



The Panel

- Chris Kimball, PE, FPE, MCP – Building Code Solutions
- James Tumelson, MCP, CBO – Building/Fire Official – City of Edgewood
- Shelley Jin, PE – Fire Reviewer – City of Bellevue
- Chris Seaman, PE – Building Official – City of Tacoma
- Walker Donuji, PE – Jensen Hughes

Format

- Panel discussion
- Questions are encouraged
- Sharing of your experience is encouraged
- We will follow interesting threads
- Slides are only to keep us on track

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Possible Topics

- The Need for Coordination
- Fire-Resistance-Rated Assemblies
- Hazardous Materials
- Batteries
- Storage Racking
- Solar PV Systems
- ERCES
- Mechanical Systems
- Foam Insulation
- Wildland-Urban Interface Code
- Alternate Means & Methods
- Construction Safeguards
- Group R-3 in the IFC
- After the Fire

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The Need for Coordination

In many cases there is an overlap in duties between the building and fire departments.

Is this intentional?

Is this needed?



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Responsibilities

• Building Official

- "The building official shall receive applications, review construction documents, issue permits, inspect the premises for which such permits have been issued and enforce compliance with the provisions of the code." [IBC 104.3]



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Responsibilities

- **Fire Code Official**

- “The fire code official is authorized to receive applications, review construction documents and issue permits for construction regulated by this code, issue permits for operations regulated by this code, inspect the premises for which such permits have been issued and enforce compliance with the provisions of this code.” [IFC 104.3]
- *How do the defined responsibilities differ?*

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Review Scope

- **Building Official** (*Google Gemini*)

- Structural safety, means of egress, fire safety, accessibility, occupancy & classification, mechanical, electrical, plumbing.
- Is that everything?

- **Fire Code Official** (*Google Gemini*)

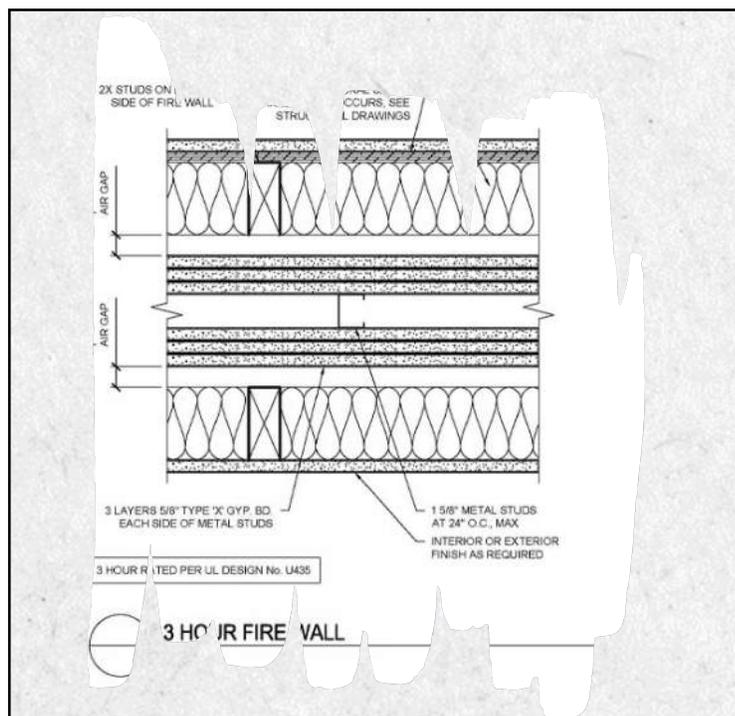
- Site access & water supply, building construction & protection, means of egress, fire protection systems, special hazards & occupancy.
- Is there any overlap between the building and fire departments?

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Discussion Topics

- If the building department is reviewing (?) does the fire department need to?
- Is there a purpose to duplicating efforts?
- As we review the next topics in this presentation, consider the responsibility of your group and also ponder what other organizations are looking at. Does each party know their responsibility?

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FRR Assemblies

Who reviews these?

Who inspects these?

What should be on the plans?

How is continuity confirmed in the field?

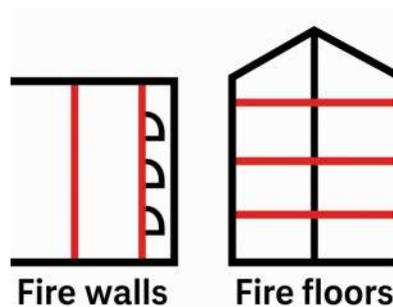
What is structural stability?

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Key Concepts

• 7 Types of FRR Assemblies

1. Exterior walls
2. Fire walls
3. Fire barriers
4. Fire partitions
5. Smoke barriers
6. Smoke partitions
7. Horizontal assemblies



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Key Concepts

• Assembly Continuity

1. Exterior walls → FDN to top of parapet
2. Fire walls → FDN to top of parapet + 18" horizontally
3. Fire barriers → FDN/floor to floor/roof assembly
4. Fire partitions → FDN/floor to floor/roof assembly
5. Smoke barriers → FDN/floor to floor/roof assembly (membrane)
6. Smoke partitions → FDN/floor to floor/roof assembly (smoke)
7. Horizontal assemblies → Continuous w/out vertical openings

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Key Concepts

• Opening Protectives

- What should we be worried about?

TABLE 716.1(2)—OPENING FIRE PROTECTION ASSEMBLIES, RATINGS AND MARKINGS

TYPE OF ASSEMBLY	REQUIRED WALL ASSEMBLY RATING (hours)	MINIMUM FIRE DOOR AND FIRE SHUTTER ASSEMBLY RATING (hours)	DOOR VISION PANEL SIZE ^a	FIRE-RATED GLAZING MARKING DOOR VISION PANEL ^{b,c}	MINIMUM SIDELIGHT/TRANSOM ASSEMBLY RATING (hours)		FIRE-RATED GLAZING MARKING SIDE-LIGHT/TRANSOM PANEL	
					Fire protection	Fire resistance	Fire protection	Fire resistance
Fire walls and fire barriers having a required fire-resistance rating greater than 1 hour	4	3	See Note a	D-H-W-240	Not Permitted	4	Not Permitted	W-240
	3	3 ^d	See Note a	D-H-W-180	Not Permitted	3	Not Permitted	W-180
	2	1½	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in. = D-H-W-90	Not Permitted	2	Not Permitted	W-120
	1½	1½	100 sq. in.	≤100 sq. in. = D-H-90 >100 sq. in. = D-H-W-90	Not Permitted	1½	Not Permitted	W-90

International Code Council, 2024 IBC ©

Key Concepts

• Penetrations & Joints

- Penetrations (IBC 714)
- Joints & Voids (IBC 715)
- Duct & Air Transfer Openings (IBC 717)



Discussion Items

- Where is FRR construction often required?
- What are common mistakes at plan review?
- What are common mistakes in the field?
- How is this shown on the plans?
- Do plans distinguish between types of assemblies?
- Do plans include actual assembly listings?
- Can this be enforced after occupancy?

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Hazardous Materials

What occupancies commonly have HazMat?

Who reviews these?

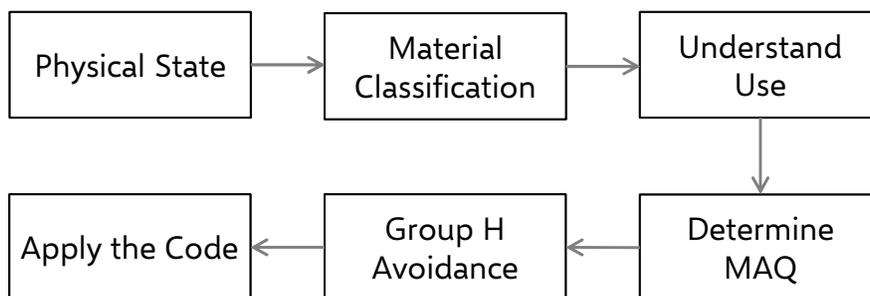
Who inspects these?

Who confirms HazMat classifications?



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Evaluation Process



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Key Topics

- When is an HMIS required?
 - Who requires this?
- When is an HMMP required?
 - Who requires this?
- For small projects, will you perform the HazMat classification rather than require an HMIS?

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HMIS

- What information is required on the HMIS?
- Do you have a form you provide to the applicant?
- Do you require both an HMIS inventory report and an HMIS summary report?
- How do you identify incompatible materials?

The screenshot displays the CAMEO Chemicals interface. At the top, it shows the time 9:30 and the app name 'CAMEO Chemicals'. Below this is a 'Back to Chemical Datasheet' link. The main section is titled 'Reactivity Predictions' and contains a table with the following data:

	ACETIC ACID, SOLUTION, MORE THAN 80%	
HYDROGEN PEROXIDE, STABILIZED	X	HYDROGEN PEROXIDE, STABILIZED
CHLORINE	X	X

Below the table are options for 'What is this information?' with buttons for 'Summary', 'Share PDF', and 'Export CSV'. The 'Incompatible Pairs: Hazard Predictions' section lists three pairs of chemicals with red boxes around them:

- ACETIC ACID, SOLUTION, MORE THAN 80% ACID mixed with HYDROGEN PEROXIDE, STABILIZED
- ACETIC ACID, SOLUTION, MORE THAN 80% ACID mixed with CHLORINE
- HYDROGEN PEROXIDE, STABILIZED

At the bottom, there is a search bar and a 'MyChemicals' button.

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Operational Permits

- What are operational permits?
- What are the benefits? Pitfalls?
- Should the building reviewer know when the fire department requires operational permits?
- 57 items listed in IFC 105.5, a significant number of which pertain to HazMat.



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Energy Storage Systems (ESS)

Who reviews these?

Who inspects these?

What should we be concerned about?

Are you familiar with the 2024 IBC/IFC requirements?

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What is wrong with this picture?



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2024 Updates

- **IBC Chapter 3:**

- Group B → testing, research and development
- Group F-1 → ESS dedicated use buildings; Equipment containing lithium batteries; Lithium batteries; Vehicles powered by lithium batteries
- Group S-1 → Lithium batteries; Repair garages for vehicles powered by lithium batteries

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2024 Updates

- **Fire Protection Systems:**

- Group B, F-1 & S-1 having lithium batteries require sprinklers whose design is based on a series of fire tests. [IBC 902.3.1.1.3]
- Group B, F-1 & S-1 having lithium batteries must have a fire alarm system activated by air-sampling-type smoke detectors or radiant-energy-sensing detectors installed throughout the fire area. [IBC 907.2.2.2]

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2024 Updates

- **IFC 320:** *General Requirements*

- Permits are required if > 15CF
- Fire safety plan per IFC 404
- Separate indoor & outdoor storage requirements
- Indoor storage > 15CF requires a technical opinion & report
- 2-hour separation from other uses
- Reduced provisions for partially charged batteries (30%)

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2024 Updates

- **IFC 1207:** *Specific Requirements*

- Commissioning/decommissioning
- Equipment
- Installation requirements
- Protection
- Indoor/outdoor installations
- Mobile ESS
- ESS in Group R-3 & R-4

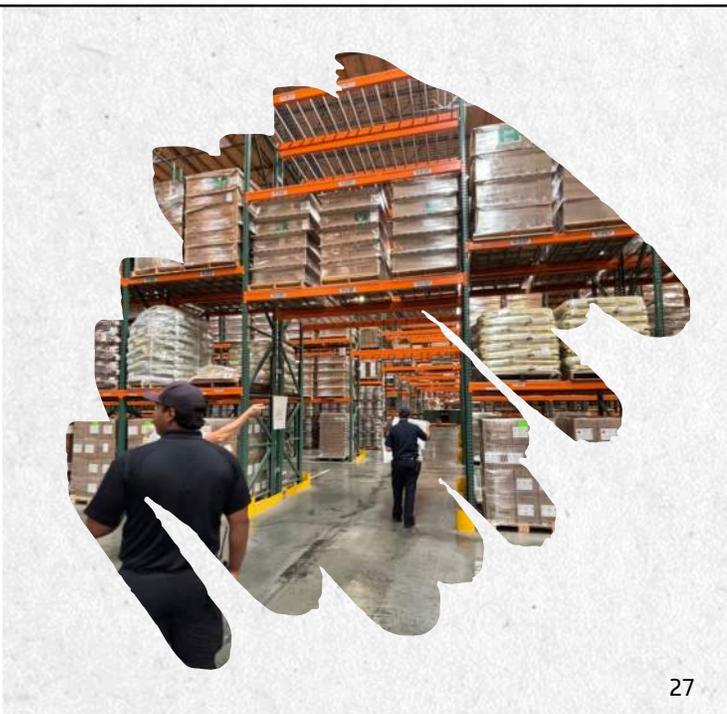
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Storage Racking

Who reviews these?

Who inspects these?

Are there key triggers to be aware of?



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Discussion Topics

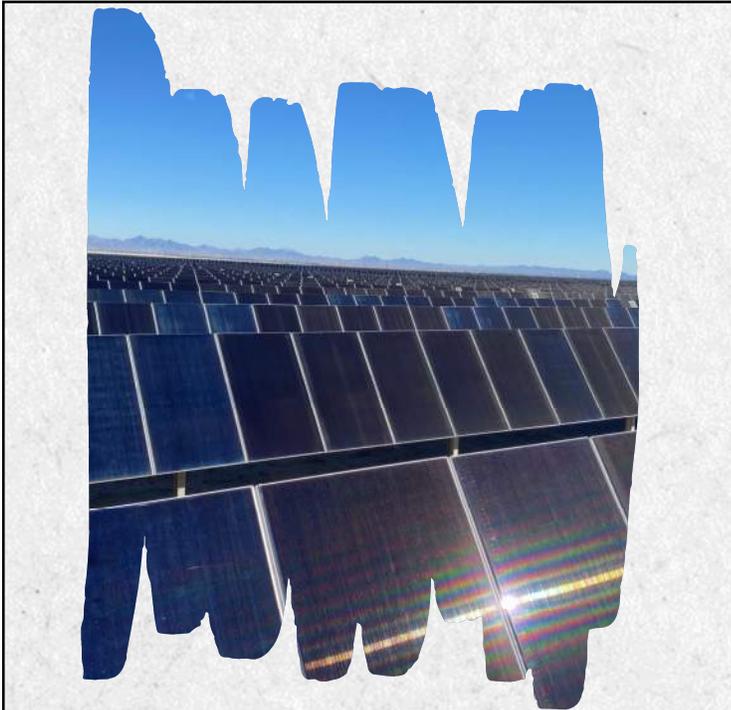
- What are common problems?
- When is a permit required?
- When are special inspections required? What are they supposed to verify?
- What should be on the plans? [IFC 3201.3]
- Is a fire safety and evacuation plan typically provided? [IFC 3201.4]

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Discussion Topics

- Which of the following fire protection features may be required?
 - A. Fire area sprinklers
 - B. In-rack sprinklers
 - C. Fire alarm
 - D. Fire department access doors
 - E. Smoke & heat removal

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Solar PV Systems

Who reviews these?

Who inspects these?

What are the main concerns?

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Discussion Topics

- What are common problems with roof-mounted systems?
- What are common problems with ground-mounted systems?
- What is typically included in the permit submission?
- Who performs a review of the system?
- What is the fire marshal concerned about?
- What is the risk category?

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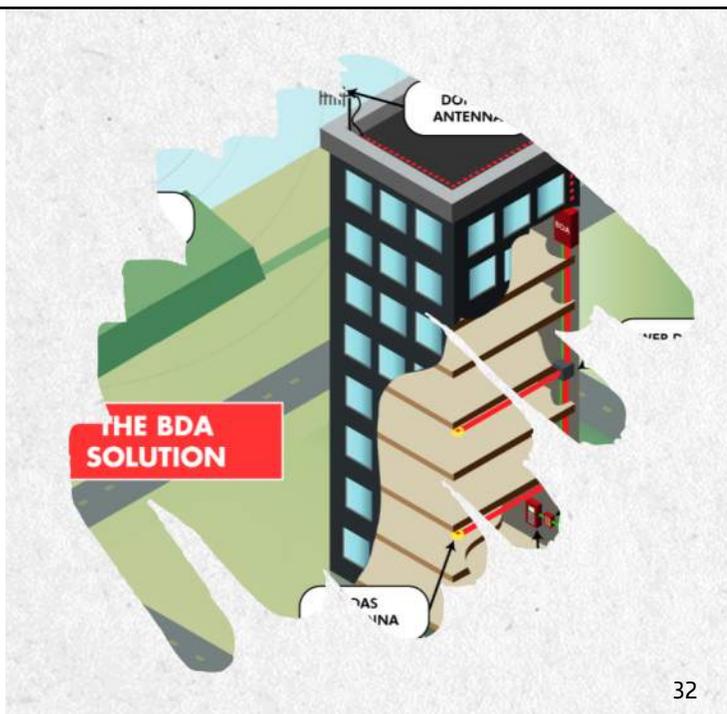
ERCES

What does this consist of?

Who reviews these?

Who inspects these?

How could these affect the building department?



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Discussion Topics

- Does the fire department require ERCES?
- What buildings are typically exempt from ERCES?
- What is required for a permit application?
- Are the required frequencies commonly listed on the plans?

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Key Considerations

- Equipment must be UL 2524 listed
- 95% of building must have acceptable signal coverage
- 99% of "critical areas" must have adequate coverage
- Adequate = DAQ 3.0
- Must have dedicated standby power
- Must be monitored by a listed FACU

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Mechanical Systems

Who reviews these?

Who inspects these?

How does this get coordinated with the fire alarm system?

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Discussion Topics

- What fire-related considerations are there related to mechanical systems?
- What are common issues you have seen in relation to mechanical equipment/systems?
- When is an in-duct smoke detector required?
- When are dampers required?
- What are the 5 types of fire dampers described in the code?

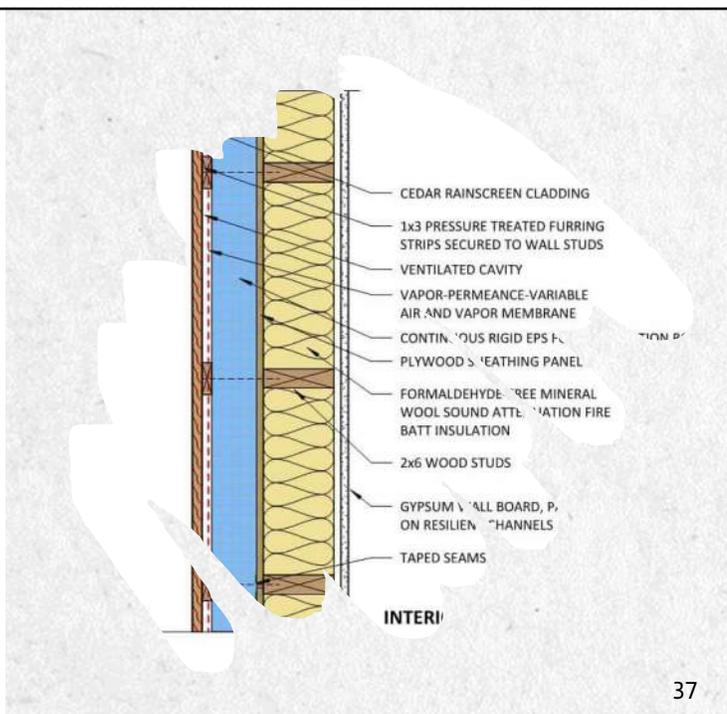
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Foam Insulation

Are you seeing more of this?

Will it go away?

Why worry?



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Key Considerations

- **Surface-Burning Characteristics** [IBC 2603.3]
 - Flame Spread Index ≤ 75
 - Smoke Developed Index ≤ 450
- Why does this matter?
- **Thermal Barrier** [IBC 2603.4]
 - Must be separated from the interior (1/2" gypsum)
 - Combustible concealed spaces \rightarrow IBC 718

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Key Considerations

- **Exterior Walls** [IBC 2603.5]
 - If > 1 story → NFPA 285 test for vertical & lateral fire propagation
 - Flame Spread Index ≤ 25 ; Smoke Developed Index ≤ 450
 - Potential heat (Btu) in any portion of wall shall not exceed that considered in the assembly test
- **Roofing**[IBC 2603.6]
 - If Class A, B or C roofing is required, the insulation must be considered as part of the tested assembly per ASTM E108 or UL 790

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Discussion Items

- What listings are appropriate?
- When must this be part of a listed assembly or when can it be added?
- How often do you receive an NFPA 285 listing?
- Do you require evaluation reports?

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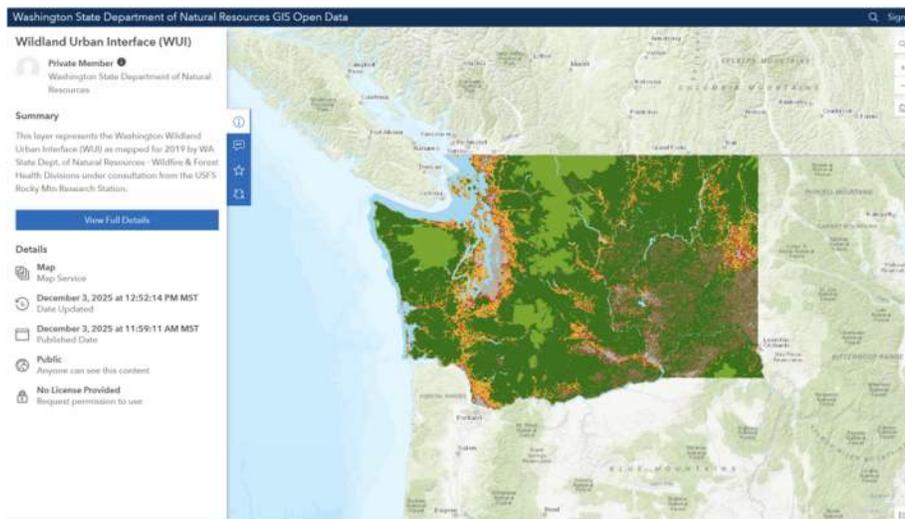
Wildland-Urban Interface

How is this enforced?

Who is responsible for what?

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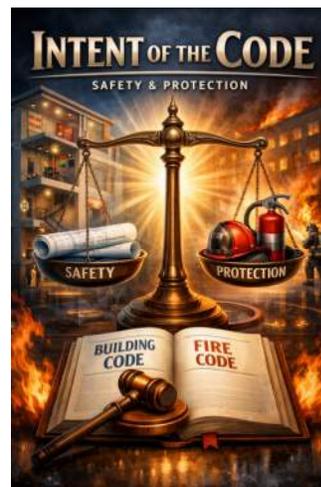
Department of Natural Resources



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2024 Updates

- Re-written in all I-codes
- Shall be submitted in writing
- Disapprovals shall be in writing
- **Equivalency criteria:** quality, strength, effectiveness, durability, safety (other than fire safety), fire safety.
- Tests, reports, peer review



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Discussion Topics

- What is an example of an AMMR you would consider?
- What is an example of one you would not consider?
- Do you require approved AMMRs to be placed on the plans?

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Construction Safeguards

Who enforces?

When is it required?

Is a site safety plan required?

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Discussion Topics

- When do you require construction safeguards to be provided?
- What do they consist of?
- What are the components of a site safety plan? [IBC 3302.1.1]
- Do you require a designated site safety director?
- Do you verify that daily fire safety inspections are performed?

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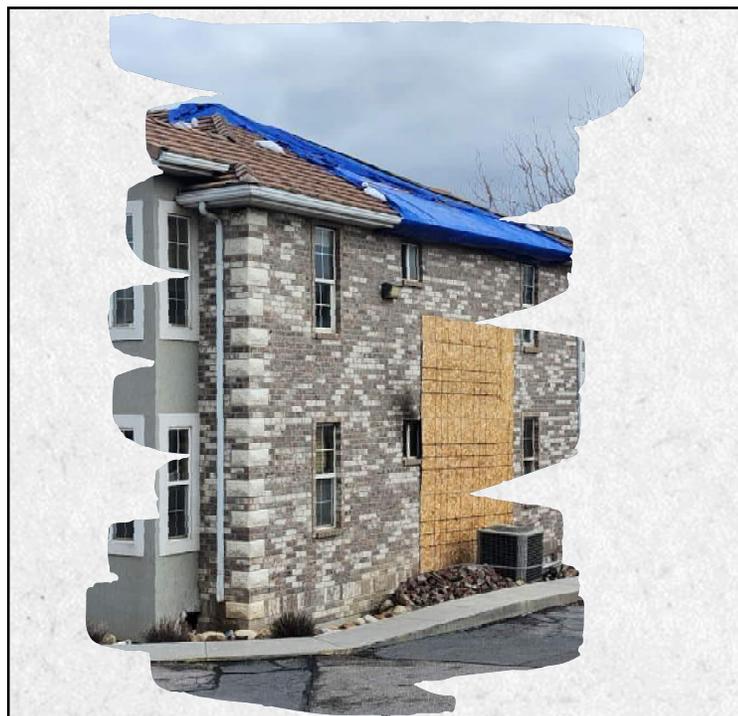
Group R-3 in the IFC

The IRC does not list occupancy groups

Single-family dwellings are classified Group R-3 in the IBC, but this includes other types as well



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After the Fire

Who is involved with what?

What is the communication chain?

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Thoughts?



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Discussion Topics

- Who is responsible to assess a building to ensure it is safe to occupy after a fire?
- What items do you look at when assessing a structure after a fire?
- Are third-parties ever required? When?
- Is a final inspection of any repairs required prior to re-occupancy?

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Thank You!

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