Expand Your Horizons Through the Use of the UL Guide Information for Fire-Resistance

Gabby Peck, NFCA Technical Director
Rich Walke, CTI, Consultant to the NFCA
Kevin Hyland, UL Solutions, Principal Engineer

NFCA FREE Webinar Series

Learn – Network – Grow

National Fireproofing Contractors Association

April 21, 2026

Our mission

- **Educate**
- **Advocate**
- **Advance the passive fire industry globally**

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NFCA – Where are we?

- ASTM
- ICC
- NFPA
- UL & ULC STP's,
- ASTM
- BSI

How??

Global Membership
NFCA HAFK
Education
Webinars
Life Safety Digest
International Work
Standards & Code development
Social Media; Linkedin

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What we do?

Speak, Write, Advocate, Promote

- **ICC**
- **CSI**
- **CSC, FFMIA, ON BOA, ON FMIA, RAIC**
- **NFPA, Center for Campus Fire Safety**
- **Code-Fire Officials**
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Elevate your fireproofing standards with NFCA's expert resources.

The National Fireproofing Contractors Association (NFCA) has crafted dynamic, industry-consensus Standard Practices and Quality Assurance Procedures to guide the precise application and quality assurance procedures of fireproofing products, such as SFRM and IFRM. These are the industry authority documents, designed to ensure compliance and excellence and uniform industry practices, provide clear, actionable guidelines for contractors and construction professionals to achieve consistent, high-quality installations that meet rigorous safety and performance standards.

Explore the NFCA Approved documents below, essential tools for enhancing building safety and project success.

- NFCA 100 Standard Practice for the Application of Sprayed Fire-Resistive Material
- NFCA 200 Field Quality Assurance Procedure for the Application of Sprayed Applied Fire-Resistive Material
- NFCA 300 Standard Practice for the Application of Intumescent Fire-Resistive Material
- NFCA 400 Field Quality Assurance Procedure for the Application of Intumescent Fire-Resistive Material

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2025

12/16/2025 - 'What the Structural Fireproofing Discipline Needs to Know about Firestopping Penetrations and Fire-Resistive Joints' with Bill McHugh (FCIA), Carl Fernald (PCI -Tampa), Gus Mancini (Gleeson Powers), and Rich Walke (CTI)
11/11/2025 - 'The Most Commonly Misunderstood Code Requirements for Structural Fire-Resistance: Part II' with Tony Crimi (AC Consulting Solutions), Bill McHugh (NFCA), and Rich Walke (CTI)
09/17/2025 - 'Fireproofing Fluted Metal Decks-to-Beam Connections' with Bill McHugh (NFCA), Carl Fernald (Performance Contracting, Inc.), and Rich Walke (CTI)
08/05/2025 - 'The Most Commonly Misunderstood Code Requirements for Structural Fire-Resistance' with Tony Crimi (A.C. Consulting Solutions), Bill Koffel (Koffel Associates), Bill McHugh (NFCA), and Rich Walke (CTI)
07/15/25 - Thermal & Ignition Barrier Requirements for Foamed Plastic with John Dalton (Saint-Gobain)
06/17/25 - Growing the Available Market While Unlocking Carbon Savings in Steel Buildings with Galen Burrell (Saint-Gobain)
04/14/25 - Excellence in Fireproofing Projects - The 2025 NFCA Award of Excellence Winning Projects
03/25/25 - Fireproofing Materials and Fire-Resistance
02/25/25 - Fireproofing Inspection with Bill McHugh (NFCA)
01/14/25 - The ASTM E119, UL 263, and CAN/ULC S101 Fire Test Standards with Rich Walke (CTI)

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Fireproofing Products

Fireproofing protection products protect structural steel framed buildings and are categorized into Sprayed Fire-Resistive Material (SFRM), Intumescent Fire-Resistive Material (IFRM) and Rigid Board Fire Protection. The following information separates products into these several categories and is intended to provide general information about various types of fire protection products. Manufacturer's information can be easily accessed by clicking on the Manufacturers name in the Manufacturers Section of this web site. Product details are available at the manufacturers website.

- Sprayed Fire-Resistive Materials (SFRM)
- Intumescent Fire-Resistive Material (IFRM)
- Rigid Board Fire Protection

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Free information & resources!

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NFCA's SFRM and IFRM Contractor Accreditation Programs prove contractor knowledge.

UL Solutions Qualified SFRM Contractor Program

UL Solutions' Qualified SFRM Contractor Program has a mandatory office and on-site management system audit to verify that policies and procedures are working at the company.

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Accreditation establishes the company management system has been audited and the inspection agency. Inspector agency competence is established through passing an exam, and showing experience in the same type and complexity of materials and listings to be inspected. Get both with IAS AC 291

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Upcoming events:

PFPCON '26

The Passive Fire Protection Conference & Expo

The Aria Hotel & Casino
Las Vegas, NV

March 30-April 3, 2026

Introducing **PFPCON**, the world's *only* conference dedicated entirely to Passive Fire Protection.

PFPCON '26 joins the FCIA Education & Committee Action Conference and the NFCA Week of Learning and brings together the structural fire-resistance and effective compartmentation industries for a dynamic tradeshow, compelling industry education, high-energy networking events, the FM & UL Firestop Exams and NFCA Fireproofing Exams, and the industry's most interactive Committee Meetings.

This first-ever, one-of-a-kind global gathering is set to ignite the PFP community with unmatched access, unmatched expertise, and an experience so compelling that those involved in the 'D'esign, 'I'nstallation, 'I'nspection, and 'M'aintenance of Passive Fire Protection systems will have serious FOMO.

AKA "the Mother-Con"

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Agenda

- Three components of a UL Certification for Fire Resistance
  - Guide Information
  - Design
  - Manufacturer’s Certification Page (i.e. Product Categories)
- Locating Guide Information on UL Product iQ
- Understanding UL Guide Information Fire-Resistance, SFRM, IFRM, and Boards and Wraps

Three Components of US Based Certification for Fire Resistance

- Guide Information for “Fire Resistance Ratings – ANSI/UL 263” (BXUV), and “Fire Resistance Ratings – ANSI/UL 1709” (BYBU)
- Designs
- Product categories (indexed by manufacturer’s names)
  - Spray-Applied Fire-Resistive Materials (CHPX)
  - Intumescent Fire-Resistive Materials (CDWZ)
  - Batts and Blankets (BZJZ)
  - Mineral and Fiber Boards (CERZ)
  - Mat Materials (CEAV)
  - Gypsum Board (CKNX)

Note: Product Categories also have Guide Information

Three Components of Canadian Based Certification for Fire Resistance

- Guide Information for “Fire Resistance Ratings – CAN/ULC-S101 Certified for Canada” (BXUV7) and “Fire-resistance Ratings (BXUVC)
- Designs
- Product categories (indexed by manufacturer’s names)
  - Spray-Applied Fire-Resistive Materials Certified for Canada (CHPX7) and (CHPXC)
  - Intumescent Fire-Resistive Materials Certified for Canada (CDWZ7)
  - Batts and Blankets Certified for Canada (BZJZ7) and (BZJZC)
  - Mineral and Fiber Boards Certified for Canada (CERZ7) and (CERZC)
  - Mat Materials Certified for Canada (CEAV7)
  - Gypsum Board Certified for Canada (CKNX7) and Wallboard (CKNXC)

Note: Product Categories also have Guide Information

Guide Information

- Equipment, materials or systems included in the category
- **Intended use, restrictions or supplemental information that apply**
- Standard(s) used to evaluate products under the category
- Certification Mark information for the category

UL Designs

- Each fire resistance design contains specific construction features and ratings
- Describes details of how assembly is constructed to achieve hourly rating
- Designs detail application and installation procedures
- Determines thickness for desired hourly rating
- Many designs contain various options and various ratings

UL Designs

- Most UL designs are for a particular manufacturer
- UL designs are not interchangeable between products unless specifically noted in a design
- Must be followed exactly for rating to apply, subject to changes *permitted by the Guide Information*
- UL Product iQ Online Directory
  - www.UL.com/PiQ

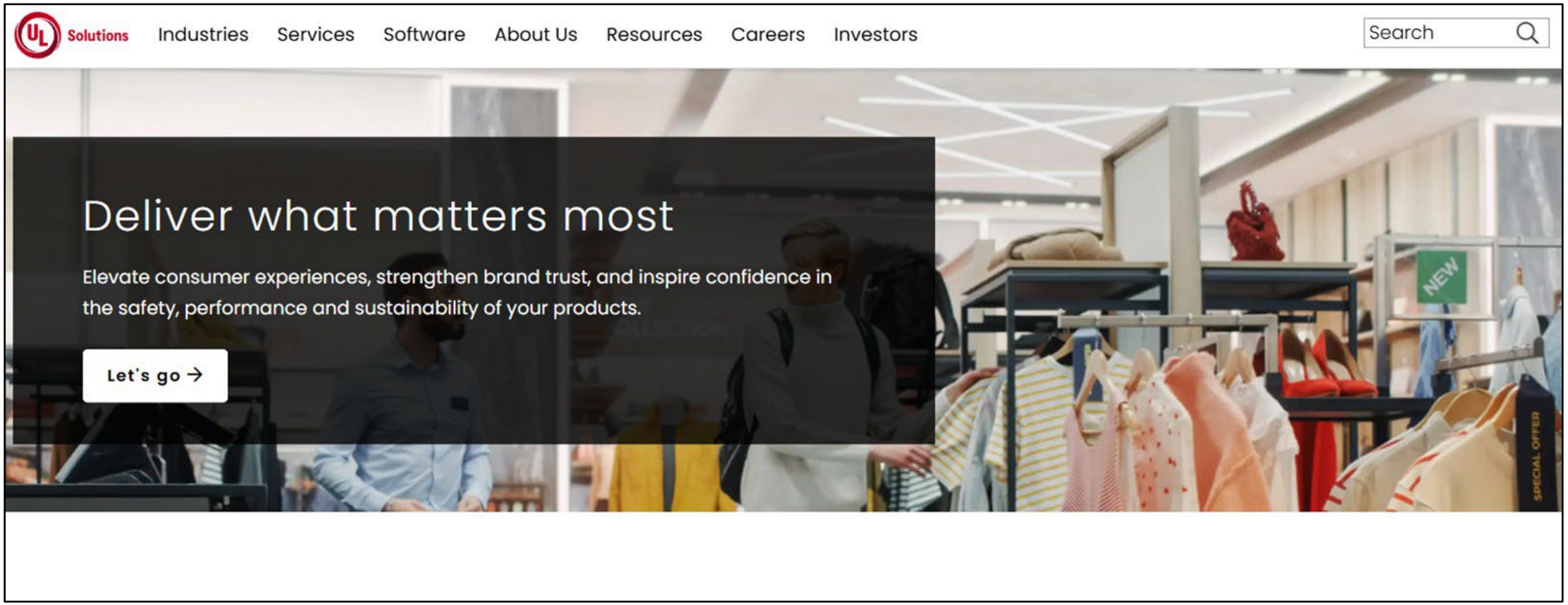
Product Categories

- Each product category describes some generic family of products (e.g. Intumescent Fire-Resistive Material)
- Each product category covers products used in fire resistance designs
- Each product category contains manufacturer’s names and designations of products tested and specified in the designs

Accessing UL Guide Information

Product iQ

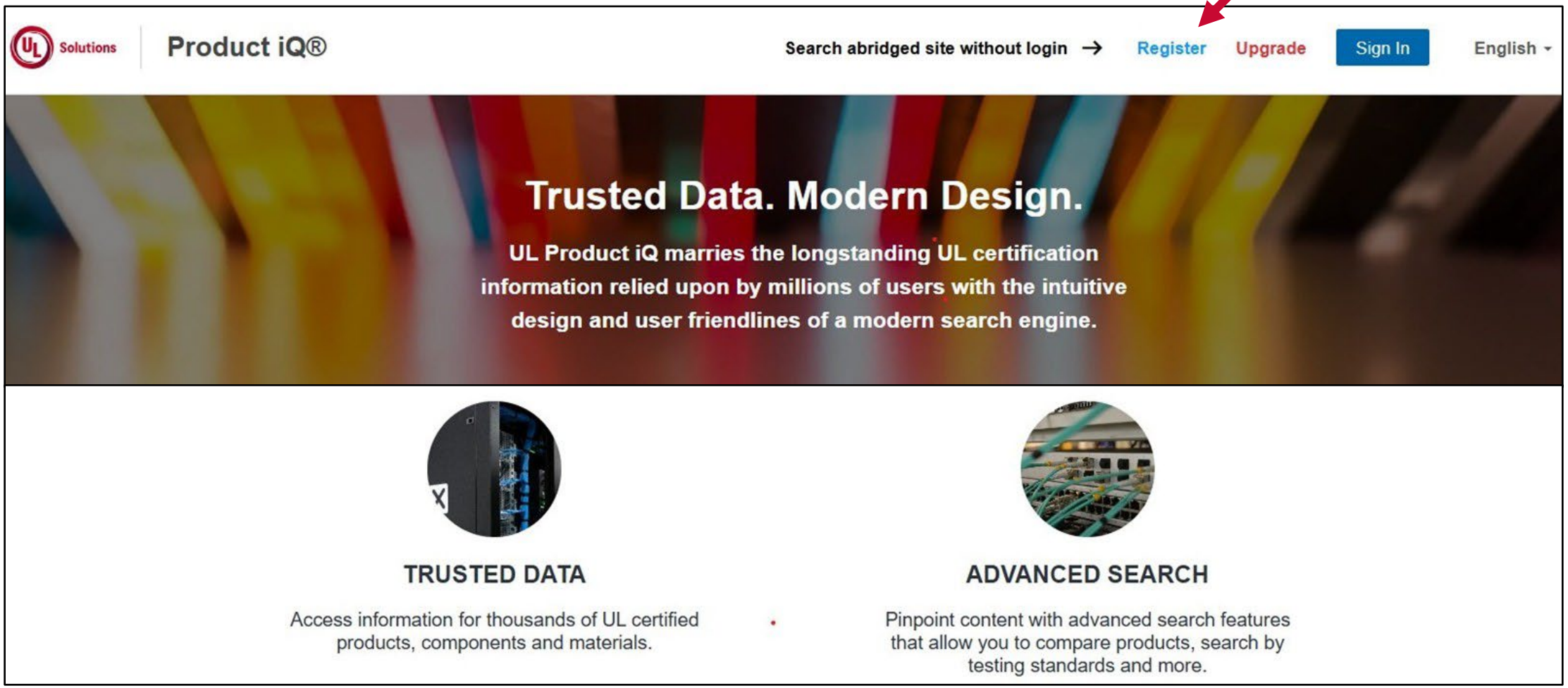
Product iQ – Access Using www.UL.com



Scroll Down to "Find a product certification"

OR

Product iQ – Access Using www.UL.com/PiQ



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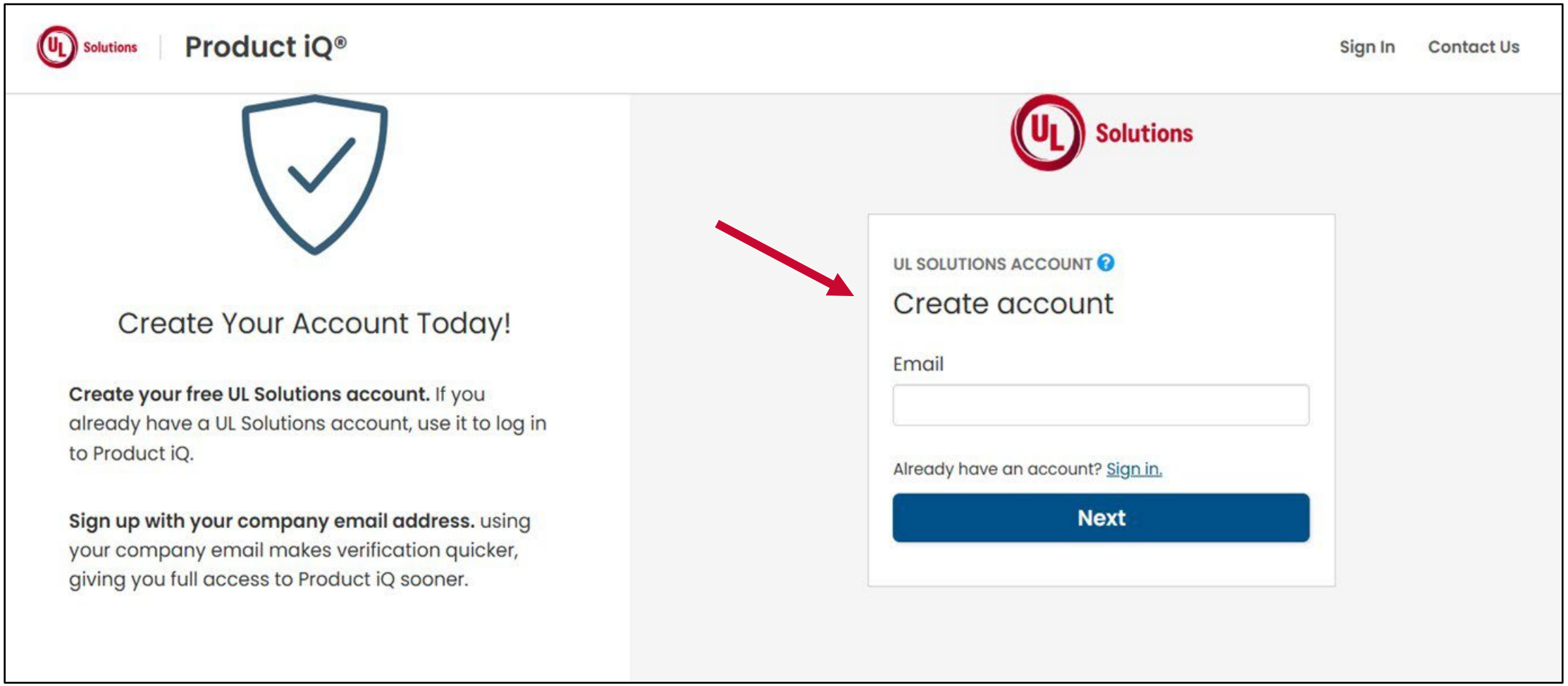
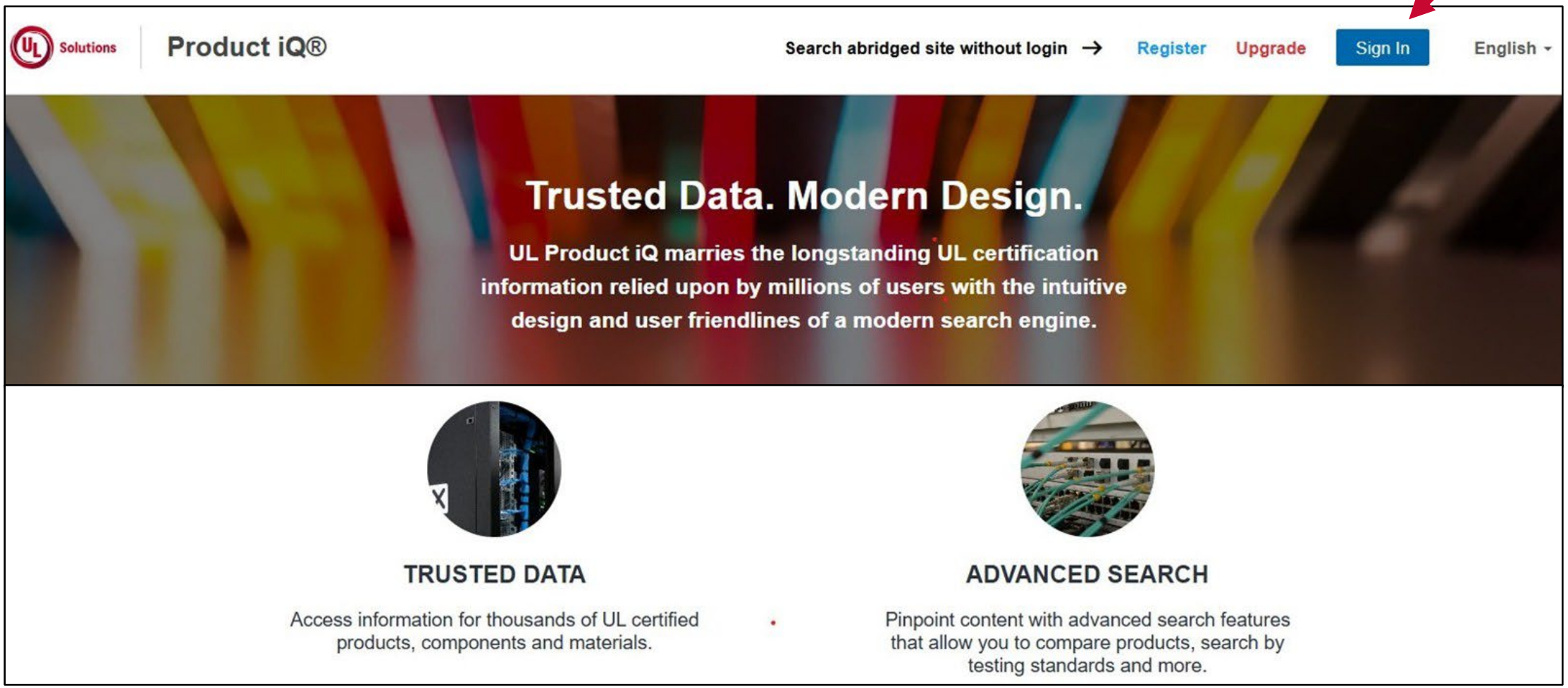
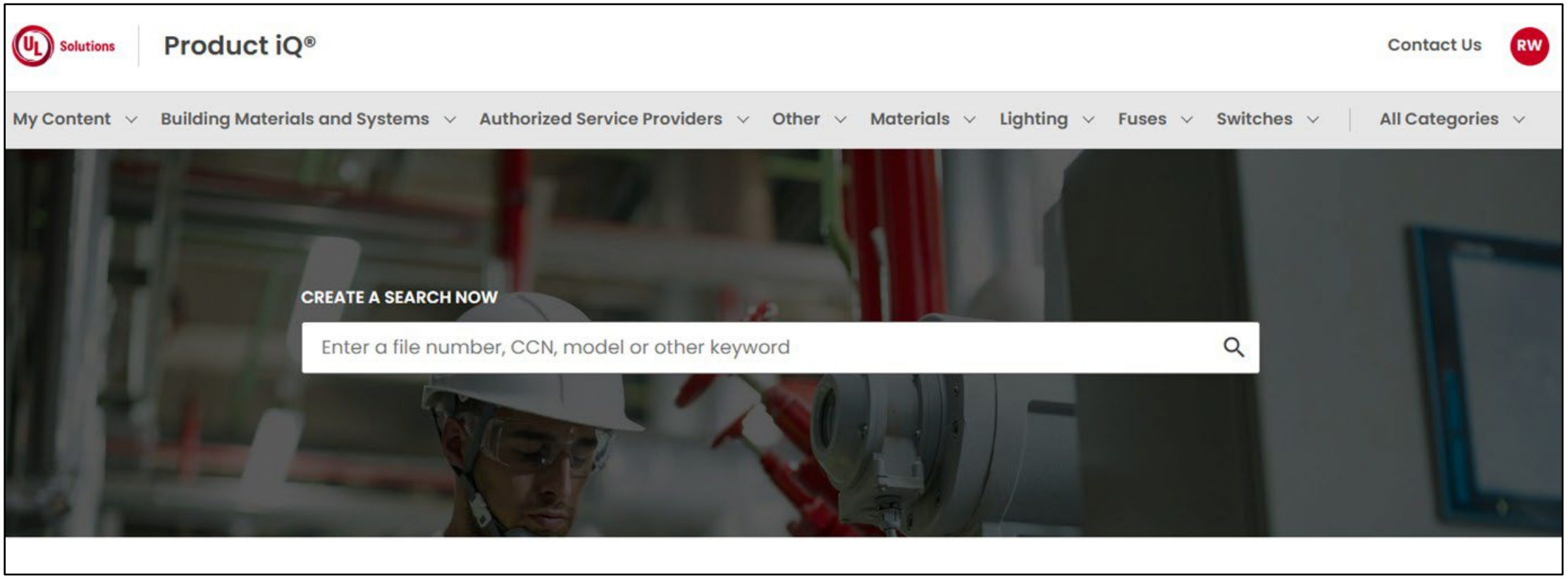


Product iQ Cont.



Product iQ Cont.
Smart Search



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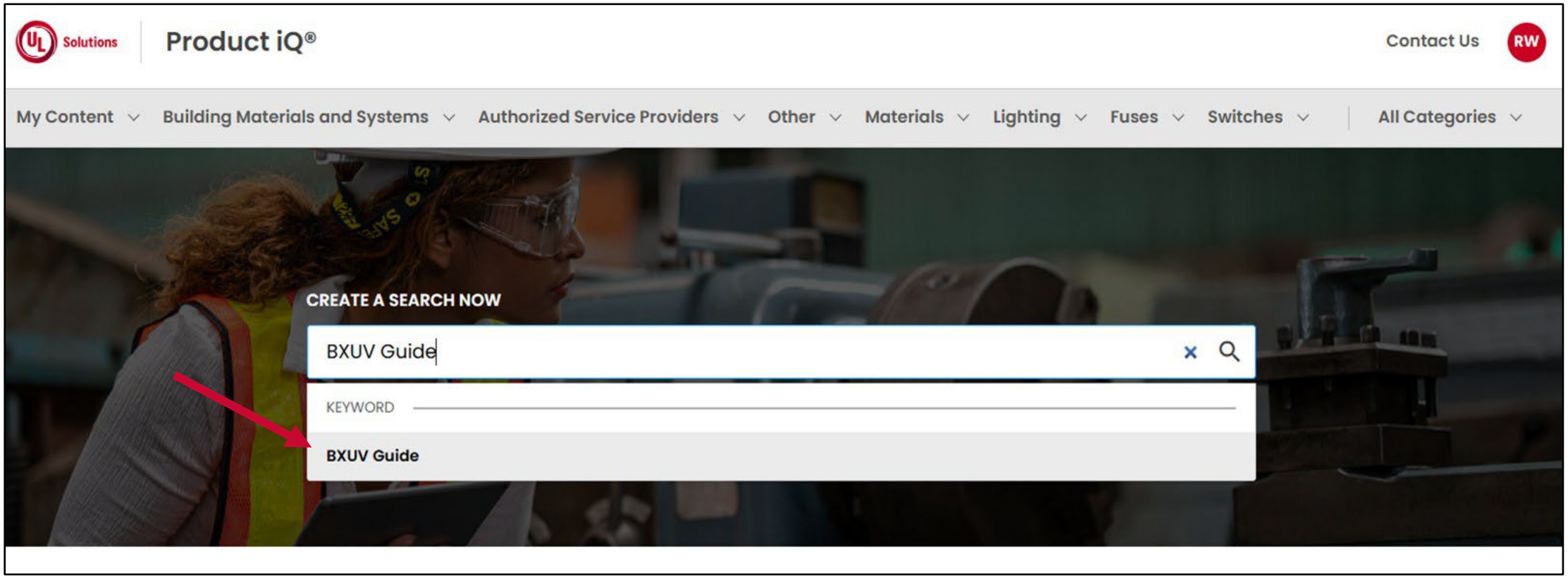

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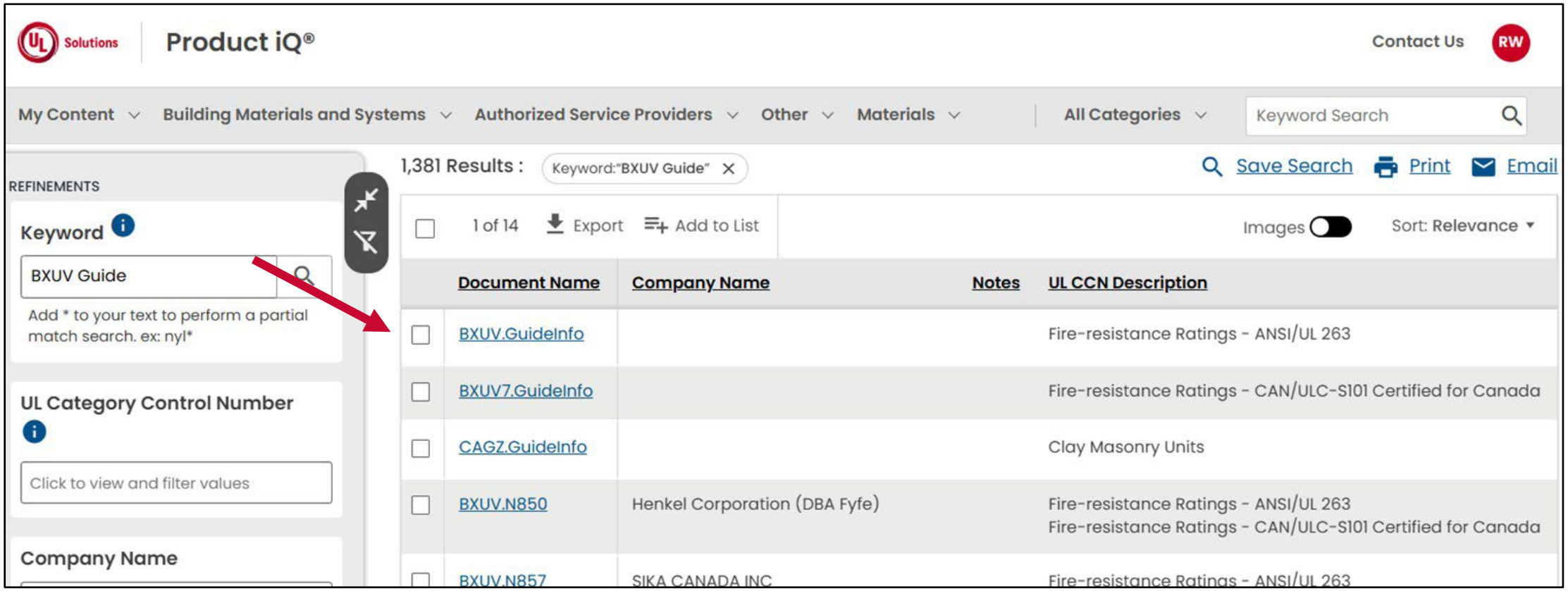

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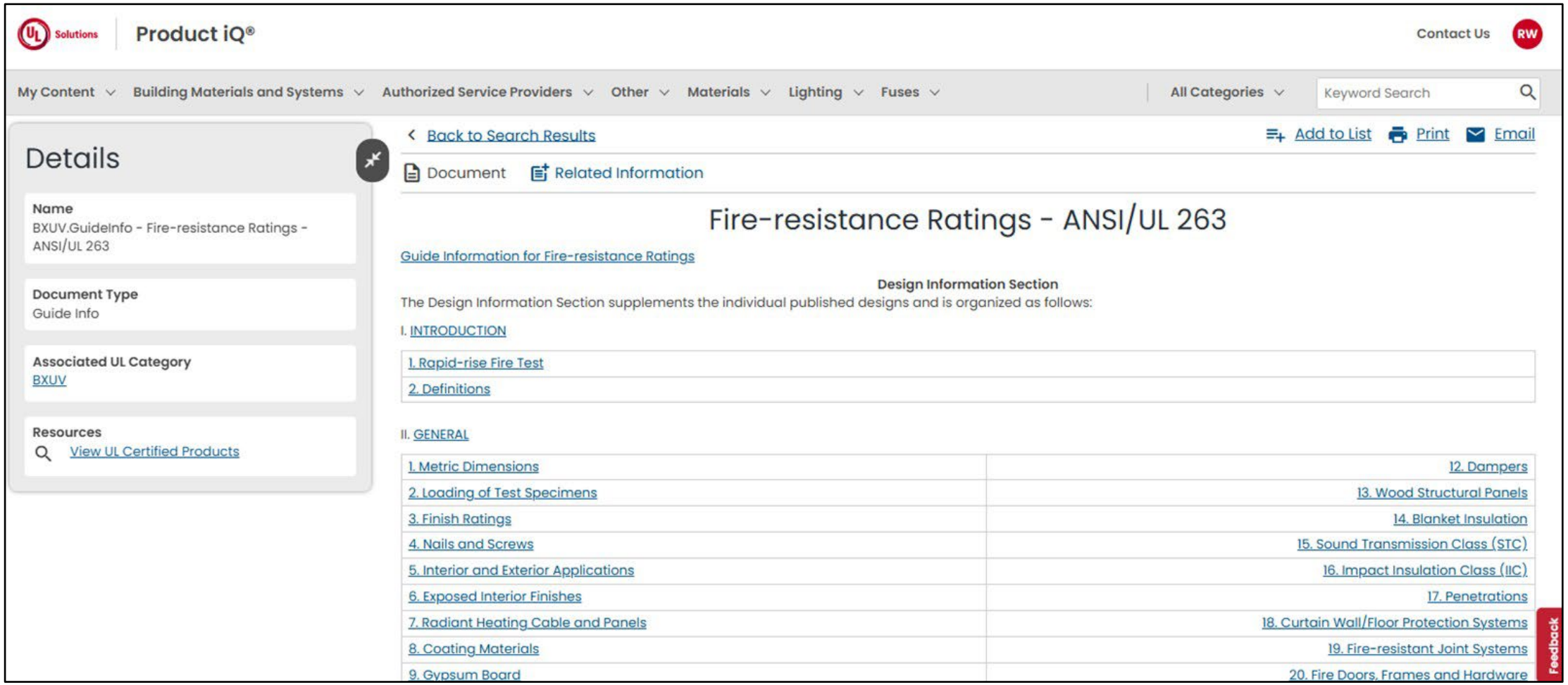


Topics Addressed In BXUV Guide Information

- I - Introduction
- II - General
- III - Floor-Ceilings and Roof Ceilings
- IV - Beams
- V - Columns
- VI - Wall and Partition Assemblies

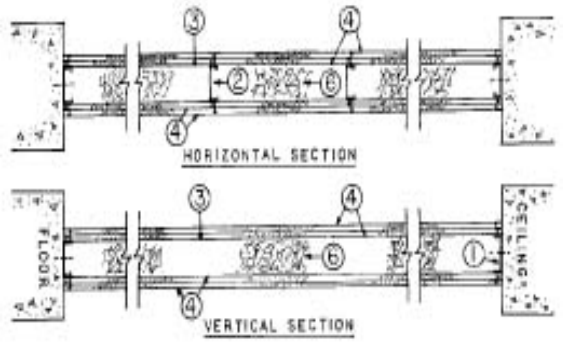
UL Numbering System (Section I – Introduction)

- 4 digit, alpha-numeric numbering system
- Prefix letter identifies group of construction (i.e. – A, D, G, J, L, M, N, P, S, X, Y, U, V, W)
- Assemblies tested to the UL 1709 petrochemical fire exposure include the letter R after the alpha character (i.e. – XR)
- Last 3 digits describe type of protection (i.e. – 300, 400, 500, 600, 700, 800, 900)

UL Numbering System (Section I – Introduction)

Hourly Ratings for:

FLOORS	A, D, G & J Series
FLOOR BEAMS	N Series
ROOFS	P Series
ROOF BEAMS	S Series
WALLS	U, V & W Series
COLUMNS	X, Y & XR Series



UL Numbering System (Section I – Introduction)

Hourly Ratings for:

- 300 Series - Rigid Board Fire Protection
- 400/500 - Series Plaster/Gypsum Board
- 600 Series - IFRMs
- 700 Series - SFRMs
- 800 Series - SFRMs
- 900 Series - Unprotected

Numbering System Examples

- D700 – Typically Wet-Mix SFRM on floor assemblies (beams and deck)
- P800 – Typically Dry-Mix SFRM on roof assemblies (beams and deck)
- X600 – Intumescent fireproofing on columns

Section II – General

- This Section contains sub sections, of those, two are particularly important:
  - Interior and Exterior Applications (Section II.5)
  - Coatings Materials (Section II.8)
    - Spray-Applied Fire-Resistive Materials
    - Intumescent Fire-Resistive Materials

Section II.5 – General (Interior and Exterior Applications)

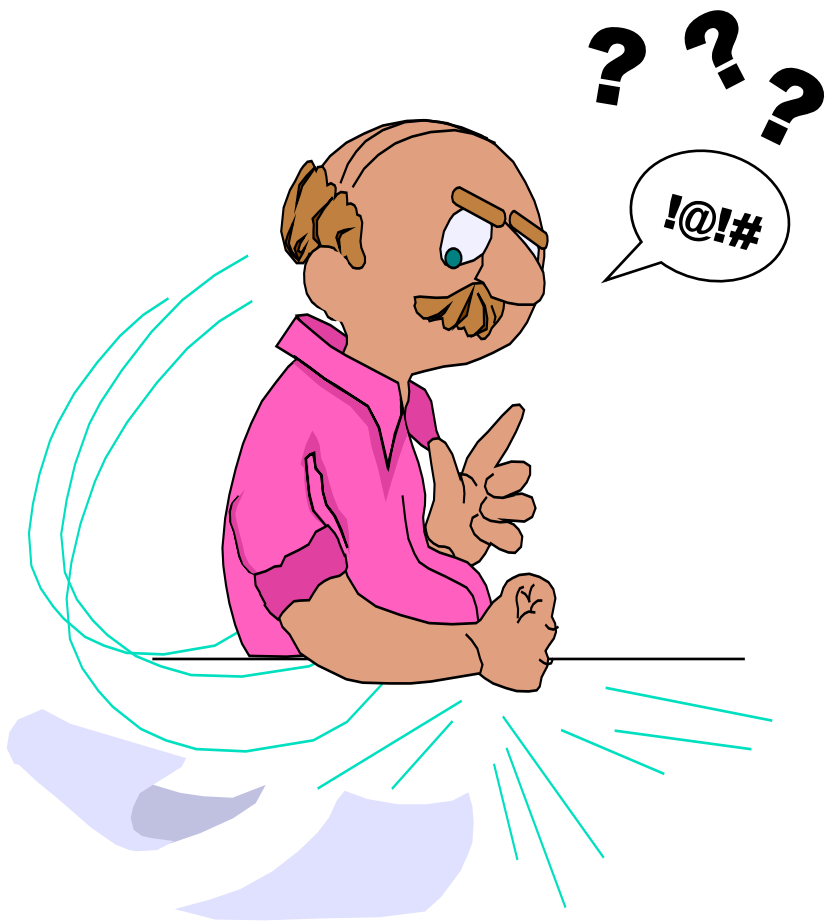
Interior and Exterior Applications – The fire-resistive designs and the UL-Certified materials are investigated with the understanding their use is limited to interior applications unless otherwise specified in the design or Certification information (e.g., structural columns "Investigated for Exterior Use"). Where an exterior application of a UL-Certified design is desired, the code authority should be consulted to ensure compliance with other code requirements applicable to exterior use.

Section II.8 – General (Coating Materials)

Spray-Applied Fire Resistive Materials

- Primed Steel Guidelines

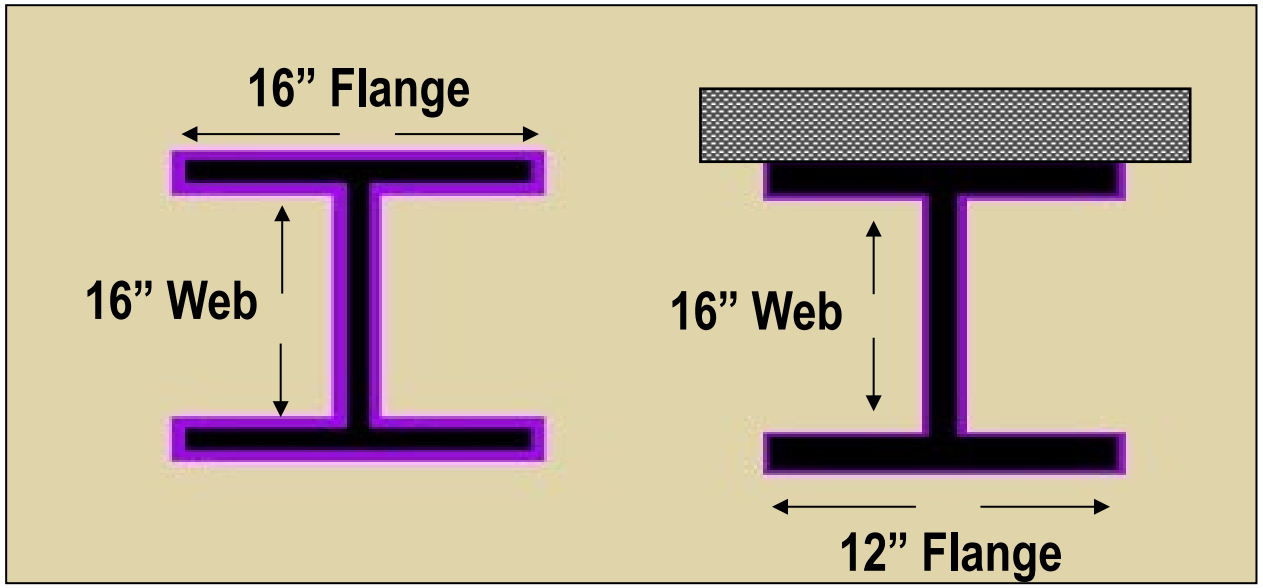
What To Do When:



- Primed steel is oversized
- Primer fails bond strength evaluation
- Primer is compatible and steel meets minimum requirements
- Primed pipe and tube steel members

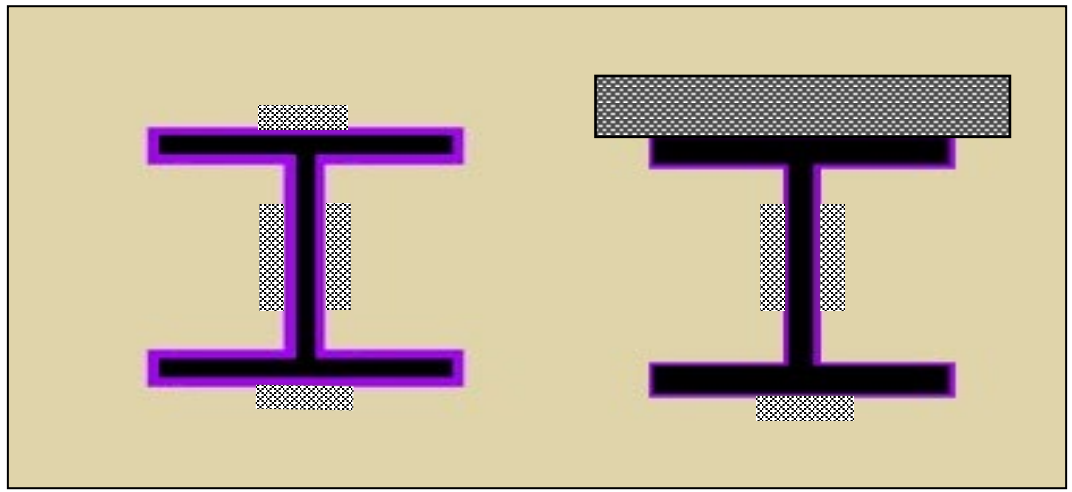
Primed Wide Flange Steel Size Requirements

- Beam flange width does not exceed 12”
- Column flange width does not exceed 16”
- Beam or column web depth does not exceed 16”



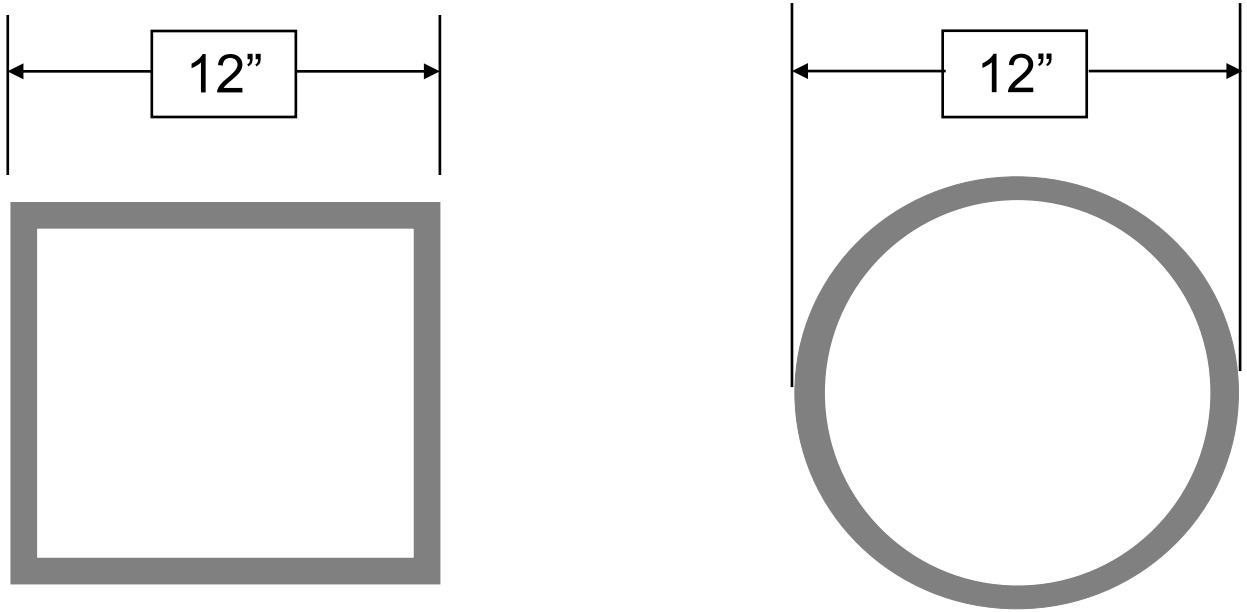
Primed Wide Flange Steel Size Requirements

- If oversized, a minimum 25% of the flange or web shall be covered by strips of lath, or studs and discs applied if covered in design
- Lath strips shall not be less than 3-1/2” wide
- Secure using welds, screws, or powder-actuated fasteners, on maximum 12” centers
- Clear span of flange or web must not exceed allowable widths stated above



Primed Tube and Pipe Steel Size Requirements

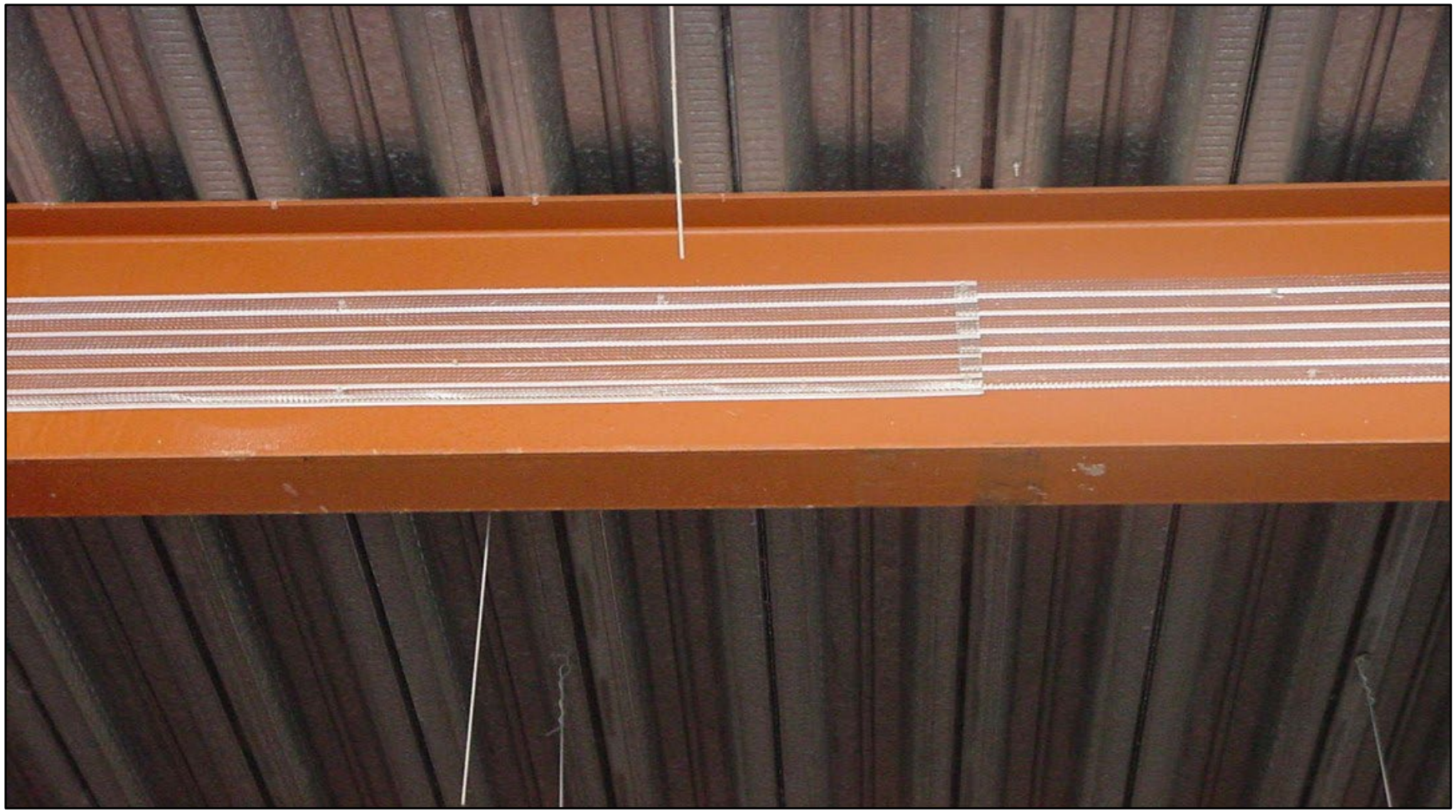
- Tube width does not exceed 12”
- Pipe outer diameter does not exceed 12”



Primed Tube and Pipe Steel Size Requirements

- If oversized, a minimum 25% of tube face shall be covered by strip of lath, or studs and discs applied if covered in design
- Lath strips shall not be less than 3-1/2” wide
- Secure using welds, screws, or powder-actuated fasteners, on maximum 12” centers
- Clear span of pipe must not exceed 12”

Typical Strip Lath Application



Bond Strength Requirements

- Bond strength tests conducted in accordance with ASTM E736, should indicate a min ave bond strength of 80% and a min ind bond strength of 50% when compared to the bond strength of the fire-resistive material as applied to clean uncoated 1/8 in. thick steel plate (control sample). The ave and min bond strength values should be determined based upon a minimum of five bond strength tests.
- Bonding agent may be utilized meet this requirement.
- If bond strength is not met, mechanical bond may be obtained by wrapping member with expanded metal lath.

Section II.8 – General (Coating Materials)

Intumescent Fire Resistive Materials

Installation

- Thickness published in Design is min ave thickness of the individual thickness readings measured in accordance with AWCI Technical Manual 12-B “Standard Practice of the Testing and Inspection of Field Applied Thin-Film Intumescent Fire Resistive Materials: an Annotated Guide”
- Extrapolated element size and material thickness has not been investigated

Installation

- Ave thickness should not exceed the maximum thickness published in individual design and no individual thickness measurement should be less than 80% of the thickness specified in the design
- Material installed per manufacturer’s installation instructions
- Clearance required around protected element to allow for free expansion, subject to manufacturer’s recommendations

Section II – General (Additional Important Points)

- Fire resistance ratings apply only to assemblies in their entirety

Section III –
Floor-Ceilings and Roof-Ceilings

This Section contains 24 sub sections, of those, 4 are particularly important. Specific guidelines for the application of beam designs to floor-ceiling and roof-ceiling assemblies are provided in the Directory under Section IV heading entitled “Beams”.

Section III – Floor-Ceilings and Roof-Ceilings

- The important sub sections are:
  - Concrete (Section III.1)
  - Steel Floor and Form Units (Section III.3)
  - Steel Joists (Section III.7)
  - Restrained & Unrestrained Assemblies (Section III.15)

Section III – Floor-Ceilings and Roof-Ceilings

- Concrete (Section III.1)
  - Normal weight – 145 to 155 pounds/cubic ft
  - Lightweight – 90 to 120 pounds/cubic ft
  - The concrete compressive strength specified in the design may be reduced 500 psi to obtain the minimum value
  - The concrete unit density has a tolerance of 3 pcf unless stated as a range for the design
  - When lightweight concrete is specified the use of normal weight is not allowed, and vise versa

Section III – Floor-Ceilings and Roof-Ceilings

- Steel Floor and Form Units (Section III.3)
  - The type of unit and the minimum steel thickness are specified in each design

Section III – Floor-Ceilings and Roof-Ceilings

- Steel Joists (Section III.7)
  - The specified minimum joist size in floor- or roof-ceiling designs, is the joist which meets the requirements for both the minimum depth and the minimum weight per foot
  - For designs that require the bottom chords of the joists to consist of round bars, the substitution of angles of an equivalent area is not recommended
  - Bridging bars or angles protected for 12 in. beyond the joist

Section III – Floor-Ceilings and Roof-Ceilings

- Restrained and Unrestrained Assemblies (Section III.15)
  - Designer to determine if assembly is restrained or unrestrained, subject to approval of code authority
  - Unrestrained Assembly ratings may be used for either restrained or unrestrained conditions

Section III – Floor-Ceilings and Roof-Ceilings

- Generally determined in one of two ways:
  - Structural engineer can calculate the relative stiffness of the surrounding structure and compare it to the stiffness of the UL test frames
    - UL publishes the stiffness of the test frames as a point of comparison
    - GREATER STIFFNESS THAN THE UL TEST FRAME = RESTRAINED
    - LESS STIFFNESS = UNRESTRAINED
  - Based on Appendix C of UL 263, which is reprinted in Guide Information

Section IV – Beams

- Beam ratings used for two purposes:
  - Where code only requires rating on structural members
  - To replace beam specified in a fire-resistance-rated floor-ceiling or roof-ceiling
- Beams defined as W, M, or S Shaped Structural Steel Sections as defined by AISC
- Section IV.1 – Minimum beam size defined by W/D ratio

Section IV – Beams

- Section IV.3 – Cavities above upper flange and steel floor unit must be filled with fire-resistive material
  - Fire-Resistive Material
  - Fire-Resistive Material in conjunction with Mineral Wool

Section IV – Beams
Beam Substitution Principles

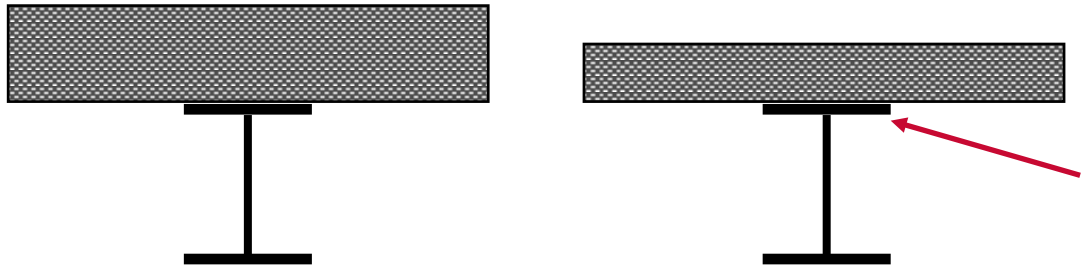
- Section IV.4 – Beam substitution procedures
  - Floor Beams from the N series designs may be substituted for beam specified in A, D, G and J series floor-ceiling designs subject to specific rules
    - Beam Rating of N series beam must be equal to or greater than Assembly Rating of floor-ceiling assembly
    - Beam substituted must utilize same material as floor-ceiling assembly
  - Roof Beams from the S series designs may be substituted for beam specified in P series roof-ceiling designs subject to specific rules
    - Beam Rating of S series beam must be equal to or greater than Assembly Rating of roof-ceiling assembly
    - Beam substituted must utilize same material as roof-ceiling assembly

Section IV – Beams
Beam Substitution Principles

- Beam ratings depend on the following:
  - Type of roof or floor being supported
  - Amount of fireproofing (protection) on the floor or roof units
  - Type of material applied to the beam
- All ratings are specific to the manufacturer and fireproofing material

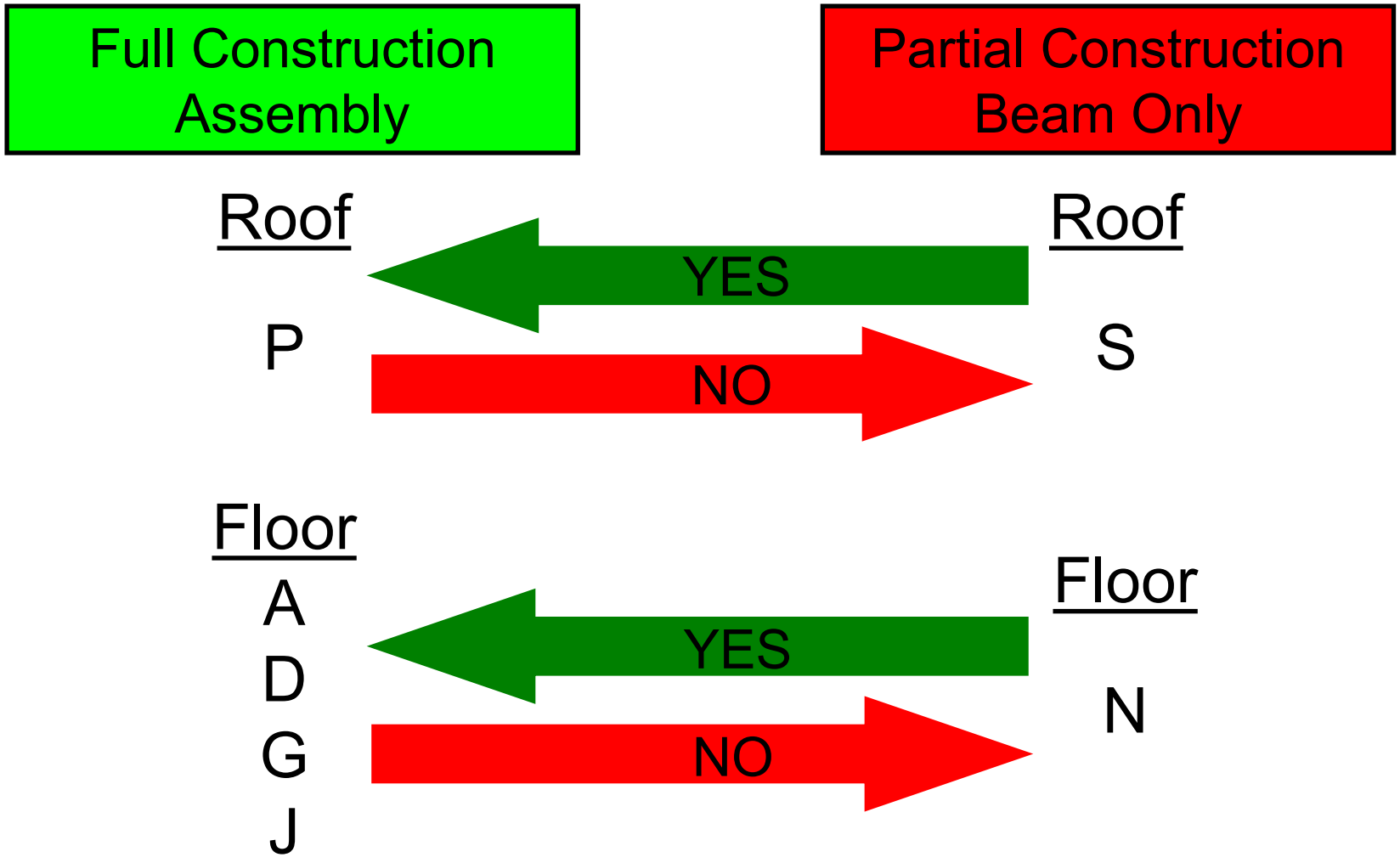
Section IV – Beams
UL Beam Substitution Rules

- UL Guide Information Section IV.4 - Beam Substitution
  - Substitution of beams into floor or roof assemblies should be limited to assemblies which have similar or greater capacity for heat dissipation from the beam as compared to the capacity for heat dissipation in the design from which the beam is being transferred
  - For concrete floors, a greater or equal heat capacity exists when the concrete has an equal or greater density range and volume per unit floor area. (concrete thickness)
  - Rules apply to beams, joists and trusses

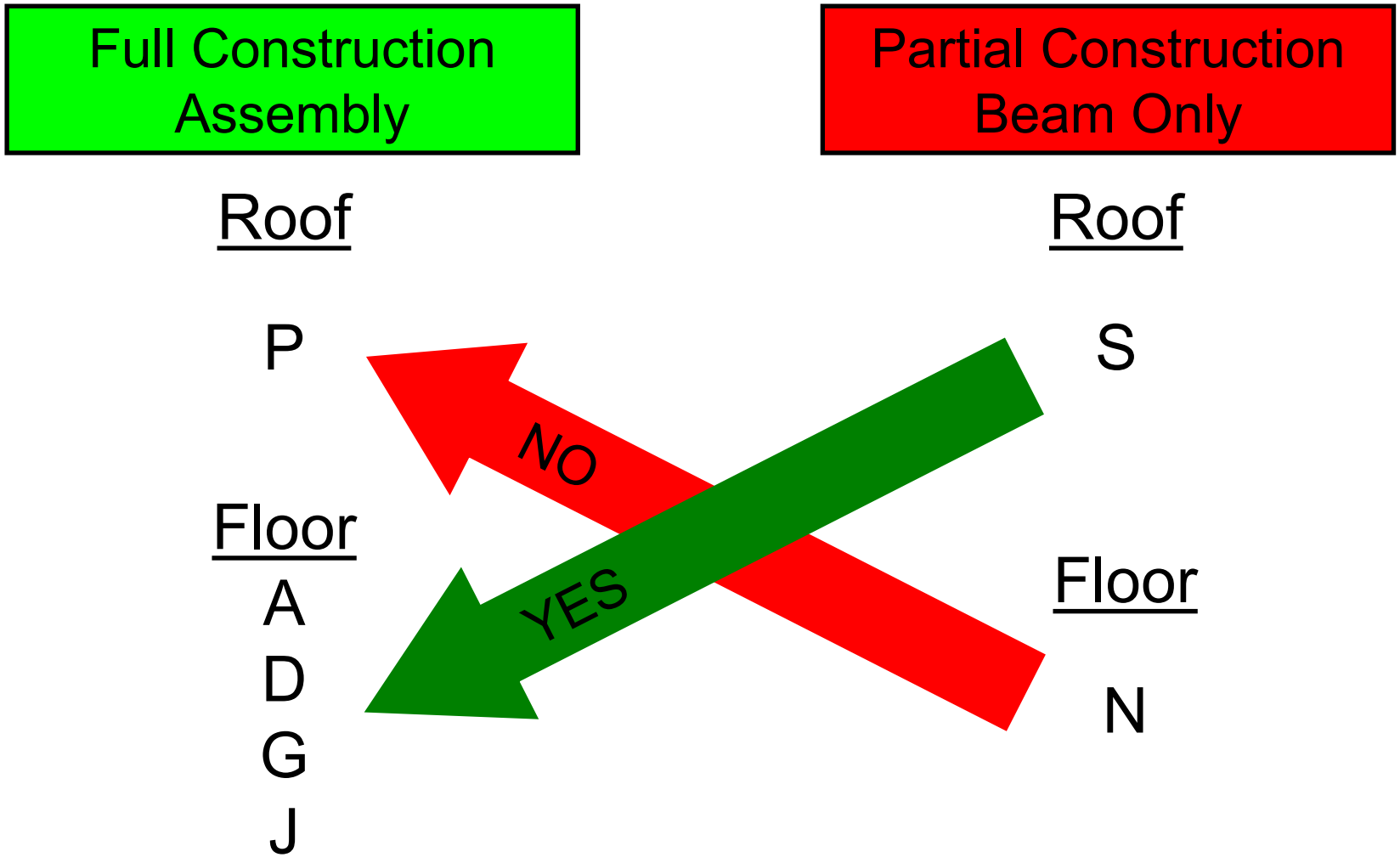


Less concrete means top flange gets hot faster = More fireproofing

Section IV – Beams
UL Beam Substitution Rules



Section IV – Beams
UL Beam Substitution Rules



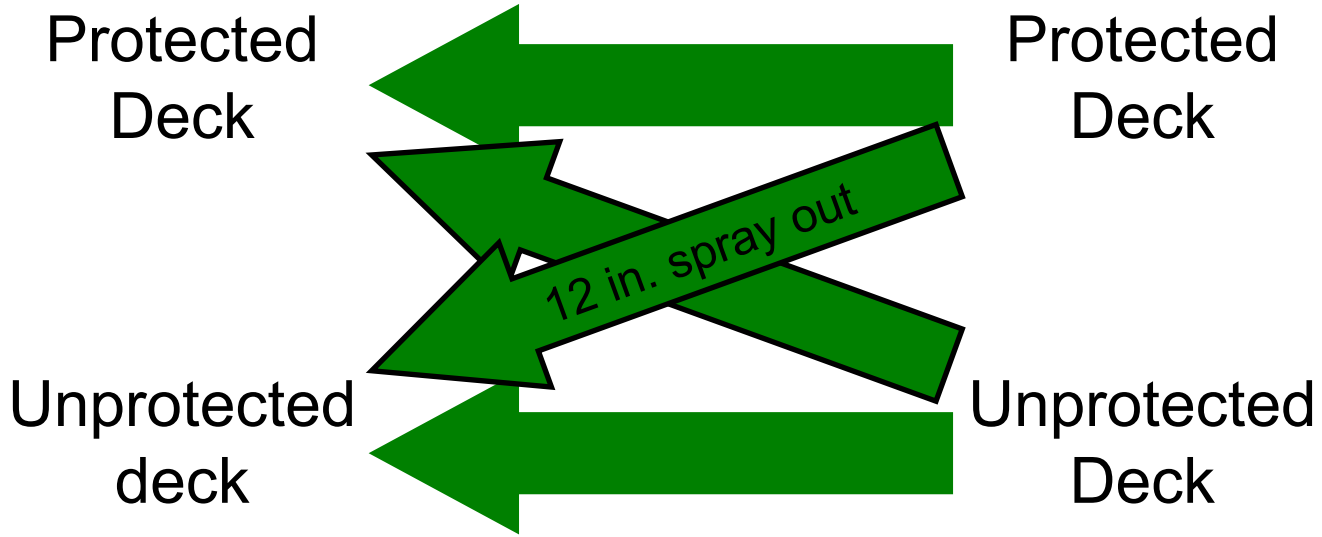
Section IV – Beams
UL Beam Substitution Rules

- Protected deck assembly substituted by protected deck beam only
- Unprotected deck assembly substituted by unprotected deck beam only
- Protected deck assembly substituted by unprotected deck beam only
- Unprotected deck assembly substituted by protected deck beam only
  - Deck sprayed out 12” from the beam at same thickness as beam

Section IV – Beams
UL Beam Substitution Rules

Full Construction Assembly

Partial Construction Beam Only



Thickness of Fire-Resistive Materials

- **Depends on:**
  - Fire Resistance Rating
  - W/D or A/P of steel section
  - Type (shape) of section
  - Number of faces exposed to the fire (3 for beams and 4 for columns)
  - For beams, the construction being supported
  - Properties of the fire-resistive material

Determining “massivity” of Wide Flange Steel: W/D

- W/D – Weight of steel/heated perimeter
- Fireproofing thickness based on W/D
- Greater W/D = Greater mass of steel
- Greater mass of steel = Lower FP thickness on that steel
- SFRM thickness calculated using the beam/column adjustment formulas found in Sections IV.6 and V of the UL Product iQ Online Directory

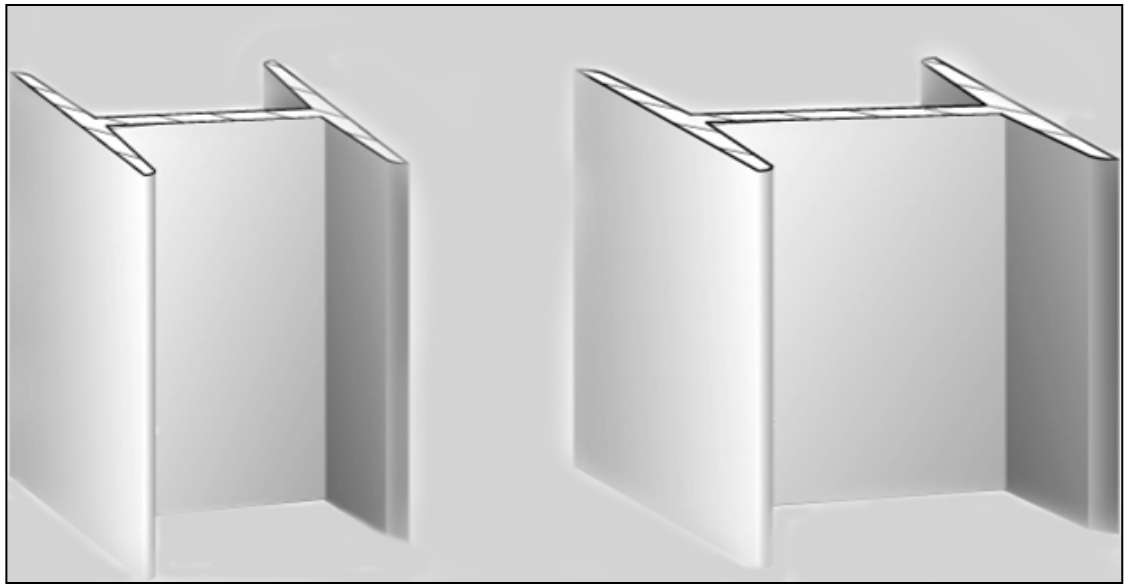
Determining “Massivity” of Tubular Steel: A/P

- A – Refers to the cross-sectional area of the steel
- P – Refers to the heated perimeter of the steel section in inches

Structural vs. Thermal Massivity

Which column is thermally larger?

W8x28 **W14x22**



W/D = 0.68 **W/D = 0.47**

$$W/D = \frac{\text{Lbs/lin ft}}{4a + 2b - 2c}$$

Using the W/D and A/P Ratios

- Designs use W/D and A/P ratios in one of three manners
  - Design specifies min W/D or A/P. Any size steel with larger W/D or A/P may be protected based on requirements of design
  - Design specifies equation for determining protection thickness based W/D or A/P
  - Design includes protection thickness in tabular form based on W/D or A/P

Section IV – Beams
Thickness Adjustment Equation

- Section IV.6 – Provides thickness adjustment equation for SFRM protecting beams
  - Beam size defined by W/D ratio
  - Material thickness on beams with lesser W/D than that specified in design requires adjustment and thickness on beams with greater W/D **may** be adjusted as follows:

$$T_1 = \frac{\left(\frac{W_2}{D_2} + 0.6\right)}{\left(\frac{W_1}{D_1} + 0.6\right)} T_2$$

Section V – Columns
Thickness Adjustment Equation

- Section V – Provides thickness adjustment equation for SFRM protecting columns
  - Column size defined by W/D ratio
  - Material thickness on columns with lesser W/D than specified in design requires adjustment as follows:

$$X_2 = 1.25\,(X_1)\left(\frac{W_1}{D_1}\right)\left(\frac{D_2}{W_2}\right)$$

National Fireproofing Contractors Association

Thanks for Attending!!!

National Fireproofing Contractors Association

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