# Barrier Management Symposium™

## Fire-Rated Glazing
## Protective - Resistive

Bill McHugh, FCIA &
Rich Walke, UL, LLC

**Presentation Outline -** Fire Rated Glazing

- Code Info
- Testing
- Fire Protective & Fire Resistive Glazing
- Labeling – Labeling for Fire-Rated Glass
- Non-Code Compliant Products

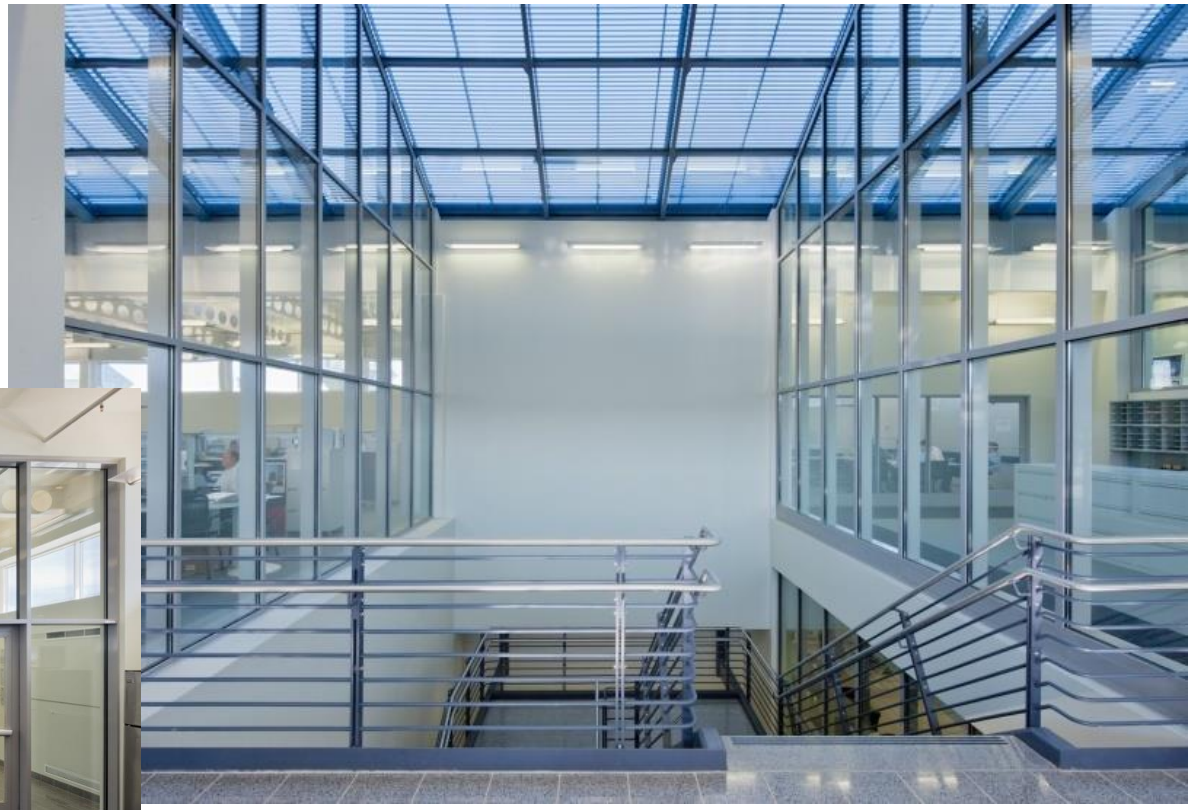
**Fire-Rated Glazing Suitability for Use Determined by…**

Test Standard UL 9, UL 263

- Fire Protective – UL 9
- Fire Resistive – UL 263
- Fire-rated glazing for door and window assemblies – UL 10B, UL 10C
- Ratings –
  - Time, remain in place, stop the spread of fire
  - Hose Stream Test
  - Impact for Safety

## Two Key Purposes of Fire-Rated Glass

- Allows visibility into a space
- Prevents fire from spreading
- Compartmentation



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## Key Testing Components for Fire and Human Impact Safety

**Fire Test** - Measures the amount of time, in minutes or hours, that fire rated glazing and framing can withstand fire exposure in a furnace.

**Hose Stream Test** - Heated glass and frames are subjected to water from a fire hose. The cooling, impact and erosion created by the hose stream tests the integrity of the glass and frames and eliminates inadequate materials.

**Impact Safety Test -** Measures the ability of glass to withstand impact. Ratings are given in levels based on the amount of force the glass can resist.  Typically defined by CPSC Category 1 or 2 rating.

**Safety Glazing Classifications…in addition to Fire Restance**

CPSC 16 CFR 1201 (Category II)

- 400 ft. lbs. pressure
- Tempered Glass, typical laminated glass, filmed glass

CPSC 16 CFR 1201 (Category I)

- 150 ft. lbs. pressure
- Permitted up to 1,296 $in^2$

ANSI Z97.1 (Traditional Wired Glass Only – Removed, IBC 2009)

- 100 ft. lbs. Pressure
- Permitted up to 1,296 $in^2$

# Impact Safety Test

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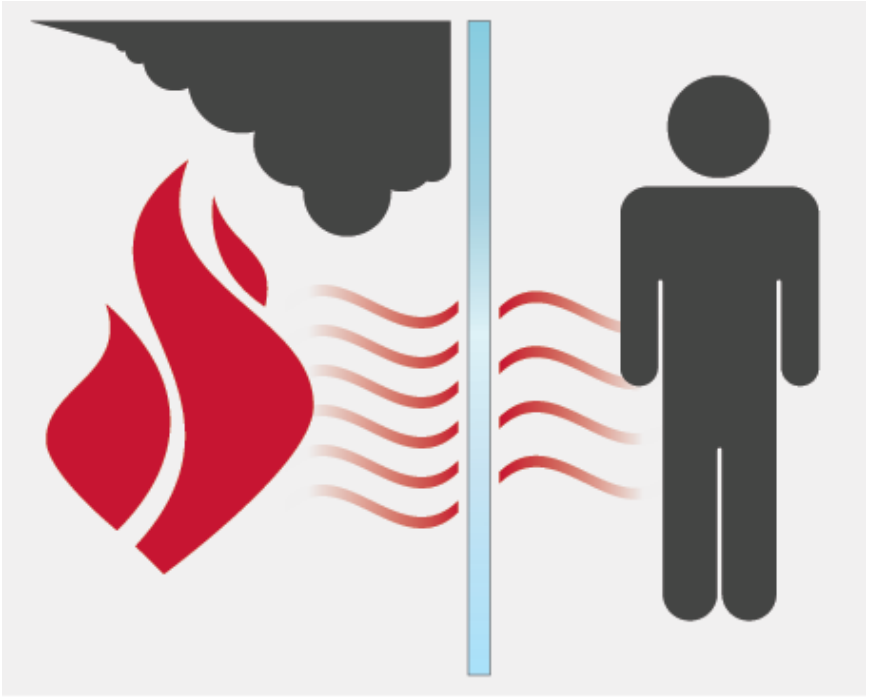
## FIRE PROTECTIVE

- Fire Rated, Thin Glazing
- Traditional fire-rated material (wired glass, glass ceramic, hollow metal steel frames, etc.)
    - No Human Impact - Wired
- Used as Opening Protectives
    - Fire Windows: 45-90 Minutes
    - Fire Doors: 20 minutes – 3 hrs
    - May not exceed 25% of the area of a Fire Resistance Rated Walll
    - May not exceed 156ft$^2$
- May not exceed manufacturers tested sizes
- Frames must be Listed

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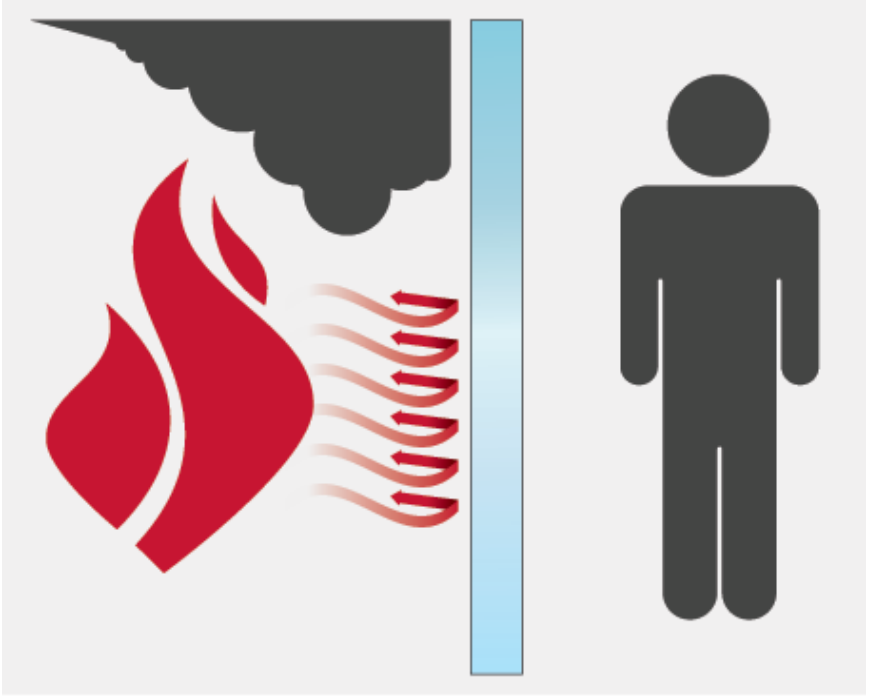
## FIRE RESISTIVE

- Stop fire **AND** radiant heat
- Both glass and frames
- “Thick” glazing
- Classified as a “wall” rather than an opening (window)
- Both glass and frames must block passage of radiant heat
- Classified as Wall Construction, and may be used in multi story spans or floor to ceiling sizes

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## Why is Fire-Rated Glazing Labeled?

- Code Required Since – 2006
- Easy inspection
- Product verification in Building for All…

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## Label Standards

- "W" indicates that the glass passes ASTM E119
  - ➢ This is the wall standard which includes temperature rise and hose stream

- "D" indicates that the glass passed NFPA 252
  - ➢ Door standard

- "O" indicates that the glass passed NFPA 257
  - ➢ Opening standard

**TABLE 716.3**
**MARKING FIRE-RATED GLAZING ASSEMBLIES**

| FIRE TEST STANDARD | MARKING | DEFINITION OF MARKING |
|---|---|---|
| ASTM E 119 or UL 263 | W | Meets wall assembly criteria. |
| NFPA 257 or UL 9 | OH | Meets fire window assembly criteria including the hose stream test. |
| NFPA 252 or UL 10B or UL 10C | D<br>H<br>T | Meets fire door assembly criteria.<br>Meets fire door assembly "Hose Stream" test.<br>Meets 450°F temperature rise criteria for 30 minutes |
| | XXX | The time in minutes of the fire resistance or fire protection rating of the glazing assembly |

For SI: °C = [(°F) - 32]/1.8.

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## Fire-Rated Glass Manufacturer Label

FireLite

D-H-20
OH-20

CLASSIFIED
C UL US
6259
R-13377
ANSI/UL9/10B/10C

CLASSIFIED
C UL US
GLAZING MATERIALS
9FX5

Pilkington Pyrostop
120-104
16 CFR 1201 CAT II
ANSI Z97.1-2009 UA
LAMINATED
W-120
North America
TGP

2” wide x .75” tall

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## Fire-Rated Frame Manufacturer Label

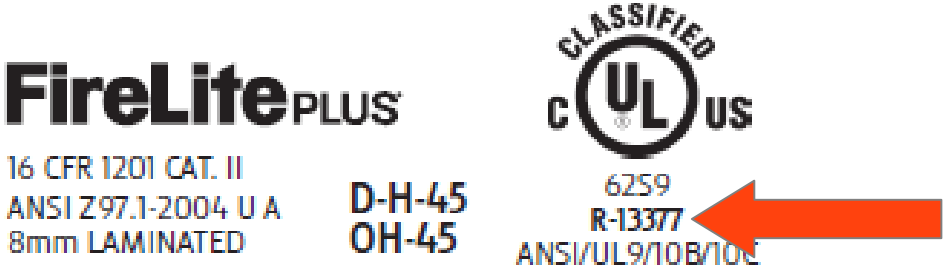
Fireframes® Heat Barrier Series
by TGP
SPECIAL PURPOSE FIRE DOOR FRAME ASSEMBLY
FIRE RATING 60 MIN. SERIAL NO_____
TEMPERATURE RISE, 30 MIN. 250° MAX
POSITIVE PRESSURE
ALSO CLASSIFIED IN ACCORDANCE WITH UL-10C

Installers should not remove or paint over frame labels

Fireframes® Designer Series
by TGP
SPECIAL PURPOSE FIRE DOOR & WINDOW FRAME ASSEMBLIES
FIRE RATING 60 MIN. SERIAL NO_____
POSITIVE PRESSURE
ALSO CLASSIFIED IN ACCORDANCE WITH UL-10C

## UL Online Certifications Directory

- Available online at database.ul.com
- Search for UL File Number found on label for more information on listing
- [www.UL.com/Database](www.UL.com/Database)

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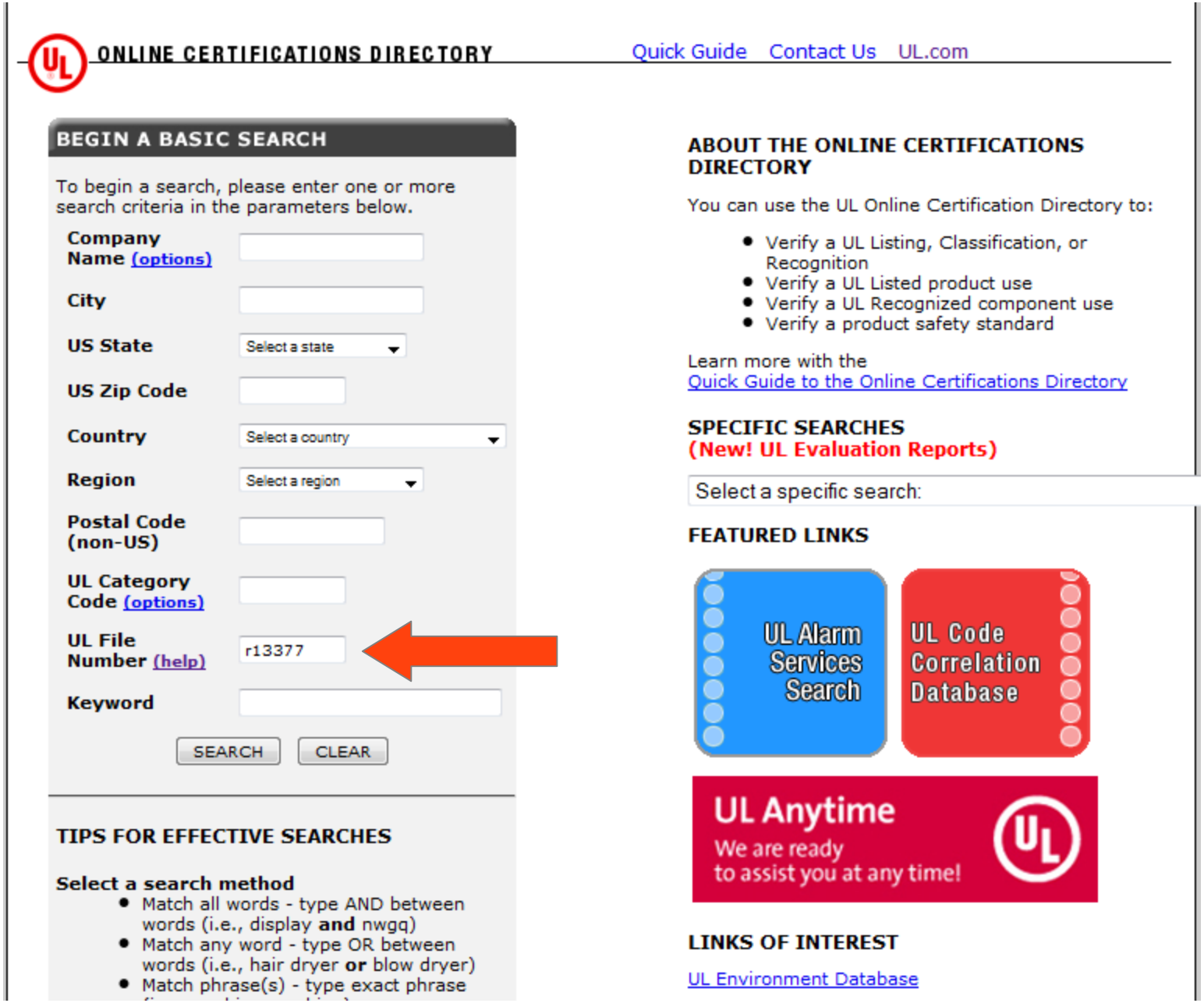

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To begin a search, please enter one or more search criteria in the parameters below.

Company Name (options)

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US State — Select a state

US Zip Code

Country — Select a country

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UL Category Code (options)

UL File Number (help) — r13377

Keyword

SEARCH CLEAR

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Select a search method

- Match all words - type AND between words (i.e., display **and** nwgq)
- Match any word - type OR between words (i.e., hair dryer **or** blow dryer)
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- Verify a UL Recognized component use
- Verify a product safety standard

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UL Code Correlation Database

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LINKS OF INTEREST

UL Environment Database

Search results

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**Search results**

You may choose to **Refine Your Search.**

| Company Name | Category Name | Link to File |
|---|---|---|
| **TECHNICAL GLASS PRODUCTS** | Fire-protection-rated Glazing Materials | *KCMZ.R13377* |
| **TECHNICAL GLASS PRODUCTS** | Fire-protection-rated Glazing Materials Certified for Canada | *KCMZ7.R13377* |

Model number information is not published for all product categories. If you require information about a specific model number, please contact Customer Service for further assistance.

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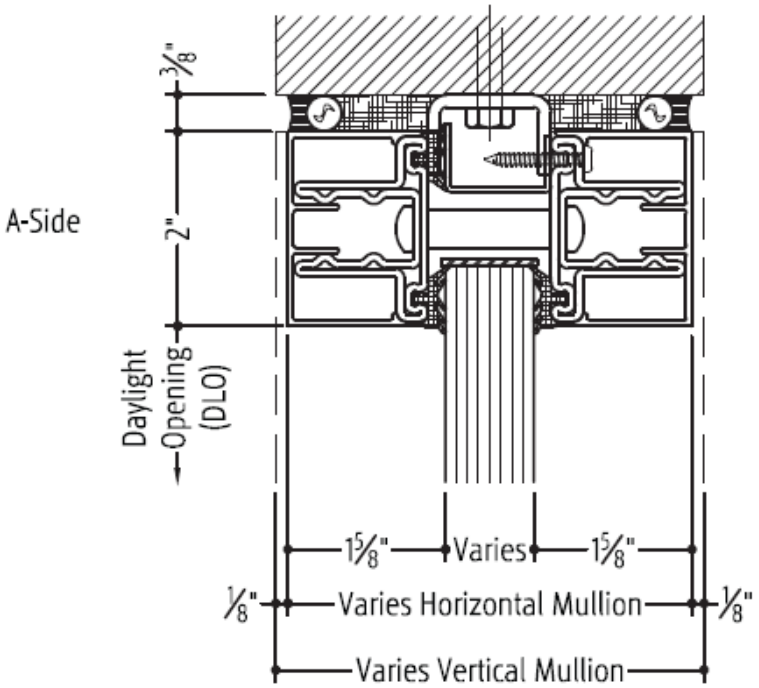
## Installation of Fire-rated assemblies

- Framing similar to typical storefront systems
- Any qualified glazing sub contractor can install
- Must follow UL Listing and manufacturer's installation guidelines



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**Questions:**

- What is the required fire-rating for the application?
  - Fire Resistance?
  - Fire Protection?
- Does the glazing system need to block the transfer of radiant heat?
- Does the glazing meet impact safety standards?
- Should I select performance films or laminates?
  - Factory? Field?
- Are there any acoustic or thermal performance needs?
- Is the glazing being installed into the proper framing assembly (Rated?)
- Once the glazing has been selected, did you confirm the material has been tested by a testing agency such as UL and can be validated through that testing agency?
- How does the frame attach to the wall?  Door? Transom?

# Case Studies

Project: University Hospitals, Seidman Cancer Center

Location: Cleveland, OH

Architect: Cannon Design

Products: Fireframes® Designer Series steel doors and frames with FireLite Plus® glass ceramic

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# Case Studies

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Project: MultiCare Good Samaritan Hospital, Dally Tower

Location: Puyallup, WA

Architect: Good Sam Design Collaborative, in conjunction with Clark/Kjos Architects and GBJ Architecture

Products: Fireframes® Curtainwall Series with Pilkington Pyrostop® glass firewall

***Thank you!***

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