

# IFRM Surface Prep & Finishes Webinar

**George Guanci, Sherwin Williams**

**Jason McKay, Isolatek**

**Keith Fernald, Rolling Plains Construction**

**Kevin Twyford, Carboline**

NFCA FREE Webinar Series

Learn – Network – Grow



August 13, 2024

# Thanks Members...

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- NFCA Contractors
- NFCA Associates
- NFCA Manufacturers

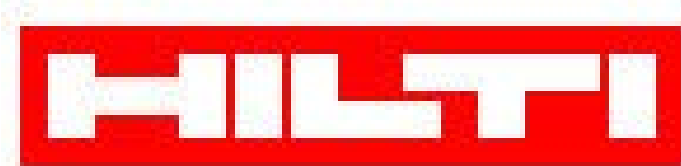
# Thanks Members...

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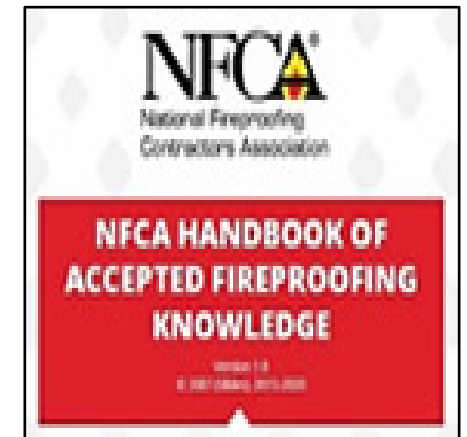
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# What Does NFCA Provide?

- **Fireproofing Education & Exams**
  - World-Class SFRM & IFRM Fireproofing Instruction
- **NFCA Contractor Accreditation Program for IFRM & SFRM**
  - Educated fireproofing Companies
  - UL Qualified SFRM Contractor Program
- **Week of Learning - Educational Conference**
  - Network with top Fireproofing Contractors, Manufacturers, Associates
  - A forum for suppliers and contractors to learn from one another
- **NFCA 100-400 Standards** for quality and life safety
- **Technical expertise, Standards and Code development**
- **Fireproofing Handbook of Fireproofing Knowledge**
- **NFCA Website** to find Fireproofing Leaders – [www.NFCA-online.org](http://www.NFCA-online.org)



# What does NFCA Do?

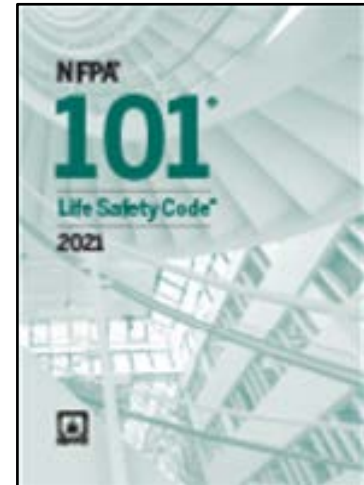
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- NFCA Committee ACTIONS
- NFCA @ ASTM Task Groups - Fireproofing
- NFCA @ NFPA Fire Protection Features
- NFCA @ AISC, AISI
- NFCA @ National Codes, Canada – NBCC, NFCC
- NFCA requests IAS add NFCA Fireproofing Exam
- NFCA Writes Industry Articles
- NFCA @ SFPE/ASCE Meetings
- NFCA @ ICC Codes...





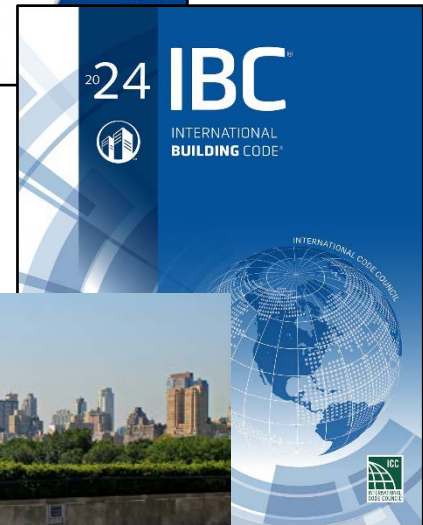
# NFCA @ ICC, NFPA, Canada CDP



# NFCA @ 2027 IBC CDP

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- **International Fire Code**
  - **Maintain Protection & Repairs**
- **Fire-Resistive vs Fire-Resistant**
- **Occupiable Roofs – Fire-Resistance-Rated**
- **Attachments**
- **Table 601 - 20' Rule; Clarifications**
- **Fireproofing Special Inspection**
  - **ASTM Standards – SFRM, IFRM, Boards/Wraps**
  - **Manufacturers Instructions**
- **Parking Garage Fire-Resistance**





# NFCA Contractor Accreditation Program

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- **NFCA LIVE & VIRTUAL EDUCATION/EXAMS**

- Contractor Designated Responsible Individual
- Focus on Fire-Resistance & Fireproofing
- 2024 Early Fall VIRTUAL
- 2025 Week of Learning



- **2025 Week of Learning –**

- Omni Interlocken
- March 31-April 4, 2025



# NFCA Contractor Accreditation Program (CAP)

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- NFCA Accreditation “seal” - Registered NFCA mark.
- Contract - NFCA & CAP Contractor.
- NFCA Fireproofing Exam(s), DRI

IFRM Accredited Contractor



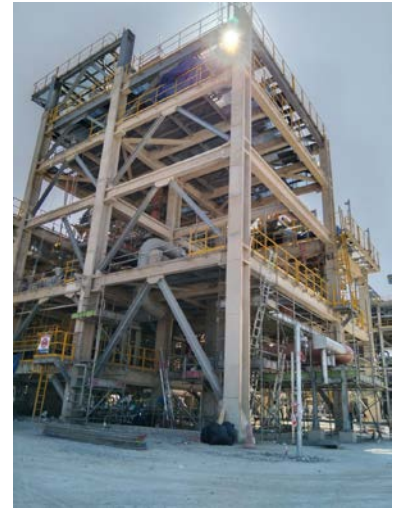
SFRM Accredited Contractor



# Contractor Qualifications

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- **UL Qualified SFRM Fireproofing Contractors**
  - **NFCA Education**
    - NFCA HAFK
    - UL Program Guide
  - **NFCA SFRM Fireproofing Exam**
  - **Audits –**
    - Office
    - Field



**Underwriters  
Laboratories**

**Qualified SFRM  
Contractor Program**

# UL Qualified SFRM Contactor Program

The UL Qualified SFRM Contractor Program is an independent, 3<sup>rd</sup> party credential.



## Program requirements

Pass the NFCA Fireproofing Exam – (DRI)

Understanding NFCA Handbook of Fireproofing knowledge

Knowledge of the UL Product iq of UL Fire resistance designs

Management system requirement

- Establish and effectively maintain a **management system** that meets the UL Program Requirements





# UL Qualified Fireproofing Contractor Program

- **NFCA DRI**
- **Management System (MS)**
  - **Audits**
  - **Contractor's Office**
  - **A Jobsite**
- **Consider....**

## UL Qualified Spray-Applied Fire Resistive Material (SFRM) Contractor Program requirements

### Mark Integrity Program

#### Introduction:

This document outlines the contractor company requirements for participation in the UL Qualified Spray-Applied Fire Resistive Material (SFRM) Contractor Program.

The SFRM installation industry serves residential, institutional, commercial and industrial structures. The industry addresses the need to limit the damaging effects of fire by insulating structural building elements from fire. SFRMs help horizontal assemblies including floor/ceiling, roof/ceiling and building elements such as beams and columns obtain fire endurance ratings. SFRM contractors install certified SFRMs to establish a protective system for a structure to protect fire and life safety and comply with specification and customer requirements.

In order for a SFRM installation contractor organization to qualify for UL's SFRM Contractor Program, the contractor organization shall employ a knowledgeable individual who successfully demonstrates their competency to UL through successful completion of the Designated Responsible Individual (DRI) program at a contractor company that has been recognized in the NFCA Contractor Accreditation Program (CAP).

The company that enrolls in the UL Qualified SFRM Contractor program also has to establish, implement and maintain a management system focused on the application of SFRMs. A management system is used to describe the contractor's SFRM operations.

The Management System approach requires the Contractor

may be determined by the construction documents that have had final approval by code authorities. Where special inspection is implemented, the AHJ ultimately determines the acceptability of the installation.

Because the SFRM contractor firm's selection and installation of SFRMs to requirements relies on staff knowledge, the UL Qualified SFRM Contractor Program requires at least one individual employed by the Contractor organization to be designated as a Designated Responsible Individual (DRI) who has demonstrated his/her knowledge via examination and meets other related requirements defined in this document.

### Definitions

**Authority Having Jurisdiction (AHJ)** — The organization, office or individual responsible for implementing the adopted code. This is typically the building official or fire marshal, or another governmental agency who may also be the final authority signing the "Certificate of Occupancy Permit".

**Certificate** — The SFRM Contractor Certificate. This is a document issued after an audit has been completed, and conformance to all UL Qualified SFRM Contractor Program Requirements has been determined. The Certificate is valid until Dec. 31 of the following year from which the certificate was issued.

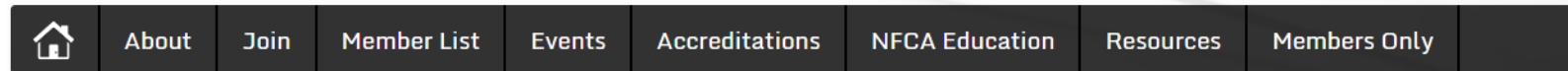
**Continuing Education Unit (CEU)** — For purposes of awarding CEU credit, the International Association of Continuing Education and Training (IACET) definition will be used for those individuals involved in the UL Qualified SFRM Contractor Program as follows: One (1) CEU is equal to 10 contact hours of participation in an approved education

# NFCA CAP & UL Qualified Fireproofing Contractors

- Successful Contractor meeting requirements
- Listed @ NFCA-Online.org



4415 W. Harrison St., #540  
Hillside, IL 60162  
P 708-236-3411  
F 708-449-0837  
[info@nfca-online.org](mailto:info@nfca-online.org)



## ABOUT

- Join
- Contact
- Board
- Committees

## MEMBER LIST

- Contractors
  - NFCA IFRM Accredited Contractors
  - NFCA SFRM Accredited Contractors
  - NFCA Contractors
  - Interim Members

## SFRM Accredited Contractors

Sort by Company

Sort by State

Member's First Letter:



## CONTRACTORS OPERATING IN...

- Alabama
- Alaska
- Arizona
- Arkansas
- California
- Colorado
- Connecticut
- Delaware
- District of Columbia
- Florida
- Georgia
- Guam





# What Makes Fire Resistance?

## UL 263 & ASTM E119 – The Details....

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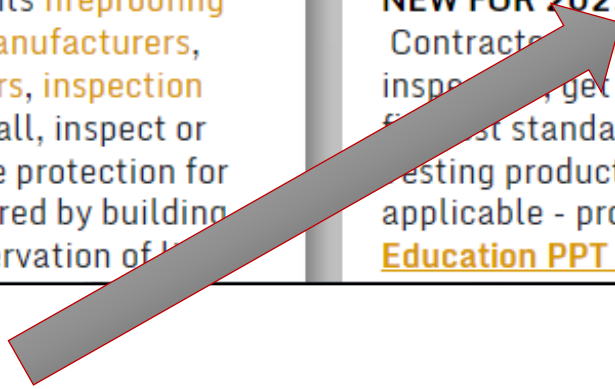
NFCA [Fireproofing Contractors](#) install passive fireproofing products such as Sprayed Fire-Resistive Material (SFRM) and Intumescent Fire-Resistive Material (IFRM), Boards and Wraps, to protect building structural materials from fire, as required by building codes, and the [manufacturers](#) and [associates](#) who provide those products. NFCA represents the fireproofing industry - [manufacturers](#), [equipment](#), [inspection](#) and [installation](#). Looking for a [NFCA Accredited Fireproofing Contractor](#) or [UL Qualified SFRM Contractor](#) ? Visit NFCA's [Member Lists](#)!

### About

The NFCA represents [fireproofing contractors](#) and [manufacturers](#), [equipment suppliers](#), [inspection agencies](#), who install, inspect or provide passive fire protection for structures as required by building codes for the preservation of

### News/Events

**NEW FOR 2022 - [FREE NFCA Fire-Resistance Webinar Recording](#).** - Contractors, inspection agencies, code officials, specifiers, fire inspectors, get a detailed look at structural fireproofing. Check out fire test standards ASTM E119, UL 263 and CAN/ULC-S-101. Testing products - in a full scale furnace with loads applied where applicable - proves fire-resistance. [FREE NFCA Fire-Resistance Education PPT Slides](#)



### NFCA Membership

**Welcome New Branch Contractor Interim Member**

PCI - [Phoenix Interior](#)

**[Not a member?](#)**

# NFCA Membership

- Thank you NFCA Members – You make NFCA programs possible!
- **Not a Member? Join Now!**
- Annual Contractor Membership \$1495
- **NFCA CAP SFRM / IFRM Program**
- **UL Qualified Fireproofing Contractor Program**
- Contact [info@NFCA-online.org](mailto:info@NFCA-online.org) for an application
- **NFCA Membership is an investment in your company and your industry**

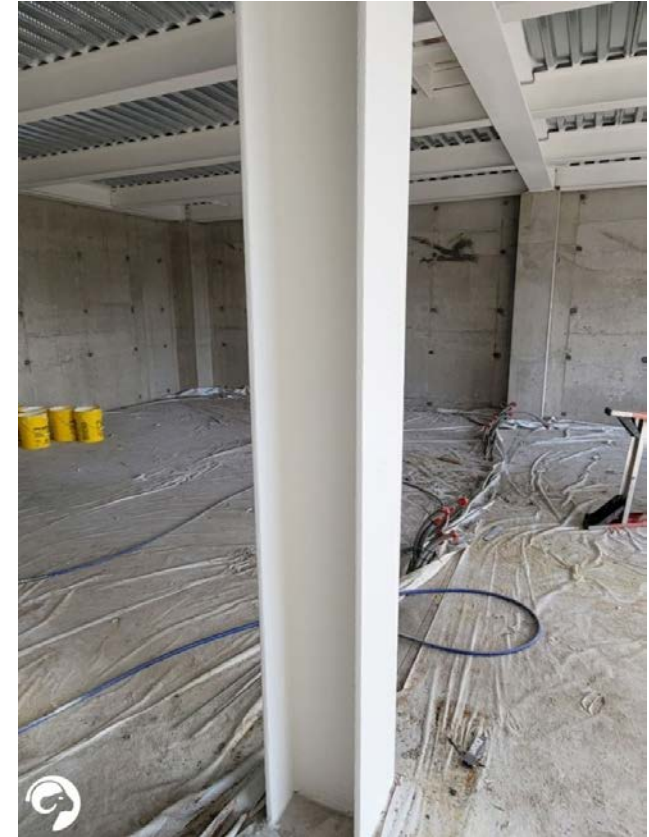


NFCA Fireproofing Class

# Surface Preparation

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- Primed Carbon Steel
- Galvanized Steel
- Stainless Steel Surfaces
- Wood??
  - Alternative Testing/Methods??
  - E84 type coatings?



# Surface Preparation Requirements

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- Surfaces shall be..
  - Free of dirt, oil, grease, release agents, loose scale, incompatible paints / primers ...
  - ...or any other surface condition that may prevent adequate adhesion
  - *SMOOTH...or reflects through IFRM to Finish....*



# Surface Preparation Requirements – SSPC

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- Primers – Applied to Steel Prepared in Accordance with
  - SSPC SP 6 –
  - Sandblast finish





# IFRM Primer General Requirements

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- Primer must be approved by IFRM manufacturer and pass bond strength test before applying IFRM
- Perform patch test of IFRM over existing or unknown primers
- If necessary, apply manufacturer approved tie-coat primer





# Surface Preparation Requirements - Standards

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- Manufacturer's Recommendations for Surface Prep
- Finish Requirements Address Steel Prep
- ASTM D3359, Method A
- SSPC-SP2, SP3
- SSPC-SP6
  - Architecturally prepared steel?
  - Does it Happen? Can it Happen?



# IFRM

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- IFRM ....It's NOT PAINT...

## **2024 International Building Code (IBC)**

**[BF] INTUMESCENT FIRE-RESISTIVE MATERIALS.** A liquid mixture applied to substrates by brush, roller, spray or trowel that expands into a protective insulating layer to provide fire-resistive protection of the substrates when exposed to flame or intense heat.

- IFRM – 60-100% Solids
- Paint – 12% Solids

# Determine IFRM Types

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- IFRM Latex
- IFRM Solvent
- IFRM Epoxy



# Surface Preparation Requirements - General

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- **Surface Preparation - Manufacturer's Requirements ...**
  - Product data sheet
  - Installation Instructions
  - Sell Sheets
- Surfaces shall be..
  - 100% Primed
  - Bolts?
  - Of 'Sound Condition'
  - Free of dirt, oil, grease, mill scale, release agents, loose scale, condensation, incompatible paints / primers ... overcured or undercured primer, zinc rich primers,
  - ...or any other surface condition that may prevent adequate adhesion

# Surface Preparation Requirements – SSPC

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- **SSPC SP6** - Architecturally Exposed Steel
  - Surface Prep in 07 81 23
  - Should Surface Prep be in
    - Steel Section ?
    - Shop Applied Primer Section?

# Surface Preparation Requirements – SSPC

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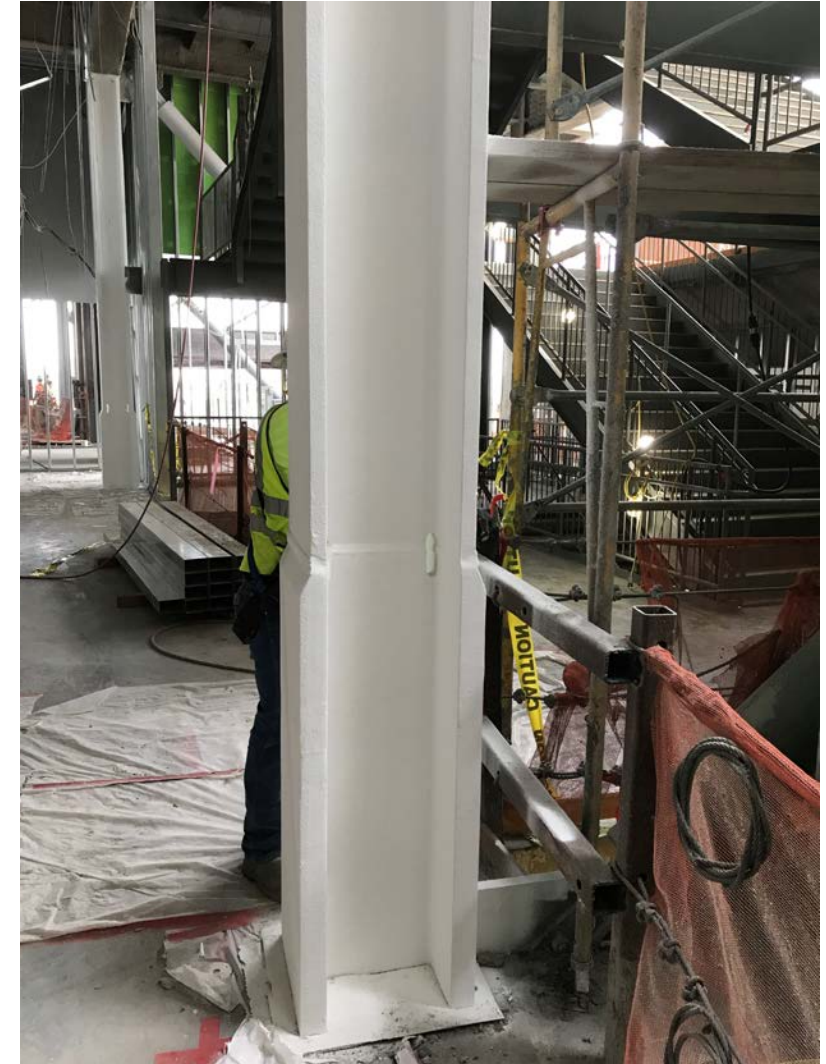
- **SSPC SP6** - Architecturally Exposed Steel
  - Prep before PRIMER
  - Specs require, rarely delivered...
  - **Epoxy IFRM Application,**
    - Over dry primer
    - No Damage
    - Free of dirt, oils, etc.



# Surface Preparation Requirements – SSPC

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- **Water Based, Solvent Based**
  - SP?? before Primer
  - Steel surface prep requirements BEFORE Primer (SP2/SP3)
  - Water & Solvent Based
    - **Manufacturer's requirements**
    - **Over dry primer**
    - **No Damage**
    - **Free of dirt, oils, etc.**



# NFCA & IFRM Finish Levels Task Group

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- *The finish quality of the product is dependent on the quality of the surface to which it is being applied.*
- *All substrate blemishes should be repaired prior to initial application of product.*

# NFCA's IFRM Finish Levels Task Group

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- **OBJECTIVE:**

- The objective of the Finishes Task Group is to develop a standard practice for IFRM finish levels for field applied or shop applied IFRM's.

# NFCA IFRM Finish Levels Task Group

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- **VISION:** Many factors are involved with finishes, including substrate surface smoothness, primer finish, to name a few. Finished IFRM samples from manufacturers with specifiers and architects, mock ups at jobsites to show GC's, building owners, with specific finish levels and costs, can set acceptable finish level expectations, and contractors can understand what to deliver and inspection agencies the levels from which to judge, if applicable.

# NFCA & IFRM Finish Levels Task Group

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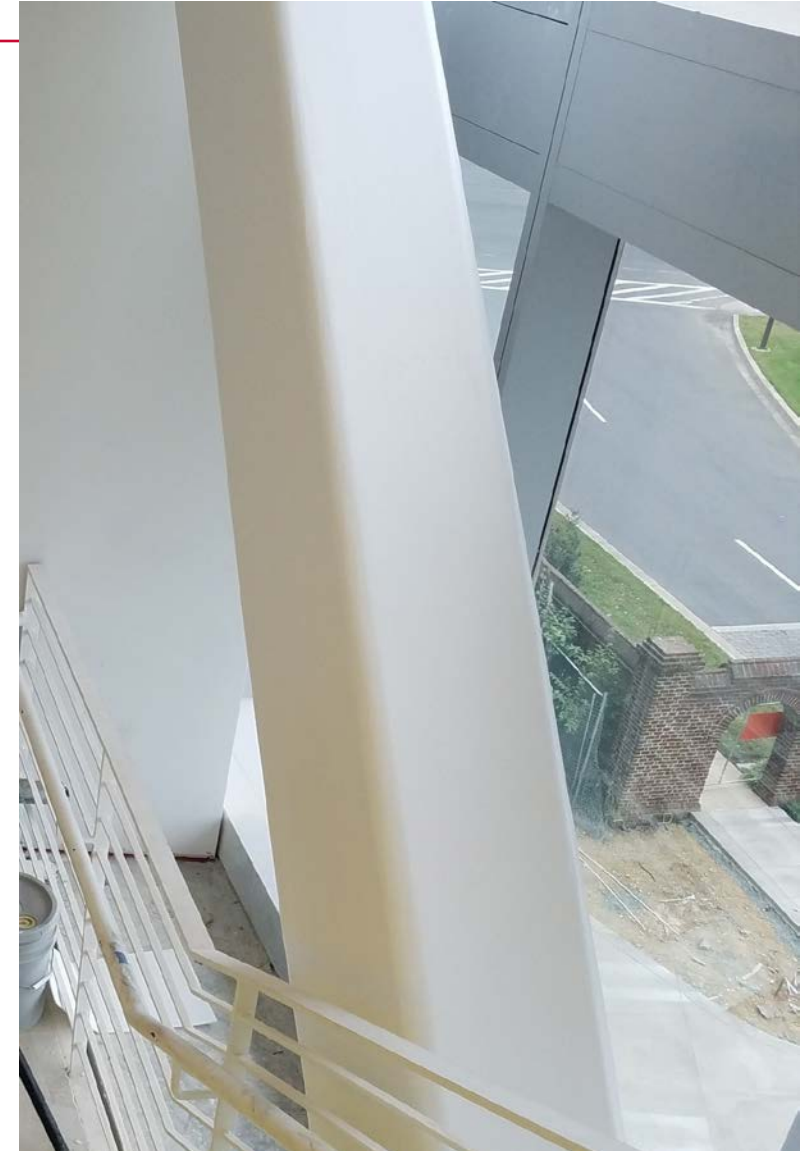
- One recommended practice, generic for all Types
- Costs change based on surface prep AND finish, by type of product
  - Primer
  - Water base IFRM
  - Solvent base IFRM
  - Epoxy IFRM
  - New technologies such as MMA??

# NFCA & IFRM Finish Levels – Initial Thoughts

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- Level 1 (a) – Roughest ‘orange peel’ finish visible @ 3’ (1 meter)?
- Level 2 (b) – Between no Orange Peel and Much Peel??
- Level 3 (c) - Smooth with no visible ‘orange peel’ @3’ (1 meter), with or without filler coats..

Southern  
Insul. Image





# NFCA & IFRM Finish Levels – Manufacturers

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- **The Sherwin-Williams Company Definitions**

- **Level 1- Basic Finish**

- Product is installed to specified thickness with no additional treatment to smooth or mitigate appearance.

- **Level 2 - Feature Elements not in Close View**

- Final coat should have a uniform smooth to “orange peel” finish when observed from 20 feet.

- **Level 3- Feature Items in Close View**

- These Items Generally are located within 20 feet of the viewing public. The product should generally be level and free from major defect. Only minor texture should be observable when observed from 6 feet or greater.

- **Level 4- Showcase Elements**

- These Items are a critical aesthetic feature and due to proximity, shape, topcoat and/or lighting, require the highest possible degree of finish. Items should be smooth, and the finish should be even with no waviness or defect.

# NFCA & IFRM Finish Levels – Manufacturers

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- **Carboline Company Definitions – See PDF Brochure**

- **Level 1- Standard Finish** - Standard sprayed finish applied to specified DFT requirements with surface irregularities. Surface has a textured appearance. Surface is left as sprayed with hand tooling or back rolling on edges only.
- **Level 2 – Commercial Finish** – Spray Applied & Back Rolled with some surface irregularities. Uniform, light texture, minimal surface defects. Back rolling/hand tooling required on flanges, angles.
- **Level 3 - Architectural Finish** – Spray Applied, Back Rolled, and Sanded. Back rolling and hand tooling required. Sanding minimizes texture. Some slight texture visible, uniform finish.
- **Level 4- High Quality Architectural Finish** – Spray Applied, Back Rolled, Sanded Smooth. Back rolling & hand tooling required. Sand smooth to remove orange peel.

# NFCA & IFRM Finish Levels – Manufacturers

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- **Isolatek.....and recommends Pre-Fireproofing Mockup**
- **Level 1** – Product is applied to maximum wet film thicknesses allowed by the manufacturer and environmental conditions. A textured finish is to be expected. Level 1 finish is recommended for concealed locations or where surface appearance is not of paramount importance due to the distance from which the protected steel is viewed by building occupants.
- **Level 2** – Product applied at thin, controlled coats using the minimum size tip allowed by the manufacturer to provide the highest quality finish by spray application. The surface may need to be sanded or abraded to remove peaked texture to produce a semi-smooth finish. Level 2 finish is recommended for locations which may be exposed to view from a distance, or where high quality, texture free finish is not required
- **Level 3** – Product is applied following procedures listed above for a Level 2 finish, with the addition of hand tooling or sanding following manufacturer's recommended practices once the final DFT is achieved. The manufacturer may be consulted for other recommended practices to smooth the surface of the finished product. The surface is to be free from visible imperfections and texture. Care must be taken to ensure the required DFT thickness is maintained once the final surface is smoothed. Level 3 finish is recommended for use in exposed areas where a high-quality architectural finish is required.

# NFCA & IFRM Finish Levels – Other Industries

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- **Painting and Decorating Contractors Assn.– P14-06.**
  - **Level 1 – clean, no smoothing needed.** Requires only basic cleanliness of surfaces to ensure the adhesion of new finishes, with less concern for the adhesion of existing paint and quality of appearance. Obvious loose paint will be removed, but no smoothing of the existing surface profile will be done. Includes washing or hand cleaning. No Warranty
  - **Level 2 – Requires all of Level 1** as well as the examination of existing coatings to assess their adhesion. With this level of surface preparation, good adhesion and longevity of finish are of primary concern and appearance is of secondary concern. Includes basic patching, filling, dulling of glossy surfaces, spot priming, caulking, and light sanding/abrading to **address surface profile differences exceeding 1/8 inch**. Excludes matching texture and taping cracks.
  - **Level 3 – Superior – patching, filling cracks, etc. - Basic patching - Requires all of Levels 1 and 2 with added emphasis on the quality of appearance** of finish painted surfaces. Includes detailed patching, filling, properly taping cracks, approximate matching of textures, and thorough sanding to address surface profile differences exceeding 1/16 inch.
  - **Level 4 – Supreme, ‘touch and feel’ is smooth. - Requires all of Levels 1, 2 and 3 with even more emphasis on the quality of appearance of finish painted surfaces.** The criteria for inspection and acceptance may include smoothness to “touch and feel” on interior handrails, doors and easily accessible trim. Includes thorough filling & sanding to address surface profile differences exceeding 1/32 inch.
  - **Level 5 – Restoration. This type of surface preparation is required when existing conditions indicate that the surfaces are severely deteriorated** (where damage to the coating is widespread). Includes complete or nearly complete removal of existing paint through various stripping methods. Substrate (underlying surface being painted) may need to be completely replaced, repaired or resurfaced.

# NFCA & IFRM Finish Levels – Other Industries

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- **Wall texture – Drywall, Plaster levels?**

<https://www.trim-tex.com/blog/6-levels-drywall-finishing>

- Level 0 – no mud/tape
- Level 1 – taped, no mud over.
- Level 2 – ‘look is not priority’.
- Level 3 – 2 layers mud after taping. Sand.
- Level 4 – accepts flat enamel paint. Skim coat and 2 layers wallboard compound.
- Level 5 – really smooth, glossy paint. Add another skim coat to level 4. (perfectly flat?)

# NFCA & IFRM Finish Levels – Other Industries

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- Concrete finish levels –
  - <https://theconstructor.org/concrete/types-concrete-finishes/39399/>
- Troweled, Broom, Stamped, Salt, Exposed Aggregate, Swirl, Color
- Honed
- Polished
- Buffed



# NFCA & IFRM Finish - Considerations

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- How smooth is steel?
- Surface smoothness might affect IFRM finish – causing a limitation. Waviness, non-loose scale, etc.
- Requirement for range of finish, waviness, rust, 'range of smoothness minimum to achieve a certain IFRM finish, might limit



# NFCA & IFRM Finish Levels – TG Thoughts

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- Important for delivery of a successful project – from budget, proposal to application.
- Samples are critical to success -- prior to application.
- Manufacturers should show samples that reflect level 1, 2, 3 above.
- Is 3' close enough to surface? Far enough to judge?
- ONLY provide guidelines above and not have examples below?? Performance based document, rather than prescriptive. Leave means and methods to contractor.
- Do we use a 'x' nap roller to determine Level 1, 2, or 3?? Compare?
- Use different spray tip sizes to get comparison for Level 1, 2, 3?? Compare?
- Orange peel pits per square inch?
- Orange Peel pit depth?
- Finish subject to waviness of steel? Surface of steel?
- Do NOT compare to gypsum panel smoothness.
- SSPC/NACE-AMPP – surface prep only.
- Painting and decorating contractors association....surface prep only.
- SSPC – Can a SSPC/NACE Level 1 be smoothed with IFRM to a Level 5 finish?



# NFCA & IFRM Finish –Issues

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- How smooth is primer?
- What level finish for steel, then primer. Primer.....
- Can Steel Mills, Fabricators, Primer Mfrs. help?
- Primer roughness affects IFRM surface finish....
- Glossy vs. Matte reflectance?



# NFCA & IFRM Finish Levels - Issues

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- Judging Smoothness
- What is the distance from surface that is standard for judging compliance? Distance helps ...
  - 15 feet?
  - 5 feet?
  - 5 inches?
- Microscope? Magnifying glass?
- What determines the finish level? Aesthetic or Process?



Wohl Image



# NFCA & IFRM Finish Levels

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- Keys to Success....
  - Steel Prep, Cleanliness, Burrs, etc.
  - Primer Application
  - IFRM Application, Surface Required
    - Rougher substrate = Costlier Surface Finish
      - Welds, Bolted Connections
    - Sequencing & Scheduling
      - Thinner & Multiple Applications = better finish
      - Material Prep (sanding, shaving, etc.) between Applications
    - Clear Expectations – Specifications;
      - Paint like finish?
      - Smooth as Steel?
    - IFRM's = 60%-100% solids; Paint 10-12% Solids...
    - IFRM's ARE NOT PAINT
    - SP6
    - Communication – GC – Fireproofing Contractor



Carboline  
Image

# NFCA & IFRM Surface Prep & Finish Levels

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- Closing Comments
- Questions??





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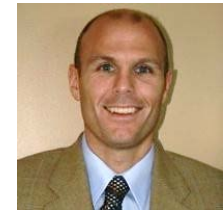
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