 0.
  - 2. Smoke Developed: 0.
- B. Provide acoustical ceiling system which has been manufactured, fabricated and installed to provide Noise Reduction Coefficient (NRC) rating as follows: 1.0

## 1.9 MAINTENANCE

- A. Extra Materials: 10% additional material for use by Owner in building maintenance and repair.

## PART 2 - PRODUCTS

### 2.1 ACOUSTICAL CEILING SYSTEM

- A. Acoustical ceiling tile shall be 24" x 48", 5/8" minimum thickness, type 3, form 2 class A ceiling tiles. Acoustical tiles shall meet the following requirements:

Acoustical tiles shall be specifically designed to resist sagging. Products shall have a 10 year warranty to withstand temperature and humidity conditions up to 90° F/90% RH

Material: Wet formed mineral fiber  
Surface Finish: Factory applied vinyl latex paint  
Color: White  
Light Reflectance: LR-1 minimum per ASTM E 1264  
Edge Detail: Lay-in with reveal edge  
NRC Range: .50-.60 per ASTM E 1264  
CAC Range: 35-39 per ASTM E 1414  
Surface burning characteristics: Class A per ASTM E 1264  
Flame Spread: 25 or under  
Manufacturers: Omni 90 by USG, Vantage 10 by Celotex, Fine Look RH 90 by Armstrong or an alternative product may be submitted for compliance with the documents.
- B. Suspended tile shall be suspended on a direct hung exposed, 9/16" metal grid system with baked on white enamel finish
- C. Accessories shall be specifically designed as an integral part of the system and shall be installed as per manufacturer's recommendations. Provide whatever accessory items are needed to assure satisfactory ceiling performance and achieve specified requirements.

- D. All steel roll formed and stamped parts shall be chemically cleaned, electrogalvanized and bonderized to resist corrosion and form a chemical affinity for paint. All surfaces shall then receive a high-baked enamel finish.

## 2.2 HANGERS

- A. Hangers shall be galvanized steel wire. Hangers and attachment shall support a minimum 300 pound ultimate vertical load without failure of supporting material or attachment.
- B. Hanger wires shall be splayed for seismic resistance as required by the manufacturer.

## PART 3 - EXECUTION

### 3.1 MANUFACTURER'S INSTRUCTIONS

- A. Comply with the instructions and recommendations of the ceiling system manufacturer.
- B. Install materials in accordance with governing regulations, fire resistance rating requirements and industry standards applicable to work.
  - 1. Comply with CISCA Code of Practices.

### 3.2 EXAMINATION

- A. Site Verification of Conditions:
  - 1. Examine surfaces scheduled to receive suspended or directly attached acoustical units for unevenness, irregularities and dampness that would affect quality and execution of work.
  - 2. Do not proceed with installation of ceiling system until unacceptable conditions are corrected.

### 3.3 INSTALLATION

- A. General: Do not begin installation until materials sufficient to complete an entire room are received and prepared for installation.
- B. Suspension system shall be installed in accordance with ASTM C 636 and as specified herein.
- C. Measure each ceiling area and establish layout of acoustical units to balance border widths at opposite edges of each ceiling. Avoid use of less-than-half width units at borders.

- D. Symmetrically locate grid layout in each space. Coordinate work with other trades so that lighting fixtures, grilles and other ceiling fixtures work with grid layout.
- E. Do not use universal splices or other splices that would obstruct passage of recessed lighting fixtures through grid openings or limit fixture relocation upon flanges of ceiling grids.
- F. Support suspension system from structure above, not from ductwork, metal deck, equipment or piping.
- G. Space hangers not more than 6 inches (152 mm) from ends and not more than 4 feet (1219 mm) on centers on runners.
- H. Hangers shall be plumb.
- I. Arrange acoustical units and orient directionally patterned units, if any, in manner shown on reflected ceiling plans.
- J. Acoustical units shall be installed in accordance with the approved installation instructions of the manufacturer. Edges of acoustical units shall be in close contact with metal supports, with each other, and in true alignment.

#### 3.4 CLEANING

- A. Clean exposed surfaces of acoustical ceilings, trim, edge moldings and suspension members to comply with manufacturer's instructions for cleaning.
- B. Touch up any minor finish damage.
- C. Remove and replace work that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

#### 3.5 PROTECTION

- A. Protect installed work from damage due to subsequent construction activity, including temperature and humidity limitations and dust control, so that the work will be without damage and deterioration at the time of acceptance by the Owner.

END OF SECTION

**MECHANICAL/ELECTRICAL GENERAL REQUIREMENTS**

**SECTION 23 00 00**

**PART 1 - GENERAL**

**1.1 IN GENERAL**

- A. The General Conditions and all parts of the Bid and Contract Documents are made part of this Section as if fully repeated herein.
- B. Refer to Division 1, Sections 01 11 00 – 01 91 15 for additional information.

**1.2 RELATED WORK SPECIFIED ELSEWHERE:**

- A. Selective Building Demolition – Section 02 41 19
- B. Metal Windows and Curtain Walls – Section 08 50 00
- C. Translucent Wall Panels – Section 08 95 00

**1.3 SCOPE OF WORK**

This Section specifies requirements for the following Scope of Work:

- A. Provide miscellaneous electrical and mechanical disconnections including temporary removal of electrical conduits mounted to the existing wood jamb trim and along interior wood sills.
- B. Disconnect existing duct work from louvers to be removed/replaced. Cut or provide duct extensions as required for the installation of the new louvers. Coordinate the installation of metal louvers within the curtain wall frames. Provide blank off panels at interior of louvers where new louvers are larger in area than existing ductwork. Blank-off panels shall have painted finish on interior to match window frames.
- C. Disconnect and reconnect lighting fixtures and conduits which will affect the window replacement work.
- D. Disconnect, relocate and reconnect various MEP or fire protection systems above drop ceilings which are required to install new structural bracing.

**PART 2 - PRODUCTS**

**2.1 GENERAL**

Electrical components used in the extension and reconnection of electrical conduit, wiring, and connections shall be UL approved.

## 2.2 REPLACEMENT LOUVERS

- A. Replacement aluminum louvers shall be minimum 1-1/2" nominal deep extruded aluminum frame with weather resistant 45-degree blade angle blades and stainless steel insect screens. Louvers shall be fabricated of 6063 aluminum with 0.125" wall thickness. Louvers shall have interior mounted, stainless steel insect screens. Finish for louvers shall be a Resin-Based Coating- Hylar 5000, or Kynar 500. Paint dry film thickness shall be not less than 1.0 mils +/- 0.2 mils. Surface preparation and coating shall conform to AAMA 2605 Specifications. Free area shall be 50%. Louver shall be FL 1.5 deep 45-degree standard fixed blade by Architectural Louvers, or an alternative product may be submitted for compliance with the documents. Louver shall be integral and compatible to the submitted metal panel wall assembly. Size shall be as designated on the Contract Drawings to fit within the new curtain wall assemblies or insulated metal panels. Louvers shall be glazed into the curtain walls.
- B. Should duct work extension be required, fabricate ductwork from galvanized sheet steel complying with ASTM A-527, lockforming quality, with G90 zinc coating in accordance with ASTM A-525, and mill phosphatized for exposed locations.
- C. Blank off panels shall be non-insulating panels with minimum 0.063" aluminum skin, finished on the exterior to match the new louvers, as manufactured by Greenheck or approved equal.
- D. Provide miscellaneous materials and products of types and sizes to comply with ductwork system requirements including proper connection of ductwork and equipment.

## PART 3 - EXECUTION

### 3.1 IN GENERAL

- A. Mechanical, electrical, and associated work shall be performed by licensed tradesmen and shall comply with the Massachusetts Electrical Code (527 CMR).
- B. Wherever possible match the existing mechanical and electrical components.
- C. Handle, store, and protect equipment and materials to prevent damage before and during installation.

### 3.2 UTILITY SERVICES AND MECHANICAL/ELECTRICAL SYSTEMS

- A. Existing Services/Systems: Maintain services/systems indicated to remain and protect them against damage during selective demolition operations.
- B. Service/System Requirements: Locate, identify, disconnect, and seal or cap off indicated utility services and mechanical/electrical systems serving areas to be selectively demolished.

1. Arrange to shut off indicated utilities with utility companies.
2. If services/systems are required to be removed, relocated, or abandoned, before proceeding with selective demolition provide temporary services/systems that bypass area of selective demolition and that maintain continuity of services/systems to other parts of building.
  - a. Refer to Division 01 Section "Temporary Facilities" for additional information.
3. Protect existing mechanical/plumbing systems and drain lines during the project from freezing temperatures; do not leave exposed to the elements.
4. Partial or whole building shutdowns shall be coordinated so they do not impact occupied spaces during school hours.

### 3.3 MECHANICAL DISCONNECT AND RECONNECT

- A. Any disconnection of the electrical power or mechanical equipment shall be made prior to the start of demolition. Notify the Owner at least 48 hours in advance so that power will be shut off and occupancy eliminated. All disconnection and reconnection shall be performed by licensed tradesmen in accordance with the Building Codes.

### 3.4 LOUVER INSTALLATION

- A. Install new louvers within curtain walls where as indicated on the Contract Drawings. Provide duct extensions to existing unit ventilators where required.

### 3.5 DUCT EXTENSIONS AND BLANK OFF PANELS

- A. Provide duct extensions to existing unit ventilators and exhaust units, if required.
- B. Where louver area is larger than existing ducts or duct extensions, provide blank off panels. Blank off panels shall be silicone wet sealed and mechanically fastened to the interior face of the louvers, per the blank off panel manufacturer's instructions.

END OF SECTION

# Building Enclosure Commissioning Testing Procedures and Plan

## **Middle School Watertown, Massachusetts**

Prepared by  
The Thompson & Lichtner Company, Inc.  
480 Neponset Street, Unit 11A  
Canton, Massachusetts 02021



June 13, 2016

## Building Enclosure Commissioning (Cx):

1. **General Building Information:** Watertown Middle School, Watertown, Massachusetts.
2. **Commissioning Team Information:** Thompson & Lichtner (T&L) is the Building Enclosure Commissioning Agent (BECx). Commissioning Team consists of Henry R. Heywood, CEO; Michael Vielmetti, President; Richard Keleher, Senior Architect; Peter Dalton, Senior Weatherproofing Consultant; Nima Mansour, Senior Engineer.
3. **Commissioning Task Matrix:** Major commissioning activities will be to review the architect's drawings and technical specifications pertaining to the building enclosure, prepare Cx Specifications and a Cx Testing and Procedures Plan (this plan), review submittals, visit the site for field inspections, which will include observing testing of the window installations, and preparation of a final report.
4. **Commissioning Scope of Work:** The system scheduled for commissioning is the windows. The tests to be performed are air and water leakage pressure tests (tests by an independent testing agency, witnessed by the BECx), and field adhesion tests for sealants, performed by the Contractor.
5. **Deliverables:** The deliverables to be produced from the commissioning process are a peer review of the architect's drawings and technical specifications pertaining to the building enclosure, Cx Specifications and a Cx Testing Procedures and Plan, submittal reviews, field reports, and a final report. This is the Cx Testing Procedures and Plan.
6. **Functional Performance Testing:** See below for conditions of testing.

## Testing Procedures

### Conditions for Testing (also included in the Cx Specifications):

1. Access to the exterior and to the interior surfaces of the windows, electrical connections, and water connections for hoses located near the windows shall be provided by the Contractor.
2. All exterior sealant installations at the window perimeters shall have been completed and allowed to cure for 72 hours prior to the start of testing.
3. Interior finishes shall not be installed at the window test locations until after the tests are completed, or, if already in-place, such finishes should be removed. Any damage to paint and wall surfaces resulting from the attachment of the test chamber is to be repaired by the Contractor. Perimeter caulking beads shall have been installed and allowed to cure for a minimum of 72 hours prior to the field testing of the window.
4. During winter weather conditions, ambient and surface temperatures must be 40°F and above to conduct testing. Exterior tenting and heating, if required, shall be provided by the Contractor.

## Testing Plan

The Testing Plan shall be as described in the technical specifications for the project.