CITY OF NEW YORK
DEPARTMENT OF BUILDINGS

Pursuant to Administrative Code Section 27-131, the following equipment or material has been found acceptable for use in accordance with the Report of Materials and Equipment Acceptance (MEA) Division.

Patricia J. Lancaster, F.A.I.A., Commissioner
MEA 210-04-M
Report of Material and Equipment Acceptance Division

Manufacturer - Isolatek International, 41 Furnace Street, Stanhope, New Jersey 07874.

Trade Name(s) - Cafco Sprayfilm WB-4.

Product - Intumescent coating for fire protection of structural steel for Class II Building.

Pertinent Code Section(s) - 27-323, 27-324, 27-133.

Prescribed Test{s) - RS 5-2 (ASTM E119).

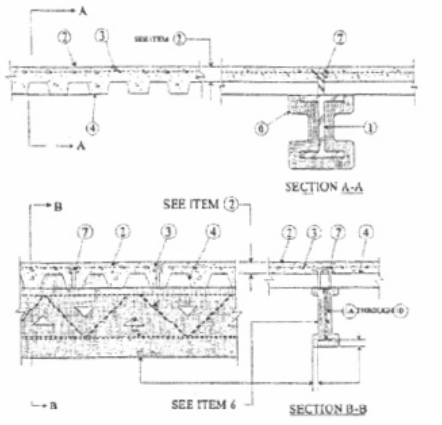
Laboratory - Underwriters Laboratories Inc. of Canada, Underwriters Laboratories.

Test Report(s) - UL file CR2566 dated August 19, 1998, February 8, 1999, February 21, 2000, March 1, 2000, December 21, 2000, August 1, 2002. UL File R16639, Project 01NK33902 dated August 9,2001, November 13 2002, December 19, 2002, March 27, 2003, UL file R3749 dated September 28, 2001, and October 26, 2002, and UL letter R16639 Project 03NK11063, dated November 19, 2003. UL letter Reference File R16639 and R16640 dated July 25, 2001.

Description - Structural Steel fire protection assemblies, as per sketch below utilizing Cafco Sprayfilm WB-4 intumescent fire protection material, applied to required thicknesses following the manufacturer's instructions to achieve the fire resistance rating listed on the following pages and in accordance with Underwriters Laboratories Inc. Design Nos. D902.

Design No. D9O2

Restrained Assembly Ratings — I. 1-1/2, 2 and 3 Hr.
Unrestrained Assembly Rating* — 0, 1. 1-1/2. 2 or 3 Hr. (Sec Items 4 & 6)
Unrestrained Beam Ratings — 1, 1-1/2. 2 and 3 Hr.



1 Beam — **W12X14.** W8X28 or W6xl2. min size, see Items 6A through GE.

IA. Steel Joists — (Not shown) — As an alternate to Item I — May be either uncoiited or provided with a shop coat of point Composite or noncomposite Welded or bolted to end supports. Designed per **SJ.l** specifications for a max design stress of 3(1 ksi. The top chords shall consist of two angles measuring 1 1 / 4 by 1-1/4 by 0 127 in. thick Bottom chords shall consist of two round bars measuring 0.566 in in diam. or two angles measuring 1 b> I by 0.125 in. Ihick. Bearing plates shall **consist** of two angles measuring 1-1/2 by 2 by 0.188 in. thick and 5-1/16 in. long. Web members shall consist of 0.565 in. diam bars. The min depth and weight shall be M In. and 4.9 Ib/ft. respectively.

IB. Steel Joists — (Mot shown) - As an alternate to Item 1 — Composite or noncomposite and welded or bolted to end supports. May tw uncoaied or provided with a shop coat of paim. Designed per S.J.I specificaiions for a max design stress of 3O.U00 psi. Top chords shall consist of two angles measuring 1-1/2 by 1-1/2 by 0.156 in. thick Bottom chords shall consist of two round bars measuring 0 575 in. in diam. or two angles measuring 1 by 1 by 0.125 in thick. Bearing plates shall consist of two angles measuring 2 by 2 by 0.192 in. thick and shall be min 4-15/16 in long. The second web member at each end shall consist of 0.B54 in. diam round bat. All remaining web members, including the end web members, shall consist of 0774 in. diain round bars. Bridging pec **SJ.l.** specifications is required when noncomposite joists are used.

IC Steel joists — (Not shown) — As an alternate to (tern 1 — Composite or noncomposite. welded or bolted to end suppoits- May be uncoated or provided with a shop coat of paint. Designed per S.J.I, specifications for a max design stress of 30.000 psi. Top chords shall consist of two angles measuring 1-1/2 by **1-1/2** by 0.156 in. thick. Bottom chord shall consist of two round bats measuring 0675 in. in diam. or two nangles measuring 1 by I by 0 125 in. thick. The second web member at each end shall cunsist of 0.654 in diam round bar. All remaining web members, including the end web members, shall consist **of** 0.774 in. diam round bars. **Bridging** per S.J.I, specifications is required when noncumposite joists are used

ID Steel Joists — (N'tii shown) — As ati alternate to Item I — May be either uncoated or provided with a shop coat of paint. Composite or nonconiposile. Welded or bolted to end supports. Designed per SJ.l **specifications** for a max design stress of 30 ksi. The [op chords shall consist of two angles measuring 1-1/4 by 1-1/4 by 0.127 in thick. Bottom chords shall consist ol two round tens measuring O.5G6 in. in diam. or two angles measuring I liy 1 by 0.125 in. (hick. Bearing ptates shall conform to S J.i **specifications** Web **membere** shall consist uf 0.565 in. diam bars. The min depth and weight shall be S in. and 4.9 Ib/ft **respectively.**

2. Normal Weight or Lightweight Concrete — Normal weight concrete, carbonate or siliceous aggregate. 3500 psi tompressive strength, vibrated. Lightweight concrete, expanded shale or slate aggregate by rotary-kiln methud or expanded djy aggregate by rotary-kiln or si me red-grate method. 3U00 psi compressivc strength, vibrated, 4 to 7 per cent entrained air.

Restrained A%Kmbly Racing Mr	Concrete iTypr)	CJP..I:-:U Li..; Wfielil ptf	Concrete Tlikiw In.
1	Normal Weight	147-153	3-1/2
t-L/Z	NormalWeight	147-153	*4*
2	Normal Weight	147-153	4-1/2
3	NorinalWeiglll	H7-153	5-1/4
1	Lightweight	107-113	2-1/2
1	Lightweight	107-120	2-5/8
1-1/2	Lightweight	11)7-113	3
2	Lightweight	107113	3-1/4
1	Lightweight	**107-116**	3-1/4'
2	Lightweight	114-12(1	3-1/2
3	Lightweight	107-113	4-3/16
3	Lightweight	114-120	4-7/16

'With *2* and 3 In deep steel floor units only

3. Welded Wire Fabric- 6x6 10/10 SWC

4. Steel Floor and Form Units" — Composite 1-1/2, 1-5/8. 2 or 3 in. deep **flalv** units or 4-1/2 in. deep non-composite galv units. Fluted units niav be phos/ptd. Min gauges are 22 MSC for fluted and 211/20 for cellular and partial **cellular units.** The **following** combinations of units may be used:
   (I) All *U.* 26. 28 or 36 in. wide cellular or partial cellular
   (Z) All fluted.
   (3) One or two 3 in. deep. \t in. wide. IB/18 MSC min cellular alternating with 3 in. deep fluted or other cellular.
   (4)Any blend of fluted and 24.26. 28 or 36 in. **wide** cellular or partial cellular.
   (5)Corrugated, nom 1-5/16 or 2 in. deep. 30 in. wide. 24 MSC **min** galv units with shear wires factory welded to deck corrugations. V.e!dcd to supports 12 in. OC through welding washers. For shear wire spacing of B in. or less the steel deck stress shall **not** exceed 211 KSf For shear wire spacing greater than S in. OC but less than or equal to 12 in. OC steel deck stress shall not exceed 12 KSI.
   ASC STEEL DECK. DIV OF
   ASC PROFILES INC -24 in. wide Types 2VV24. 2WF24. 3W24, 3WF24. B. BF-24. BR. EMOD. BRMOD. N. NF. 30 in. wide Type B-30. BF-30. BR; 36 in. wide Types 2W36, 2WF36, 3W36, 3WF36, B-36: 24 or 30 in. wide Types ASC2, ASC3.

CONSOLIDATED SYSTEMS !NC -24 in. wide Types CFD-2. CFD-3; 24, 30 or 3S in wide **Type** CFD-1.5. 21 or 36 in. wide Types Uac-Lok *I.* Mac-Lok 3; 21 in. wide Types B2C. B2FC. NC. NFC; 30 in. wide, Type B3C, 12 in. **wide** Mac-Way Cellular 45 MDW. 2-G33 MTVVA. S-t,33 **MTWA*** 30 "in. wide. **Mac-Cor** Types 1 and *I*

DECK WEST **WC—**36 in wide Type B-DW. Inverted B-DW. BA-DW. Inverted BA-DW. 2-DW or 3-DW Side joints of Tj-pe 2-DW and 3-DW may *be* fastened together with min I in. long No. 12 x 14 self-drilling, self-tapping ste>>i **screws** 3b in OC EPIC METALS CORP-2-1 in. wide Types ECI50. ECI50 inverted. EC3O0. EC366. ECPI50. ECP3II0, ECP3o6. Epirore A 30 in wide Types ECR150. cCBRIJO: 35 in. wide Types ECI56. EC2ii6. ECP266.

GENS METALS INC -12 or 24 in. wide Types LF2. LF3.

}1A DER CONSTRUCTION MATERIAL CO LTD - 24 **w** 36 in. wide Mac-Lok *1:* /\ In wide CFD-3.

MARLVN STEEL DECKS INC - Type 1.5 CF. 2.0 CF or 3.1) CF. FLYNN CANADA LTD *it* in. wide. Tvpes T-150. -13UF. HAM8RO STRUCTURAL SYSTEMS. DIV OF CANA.M STEEL CORP - 24 in. wide Type P24.S2 composite.

H H ROBERTSON QL Types. 24 in. wide, 3 or 3 inverted. UKX. 21 or 21 inverted. 2 in. «9 121. AKX. NKX. TKX, *U* or 30 in. wideCKX. GKXH, GKX-A: 36 m. wide 2 in, 99. AK.X, WKX: 12 in. wide NKC.TKC; 12 in. wide non-composite S« 12. Side joint! of 99, 121. TKC. TKX. WKX may be welded together 60 in. OC. Side joints of 99, AKX, WKX, CKX, CKX-A. TKX ma> be fastened together with min 1 in. long No. **12xH** self-drill ing, self-tapping steel snews 3b in. OC NEW MILLENNIUM BUILDING SYSTEMS L L C - Type I.5CD or 2.0CD. ROOF DECK INC -36 in. wide types LOK-I-I/2. LOK-1-I/2R: 24 in. wide Types LOK-2. LOK-3 TOMEN BUILDING COMPONENTS INC 24. 30 or 3fi in. wide Types LXR-B. LXR-B inverted: 2-1 or 3G in. wide Type LXR-3VV; 36 in. wide Type LXK-'W. UNITED STEEL DECK INC -12 or 21 in. wide. Types 1-1/2. 2. or 3 in. LOK-Floor and LOK-FLoor Cell: 24. 30 or 3G in wide Type 1-1/2 in. B-LOK and B-LOK Cell; 24 in. wide. Types N-LOK and N-LOK Cell.

VE'RCOMFGCO ■■- Formlok Types, 24 or 36 in. wide. PLW2. W2. W2CD. PLW3. W3and W3CD; 24 in. wide. PLB, B, BCD, BR. PLN. N and NCD; 30 in. wide. PLB. B. BCD and BR. 36 in. **wide** PLB. B. BCD and BR: 12 in. wide PLW2. W2. **PLW3 or** W3 units may be blended with 24 or 36 la wide PLW2. W2. PLW3 or W3 units, respectively. VALLEY JOIST - 24 or 36 in. wide Types WVC 1-1/2 or WVC 2. VULCRAFT. DIV OF

NUCOR CORP -24, 30 or 36 in. wide. Typg **1.5** VL. **I.SVU.** 1.5VLP; 2J or 36 in. wide. Types 2VLI. 3VL1. 2VLP. 3VLP.

WALKER SYSTEMS INC -24 in. wide. Types 2 or 3 in. WDR. WHEELING-PITTSBURGH STEEL CORP. DIV OF WHEELING CORRUGATING CO -30 in. wide Types 5B-BI6LF. -150. -150N. -150NR. -I50R: 24 In. wide Type SB-200. -300 SB-B16LF.-N35LF. -P21LF. -P3ILF or-P:55LF: 12 in. wide Type SB-P21LF or SB-P31LF, 36 in. wide Types SB-BI6LF. -P21LF -P31LF. Lock Form Type. 24. 30 or 36 in. wide Types BiGLF. BIbLFNV; 24 in. wide Types P34LF. P34LFNV: 12. 24 or 36 in wide Types C20LF. C30LF. C31LF. P20LF. P30LF. P3ILF: 35 in. wide Types t.5 SB. 1.5 SER: ?4 or 36 in wide Types 2.0 SB. 3.0 SB. Units may be phos/ptd. 30 in. wide Types 1-1/2 in. V-Crip. 1-1/2 in. RV-Grip: 24 or 36 in. wide Types 212V-Gnp. 312V-Crip: 36 in wide Types 2I2VW3-Wireway. 3I2vW3-Wireway. Components for fie Id-assembled cellular metal raceway units: Raceway Bottom — 24 or 36 In. wide Types 212VS. 312VS . Raceway cover plate — Types CP-12, CP-lli. Raceway divider - Types DC-ZO. DC-25. **Raceway** isolation trough — Types T-20. **T-2S..T-30.**

Spacing of welds attach ing units to supports shall be 12 in. OC for !2. 24. 36 in. wide units, four welds per slieet for 30 In. wide units. 6 in. *OC* for 18 in. wide and Sec. 12 units. Unless specified otherwise for specific units types, adjacent units button-punched ur **welded** together 36 in. OC along side joints. For 3 Hr Rating, units with overlapping type side joints welded together 24 in. OC max. When a superimposed load of 250 PSF is **desired** [he spacing of welds or button-punches Shall not exceed 24 ui. OC along side joints.

'12 in. wide. 1-1/2 In. deep Mac-Way units may be blended with 24 in. wide B2C or 30 in wide B3C units in a blend of one cell to one or more fluted units. 12 in. wide. 2 in. deep Mac-Way units may be blended with 24 or 36 in. wide Mac-Luck **units** in **a** blend ol one cell lo one or more fluted units. 12 in. wide. 3 in. deep Mac-Way unils may be blended with 24 or 36 in. wide Mac-Lock 3 units in .) blend of one cell to one or more fluted units. The side edge of the fluted units is placed on the top of the side edge of the Mac-Way unit and the two are welded together with welding washers spaced a max. of 32 in. OC for Mac-Lock 2 or 3 units and j max of 24 in. OC for the B2C or B3C units.

Alternate Construction — N'oncomposite units of the same type listed above may be used provided allowable **loading** is calculated on the basis of noncomposite design

The; Unrestrained Assembly Rating is equal to the Unrestrained Beam Rating (See Item 61 fur a **max** 3 Hr and is limited lo the following unils and limitations:

(a) 1-1/2. 2 and 3 in. deep, *U* in. wide. 22 MSG or thicker (luted with clear spans not more than 7 Ft. 8 in. Ib) 1-1/2. 2 and 3 in. deep. 24 in. wide, 20 MSG or thicker fluted with clear spans not more than 8 fr. 8 In (c) **1-1/2** and 2 in. deep. 24 in. wide. 16 MSG or thicker fluted and 13/18 MSC or thicker cellular with clear ipans not more than 9 ft. It In.

(dl 3 in. deep. 36 in. wide. 18 MSG or thicker fluted and 24 in. wide. 20/18 MSG or thicker cellular with cleat **spans** not more than 13 ft. 2 in.

For assemblies utilizing 3-1/4 in. lightweight concrete topping with a max Restrained Assembly Rating of 2 Hr. the Unrestrained Assembly Rating is equal to the Unrestrained Beam Rating (See Item 6) and is limited to the following door units and spans: |a) **1-1/2.** 2 and 3 in. deep. 24 or 36 in. wide. 22 MSG fluted and 20/20 MSG cellular with clear spans not more than 9 ft. 6 in. ib) 2 and 3 in. deep. 24 or 36 in. wide. Z0 MSC fluted and 20/20 MSG cellular with dear spans not more than 10 ft, 0 in. (c) 3 in. deep, 24 in. wide. 20 MSC fluted and 20/20 MSG cellular with clear spans not more than iJ ft. 2 In. 5 Joint Cover — (Use with fluted unils optional - Not Shown) — 2 in. wide cloth adhesive tape applied following the contour of the units.

(i Spray-Applied Fire Resistive Materials" — Applied by spraying with water. In one coal to a final ihickness as shown above and in table below to steel b&un surface which is free of dirt, oil or scale. When (lured steel deck is used and the fire protection thickness selected is based on all fluted deck, the area between the steel deck and the top Hange of the steel beam shall be filled. When fluted steel deck is used and the steel beam is sprayed with the thicknesses applicable to celluliir or blended units, the area between the steel deck dud the top flange of the steel beam shall be plugged. Use of adhesive is optional Min avg untamped density is 13 pcf with min **tad** untainped density of 11 pcf for Types II ar DC/F. Min avg and **min** ind untamped densities of 22 **and** 19 pcf. respectively, for Type HP. Tamping is **optional.** For method of density **determination,** <*?fci* to Design Inlormation Section. The thickness of the Spray-Applied Fire Resistive **Materials** on the Structural Members (Item 1. I A. or IB) slull be as follows.

"... ».i fljluifl Hi	***Sam ttom,***	**fypi**	**wka** Wai **Dxk H** AD Hind	111*11 Deck 01 **All** Oil ul*	Pminanii MM I lihH HL Slninuijl \l*iuber lit **Wlhll** Wlga *Oat* **b** AH Flmtd	Jon. km IA Mien Un* !i Fl,*d «ninLj	lulu lirailfi rtlitn Bed **It** rllili-d **Ill .'.-l'll**
1 I-I/Z		NW	3.'85 **8-**	1.2- II 16"	**8/16 IS/IS"**	I—	–
I	1	NW	**1/IS/S-**	1/2-.IM6"	**9/16.15/li"**	I* IE	
!	I	NW	**1/U/f**	I/!-. **11/18-**	**i/is.is/ie-**	M/M	–
	i	NW	**3,'t**	1-3/S-	**1-1/18**	**M/U**	
	3	NW	**1-3/ It**	Z 1/8-	1 11/16	_	3-1/1
	1-1/I	NW	**1/2**	I/S-	*3'* 1	_	31 ■!
	I	NW	3.1	1 **3/B»**	**I [/III**		**3-	.'4**
	.	NW	**1-3/16**	2-1/8-	1 1I.'16	..	3-1/1
	1	LW	**3.85/8"**	**I/Z» 11/18"**	3/IB **IS/IS*"**	**I i/i**–	_
	1	LW	**I/1S/S"**	i/z-**11/18-**	**9/16,15/16"**	t-J.'t	
	1	LW	J/S.S,-S™	I/2-.LL, **IS"**	**J/I6.IS/I6-**	21/1	
	.	LW	**1**	1-3/8-	1 J. 16	**j–I't**	_
	3	LW	1 9/16-		21/1	_	**3-1/1**
			1M	*V*	1	_	
	Z	LW	1-	I-3/S-	i 7 16	_	3-1/1

'May be reduced to 3/4 in. fonhe 1-1/2 hr Unrestrained Beam Rating when rlw matenal is sprayed 2 in. beyond the beams s top flange nnd no reduction in thickness is made at the tips of the bottom flange.

"This thickness applies when optional Item 12 or 13 are used over 3-1/4 in. lightweight concrete topping.

♦Thickness of Spray-Applied Fiie Resistive Materials may be reduced to one half of this thickness on the lower flange tips of the steel beam.

+-T- - When bottom chords consist of 1 bv I by 0.125 in. thickn sieel angles, the thickness of spray-applied lire resistive material shall be increased by *I '$* in. on the bottom chord only.

C)L GROUP LTD -Type D-C/F or Type II. Type EBS or Type X adhesive which may also be used as a surface sealer.

ISOLATEK INTERNATIONAL -Type D-C/F, HR Type II. Type EBS or Type X adhesive ivhich may also be used as a surface sealer.

6A Spray-Applied Fire Resistive Materials* — Alternate to Item 6. See table below for appropriate thicknesses. When fluted steel deck is used and the fire protection thickness selected is based on all fluted deck, the area between the steel deck and the top flange of tire steel beam shali be filled. When fluted steel deck is used and the steel beam is sprayed with the thicknesses applicable to cellular or blended units, the area between (he steel deck and the lop flange of the steel beam shall be plugged. Prepared by mixing with water and spray-applied in one ur more coals to beam surfaces which must be clean and free of dirt, loose scale and oil. \lin average density of 17.5 pcf with min individual valued !7.0 pcf For method of density determination, sec Design **Information** Section. Sprayed Material.

K.'M .|| ..li Auembly **Ruing** Hr	Lnresu nincd Beam Rating **fir**	Proleclion Thkns on \\ S.i'S. !ir When Declc It All Fluled	When Deck Is Blond ur All Cellular
1.1-1/2,2	I	5/18,7/16-	5/16.7/16-
Z	:	11/16	13/16
2 3 3 3	3	1-1/16	1-5/16
	I-1/2	1/2	9/16
	2	11/16	13/16
	j	1-1/16	1-5/16

'This thickness applies when optional Items 12. 13 are used over 3-1/4 in. lightweight concrete topping.

♦ *♦ - When bottom chords consist of 1 by I by 0.125 in. thick steel angles, the thickness of spray-applied fire lesistive material shall ue increased bv 1/4 in. on the bottom chord only. CIL GROUP LTD -Type 280. [SOLATEK INTERNATIONAL-Type 280.

GB. Spray-Applied Fire Resistive Materials' — Alternate to kern 6 or 6A. Applied by mixing with water according to instructions on each bag of material. Mixiure can be spray or trowel applied in one or more coats. The thickness of (he **mixture** is dependent on the type of floor unit. See table below foi appropriate thickness. When fluted steel deck is used and the fire protection thickness selected is based on all fluted deck, the area between the steel deck and the top flange of the steel beam shall be filled. When fluted steel deck is used and the steel beam is sprayed with the thicknesses applicable to cellular ur blended units, the ared between the steel deck and the top flange of the steel beam shall be plugged. The steel **surfaces** must be clean and free of dirt, loose scale and oil. **Minimum** average density of 38 pcf and minimum individual density of 35 pcf for Type 800 **Min avg** density **of** 44 pcf with min ind value of 40 pcf for Type M-II. Min avg density of 44 pcf with min ind value of *M* pcf for Type TG. For method of" density determination, leter to Design Information Section, Sprayed Material.

Assembly I-Ii **1.1-1/2.2** **2 2** i 3 3	Lnrcstraincd Ban Rating Hr	ProlpctionThkns nflWtdl. lii. When Deck Is All Fluied	When D«k Is Bltmi or All Ctlluhr
	1	3/8.1/2"	7/16.9/16-
	:	**15/16**	I-1/I
'This thickness applies when optional item 12 or 13 **are** used over 3-1 '4 in. lightweight concrete topping.	3	1-5/16	1-1/2
CIL GROUP LTD —Type 800. Investigated for exterior use.	**i-i *n***	5.-8	:
	2	15/16	1-1/4
ISOLATEK INTERNATIONAL - Types 800. M-II or TC.	i	**1-5/16**	1-1/2

Types 800. M-II and TC InvcstiRated for exterior use. 6C. Spray-Applied Fire Resistive Materials' — Alternate to Items 6A. 6B or 6C. Applied by mixing with water in accordance with instructions on each bag and applied iri one or more coats to a final thickness as shown in (able below to steel beam surface ivhich is free of dirt, oil or scale When fluted steel deck is used and the fire protection thickness selected is based on all fluted deck, the area between the steel deck and the top flange of the steel beam shall be filled When fluied steel deck is used and the steel beam is spi ayed with the thicknesses applicable to cellular or blended units, the area between the steel deck and the top fi.inge **of** rhc steel beam shall be plugged.

Min average and min individual density is 17.5 and IB pcf, respectively, for Types 300. 3U0ES. 300N and SB. Mm average and min individual density of 22 and 19 pcf, respectively, for Type 400. For method of density determination, refer ;o Design Information Section.

The thickness of the material on the Structural Members (Item 1. 1C. or ID) shall he as follows:

Riling Hi **I**	1 uri ur.....■ **Bum** RwmgHr	VVb!t '.M. -i **Dak** I) \i.;,.n,ii	Puilnliiin MllTlikrisori **WbZtWbcn** Dwkls Blend or All Ctllutw	**Wl&HWhen Dcckb** *KB* FbiWd	Jm<t Ilirni ICnrlDI **Win** Dnh li Fliutd CdLI ar or Bin id
1 1/2 2 ›	.	5/16. 7/16-	5/16,7/16-	I/?.¡'H-	9/16
	:	5/16.7/l6-	5/16.7/16*	1'2.5/S-	1
	i	S/10. 7/16"	i. ;Li: :■;■	I/J.5/S-	1-3:rt
i	t	11/16	**13/18**	**1**	13/8
	3	**i-i/ia**	15/16	1-1/2	*I* 1/4
This thickness applies when optional Item 12 or 13 are used over 3-1/4 in. lightweight concrete topping.	**1-1/2**	In	9/16	3/4	ZI/4
	2	11/16	**13/18**	1	2 **1/4**
	3	1-1,16	1-5/16	1-1/2	*1* 1/4

CIL GROUP LTD -Type 300. ISOLATEK INTERNATIONAL -Type 300. Type 30OES, Type 300N. Type 400 or T>pe SB.

6D. Mastic and luminescent Coalings' — As an alternate to hems 6 ihrough GC. For use with normal weight **concrete** and fluted steel flour and farm **mills** only. Mm. size WSxJS beams shall be primed with **a** phenolic modified alkyd pi iiner .it a thickness of ! mil. Coaling spray or brush applied in accordance with the manufacturer's instructions at Ihe **ruin dry** thickness as shown in the table below. The thickness shown below includes the I mil of primer. When **mineral** wool [Item 18] is uaed. the top surface of the beam need not he protected with the coating. When **mineral** wool (Item 181 is not used, the top surface of the lop flange must be protected with the coaling material al the same **coin** dry thickness **at** a **tnin** distance of I in. (25 mm] inward feom the flange tip un both sides of the beam.

Dry T*iic(uic« nilk	Minimum Drv II v ki e^% in^1 ^ mm	M moral HEMpJ LmildlLun Hum IS)	1 Mi, .1 IN, 1 Beam Baling Hr	Rrsu-iirwfl AvsembJv HjunB Hr
].:< ITS 241	2£2	Optional Required	1-1/2 2	■
ISOUVTEK INTERNATIONAL - Ty]te SprayFilm-WB 3. Investigated for Interior General Purpose. Type SprayFilm-WB *i.* Investigated for Interior. General Purpose Type SprayFilm-WB *i.* Investigated for Exterior Use with top coat as described in Item 6E.	in		*i*	**7**

SE. Top Coal — Type SprayFilm - TOPSEAL required for Exterior Use. applied at a minimum dry thickness of 14 mils (D.34 mm) over the intumescent material. See Classification information in the Mastic Coaling (CDVVZ) category, Isoiaiek International, for mixing requirements.

fiF Mastic and Intumescent Coatings" — As an alternate to Items G through GD. For use wiih normal weight concrete and fluted steel floor and form units only. Min size WGxI2 beams shall be primed with a phenolic modified alkyd **prime*** al a thickness of 1 mil. Coaling spray or brush applied in accordance with the manufacturer's instructions-at the shown below. The thickness includes the I mil of primer.

Minimum Dry Tliickm-ss mils 60	MiLLimum Dry Thickness nun	LnreslraiiiKl Beam Rali..,E Hr	' ■ ' ■ . . . ,i ■ Awi'mUly Rating Hr.
ISOLATEK INTERNATIONAL - Type SprayFilm-WB 2. Investigated Interior General Purpose.	**1.5**	**1**	1

7. Shear Connectoi Studs — Optional — Studs. 3/4 in. diam by 3 in. long, for 1-1/2 in deep form units to 5-1/4 in. long for 3 in. deep form units, headed type or equivalent per AISC specifications. Welded to the top flange of the beam through the steel fortn units
8. Lath HiingM — (Not Shown) - Calv steel 6 SWG min diam spaced *11* in. O. C.
9. Clips — (Not Shown) — No. *24* MSG spring steel pushed on to lop and bottom flanges of beam spaced 6 in. O. C. max.
1(1. Metal Lalh — (Not Shown] — 3/8 in. diamond mesh or rib lath, 3.4 lbs per sq yd expanded steel atlached to beam with clips spaced G in. OC max; or lied to lath hangers with 18 SWCgalv steel wire spaced 6 In. OC max. II. Electrical Inserts— (Not Shown) — Classified as 'Outlet Boxes and Fittings Classified for Fire Resistance"
12 Mineral and Fiberboards'— (Optional, not shown). Applied over concrete floor with no restriction on board thickness. When mineral and fiber boards are used, tlw unrestrained beam rating shall be increased by a minimum of 1/2 hr. See Mineral and Fiber Board [CERZ] category for names of manufacturers.
13. Foamed Plastic" — (Optional, not shown]. Consisting of polyisocyanurate of urethane roof insulations. Applied over **concrete Boor** with no restrictions on thickness. When polyisocvanurale or urethane insulation is used, the unrestrained beam rating shall he increased by a minimum of 1/2 hr. Sec. roamed Plastic (CCVW) for lisl of manufacturers.
14. Insulating Concrete — (Optional, noi shown) — Various types of insulating concrete prepared and applied as fullows:
A. Vemiiculite Concrete - Blend 6 ID 8 cu ft of Vermiculite Abrogate' lo 94 1b Portland cement and air entraining agent. **Min** thickness of ***t*** in, as measured to the top suiface uf the simctural concrete or foamed plastic (Item 15] when it is used. See X'eiminiHte Aggregate (CJZZ] category for names of Classified companies.
B. Cellular Concrete-Roof Topping **Mixture*** - Concentrate mixed with water and Portland cement per **manufacturer's** specifications. Cast dry density and 28-day min compressive strength of 190 psi as determined with ASTM C495-G6.
CELCORE INC -Cast dry density of 31 (*■ or ■ 3.0) pcf.
CELLUFOAM CONCRETE SYSTEMS. DIV OF
CELLUFOAM CONCRETE OF
CANADA (EASTERN) LTD -Cast dry density of 30 (- or - 3.0] pcf.
CELLULAR CONCRETE L L C - Cast dry density of 37 (+ or ■) 3.0 pcf.
ELAST1ZELL CORP OF AMERICA - Type II. with a cast dry density of 39 (- or - 3.0] pcf.
LITE-CRETE INC -Cast density of 29 (+ or ■) 3.0 pcf.
SIPLAST INC -Mix »1. Cast dry density at 32 1+ or ■] 3 pcf.
SIPLAST INC -Mix «2. Cast dry density of 36 I* or -) 3 pcf
C. Cellular Concrete-Roof Topping Mixture' ■ Fuam concentrate mixed with water. Portland cement and UL Classified Vemiiculite Aggregate per manufacture s application Instructions. Cast diy density uf 33 (+ or -] 3 pcf and ***'ii*** day compressive strength of min 350 psi as determined in accordance with ASTM C495-8B.
CELLL'LAR CONCRETE L L C - Mix *3.

ELAST1ZELL CORK OF AMERICA -Type II. Mix #1 of cast dry densily 39 (- or -) 3 0 **pcf. Mix** « of **cast dry** density 40 |- or ■) 3.0 pcf. Mix *3 of cast dry density 47 (* or -I *3.0* pcf.
S1PLAST 1NC -Mix «.

D. Perlite Concicie - 6 cu ft of Perlue Aggregate' to 9-1 lb of Portland Cemerv. and **1-1/2** pt aii entraining agent. Min thickness *2* in. in **measured** to the rop **surface** of **structural concrete** or foamed plastic lltetu 15A) when it is used. See Perlitc Aggregate (CFFX) in Fire Resistance Directory for names of Classified companies.

] j. Foamed Plastic' — (Optional-not shown) — For use only with vermiculiie (Item HA) or cellular lltem 14B1 concretes-Rigid poly-styrene foamed plastic insulation having slots and/or holes sandwiched belivetn vennicullte concrete slurry which is applied lo the normal or lightweight concrete surface and vennicullle concrete topping (Item 14A). Max thickness to be 8 la See Foamed Plastic" IBRYX) category in Building **Materials** Directory or Fnamed Plaslic' iCCVW) Category in Fire Resistance Directory for list of Classified companies.

ISA. Foamed Plaslic" — (N'ot Shown) - Foi use only with cellular or perlite concrete Nominal 24 by 48 by max 8 in. thick polystyrene foamed plastic insulation boards having a density of I *0* (■<■ or ■ 0.l| pcf, encapsulated within concrete topping. Each insulation board shall contain six nominal 3 in. diameter holes oriented in two rows of three holes each with the holes spaced 12 i>: CC transversely and lli in. OC longitudinally.

See Foamed Plastic" (BRVX) category in Building Materials Directory or Foamed Plastic' (CCYW) category in Fire Resistance Directory for list of Classified companies, lli. Roof Covering Materials' — (Optional, not shown) — Consisting of materials compatible wiih insulations descrilied herein which
provide Class A. B or C coverings. See Built-Up Roof Covering Materials in Building Materials Directory.

1? Insulated Concrete— [Optional, not shown) — various types of insulated concrete prepared and applied in **the** thickness indicated. A Venniculite Concrete — Mix consists of B cu ft of Vermiciilitc Aggregate*. 94 lbs of Portland cement anil 6 ox of air entraining agent. Thickness to be *2* in min from the top plane uf steel roof deck. ELASTIZELL CORP OF AMERICA -Types MSI6-U. MSV 200.

B Perlite Concrete — Mix consists of 6.2 cu ft Perlite Aggregate" to *94* lbs of Portland cement and 1-1/2 pt air entraining agent. Compressive strength 80 psi min.
See Perlite Aggregate (CFFX) category for names of Classified companies.

'Bearing the UL Classification Mark

Recommendation - That the above described fire rated assemblies be accepted for Class II Buildings only, as having the fire resistance ratings given above, when members framing into the columns have at least the same fire resistance rating, provided the following requirements for application and protection of the sprayed fireproofing be adhered to:

1. Where used for protection of column(s) in fireproofing buildings each such column(s) shall bear an identifying tag installed at 7'-0" above the finished floor. Subject tag shall be of metal construction mechanically attached to such column(s) and shall state the following: "This beam has been fireproofed with MEA approved Cafco Sprayfilm finish and such finish shall not be removed" nor any subsequent coating shall applied other than Cafco Sprayfilm.

2. Surfaces to receive intumescent coating shall be cleaned prior to the application of the fireproofing.

3. The finished fireproofing shall be sprayed to a uniform thickness, which shall not be less than the minimum thickness specified.

4. The general contractor and the owner shall provide qualified personnel to supervise the application of the sprayed fire resistive material. They

shall certify to the Department of Buildings that the finished fireproofing of the completed building is in full compliance with the acceptance requirements and drawings approved by the Department of Buildings.

5. The installation of the sprayed fire resistive materials shall be subject to the controlled inspection requirements of Section 27-132.

6. The use of this material shall be subject to all pertinent regulations of the Department of Air Resources and the Department of Health.

7. All installations shall comply with 118-68 GR, the New York City Building Code, the Fire Department Directives, the manufacturer's instructions and laboratory recommendations.

8. All shipments and deliveries of the materials comprising this assembly shall be accompanied by a certificate or label certifying that the materials shipped or delivered are equivalent to those tested and acceptable for use, as provided for in Section 27-131 of the Building Code.

Final Acceptance Sep 21/04

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Examined by S Derkhodaian