SECTION 08955A

TRANSLUCENT EXTERIOR LINEAR GLASS WALL ASSEMBLIES

Specifier's note: select and/or delete [bracketed options] as appropriate for the system selected and for the performance requirements of the project. Remove margin notes before completing.

Part 1 GENERAL

1.1 SCOPE OF WORK

A. Sections Include:

1. Translucent exterior linear glass units.
2. Framing.
3. Glazing accessories.

1.2 REFERENCES

A. Comply with applicable provisions of the following curtain wall test criteria for design, materials, fabrication, and installation of component parts:

ASTM E 330-84, ASTM E 331-86, ASTM E 283-91, AAMA 501.1, AAMA 501.4-00, ANSI Z97.1-84, 16 CFR 1201 category II, AAMA 1503-98, ASTM E 90, ASTM E 413, ASTM E 1332, DIN EN 572.1, DIN EN 572.7. (Visual characteristics for all U-profile glass in accordance with glass manufacturer's product definition. Dimensional standards for tempered glass per manufacturer's product definition.)

1.3 DEFINITIONS

A. Translucent Linear Glass: Translucent, channel shaped linear glass unit. Size and pattern as selected by architect.

Select Basic System or Rain Screen. Delete unused data.

B. Basic System: Thermally broken aluminum frame with double glazed, translucent, vertical [horizontal] linear glass with 2-3/8 inch (60mm) deep channel flange.

C. [Rain Screen: Non-thermally broken aluminum frame with single glazed, open joint vertical (horizontal) linear glass with 2 3/8 inch (60 mm) deep channel flange.]

1.4 SYSTEM DESCRIPTION

A. Design Requirements:

1. Glazing Contractor: Responsible for conforming the system [units], to the architectural plans, including anchorage to structural system and necessary modifications to meet specified requirements and maintain visual design concepts.

2. Drawings: Shop drawings will show the complete assembly installed as described under this section, fully identify all fasteners, shims, gaskets, sealants and hardware required for the complete system installation and be stamped by an engineer licensed in the state where the project is located. Dimensions of all components, alloys, tempers, and finishes will be clearly identified. Provide engineering calculations for all conditions required by the project.

3. Provide concealed fastening wherever possible.

4. Attachment Considerations: Accommodate project design concepts and provide for building movement anticipated from all possible causes. Provide for expansion and contraction in all components to eliminate the possibility of loosening, warping, buckling or bulging of all components.

B. Performance Requirements:

1. Test Data Requirements:

a) Test data submitted must be from a certified, independent AAMA, ANSI, ASTM, or NFRC recognized test laboratory certifying compliance to the applicable tests. No substitutes accepted.

b) Test results submitted must conform to the design intent of the project.

2. Air Infiltration Requirements: ASTM E 283; at 6.24 PSF (0.03 kPa).

a) Total amount of air infiltration shall not exceed 0.06 cubic foot/minute/square foot of wall area tested.

3. Water Penetration Under Static Pressure: In accordance with ASTM E 331; air pressure 20 percent design of wind load; 15 PSF (0.0718 kPa) maximum, applied against face.

a) No uncontrolled water penetration allowed.

Select CRF requirements appropriate for system choice. Delete unused data.

4. Condensation Resistance Factor – In accordance with AAMA 1503-98:

a) Vertical System:

(1) V60 System: 0.57

(2) SF60 System: 0.60

b) Horizontal System: 0.62

5. Structural Requirements: ASTM E 330-84, horizontal or vertical linear applications.

a) Aluminum framing components shall not deflect more than L/175 at the design wind load specified by the architect or engineer.

b) Channel Glass: Glass manufacturer to supply independent test reports verifying the channel glass will withstand the defined load requirements in accordance with the probability of breakage as determined by the architect.

(1) Design Wind Load [____]

(2) [Wind Tunnel Load [____]]

(3) Probability of Breakage Factor [__/____]

Select U-Value requirements appropriate for system choice. Delete unused data.

6. Thermal Requirements:

a) U-Value, Basic System, Uncoated Glass: Test data from a certified testing lab to be submitted upon request to verify system compliance with project requirements. [Vertical double glazed system: V60 U-value $\leq$ 0.50; SF60 U-value $\leq$ 0.52] [Horizontal double glazed system $\leq$ 0.57] in accordance with AAMA 1503-98.

7. Seismic Requirements: AAMA 501.4

a) Basic System: Passed for use with NEHRP Group III performance at +/- 3" lateral displacement from zero when tested at 12' height conditions. Test reports

from certified test laboratory verifying the performance of the system to these criteria to be submitted to the architect prior to review of any shop drawings.

8. Acoustical Requirements: – In accordance with ASTM E 90, ASTM E 413, ASTM E 1332:

Select Acoustical requirements appropriate for system choice. Delete unused data.

a) Basic Vertical System, 60mm flange:

(1) [V60 System: STC - 40 OITC – 40]

(2) [SF60 System: STC – 38 OITC - 33

b) [Basic Horizontal System, 60mm flange: STC – 41 OITC – 33]

C. Glass requirements:

1. Glass: ASTM C 1036, Type 2, Class 1, Quality q3 finish F1, cast or rolled glass, channel shape, surface texture as selected by architect.

a) Tempered Glass

(1) Where required by wind loads or safety considerations glass to be SGCC certified to ANSI Z 97.1-84 and CPSC Title 16 Part 1201 (16 CFR 1201, category II) for unlimited size. Safety film shall not be used to satisfy safety glazing requirements, except in longitudinally cut pieces which cannot be tempered. [Architect or Engineer to select approved safety film.].

(2) Tempered glass to be 100% heat soak tested in accordance with German Bauregelliste 2002/1, part 11.4 (approximately 10 ½ hour treatment).

b) Annealed Glass: In accordance with ANSI Z97.1-84 and 16 CFR 1201 category II.

(1) Basic system with safety film: No free passage at 18-inch impact drop (in accordance with ANSI Z97.1-84 single glazed procedures).

(2) Basic system with safety film: No free passage at 48-inch impact drop (in accordance with 16 CFR 1201 category II single glazed procedures).

c) Wire Glass: Shall not be considered a safety glass.

D. Interface with Adjacent Systems:

1. Integrate design and connections with adjacent construction.

1.5 SUBMITTALS

A. [General: Submit in accordance with Section _____.]

B. Product Data: Submit following:

1. Product data for translucent linear glass units, framing system, and glazing accessories.

C. Shop Drawings:

1. Submit plan view, elevation details, connection details, and installation details including interface with adjacent construction.

2. Drawings will identify all gaskets, tapes, sealants, fasteners, shims, hardware and accessories used to install the system. They will clearly identify adjacent materials

completely and label these materials as “by others”. The drawings will show all dimensions for sealant joints, maximum allowable offset for adjacent components, overall facade alignment tolerance, and maximum allowable deviation of supporting construction from the dimensions shown on the architectural drawings, maximum shim space at anchors etc. [Stamped with seal and signature by registered professional engineer licensed in the jurisdiction where the project is located with a minimum of five (5) years experience in the design of curtain wall systems.]

D. Samples:

1. Glass: Submit three 8 inch (200mm) lengths by full panel width of standard production material. Note: Cast glass can vary slightly in color,

2. Frame: one 8 inch (200mm) section of each frame element.

3. Components: submit samples of all glazing accessories (tapes, shims, gaskets, sealants, screws, etc.).

E. Informational Submittals: Submit following packaged separately from other submittals:

1. Test reports: Submit following:

a) Certified test reports showing compliance with specified design requirements.

2. Manufacturer’s fabrication and installation instructions.

1.6 QUALITY ASSURANCE

A. Single Source Responsibility: Manufacturer shall be responsible for all components it supplies for the basic system.

B. [Manufacturer’s authorized representative shall make visits as required to validate warranty.]

C. Welder Qualifications: AWS certified within past 12 months for each type of weld required.

D. Certifications:

1. Certificates verifying AWS qualifications for each welder employed on Project.

1.7 FIELD SAMPLES

A. [General: Comply with Section _____.]

B. [Sample Installation:]

1. [Install one full size [4 channel] wide unit in location as directed by Architect.]

2. [Show connection, seal, hardware, accessories and construction techniques.]

3. [Accepted Field Sample: May remain part of completed work and will serve as criteria for visual acceptance for the project.]

1.8 MOCK – UPS

A. [General: Comply with Section _____.]

B. [Testing Laboratory Mock-Up: (Not required)]

1. Construct mock-up ____ feet high by ____ feet wide as indicated.

2. Locate at certified independent testing laboratory as selected by Architect.

3. Perform tests in accordance with [_____].

C. Visual mock-Up/Field Sample: (Not required).

1. Construct typical, full size mock-up panel.
2. Locate as directed by Architect.
3. [Perform following field tests in order listed:]
    a) [_____].
    b) [_____].
4. Accepted Mock-Up/Field Sample: May [not] remain part of completed work.

1.9 PRE-INSTALLATION CONFERENCE

A. [Conduct pre-installation conference in accordance with project requirements.]

B. Identify access to site, storage, sequencing, and scheduling.

C. Establish requirements for visits by manufacturer's representative.

1.10 DELIVERY, STORAGE, AND HANDLING

A. General: Store on a level surface, above ground, in a watertight enclosed space fully ventilated and protected from damage and in accordance with manufacturer's recommendations.

1.11 WARRANTY

A. Special Warranty:

1. Warrant installed units to be free from defects in material and workmanship for a period of [___] years.

2. Include coverage against crack, warp, pit, corrode, peel, or blister under normal use and service.

3. Installation warranty of [_____] year(s) shall be supplied by selected glazing contractor.

PART 2 PRODUCTS

2.1 MANUFACTURERS AND PRODUCTS

A. Acceptable Products and Manufacturers:

1. Lamberts LINIT channel glass by Glasfabrik Lamberts.

    Local contact: Arcspec, 225 Peterson Rd., Libertyville, IL 60048

    phone: 847-362-1590, fax: 847-362-1557

2. Bendheim LINIT Frame System by Bendheim Wall Systems Inc.

    Local contact: Arcspec, 225 Peterson Rd., Libertyville, IL 60048

    phone: 847-362-1590, fax: 847-362-1557

3. No [known] Substitutions.
4. [Accepted Substitute in accordance with Section _____.]

B. Glass products of other manufactures matching the aesthetics, performance, and certifications of the above listed specified products will be considered for approval if submitted as part of the bid proposal and accompanied by samples, performance data, certifications and written statement that the manufacturer will conform to all requirements of these Specifications.

2.2 MATERIALS

Select regular or low iron requirements.

Select coating requirements.

Delete unused data.

A. Glass: ASTM C 1036, Type 2, Class 1, Quality q3 finish F1, cast or rolled glass, channel shape, surface texture as selected by architect.

1. Color: [Clear with green cast] [Low iron clear with very pale green cast].

2. Coatings: [Azur blue-gray], [Solex bronze], [Low-e iridescent], [sandblast and sealed], [enameled frit].

B. Stainless Steel Wire: .45mm +/- 0.05mm diameter, category Nr 1.4016, in accordance with DIN 17 440: X 6 Cr 17.

C. Aluminum: ASTM B 221, alloy 6063-T5 for extrusions; ASTM B 209, alloy 5005-H14 for sheets; or other alloys and temper recommended by manufacturer appropriate for specified fabrication and/or finish.

D. Thermal Break: Poured and debridged Azon SU-311 polyurethane resin [or equal] with Azo braded aluminum frame.

E. Vinyl: In accordance with AAMA 303-01 external grade unplasticized PVC, testing at least 150 degrees.

2.3 UNITIZED ASSEMBLIES

Option for horizontal only

A. [Horizontal Unitized System: Installer fabricated units of Basic System including unitized frame, integrally glazed. Fabricate and seal framed units to meet specified performance requirements].

2.4 COMPONENTS

A. Translucent Linear Glass Units:

Select which:
- Width
- Texture
- Coating
- Tempered
- Annealed

Delete unused data.

1. Lamberts LINIT channel glass (P23/60/7), (P26/60/7)

2. [Lamberts LINIT channel wired glass (P23/60/7), (P26/60/7)]

3. Surface Texture of glass to be [504 Rough Cast] [Klar/Clarissimo] [Piccolo] [Solar] [Prismasolar].

4. [Coating applied to glass: (sandblast and sealed), (Azur), (Solex), (Low-e)], [enameled frit].

5. Tempered glass (where shown) to be SGCC certified to ANSI Z 97.1, 16 CFR 1201 category II.

6. Tempered glass shall be 100% heat soak tested in accordance with German Bauregelliste 2002/1, part 11.4 (approximately 10 ½ hour treatment).

7. Tempered glass shall be factory cut to provide precise dimensions and clean edges in accordance with EN 572.7.

8. Annealed glass shall be provided cut to size in accordance with EN 572.7.

B. Framing:

1. Aluminum: Extruded units per the profiles shown or as required to suit conditions indicated.

a) Minimum wall thickness of 0.125 inch (3.18mm) for framing members and rails, 0.090inch (2.3 mm) for sheets.

2. Vinyl Frame Liner, Glass Support and Spacer: Extruded vinyl spacer engineered for snap-in application in standard thermally broken aluminum frame to support and space glass units.

3. Thermal Break: Poured and debridged Azon SU-311 polyurethane resin [or equal] with Azo-braded aluminum frame.

2.5 ACCESSORIES

A. Anchorage Devices: Standard fabricated steel or aluminum assemblies of shapes, plates, bars or tubes.

1. Hot-dip galvanized steel assemblies after fabrication, ASTM A123, 2.0 ounce (0.05kg) minimum coating.

B. Fasteners: Non-magnetic stainless steel or other Engineer approved non-corrosive materials compatible with items being fastened.

1. Provide concealed fasteners wherever possible.

2. Exposed locations: Stainless steel screws with approved finish.

3. Concealed locations: Stainless steel or approved fasteners in accordance with approved engineering calculations.

C. Expansion/Chemical Anchor Devices: Lead-shield or toothed-steel, drilled-in, expansion bolt, or chemical/epoxy set anchors.

D. Protective Coatings: Cold-applied asphalt mastic, SSPC-Paint 12, compounded for 30 mil (0.76 mm) thickness for each coat; or alkyd type zinc chromate primer, FS TT-P-645.

E. Perimeter Joint Sealant and Backer Rod: Silicone-Glazing.

1. Color: translucent [or manufacturer's color selected by Architect]

2. Primer: As required by sealant manufacturer for applications shown.

3. Sealant Backing, Bond Breaker Rod and Tape: Closed cell unless otherwise required by sealant manufacturer. Translucent backer rod to be used if requested by the architect.

4. Acceptable Manufacturers:

a) Silicones: Dow Corning, General Electric, Tremco.

b) Acrylic seam sealant: Schnee Morehead.

c) Translucent backer rod – supplied by Bendheim.

2.6 FABRICATION

A. Coordination of Fabrication: Check all field conditions for acceptable conformance to architect's drawings.

B. General:

1. Install framing in lengths as long as possible. Allow for thermal movement as required by project engineer.

2. Conceal fasteners wherever possible.

3. Install system so that all glazing pockets weep to the exterior of the building.

4. Isolate dissimilar metals and aluminum in contact with concrete utilizing protective coating or pre-formed separators which will prevent contact and corrosion.

C. Aluminum Framing: Provide members of size, shape and profile indicated, designed to provide for glazing from exterior or interior, fabricated and assembled in accordance with manufacturer's fabrication and installation manual.

1. Provide manufacturer's standard Azo-braded thermal isolation within aluminum extrusions.

2. Fabricate frame assemblies with mitered or coped joints.

3. Maintain accurate relation of planes and angles.

4. Provide end dams at all vertical interruptions of horizontal extrusions.

5. Fabricate framing for expansion and contraction to accommodate a thermal variation of [180] degrees Fahrenheit.

6. Make provisions in framing for minimum edge clearance, nominal edge cover and nominal pocket width for thickness and type of glazing or in-fill used in accordance with requirements of manufacturer's fabrication and installation manual and GANA Glazing Manual.

D. Welding: Comply with recommendations of American Welding Society (AWS).

1. Use recommended electrodes and methods to avoid distortion and discoloration.

2. Grind exposed welds smooth and flush with adjacent surfaces; restore material finish.

2.7 FINISHES

A. Fluorocarbon Coating: AAMA 2604 [2605].

Select paint options or clear anodized finish. Delete unused data.

1. Resin: 70 percent polyvinylidene fluoride (PVF_2).

2. Substrate: Cleaned and pre-treated.

3. Primer: Manufacturer's standard epoxy or acrylic coating, dry film thickness:

   a) Extrusion: Minimum 0.20 mil (0.005 mm).

4. Color coat: PVDF, Dry film thickness:

   a) Extrusion: Minimum 0.80 mil (0.020 mm).

5. Clear top coat (three coat finish only): Dry film thickness

   a) Extrusion: Minimum 0.40 mil (0.010 mm)

6. Color: Duranar by PPG. Manufacturer's standard color [Arcadia Silver UC70123F] as selected by architect. [Custom color as selected by architect.]

7. Acceptable Coatings Manufacturers:

   a) Akzo Coatings, Inc., Columbus, OH.

   b) Lilly Industries Inc., Indianapolis, IN.

   c) Morton International, Inc., Chicago, IL.

   d) PPG Industries Inc., Delaware, OH and Springdale, PA.

   e) Valspar Corporation, Garland, TX.

8. Application: Specified coatings applied to visible surfaces.

B. [Clear Anodized: AA-M12C22A41, Architectural Class 1, etched, medium matte, clear anodic coating, 0.7 mil [(0.018mm)] minimum thickness.

PART 3 EXECUTIONS

3.1 INSTALLERS

A. Architect [Engineer] approved [with a minimum of (5) years experience in the installation of curtain wall systems].

3.2 EXAMINATION

A. [General: Examine conditions and proceed with work in accordance with Section _____.]

B. Site Verification of Conditions: Do not commence work until field conditions conform adequately to architectural drawings.

3.3 PREPARATION

A. Protection: [_____].

B. Surface Preparation: [_____].

3.4 INSTALLATION

A. Install units in accordance with [Section _____], [State/Jurisdiction of _____ standards], and approved Shop Drawings, plumb, level, square, and free from warp or twist while maintaining dimensional tolerances and alignment with surrounding construction [adjacent surfaces].

B. Erect framing, vinyl spacer, and glass in accordance with manufacturer's printed installation instructions. Clean glass immediately before installing. Protect or seal all installed glass units daily on both sides of glass, between frame and glass, and between linear glass units to prevent infiltration of airborne debris.

C. Perimeter Joint Sealant: Insure compatibility of joint components and adhesion of perimeter joint sealant to surfaces that receive sealant.

D. Erection Tolerances – Framing Members:

1. Limit variations of jambs from plumb and horizontal frame members from level:

   a) 1/8 inch in 12 feet (3 mm in 3000 mm) vertically.

   b) 1/8 inch in 20 feet (3 mm in 6000 mm) horizontally.

2. Limit variations from Theoretical Locations: 1/4 inch (6 mm) for any member at any location.

3. Limit Offsets in End-To-End and Edge-To-Edge Alignment: 1/32 inch (0.8 mm) maximum out of plane offset for horizontal and vertical glazing legs of framing members designed to be in the same plane.

3.5 FIELD QUALITY CONTROL

A. [Manufacturer's Field Services: Comply with Section _____.]

1. Employ manufacturer's representative as necessary to insure proper installation and to verify work is done in accordance with manufacturer's requirements.

3.6 CLEANING

A. Cleaning: [Comply with Section _____.]

1. Clean as recommended by manufacturer. Do not use materials or methods which may damage system components or surrounding construction.

3.7 PROTECTION

A. Protection: [Protect finished work in accordance with Section_____.]

1. Protect finished surfaces from damage.

END OF SECTION