



**MAINE DEPARTMENT OF  
INLAND FISHERIES AND WILDLIFE**

**ADDENDUM NO. 2**

**08-JUL-24**

TO THE SPECIFICATIONS, PROPOSAL, CONTRACT AND BOND  
FOR THE CONSTRUCTION OF

**PHASE III FACILITY CONVERSION AT NEW GLOUCESTER STATE FISH HATCHERY**

**NEW GLOUCESTER, MAINE**

**CUMBERLAND COUNTY**

BGS PROJECT NO.: 3289-312



<b>SUBJECT:</b>	<b>ADDENDUM NO. 2</b>
<b>PROJECT:</b>	Phase III Facility Conversion at New Gloucester State Fish Hatchery
<b>TO:</b>	Richard Parker - DIFW
<b>FROM:</b>	Andrew Gurski – HDR

This Addendum is issued to known individuals, firms or corporations holding Bidding Documents and Contract Documents for above listed project.

The pre-bid conference was held on **Friday, June 21, 2024**. The sign-in list is attached below.

This Addendum is hereby made a portion of Bidding Documents and Contract Documents.

**PART 1 - QUESTIONS AND ANSWERS**

- QUESTION:** What is the connection detail for the fiberglass grating at the walls at the Effluent Treatment Building? No details shown.  
**ANSWER:** Grating shall be attached to walls per detail 5/00S-101  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Thu 6/27/2024 03:58
- QUESTION:** There are channel supports (C8x13.7) shown to provide the openings in the fiberglass grating at the Effluent Treatment Building but no structural details for this. What is the intent here?  
**ANSWER:** The channels support the fiberglass grating over the drum filter pit. Channels shall be attached to the concrete walls per detail 3/00S-101. Channel to channel connections shall be per detail 5/00S-103.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Thu 6/27/2024 03:58
- QUESTION:** The specification call for 6” waterstops but the plans indicate 4”. Which is it?  
**ANSWER:** Question to be followed up with next addendum.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Thu 6/27/2024 05:25
- QUESTION:** There are different waterstop products depending on joint type. What is the footing to wall joint considered as a joint type with regard to waterstop?  
**ANSWER:** Question to be followed up with next addendum.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Thu 6/27/2024 05:25
- QUESTION:** Can the specified preformed strip type waterstop be used in lieu of the pvc type?  
**ANSWER:** Question to be followed up with next addendum.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Thu 6/27/2024 05:25
- QUESTION:** The wall sections on 04S-302 show “rigid insulation with architectural wall finish” over the CMU exterior walls. The exterior elevations on 04A-101 show exterior walls as CMU. Please clarify the exterior wall required materials system.  
**ANSWER:** Question to be followed up with next addendum.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Thu 6/27/2024 11:09



- 7. QUESTION:** The exterior gable walls have no reference to exterior wall requirements above the CMU walls. Please clarify the wall requirements at this condition.  
**ANSWER:** Question to be followed up with next addendum.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Thu 6/27/2024 11:09
- 8. QUESTION:** There is no door schedule for the exterior door 13 at the Effluent Treatment Building. Please provide.  
**ANSWER:** Question to be followed up with next addendum.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Thu 6/27/2024 11:28
- 9. QUESTION:** There is a specification section 08 15 00 Fiberglass Reinforced Plastic (FRP) Doors And Frames. What doors does this spec section pertain to?  
**ANSWER:** Question to be followed up with next addendum.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Thu 6/27/2024 11:28
- 10. QUESTION:** Do the radiused walls for the clarifier and sludge treatment structures need to be true radiused formed concrete walls or they be segmented? Same question for the footings.  
**ANSWER:** The clarifier and sludge storage tank walls shall be true radiused walls.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Fri 6/28/2024 13:11
- 11. QUESTION:** Are we to carry a utility allowance for CMP to do their work or is the state paying for this direct and we need to coordinate?  
**ANSWER:** Per General Note #1: The contractor shall include in his bid the amount of \$15,000 for payment to the utility for the new electric service.  
**SOURCE:** Tyler Coffin [tyler@dotens.com](mailto:tyler@dotens.com) Mon 7/1/2024 12:03
- 12. QUESTION:** There is a Note 7 between columns 2 & 3 on the 'A' line indicating interior steel bollards . Are there in fact 2 steel bollards at this location or is this an erroneous note?  
**ANSWER:** This note is in error. Disregard note 7 and the two bollards shown a grid A between grids 2 and 3.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Mon 7/1/2024 11:05
- 13. QUESTION:** The Effluent Building Roof Framing Plan drawing 04S-103 indicates ½" plywood roof sheathing. The section A/04S-303 indicates 5/8". Which is correct?  
**ANSWER:** Roof sheathing shall be ½" as shown on sheet 04S-103.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Mon 7/1/2024 13:24
- 14. QUESTION:** Would it be possible to extend the Bid Opening 3 weeks to allow more time for Sub-Contractors and Suppliers to prepare their pricing. Many Subs and suppliers have just learned of the Preoject. Several people I talked to had planned 4th of July Vacation weeks.  
**ANSWER:** The Bid Date has been extended to Thursday, August 15, 2024. See Part 2 of this Addendum.  
**SOURCE:** Jeff Todd [Jeff@apex-constructioninc.com](mailto:Jeff@apex-constructioninc.com) Mon 7/1/2024 15:06
- 15. QUESTION:** There is a specification section 07 13 26 Self-Adhering Sheet Membranr Waterproofing. Where is this being used?  
**ANSWER:** Question to be followed up with next addendum.  
**SOURCE:** Joe LaRose [ilarose@gannestonconstruction.com](mailto:ilarose@gannestonconstruction.com) Tue 7/2/2024 07:43



**16. QUESTION:** The metal siding spec in Division 7 calls for insulated metal panel siding. Is this the correct product to be used at the Effluent Treatment Building & the Storage Building?

**ANSWER:** Question to be followed up with next addendum.

**SOURCE:** Joe LaRose [jarose@gannestonconstruction.com](mailto:jarose@gannestonconstruction.com) Tue 7/2/2024 08:10

**17. QUESTION:** Please confirm the style of flowmeters needed for LHO & tanks? Drawings & schedule show flowmeter on a single bracket while written specs in section 40 20 50, 2.3- E, state to Provide meters sturdily mounted in UV stabilized FRP enclosures with stainless steel hinges and lockable latches, not necessarily by meter manufacturer. Which one should it be?

**ANSWER:** See Part 2 of this Addendum.

**SOURCE:** Constance Beaulaton [constance.beaulaton@innovasea.com](mailto:constance.beaulaton@innovasea.com) Tue 7/2/2024 16:13

**18. QUESTION:** Please confirm wing wall length for New Gloucester drums: drawing 04S-102 shows a length of 4'-8 3/8" while the schedule summary on drawing 00D-603 lists 4'6". Which one should it be?

**ANSWER:** See Part 3 of this Addendum.

**SOURCE:** Constance Beaulaton [constance.beaulaton@innovasea.com](mailto:constance.beaulaton@innovasea.com) Tue 7/2/2024 16:13

**19. QUESTION:** The Clarifier stair pad detail on 04S-304 indicates 8" thick. The typical stair pad detail on drawing 00S-103 shows 10". Which is correct?

**ANSWER:** The stair pad thickness shall be 10" as shown on typical detail 00S-103. Disregard the 8" thickness shown on 04S-304.

**SOURCE:** Joe LaRose [jarose@gannestonconstruction.com](mailto:jarose@gannestonconstruction.com) Wed 7/3/2024 07:12

## PART 2

### 20. DIVISION 00 - PROCUREMENT AND CONTRACTING REQUIREMENTS

#### a. SECTION 00 11 13 - NOTICE TO CONTRACTORS

- i. **REPLACE:** Part 1: Update Bid Date – Thursday, August 15, 2024.
- ii. **REPLACE:** Part 3: Update Question and Comments – Thursday, August 08, 2024

### 21. DIVISION 40 - PROCESS INTERCONNECTIONS

#### a. SECTION 40 20 50, Part 2.3, E.:

- i. **REPLACE:** "in UV stabilized FRP enclosures wit stainless steel hinges and lockable latches"
- ii. **ADD:** "on stainless steel or aluminum bracket similar to that depicted in the Drawings"

### 22. DIVISION 08 - OPENINGS

#### a. SECTION 08 51 13 – ALUMINUM WINDOWS

- i. **ADD:** Section to Project Manual

## PART 3 -DRAWING UPDATES

### 23. SHEET 04S-102

#### a. REPLACE: 4'-8 3/8"



- WITH: 4'-10"**
- b. REPLACE: 1'-3"**  
**WITH: 1'-5"**
- c. REMOVE: 7'-8"**
- d. ADD: "NOTE 5: COORDINATE DECKING OPENING DIMENSIONS WITH DRUMFILTER MANUFACTURER."**

**END OF ADDENDUM 2**



JANET T. MILLS  
GOVERNOR

STATE OF MAINE  
DEPARTMENT OF  
INLAND FISHERIES & WILDLIFE  
353 WATER STREET  
41 STATE HOUSE STATION  
AUGUSTA ME 04333-0041



JUDITH CAMUSO  
COMMISSIONER

Maine IF+W New Gloucester State Fish Hatchery Phase III Facility Conversion  
Pre-Bid Sign in Project 3289-312

COMPANY NAME	CONTRACTOR NAME	PHONE NUMBER	EMAIL ADDRESS
A.H. Grover	Lee Ruby	207-615-9341	leeruby@ahgrover.com
CHANNISTON CONSTRUCTION CORP.	JOE LAROSA	207-615-7534	JLAROSE@CHANNISTONCONSTRUCTION.COM
GEVORAN CORP.	TOBIAS FARNSWORTH	207-333-7106	TOBIASF@GEVORANCORP.COM
Apex Construction	JEFF TODD	603 330 3600	JEFF@Apex-ConstructionINC.COM
Colex	Jason Cole	207-329-2606	Jason@colexexcavation.com

PHONE: (207) 287-8000

FISH AND WILDLIFE ON THE WEB:  
[www.maine.gov/ifw](http://www.maine.gov/ifw)

EMAIL ADDRESS:  
[ifw.webmaster@maine.gov](mailto:ifw.webmaster@maine.gov)



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COMPANY NAME	CONTRACTOR NAME	PHONE NUMBER	EMAIL ADDRESS
Doten's Construction	Tyler Coffin	207-233-9005	Tyler@dotens.com
SCOTT CONSTRUCTION	WESTON SCOTT	207-999-5709	WSCOTT@SCOTTCOM.COM
ES Boulos	Zachary Caavette	207-464-3706	zcaavette@esboulos.com bfrazier@esboulos.com
A.B. ELECTRICAL SERVICES	GREG HURLEY	(207) 751-1898	gblaine.greg@abelectricalserv.com
Benchmark Construction	Kyle Steinhilf	207 591 7600	Krice@benchmarkconstruction.org

PHONE: (207) 287-8000

FISH AND WILDLIFE ON THE WEB:  
[www.maine.gov/ifw](http://www.maine.gov/ifw)

EMAIL ADDRESS:  
[ifw.webmaster@maine.gov](mailto:ifw.webmaster@maine.gov)



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COMPANY NAME	CONTRACTOR NAME	PHONE NUMBER	EMAIL ADDRESS
DAMONI MECHANICAL SERVICES	MIKIE BROCHU	207-784-7461	MBROCHU@DAMONIMECHANICAL.COM
HAR	Andrew Gurski	217.553.4250	andrew.gurski@hdrinc.com
HAR	Troy Talsma	217.331.5864	troy.talsma@hdrinc.com
MDIFW	Richard Parker Todd Langevin Tim Knebler		

PHONE: (207) 287-8000

FISH AND WILDLIFE ON THE WEB:  
[www.maine.gov/ifw](http://www.maine.gov/ifw)

EMAIL ADDRESS:  
[ifw.webmaster@maine.gov](mailto:ifw.webmaster@maine.gov)



**00 11 13**  
**Notice to Contractors**

**Phase III Facility Conversion at New Gloucester State Fish Hatchery**

BGS project No.: 3289

*This project will add circular rearing tank facilities, storage garage, and several infrastructure upgrades including a waste water treatment system to the existing New Gloucester facility.*

The cost of the work is approximately \$ 9,400,00. The contract shall designate the Substantial Completion Date on or before *30 November 2025*, and the Contract Final Completion Date on or before *30 December 2025*.

1. Submit bids on a completed Contractor Bid Form (section 00 41 13) provided in the Bid Documents, include bid security when required, and scan each item as an attachment to an email addressed to: BGS.Architect@Maine.gov, so as to be received no later than **2:00:00 p.m.** on **Thursday, August 15, 2024**. The email subject line shall be marked "**Bid for Phase III Facility Conversion at New Gloucester State Fish Hatchery**".

Bid submissions will be opened and read aloud at the time and date noted above at the Bureau of General Services office, accessible as a video conference call. Those who wish to participate in the call must submit a request for access to BGS.Architect@Maine.gov.

Any bid received after the noted time will not be considered a valid bid and will remain unopened. Any bid submitted by any other means will not be considered a valid bid. In certain circumstances, the Bureau of General Services may require the Bidder to surrender a valid paper copy of the bid form or the bid security document. The Owner reserves the right to accept or reject any or all bids as may best serve the interest of the Owner.

2. Questions and comments on the *bid opening process* shall be addressed to: Robert Gurney, Project Manager, Division of Planning, Design & Construction, Bureau of General Services, 77 State House Station, Augusta, Maine 04333-0077, BGS.Architect@Maine.gov.
3. Questions and comments regarding the *project design specifications or drawings* shall be directed in writing to the Consultant during the bid period prior to the question and comment deadline of 5:00 p.m. on Thursday, August 08, 2024..

*HDR*  
*Andrew Gurski*  
*andrew.gurski@hdrinc.com*

4.  Bid security is required on this project.  
The Bidder shall include a satisfactory Bid Bond (section 00 43 13) or a certified or cashier's check for 5% of the bid amount with the completed bid form submitted to the Owner. The Bid Bond form is available on the BGS website.  
*or*  
 Bid security is not required on this project.

**00 11 13**  
**Notice to Contractors**

5.  Performance and Payment Bonds are required on this project.  
If noted above as required, or if any combination of Base Bid and Alternate Bids amounts selected in the award of the contract exceeds \$125,000.00, the selected Contractor shall furnish a 100% contract Performance Bond (section 00 61 13.13) and a 100% contract Payment Bond (section 00 61 13.16) in the contract amount to cover the execution of the Work. Bond forms are available on the BGS website.  
*or*  
 Performance and Payment Bonds are not required on this project.
6. Filed Sub-bids *are not required* on this project.
7.  Pre-qualified General Contractors are utilized on this project.  
*insert the company name, city and state for each*  
*or*  
 Pre-qualified General Contractors are not utilized on this project.
8.  An on-site pre-bid conference (  *mandatory* or  *optional* ) will be conducted for this project.  
The pre-bid conference is intended for General Contractors. Subcontractors and suppliers are welcome to attend. Contractors who arrive late or leave early for a mandatory meeting may be prohibited from participating in this meeting and bidding.  
*21 June 2024 at 10:00 am*  
*on site at the New Gloucester Fish Hatchery*  
*located at 312 Fish Hatchery Rd, New Gloucester, ME.*  
  
*or*  
 An on-site pre-bid conference will not be conducted for this project.
9. Bid Documents - full sets only - will be available on or about *3 June 2024* and may be obtained *at no cost* from:  
*<https://www.maine.gov/dafs/bgs/business-opportunities#invitationforbid>*
10. Bid Documents may be examined at:
- |  |  |
|--|--|
| <i>AGC Maine</i>                           | <i>Construction Summary</i>                |
| <i>188 Whitten Road</i>                    | <i>734 Chestnut Street</i>                 |
| <i>Augusta, ME 04330</i>                   | <i>Manchester, NH 03104</i>                |
| <i>Phone 207-622-4741 Fax 207-622-1625</i> | <i>Phone 603-627-8856 Fax 603-627-4524</i> |

**SECTION 08 51 13**  
**ALUMINUM WINDOWS**

**PART 1 - GENERAL**

**1.1 SUMMARY**

- A. Section Includes:
  - 1. Aluminum windows.
- B. Related Sections include but are not necessarily limited to:
  - 1. Section 07 92 00 - Joint Sealants.
  - 2. Section 08 81 00 - Glass and Glazing.
  - 3. Section 09 96 00 - High Performance Industrial Coatings.

**1.2 QUALITY ASSURANCE**

- A. Referenced Standards:
  - 1. American Architectural Manufacturers Association (AAMA):
    - a. 904, Voluntary Specification for Multi-Bar Hinges in Window Applications
    - b. 1503, Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections.
    - c. 2605, Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.
  - 2. ASTM International (ASTM):
    - a. A924, Standard Specification for General Requirements for Steel Sheet, Metallic-Coated by the Hot-Dip Process.
    - b. C1363, Standard Test Method for the Thermal Performance of Building Assemblies by Means of a Hot Box Apparatus.
    - c. E283, Standard Test Method for Determining the Rate of Air Leakage Through Exterior Windows, Curtain Walls, and Doors Under Specified Pressure Differences Across the Specimen.
    - d. E330, Standard Test Method for Structural Performance of Exterior Windows, Doors, Skylights, and Curtain Walls by Uniform Static Air Pressure Difference.
    - e. E331, Standard Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference.
  - 3. American Welding Society (AWS):
    - a. D1.2, Structural Welding Code - Aluminum.

**1.3 DEFINITIONS**

- A. Installer or Applicator:
  - 1. Installer or applicator is the person actually installing or applying the product in the field at the Project site.
  - 2. Installer and applicator are synonymous.

**1.4 SUBMITTALS**

- A. Shop Drawings:
  - 1. Product technical data for framing system and major accessories including:
    - a. Acknowledgement that products submitted meet requirements of standards referenced.
    - b. Hardware being provided by window manufacturer.
    - c. Glass being provided by window manufacturer in factory glazed units.
    - d. Manufacturer's installation instructions.
  - 2. Elevation drawings indicating window dimensions and details.
- B. Samples:

1. After initial color selection, provide 2 x 3 inches minimum sample of each color and finish selected.
- C. Informational Submittals:
  1. Qualifications of testing laboratory.
  2. Test results.
  3. Warranty.

## **1.5 DELIVERY, STORAGE, AND HANDLING**

- A. Store units in vertical position off ground with wood spacers between each unit.

## **1.6 WARRANTY**

- A. Five year warranty of weathertightness of installation.
  1. Air and water integrity and structural adequacy of units and hardware, including sealants and sealing within and around perimeter of installation.
  2. Signed jointly by fabricator, installer, and contractor.

## **PART 2 - PRODUCTS**

### **2.1 MANUFACTURERS**

- A. Subject to compliance with the Contract Documents, the following manufacturers are acceptable:
  1. Thermally broken windows:
    - a. Wausau Metals Corp., 2250-T Series.
    - b. Kawneer Company Inc., 8225-T Series.
    - c. EFCO Windows, Series [510] [520] [530] [540].

### **2.2 MATERIALS**

- A. Extruded Aluminum: 6063T5 alloy.
- B. Sealants: As specified in Section 07 92 00.
- C. Thermal Insulator: Poured in place polyurethane, self-adhering to adjacent aluminum surfaces.
- D. Weatherstripping: Sponge neoprene.

### **2.3 ACCESSORIES**

- A. Screens:
  1. 18 x 16 mesh aluminum wire screens.
  2. Secure to aluminum shapes with vinyl spline.
  3. Hold in place with spring loaded plungers.
  4. Removable to inside of building.
  5. Finish same as window frames.
- B. Flashing:
  1. Minimum 0.040 inches aluminum.
  2. Finish to match window frames.
  3. Mill finish if concealed.

### **2.4 FABRICATION**

- A. General:
  1. Fully degrease and clean members prior to assembly or application of protective coatings.
  2. Weld by methods recommended by manufacturer and AWS D1.2 to avoid discoloration at welds.
  3. Grind exposed welds smooth and restore finish.
  4. Ease corners of cut edges to a radius of approximately 1/64 inches.

5. Conceal fasteners wherever possible.
  6. Fit and assemble work at shop to maximum extent possible.
  7. Maintain true continuity of line and accurate relation of planes and angles.
  8. Provide secure attachment and support at mechanical joint, with hairline fit of contacting members.
  9. Reinforce work as necessary to withstand wind loadings and to support system.
  10. Separate dissimilar metal with paint or preformed separators to prevent corrosion.
    - a. See Section 09 96 00.
  11. Separate metal surfaces at moving joints with plastic inserts or other nonabrasive concealed inserts to permanently prevent freeze-up of joint.
  12. Reinforce frames for hardware.
  13. Structural steel reinforcement hot-dip galvanized after fabrication meeting G-90, ASTM A924, requirements.
- B. Construct Window Frames (Casement, Fixed and Projected):
1. Cope and mechanically fasten together at corners or mitre at corners and heliarc weld on nonexposed surfaces, leaving only hairline joinery.
  2. Seal weathertight.
  3. Do not use joinery methods which discolor finish.
- C. Thermal Insulator: Provide minimum 1/4 inches separation between exterior and interior metal surfaces after bridge is removed.
- D. Weatherstripping:
1. Thermally broken type windows:
    - a. Casement and projected:
      - 1) Provide two rows of fin type extruded neoprene weatherstrips extending around perimeter of sash at both inner and outer overlap contacts.
      - 2) Provide corners which are securely staked and joined.
      - 3) Provide units which are easily replaceable.
- E. Window Hardware:
1. General:
    - a. Locking device and strikes: White bronze and/or non-magnetic stainless steel.
    - b. All hardware elements that bridge sash or frame thermal barrier: Reinforced nylon, deirin or suitable non-metallic, low conductivity material.
    - c. Custodial key operation: Secure sash in closed position and automatically lock in washing position.
    - d. Safety keys removable only in closed position.
  2. Glass: See Section 08 81 00 for types of glass to be installed under this Section.
- F. Fasteners:
1. Finish exposed fasteners to match finish of system.
  2. Provide Phillips flat head screws where exposed.
- G. Finish: AAMA 2605 Fluoropolymer paint; color to be [\_\_\_\_\_] [AA-MA10C22A31+, clear anodized] [AA-MA10C22A42, anodized].
1. Color: [Dark bronze] [Medium bronze] [Light bronze] [Black].

## 2.5 SOURCE QUALITY CONTROL

- A. General Test Requirements:
1. Utilize independent testing laboratories specifically qualified to conduct all performance tests required.
  2. Performance tests may be conducted in manufacturer's laboratories provided they are witnessed and certified by qualified independent testing laboratory personnel.
  3. Perform all tests on "Test Unit":

- a. Full-sized window unit for project or a minimum 5 x 8 feet unit mounted in test chamber in exact accordance with job conditions including anchorage system, sealing, etc.
  - b. Test unit to be completely assembled and glazed.
    - 1) Thermal tests may be conducted on 4 x 6 feet unit.
  - 4. Test air infiltration first, water resistance second.
    - a. Other tests may be in any order.
  - 5. Test data on vertical pivot windows will be accepted for fixed windows for condensation resistance, thermal, temperature exposure and acoustical tests provided the fixed windows are the same as the vertical windows tested in the following respects:
    - a. Same frame section (or same family of extrusions).
    - b. Same basic metal mass inside and outside.
    - c. Identical thermal break.
    - d. Same type of glazing.
- B. Test Requirements:
- 1. Air infiltration test:
    - a. With sash and ventilators closed and locked, test in accordance with ASTM E283.
    - b. Air infiltration, in CFM/FT of crack length, at pressure differential of 6.24 psf as follows:
      - 1) Fixed windows: 0.06 maximum, all others 0.10 maximum.
  - 2. Water resistance test:
    - a. Mount glazed unit in its vertical position, continuously supported around outside perimeter with sash and ventilators closed and locked.
    - b. Test in accordance with ASTM E331.
    - c. No uncontrolled leakage allowed, with pressure differential of 6.24 psf.
  - 3. Uniform load deflection test:
    - a. Test in accordance with ASTM E330.
    - b. Subject unit to load of 25 psf applied to outside of window and 25 psf applied to inside of window.
    - c. Maximum allowable deflection of any unsupported span:  $L/175$ .
    - d. No glass breakage, permanent damage to fasteners, hardware parts, support arms or activating mechanisms, or any other damage which would cause window to be inoperable will be allowed.
  - 4. Uniform load structural test:
    - a. Test in accord with ASTM E330.
    - b. Subject unit to loads indicated below.
    - c. Stabilize pressure and maintain it for minimum period of 10 seconds.
    - d. No glass breakage, permanent damage to fasteners, hardware parts, support arms or activating mechanisms or any other damage which would cause window to be inoperable will be allowed.
    - e. Maximum permanent deformation of any main frame, sash or ventilator member: 0.4% of its span.
    - f. After performing Uniform Load Structural Test, increase loads 1-1/2 times and perform safety test.
    - g. Design unit to withstand following design pressures acting normal to plane of wall, at applicable heights and locations.
      - 1) At height of 30 feet or less: [\_\_\_\_\_] PSF acting inward [\_\_\_\_\_] PSF acting outward.
  - 5. Condensation resistance test:
    - a. Perform on "test unit," except size may be 3 x 4 feet, minimum.
    - b. Test in accordance with AAMA 1503.
    - c. CRF (Condensation Resistance Factor): 50, minimum.
  - 6. Thermal test:
    - a. Perform on "test unit" except size may be 4 x 6 feet, minimum.

- b. Test in guarded hot box ASTM C1363, with an exterior temperature of 18 degrees F, an interior of 68 degrees F and 15 mph fan-generated wind velocity on exterior.
  - c. "U" value: not to exceed 0.65 btu/HR/SQFT/DEGF.
  - d. Calculated "U" values from smaller units or data or theoretical assumptions will not be acceptable.
7. Temperature exposure test:
- a. Perform on "test unit" except size may be 4 x 6 feet, minimum.
  - b. Maintain interior chamber temperature at 70 degrees F.
  - c. Reduce exterior ambient temperature to minus 15 degrees F.
  - d. Interior rail of frame and ventilator must maintain a temperature of not less than +[\_\_\_\_\_] DEGF as indicated by thermocouple temperature sensing.
8. Structural thermal barrier tension test:
- a. Test urethane filled sections of aluminum.
  - b. Mechanically secure interior and exterior faces of 12 inches section in horizontal position.
  - c. Apply heat tape to exterior face to control surface temperature at 180 degrees F 5 minutes before loading, as indicated by a thermocouple wire operated by an automatic controller.
  - d. Apply direct tension (pull) using a Universal testing machine set in 12,000 pound load range.
  - e. Test results: No loss of bond at 4000 pound IN/IN/MIN.
9. Structural thermal barrier shear test:
- a. Test urethane filled sections of aluminum.
  - b. Mechanically secure interior face of 12 inches section in vertical position.
  - c. Apply heat tape to exterior face to control surface temperature at 180 degrees F 5 minutes before loading, as indicated by a thermocouple wire operated by an automatic controller.
  - d. Apply load to exterior face by a bearing plate resting on top of exterior face, using Universal Testing machine set in 12,000 pound load range at a strain rate of 0.050 inches/IN/MIN.
  - e. Test results: No loss of bond at 5500 pound loading.
10. Structural thermal barrier combined torsion and shear test:
- a. Test urethane filled sections of aluminum.
  - b. Secure interior face of 12 inches section in horizontal position.
  - c. Apply heat tape to exterior face to control surface temperature at 180 degrees F 5 minutes before loading, as indicated by a thermocouple wire operated by an automatic controller.
  - d. Apply load to bearing plate centered on portion of glazing pocket to exterior side of thermal barrier, using a Universal Testing machine set in the 12,000 pound load range.
  - e. Test results: No loss of bond at 3900 pound load applied at strain rate of 0.05 inches/IN/MIN.

## **PART 3 - EXECUTION**

### **3.1 INSTALLATION**

- A. Install products in accordance with manufacturer's instructions.
- B. Set units plumb, level, and true to line.
- C. Anchor securely in place.
- D. Separate metal surfaces from sources of corrosion or electrolytic action.
  - 1. See Section 09 96 00.
- E. Set sill and base members in a bed of sealant.
- F. Provide joint fillers or gaskets for weathertight construction.

- G. Seal all joints within and at perimeter of system.
- H. Provide sealant color to match finish of system at exposed locations.
- I. Provide sealants compatible with aluminum system and recommended for use with this type of installation.
- J. See Section 07 92 00 for sealants.

### **3.2 FIELD QUALITY CONTROL**

- A. Installation supervised or inspected by manufacturer's authorized representative.

**END OF SECTION**