Technical Glass Products has included notes in this specification to assist you in tailoring the content to your project. These comments will appear on your screen in blue. To hide them and view only the specification, do the following: Click on "Tools" on your Microsoft Word toolbar. Under Tools, select "Options." On the "View" tab, under "Formatting Marks," remove the check mark from the "Hidden Text" box. Then click "OK." All blue text will then be hidden. For assistance, call Technical Glass Products at 1-800-426-0279.SECTION 08817 - FIRE-RATED GLASS – FIRELITE®NT

PART 1 - GENERAL

1.1 SUMMARY

A. Section Includes:
   1. Fire-rated glazing materials installed as vision lights in fire-rated doors.
   2. Fire-rated glazing materials installed as [transoms] [borrowed lites] [windows] in fire-rated frames.

B. Related Sections include the following:
   1. Section 06400 "Architectural Woodwork" for wood frames for doors, sidelights, transoms, borrowed lights.
   2. Section 08110 "Steel Doors and Frames" for vision panels in interior doors and interior vision panel (borrowed lites) frames.
   3. Section 08210 "Flush Wood Doors" for vision panels in interior doors.
   4. Section 08112 "Stile and Rail Wood Doors" for vision panels in interior doors.
   5. Section 08510 "Steel Windows."

1.2 REFERENCES

A. American Society for Testing and Materials (ASTM):
   1. 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. ASTM E2010-01: Standard Test Method for Positive Pressure Fire Tests of Window Assemblies.

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

C. Consumer Product Safety Commission (CPSC):
   1. CPSC 16 CFR 1201: Safety Standard for Architectural Glazing Materials

D. Glass Association of North America (GANA):
   1. GANA – Glazing Manual.
   2. FGMA – Sealant Manual.

E. National Fire Protection Association (NFPA):
   1. NFPA 80: Fire Doors and Windows.
   2. NFPA 252 – Fire Tests of Door Assemblies.
   3. NFPA 257 – Fire Tests of Window 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. Standard Council of Canada:
1. ULC Standard CAN4-S104: Fire Tests of Door Assemblies.
2. ULC Standard CAN4-S106: Fire Tests of Window Assemblies.
3. CAN/ULC-S101M: Standard Methods of Fire Endurance Tests.

H. <**Insert building code name used by authority having jurisdiction**>.

1.3 PERFORMANCE REQUIREMENTS

A. Fire-rated glass ceramic clear and wireless glazing material with surface-applied film listed for use in impact safety-rated locations such as doors, transoms and borrowed lites with fire rating requirements ranging from 20 minutes to 3 hours with hose stream test.

1.4 SUBMITTALS

A. Comply with requirements of Section <**Insert Section #**>.

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

C. Certificates of compliance from glass and glazing materials manufacturers attesting that glass and glazing materials furnished for project 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.

1.5 QUALITY ASSURANCE

A. Glazing Standards: FGMA Glazing Manual and Sealant Manual.

B. Fire Protective Rated Glass: Each lite shall bear permanent, nonremovable label of UL certifying it for use in tested and rated fire protective assemblies.

C. Fire Protective Glazing Products for Door Assemblies: Products identical to those tested per ASTM E 152, labeled and listed by UL or WHI or other certification agency acceptable to authorities having jurisdiction.

1.6 DELIVERY, STORAGE, AND HANDLING

A. Deliver, store, and handle materials under provisions of Section <**Insert Section #**>.

B. Deliver materials to specified destination in manufacturer's 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 manufacturer's limited warranty under provision of Section <**Insert Section #**>.

B. Warranty Period: Three years from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 FIRE-RATED GLAZING MATERIALS

A. Supplier: FireLite®NT as supplied by Technical Glass Products, Kirkland, Washington, voice 1-800-426-0279, fax 1-800-451-9857, e-mail sales@fireglass.com, web site www.fireglass.com

B. Properties:
1. Thickness: 3/16 inch [5 mm] Firelite®.
2. Film: 3M Scotchshield Ultra Film.
3. Weight: 2.4 lbs./sq. ft.
4. Approximate Visible Transmission: 88 percent.
5. Approximate Visible Reflection: 9 percent.
6. Hardness (Vicker's Scale): 700.
7. Fire-rating: 20 minutes to 3 hours for doors; 20 minutes to 90 minutes for other applications.
8. Impact Safety Resistance: ANSI Z97.1 and CPSC 16CFR1201 (Cat. I and II).
9. Positive Pressure Test: UL 10C, UBC 7-2 and 7-4; passes.
10. 1Surface Finish: Premium (polished) [Standard (unpolished)] [Obscure (patterned)].

C. Maximum sheet sizes based on surface finish:
1. Premium: 48 inches by 96 inches.
2. Standard: 48 inches by 96 inches.
3. Obscure: 36 inches by 96 inches.

D. Labeling: Permanently label each piece of FireLite®NT with the FireLite® logo, UL logo and fire rating in sizes up to 3,325 sq. in., and with the FireLite label only for sizes that exceed the listing (as approved by the local authority having jurisdiction).

E. Fire Rating: Fire rating listed and labeled by UL for fire rating scheduled at opening locations on drawings, when tested in accordance with [ASTM E2074-00 and ASTM E2010-01] [ULC Standards CAN4 S-104 and CAN4 S-106] [NPFA 252 and NFPA 257] [UL 9, UL 10B and UL 10C].

F. Substitutions: No substitutions allowed.

2.2 GLAZING COMPOUND FOR FIRE-RATED GLAZING MATERIALS

A. Glazing Tape: Closed cell polyvinyl chloride (PVC) foam, coiled on release paper over adhesive on two sides, maximum water absorption by volume of 2 percent. Glass panels that exceed 1,393 sq. inches for 90-minute ratings must be glazed with fire-rated glazing tape supplied by manufacturer.

B. [Glazing Compound: DAP 33 putty.]

C. [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.]

D. Setting Blocks: Neoprene, EPDM, or silicone; tested for compatibility with glazing compound; of 70 to 90 Shore A hardness.

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 FGMA 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. Set units of glass in each series with uniformity of pattern, draw, bow, and similar characteristics.

D. Cut glazing tape to length and set against permanent stops, flush with sight lines to fit openings exactly, with stretch allowance during installation.

E. Place setting blocks located at quarter points of glass with edge block no more than 6 inches from corners.

F. Glaze vertically into labeled fire-rated metal frames or partition walls with same fire rating as glass and push against tape for full contact at perimeter of pane or unit.

G. Place glazing tape on free perimeter of glazing in same manner described above.

H. Install removable stop and secure without displacement of tape.

I. [Use specified glazing compound, without adulteration; bed glazing material in glazing compound; entirely fill all recess and spaces. Provide visible glazing compound with smooth and straight edges.]

J. Install in vision panels in fire-rated doors to requirements of NFPA 80.

K. Install so that appropriate [UL] [FireLite®NT] 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.

3.4 GLAZING SCHEDULE

Rating	Assembly	Max. Exposed Area (Sq. In.)	Max. Width Of Exposed Glazing (In.)	**OR**	Max. Height Of Exposed Glazing (In.)	Stop Height
20 min.	Doors					
	HMS or wood*	3,204	36		89	5/8”
	Fireframes D.S.	3,204	36		89	3/4"
	Other than doors					
	HMS or wood	3,325	95		95	5/8”
	Fireframes D.S.	3,325	95		95	3/4"
45 min.	Doors					
	HMS or wood	3,204	36		89	5/8”
	Fireframes D.S.	3,204	36		89	3/4"
	Other than doors					
	HMS or wood	3,325	95		95	5/8”
	Fireframes D.S.	3,325	95		95	3/4"
60 min.	Doors (non-temp rise)					
	HMS or wood	3,204	36		89	5/8”
	Fireframes D.S.	3,204	36		89	3/4"
	Doors (temp rise)	100	12		33	5/8”
	Other than doors					
	HMS or wood	3,325	95		95	5/8”
	Fireframes D.S.	3,325	95		95	3/4"
90 min.	Doors (non-temp rise)	2,034	36		56 ½”	3/4"
	Doors (temp rise)	100	12		33	1/2”
	Other than doors					
	HMS	2,627	56 ½”		56 ½”	5/8”
	Fireframes D.S.	2,627	56 ½”		56 ½”	3/4"
3 hours	Doors	100	12		33	1/2”

* HMS indicates hollow metal steel framing. Fireframes D.S. indicates Designer Series narrow profile framing by Forster. For wood frames, check with manufacturer for maximum tested glass sizes.

END OF SECTION