

ANN ARBOR HOUSING COMMISSION  
BAKER COMMONS WINDOWS REPLACEMENT

BID NO. ITB-4175



**ANN ARBOR HOUSING COMMISSION**

OCTOBER 2011

ANN ARBOR HOUSING COMMISSION  
727 MILLER AVE.  
ANN ARBOR, MI 48103  
(734) 794-6720

**TABLE OF CONTENTS**

<u>Section</u>	<u>Pages</u>
Advertisement	2
Notice of Mandatory Pre-Bid Conference	3
Background	4
Instructions to Bidders	5
Proposal	8
Legal Status of Bidder	9
Bid Form and Scope of Work	10
Contract and Bond Forms (Bid Bond example)	80
General Conditions	81
Contents of Bid Proposal	87
Bid Schedule of Events	87
Forms and Attachments	88
1. Performance and Payment Bonds (examples)	89
2. Addenda Form	90
3. Certification of Non-Segregated Facilities	91
4. Non-Discrimination	92
5. Reference Form	94
6. Michigan EEO Clause	95
7. Section 3 Certification for Preference	96
8. Davis-Bacon Decision	97
9. HUD-5369 – Instructions to Bidders for Contracts	98
10. HUD-5369-A – Representations, Certifications, and Other Statements of Bidders	99
11. HUD-5370 – General Conditions for Construction Contracts	100
12. Non-Collusive Affidavit	101
13. Ann Arbor Human Rights Forms 1 and 2	102 (A & B)
14. Ann Arbor Contractor Compliance Form – Instructions for Contractors	102 (C)
15. Ann Arbor Living Wage Ordinance – Declaration of Compliance	102 (D)
16. Ann Arbor Living Wage Ordinance Poster	102 (E)
17. Layout Drawings – 2 Documents	103
18. Project Reference Drawings – 14 Documents	104
19. Sample Progress Schedule and Partial Payment Forms	105
20. Contract – Draft	106

ADVERTISEMENT FOR  
BAKER COMMONS WINDOWS REPLACEMENT FOR THE  
ANN ARBOR HOUSING COMMISSION  
**BID NO. ITB-4175**

Sealed Bids will be received by Ann Arbor Procurement Office, Fifth Floor City Hall, **on or before Friday, October 28, 2011 at 10:00 AM** for Windows Replacements for the Ann Arbor Housing Commission (AAHC). Bids will be publically opened and read aloud at this time.

Work to be done shall include, but not be limited to replacing windows at AAHC property Baker Commons, 106 Packard, Ann Arbor, MI 48104.

Bids may be downloaded from the following websites:

<http://www.a2gov.org/government/financeadminservices/procurement/Pages/OpenBidsandProposals.aspx> or at <http://www.a2gov.org/housingcommission>.

**Each proposal shall be accompanied by a certified check, or Bid Bond by a recognized surety, in the amount of 5% of the total bid price.** A proposal, once submitted, becomes the property of the City and AAHC. In the sole discretion of the AAHC, the AAHC reserves the right to allow a bidder to reclaim submitted documents provided the documents are requested and retrieved no later than 48 hours prior to the scheduled bid opening.

The successful Bidder will be required to furnish satisfactory performance and payment bonds in the amount of 100% of the contract price and satisfactory insurance coverage.

Precondition for entering into a contract with the AAHC: 1) compliance with Chapter 112 of Title IX of the Code of the City of Ann Arbor; 2) compliance with applicable prevailing wage and living wage requirements of Chapter 23 of Title I of the Code of the City of Ann Arbor; and (3) compliance with the Davis-Bacon requirements.

After the time of opening, no Bid may be withdrawn for a period of 90 days. The AAHC reserves the right to accept any Bid, to reject any and all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the AAHC believes to be in its best interest.

Additional information and detail are mentioned throughout the ITB documents and may be obtained by email from Nick Coquillard, Deputy Director, at [ncoquillard@a2gov.org](mailto:ncoquillard@a2gov.org), or from the Ann Arbor Procurement Office, Procurement Agent (734) 794-6756, ext. 4-5206.

**NOTICE OF MANDATORY PRE-BID CONFERENCE**

A pre-bid conference for this project will be **held on Tuesday, October 18, 2011 at 10:00 AM at Baker Commons, 106 Packard, Ann Arbor, Michigan 48104.** The pre-bid conference and site visit is provided to allow the potential bidders the opportunity to ask clarifying questions about the invitation to bid, view the project site, view existing conditions, site constraints, etc. Following the mandatory conference, a tour will be offered to provide examples of windows to be replaced.

**Attendance at this conference is MANDATORY.** Administrative and technical questions regarding this project will be answered at this time. If any questions arise whose answers constitute modifications to the bid documents, an addendum will be issued.

**BACKGROUND**

**Ann Arbor Housing Commission**

The Ann Arbor Housing Commission (AAHC) is the Public Housing Authority (PHA) for the City of Ann Arbor. The mission of the AAHC is to seek to provide desirable housing and related supportive services for low-income individuals and families on a transitional and/or permanent basis. The AAHC partners with housing and service providers to build healthy residential communities and promote an atmosphere of pride and responsibility.

The AAHC is responsible for the management of eighteen (18) total developments, including ten (10) scattered site communities and two (2) single-family detached homes. The Public Housing (PH) developments are set up by Asset Management Project Groupings (AMPS). In total, the AAHC is responsible for the management of approximately 360 units.

**AAHC Development Related to this Bid, by AMP:**

**PH-EAST**

Baker Commons

The AAHC communities are subject to HUD, State of Michigan and other Federal regulations and statutes governing public housing rental units in Michigan.

## **INSTRUCTIONS TO BIDDERS**

### **General**

Work to be done under this Contract is generally described through the detailed specifications and must be completed fully in accordance with the contract documents. All work to be done under this Contract is located in or near the City of Ann Arbor.

The AAHC shall make available to all prospective Bidders, prior to receipt of the Bids, access to a full sample of the areas in which the work is to be performed (in this ITB, please see the “Notice of Mandatory Pre-Bid Conference” for full details).

Any proposal which does not conform fully with these instructions may be rejected.

### **Proposals**

Proposals must be submitted on the “Proposal Forms” and “Bid Forms” provided, with each blank properly filled in. **One (1) original and three (3) copies of the ITB proposal** shall be submitted in a sealed envelope. Each proposal shall be indexed and one clearly marked "original." Sealed proposals will be received by the Ann Arbor Procurement Office, Fifth Floor City Hall, Ann Arbor, Michigan, **on or before Friday, October 28, 2011 at 10:00 AM**, as stipulated in the Advertisement, promptly after which proposals will be publically opened and read aloud. Each proposal must be enclosed in a sealed envelope, endorsed across one end:

### **BID #ITB-4175, Baker Commons Windows Replacement - Proposal for the Ann Arbor Housing Commission**

**The AAHC will evaluate Proposals based on cost as well as experience. Contractors that have not included the required list of similar work experience and associated references (located in the Forms and Attachments section) may have their Bid rejected.**

**The AAHC intends to award a Contract(s) to the lowest responsible Bidder(s).** The contract will be awarded based upon the total bid price stated by the bidder for the work items specified in the bid documents, with consideration given to any alternates selected by the AAHC. If the AAHC determines that the total bid price or the unit price for any item is materially different for the work item bid than either other bidders or the general market, the AAHC, in its sole discretion, in addition to any other right it may have, may reject the bid as not responsible or non-conforming.

When applicable, the acceptability of major subcontractors will be considered in determining if a

Bidder is responsible. In comparing proposals, the AAHC will give consideration to alternate proposals for items listed in the forms, or other alternates which the Bidder may wish to submit, but preference will be given to Base Bid Proposals.

The AAHC reserves the right to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner the AAHC believes to be in its best interest.

### **Mistakes in Proposals**

If a mistake in a proposal is suspected or alleged, the proposal may be corrected or withdrawn during any negotiations that are held. If negotiations are not held, or if best and final offers have been received, the firm may be permitted to correct a mistake in its proposal and the intended correct offer may be considered based on the conditions that follow:

- The mistake and the intended correct offer are clearly evident on the face of the proposal.
- The firm submits written evidence which clearly and convincingly demonstrates both the existing offer and such correction would not be contrary to the fair and equal treatment of other firms.

Mistakes discovered after award shall not be corrected unless the AAHC Legal Counsel makes a written determination that it would be disadvantageous to the AAHC not to allow the mistake to be corrected. The approval or disapproval of requests of this nature shall be in writing by the AAHC's Legal Counsel.

### **Bid Security**

NOTE: Each proposal must be accompanied by a certified check, or Bid Bond by a surety licensed and authorized to do business within the State of Michigan, in the amount of 5% of the total Bid price.

### **Withdraw of Bids**

After the time of opening, no Bid may be withdrawn for the period of days specified in the Advertisement.

### **Contract Time**

Time is of the essence in the performance of the work under this Contract. The available time for work under this Contract is **100 consecutive calendar days** from contract execution date.

**Liquidated Damages**

A liquidated damages clause as stated in the Contract, provides that the Contractor shall pay the AAHC as liquidated damages, and not as a penalty, a sum certain per day for each and every day the Contractor may be in default of completion of the specified work, within the time(s) stated in the Contract, or written extensions.

Liquidated damages clauses, as given in part in the General Conditions, and in full in the Contract, provide further that the AAHC shall be entitled to impose and recover liquidated damages for breach of the obligations under Chapter 112 of the City Code.

The liquidated damages are for the non-quantifiable aspects of any of the previously identified events and do not cover actual damages that can be shown or quantified nor are they intended to preclude recovery of actual damages in addition to the recovery of liquidated damages.

**Human Rights Information**

The General Conditions outline the requirements for fair employment practices under AAHC and City of Ann Arbor Contracts. To establish compliance with this Ordinance, the Bidder must complete and return with its bid completed copies of the Human Rights Division Contract Compliance Forms (see Forms and Attachments).

**Wage Requirements**

The General Conditions outline the requirements for payment of prevailing wages or of a “living wage” to employees providing service to the City under this contract. The successful Bidder must comply with all applicable requirements and provide documentary proof of compliance when requested. In addition, hourly rates for Bidder’s staff shall be in accordance with the current Davis-Bacon Wage Determination schedule at the time of contract. The current Davis-Bacon Wage Determination schedule at the time this ITB publishing is included in the “Forms and Attachments” section. Staff may be paid more per hour but they cannot be paid less. Hourly payment shall correspond to the tasks performed. Please note, the bid opening date “locks-in” the wage decision provided that the contract is awarded within 90 days. If the contract is awarded more than 90 days after the bid opening, the contract award date “locks-in” the wage decision (see form HUD-4710 available at [www.hud.gov](http://www.hud.gov)).

**PROPOSAL**

**PROPOSAL FORM**

Ann Arbor Housing Commission  
727 Miller Avenue  
Ann Arbor, MI 48103

The undersigned, as Bidder, hereby declares that this bid is made in good faith, without fraud or collusion with any person or persons bidding on the same Contract; that he/she has carefully read and examined indexed items in the Invitation to Bid and understands all the same. The Bidder declares that he or his representative has made a personal investigation at the site and of the work herein proposed and is fully informed as to the nature of the work and the conditions relating to its performance.

The Bidder acknowledges that he has not received or relied upon any representations or warrants of any nature whatsoever from the Ann Arbor Housing Commission, its agents or employees, and that this bid is based solely upon the Bidder's own independent business judgment.

The undersigned hereby proposes to perform all work described in the Scope of Work and Specifications, including any Addenda issued thereto, and to furnish all necessary machinery, tools, apparatus, and other means of construction to do all the work, furnish all the materials, and complete the work herein described in strict accordance with all terms of the Contract of which this Proposal is one part.

In accordance with these Bid Documents, and Addenda thereto numbered \_\_\_\_\_, the undersigned, as Bidder, hereby proposes to perform at the site(s) specified in Ann Arbor, Michigan, the work included herein for the amounts set forth in the Bid Form.

The undersigned agrees to contract for said work and to furnish the all necessary Insurance Certificates within seven (7) days after being notified of the acceptance of his Bid.

If this Proposal is accepted by the Ann Arbor Housing Commission and the Bidder fails to contract as aforesaid and to furnish the required Insurance Certificates with seven (7) days after being notified of the acceptance of this Bid, then the undersigned shall be considered to have abandoned the Contract and the Ann Arbor Housing Commission will execute a contract with the next responsive bidder or re-bid the work.

In submitting this Bid, it is understood that the right is reserved by the Ann Arbor Housing Commission to accept any Bid, to reject any or all Bids, to waive irregularities and/or informalities in any Bid, and to make the award in any manner deemed in the best interest of the Ann Arbor Housing Commission.

SIGNED THIS \_\_\_\_\_ DAY OF \_\_\_\_\_, 2011.

\_\_\_\_\_  
Firm Name

\_\_\_\_\_  
Authorized Signature of Bidder

\_\_\_\_\_  
Official Address

\_\_\_\_\_  
Telephone Number

**LEGAL STATUS OF BIDDER**

**(The Bidder shall fill out the appropriate form and strike out the other two.)**

Bidder declares that it is:

\*A corporation organized and doing business under the laws of the state of

\_\_\_\_\_, for whom \_\_\_\_\_, bearing the office

title of \_\_\_\_\_, whose signature is affixed to this proposal, is authorized to execute contracts.

---

\*A partnership, list all members and the street and mailing address of each:

1. \_\_\_\_\_

2. \_\_\_\_\_

3. \_\_\_\_\_

4. \_\_\_\_\_

Also identify the County and State where partnership papers are filed:

County of \_\_\_\_\_, State of \_\_\_\_\_

---

\*An individual, whose signature with address, is affixed to this proposal: \_\_\_\_\_

(initial here)

**BID FORM AND SCOPE OF WORK**

**PROPOSAL FOR  
REPLACEMENT OF WINDOWS AT BAKER COMMONS**

TO THE CITY OF ANN ARBOR HOUSING COMMISSION:

The undersigned as Bidder hereby declares that this Proposal is made in good faith without fraud or collusion with any person or persons bidding on the same Contract; that he has read and examined the Advertisement, Information for Bidders, Proposal, General Conditions, Agreement, Forms of Bonds, Specifications and Plans, as prepared by the ENGINEER, and understands all of the same; that he or his representative has made personal investigation at the site and has informed himself fully with regard to the conditions to be met in the execution of this Contract, and the undersigned proposes to furnish all labor, materials, tools, power, transportation, and construction equipment necessary for the construction of the Project and performing related work in full accordance with the aforesaid Contract Documents, including any and all addenda officially issued, the receipt of which is hereby acknowledged:

Addendum No./Dated	Date of Receipt	Signature
_____	_____	_____
_____	_____	_____
_____	_____	_____

**AWARD OF CONTRACT:** The Contract(s) will be awarded to the lowest responsive, responsible Bidder based on the OWNER's selection of: one (1) Window Alternative; one (1) Glazing Alternative; one (1) Warranty Alternative; and one (1) Paint Alternative from the following schedule, as he deems in his best interest.

**PROPOSAL PRICE:** The Bidder agrees to complete the Project for the following unit prices and/or lump sums:

Item No.	Item Description	Qty	Unit	Unit Price	Total Price
<b>Window Alternative 1: Aluminum Frame Windows (Specifications 8.03 and 8.04), L and R slides on B windows.</b>					
1.	Remove and Replace Window A (6' - 10 1/2" x 45 1/2" nom. Dual slides)	64	EA	\$	\$
2.	Remove and Replace Window B1 (47" x 45 1/2" nom. RH slides)	32	EA	\$	\$

Baker Commons Windows Replacement – ITB-4175

3.	Remove and Replace Window B2 (47" x 45 1/2" nom. LH slides)	32	EA	\$	\$
4.	Remove and Replace Window C (21' – 7 1/2" x 7' 1 3/4" nom. Fixed)	2	EA	\$	\$
5.	Remove and Replace Window D1 (Irregular. Fixed)	1	EA	\$	\$
6.	Remove and Replace Window D2 (Irregular. Fixed)	1	EA	\$	\$
7.	Remove and Replace Window E (38 3/4" x 70 3/4" nom. Fixed)	10	EA	\$	\$
<b>Total, Window Alternative 1:</b>					\$
<b>Window Alternative 2: Aluminum Frame Windows (Specifications 8.03 and 8.04), all slides same direction on B windows.</b>					
1.	Remove and Replace Window A (6' - 10 1/2" x 45 1/2" nom. Dual slides)	64	EA	\$	\$
2.	Remove and Replace B Windows (47" x 45 1/2" nom. All slides same direction)	64	EA	\$	\$
3.	Remove and Replace Window C (21' – 7 1/2" x 7' 1 3/4" nom. Fixed)	2	EA	\$	\$
4.	Remove and Replace Window D1 (Irregular. Fixed)	1	EA	\$	\$
5.	Remove and Replace Window D2 (Irregular. Fixed)	1	EA	\$	\$
6.	Remove and Replace Window E (38 3/4" x 70 3/4" nom. Fixed)	10	EA	\$	\$
<b>Total, Window Alternative 2:</b>					\$
<b>Window Alternative 3: Aluminum Clad Windows (Specification 8.05), L and R slides on B windows.</b>					
1.	Remove and Replace Window A (6' - 10 1/2" x 45 1/2" nom. Dual slides)	64	EA	\$	\$
2.	Remove and Replace Window B1 (47" x 45 1/2" nom. RH slides)	32	EA	\$	\$
3.	Remove and Replace Window B2 (47" x 45 1/2" nom. LH slides)	32	EA	\$	\$

Baker Commons Windows Replacement – ITB-4175

4.	Remove and Replace Window C (21' – 7 ½" x 7' 1 ¾" nom. Fixed)	2	EA	\$	\$
5.	Remove and Replace Window D1 (Irregular. Fixed)	1	EA	\$	\$
6.	Remove and Replace Window D2 (Irregular. Fixed)	1	EA	\$	\$
7.	Remove and Replace Window E (38 ¾" x 70 ¾" nom. Fixed)	10	EA	\$	\$
<b>Total, Window Alternative 3:</b>					\$
<b>Window Alternative 4: Aluminum Clad Windows (Specification 8.05), all slides same direction on B windows.</b>					
1.	Remove and Replace Window A (6' - 10 ½" x 45 ½" nom. Dual slides)	64	EA	\$	\$
2.	Remove and Replace B Windows (47" x 45 ½" nom. All slides same direction)	64	EA	\$	\$
3.	Remove and Replace Window C (21' – 7 ½" x 7' 1 ¾" nom. Fixed)	2	EA	\$	\$
4.	Remove and Replace Window D1 (Irregular. Fixed)	1	EA	\$	\$
5.	Remove and Replace Window D2 (Irregular. Fixed)	1	EA	\$	\$
6.	Remove and Replace Window E (38 ¾" x 70 ¾" nom. Fixed)	10	EA	\$	\$
<b>Total, Window Alternative 4:</b>					\$
<b>Glazing Alternative 1: Low Emissivity Glass</b>					
Low-E2 366 Argon Glazing, all Windows		1	LS	<b>Total:</b>	\$
<b>Glazing Alternative 2: Low Emissivity Glass with Exterior Clean Coating</b>					
Low-E2 366 Argon Glazing w/Neat® Exterior Coating, all Windows		1	LS	<b>Total:</b>	\$
<b>Warranty Alternative 1: 10 Year</b>					
10-Year Manufacturer's Warranty for Glazing and Frames, all Windows		1	LS	<b>Total:</b>	\$

Baker Commons Windows Replacement – ITB-4175

<b>Warranty Alternative 2: 20 Year</b>				
20-Year Manufacturer's Warranty for Glazing and Frames, all Windows	1	LS	<b>Total:</b>	\$
<b>Paint Alternative 1: Sand Blast and Paint all Lintels</b>				
SSPC 7 Blasting, All Lintels	1	LS	<b>Total:</b>	\$
<b>Paint Alternative 2: Mechanically Clean and Paint all Lintels</b>				
SSPC 15 Cleaning, All Lintels	1	LS	<b>Total:</b>	\$

The undersigned agrees that if the foregoing Proposal shall be accepted by the OWNER, he will, within ten (10) days (Sundays and legal holidays excepted) after receiving notice of such acceptance, enter into the attached form of Agreement and will complete the Project, ready for use, at the price and within the time stated in this Proposal, and that he will furnish the OWNER satisfactory Contract Bonds and certificates of insurance coverage.

The undersigned further agrees that if the foregoing Proposal shall be accepted, he will commence work immediately after the Contract has been awarded, the Agreement executed, and he has received a Notice to Proceed and he shall complete the entire work within 100 calendar days.

The undersigned attaches hereto his Bid Security, as required by the Advertisement and Information for Bidders, and the undersigned agrees that in case he shall fail to fulfill his obligations under the foregoing Proposal and/or shall fail to furnish bonds, as specified, the OWNER may, at its option determine that the undersigned has abandoned his rights and interests in such Contract and that his Bid Security accompanying his Proposal has been forfeited to the said OWNER, but otherwise the Bid Security shall be returned to the undersigned upon the execution of the Contract and the acceptance of the bonds.

The undersigned also agrees that for each and every calendar day that he may be in default of substantial completion of the entire work, ready for use, within the time specified in this Proposal or within the time to which said time of completion may be extended for good cause shown, the OWNER will suffer a damage of Eight Hundred Dollars (\$800.00) per day, and said OWNER shall be compensated therefore at the rate as liquidated damages in accordance with the Agreement.

The Bidder shall acknowledge that he/she is an equal opportunity employer and that they do not discriminate against other firms due to race, age, gender or physical conditions.

Baker Commons Windows Replacement – ITB-4175

In submitting this bid, it is understood that the right is reserved by the OWNER to accept any bid, to reject any or all bids, and to waive irregularities in bidding in the interest of the OWNER.

The Bidder has completed the accompanying "Legal Status" form.

Dated and Signed

at \_\_\_\_\_

this, the \_\_\_\_\_ day of \_\_\_\_\_, 20\_\_\_\_\_.

OFFICIAL ADDRESS

BIDDER'S NAME

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

By

Telephone

Title

**METHOD OF MEASUREMENT AND BASIS OF PAYMENT  
FOR  
REPLACEMENT OF WINDOWS AT BAKER COMMONS**

A. The OWNER may select to have the CONTRACTOR construct any or all portions of the Work as specified and shown on the Drawings. Payment for selected Work shall be per the Itemized Bid Form, and no adjustments will be made to the unit prices based on limited Scope of Work.

B. General

1. The method of measurement and the basis of payment for each item in the Bid Form will be as specified. There will be no payment allowed for any unit of work not specifically mentioned in the Bid Form as a bid item, and any such unit of work not mentioned in the Bid Form, but necessary for the completion of the Project, will be considered as incidental to the construction of the Project.

2. MEASUREMENT

Quantities of work completed under the Contract will be measured by the CONTRACTOR and confirmed by the OWNER and/or OWNER's REPRESENTATIVE according to the United States standard measures. When tons are specified, the unit shall be the ton of 2000 pounds. Where measurements are specified to be "in place," they will be taken along the actual surface of the completed item to obtain lineal, area, or volume measurements.

3. PAYMENT

In each and every instance in the schedule attached, where a Basis of Payment is specified, it shall be understood to be prefaced by the following statement, "The Contract unit price bid in the Bid Form will be payment in full for all labor, materials, and equipment necessary to do the following according to the Plans and Specifications." Payment shall be made on the basis of the actual quantity of the item completed and accepted at the unit price for such item named in the Bid Form. It shall be the responsibility of the CONTRACTOR to notify the OWNER or the OWNER's REPRESENTATIVE whenever actual quantities differ from the Contract Documents; no additional compensation shall be granted unless the CONTRACTOR allows for verification.

4. A description of the items generally serving as the Basis of Payment is attached to the end of this section.

C. Basis of Payment. Items not specifically included in the following schedule but required for a complete job shall be assumed as incidental to the items as called out in the Proposal.

1. Remove and Replace Window (Types A, B1, B2, C, D1, D2 and E; Window Alternatives 1, 2, 3 and 4). Paid by the unit Each (EA) per type.

All mobilization, materials and labor for complete removal and replacement of existing window unit with new window unit. Includes all staging and scaffolding, appurtenant

## Baker Commons Windows Replacement – ITB-4175

demolition, temporary removals and replacements, protection of existing facilities, and repair or reconstruction of interior and exterior finishes and claddings, backer rods, caulking and other incidentals for a complete installation.

2. Provide Low-E2 366 Argon Glazing with or without (as selected) Neat® Exterior Coating  
Paid by the Lump Sum (LS)

Glazing as selected for all windows.

3. Provide Warranty (10 or 20 years, as selected)  
Paid by the Lump Sum (LS)

Project-specific manufacturer warranty certificate for the selected duration.

4. Sand Blast and Paint All Lintels (Painting Alternative 1)  
Paid by the Lump Sum (LS)

All mobilization, materials and labor to perform surface preparation and painting as specified on lintels where windows are replaced. Includes all sizes and types of lintels on the project. Work includes surface preparation, cleaning, and protection of areas interior and exterior adjacent to the work space, staging, scaffolding and application of coatings.

5. Mechanically Clean and Paint All Lintels (Painting Alternative 2)  
Paid by the Lump Sum (LS)

All mobilization, materials and labor to perform surface preparation and painting as specified on lintels where windows are replaced. Includes all sizes and types of lintels on the project. Work includes surface preparation, cleaning, and protection of areas interior and exterior adjacent to the work space, staging, scaffolding and application of coatings.

**SECTION 1.50**

**PROJECT REQUIREMENTS**

**1.50**

Page 1

**1.00 GENERAL**

**1.01 DESCRIPTION OF WORK**

- A. Work under this contract consists of replacement of windows at the Baker Commons Apartment Building (106 Packard, Ann Arbor, Michigan) operated by the Ann Arbor Housing Commission. Generally, work shall include removal and disposal of old windows, furnishing and installation of new windows, painting, caulking, restoration, and other miscellaneous work as required for a complete finished project.
- B. Additional information is provided in the Appendix, which includes Layout Drawings and Reference Drawings. Reference Drawings show architectural and structural details of Baker Commons. The Layout Drawings indicate particular windows to be replaced.
- C. All work under this contract shall be performed by skilled tradesmen trained in the particular area indicated by each separate task.
- D. **The CONTRACTOR shall take field measurements of existing windows and other building features as necessary for proper fit and installation of new windows and appurtenances. Sizes noted in these drawings and specifications are to be considered as approximate. The CONTRACTOR will be responsible to ensure that his windows fit properly into the existing openings. Likewise, the CONTRACTOR shall be responsible for determining the type and extent of related demolition and reconstruction of existing finishes and claddings, and temporary removals and relocations, which will be required so as to provide a complete finished installation.**
- E. The CONTRACTOR shall be responsible for coordinating the work of all trades and sub-contractors on the project.
- F. Designs for all window systems must be approved and sealed by a professional engineer licensed in the State of Michigan. Window systems must comply with the latest versions of Michigan State Building Code and International Building Code.

**1.02 EXISTING FACILITIES ACCESS**

- A. The CONTRACTOR shall be responsible for maintaining access to existing facilities for personnel, supplies and deliveries during the construction period.
- B. Access to existing facilities shall not be temporarily disrupted without coordination with and prior approval of the OWNER.

**1.03 TEMPORARY FIELD OFFICE, STORAGE AND SANITARY FACILITIES**

- A. If required by the CONTRACTOR, he shall coordinate with the OWNER for a location to setup and for use as a storage area.
- B. Existing facilities shall not be used for field offices or for storage of materials unless approved by the OWNER.

- C. The CONTRACTOR shall provide and maintain one or more portable sanitary unit(s) as required for the duration of the project. The unit(s) shall be set in a location as acceptable to the OWNER.

**1.04 CONSTRUCTION WATER**

- A. Water for construction is available from the OWNER and may be obtained from the existing facilities. The CONTRACTOR shall be responsible for providing an approved backflow prevention device if required to protect the water source and all necessary piping.

**1.05 CONSTRUCTION POWER**

- A. Electrical power to be used during construction is available from the OWNER and may be obtained from the existing facilities if use by the CONTRACTOR will not impact the OWNER's operations. The CONTRACTOR shall be responsible for providing all necessary appurtenances from the point of supply.

**1.06 NOTIFICATION OF UTILITIES**

- A. If excavation is required, before proceeding the CONTRACTOR shall notify all utilities. Information regarding size and location is available from the utility.
- B. MISS DIG - The CONTRACTORS shall contact "MISS DIG" not less than 72 hours before starting construction for assistance in locating utilities or for any work to be done on utilities. The toll free phone number is (800) 482-7171.
- C. The contractor shall coordinate with the OWNER to determine location of utilities in and on the building that may be impacted by or interfere with window replacement and related work.

**1.07 WORK SCHEDULE**

- A. The CONTRACTOR shall provide a work schedule in compliance with the OWNER's schedule and in coordination with other CONTRACTORS on site. The schedule shall be complete and shall show in detail the manner in which he proposes to complete the work under this contract.
- B. The CONTRACTOR shall submit to the OWNER and/or OWNER's REPRESENTATIVE for his approval written documentation of the proposed plan for construction. No work shall commence until the OWNER and/or OWNER's REPRESENTATIVE has approved this plan.

**1.08 CONSTRUCTION PERMITS**

- A. The CONTRACTOR will be required to follow the requirements established by all permits necessary for the construction of this project. The following is a list of all permits that must be obtained prior to the beginning of construction.
  - 1. City of Ann Arbor Building permit including all necessary trades (electrical, plumbing, mechanical, etc.).

**1.09 HAZARDOUS MATERIALS**

- A. The Baker Commons building was constructed in the early 1980's. Paint and other coatings in the building are thereby assumed substantially to be lead free. If the CONTRACTOR reasonably suspects that his personnel could come into contact with lead-based coatings or any other hazardous materials while accomplishing work per this Contract, he is to notify the OWNER before proceeding with demolition or other actions that might disturb the material.
- B. Following notification and consent of the OWNER, the CONTRACTOR, at his own expense, may conduct non-destructive spot testing of materials suspected of being hazardous. If the OWNER deems it necessary, he will hire a qualified independent testing consultant to make a determination regarding the suspected hazardous material.

**1.10 DUST AND DEBRIS CONTROL/PROTECTION OF EQUIPMENT**

- A. Dust and debris created by the demolition procedures of sawcutting, mechanical removal of concrete, routing, chipping or other demolition methods must be controlled within the facilities. The CONTRACTOR shall therefore provide dust control in the form of tarps, planks, protective truss or scaffolding systems, or other OWNER and/or OWNER's REPRESENTATIVE approved methods.
- B. Should the CONTRACTOR be negligent of his duties in providing dust and debris control, the OWNER may, with or without notice, order the CONTRACTOR to stop work, or may cause the same to be done and deduct the cost of such work from any monies due or to become due the CONTRACTOR under this Contract, but the performance of such work by the OWNER, or at his insistence, shall service in no way to release the CONTRACTOR from his liability for dust and debris control.
- C. Following the completion of demolition and repair work, the CONTRACTOR shall be responsible for the complete cleaning of the construction areas where work was performed. This shall include, but not limited to power washing, removal of debris, construction materials, dust or other construction related matter.

**1.11 PROJECT PROGRESS MEETING**

- A. It shall be the responsibility of the CONTRACTOR to have a representative project manager and foreman present at each meeting. The meetings shall be held at least once every two weeks or more frequently as directed by the OWNER and/or OWNER's REPRESENTATIVE.
- B. CONTRACTOR shall attend additional meetings for planning and coordinating critical activities such as concrete pours as needed.

**SECTION 1.51**

**SUBMITTAL PROCEDURES**

**1.51**

**1.00 GENERAL**

**1.01 SECTION INCLUDES**

- A. Submittal Procedures
- B. Certifications
- C. Shop Drawings
- D. Product Data
- E. Samples
- F. Manufacturers' Instructions
- G. Manufacturers' Field Reports
- H. Construction Schedule
- I. Submittal Schedule

**1.02 SUBMITTAL PROCEDURES**

- A. Package each submittal appropriately for shipping and handling. This shall include an index either on the transmittal or within the submittal itself. Transmit each submittal from CONTRACTOR to ENGINEER using a transmittal form. Submittals received from sources other than CONTRACTOR will be returned without action. Use separate transmittals for items from different specification sections. Number each submittal consecutively. Resubmittals should have the same number as the original, plus a letter designation for each Resubmittal (i.e. 7-A, 7-B, etc.).
- B. Indicate on the transmittal relevant information and requests for data. On the form, or separate sheet, record deviations from Contract Document requirements, including minor variations and limitations. Include CONTRACTOR's certification that information complies with Contract Document requirements. On Resubmittal, all changes shall be clearly identified for ease of review. Resubmittals shall be reviewed for the clearly identified changes only. Any changes not clearly identified will not be reviewed and original submittal shall govern.
- C. Include the following information on the label for processing and recording action taken.
  - 1. Project name.
  - 2. Date.
  - 3. Name and address of CONTRACTOR.
  - 4. Name and address of subcontractor.
  - 5. Name and address of supplier.
  - 6. Name of manufacturer.
  - 7. Number and title of appropriate specification sections.
  - 8. Drawing number and detail references, as appropriate.
- D. Schedule submittals to expedite the Project, and deliver to ENGINEER at business address. Coordinate submission of related items. Coordinate related activities that require sequential activity.
- E. Review and approve Shop Drawings, project data, and samples before submitting them.

Baker Commons Windows Replacement – ITB-4175

- F. Verify field measurements, field construction criteria, catalog numbers, and similar data. Indicate on the submission exactly what was verified.
- G. Any markings done by CONTRACTOR shall be done in a color other than red. Red is reserved for ENGINEER's marking.
- H. The number of copies to be submitted will be determined at the pre-construction conference. Reproducible may be submitted and will be marked and returned to CONTRACTOR. Blue or black line prints shall be submitted in sufficient quantity for distribution to ENGINEER and OWNER recipients.
- I. Coordinate each submittal with the requirements of the Contract Documents.
- J. Provide space for CONTRACTOR and ENGINEER review stamps.
- K. Apply CONTRACTOR's stamp, signed or initialed certifying that review, approval, verification of products required, field dimensions, adjacent construction Work, and coordination of information, is in accordance with the requirements of the Work and Contract Documents.
- L. Submit the number of copies that the CONTRACTOR requires, plus three (3) copies that will be retained by the OWNER and ENGINEER.
- M. Identify variations from Contract Documents and Product or system limitations that may be detrimental to successful performance of the completed Work.
- N. No claim will be allowed for damages or extension of time because of delays in the work resulting from rejection of material or from revision and resubmittal of Shop Drawings, project data, or samples.
- O. No extension of contract time will be authorized because of failure to transmit submittals to ENGINEER sufficiently in advance of the work to permit processing.
- P. ENGINEER reserves the right to withhold action on a submittal requiring coordination with other submittals until related submittals are received.
- Q. Do not install materials or equipment which require submittals until the submittals are returned with ENGINEER's/OWNER's stamp and initials or signature indicating approval. The OWNER shall have final approval authority.
- R. CONTRACTOR's responsibility of errors, omissions, and deviations from requirements of Contract Documents in submittals is not relieved by the ENGINEER's review.
- S. Distribute copies of reviewed submittals to concerned parties. Instruct parties to promptly report any inability to comply with requirements.
- T. Do not use Shop Drawings without an appropriate final stamp indicating action taken in connection with construction.
- U. Submittals not requested in conformance with this Specification will not be recognized or processed.

- V. Revise and resubmit as required, identify all changes made since the previous submittal.

**1.03 CERTIFICATIONS**

- A. When specified in individual specification sections, submit certification by the manufacturer, installation/application subcontractor, or the CONTRACTOR to ENGINEER, in quantities specified for Product Data.
- B. Indicate that the material or Product conforms to or exceeds specified requirements. Submit supporting reference data, affidavits, and certifications as appropriate.
- C. Certifications may be recent or previous test results of the material or product, but must be acceptable to ENGINEER.

**1.04 SHOP DRAWINGS**

- A. Shop Drawings: Submit to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Produce copies and distribute in accordance with SUBMITTAL PROCEDURES.
- B. Submit fabrication drawings and calculations specific to this project and sealed by a professional engineer licensed in the State of Michigan. The submittal shall include design calculations showing compliance with wind, seismic, thermal and other live and dead loads as specified both in these Specifications and as required by the latest versions of Michigan State Building Code or International Building Code.
- C. Submit newly prepared information, drawn to accurate scale. Highlight, encircle, or otherwise indicate deviations from the Contract Documents. Do not reproduce Contract Documents or copy standard information as the basis of Shop Drawings. Standard information prepared without specific reference to the project is not considered Shop Drawings.
- D. Shop Drawings shall include fabrication and installation drawings, setting diagrams, schedules, patterns, templates, and similar drawings. Include the following information:
  - 1. Dimensions.
  - 2. Identification of products and materials included.
  - 3. Compliance with specified loads and standards.
  - 4. Notation of coordination requirements.
  - 5. Notation of dimensions established by field measurements.
- E. Shop Drawings shall indicate shop and field painting requirements to include type of paint and manufacturer.
- F. Standard manufactured items in the form of catalog work sheets showing illustrated cuts of the items to be furnished, scale details, sizes, dimensions, quantity, and all other pertinent information should be submitted and approved in a similar manner.
- G. Measurements given on shop drawings or standard catalog sheets, as established from Contract Drawings and as approved by ENGINEER, shall be followed. When it is necessary to verify field measurements, they shall be checked and established by CONTRACTOR. The

field measurements so established shall be followed by CONTRACTOR and by all affected trades.

**1.05 PRODUCT DATA**

- A. Product Data: Submit to ENGINEER for review for the limited purpose of checking for conformance with information given and the design concept expressed in the Contract Documents. Provide copies and distribute in accordance with SUBMITTAL PROCEDURES article.
- B. Mark each copy to identify applicable products, models, options, and other data. Supplement manufacturers' standard data to provide information specific to this Project.
- C. After review distribute in accordance with the Submittal Procedures article above and provide copies for record documents.

**1.06 SAMPLES**

- A. Submit full-size, fully fabricated samples cured and finished as specified and physically identical with the material or product proposed. Samples include window glass and window pane sections. Refer also to individual specification sections.
- B. Mount, display, or package samples in the manner specified to facilitate review of qualities indicated. Prepare samples to match ENGINEER's sample. Include the following:
  - 1. Generic description of the sample.
  - 2. Sample source.
  - 3. Product name or name of manufacturer.
  - 4. Compliance with recognized standards.
  - 5. Availability and delivery time.
- C. Submit samples for review of kind, color, pattern, and texture, for a final check of these characteristics with other elements, and for a comparison of these characteristics between the final submittal and the actual component as delivered and installed.
- D. Refer to other specifications sections for requirements for samples that illustrate workmanship, fabrication techniques, details of assembly, connections, operation, and similar construction characteristics.
- E. Preliminary Submittals: Where samples are for selection of color, pattern, texture, or similar characteristics from a range of standard choices, submit a full set of choices for the material or product.
  - 1. Preliminary Submittals will be reviewed and returned with ENGINEER's mark indicating selection and other action.
- F. Except for samples illustrating assembly details, workmanship, fabrication techniques, connections, operation and similar characteristics, submit 3 sets; one will be returned marked with the action taken.

- G. Maintain sets of samples, as returned, at the site, for quality comparisons throughout the course of construction.
- H. Unless noncompliance with Contract Document provisions is observed the sample may serve as the final submittal.
- I. Sample sets may be used to obtain final acceptance of the construction associated with each set.

**1.07 MANUFACTURER'S INSTRUCTIONS**

- A. When specified in individual specification sections, submit printed instructions for delivery, storage, assembly, installation, start-up, adjusting, and finishing, to ENGINEER for delivery to OWNER in quantities specified for Product Data.
- B. Indicate special procedures, perimeter conditions requiring special attention, and special environmental criteria required for application or installation.

**1.08 CONSTRUCTION SCHEDULE**

A. Bar Chart Schedule:

1. Prepare a fully developed, horizontal bar chart type construction schedule. Submit within 30 days of the date established for commencement of the work.
2. Provide a separate item bar for each significant construction activity. Provide a continuous vertical line to identify the first working day of each week. Use the same breakdown of units of the work as indicated on schedule of values.
3. Prepare schedule of sheet, or series of sheets, of stable transparency, or other reproducible media, of sufficient width to show data for entire construction period.
4. Secure time commitments for performing critical elements of the work from parties involved. Coordinate each element on schedule with other construction activities, including the OWNER's operation of the facility and other CONTRACTORS on site; include minor elements involved in the sequence of the work. Show each activity in proper sequence. Indicate graphically sequences necessary for completion of related portions of the work.
5. Coordinate construction schedule with schedule of values, list of subcontracts, submittal schedule, progress reports, payment requests, and other schedules.
6. Indicate completion in advance of the date established for substantial completion. Indicate substantial completion of schedule to allow time for ENGINEER's procedures necessary for certification of substantial completion.

- B. Schedule Updating: Revise schedule after each meeting or activity, where revisions have been recognized or made within two weeks following the meeting or activity.

**1.09 SUBSTITUTIONS**

A. Substitution Submittal Procedure.

1. Pre-Contract (Bidding Period) Substitutions: Submit written requests ten (10) days prior to bid date.
2. Post-Contract (Construction Period) Substitutions: Submit written request in order to avoid window installation and construction delays.
3. Product Literature and Drawings: Submit product literature and drawings modified to suit specific project requirements and job conditions.
4. Certificates: Submit certificate(s) certifying substitute manufacturer (1) attesting to adherence to specification requirements for window system performance criteria, and (2) has been engaged in the design, manufacturer and fabrication of aluminum windows for a period of not less than ten (10) years. (Company Name)
5. Test Reports: Submit test reports verifying compliance with each test requirement required by the project.
6. Samples: Provide samples of typical product sections and finish samples in manufacturer's standard sizes.

B. Substitution Acceptance: Acceptance will be in written form, either as an addendum or modification, and documented by a formal change order signed by the Owner and Contractor.

**2.00 PRODUCTS**

Not Applicable

**3.00 EXECUTIONS**

**3.01 ENGINEER'S ACTION**

- A. Except for submittals for record, information or similar purposes, where action and return is required or requested, ENGINEER will review each submittal, mark to indicate action taken, and return promptly. Compliance with specified characteristics is CONTRACTOR's responsibility.
- B. Action Stamp: ENGINEER will stamp each submittal with a uniform, self-explanatory action stamp. The stamp will be appropriately marked, as follows, to indicate the action taken:
1. Final Unrestricted Release: Where submittals are marked "No Exceptions Taken" that part of the work covered by the submittal may proceed provided it complies with the requirements of the Contract Documents; final acceptance will depend upon the compliance.
  2. Final-But-Restricted Release: When submittals are marked "Make Corrections Noted" that part of the work covered by the submittal may proceed, provided it complies with notation or correction on the submittal and requirements of the Contract Documents; final acceptance will depend on that compliance.

## Baker Commons Windows Replacement – ITB-4175

3. Returned for Resubmittal: When submittal is marked “Rejected” or “Revise and Resubmit” do not proceed with the part of the work covered by the submittal, including purchasing, fabrication, delivery, or other activity. Revise or prepare a new submittal in accordance with the notations; resubmit without delay. Repeat if necessary to obtain a different action mark. Do not permit submittals marked “Rejected” or “Revise and Resubmit” to be used at site, or elsewhere where work is in progress.
4. Additional Information Needed: When submittal is marked “Submit Specified Item” CONTRACTOR shall submit requested information.
5. Other Action: Where a submittal is primarily for information or record purposes, special processing or other activity, the submittal will be returned, marked “Receipt Acknowledged”.
6. The approval of ENGINEER shall not relieve CONTRACTOR of responsibility for errors on drawings or submittals as ENGINEER’s checking is intended to cover compliance with drawings and specifications and not enter into every detail of the shop work.

END OF SECTION

**SECTION 2.03**

**SELECTIVE DEMOLITION/TEMPORARY RELOCATIONS**

**2.03**

Page 1

**1.00 GENERAL**

**1.01 DESCRIPTION**

- A. Furnish all labor, materials, tools, and equipment necessary properly to dismantle and/or remove items as required for complete installation of new windows and painting as specified. This work may include removal of such items as brick, block, mortar, thresholds, sills, drywall, caulk, etc.
- B. Work may also include temporary removal and relocation of panels, pipes, wires, conduits and other equipment.
- C. It shall be the responsibility of the CONTRACTOR to familiarize himself with the site and existing conditions so that he will include in his bid price whatever selective demolitions and/or temporary removals are required for the work as specified. In general, the cost of all selective demolition and relocation shall be included in the CONTRACTOR's unit costs.
- D. Selective demolitions and/or temporary removals shall be assumed to be included as incidental to the work of this Contract. If required, unforeseen demolitions and temporary removals will be considered for payment on a case-by-case basis only. Where additional work is advisable, it shall be the responsibility of the CONTRACTOR to notify the OWNER or OWNER's REPRESENTATIVE prior to beginning that work. No additional compensation shall be granted without prior approval by the OWNER or OWNER's REPRESENTATIVE.

**2.00 PRODUCTS**

Not Applicable

**3.00 EXECUTION**

**3.01 GENERAL**

- A. The CONTRACTOR shall exercise special precautions during construction so as not to cause harm to residents or City employees, and not to damage the existing building. The CONTRACTOR shall confine his demolition to only the minimum required for the specified work. Protection of the existing facilities and occupants, interior and exterior, and the property of building residents, from harm or damage shall be the sole responsibility of the CONTRACTOR.
- B. No construction equipment with tractor lugs or other defacing or damaging components will be permitted on sidewalks, driveways or streets surfaces. Where it is necessary for such equipment to travel over paved areas, the CONTRACTOR shall provide suitable planks and blocking to prevent damaging paved surfaces.
- C. All demolished and broken pieces of window units, masonry, drywall, or other debris shall be removed from the work site and disposed of by the CONTRACTOR at his expense.

- D. CONTRACTOR shall erect all necessary protection prior to beginning demolition.
- E. Coordinate the work of this Section with that of all other trades so that all work can be conducted in proper sequence without interference from other trades. Complete the work of this Section so that systems and components remaining after demolition are left unprotected for as short a time as possible.

**3.02 BRICK AND MASONRY**

- A. Brick and masonry shall be carefully cut out to prevent damage to adjoining masonry or other structures. Sawcutting or routing out of mortar joints shall follow the existing joints so new masonry units can be toothed into old.
- B. Any reinforcement encountered shall not be cut out, but shall be left protruding from the face of the cut and shall be bent out of the way to be replaced later and spliced to new reinforcement.
- C. Protect wall cavities from weather, collection of debris or other damage.

**3.03 DRYWALL**

- A. Drywall shall be square cut and removed as required. Edges shall be straight and true so as to facilitate repair of remaining drywall.
- B. Edges of remaining drywall shall be protected to prevent damage before or during installation of new windows. Protect wall cavities from collecting dust or debris, or other damage.

**3.05 TEMPORARY REMOVAL AND REINSTALLATION**

- A. Demolition activities may require the temporary removal and relocation of miscellaneous items such as electrical panels, conduit, conductors, lighting, ladders, supports, mounts or other items.
- B. CONTRACTOR shall be responsible for familiarizing himself with the site and the specific conditions of the work areas.
- C. CONTRACTOR shall be responsible for all the temporary removal and reinstallation of such items to facilitate the repair work. All items removed for later reinstallation shall be carefully protected from any sort of damage from weather, vandalism, theft, etc. All equipment and removal locations shall be protected so as to prevent injury to residents, employees or the public.
- D. Only workers qualified in the specific trade may remove and relocate specialty items such as electrical disconnects, gas meters, utility sending units and so forth.

END OF SECTION

**SECTION 4.01**

**MORTAR AND GROUTING**

**4.01**

Page 1

**1.00 GENERAL**

**1.01 DESCRIPTION**

A. Furnish and install all mortar and grouting specified herein. The work of this Section includes:

1. Mortar for unit masonry repair.

B. Related work that is not a part of this Section and is specified elsewhere includes:

Masonry Accessories	Section 4.02
Unit Masonry	Section 4.03
Masonry Restoration	Section 4.06

**1.02 QUALITY ASSURANCE**

A. Use skilled workmen who are familiar with the type of construction, materials, and techniques required.

B. When required by local ordinance or by the ENGINEER, prepare grout cylinders for strength testing, and test them to verify compliance with these Specifications.

**1.03 SUBMITTALS**

A. Prior to beginning masonry work, submit product literature on portland cement, lime and masonry cement to indicate compliance with the Specifications.

**2.00 PRODUCTS**

**2.01 MORTAR**

A. In general, mortar shall be approved on a site-specific basis. New mortars must be made to match the existing mortar in appearance, texture, hardness and permeability.

B. For use in constructing brick veneer work, provide mortar conforming to ASTM C270, Type S.

C. For use in constructing all other masonry work without steel bar masonry reinforcing, provide mortar conforming to ASTM C270, Type S.

D. For use in constructing masonry work with steel bar masonry reinforcing, provide mortar conforming to ASTM C476.

E. For all mortar in exposed-to-view brick surfaces, provide mortar tinting additive as manufactured by Solomon Grind-Chem Service, Medusa Cement Co., or equally established manufacturer to achieve a color compatible with adjacent existing brickwork where applicable).

## Baker Commons Windows Replacement – ITB-4175

- E. Where Portland cement is called for as a mortar constituent, use Portland cement conforming to ASTM C150 or air entraining Portland cement conforming to ASTM C175.
- F. Where masonry cement is called for as a mortar constituent, use prepared masonry cement conforming to ASTM C91, Type II.
- G. Where lime is called for as a mortar constituent, use lime conforming to ASTM C207 Type S.
- H. Where sand is called for as a "mortar constituent" use clean, natural bank sand conforming to ASTM C144. For joints less than 1/4 inch, use aggregate in which 100% passes the No. 16 sieve.
- I. Where water is called as a mortar constituent, use potable water.
- J. The use of calcium chloride or admixtures containing calcium chloride will not be permitted in mortar.

### **2.02 STORAGE AND PROTECTION**

- A. Store and protect all materials against weather and moisture damage prior to use.

### **3.00 EXECUTION**

#### **3.01 GENERAL**

- A. Installation of mortar in conjunction with unit masonry is described in Section 4.03. Additional special requirements are specified herein.

#### **3.02 SURFACE CONDITIONS**

- A. Prior to work of this Section, inspect the work of all other trades to insure that all such work is complete to the point that this installation may properly commence. Installation of mortar and/or grout shall indicate acceptance of surfaces conditions.

#### **3.04 CLEANING UP**

- A. Upon completion of the work of this Section, remove mortar stains, splatter and drippings, and brush masonry to remove loose mortar and stains.
- B. Use only plain water or, if approved by OWNER or ENGINEER, mild detergents for cleaning existing masonry.

#### **3.04 COORDINATION**

- A. Coordinate the work of this Section with the work of all other trades.

END OF SECTION

**SECTION 4.02**

**MASONRY ACCESSORIES**

**4.02**

Page 1

**1.00 GENERAL**

**1.01 DESCRIPTION**

- A. As the work of this Section, furnish and install vertical and horizontal masonry reinforcing, masonry anchors and ties as necessary for a complete masonry repair.
- B. Related work that is not a part of this Section and is specified elsewhere includes:

Mortar and Grouting	Section. 4.01
Unit Masonry	Section. 4.03
Masonry Restoration	Section 4.06

**1.02 STORAGE AND HANDLING**

- A. Protect all masonry reinforcing against weather and rust so that it is clean and free of scale, dirt, rust, and other materials which would prevent the reinforcing from bonding with mortar or grout.
- B. Handle precast concrete units so as to prevent breakage, cracking, spalling, chipping, or other damage. Replace all units damaged during construction.

**2.00 PRODUCTS**

**2.01 MASONRY ANCHORS FOR BRICK**

- A. Adjustable Screw-on Anchor Straps
  - 1. Adjustable screw-on anchor straps shall be 12 gauge metal x 7/8" wide x 6 1/2" long. Overall projection of the strap from the backing wall face shall not exceed 3/8". Adjustable anchor straps shall be equivalent to Heckmann #315-C.
  - 2. Ties shall be 3" triangular made of 3/16" wire and shall be equivalent to Heckmann #316 triangle ties.
  - 3. Ties and anchor straps shall be 304 stainless steel.
  - 4. Sheet metal anchors and ties shall meet ASTM A 167 AISI Type 304; plate and bent bar anchors shall meet ASTM A 666 AISI Type 304; wire ties and anchors shall meet ASTM A 580 AISI Type 304.
  - 5. Ties shall be attached to backing material with 410 stainless steel Tapcon hex head self threading screws. Screw length shall be 2 3/4"; diameter shall be 3/16".

B. Dovetail Triangular Anchors

1. Dovetail triangular anchors shall be 12 gauge metal with a 1" wide clip. Ties shall be 3" triangular made of 3/16" wire. Anchor straps with ties shall be equivalent to Heckmann #103.
2. Anchor straps and ties shall be 304 stainless steel.
3. Sheet metal anchors and ties shall meet ASTM A 167 AISI type 304; plate and bent bar anchors shall meet ASTM A 666 AISI Type 304; wire ties and anchors shall meet ASTM A 580 AISI type 304.
4. Ties shall be attached to backing material with 410 stainless steel Tapcon hex head self threading screws. Screw length shall be 2 3/4"; diameter shall be 1/4".

**2.02 WEEP-HOLE WICKS**

- A. Furnish wicks for weep-holes made from wax coated cotton sash-cord, to match existing.

**3.00 EXECUTION**

**3.01 INSTALLATION OF REINFORCING**

- A. Install all reinforcing in conjunction with the work of Section 4.03 - Unit Masonry. Follow specification requirements indicated in that Section. Additional special requirements are specified herein.
- B. Unless otherwise indicated on the Drawings, install wire gauge masonry reinforcing for brick veneer in the following manner. Provide at least one tie for each 2-2/3 sq ft of wall area. Install ties in rows with a maximum spacing between ties of 24 inch both horizontally and vertically. Embed ties at least 2 inches into the bed joints of the veneer. Attach reinforcing anchors through the sheathing to structural framing members.
- C. Install wire gauge reinforcing so that it is completely embedded in mortar or grout. Joints with wire gauge reinforcing shall be at least twice the thickness of the reinforcing. Where continuous wire gauge reinforcing is called for, lap reinforcing and install corner and intersection assemblies to provide complete reinforcement of the entire horizontal masonry joint at that elevation. Tie corner reinforcing units to straight wall units.

**3.02 INSTALLATION OF MASONRY ANCHORS**

- A. Repaired sections of masonry shall be tied to the existing backing at a maximum spacing of 32" o/c horizontal and 16" o/c vertical. For repair areas smaller than 32" w x 16" h, at least two ties shall be used.
- B. At a minimum, masonry ties shall be installed as per ACI 530.

**3.03 INSTALLATION OF WEEP-HOLE WICKS**

- A. Install weep-hole wicks as directed in Section 4.03 of these Specifications.

END OF SECTION

**SECTION 4.03**

**UNIT MASONRY**

**4.03**

Page 1

**1.00 GENERAL**

**1.01 DESCRIPTION**

- A. Furnish and install all unit masonry as required to make repairs as necessary. The work of this Section includes:

Supplying and laying up all masonry units.  
Placing all vertical and/or horizontal reinforcing specified in Section 4.02.

- B. Related work that is not a part of this Section and is specified elsewhere includes:

Mortar and Grouting	Section 4.01
Masonry Accessories	Section 4.02
Masonry Restoration	Section 4.06
Miscellaneous Metals	Section 5.05

**1.02 GOVERNING STANDARDS**

- A. Conduct the installation of brickwork so as to conform to ANSI A41.1 "Building Code Requirements for Masonry". This ANSI specification shall be considered as part of this Specification except as specifically modified herein.

**1.03 SUBMITTALS**

- A. Prior to delivery of masonry units to the project site, submit a letter from the manufacturer of the masonry units certifying that masonry units to be delivered are in strict conformance with these Specifications.
- B. Prior to delivery of face brick to the project site, submit sample panels that indicate the color, range and texture of proposed face brick for review by the OWNER and ENGINEER (brick will be selected by the CONTRACTOR to match adjacent existing brickwork where applicable).
- C. Prior to submitting proposed face brick, CONTRACTOR shall clean a 5 feet by 5 feet section of existing brick for accurate match. Cleaning shall be with a low or moderate pressure water wash with a mid non-ionic detergent additive. Do not clean limestone, if present.

**1.04 PRODUCT HANDLING**

- A. Use all means necessary to protect the materials of this Section from damage prior to installation. Store masonry materials on platforms above ground and cover with weatherproof tarps to keep dirt and water away from the masonry materials.
- B. Organize masonry unit stockpiles so that units with differing compressive strength are stored separately. Mark each stack of masonry units with a tag indicating the compressive strength of the units in the stack.

**2.00 PRODUCTS**

**2.01 FACE BRICK**

- A. Provide face brick meeting the requirements of ASTM C216 for grade SW, type FBS units.
- B. Provide brick that is dimensionally equivalent to the existing brick.
- C. Where the top or bottom of brick will be exposed to the weather or view in the completed work, furnish solid non-cored brick for these locations.

**3.00 EXECUTION**

**3.01 GENERAL**

- A. Provide one skilled journeyman mason who shall be present at all times during execution of the work of this Section and who shall personally direct the execution of this portion of the work.
- B. Prior to beginning the erection of unit masonry, carefully inspect the installed work of all other trades to verify that all such work is complete to the point that masonry work may properly commence. During erection of masonry work, build into completed work all those items of other trades that are indicated or specified elsewhere as being installed with the masonry.

**3.02 MASONRY ERECTION**

- A. Lay up fluted block walls in stack bond. Lay up all other walls in running bond. Lay up all walls with horizontal joints level and the walls plumb and true to the existing lines. Align vertical joints of alternate courses, align scored joints with natural head joints above and below where a stacked bond appearance is indicated, and align all cores to be filled. Cross bond corner joints. Do not use chipped or broken masonry units. Remove any damaged units discovered in the finished work and replace with new units. Place all units with completely filled bed and cross joints using mortar specified in Section 4.01.
- B. Install vertical and/or horizontal reinforcing as the masonry work progresses. Follow Section 4.02 requirements. Tie lapping steel bars or provide adequate spacing between bars. Support all bars to provide minimum clearances specified in Section 4.01. Install lowest course masonry units to maintain vertical joints but to provide clean-out openings for cores to be filled. Before grouting, clean debris out of cores through the clean-out openings and place temporary formwork over them. Proceed with grouting.
- C. Tool all joints to a smooth, dense finish. On interior exposed-to-view masonry wall faces and on exterior brick and flush face block wall faces, use concave joints with excess mortar struck off the masonry face.
- D. Prior to placement in the work, wet brick units that have a water absorption rate in excess of 20 grams /sq in./minute as determined by ASTM C67. Wet brick as necessary to that absorption is reduced to this specified rate.

- E. Provide weep holes in cross joints of the first course of exterior brickwork immediately above all flashing. Accomplish this by placing weep-hole wick for full thickness of masonry facing units. Space weep holes approximately 24 inches apart.
- F. Where air space is indicated in composite wall construction, keep the cavity between materials clean of mortar and debris. Where solid composite wall construction is indicated, completely fill all voids by parging or pouring the vertical joint full of grout.

### **3.03 COLD WEATHER MASONRY CONSTRUCTION**

#### **A. General**

- 1. When the mean daily temperature falls below 40°F, follow the cold weather requirements specified below. Prior to implementation of these procedures, conduct a meeting of all involved parties to detail the practical institution of these requirements.

#### **B. Preparation**

- 1. On bearing surfaces covered with ice or snow, apply heat to surfaces until surfaces are dry. Remove previously installed masonry damaged due to cold weather.

#### **C. Special Construction Requirements**

- 1. Install dry masonry units that are at least 20°F. If reviewed by the ENGINEER, use Type III Portland cement and/or mortar admixtures to attain early mortar setting. Use mortar at a temperature of between 40°F and 120°F. If possible, use 70°F mortar. Mix mortar so that successive batches vary in temperature by no more than 30°F.
- 2. Air temperature 40°F to 32°F: heat sand or mixing water to achieve specified mortar temperature at point of use.
- 3. Air temperature 32°F to 25°F: heat sand and mixing water to at least 70°F prior to mixing. Provide auxiliary heat to mortar boards as necessary to ensure specified mortar temperature at point of use.
- 4. Air temperature 25°F and below: heat sand and mixing water to at least 70°F prior to mixing. Provide continuous auxiliary heat to mortar boards to ensure specified mortar temperature at point of use.

#### **D. Special Protection Requirements**

- 1. Mean daily temperature 40°F to 32°F: protect masonry from rain, snow, and freezing by covering. Use plastic or canvas tarps.
- 2. Mean daily temperature 32°F to 20°F: protect masonry from rain, snow and freezing by covering within 2 hours of mortar application. Maintain masonry above freezing for 24 hours by using auxiliary heat or insulated blankets. With wind velocities over 15 mph provide windbreaks.
- 3. Mean daily temperature 20°F and below: construct enclosures and supply sufficient heat to maintain masonry enclosure above 32°F for 24 hours.

**3.04 PROTECTION OF CONSTRUCTION**

- A. Cover the tops of all walls not enclosed or sheltered using a strong weather-resistive material at the end of each day.
- B. Cover partially completed walls at all times when work is not in progress. Drape cover over the wall and extend a minimum of 2 ft. down both sides. Hold securely in place.
- C. Provide temporary bracing of all walls until they are securely braced by permanent construction.

**3.05 CLEANING**

- A. Upon completion of work, remove mortar stains, splatter and drippings, and brush all masonry to remove loose mortar and stains. Use only water or, if approved by OWNER or ENGINEER, a mild detergent, for cleaning existing masonry.
- B. After cleaning, inspect all masonry work for incomplete workmanship. Point-up joints as required to achieve complete bonding and continuously smooth mortar joints.
- C. As directed by the ENGINEER, patch and repoint work damaged by other trades.

END OF SECTION

**SECTION 4.06**

**MASONRY RESTORATION**

**4.06**

Page 1

**1.00 GENERAL**

**1.01 SUMMARY**

A. This section includes the following:

1. Cut out, replace and repoint all damaged masonry units and joints as required for replacement of windows.
2. Remove cracked or displaced brick and replace with new brick.

B. Restore wall construction in kind to match existing. Deviations will be permitted only as approved by the OWNER and/or OWNER's REPRESENTATIVE.

C. Related work that is not a part of this Section and is specified elsewhere includes:

Mortar and Grouting	Section 4.01
Masonry Accessories	Section 4.02
Unit Masonry	Section 4.03

**1.02 INTENT**

A. To provide a sound and watertight building shell utilizing repair methods and materials that are compatible with the physical characteristics of the existing materials and which visually blend with the surrounding materials when viewed from twenty (20) feet.

B. CONTRACTOR shall provide a minimum of three (3) brick samples for OWNER selection to match existing brick.

**1.03 QUALITY ASSURANCE**

A. Masonry restoration specialist: Work shall be performed by a firm having not less than ten (10) years successful experience in comparable masonry restoration projects and employing personnel skilled in the processes and operations indicated and required.

B. CONTRACTOR shall submit a written Quality Control and Restoration Program to the OWNER and/or OWNER's REPRESENTATIVE for review. The descriptions shall cover all means and methods proposed by the CONTRACTOR.

C. Field – Constructed Mock-Ups: Prior to start of general masonry restoration, prepare the following mock-ups on building surfaces where directed by OWNER and/or OWNER's REPRESENTATIVE. Obtain OWNER and/or OWNER's REPRESENTATIVE's acceptance of visual qualities before proceeding with the work. Mock-ups will be used to measure standard of workmanship, finish, texture, color and qualifications of workman. Repeat mock-up procedure as required until OWNER and/or OWNER's REPRESENTATIVE's acceptance is obtained. Protect and mark acceptable mock-ups, retain in undisturbed condition during construction to be used as a standard for judging completed work.

1. Repointing:
  - a. Brick: One mock-up demonstrating cutting out of mortar joints. One sample for demonstrating the color of the mortar, tooling and finishing of the joints. Each sample shall be ten (10) square feet.
  - D. Any joints that develop hairline cracking, become unbonded, are friable after 28 day cure period, or are otherwise defective in the opinion of the OWNER and/or OWNER's REPRESENTATIVE shall be cut out and repointed at no cost to the OWNER.

#### **1.04 SUBMITTALS**

- A. Samples: Submit prior to mock-up samples for inspection by the OWNER and/or OWNER's REPRESENTATIVE of each type of brick, lime, cement, aggregate, grout, adhesive, patching material, sealant, flashing and colorant proposed for use. Provide unopened container of each material with manufacturer's original labeling. Also submit samples of each type of attachment anchor proposed for use.
  1. All brick for repairs shall be new brick.
- B. Product data: Submit manufacturer's technical data and Materials Safety Data Sheet for each product specified or proposed for use including recommendations for their application and use.
- C. Field measurements: The CONTRACTOR shall take all necessary field measurements prior to fabrication and installation of work and shall assume complete responsibility for accuracy of same.
- D. CONTRACTOR shall submit written Quality Control and Restoration Program. Refer to Paragraph 1.03 Quality Assurance, B.

#### **1.05 DELIVERY, STORAGE AND HANDLING**

- A. Deliver materials to site in manufacturer's original and unopened containers and packaging, bearing labels as to type and names of products and manufacturers. Store materials only in designated areas.
- B. Protect materials during storage and construction. Keep containers tightly closed and away from open flames. Protect liquid components from freezing. Comply with manufacturer's recommendations for minimum and maximum temperature requirements for storage. Store materials only in areas designated by the OWNER.
- C. Deliver materials at such time as to assure continuity of installation. Store and handle units at project site or staging area with care to prevent chipping, cracking, distortion, warping, staining or other damage.

#### **1.06 PROJECT CONDITIONS**

- A. Prevent mortar, coating from staining surrounding masonry. Remove any spill immediately. Protect sills, ledges and other projections from mortar droppings by coating with sand. No spills shall be permitted to remain at the end of each work day.

- C. Protect all new mortar from contact with rain for 24 hours. Cover work at end of each day and whenever work is not in progress. Extend waterproof covers securely over work area.
- D. Protect persons, motor vehicles, all building surfaces including but not limited to roofing and flashing, walls, parapets and doors and related fixtures, signs, light standards, all metals, fittings and equipment of the building and building site, sidewalks, landscaping and related materials from damage. Protect landscaping at this building and site.
  - 1. In the event of damage, make all repairs and replacements necessary to the approval of the OWNER and/or OWNER's REPRESENTATIVE and at no additional cost to the OWNER.
- E. Shore as required to complete the work and protect all masonry to remain. Removal and rebuilding shall be done in limited sections so as not to compromise in any way the structural stability of the building. Provide temporary watertight protection to all open work areas. CONTRACTOR shall provide a work plan detailing the staging of the work and other measures to protect the building and adjacent areas.

## **2.00 PRODUCTS**

### **2.01 MORTAR MATERIALS**

In general, mortar for repointing shall be made to be as soft as or softer than the existing mortar points and shall have the same permeability as the surrounding mortar. Aggregate of new mortar shall be matched to the surrounding mortar.

- A. Portland Cement, Type I ASTM C 150, Portland Cement. Cement shall comply with ASTM C 91, not more than 0.30% water soluble alkali.
- B. Hydrated Type S Lime for Masonry Purposes, ASTM C207. Air entrained lime shall not be used.
- C. Mortar Aggregate: Well-graded sharp bagged mason's mortar sand, ASTM C 144.
- D. Water shall be clean and free from deleterious materials. Only potable water may be used.
- E. Mortar pigments to match color of the original mortar. Measurements of pigments shall be accurate and a record shall be made of exact amount of pigment added to each approved mix.
- F. Mortar of reconstructed areas shall be made to match that of the adjacent repointing work. The mortar types and mixes for particular areas shall be proposed by the CONTRACTOR and approved by the OWNER and/or OWNER's REPRESENTATIVE.

### **2.02 MASONRY UNITS**

- A. Brick: Provide new brick. Match colors of the original brick. Submit a minimum of three (3) samples for review and selection.

**2.03 SEALANT/CAULK**

- A. One-part polyurethane: Tremco Dymonic or equal color to match existing. Coat exposed sealant at masonry joints with mortar sand before sealant sets. Prime all brick surfaces prior to caulking.

**2.04 CLEANERS**

- A. Excess mortar remover: Sureklean 101, SureKlean VanaTrol – ProSoCo; NMD80 – EaCo Chem; Hydroclean 455 – Hydrochemical Techniques.

**3.00 EXECUTION**

**3.01 INSPECTION AND ACCEPTANCE**

- A. Examine all surfaces and contiguous elements to receive work of this section and correct, as part of the Work of the Contract, any defects affecting installation. Commencement of work will be construed as complete acceptance of working conditions.

**3.02 MASONRY REPOINTING**

A. Joint Preparation:

- 1. All mortar in the work area shall be cut back to a depth of at least  $\frac{3}{4}$ ", 2 and one half times the width of the joint or to sound mortar, whichever is greater. Care must be taken to avoid damage to the masonry units and to prevent widening of joints. Back of the joint shall be cut square. Remove any sealants, or other non-mortar joint filler; remove all trace of sealant, etc. to assure bond. All loose material shall be washed from the joints using a hose. Joints shall be wetted before the new mortar is applied.

B. Mortar Preparation and Mixing:

- 1. The lime, cement and sand should be carefully measured and well mixed together dry. Any pigment should be added in measured quantities and well dispersed into the other materials. Mortar shall be mixed in small batches so that it will be used within one hour after preparation.

C. Mortar Proportions for repointing and rebuilding shall be as approved. Color, texture and composition to match existing.

1. Mortar Proportions for Type S (repointing):

- 1 Part by volume Portland Cement
- 1 Parts by volume Lime
- 6 Parts by volume sand, as measured damp. If dry sand is used, compensate volume for expansion.

2. Other mixes shall be as approved.

## Baker Commons Windows Replacement – ITB-4175

- D. Joint Filling: Mortar should be packed in thin layers, not exceeding ½". Compact and allow each layer to become thumbprint hard before installation of new lift. Filled joints should be tooled to match the original joint profile. No mortar shall extend onto the face of the units.
- E. Damp Cure Mortar: Mist mortar for at least 4 hours after tooling. In windy or hot weather, perform cure procedures to ensure that mortar does not cure excessively fast.
- F. Clean-up excess mortar at all areas repointed or rebuilt. Excess mortar should be removed from the surface before it sets using a bristle brush or by rubbing the surface with burlap or clean sand. Dried mortar shall be removed with chemical mortar remover.

### **3.03 REBUILDING MASONRY**

- A. Cracked and Displaced Brick: Where shown on the Drawings, remove and replace cracked and displaced brick with new brick. Reset all areas where loose bricks are uncovered during repointing operations. Finish tool and rebuilt work to match original joint detail and to blend fully with adjoining areas. No overcutting of brick shall be permitted. All new brick shall be toothed into existing sound brick.
- B. Type S mortar shall in general be used for rebuilding masonry.

END OF SECTION



- B. Provide metal stud partition components that all have been galvanized.
- C. Provide all necessary fasteners to ensure complete assemblies ready to receive drywall facings and all superimposed loads. Use fasteners that have been plated or galvanized to prohibit rusting.

**2.02 GYPSUM DRYWALL CEILING SUSPENSION SYSTEM COMPONENTS**

- A. Furnish main runners, cross runners, structural struts, perimeter wall angles, prestretched hanger wire and all other necessary components to construct a complete suspended ceiling support system. Provide components that will collectively result in a "heavy duty" structural classification and will meet all additional requirements defined in ASTM C635. Furnish components that have a galvanized finish.
- B. Furnish Chicago Metallic Corp. 640 System components, Donn Corp. Drywall Suspension System components, National Rolling Mills Inc. CER 8000 components, or equal components of an equally established manufacturer.

**3.00 EXECUTION**

**3.01 CLEAN UP**

- A. Following installation of metal framing, remove all debris and extra material and discard offsite.

END OF SECTION

**SECTION 8.03**

**ALUMINUM FRAME WINDOWS**

**8.03**  
Page 1

**1.00 GENERAL**

**1.01 RELATED DOCUMENTS**

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

**1.02 SUMMARY**

- A. Section Includes: Kawneer Architectural Aluminum Window Systems, including perimeter trims, stools, accessories, shims and anchors, and perimeter sealing of window units.
  - 1. Types of Kawneer Aluminum Window Systems include:
    - a. Trifab® 451UT Window System – 2" x 4-1/2" (50.8 mm x 114.3 mm) nominal dimension; Thermal; Center Plane, Screw Spline Fabrication.

**1.03 DEFINITIONS**

- A. Definitions: For fenestration industry standard terminology and definitions refer to American Architectural Manufacturers Association (AAMA) – AAMA Glossary (AAMA AG).

**1.04 PERFORMANCE REQUIREMENTS**

- A. General Performance: Aluminum-framed window system shall withstand the effects of the following performance requirements without exceeding performance criteria or failure due to defective manufacture, fabrication, installation, or other defects in construction. Windows shall conform to the latest edition of applicable Michigan Building Codes and International Building Codes:
  - 1. Design Wind Loads: Determine design wind loads applicable to the Project from basic wind speed indicated in miles per hour, according to ASCE 7, Section 6.5, "Method 2- Analytical Procedure," based on mean roof heights above grade indicated on Drawings, or based on 90 mph, whichever is greater. Importance Factor (IF) and Exposure Category (EC) shall be according to the latest Michigan and International Building Codes, or shall be IF = II; EC = B; whichever is more stringent.
- B. Aluminum Frame Window Performance Requirements:
  - 1. Wind loads: Provide window system; include anchorage, capable of withstanding wind load design pressures inward and outward. The design pressures are based on the Building Code; latest Edition.
  - 2. Air Infiltration: The test specimen shall be tested in accordance with ASTM E 283. Air infiltration rate shall not exceed 0.06 cfm/ft<sup>2</sup> (0.3 l/s • m<sup>2</sup>) at a static air pressure differential of 6.24 psf (300 Pa).
  - 3. Water Resistance: The test specimen shall be tested in accordance with ASTM E 331. There shall be no leakage at a minimum static air pressure differential of 10 psf (479 Pa) as defined in AAMA 501.
  - 4. Uniform Load: A static air design load of 30 psf (1436 Pa) shall be applied in the positive and negative direction in accordance with ASTM E 330. There shall be no deflection in excess of L/175 of the span of any framing member. At a structural test load equal to 1.5

