Tecfire USA, Inc.
Indianapolis, IN.
1-833-TECFIRE
info.na@tecfire.com

Tecfire Fire-Rated Steel-Framed Curtain Wall

3-Part Specification

Specifier Guidance – Tecfire USA

This guide section is provided to support design professionals in developing accurate and complete project specifications. Please carefully review and adapt the content to suit your specific project requirements and ensure compliance with all applicable local codes and regulations.

Instructional notes appear in boxed text and should be removed from the final specification. Items marked with brackets and highlighted in yellow indicate options or required selections—please make the appropriate choices and delete any unused text.

Once all editing is complete, remove this page entirely by deleting its content and removing the section break above the following page.

For further assistance, please contact Tecfire USA at 1-833-TECFIRE or info.na@tecfire.com

SECTION 08 44 18
FIRE-RATED STEEL-FRAMED CURTAIN WALL
Manufacturer: Tecfire

PART 1 - GENERAL

1.1 SECTION INCLUDES
A. Fire-resistive glazed curtain wall systems, complete with perimeter trim components, stools, accessories, shims, anchorage elements, and sealants for interface with adjoining construction.

1.2 RELATED SECTIONS
Coordinate with the following specification sections:

1. 05 12 00 – Structural Steel Framing: Structural attachment components.
2. 05 50 00 – Metal Fabrications: Embedded supports and mechanical anchors.
3. 07 25 00 – Weather Barriers: Air, moisture, and vapor sealing at curtain wall interfaces.
4. 07 62 00 – Sheet Metal Flashing and Trim: Flashing integration at curtain wall transitions.
5. 07 84 00 – Firestopping: Perimeter fire containment systems adjacent to glazed fire-rated assemblies.
6. 07 92 00 – Joint Sealants: Sealant application associated with glazed assemblies.
7. 08 11 00 – Metal Doors and Frames: Related fire-rated door assemblies.
8. 08 43 13 – Aluminum Entrances and Storefronts: Entry/storefront systems integrated with fire-resistive assemblies.
9. 08 71 00 – Door Hardware: Hardware not supplied under this section.
10. 08 41 23 – Fire-Resistive Glazing and Framing Systems.
11. 08 88 17 - Fire-Rated Glass & Framing

1.3 REFERENCE STANDARDS
A. **AAMA – American Architectural Manufacturers Association:**

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 501.4-2000 (Revised 2001): Recommended Static Test Method for Evaluating Curtain Wall and Storefront Systems Subjected to Seismic and Wind Induced Interstory Drifts
   4. AAMA 501.5-2005: Test Method for Thermal Cycling of Exterior Walls
   5. AAMA 1503-1998: Voluntary Test Method for Thermal Transmittance and Condensation Resistance of Windows, Doors and Glazed Wall Sections

6. AAMA 2603-2002 - Voluntary Specification, Performance Requirements and Test Procedures for Pigmented Organic Coatings on Aluminum Extrusions and Panels.
7. AAMA 2604-2005 - Voluntary Specification, Performance Requirements and Test Procedures for High Performance Organic Coatings on Aluminum Extrusions and Panels.
8. AAMA 2605-2005 - Voluntary Specification, Performance Requirements and Test Procedures for Superior Performing Organic Coatings on Aluminum Extrusions and Panels.

B. **ASTM – American Society for Testing and Materials:**

1. Fire safety related:

a. ASTM E119: Methods for Fire Tests of Building Construction and Materials.

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. **BHMA – Builders Hardware Manufacturers Association:**

1. ANSI/BHMA A156 – Door hardware standards.

D. **Canadian Standards – CAN/ULC:**

1. CAN/ULC-S101 Standard Test of Fire Endurance Tests of Building Construction and Materials

2. CAN/ULC-S104 Standard Method of Fire Tests of Door Assemblies

3. CAN/ULC-S106 Standard Method of Fire Tests of Window and Glass Block Assemblies

E. **NFPA – National Fire Protection Association:**

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

F. **UL – Underwriters Laboratories:**

1. UL 9: Fire Tests of Window Assemblies

2. UL 10 B: Fire Tests of Door Assemblies

3. UL 10 C: Positive Pressure Fire Tests of Window & Door Assemblies

4. UL 263: Fire tests of Building Construction and Materials

G. **ANSI – American National Standards Institute:**

1. ANSI Z97.1 – Safety glazing performance.

H. **CPSC – Consumer Product Safety Commission:**

1. 16 CFR 1201 – Glazing safety standards.

I. **ASCE – American Society of Civil Engineers:**

1. ASCE 7 – Minimum design loads for structures.

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. Submit in accordance with Section <Insert Section #>.

B. **Product Data:** Provide manufacturer's technical literature, product certifications (UL, Intertek), and installation instructions.

C. **Shop Drawings:**

- Include layouts, elevations, interface details, rough opening requirements, and structural attachments.

D. **Structural Calculations (if applicable):**

- Provide sealed engineering calculations for exterior systems, prepared by a licensed engineer registered in the project state.

E. **Samples (if requested):**

- Glass samples, frame sections, and finish verification samples.

F. **Glazing Schedule:**

- Coordinate with drawing notations to list glass types and sizes per location.

G. **Warranties:**

- Manufacturer's standard warranty for the curtain wall system.

H. **Certificates of Compliance:**

- From glass and accessory manufacturers confirming conformity with specifications.
- 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:**

- Certified by the International Accreditation Service (IAS) for third-party inspections and material testing.
- Testing to include standards such as:

    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
    5. BS 476; Part 22: 1987
    6. EN 1634-1
    7. CAN/ULC Standards S101, S104, S106

- 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 and UL 9.

- Fire-Rated Wall Assemblies: Assemblies complying with ASTM E119 that are classified and labeled by UL, for fire ratings indicated, based on testing in accordance with UL 263, ASTM E119.

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

B. **Installer Qualifications:**

- Experienced firms with proven track record in similar scope and complexity; glaziers certified at Level 2 or 3 by the National Glass Association (or equivalent).

C. **Glazing Accessories:**

- Obtain all accessories from a single source to ensure compatibility.

D. **Fire-Resistive Assemblies:**

- Must be UL-classified and labeled in accordance with NFPA 80, UL 9, and UL 263.

E. **Markings:**

- Assemblies must carry permanent labels showing compliance with applicable listings.

1.7 DELIVERY, STORAGE, AND HANDLING
A. Handle and store all products per manufacturer recommendations to prevent damage and contamination.

1.8 PROJECT CONDITIONS
A. Field verify dimensions prior to fabrication. If not feasible, coordinate planned dimensions carefully with related trades.
B. Ensure coordination of this scope with other interfacing systems, including envelope assemblies and door hardware beyond this specification.

1.9 WARRANTY
A. Provide Tecfire's standard 10-year limited warranty for fire-resistive curtain wall assemblies.

PART 2 – PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS
A. **Fire-Resistive Glazing:** Supplied by Tecfire, 8414 Zionsville Rd., Indianapolis, IN 46268 | 1-833-TECFIRE | info.na@tecfire.com
B. **Framing System:** Tecfire FireGuard Pro STB80 steel fire-resistive curtain wall framing. Supplied by Tecfire, 8414 Zionsville Rd., Indianapolis, IN 46268 | 1-833-TECFIRE | info.na@tecfire.com
C. **Substitutions:** Not permitted for glazing or framing systems.

2.2 PERFORMANCE REQUIREMENTS
A. **System Overview:**

1. Fire-rated steel curtain wall, exterior glazed with pressure plate and snap cap.
2. Available Face Dimensions:
    - 1 3/4 in.
    - 2 3/8 in.
3. Drainage Design:
    - Vertically drained with continuous weep channels; no horizontal joint plugs or weep holes.
    - Horizontal gaskets relieved to integrate with vertical gaskets.

B. **Structural Requirements:**

1. Meet or exceed ASTM E330; tested at 1.5x design wind loads for 10 seconds.

2. Wind Loads: [Specify values or refer to drawings].
3. Deflection: Maximum [1/175 of glass span or ¾", whichever is less].
4. Accommodate building movement and structural tolerances.

C. **Air Infiltration:** ASTM E283 ≤ 0.06 cfm/ft² at 6.24 psf.
D. **Water Resistance – Static:** ASTM E331; No leakage at 15 psf.
E. **Water Resistance – Dynamic:** AAMA 501.1; No leakage at 15 psf.
F. **Thermal Movement:**

- Allow for 120°F (ambient) and 180°F (surface) differential.

2.3 MATERIALS – GLAZING
A. Low-E Coated Glass: Specified in Section 08 80 00. Coordinate with manufacturer on acceptable combinations for use in insulated units.
B. Not all coatings may be suitable for fabrication outside of specified conditions. Confirm compatibility with insulating unit assembly processes.
C. **Fire-Resistive Glazing:** Tecfire T-Flame Glass by Tecfire (or other glass that may be recommended by Tecfire)
D. **Safety Glazing:** Conforms to ANSI Z97.1 and CPSC 16 CFR 1201 (Category I and II).
E. Adjust glass thicknesses and configurations based on project-specific requirements.

2.4 MATERIALS – STEEL FRAMING

A. Fire-Resistive Steel Curtain Wall System [60 min] [120 min]

1. **Framing Members:** Fabricated from profiled steel tubing mechanically fastened with steel bolts.
2. **Thermal & Fire Insulation:** Provide insulation to resist heat, flame, and smoke transfer from either direction. At perimeter, tightly pack mineral wool fire-stop insulation or install rated intumescent sealant.
3. **Fasteners:** Use fasteners as recommended by the system manufacturer.
4. **Glazing Seals:** Glaze T-Flame glass using approved EPDM gaskets and either [closed-cell PVC foam tape] or [pure silicone sealant].
5. **Pressure Plates:** Formed stainless steel, sized per manufacturer requirements to properly retain glazing.
6. **Cover Caps:** Formed from [steel] [stainless steel] [extruded aluminum], as specified.

B. Aluminum Extrusions: Alloy and temper as recommended for application and finish.

1. **Shapes & Tubing:** Comply with ASTM B221.

C. Steel Reinforcement:

- Apply corrosion-resistant primer per SSPC-PS 12.00 after surface prep.

- Surface preparation per SSPC-SP COM and applicable SSPC standards.

1. Structural Shapes: ASTM A36/A36M
2. Cold-Rolled Sheet: ASTM A1008/A1008M
3. Hot-Rolled Sheet: ASTM A1011/A1011M

D. Brackets & Reinforcements: Manufacturer's standard high-strength components; provide non-staining, non-ferrous shims for system alignment.

E. Fasteners & Accessories:

- Provide corrosion-resistant, non-staining, and compatible hardware.
- Use self-locking devices where subject to thermal or structural movement.
- Reinforce framing as needed to receive fasteners.

F. Anchors:

- Use 3-way adjustable anchors allowing for field adjustment.
- For concrete/masonry: use hot-dip galvanized inserts per ASTM A123/A153.

G. Concealed Flashing: Corrosion-resistant and compatible with adjacent materials.

2.5 ACCESSORIES

A. Exposed Fasteners: Type 304 or 316 stainless steel.
B. Glazing Gaskets:

1. Interior/Exterior: ASTM C864 (EPDM) or ASTM C1115 (silicone).
   C. Intumescent Tape: As provided by frame manufacturer.

   D. Setting Blocks: ¼" calcium silicate.

   E. Perimeter Anchors: Steel or 316 stainless steel if exposed.

   F. Flashings: Material and finish to match cover caps; per manufacturer.

   G. Silicone Sealant:

- One-part, neutral-cure, high movement (±100/–50%) rated.
- Complies with: Type S; Grade NS; Class 25; Use NT, M, G, A, and O.

H. Intumescent Caulk:

- Single-component latex-based, flexible after cure, mold-resistant, 10/10 flame/smoke rating.

2.6 INSULATION – SLAG/ROCK WOOL

A. Board Insulation:

- ASTM C612; flame spread ≤ 15, smoke developed = 0; ASTM E136 compliant.
- Nominal 4 lb/cu. ft. density; Types IA and IB; Thermal resistivity: 4°F·h·ft²/Btu·in at 75°F.
- Fiber color: standard unless noted otherwise.

2.7 FABRICATION

A. General Requirements:

1. Fabricate per manufacturer's installation instructions.
2. Ensure clearances and shims allow for installation and movement.
3. Tight joints; flush and weather-sealed.
4. Prepare all elements for anchorage.
5. Provide isolation between glazing and frame.
6. Include internal drainage for water management.
7. Fabricate anchors; conceal all fasteners from view.

B. Guttered Components:

1. Provide resistance to water ingress via:
   a. Internal guttering or drainage mechanisms.
   b. Pressure-equalized or dual-barrier systems with primary seals at interior glazing pocket.

2.8 POWDER COAT FINISHES

A. Apply finish after fabrication.
B. Appearance: Uniform finish across adjoining components; no visible variation within a single component.
C. Interior/Exterior Finish:

1. Polyester super-durable powder coat per AAMA 2604; factory-applied on assembled frames.
2. Color/Gloss: [As selected by Architect] [Match sample] [Per manufacturer's full range].
3. Approved manufacturers:
   a. Tiger Drylac
   b. Others with Tecfire approval

PART 2 – EXECUTION

3.1 EXAMINATION

A. Site Conditions: Confirm substrates and openings are in acceptable condition and within tolerances.
B. Notification: Inform Architect of any unsuitable conditions.
C. Proceeding: Proceed only once issues are resolved.

3.2 INSTALLATION

1. Install per Tecfire's installation instructions and approved submittals. Door installation shall be by a specialty contractor with appropriate experience qualifications, and in strict accordance with the approved shop drawings.
2. Ensure alignment, anchorage, thermal breaks, and glazing gaskets are correctly applied.
3. Apply sealants and flashings as required.

3.3 CLEANING AND PROTECTION

B. 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

C. 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.

Modify paragraph below to suit Project.

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 08900

