



57th Annual Minnesota State fire Chiefs conference
October 15 – 17, 2009
Duluth, Minnesota

Hot Topics

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UL Fire Research on Lightweight Wood Construction

Bob James - Regulatory Services



Grant Research Partners



- Chicago Fire Department (CFD)
- International Association of Fire Chiefs (IAFC)



- Michigan State University
- U.S. Department of Homeland Security- Assistance to Firefighters Grants Program (AFG)



- Underwriters Laboratories (UL)



NIOSH Firefighter Fatality Investigation Prevention Program

“All fire fighters, including chief officers, incident commanders, safety officers, and fire investigators need to know and understand how the presence of unprotected wood construction and/or lightweight wood construction products can affect firefighter safety.”

Timothy R. Merinar
Safety Engineer
Surveillance and Field Investigations Branch
Division of Safety Research
National Institute for Occupational Safety and Health



Assembly	Structural Element	Type	Ceiling
1	2x10 Joist Floor	Legacy	None/Exposed
2	12" Wood I Joist Floor	Lightweight	None/Exposed
8	2x10 Joist Floor	Legacy	Lath and plaster
3	2x10 Joist Floor	Legacy	Gypsum wallboard
4	12" Wood I Joist Floor	Lightweight	Gypsum wallboard
5	14" Metal Gusset Truss Floor	Lightweight	Gypsum wallboard
6	14" Finger Jointed Truss Floor	Lightweight	Gypsum wallboard
7	2x6 Joist & Rafter Roof	Legacy	Gypsum wallboard
9	Metal Gusset Truss Roof	Lightweight	Gypsum wallboard
CFD 1	<i>14" Metal Gusset Truss Floor - W/ Splice plates & I Joist Ends</i>	<i>Lightweight</i>	<i>Reg. gypsum W/ Mechanical Penetrations</i>
CFD 2	<i>14" Finger Jointed Truss Floor</i>	<i>Lightweight</i>	<i>None/Exposed</i>
CFD 3	<i>14" Metal Gusset Truss Floor - W/ Chord Slice Plates, Wood I Joist Ends and a Framed Floor Opening</i>	<i>Lightweight</i>	<i>None/Exposed</i>



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The Code Authority

Published quarterly by Underwriters Laboratories to assist regulators

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p/7

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UL the standard in safety p/9

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Assembly	Structural Element	Type	Ceiling	Finish Rating (min : sec)	Protective Membrane Breach	Allowable Deflection $L/240 = \frac{3}{4}''$ (min : sec)	Fire Fighter Breach (min : sec)
1	2x10 Joist Floor	Legacy	None	0:45	0:00	3:30	18:35
2	Wood I Joist Floor	Lightweight	None	0:30	0:00	3:15	6:00
8	2x10 Joist Floor	Legacy	Lath and plaster	74:00 ¹	74 ¹	75:45	79*
3	2x10 Joist Floor	Legacy	Regular gypsum wallboard	15:30	23:30	35:30	44:40
4	Wood I Joist Floor	Lightweight	Regular gypsum wallboard	7:45	17:45	3:30	26:43
5	Metal Gusset Truss Floor	Lightweight	Regular gypsum wallboard	10:45	16:30	20:45	29*
6	Finger Joint Truss Floor	Lightweight	Regular gypsum wallboard	12:15	16:00	24:00	26:30
7	2x6 Joist & Rafter Roof	Legacy	Regular gypsum wallboard	15:15	15:45	³	38 ²
9	Metal Gusset Truss Roof	Lightweight	Regular gypsum wallboard	13:45	13:45	³	23:10

* - Denotes approximate time 1 - Denotes total failure of ceiling - plaster & lath had deflected down to & was supported by TC's prior to event. 2 - Kneeling fire fighter fell over & flaming impacting on. 3 - Denotes not applicable to roof structures.