

CFR


Congreso Internacional Fuego y Rescate



Fire & Smoke in Void Spaces

Hidden Hazards

Valdivia, Chile
January 2010

CFBT-US 
Not just what and how, but why!



...the door should be kept shut while the water is being brought, and the air excluded as much as possible, as the fire burns exactly in proportion to the quantity of air which it receives.

James Braidwood
Superintendent, London Fire Brigade
Fire Prevention & Fire Extinction 1866

Learning Outcomes

- ▶ Recognize where structural voids may be encountered.
- ▶ Understand how voids can serve as a path of fire and smoke travel.
- ▶ Recognize the hazards presented by fires in void spaces.
- ▶ Select strategies and effective tactics based on incident conditions.

The Problem

- ▶ Fires in void or concealed spaces have resulted in numerous firefighter fatalities due being caught by rapid fire progress or structural collapse.
- ▶ Safe and effective operations require recognition of hazards presented by fire extension and development in void spaces and take appropriate action to mitigate those hazards.



WATTLE RESERVE LODGE
Avalanche Ridge Canyon for Seniors
West Valley Communities Affordable Housing LLC

This project is funded in whole
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Project Manager: [illegible]
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WARNING
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Structural Void Spaces

- ▶ Attics and Roof Voids
- ▶ Suspended Ceilings
- ▶ Multiple Ceilings
- ▶ Utility Conduits & Chases



Some voids are inherent in specific types of building construction, others result from modification or renovation.

A Simple Fire

What initially appeared to be a simple fire in a single family house, presented a significant challenge to responding companies!



Challenges

The fire spread not only in voids inherent in the normal building construction, but those created by renovation.



- ▶ Multiple ceilings
- ▶ Different materials
- ▶ Heavy fuel load



Extreme Fire Behavior

- ▶ Fires in void spaces are generally ventilation controlled
- ▶ Ventilation controlled can fires present a significant threat of extreme fire behavior
 - *Ventilation Induced Flashover*
 - *Backdraft*
 - *Smoke Explosion*

Durango, CO

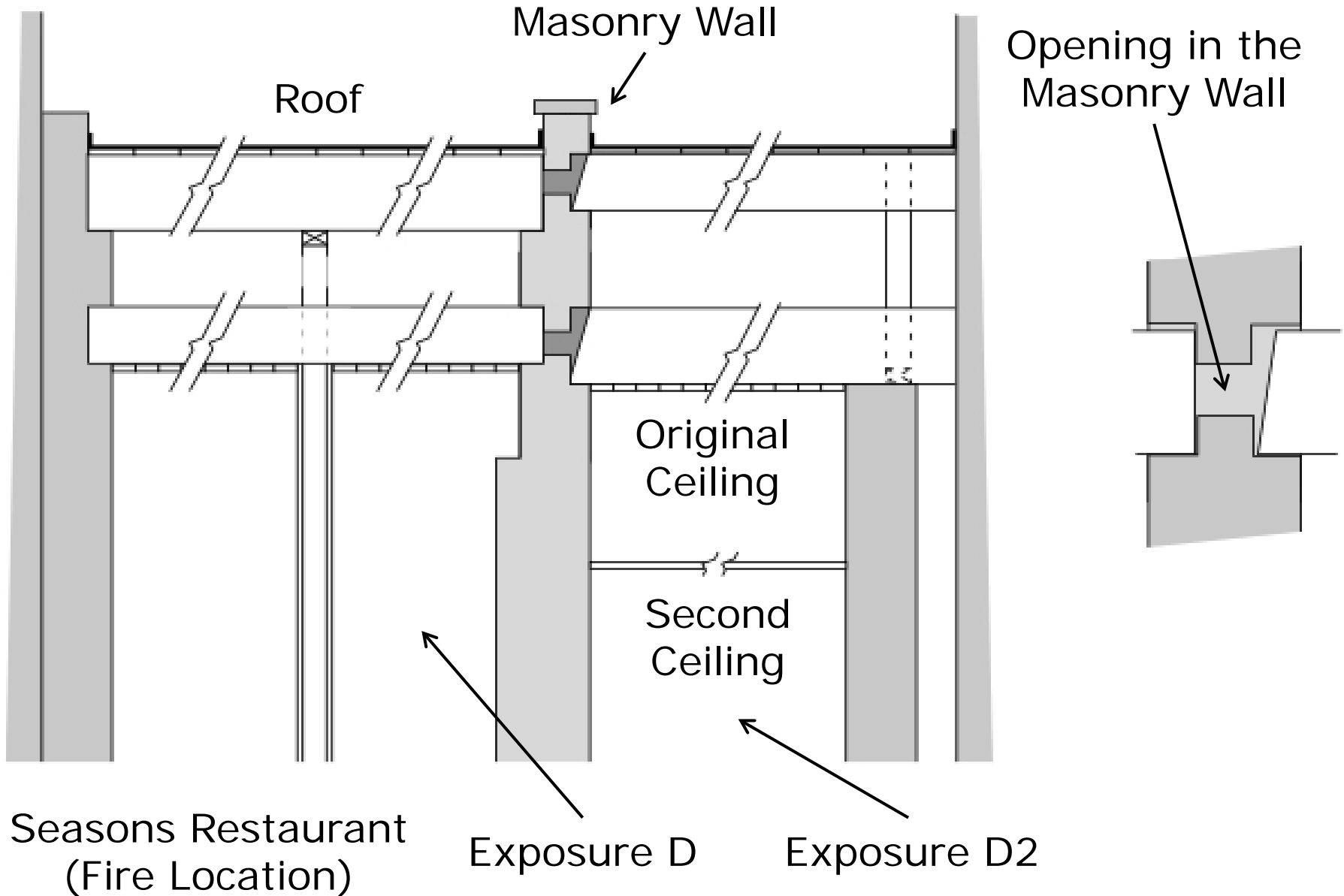


Exposure B

Exposure D

Seasons Restaurant
(Fire Location)

Durango, CO



Durango, CO



Strategies & Tactics

- ▶ Recognize the problems presented
 - *Building Construction*
 - *Fire Behavior*
- ▶ Fire Control
 - *Access to Voids*
 - *Consider Piercing Nozzles*
- ▶ Tactical Ventilation/Anti-Ventilation
 - *Control Smoke Movement*
 - *Remove Smoke (Fuel)*

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