SECTION 08 81 17

FIRE-RATED GLASS

PART 1 – GENERAL

1.1 PURPOSE

A. This guideline is intended to provide useful information to the Professional Service Provider (PSP) to establish a basis of design. PSP is to apply the principles of this section such that the University of Texas at Arlington (UTA) may achieve a level of quality and consistency in the design and construction of their facilities. Deviations from these guidelines must be approved by UTA and may require justification through Life Cycle Cost (LCC) analysis and submitted to UTA for approval.

1.2 LESSONS LEARNED AND DESIGN CONSIDERATIONS

A. X

1.3 SUMMARY

A. Section includes:
   1. Fire-rated glazing materials installed as vision lights in fire-rated frames and doors.
   2. Fire-rated glazing materials installed in fire-rated frames and wall applications.

B. Related Sections include the following:
   1. Section 08 11 13 – Hollow Metal Doors and Frames.
   2. Section 08 14 16 – Flush Wood Doors.
   3. Section 08 41 23 – Fire-Rated Aluminum Framed Storefronts.

1.4 REFERENCES

A. Adjust lists below to suit Project. Coordinate with Part 2.

B. American Society for Testing and Materials (ASTM):
   1. ASTM E 119: Fire Tests of Building Construction and Materials; current edition.

C. American National Standards Institute (ANSI):
   1. ANSI Z97.1: Standard for Safety Glazing Materials Used in Buildings; current edition.

D. Glass Association of North America (GANA):
   1. GANA - Glazing Manual; current edition.
   2. FGMA - Sealant Manual; current edition.

E. National Fire Protection Association (NFPA):
   1. NFPA 80: Fire Doors and Windows; current edition.

F. Underwriters Laboratories, Inc. (UL):
   1. UL 263: Fire tests of Building Construction and Materials; current edition.

G. International Building Code, 2015.

1.5 PERFORMANCE REQUIREMENTS

A. Fire-rated, clear and wireless glazing material for doors, sidelites, transoms, borrowed lites, and wall applications with fire rating requirements ranging from 45 minutes to 2 hours with required hose stream test.

1.6 SUBMITTALS

A. Comply with requirements of Division 01 for submittal procedures.

B. Product Data: Submit manufacturer's technical data for each glazing material required, including installation and maintenance instructions.

C. Certificates: Written certification that glass and glazing materials furnished comply with requirements. 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.

D. Product Test Listings: From UL indicating fire-rated glass complies with requirements, based on comprehensive testing of current product.

E. Samples: Submit, for verification purposes, approx. 8-inch by 10-inch sample for each type of glass indicated.

1.7 QUALITY ASSURANCE
- A. Glazing Standards: FGMA Glazing Manual and Sealant Manual.
- B. Fire Resistance Rated Glass: Each lite shall bear permanent, non-removable label of UL certifying it for use in tested and rated fire resistive assemblies.

1.8 DELIVERY, STORAGE, AND HANDLING
- A. Deliver materials to specified destination in manufacturer or distributor's packaging, undamaged, complete with installation instructions.
- B. Environmental: Storage temperature:
- C. Protect fire rated glass from outside temperature range of -40 degrees F to 120 degrees F during storage and transportation.
- D. Store off ground, under cover, protected from weather and construction activities.
- E. Do not expose the non-PVB side of glass to UV light.
- F. Store sheets of glass vertically. DO NOT lean.

PART 2 – PRODUCTS

2.1 FIRE-RATED GLAZING MATERIALS
- A. Basis of Design Manufacturer: Pilkington Pyrostop, distributed by Technical Glass Products, www.fireglass.com.
- B. Composition: Multiple sheets of "Optiwhite" high visible light transmission glass laminated with an intumescent interlayer.
- C. Properties:
  1. Thickness:
     a. 60 minute: 7/8", #60-101.
     b. 120 minute 2-1/4", #120-106.
  2. Weight:
     a. 60 minute: 10.85 lbs/sq. ft.
     b. 120 minute: 22.9 lbs/sq. ft.
  3. Approximate Visible Transmission:
     a. 60 minute: 87%.
     b. 120 minute: 75%
  4. Fire-rating: As scheduled on the Drawings.
  5. Impact Safety Resistance: ANSI Z97.1 and CPSC 16CFR1201 (Cat. I and II).
- D. Permanently label each piece of fire rated glass with the appropriate marking.
- E. Fire Rating - 60 Minutes and Greater: Fire rating classified and labeled by UL for fire rating scheduled at opening locations on drawings, when tested in accordance with ASTM E 119 and UL 263.
- F. Substitutions: No substitutions allowed.

2.2 GLAZING COMPOUND FOR FIRE-RATED GLAZING MATERIALS
- A. Glazing Tape: Closed cell polyvinyl chloride foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent, designed for compression of 25 percent to effect an air and vapor seal.
- B. Silicone Sealant: One-part neutral curing silicone, medium modulus sealant, Type S; Grade NS; Class 25 with additional movement capability of 50 percent in both extension and compression (total 100 percent); Use (Exposure) NT; Uses (Substrates) G, A, and O as applicable. Available Products:
  1. Dow Corning 795 - Dow Corning Corp.
  2. Silglaze-II 2800 - General Electric Co.
  3. Spectrem 2 - Tremco Inc.
- C. Setting Blocks: Hardwood or calcium silicate; glass width by 4 inches by 3/16 inch thick.
- D. Spacers: Neoprene or other resilient blocks of 40 to 50 Shore A durometer hardness, adhesive-backed on one face only, tested for compatibility with specified glazing compound.
- E. Cleaners, Primers, and Sealers: Type recommended by manufacturer of glass and gaskets.

2.3 FABRICATION
- A. Fabricate glass and other glazing products in sizes required to glaze openings indicated for Project, with edge and face clearances, edge and surface conditions, and bite complying with recommendations of product

manufacturer and referenced glazing standard as required to comply with system performance requirements.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Examine glass framing, with glazier present, for compliance with the following:
   1. Manufacturing and installation tolerances, including those for size, Squareness, offsets at corners.
   2. Minimum required face or edge clearances.
   3. Observable edge damage or face imperfections.
B. Do not proceed with glazing until unsatisfactory conditions have been corrected.
C. Clean glazing channels and other framing members receiving glass immediately before glazing. Remove coatings that are not firmly bonded to substrates.

3.2 INSTALLATION (GLAZING)

A. Comply with referenced GANA standards and instructions of manufacturers of glass, glazing sealants, and glazing compounds.
B. Protect glass from edge damage during handling and installation. Inspect glass during installation and discard pieces with edge damage that could affect glass performance.
C. Cut glazing tape to length and set against permanent stops, flush with sight lines to fit openings exactly, with stretch allowance during installation.
D. Place setting blocks located at quarter points of glass with edge block no more than 6-inches from corners.
E. Glaze vertically into labeled fire-rated metal frames or partition walls with the same fire rating as glass and push against tape for full contact at perimeter of pane or unit.
F. Place glazing tape on free perimeter of glazing in same manner described above.
G. Do not remove protective edge tape.
H. Install removable stop and secure without displacement of tape.
I. Do not pressure glaze.
J. Glaze exterior openings with PVB layer toward the exterior of the building.
K. Knife trim protruding tape.
L. Apply cap bead of silicone sealant along void between the stop and the glazing, to uniform line, with bevel to form watershed away from glass. Tool or wipe sealant surface smooth.
M. Provide minimum 3/16 inch edge clearance.
N. Install in vision panels in fire-rated doors to requirements of NFPA 80.
O. Install so that appropriate UL and Pilkington Pyrostop® markings remain permanently visible.

3.3 PROTECTION AND CLEANING

A. Protect glass from contact with contaminating substances resulting from construction operations. Remove any such substances by method approved by glass manufacturer.
B. Wash glass on both faces not more than four days prior to date scheduled for inspections intended to establish date of substantial completion. Wash glass by method recommended by glass manufacturer.

END OF SECTION