

.SECTION 08810 - FIRE RATED GLASS AND FRAMING SYSTEMS – STILELITE-100™ DOORS AND
TRANSPARENT WALL SYSTEMS

PART 1 - GENERAL

1.1 SUMMARY

- A.** Section includes:
 - 1. Fire rated glazing and framing systems for installation as [full vision fire rated doors] [sidelights] [borrowed lights] [windows] [transoms] [walls]
- B.** Related Sections include the following:
 - 1. Division 8 Section 08110 “Steel Doors and Frames.”
 - 2. Division 8 Section 08710 “Door Hardware.”

1.2 REFERENCES

- A.** American Society for Testing and Materials (ASTM):
 - 1. ASTM E119: Methods for Fire Tests of Building Construction and Materials.
 - 2. ASTM E2074-00: Standard Test Method for Fire Tests of Door Assemblies, Including Positive Pressure Testing of Side-Hinged and Pivoted Swinging Door Assemblies.
 - 3. ASTM E2010-01: Standard Test Method for Positive Pressure Fire Tests of Window Assemblies.
- B.** National Fire Protection Association (NFPA):
 - 1. NFPA 80: Fire Doors and Windows
 - 2. NFPA 251: Fire Tests of Building Construction & Materials
 - 3. NFPA 252: Fire Tests of Door Assemblies
 - 4. NFPA 257: Fire Test of Window Assemblies
- C.** Underwriters Laboratories, Inc. (UL):
 - 1. UL 9: Fire Tests of Door Assemblies
 - 2. UL 10 B: Fire Tests of Window Assemblies
 - 3. UL 263: Fire tests of Building Construction and Materials
 - 4. UL 10 C: Positive Pressure Fire Tests of Window & Door Assemblies
- D.** American National Standards Institute (ANSI):
 - 1. ANSI Z97.1: Standard for Safety Glazing Materials Used in Buildings
- E.** Consumer Product Safety Commission (CPSC):
 - 1. CPSC 16 CFR 1201: Safety Standard for Architectural Glazing Materials
- F.** Steel Window and Glass Wall System shall have been tested to meet or exceed the requirements of NAAMM/HMMA 861.

1.3 SYSTEM DESCRIPTION

- A.** Press formed steel modular steel windows (transparent wall) modules, glazed swinging steel doors and door frames within the System including factory finish painted, glass and hardware.

B. Performance Requirements

1. Adjust minutes in paragraphs below to suite project.
2. Duration of Fire Rating—Doors: Capable of providing a fire rating for 60 minutes.
3. Duration of Fire Rating—Windows/Walls: Capable of providing a fire rating for 60 minutes.
4. Fire Resistive Rating: Glaze applications in occupancy or area separation walls and corridors where glazing exceeds 25% of the wall area, or as otherwise specified with a fire resistive assembly meeting the radiant heat requirements of ASTM E119. Per ASTM E119, NFPA-251 and UL 263 requirements temperature on the non-fire side of glazing and framing at conclusion of fire test exposure shall be below 250°F above ambient room temperature.

1.4 SUBMITTALS

- A. Submittal drawings shall be prepared in accordance with NAAM/HMMA 861.
- B. Shop Drawings: Show doors, frames, hardware and steel frame components as shown on shop drawings and schedules.
- C. Obtain Architect's approval before fabrication.
- D. Finish Paint Color Sample: Submit a draw of the finish paint for approval of color and glass.
- E. Samples: For following products:
 1. Two 8-inch by 10-inch samples for glass.
- F. Glazing Schedule: Use same designations indicated on Drawings for glazed openings in preparing a schedule listing glass types and thicknesses for each size opening and location.
- G. Technical Information: Submit latest edition of manufacturer's product data providing product descriptions, technical data and installation instructions.
- H. Qualification Data: For firms and persons specified in "Quality Assurance" Article to demonstrate their capabilities and experience. Include lists of completed projects with project names and addresses, names and addresses of architects and owners, and other information specified.

1.5 QUALITY ASSURANCE

- A. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for this Project; whose work has resulted in glass installations with a record of successful in-service performance; and who employs glass installers for this Project who are certified under the National Glass Association Glazier Certification Program as Level 2 (Senior Glaziers) or Level 3 (Master Glaziers).
- B. Source Limitations for Glazing Accessories: Obtain glazing accessories from one source for each product and installation method indicated.
- C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are listed and labeled by Intertek Testing Services-Warnock-Hersey Certification, for fire ratings indicated, based on testing according to NFPA 252, ASTM E119. Assemblies must be factory-welded or come complete with factory-installed mechanical joints and must not require job site fabrication.

- D. Certification: Signed by manufacturers of glass and glazing products certifying that products furnished comply with requirements.
 - 1. [Door assemblies shall be tested to the acceptance criteria of ASTM E2074-00, NFPA 252, UL 9,
 - 2. [Wall assemblies shall be tested to the acceptance criteria of ASTM E119, NFPA 251, UL 263 Standard Test Methods for Fire Tests of Building Construction and Materials.]
- E. Listings and Labels - Fire Rated Assemblies: Under current follow-up service by an approved independent agency maintaining a current listing or certification. Label assemblies accordance with limits of manufacturer's listing.
- F. Regulatory Requirements: Comply with provisions of the following:
 - 1. Generally retain Americans with Disabilities Act Accessibility Guidelines below for private projects; FED-STD-795 for Federal, State, and local government projects. Verify with authorities having jurisdiction.
 - 2. Where indicated to comply with accessibility requirements, comply with [**Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG),"**] [**ANSI A117.1,**] [**FED-STD-795, "Uniform Federal Accessibility Standards,"**] as follows:
 - 3. Handles, Pulls, Latches, Locks, and other Operating Devices: Shape that is easy to grasp with one hand and does not require tight grasping, tight pinching, or twisting of the wrist.
 - 4. Door Closers: Comply with the following maximum opening-force requirements indicated:
 - 5. Fire Doors: Minimum opening force allowable by authorities having jurisdiction.
 - 6. NFPA 101: Comply with the following for means of egress doors:
 - 7. Latches, Locks, and Exit Devices: Not more than **15 lbf (67 N)** to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
 - 8. Door Closers: Not more than **30 lbf (133 N)** to set door in motion and not more than **15 lbf (67 N)** to open door to minimum required width.

1.6 DELIVERY, STORAGE AND HANDLING

- A. Deliver, store and handle under provisions specified by manufacturer. For details on storage and product handling, please contact AGC InterEdge Technologies and request information on storage and product handling.
- B. Deliver materials to specified destination in manufacturer or distributor's packaging undamaged, complete with installation instructions.
- C. Store off ground, under cover, protected from weather and construction activities.

1.7 WARRANTY

- A. Provide the Pyrobel and StileLite 100 supplier's limited five year warranty.

PART 2 - PRODUCTS

2.1 MANUFACTURERS - FIRE RATED [DOOR ASSEMBLY] [WINDOW] [WALL ASSEMBLY]

- A. Manufacturer Glazing Material: “Pyrobel®” fire-rated glazing as manufactured by AGC Flat Glass Europe and distributed by AGC InterEdge Technologies, LLC Tele: 877-376-3343 Fax: 415-289-0326, web site www.firesafe-glass.com
- B. Frame System: “StileLite 100” fire-rated steel frame system as manufactured by Stiles Custom Hollow Metal and supplied by AGC InterEdge Technologies LLC, 85 Liberty Ship Way, Suite 110B, Sausalito, CA 94965 Tele: 877-3760-3343 Fax: 415-289-0326; web site: www.firesafe-glass.com
- C. Substitutions: No substitutions allowed.

2.2 MATERIALS - GLASS

- A. Fire Rated Glazing: Pyrobel 60, 60 minute fire and safety rated glazing
- B. Properties:
 - 1. Thickness: For Interior Use: (1”, #60-25)
 - a. For Exterior Use, Single Glazing: (1 1/4”, #60-29)
 - b. For Exterior Use, Insulated Glass Unit: (1 7/8”, #60-47)
 - 2. Weight: Varies with thickness (approx. 12.3 to 17.0)
 - 3. Approximate Visible Transmission: Varies with thickness (approximate range 81 to 71 percent).
 - 4. Fire-rating: One hour.
 - 5. Impact Safety Resistance: ANSI Z97.1 and CPSC 16CFR1201 (Cat. I and II).
 - 6. STC Rating: Up to 44 dB.

7. Exterior Grade: PVB layer on exterior surface.

- C. Logo: Each piece of fire-rated glazing shall be labeled with a permanent logo including name of product, manufacture, testing laboratory (Warnock-Hersey), fire rating period, safety glazing standards, and date of manufacture.

2.3 MATERIALS – STEEL FRAMING

- A. Steel Framing System: 60 min:
 - 1. Steel Frame: Frames shall be constructed of commercial quality, cold rolled steel conforming to ASTM A366. The steel shall be 14 gage (.067) minimum and shall be free of scale, pitting, coil breaks or other surface defects
- B. Modular Frame Construction:
 - 1. All components of the systems shall be 4 _” minimum jamb depth with 5/8” high minimum integral stops and be welded into four sided modules. Frame shapes with corner joints shall have all contact edges closed tight. Jamb, heads and sills shall have faces mitered and stops butted. Faces and soffits shall be continuously welded and face finished smooth. Mullions and muntins shall be face welded only and finished smooth. Knock down frames are not acceptable.
 - 2. All finish work shall be neat in appearance, square, and free of defects, warps or buckles. Press steel members shall be straight and of uniform profile through their length. Roll formed members shall not be acceptable. After fabrication, all tool marks and surface imperfections shall be removed, and exposed faces of all welded joints shall be dressed smooth.

3. Loose glazing stops: Removable glass channel stops shall be a minimum 16 gage (0.053”), cold rolled steel, butted at corner joints and secured to frame using #8 oval head sheet metal screws.
 4. Provide all supplementary parts and components, such as inserts, clips, bracing and other miscellaneous supports required for a finished installation. Promptly furnish items to be placed during the installation of other work. Insofar as practicable, fitting and assembly of this work shall be done in the shop.
- C. Module Wall System Grid Assembly:**
1. Wall system (framing) shall be made up of four sided welded modules which shall be mechanically joined together to form a window wall grid system.
 2. Vertical members shall be formed of two symmetrical sections mechanically interlocking with each other. These sections shall be securely fastened together with #8 sheet metal screws. See 3.02 for further installation instructions.
- D. Fabrication**
1. Furnish frame assemblies pre-welded. When necessary, splice frames too large for shop fabrication or shipping or to fit in available building openings. Fit with suitable fasteners. Knock-down frames NOT PERMITTED.
 2. Field glaze door and frame assemblies.
 3. Factory prepare steel door assemblies field mounting of hardware.
 4. Fabrication Dimensions: Fabricate fire rated assembly to approved dimensions. Guarantee dimensions where practicable within required tolerance.
 5. Obtain approved Shop Drawings prior to fabrication.

2.4 GLAZED SWINGING STEEL DOORS

- A. Materials**
1. Frames shall be constructed from commercial quality, cold rolled steel conforming to ASTM A366 or hot rolled, pickled and oil Steel conforming to ASTM A569. The steel shall be 14 gage (.067”) minimum and shall be free of scale, pitting, coil breaks or other surface defects.
- B. Construction**
1. Door shall be 1-3/4” thick. Doors shall be neat in appearance and free from warpage or buckle. Edge bends shall be true and straight and of minimum radius for the gage of metal used.
 2. Door core shall be mineral fiber type sufficient to achieve necessary temperature rise rating of 450 degrees for 30 minutes.
 3. The top and bottom shall be closed with a continuous channel .056” minimum thickness, spot welded to both face sheets 4” o.c. maximum
 4. Vertical edges: Welded and finished flush with visible seams. Edge shall be beveled 1/8” in 2” profiles.
 5. All hardware furnished by the manufacturer or hardware contractor for single or pair doors shall be designed for beveled edges as specified herein.
 6. Hardware reinforcements shall comply with NAAMM/HMMA 861.
 7. Glass light cutouts shall be continuously stiffened by channel shaped steel sections which shall span the full thickness and be securely fastened to both face sheets by spot welds spaced a maximum of 4” o.c.
 8. Glass molding/light kits shall be 16 gage (.054”) minimum, steel channel shape to accommodate glass size and thickness as called for with mitered corners that are fully welded and finished smooth. Side of light kit shall be removable, secured to the door face with #8 oval head sheet metal screws.
 9. Finish: After fabrication, all tool marks and surface blemishes shall be filled and sanded as required to make both faces and both vertical edges smooth and free from irregularities.

2.5 CLEARANCES AND TOLERANCES

- A. All clearances and tolerances shall be in compliance with NAAMM/HMMA 861, NFPA 80.

2.6 FINISHES, GENERAL

- A. All units shall be given a “Epoxy-Shield” factory finish, if specified.
1. Thoroughly clean and phosphate treat all metal surfaces, rinse and seal with chromic acid, in accordance with Fed.Spec TT-C-490B.
 2. Treated units shall be given a rust inhibitive primer coating of Polyamidoamine Epoxy and then oven baked to a dry film thickness of not less than 0.1 mil.
 3. The finish coating shall be Aliphatic Acrylic Polyurethane formulation with a satin finish. The coating shall be applied under controlled conditions in the manufacturers plant and baked to a dry film thickness of 0.1 mil.
 4. Color shall be selected from standard color chart. Note that custom colors are available.

2.7 HARDWARE AND LOCATIONS

- A. The location of hardware on doors and frames shall be in compliance with NAAMM/HMMA 861.
- B. Standard hardware supplied from Manufacturer as follows per leaf:
- One (1) each Pemko Continuous Hinge CHS 83HS.
 - One (1) each Von Duprin Exit Device 9827-L-F 630.
 - One (1) each Schlage Cylinder 20-022 626.
 - One (1) each LCN Surface Closer 4041 w.PA AL..
- C. Custom hardware for doors specified by Architect will be approved by Manufacturer and be procured independently of Manufacturer. Manufacturer will prep for custom hardware if at all possible.

PART 3 - EXECUTION

3.1 SITE STORAGE AND PROTECTION OF MATERIALS

- A. The contractor responsible for the installation shall see that materials are properly stored on planks or blocking in a dry location. Materials shall be covered to protect them from damage but in such a manner as to permit air circulation.

3.2 INSTALLATION

- A. The contractor responsible for the installation shall perform the following:
- B. General:
1. Installation shall be in accordance with installation from System manufacturer and NAAMM/HMMA 840 and as specified below.

2. Verify conditions and measurements affecting the work of the Section at site. Make sure that detrimental conditions have been corrected before proceeding with installation.
 3. Do not install defective components, including warped, bowed, dented, abraded and broken members and glass with damage edges. Comply with manufacturers instructions for protecting, handling and installing fabricated steel systems and glazed door components with particular care and attention to preservation of applied finishes. Discard or removed and replace members that have been damaged. Do not cut, trim or weld components during erection in any manner which would damage the finish, decrease their strength, or result in a visual imperfection or a failure in performance of the work. Return components which require alteration to the shop for refabrication or replacement. Install components level, plumb, true to line and with uniform joints and reveals. Attach to structure with non-staining and non-corrosive shims, anchors, fasteners and spacers. Provide all accessories such as fasteners, sealant and concealed anchorage needed for a finished installation.
- C. Erection Tolerance:**
1. Provide benchmarks for installation within specified tolerances. Provide adjustment within the assemblies to accommodate job variations. Install this work within the assemblies to accommodate job variations. Deviation from established vertical, horizontal or designed position shall not exceed 1/8" in 12' length of any member, or " in an total run. Maximum offset from the true alignment between two consecutive members placed end-to-end shall not exceed 1/16". Limit tolerance as measured with 10" straight edge to 1/16" in any direction.
- D. Assembly and Anchorage:**
1. Assemble the work so that it will not be distorted or the fasteners overstressed from expansion and contraction.
 2. Anchor components securely by bolting or other permanent mechanical attachment system which will comply with specified requirements and permit movements which are intended or necessary. Install slip-joint linings where required to ensure movement. Provide separator between contact surfaces of dissimilar materials where there is a possibility of corrosive or electrolytic action.

3.3 GLAZING

- A.** Glaze the doors and window wall assemblies in accordance with the manufacturers specifications and the "Glass and Glazing" Section.

3.4 HANGING DOORS

- A.** Install finish hardware on glazed steel swinging doors in accordance with the hardware manufacturers printed instructions. Hang the doors and adjust the finish hardware to the doors operate freely for their entire travel without sticking or binding.

3.5 REPAIR REPLACEMENT

- A.** Touch-up marred and abraded surfaces to match adjacent undamaged surfaces, as approved by the Architect. Promptly replace components damaged beyond satisfactory field repair before acceptance with approved new components at no cost to the Owner.

3.6 PROTECTION AND CLEANING

- A.** Protect glass from damage immediately after installation by attaching crossed streamers to framing held away from glass. Do not apply markers to glass surface. Remove nonpermanent labels, and clean surfaces.
- B.** Protect glass from contact with contaminating substances resulting from construction operations, including weld splatter. If, despite such protection, contaminating substances do come into contact with glass, remove them immediately as recommended by glass manufacturer.
- C.** Remove and replace glass that is broken, chipped, cracked, abraded, or damaged in any way, including natural causes, accidents, and vandalism, during construction period.
- D.** Wash glass on both exposed surfaces in each area of Project not more than four days before date scheduled for inspections that establish date of Substantial Completion. Wash glass as recommended by glass manufacturer.

END OF SECTION