# PART 1 - GENERAL

## 1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 1 and 01 Specification Sections, apply to this Section.

## 1.2 SUMMARY

A. Section Includes:
   1. Fire rated door and framing systems for installation as vision lights in fire rated doors, transoms, windows in exterior and interior openings.

B. Related Requirements:
   1. Section 051200 “Structural Steel” for steel attachment members.
   2. Section 055000 “Metal Fabrications” for steel attachment members inserts and anchors.
   3. Section 078443 “Joint Firestopping” for firestops between work of this section and other fire resistive assemblies.
   4. Section 087100 “Door Hardware” for door hardware other than that provided by the work of this section
   5. Section 087113 “Automatic Door Operators” opener for door to comply with acessibility and Local Authority opening force requirements.

## 1.3 REFERENCES

A. American Architectural Manufacturers Association (AAMA)
   1. AAMA 501.1-2005: Standard Test Method for Water Penetration of Windows, Curtain Walls, and Doors Using Dynamic Pressure
   2. AAMA 501.2-2003: Quality Assurance and Diagnostic Water Leakage Field Check of Installed Storefronts, Curtain Walls, and Sloped Glazing Systems
   3. AAMA 501.5-2005: Test Method for Thermal Cycling of Exterior Walls
   4. AAMA 1503-1998: Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections
   5. AAMA 2603-2002 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
   6. AAMA 2604-2005 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
   7. AAMA 2605-2005 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

B. American Society for Testing and Materials (ASTM):
   1. Fire rating related:
      a. ASTM E119 Methods for Fire Tests of Building Construction and Materials.
      b. ASTM E2074-00: Standard Test Method for Fire Tests of Door Assemblies, Including Positive Pressure Testing of Side-Hinged and Pivoted Swinging Door Assemblies.

2. Material related:
   a. ASTM A 1008/A 1008M - Standard Specification for Steel, Sheet, Cold-Rolled, Carbon, Structural, High-Strength, Low Alloy, and High-Strength Low-Alloy with Improved Formability, Solution Hardened, and Bake Hardenable; 2007.
   b. ASTM A 1011/A 1011M - Standard Specification for Steel, Sheet and Strip, Hot-Rolled, Carbon, Structural, High-Strength Low-Alloy and High-Strength Low-Alloy with Improved Formability, and Ultra-High Strength; 2006b.
3. Exterior related:
   a. ASTM E 283-04: Test Method for Determining the Rate of Air Leakage through Exterior Windows, Curtain Walls, and Doors under Specified Pressure Differences across the Specimen
   b. ASTM E 330-02: Test Method for Structural Performance of Exterior Windows, Doors, Skylights and Curtain Walls by Uniform Static Air Pressure Difference Procedure A
   c. ASTM E 331-04: Test Method for Water Penetration of Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform Static Air Pressure Difference
   d. ASTM E 783-02: Test Method for Field Measurement of Air Leakage through Installed Exterior Windows and Doors
   e. ASTM E 1105-00: Test Method for Field Determination of Water Penetration of Installed Exterior Windows, Skylights, Doors, and Curtain Walls by Uniform or Cyclic Static Air Pressure Difference
4. Sound related:
   a. ASTM E 90-04: Test Method for Laboratory Measurement of Airborne Sound Transmission Loss of Building Partitions and Elements
   b. ASTM E 413-04: Standard Classification for Rating Sound Insulation

C. American Welding Society (AWS):
   1. AWS D1.3 - Structural Welding Code - Sheet Steel; 2007

D. Builders Hardware Manufacturers Association, Inc.
   1. BHMA A156 - American National Standards for door hardware; 2006 (ANSI/BHMA A156).

E. National Fire Protection Association (NFPA):
   1. NFPA 80: Standard for Fire Doors and Fire Windows.
   2. NFPA 251: Standard Methods of Tests of Fire Endurance of Building Construction and Materials.
   3. NFPA 252: Standard Methods of Fire Tests of Door Assemblies.
   4. NFPA 257: Standard on Fire Test for Window and Glass Block Assemblies.

F. Underwriters Laboratories, Inc. (UL):
   1. UL 9: Fire Tests of Window Assemblies.
   2. UL 10B: Fire Tests of Door Assemblies.
   3. UL 10C: Positive Pressure Fire Tests of Door Assemblies.

G. American National Standards Institute (ANSI):
   1. ANSI Z97.1: Standard for Safety Glazing Materials Used in Buildings.

H. Consumer Product Safety Commission (CPSC):
   1. CPSC 16 CFR 1201 Categories I and II: Safety Standard for Architectural Glazing Materials.

1.4 DEFINITIONS

A. Manufacturer: A firm that produces primary glass, fabricated glass or framing as defined in referenced glazing publications.

1.5 SUBMITTALS

A. Product Data: Submit latest edition of manufacturer's product data providing product descriptions, technical data, Underwriters Laboratories, Inc. listings and installation instructions.

B. LEED Submittals: Credits MRc4, MRc5, EQc4.1, and EQc4.2. Refer to Section 018113 "Sustainable Design Requirements" for additional submittal requirements.

C. Shop Drawings: Include plans, elevations and details of product showing component dimensions; framed opening requirements, dimensions, tolerances, and attachment to structure.

D. Samples: For following products:
   1. Glass sample-as provided by manufacturer
   2. Sample of frame
   3. Verification of sample of selected finish

E. 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.

F. Warranties: Submit manufacturer's warranty.

G. Certificates of compliance from glass and glazing materials manufacturers attesting that glass and glazing materials furnished for project comply with requirements.
   1. Separate certification will not be required for glazing materials bearing manufacturer's permanent label designating type and thickness of glass, provided labels represent a quality control program involving a recognized certification agency or independent testing laboratory acceptable to authority having jurisdiction.

1.6 QUALITY ASSURANCE

A. Testing Agency Qualifications: Qualified according to the following:
   1. International Accreditation Service for a Type A Third-Party Inspection Body (Field Services ICC-ES Third-Party Inspections Standard Operating Procedures, 00-BL-S0400 and S0401)
   2. International Accreditation Service for Testing Body-Building Materials and Systems
      a. Fire Testing
         1) ASTM Standards E 119
         2) CPSC Standards 16 CFR 1201
         3) NFPA Standards 251, 252, 257
         4) UL Standards 9, 10B, 10C, 1784, UL Subject 63

B. Installer Qualifications: An experienced installer who has completed glazing similar in material, design, and extent to that indicated for Project and whose work has resulted in construction with a record of successful in-service performance.

C. Fire-Rated Door Assemblies: Assemblies complying with NFPA 80 that are classified and labeled by UL, for fire ratings indicated, based on testing according to NFPA 252. Assemblies must be factory-welded or come complete with factory-installed mechanical joints and must not require job site fabrication.

D. Fire-Rated Window Assemblies: Assemblies complying with NFPA 80 that are classified and labeled by UL, for fire ratings indicated, based on testing according to NFPA 257. Assemblies must be factory-welded or come complete with factory-installed mechanical joints and must not require job site fabrication.

E. Listings and Labels of Fire Rated Assemblies: Under current follow-up service by Underwriters Laboratories® maintaining a current listing or certification. Label assemblies accordance with limits of manufacturer's listing.

## 1.7 DELIVERY, STORAGE AND HANDLING

A. Deliver, store and handle under provisions specified by manufacturer.

## 1.8 PROJECT CONDITIONS

A. Obtain field measurements prior to fabrication of frame units. If field measurements will not be available in a timely manner coordinate planned measurements with the work of other sections.
   1. Note whether field or planned dimensions were used in the creation of the shop drawings.

B. Coordinate the work of this section with others effected including but not limited to: other interior and/or exterior envelope components and door hardware beyond that provided by this section

## 1.9 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of glass and framed systems that do not comply with requirements or that fail in materials or workmanship within specified warranty period.
   1. Warranty Period: Five years from date of Completion.

B. Special Finish Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components on which finishes do not comply with requirements or that fail in materials or workmanship within specified warranty period. Warranty does not include normal weathering.
   1. Warranty Period: Five years from date of Completion.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
   1. Technical Glass Products (TGP) (Basis-of-Design)
   2. Or Comparable product by one of the following:
      a. Aluflam North America
      b. Or Equal.

B. Source Limitations for Glazing Accessories: Obtain framing system, glazing and glazing accessories from one source for each product and installation method indicated.

2.2 PERFORMANCE REQUIREMENTS

A. Fire Rating Requirements:
   1. Duration at Door and Window Assembly: Capable of providing a fire rating as indicated on Drawings.
   2. Duration at Opening Applications in fire partitions or area separation walls and corridors where opening protection is specified: Capable of providing rating as indicated on Drawings.

B. Delegated design: For the performance requirements listed below requiring structural design provide data, calculations and drawings signed and sealed by an engineer licensed in the state where the project is located.

C. Structural Performance
   1. Design and size the system to withstand structural forces placed upon it without damage or permanent set when tested in accordance with ASTM E330 using load 1.5 times the design wind loads and of 10 seconds in duration.
   1. Positive wind load: As indicated on the drawings.
      2. Negative wind Load: As indicated on the drawings.
   3. Member deflection: Limit deflection of the edge of the glass normal to the plane of the glass to 1/175 of the glass edge length or 3/4-inch, whichever is less of any framing member.
   4. Accommodate movement between storefront and adjoining systems

D. Air infiltration: Provide systems that allow a maximum air leakage through fixed glazed openings of 0.06 cfm/sq. ft. of area when tested per ASTM E 283 at a static air differential of 6.24 lbf/sq ft

E. Water Penetration:
   1. Under Static pressure, provide systems that do not show uncontrolled water leakage when tested according to ASTM E 331 under static pressure equal to 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.
   2. Under Dynamic pressure, provide systems that do not show uncontrolled water leakage when tested according to AAMA 501.1 under static pressure equal to 20 percent of positive wind-load design pressure, but not less than 6.24 lbf/sq. ft.

F. Regulatory Requirements: Comply with provisions of the following:
   1. Comply with Americans with Disabilities Act (ADA), "Accessibility Guidelines for Buildings and Facilities (ADAAG)," and current CBC Accessibility Requirements as follows:
      a. 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.
      b. Door Closers: Comply with the following maximum opening-force requirements indicated:
         1) Accessible doors no more than 5 lbf push or pull force
         2) Fire Doors: Minimum opening force allowable by authorities having jurisdiction
   2. Compliance with this standard requires auto openers to be added to the opening due to the weight of the doors. Coordinate the addition of auto-openers with the Section 087100 “Door Hardware” or other section containing these devices. Verify that the Authority Having Jurisdiction is using NFPA 101 and/or CBC and which edition dates of both as a requirement for the facility. NFPA 101: Comply with the following for means of egress doors:
      a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
      b. Door Closers: Not more than 30 lbf to set door in motion and not more than 15 lbf to open door to minimum required width.
   3. CBC 2013 Chapter 10 Means of Egress: Comply with the following for means of egress doors:
      a. Latches, Locks, and Exit Devices: Not more than 15 lbf to release the latch. Locks shall not require the use of a key, tool, or special knowledge for operation.
      b. Door Closers: Not more than 30 lbf to set door in motion and not more than 15 lbf to open door to minimum required width.

## 2.3 FIRE RATED DOOR ASSEMBLY AND WINDOWS

A. Basis-of-Design Frame System: “Fireframes® Designer Series by TGP” fire-rated frame system as manufactured and supplied by Technical Glass Products.

B. Steel Framing System including rated windows.
   1. Frame: Narrow-profile, roll-formed steel tubing and fire doors or aluminum storefront architectural grade specialty frames and doors.
   2. Fasteners: As recommended by manufacturer
   3. Glazing Accessories: calcium silicate setting blocks.

## 2.4 GLAZING

A. Basis-of-Design Glass Material: FireLite Plus® Premium Grade fire-rated glazing as fabricated and distributed by Technical Glass Products.

B. Fire Rated Glazing: Comply with ASTM C 1036 and ASTM C 1048.

C. Approximate Visible Transmission: Varies with thickness (approximate range 88 percent).

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

E. Performance: Glass must be rated to stop fire from either direction and must meet all testing requirements including the required hose-stream test (where fire-rating exceeds 20 minutes).

2.5 FABRICATION

A. Furnish frame assemblies pre-welded.
   1. When necessary, splice frames too large for shop fabrication or shipping or to fit in available building openings.
   2. Fit with suitable fasteners.
   3. Knock-down frames are not permitted

B. Field glaze door and frame assemblies.

C. Factory prepare steel door assemblies and install all hardware.

D. Fabrication Dimensions: Fabricate to fire-rated field dimensions.

E. Obtain approved shop drawings prior to fabrication.

2.6 FINISHES, GENERAL

A. Comply with NAAMM's "Metal Finishes Manual for Architectural and Metal Products" for recommendations for applying and designating finishes.

B. Finish frames after assembly.

C. Appearance of Finished Work: Variations in appearance of abutting or adjacent pieces are acceptable. Noticeable variations in the same piece are not acceptable.

2.7 FACTORY FINISHES

A. Color-Coated Finish: Apply manufacturer's standard powder coating finish system complying with AAMA 2603 applied to factory-assembled frames before shipping, complying with manufacturer's written instructions for surface preparation including pretreatment, application, and minimum dry film thickness.
   1. Color and Gloss: Match Architect’s Sample.

2.8 DOOR HARDWARE

A. Furnish hardware with fire door by the manufacturer.

B. Select hardware from door manufacturer's standard recommended and approved hardware groups as specified in Division 8 Section – Door Hardware.

C. Provide power assisted hardware for use at any door that cannot meet the opening force(s) required by code noted in Part I above.
   1. High energy, power-operated doors must meet the requirements of ANSI/BHMA A156.10 and power-assisted low energy doors must comply with ANSI/BHMA 156.19

Operating hardware for Single Outswing Door with Electric Mortise Locking. (HW SET 18) Each door to have the following:

| | Item | Description | Manufacturer | Finish* |
|---|---|---|---|---|
| 3 | Hanging Devices | Weld on Pivots | Technical Glass Products | PTM |
| 1 | Electric Mortise Lock | RX 8271 LW1Lwith panic function-Fail Secure 24VDC | Sargent | 613 |
| 1 | Cylinder | Mortise 7-PIN O-Bitted | Sargent | 613 |
| 1 | Closing Device | TS 93 Surface Applied Closer-Push Side | Dorma | 690 |
| 1 | Auto door Bottom | 420APKL Smoke Seal | Pemko | MA |
| 1 | Threshold | 176B Oxidized Oil Rub MSES25 | Pemko | 613 |
| 1 | Weather Seal | Perimeter Gasket | Technical Glass Products | |
| 1 | Power Transfer | CEPT-10-10B | Sargent | 613 |
| 1 | Door Position Switch | DPS-M-BK | Sargent | BLK |

Card reader by others

* FINISH LEGEND:

| | |
|---|---|
| PTM | Painted to match frame |
| MA | Mill Finish Aluminum |
| 690 | Dark Bronze Paint |
| 613 | Oil Rubbed Bronze |

## 2.9 ACCESSORY MATERIALS

A. Bituminous Paint: Cold-applied, asphalt-mastic paint complying with SSPC-Paint 12 requirements except containing no asbestos.

# PART 3 - EXECUTION

## 3.1 EXAMINATION

A. Examine substrates and members to which the work of this section attaches or adjoins prior to frame installation.

B. Provide openings plumb, square and within allowable tolerances.
   1. Provide 3/8 inch shim space at all walls

C. Notify Architect of any conditions which jeopardize the integrity of the proposed fire wall / door system.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install fire rated glass and framing system per manufacturer's written instructions.

B. Install components plumb and true in alignment with established lines and grades, and without warp or rack.

3.3 REPAIR AND TOUCH UP

A. Limited to minor repair of small scratches. Use only manufacturer's recommended products.
   1. Such repairs shall match original finish for quality or material and view.

B. Remove and replace glass that is broken, chipped, cracked, abraded, or damaged.

3.4 ADJUSTING

A. Adjust door function and hardware for smooth operation. Coordinate with other hardware suppliers for function and use of any other attached hardware.

3.5 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.
   1. Do not clean with astringent cleaners. Use a clean "grit free" cloth and a small amount of mild soap and water or mild detergent.
   2. Do not use any of the following:
      a. Steam jets
      b. Abrasives
      c. Strong acidic or alkaline detergents, or surface-reactive agents
      d. Detergents not recommended in writing by the manufacturer
      e. Do not use any detergent above 77 degrees F
      f. Organic solvents including but not limited to those containing ester, ketones, alcohols, aromatic compounds, glycol ether, or halogenated hydrocarbons.
      g. Metal or hard parts of cleaning equipment must not touch the glass surface

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 temporary coverings and protection of adjacent work areas.

D. Clean installed products in accordance with manufacturer's instructions prior to owner's acceptance.

E. Remove construction debris from project site and legally dispose of debris.

END OF SECTION