



# BXUV.P739

## Design/System/Construction/Assembly Usage Disclaimer

- Authorities Having Jurisdiction should be consulted in all cases as to the particular requirements covering the installation and use of UL Certified products, equipment, system, devices, and materials.
- Authorities Having Jurisdiction should be consulted before construction.
- Fire resistance assemblies and products are developed by the design submitter and have been investigated by UL for compliance with applicable requirements. The published information cannot always address every construction nuance encountered in the field.
- When field issues arise, it is recommended the first contact for assistance be the technical service staff provided by the product manufacturer noted for the design. Users of fire resistance assemblies are advised to consult the general Guide Information for each product category and each group of assemblies. The Guide Information includes specifics concerning alternate materials and alternate methods of construction.
- Only products which bear UL's Mark are considered Certified.

## BXUV - Fire Resistance Ratings - ANSI/UL 263 Certified for United States

## BXUV7 - Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada

[See General Information for Fire-resistance Ratings - ANSI/UL 263 Certified for United States Design Criteria and Allowable Variances](#)

[See General Information for Fire Resistance Ratings - CAN/ULC-S101 Certified for Canada Design Criteria and Allowable Variances](#)

### Design No. P739

**Restrained Assembly Ratings — 1, 1-1/2 and 2 Hr**

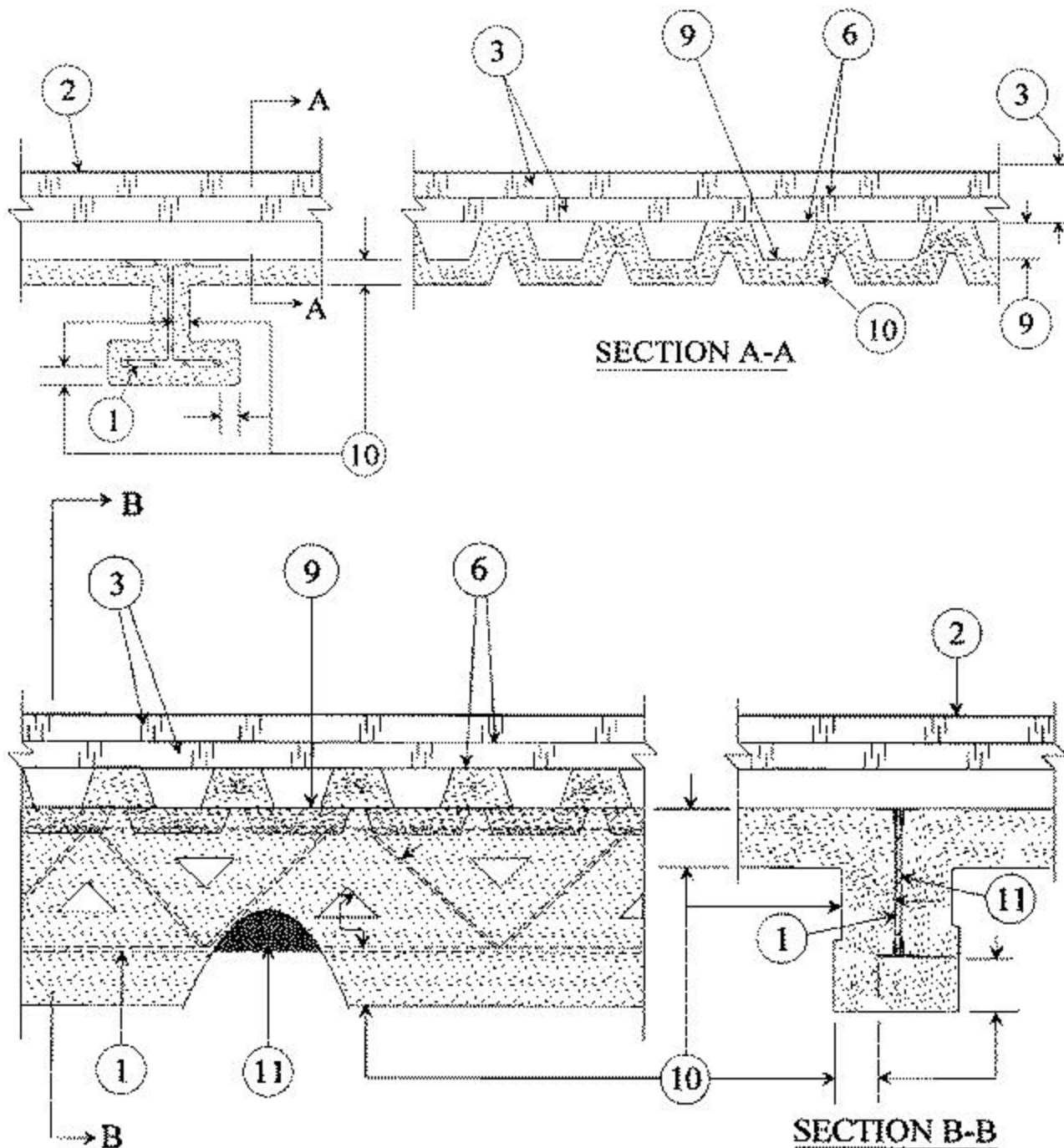
**Unrestrained Assembly Ratings — 1, 1-1/2 and 2 Hr**

**Unrestrained Beam Ratings — 1, 1-1/2 and 2 Hr**

**Restricted Load Condition — See Item 1**

**This design was evaluated using a load design method other than the Limit States Design Method (e.g., Working Stress Design Method). For jurisdictions employing the Limit States Design Method, such as Canada, a load restriction factor shall be used — See Guide [BXUV](#) or [BXUV7](#)**

**\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**



1. **Beam** — W6x16 min size, or Steel Joist — 10H4, 14J7, 10K1 or 12K3 min sizes. (See Item 10).

**NOTE:** Design load shall stress H-Series joists to a max tensile stress of 22 KSI.

2. **Roof Covering\*** — Consisting of hot mopped or cold application bituminous materials compatible with the insulation(s) described herein which provide Class A, B or C coverings. See Roofing Materials and Systems Directory-Roof Covering Materials (TEVT).

2A. **In lieu of Item 2, roof covering consisting of single-ply Roofing Membrane\*** — that is either ballasted, adhered or mechanically attached as permitted under the respective manufacturer's Classification. See Fire Resistance Directory — Roofing Membrane (CHCI).

2B. **Metal Roof Deck Panels\* — (Not Shown)** — In addition to or in lieu of Items 2 or 2A, the roof covering may consist of a mechanically fastened metal roof deck panel assembly. See Fire Resistance Directory — Metal Roof Deck Panels (CETW).

3. **Roof Insulation — Foamed Plastic\*** — Polyisocyanurate foamed plastic insulation boards nom 48 by 48 or 96 in., to be applied

in one or more layers. Boards to be installed with end joints staggered a min of 6 in. Min thickness shall be selected from the Table below. No limit on max overall thickness.

Restrained or Unrestrained Assembly Rating Hr	Min Insulation Thkns In.	
	With Gypsum Wallboard	Without Gypsum Wallboard
1	1	2
1-1/2	1	3
2	1	3

**ATLAS ROOFING CORP** — AC Foam II, Tapered AC Foam II, AC Foam II NH, Tapered AC Foam II NH, AC Foam III, AC Foam III NH, Tapered AC Foam III NH, AC Foam IV, AC Foam Supreme, AC Foam Supreme NH, AC Foam Recover Board, AC Foam Recover Board NH

**MULE-HIDE PRODUCTS CO INC** — POLY ISO 2

**CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — Types HP, HP-H, HP-N, HP-W, SecurShield CD, InsulBase NH, SecurShield NH, SecurShield HD Composite NH, Polyiso HP-F NH, InsulBase RL, SecurShield RL, Polyiso HP-F

**Kingspan Insulation LLC, dba Dyplast Products PLAST PRODUCTS L L C**

**FIRESTONE BUILDING PRODUCTS CO L L C** — "ISO 95+ GL", "ISO 95+ FK", "ISO 95+ CAN", "ISO 95+ GL NH", "ISOGARD HD Composite Board", "RESISTA", "ISOGARD GL", "ISOGARD CG".

**GAF** — EnergyGuard™ RA

**HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — H Shield, H-Shield-F, H-Shield-CG, H-Shield-C, H-Shield Premier, H-Shield HD Composite, H-Shield HD Composite CG, H-Shield RL, H-Shield CG RL, H Shield NH, H-Shield-F NH, H-Shield-CG NH, H-Shield-C NH, H-Shield Premier NH, H-Shield HD Composite CG NH.

**MULE-HIDE PRODUCTS CO INC** — Poly ISO 1, Tapered Poly ISO 1, Poly ISO 1-DWD, Tapered Poly ISO 1-DWD, Poly ISO 1-HD, Poly ISO 1-HD90, Poly ISO 1-HD-Composite

**JOHNS MANVILLE** — ENRGY 3, ISO-1, PSI 25.

**LOADMASTER SYSTEMS INC** — Loadmaster Polyisocyanurate Insulation.

**MARTIN FIREPROOFING CORP** — "Perform-A-Deck I"

**RMAX, A BUSINESS UNIT OF SIKA CORPORATION** — Multi-Max-3, Multi-Max FA-3, Ultra-Max, Ultra-Max Plus, Tapered Ultra-Max Plus, Tapered TherमारooF-3, Tapered TherमारooF FA-3, Tapered Ultra-Max.

**SIKA SARNAFIL INC** — Sarnatherm-R Insulation, Sarnatherm-R CG Insulation, Sarnatherm-R Tapered Insulation, Sarnatherm-R CG Tapered Insulation..

**SOPREMA INC** — Sopra-ISO s, Sopra-ISO s Tapered, Sopra-ISO+ s, Sopra-ISO+ s Tapered, Sopra-ISO H+ s, Sopra-ISO H+ s Tapered.

**VERSICO INC** — MP-H, VersiCore MP-H, WeatherBond XP, MP-HF, WeatherBond XP-HF, SecurShield, WeatherBond XFP, SecurShield CD,

WeatherBond XFP CD, SecurShield HD Composite, WeatherBond XFP HD Composite, VersiCore MP-H NH, WeatherBond XP NH, SecurShield NH, WeatherBond XFP NH, VersiCore RL, SecurShield RL, Polyiso MP-HF NH

**3A. Foamed Plastic\*** — As an alternate to Item 3, 1 to 8 in. thick, density of 2.5 pcf max, polystyrene foamed plastic insulation boards secured to the gypsum wallboard (Item 4) with asphalt glaze coat or adhesive. (Note: Adhesive\* (Item 6) and/or asphalt glazer coat may be omitted when Item 2A is used). See Foamed Plastic (BRYX) category in the Building Materials Directory or Foamed Plastic (CCVW) category in the Fire Resistance Directory for names of manufacturers.

**3B. Roof Insulation — Building Units\*** — (Not shown) — As an alternate to Items 3 and 3A, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on underside (or both sides) with mineral and fiber boards.

**JOHNS MANVILLE** — Fesco-Foam.

**3C. Building Units\*** — As an alternate to Items 3 through 3B, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on the top surface with oriented strand board or plywood. Min thickness of the polyisocyanurate core shall be selected from Table in Item 3. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.

**ATLAS ROOFING CORP** — AC Foam Nail Base Insulation, AC Foam Nail Base Insulation NH, Vented-R, AC Foam CrossVent, AC Foam CrossVent NH, AC Foam III Nail Base Insulation, AC Foam III Nail Base Insulation NH, AC Foam III CrossVent, AC Foam III CrossVent NH

**FIRESTONE BUILDING PRODUCTS CO L L C** — Nailbase.

**HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — H-Shield-NB, H-Shield-NB NH

**JOHNS MANVILLE** — Nailboard.

**SOPREMA INC** — Sopra-ISO CV s.

**3D. Building Units\*** — As an alternate to Items 3 through 3C, Polyisocyanurate foamed plastic insulation boards faced on the underside (or both sides) with mineral fiber board. Min thickness of the polyisocyanurate core is 2 in. for the 1 hr rating without gypsum wallboard (Item 4) and for the 1-1/2 and 2 hr ratings with wallboard and 3 in. for the 1-1/2 and 2 hr ratings without gypsum wallboard. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. adjacent rows. Adhesive (Item 3) may be applied between the building units and the vapor retarder (or gypsum wallboard if vapor retarder is not used).

**JOHNS MANVILLE** — Fesco-Foam.

**3E. Building Units\*** — As an alternate to Items 3 through 3D, polyisocyanurate foamed plastic insulation boards faced on the underside with wood fiber board. Min thickness of the polyisocyanurate core is 2 in. for the 1 hr rating without gypsum wallboard (Item 4) and for the 1-1/2 and 2 hr ratings with wallboard and 3 in. for the 1-1/2 and 2 hr ratings without gypsum wallboard. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.

**JOHNS MANVILLE** — ENRGY-2 Plus.

**3F. Building Units\*** — As an alternate to Items 3 through 3E, insulated steel panels, 36 in. wide, installed over gypsum wallboard (Item 4). Building units mechanically fastened to the steel deck (through the gypsum wallboard) in accordance with the manufacturer's recommendations.

**H H ROBERTSON** — Types VP-1.25, VP-1.75, VP-2.25.

**3G. Foamed Plastic\*** — Optional - (Not Shown) - Used in addition to the foam insulation required to achieve fire rating:

**3Ga. Foamed Plastic\*** — Optional - (Not Shown) - Maximum 1 in. thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.

**FIRESTONE BUILDING PRODUCTS CO L L C** — "ISOGARD HD"

3Gb. **Foamed Plastic\*** — Optional — (Not Shown) — Maximum 5/8 inch thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.

**RMAX, A BUSINESS UNIT OF SIKA CORPORATION** — "Ultra-Max HD"

**SIKA SARNAFIL INC** — "Sarnatherm Roof Board-R"

3Gc. **Foamed Plastic\*** — Optional — (Not Shown) — Maximum 1/2 inch thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.

**CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — SecurShield HD, SecurShield HD Plus, SecurShield HD NH, SecurShield HD Plus NH, SecurShield HD RL

**HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — H-Shield HD, H-Shield HD90, H-Shield HD RL, H-Shield HD NH, H-Shield HD90 NH

**VERSICO INC** — SecurShield HD, WeatherBond XFP HD Cover Board, SecurShield HD Plus, WeatherBond XFP HD Plus Cover Board, SecurShield HD NH, WeatherBond XFP HD NH Cover Board, SecurShield HD Plus NH, WeatherBond XFP HD Plus NH Cover Board, SecurShield HD RL

3Gd. **Foamed Plastic\*** — Optional — (Not Shown) — Maximum 1 inch thick polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in. Boards may be applied as the top layer in addition to the specified minimum thickness of any roofing system described herein, as long as the roofing system states that there is no limit on maximum thickness. Joints offset in both directions from layer below.

**ATLAS ROOFING CORP** — AC Foam HD CoverBoard and AC Foam CoverBoard FR

3H. **Roof Insulation — Foamed Plastic\* — As an alternate to Items 3 through 3F** — Polyurethane foamed plastic roof insulation. Formed by the simultaneous spraying of two liquid components applied over the gypsum board (item 4) in accordance with the manufacturer's instructions. Minimum nominal thickness per Item 3 table above. When used, gypsum board (item 4) is required .

**BASF CORP** — Types FE348-2.5, FE348-2.8, FE348-3.0, ELASTOSPRAY 81255, ELASTOSPRAY 81285, ELASTOSPRAY 81305, SKYTITE C1

**BASF CORP** — Elastospray 5100-2.0, Elastospray 5100-2.5, Elastospray 81302, Elastospray 81272, Elastospray Alpha System, Elastospray 81252

3I. **Building Units\*** — As an alternate to Item 3, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on the top surface with wood fiber board. Min thickness of the polyisocyanurate core shall be selected from Table in Item 3. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.

**CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — Polyiso HP-H Composite NH

**HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — H-Shield-WF, H-Shield-WF NH

**VERSICO INC** — MP-HWF NH, WeatherBond XP-WF NH

3J. **Building Units\*** — As an alternate to Item 3, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced on the top surface with perlite composite board. Min thickness of the polyisocyanurate core shall be selected from Table in Item 3. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.

**HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — H-Shield-P, H-Shield-RP, H-Shield-P NH, H-Shield-RP NH

3K. **Building Units\*** — As an alternate to Item 3, polyisocyanurate foamed plastic insulation boards, nom 48 by 48 or 96 in., faced

on the top surface with glass mat faced gypsum panel. Min thickness of the polyisocyanurate core shall be selected from Table in Item 3. No limit on max overall thickness. Boards to be installed with end joints staggered a min of 6 in. in adjacent rows.

**CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — Polyiso HP-HDD, Polyiso HP-HDD NH

**HUNTER PANELS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — H-Shield-DD, H-Shield DD NH

**VERSICO INC** — MP-HDD, MP-HDD NH

**4. Gypsum Board** — (Not shown — Classified or Unclassified) — May be used to obtain various Restrained and Unrestrained Assembly Ratings as described in Item 10. Required for the 2 Hr Assembly and Beam Ratings. Also required for 1, 1-1/2 and 2 hr Assembly and Beam Ratings when insulated steel building units are used. Supplied in sheets nom 2 by 4 ft to 4 by 12 ft, by nom 5/8 in. thick. Min weight 2.2 pcf. Applied perpendicular to steel roof deck direction with adhesive (Item 6), hot asphalt (Item 7) or laid loosely. End joints to occur over crests of steel roof and to be staggered 2 ft in adjacent rows.

**CABOT MANUFACTURING ULC** ([View Classification](#)) — CKNX.R25370

**AMERICAN GYPSUM CO** ([View Classification](#)) — CKNX.R14196

**BEIJING NEW BUILDING MATERIALS PUBLIC LTD CO** ([View Classification](#)) — CKNX.R19374

**CERTAINTED GYPSUM INC** ([View Classification](#)) — CKNX.R3660

**CGC INC** ([View Classification](#)) — CKNX.R19751

**CERTAINTED GYPSUM INC** ([View Classification](#)) — CKNX.R18482

**GEORGIA-PACIFIC GYPSUM L L C** ([View Classification](#)) — CKNX.R2717

**LOADMASTER SYSTEMS INC** ([View Classification](#)) — CKNX.R11809

**NATIONAL GYPSUM CO** ([View Classification](#)) — CKNX.R3501

**PABCO BUILDING PRODUCTS L L C, DBA PABCO GYPSUM** ([View Classification](#)) — CKNX.R7094

**PANEL REY S A** ([View Classification](#)) — CKNX.R21796

**SIAM GYPSUM INDUSTRY (SARABURI) CO LTD** ([View Classification](#)) — CKNX.R19262

**THAI GYPSUM PRODUCTS PCL** ([View Classification](#)) — CKNX.R27517

**UNITED STATES GYPSUM CO** ([View Classification](#)) — CKNX.R1319

**USG BORAL DRYWALL SFZ LLC** ([View Classification](#)) — CKNX.R38438

**USG MEXICO S A DE C V** ([View Classification](#)) — CKNX.R16089

**5. Vapor Retarder — Sheathing Material\*** — (Optional — Not shown) — Vinyl film or paper scrim vapor barrier, applied to steel roof deck or gypsum wallboard with adhesive (Item 6), hot asphalt (Item 7) or laid loosely, overlapped approx 2 in. on adjacent

sheets. See Sheathing Material (CHIZ) category for names of manufacturers.

**6. Adhesive\*** — (Optional) — The vapor retarder, the gypsum wallboard or the first layer of roof insulation may be secured with adhesive to the steel crest surfaces. Also used to attach the vapor retarder to gypsum wallboard, the first layer of insulation to vapor retarder or gypsum wallboard and each additional layer of insulation. Applied in 1/2 in. wide ribbons 6 in. O.C. at 0.4 gal per 100 sq ft. See Adhesives (GYWR) category for names of manufacturers.

**6A. Adhesive\* -(Optional)** — (Bearing the UL Classification Marking for Roof Systems (TGFU)) - The vapor retarder, the gypsum wallboard or the first layer of roof insulation may be secured with adhesive to the steel crest surfaces. Also used to attach the vapor retarder to gypsum wallboard, the first layer of insulation to vapor retarder or gypsum wallboard and each additional layer of insulation. Applied at a max rate of 19.8 g/ft<sup>2</sup>. When FAST 100 adhesive is used, additional **Spray-Applied Fire Resistance Materials\* (CHPX)** is required on the deck for the 1-1/2 and 2 hr Unrestrained Assembly Ratings. The thickness specified for the deck shall be increased by 1/16 in. for 1-1/2 hr Unrestrained Assembly Rating and 1/4 in. for 2 hr Unrestrained Assembly Rating.  
**CARLISLE SYNTEC SYSTEMS, A DIVISION OF CARLISLE CONSTRUCTION MATERIALS, LLC** — FAST 100

**7. Asphalt or Coal Tar Pitch\*** — (Optional — Not shown) — The vapor retarder, the gypsum wallboard or the first layer of roof insulation may be secured with asphalt or coal tar pitch to the steel crest surfaces at a max rate of 15 lbs per sq ft. Also used to attach the vapor retarder to gypsum wallboard, the first layer of insulation to vapor retarder or gypsum wallboard and each additional layer of roof insulation, applied at a max rate of 25 lbs/100 sq ft.

**8. Mechanical Fasteners** — (Optional — Not shown) — Mechanical screw-type fastener with metal or plastic washer designed for the purpose may be used to attach one or more layers of insulation to steel roof deck.

**9. Steel Roof Deck** — (Unclassified) — Min 1-1/2 in. deep and 30 in. wide galv fluted steel deck. Flutes 6 in. O.C. with crest width ranging from 3-5/8 to 5-1/16 in. Min gauge is 22 MSG. Ends overlapped at supports min 1-1/2 in. and welded to supports at deck laps at a max of 12 in. O.C. between sides of units. Side laps of adjacent units welded, button-punched or secured together with No. 12 by 3/4 in. long self-drilling, self-tapping steel screws spaced a max of 36 in. O.C., or **Classified Steel Floor and Form Units\*** — Noncomposite 1-1/2 or 3 in. deep, 24 to 36 in. wide galv units — Min gauge is 22 MSG. Ends overlapped at supports min 1-1/2 in. and welded to supports at deck laps at a max of 12 in. OC between sides of units. Side laps of adjacent units welded, button punched or secured together with No. 12 by 3/4 in. long self-drilling, self-tapping steel screws spaced a max of 36 in. OC.

**ASC STEEL DECK, DIV OF ASC PROFILES L L C** — Types BH-36, BHN-36, BHN-35-1/4, DGB-36, B-36, BN-36, BN-35-1/4, NH-32, NHN-32, DGN-32, N-32, and NN-32. All units may be galvanized or Prime Shield™. Non-cellular decks may be vented designated with a "V" suffix to the product name.

**CANAM GROUP INC** — Type P-3606, P-3615, P-2436, and P-2404 noncomposite; 36 in. wide Types 1.5B, 1.5BI.

**CANAM STEEL CORP** — Type P-3606, P-3615, P-2436, and P-2404 noncomposite.

**MARLYN STEEL DECKS INC** — Types B, F, N, NV.

**NEW MILLENNIUM BUILDING SYSTEMS L L C** — Type B, BD, BI, F, FD, N, ND, NW32 and NW32I. Units may be phos/painted or galvanized.

**VERCO DECKING INC - A NUCOR CO** — Deck types PLB, HSB, PLN3, HSN3, PLN, N; FORMLOK™ deck types PLB, B, PLN3, N3, PLN, N. Units may be galvanized or phos./ptd. Deck may be vented or non-vented.

**VULCRAFT, DIV OF NUCOR CORP** — Galv. or ptd/ptd Types 1.5B, 1.5BI, 1.5PLB, 3N, 3NI, 3.0PLN, 3NL-32, 3NI-32, 3PLN-32; Types BW, B High Strength, BW High Strength, N. Units may be galv. or ptd/ptd.

**10. Spray-Applied Fire Resistive Materials\*** — Applied by mixing with water and spraying in more than one coat to final thicknesses as shown in the illustration above and in the table below, to steel surfaces which must be clean and free of dirt, loose

scale and oil. Steel surface must be coated with Type DK-1 material prior to application of Types 15, 15 High Yield and 22 Spray-Applied Fire Resistive Material. Type DK-1 material shall be applied in accordance with the manufacturer's application instructions. Min avg and min ind density of 15/14 pcf, respectively for the Type Perlifoc LD, 15 and 15-High Yield, 22/18 pcf, respectively for the Type 22, 40/37 respectively for the Type 40 and 40T, 28/25 respectively for the Type 239, 44.5/42 respectively for the Type 240-High Yield or 241HY and 55/50 respectively for the Type 241 or Type 241 HD. For method of density determination, see Design Information Section. Thickness of the Type DK-1 is included in the total final thickness of the protection material. When materials other than Type 15, 15 High Yield and 22 see Item No. 14.

<b>Restrained &amp; Unrestrained</b>		<b>Spray Applied Fire Resistive Mtl Thk (In.)</b>			
<b>Assembly Rating Hr</b>	<b>Beam Rating Hr</b>	<b>Min W6x16Beam</b>	<b>Min W8x28Beam</b>	<b>10H4, 10K1 or 12K3 Joist</b>	<b>14J7 Joist</b>
1	1	3/4	1/2	1-1/8	1-1/2
1-1/2	1-1/2	7/8	7/8	1-7/16	—
2	2	1-1/8	1-1/8	2-3/8	—

**Spray Applied Fire Resistive Mtl Thk In.  
On Steel Deck#**

<b>Restrained &amp; Unrestrained Assembly Rating Hr</b>	<b>Without Gypsum Wallboard</b>	<b>With Gypsum Wallboard</b>	<b>With Gypsum Wallboard &amp; Insulated Steel Building Unit (Item 3I)</b>
1	1	13/16	1-13/16
1-1/2	1-9/16	1-3/16	2
2	2	1-1/2	2-3/8

#The required minimum thickness of Spray-Applied Fire Resistive Materials on the steel deck is increased by 1/16 in. for 1-1/2 hr Unrestrained Assembly Rating and 1/4 in. for 2 hr Unrestrained Assembly Rating when Item 6A is used.

NR-Indicates no rating.

**CARBOLINE CO** — Types 15, 15-High Yield, 22, 40, 239, 240-High Yield, 241, 241 HD, 241HY.

**CARBOLINE (INDIA) PVT LTD** — Types 15, 15-High Yield, 22, 40, 239, 240-High Yield, 241, 241 HD.

**PERLITA Y VERMICULITA SLU** — Types 15, 22, Perlifoc LD, 40, 40T, 239, 241, 241 HD, 241HY.

**STONCOR MIDDLE EAST L L C** — Types 15, 15-High Yield, 22, 40, 239, 240-High Yield, 241, 241 HD.

**STONCOR SOUTH CONE S A** — Types 15, 15-High Yield, 22, 40, 239, 240-High Yield, 241, 241 HD.

11. **Non-Metallic Fabric Mesh** — (Optional) — As an alternate to metal lath, glass fiber fabric mesh, weighing approximately 2.5 oz/sq yd, polypropylene fabric mesh, weighing approximately 1.25 oz/sq yd or equivalent, may be used to facilitate the spray application. The mesh is secured to one side of each joist web member. The method of attaching the mesh must be sufficient to



hold the mesh and the spray-applied Spray-Applied Fire Resistive Materials material in place during application until it has cured. An acceptable method to attach the mesh is by embedding the mesh in minimum 1/4 in. long beads of hot melted glue. The beads of glue shall be spaced a maximum of 12 in. OC along the top chord of the bar joist. Another method to secure the mesh is by 1-1/4 in. long by 1/2 in. wide hairpin clips formed from No. 18 SWG or heavier steel wire.

11A. **Metal Lath** — (Optional, not shown) — Metal lath may be used to facilitate the spray application of Spray-Applied Fire Resistive Materials on steel bar joists and trusses. The diamond mesh, 3/8 in. expanded steel lath, 1.7 to 3.4 lb/sq yd is secured to one side of each steel joist with No. 18 SWG galv steel wire at joist web and bottom chord members, spaced 15 in. OC max. When used, the metal lath is to be fully covered with Spray-Applied Fire Resistive Materials with no min thickness requirements.

12. **Bridging** — (Not shown) — Minimum 1-1/4 by 1-1/4 by 1/8 in. thick steel angles welded to top and bottom chords of each joist. Number and spacing of bridging angles per Steel Joist Institute specification. Bridging coated with the same thickness of Spray-Applied Fire Resistive Materials (Item 10) as the joist.

13. **Building Units\*** — (Optional-not shown) — Nominal 12 by 18 in. or 18 by 24 in. flat or tapered cellular glass blocks or 24 by 48 in. flat or tapered cellular glass boards, applied over the roof insulation (Item 3) with asphalt (or coal tar pitch). Joints to be offset from joints of roof insulation.

**PITTSBURGH CORNING CORP**

14. **Metal Lath** — (Not Shown) — Where Types 40, 239, 240 High-Yield, 241 HD and 241 are applied to steel deck. Metal lath shall be 3/8 in., expanded diamond mesh, weighing 3.4 lb per sq yd. Secured to underside of the steel deck with No. 12 x 3/8 in. pan head self-drilling, self-tapping screws and steel washers with an outside diam of 1/2 in. Screws spaced 12 in. OC in both directions with lath edges overlapped approx 3 in.

**\* Indicates such products shall bear the UL or cUL Certification Mark for jurisdictions employing the UL or cUL Certification (such as Canada), respectively.**

Last Updated on 2021-05-19

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