



## Heavy Commercial / Architectural Projected Windows

Series L901T

P-HC65

### GUIDE SPECIFICATION

Section 08520....Aluminum Windows

#### **PART 1: WORK INCLUDED**

- A. The conditions of the contract and applicable sections of Division 1 are hereby made a part of this section.
- B. Material, labor, tools and equipment necessary to furnish and install aluminum windows as shown on drawings and specified herein, shall be provided. Details indicate the required depth and profile.
- C. Glass & Glazing.
- D. Existing sash, stops, and other items indicated on drawings and required by the proposal replacement system shall be removed and properly discarded.
- E. Perimeter Sealing.

#### **1.02 RELATED WORK [Optional]**

- A. Section 08800....Glass & Glazing
- B. Section 07920....Perimeter Sealant
- C. Other....[Louvers, panels, hollow metal, steel, insulation, etc.]

#### **1.03 SYSTEM DESCRIPTION**

Units shall be projected aluminum windows conforming to P-HC65 specifications in ANSI/AAMA 101-97.

## 1.04 PERFORMANCE REQUIREMENTS

A. Air Infiltration: When tested in accordance with ASTM E 283-91 on a test size of 5'3"x 3'3", the air infiltration rate shall not exceed .02 cfm/ft of sash perimeter under a static pressure difference of 1.57 PSF. Additionally, at 6.24 PSF the air infiltration shall not exceed .04 cfm/ft.

B. Water Resistance: When tested in accordance with ASTM E 331-86 on a test size of 5'3"x 3'3", there shall be no leakage under a static pressure of 12.00 PSF.

C. Uniform Load Structural Test:

1. With window sash closed and locked, the unit shall be tested in accordance with ASTM E 330-90 on a test size of 5'3"x 3'3", at a static pressure difference of 100.00 PSF with first the exterior [positive] pressure applied, and then the interior [negative] pressure applied.

2. At conclusion of test, there shall be no glass breakage, permanent damage to fasteners, hardware parts, or actuating mechanisms, nor any other damage that would cause the window to be inoperable. Permanent deformation of any frame or sash member shall not exceed 0.4% of its span.

D. Condensation Resistance Factor (CRF): When tested in accordance with AAMA 1502.81 on a test size of 5'0"x 3'0", the CRF shall not be less than 55.

E. Thermal Transmittance [U Value]: When tested in accordance with AAMA 1503.1-88 on a test size of 5'0"x 3'0", the thermal transmittance due to conduction [U<sub>c</sub>] shall not exceed 0.58 BTU/HR.FT/2.F.

F. Life Cycle Test: The movable panel and locking hardware will be cycled 2500 total cycles without failure. After the Life Cycle Test the window will be retested for air infiltration, water penetration and uniform structural load deflection without failure.

G. Forced Entry Resistance: The window shall have a Level 10 Forced Entry Resistance Rating as per ASTM F588.

## 1.05 QUALITY ASSURANCE

A. Pre-Bid Qualifications:

1. All projected windows shall be L-901T as manufactured by Litex, Inc., 1675 W. Hamlin Rd., Rochester Hills, MI, 48309, Ph. [248] 852-0661, Fax [248] 852-0095, online www.Litex.com, or approved equal.
2. Other manufacturers desiring approval shall furnish a full size sample and valid test reports indicating full compliance with all requirements of this specification at least ten days prior to bid date.
3. Other manufacturers shall have been engaged in fabrication of aluminum windows for five years, and shall submit for review a list of completed projects.
4. Approval of "equal" product shall be in the form of a written addendum.

**1.06 SUBMITTAL**

- A. Product Data: Manufacturers specifications, test reports, and standard aluminum window details shall be submitted.
- B. Shop Drawings: Location plans showing window openings, unit elevations, full-size sections of typical members, anchors, and glazing details shall be shown.
- C. Samples:
1. Specified aluminum finish shall be submitted on 6" sections of aluminum as required.
  2. Additional samples shall be submitted as directed by the architect, to show fabrication techniques, workmanship of component parts, and design of hardware.
- D. Written approval by architect shall be required prior to shop fabrication.

**1.07 WRITTEN PROJECT WARRANTIES**

- A. Windows shall be warranted against defects in material or workmanship under normal use for a period of 10 years from date of installation.
- B. Insulating glass shall be warranted against visual obstruction resulting from film formation or moisture collection between the interior glass surfaces [excluding glass breakage] for a period of 10 years from date of manufacture.

## **PART 2: PRODUCTS**

### **2.01 MATERIALS**

#### **A. Aluminum Extrusions:**

1. All frame and sash sections shall be extruded aluminum shapes produced from commercial quality 6063-T5 or 6063-T6 alloy and shall be free from defects impairing strength and/or durability.
2. The frame depth shall be a nominal 3-3/4".
3. All frame and sash member shall have a nominal wall thickness of .125".
4. No extruded plastics shall be allowed in the frame or sash members.

#### **B. Hardware:**

1. All sash shall operate on 2 [two] stainless steel four or six bar hinges [Butt Hinges Optional], sized per window dimension, set into aluminum cradles with adjustable set screws for smooth operation. The hinges will be mounted with stainless steel screws.
2. Operating sash shall have white bronze cam handle(s) and keeper(s) mounted with stainless steel screws. Pole-operated, roto-operators and custodial locks are available.

#### **C. Weatherstrip:**

1. All sashes shall be double weatherstripped using dual durometer neoprene compression weatherstripping as per AAMA 701.2.
2. All weatherstripping shall be held in extruded ports and secured to prevent loss or distortion when operating sash.

#### **D. Screens [Optional]:**

1. Screens shall consist of 18x16 charcoal anodized aluminum mesh secured with PVC spline to a nominal 5/16"x 1-1/4"x .050 extruded tubular aluminum frame.

2. They shall be remeshable, removable from the interior and held in place with spring loaded plungers and clips.

E. Glazing:

1. All windows to be factory glazed with either 1" insulating glass or a "Dual Glazed" system with removable interior glass or exterior and interior polycarbonate glazing.
2. Glass shall be set in glazing tape 1/8" thick at the exterior glazing leg and held in place with interior snap-in stops.
3. All glass to be set on 1/4" setting blocks.
4. Gasket type glazing requiring sash disassembly to reglaze is not acceptable.
5. All glass or panels glazed into fixed framing to receive a perimeter cap bead of silicone sealant between the glazing leg and glass or panel surface.
6. [Optional] All glass glazed into projected or casement windows to receive a perimeter cap bead of silicone sealant between the glazing leg and glass surface.
7. [Optional] Windows to have integral mechanically operated between the glass Venetian blinds. Finish to be selected by architect from manufacturers standard colors.

## 2.02 FABRICATION

A. Construction:

1. Frame and sash members to be extruded as a single section. The frame members and the sash members will have a channel that is filled with polyurethane which becomes a rigid structural element. A connecting aluminum "bridge" of at least .250 inches wide is removed to establish interior and exterior sections separated by the polyurethane to prevent thermal transmittance.
2. The thermal barrier shall be a structural and integral part of the aluminum extrusion, having strength exceeding the basic shapes. The thermal barrier shall be permanently bonded to the aluminum extrusion and there shall be no bridging of the thermal barrier at any corner or connection or by anchorage.

3. All frame and sash members to be continuous extrusions. The window frame corners are to be butt jointed, sealed with small joint sealant as manufactured by the H.B. Fuller Co. and fastened with 2 [two] stainless steel or cadmium plated screws. The sash corners are to be mitre cut, tightly joined with solid aluminum corner keys, sealed with small joint sealant as manufactured by the H.B. Fuller Co. and hydraulically crimped.

4. Each operating vent shall open 50 degrees for ventilation and cleaning. Also each vent will have one or more handle locks [depending on window dimension] to provide a secure weathertight "locked" position.

5. The frame sill shall contain integral baffled weep holes that allow gravity water drainage and resistance to wind driven water and/or air.

6. All joints shall be hairline and be factory sealed with a sealant conforming to AAMA 803.3-85.

B. Mullions or Other Structural Members: When units occur that are joined by independent mullions, the resulting member shall be capable of withstanding the design pressure. Evidence of compliance may be by mathematical calculations.

C. Finish: the exposed surfaces of all aluminum members shall be clean and free from surface blemishes, scratches or tool marks. The finish shall be one of the following:

1. Organic finish applied over a five-stage aluminum pre-treatment. Finish shall be a one-coat, one-bake [baked enamel] system with a .8 mil minimum thickness and shall conform to AAMA 603.8-85. Color chosen by architect.

2. Organic finish applied over a five-stage aluminum pre-treatment. Finish shall be based on a "Kynar 500" resin and be applied as a two-coat, two-bake system with a 1.2 mil minimum thickness, and shall conform to AAMA 605.2-85. Color chosen by architect.

3. Organic finish applied over a five-stage aluminum pre-treatment. Finish shall be based on "Kynar 500" resin and be applied as a three-coat, three-bake system with a 1.6 minimum thickness, and shall conform to AAMA 605.2-85. The third coat shall be clear lacquer. Color chosen by architect.

4. Clear Anodic Finish - Class II [204-R1] - AAM10C22A31. Thickness shall be a .4 mil and shall conform to AAMA 607.1-77.

5. Clear Anodic Finish - Class I [215-R1] - AAM10C22A41. Thickness shall be .7 mil and shall conform to AAMA 607.1-77.

6. Color Anodic Finish - Class I - AAM10C22A44. Thickness shall be .7 mil and conform to AAMA 608.1-77. Color chosen by architect.

7. Color Anodic "Sandalor" Finish - Class I - AAM12C22A44/A43. Thickness shall be a .8 mil. Color chosen by architect.

## **PART 3: EXECUTION**

### **3.01 PREPARATION**

A. Openings shall be verified by contractor and/or general contractor to be within allowable tolerances, plumb, level, clean, providing a solid anchoring surface and in accordance with approved shop drawings. Unsatisfactory conditions shall be corrected prior to installation.

B. Existing windows shall not be removed until new replacement window is available and ready for immediate installation. Openings shall not be left uncovered at the end of the working day, during wind driven precipitation, or very cold weather.

### **3.02 WINDOW INSTALLATION**

A. Windows shall be erected by skilled craftsmen in prepared openings in accordance with manufacturer recommendations and approved shop drawings. Frames shall be securely supported, fastened and set plumb, square, and level without twist or bow.

B. All sash shall be glazed using manufacturer glazing instructions in the factory or if conditions dictate in the field, depending upon job scope and field conditions.

C. Fiberglass insulation shall be compressed between new window frame and existing construction, or between frame and new blocking as applicable.

D. Aluminum shall be insulated from direct contact with steel, masonry, concrete or non-compatible materials by bituminous paint, zinc cromate primer or other suitable insulating material.

E. Exterior joints between windows and surrounding construction shall be sealed per specifications and approved shop drawings.

F. Joints and surfaces to receive sealants shall be dry, clean, and free from loose material, efflorescence or mortar leaching. Sealants shall not be applied when the temperature is below sealant manufacturer recommendations.

### **3.03 ADJUSTING AND CLEANING**

- A. Frames and sash shall be adjusted, if necessary, after installation to insure smooth and weathertight operation.
  
- B. The general contractor shall be responsible for protection of the work from damage by other trades and for final cleaning.