

08 40 00 | Entrances, Storefronts & Curtain Walls

General

Curtain wall and storefront assemblies shall be designed, manufactured and installed to withstand all applicable loads including wind, live loads, thermal, seismic and dynamic loads. Systems must withstand the forces acting both perpendicular and in the plane of the glazing. Furthermore, the system shall be able to resist torsional forces.

Design Standards

1. Minimum Wind Design Pressure: The minimum specified design pressure shall be the maximum components and cladding design pressure (MCCDP) or 50 psf, whichever is greater.
2. Deflection limits: All deflection limits shall be tested per ASTM E330 at the wind design pressure.
 - A. Deflection Normal to Glazing Plane: The deflection shall not exceed 1/175 of clear span for spans up to 13 feet 6 inches or 1/240 of clear span plus ¼ inch for spans greater than 13 feet 6 inches or an amount that restricts edge deflection of individual glazing lites to ¾ inch, whichever is less.
 - B. Deflection Parallel to Glazing Plane: The deflection shall not exceed that which reduces the glazing bite to less than 75 percent of the design dimension or that which reduces the edge clearance between framing members and glazing or other fixed components directly below them to less than 1/8 inch.
3. Structural Resistance: The structural resistance shall be tested per ASTM E330 at 150% of the wind design pressure for a duration of ten (10) seconds. The entire curtain wall system, including anchorage, must withstand testing without exhibiting any material failures or permanent deformation of main framing members exceeding 0.2 percent of span.
4. Lab Tested Air Leakage: The maximum air leakage shall be .06 cfm/sq. ft. when tested according to ASTM E283 at a static-air-pressure difference of 6.24 lb. /sq. ft.
5. Lab Tested Water Resistance: The test pressure shall equal 20% of the minimum specified design pressure when tested according to ASTM E331.
6. Condensation: When tested according to criteria listed in AAMA 1503, the condensation resistance factor shall be a minimum of 50.
7. Thermal Transmittance: When tested according to criteria listed in AAMA 1503, the thermal transmittance shall not exceed .45 BTU/(sf*hr*deg F°). Thermal breaks shall be required. Thermally improved or thermally skipped bridged systems are not allowed unless specifically approved by UA.

Submittals

1. Samples: Samples of glazing and exposed finishes shall be submitted.
2. Product Data:
 - A. Submit data per each unit.

- B. Test data: not less than 5 years old
 - C. All calculations shall be stamped by a licensed professional engineer
3. Shop Drawings: Shop drawings shall be configured in such a manner that the submitted window details may be easily compared with details provided on architectural drawings. Shop drawings shall use numbering systems consistent with those provided on architectural plans. Shop drawings shall be specific to the project. Generalized drawings are not acceptable. All details must be thoroughly dimensioned. The following items shall be clearly detailed on shop drawings:
- A. Plan and elevation views
 - B. Details addressing anchorage
 - C. Jamb, sill, sill pans and head details
 - D. Hardware
 - E. Flashing details
 - F. Drainage
 - G. Weather stripping
 - H. Thermal breaks
 - I. Wind deflection charts
4. Qualified Engineer: All shop drawings and analysis data shall be prepared and sealed by a qualified engineer.
5. Quality Assurance: Manufacturer to submit a field installation manual to include:
- A. Written installation instructions for each type of panning and window assembly
 - B. QC task checklist showing each step of window installation and a signoff column for each task. This checklist is to be used for all windows installed and the QC manual shall be kept on record by the Contractor to be viewed at any time by Owner or Designer.

Manufacturers

1. The following manufacturers are approved with documentation that all provisions of this guide are met. Other manufacturers may be approved with sample and documentation.
 - A. YKK AP
 - B. Kawneer
 - C. Vistawall International
 - D. EFCO Corporation

Warranty

Special Warranty: Warrant for five (5) years against defects in material or workmanship under normal use. This warranty is to include components and glazing. Finish shall carry a 10 year warranty. Warranty to include all labor and materials required for replacement or repair. Glazing shall be warranted for ten (10) years against seal failures of insulated glass units.

Insulating Glass Units

1. Exterior glass lite:
 - A. Thickness: 1/4" unless specifically permitted otherwise by UA.
 - B. Tint: Clear unless tinted glass is recommended for the design
 - C. Type: Annealed unless strengthened or tempered glass is required.
 - D. Doors: All glazing in doors shall be of insulated, tempered glass
2. Interior glass lite:
 - A. Thickness: 1/4" unless specifically permitted otherwise by UA.
 - B. Tint: Clear
 - C. Type: Annealed unless strengthened or tempered glass is required.
3. Curtain Wall/Storefront Doors:
 - A. Wide stile aluminum doors are preferred.
 - B. Insulated, tempered glass is required.
4. Coatings: All required coatings are to be installed on surface 4, unless approved otherwise by owner

Finish on Aluminum Extrusions

1. Anodized coatings shall meet AAMA 612. Alternately a 75% minimum Kynar resin enamel coating 1.0 (+/- 0.2) mil dry thickness (min) over manufacturer's standard substrate preparation may be used.
2. Coating: Unless approved otherwise by UA, finish shall match UA Standard Color, "Antique White". 50% minimum Kynar resin enamel coating 1.0 (+/-0.2) mil dry thickness (min) over manufacturer's standard substrate preparation. The color numbers are as follows:
 - A. Kynar No. 3Q36309
 - B. Paint No: PNT AK2B12

Field Testing

1. Water Leakage: Systems with structural framing less than 80 square feet shall be tested per AAMA 503. Larger systems shall be tested per AAMA 502.1 unless 503 testing is specifically required by Owner.
2. Air Leakage: Field air leakage testing may be performed per AAMA 503, but in general is not recommended by AMMA for storefront and curtain wall assemblies.

Installation

1. On-site training shall be provided by the manufacturer for all personnel installing window systems. No personnel shall install window systems unless they have successfully completed the on-site training. Provide at least one week notice to owner of on-site training. Training shall be schedules such that Owner's representatives shall attend training.
2. Manufacturer shall be present during installation of first five windows for the project, and during the installation of different type of window.
3. All installations shall be water tight. All openings shall include water tight flashings. There shall be a primary sealant continuous around the perimeter of the system frame and flashed opening to maintain a water tight system. Air seal interior between frame and substrate. The primary sealant shall not be installed on snap trim. Do not block weeps with sealant.
 - A. The minimum sealant joint size shall be 3/8". Backer rod or bond breaker tape shall be installed below all sealant joints.
 - B. Storefront Sill Pans: Manufacturer supplied sill pans (subsills) are required.
 - 1) Sill pans shall have back dams and end dams to equal or exceed the minimum specified design water leakage test pressure.
 - 2) End dams shall be mechanically attached with horizontal screws. No mechanical attachments are allowed through the horizontal leg of the pan. End dams shall be sealed water tight.
 - 3) All anchors and seams shall be lap sealed and cap sealed.
 - 4) No blind seals are allowed
 - 5) All fasteners through the pan shall be set in a bed of sealant and be cap sealed.
 - 6) Broken fasteners shall be completely removed, and reinstalled.
 - C. Curtain Wall Flashing Sill Pans: When curtain walls are installed in punched openings, a flashing sill pan (sill pan) should be considered by the designer. Sill pans shall not be provided when curtain walls are installed on curbs or slabs.
 - 1) Sill pans shall be provided by glazing contractor.
 - 2) Sill pans shall be designed to capture all leakage and direct leakage into the drainage cavity or to the exterior of the structure.

- 3) Sill pan material may be metallic (stainless steel, copper, etc.) or polymer (self-adhered flexible flashing or rigid polymer).
- 4) Sill pans shall have back dams extending beyond the interior curtain wall frame and end dams extending to each jamb. Seams in sill pans, end dams, and back dams shall be water tight. End dams shall be solid, water tight, and be constructed from sheet metal flashing, flexible flashing, or pre-molded polymers with adhered joints. Seams in metallic end dams shall be welded or soldered. Splices in sill pans shall be water tight.
- 5) Sill pans shall have back dams and end dams to equal or exceed the minimum specified field water leakage testing design pressure. Sill pans shall be sealed to the jambs by setting the end dams against the jambs in a bed of sealant.
- 6) Jamb flashing shall be turned into the sill pan such that leakage at the jambs can be directed towards the drainage plane.
- 7) No blind seals through the sill pan are allowed.
- 8) All clips anchored through the sill pan shall be set in a bed of sealant. Fasteners anchoring clips shall be cap sealed.
- 9) Broken fasteners shall be completely removed and reinstalled.

- End of Guideline -