UL Product iQ™

BXUV.P301 - FIRE-RESISTANCE RATINGS - ANSI/UL 263

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. P301

July 12, 2018

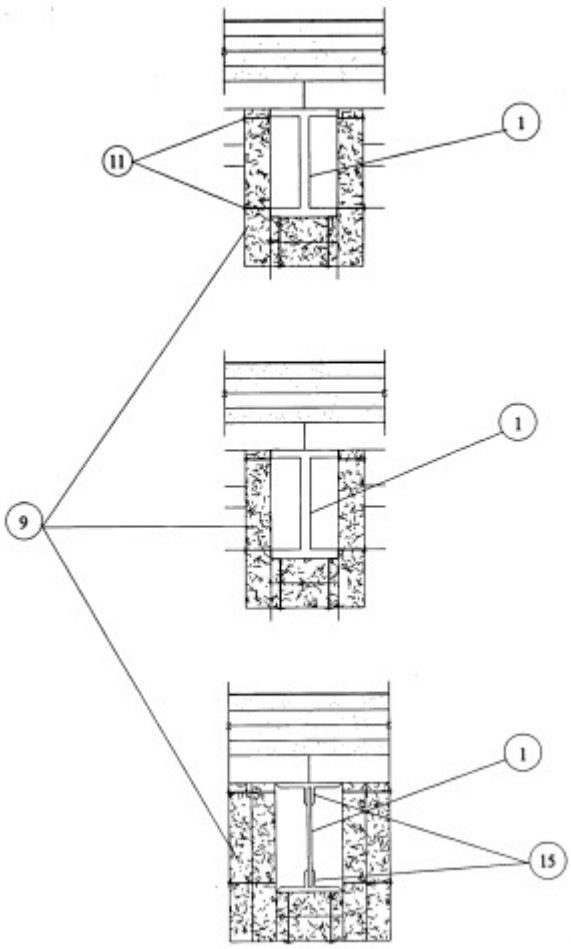
Restrained Assembly Rating — 1, 1-1/2, 2 Hr (See Item 9)

Unrestrained Assembly Rating — 1, 1-1/2 Hr (See Item 9)

Unrestrained Beam Rating — 1, 1-1/2, 2 Hr (See Item 9)

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. **Steel Supports —** Min size W6x16 beam, or min size 10K1 and 12K5 steel joists.

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

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

3. **Roof Insulation-Foamed Plastic* —** 36 by 48 inch (minimum size) polyisocyanurate formed insulation boards applied in one or multiple layers to the minimum thickness as required for the hourly rating as indicated in Item 9. No limit on maximum overall thickness. Boards to be installed with end joints staggered a minimum of 6 inches in adjacent rows. When applied in more than one layer, each layer to be offset in both directions from layer below a minimum of 6 inches in order to lap all joints.
CARLISLE SYNTEC INCORPORATED — Type HP-N

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

JOHNS MANVILLE — ENRGY 3 25 psi, ENRGY 3, Tapered ENRGY 3, Tapered ENRGY 3 25 psi, ENRGY 3 AGF, Tapered ENRGY 3 AGF, ENRGY 3 25 psi AGF, Tapered ENRGY 3 25 psi AGF, ENRGY 3 CGF, Tapered ENRGY 3 CGF, ENRGY 3 25 psi CGF, Tapered ENRGY 3 25 psi CGF, ISO-3, Tapered ISO-3, ValuTherm, Tapered ValuTherm, ValuTherm 25 psi, Tapered ValuTherm 25 psi, ValuTherm AGF, Tapered ValuTherm AGF, ValuTherm 25 psi AGF, Tapered ValuTherm 25 psi AGF, ValuTherm CGF, Tapered ValuTherm CGF, ValuTherm 25 psi CGF, Tapered ValuTherm 25 psi CGF

LOADMASTER SYSTEMS INC — Loadmaster Polyisocyanurate Insulation

3A. **Mineral and Fiber Boards —** Applied in one or more layers to the minimum thickness as required for the hourly rating as indicated in Item 9 with or without adhesive applied between the vapor barrier and roof deck units, vapor barrier and board, and each layer of board.

When more than one layer is required, each layer of board to be offset in both directions from layer below a minimum of 6 inches in order to lap all joints. Minimum thickness is as required in Item 9.

3B. **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"

4. **Vapor Retarder-Sheathing Material* —** (Optional-Not Shown) — Vinyl film or paper scrim vapor barrier, applied to steel roof deck with adhesive (Item 5), asphalt (Item 6) or laid loosely, overlapped approximately 2 inches on adjacent sheets. See Sheathing Material (CHIZ) category for names of manufacturers.

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

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

7. **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 the steel roof deck.

8. **Steel Roof Deck —** (Unclassified) — Minimum 1-1/2 in. deep galvanized, painted or phosphatized fluted steel deck. Minimum gauge is 24 MSG. Ends overlapped at supports minimum 4 inch and welded to supports at deck laps at a maximum of 12 inches OC between sides of units. Side laps of adjacent units welded, button-punched, or secured together with No. 12 by 3/4 inch long self-drilling, self-tapping steel screws spaced a maximum of 33 inches OC. **Classified Steel Floor and Form Units*** — Noncomposite, 1-1/2 in. deep, galv units, min gauge is 22 MSG. Welded to supports with welding washers 12 in. OC. Side lap joints of adjacent units welded or secured together with No. 12 by 1/2 in. Self-drilling, self-tapping steel screws midway between steel joists.
CANAM STEEL CORP — Types P-3606 or P-3615

9. **Batts and Blankets* —** Mineral wool batts applied in one or multiple layers to the thicknesses shown below. For beam and joist application, attached by impaling over clip-on studs (Item 10). But joints spaced 48 inches OC. For Deck application, attached with self-tapping insulation screws (Item 12). Butt joints spaced 48 inches OC perpendicular to flutes and lap joints spaced 24 inches OC parallel to the flutes. For multiple layer applications, staggered joints are not required. Adjacent butt joints are to be offset 24 in.

Min. Thickness of Type CB on Steel Roof Deck (In.)

Restrained Assembly Rating	Unrestrained Assembly Rating	2 In. of Roof Insulation	Min 3 In. of Roof Insulation
1	1	2	2-1/2
1-1/2	1-1/2	3	3-1/2
2	1	NR	4
2	1-1/2	NR	4
2	2	NR	4-1/2

Min. Thickness of Type CB on Steel Member (In.)

Restrained Assembly Rating	Unrestrained Assembly Rating	Min W6 x 16 Steel Beam	Min 10K1 Steel Joist	Min 12K5 Steel Joist
1	1	1	4	4

1-1/2	1-1/2	1*	4	4
2	1	1*	4	4
2	1-1/2	1*	4	4
2	2	2	4-1/2	4

*2 Inches of Type CB shall be applied to the bottom of the beam flange.

UNITED STATES MINERAL PRODUCTS CO, DBA ISOLATEK INTERNATIONAL — Type CB

9A. **Spray-Applied Fire Resistive Materials* —** Alternate for steel beam and joist protection in Item 9. Applied by spraying with water in one or more coats to a final thickness as shown in table below to steel beams and joists that are free of dirt, oil and scale. Use of adhesive is optional. Min average untamped density is 13 pcf with min individual untamped density of 11 pcf for Types DC/F, II, and II HS. Min average and min individual untamped densities are 22 and 19 pcf, respectively, for Type HP. Tamping is optional. For method of density determination, refer to Design Information Section. The thickness of Spray-Applied Fire Resistive Materials on the Structural Members (Item 1) shall be as follows:

Min. Thickness of SFRM on Steel Member (In.)

Restrained Assembly Rating	Unrestrained Assembly Rating	Min W6 x 16 Steel Beam	Min 10K1 Steel Joist	Min 12K5 Steel Joist
1	1	5/8	NR	1-1/16
1-1/2	1-1/2	13/16	1-9/16	1-9/16
2	1	5/8	1-5/8	1-5/8
2	1-1/2	13/16	1-11/16	1-11/16
2	2	1	1-11/16	1-11/16

ISOLATEK INTERNATIONAL — Types D-C/F, HP, II, or Type II HS, Type EBS or Type X adhesive/sealer

9B. **Spray-Applied Fire Resistive Materials* —** Alternate for steel beam and joist protection in Items 9 or 9A. Applied by mixing with water in accordance with instruction on each bag and applied in one or more coats to a final thickness as shown in the table below to steel beams and joists which are free of dirt, oil or scale. Min average and min individual density of 15 and 14 pcf, respectively, for Types 300, 300AC, 300ES, 300HS, 300N, 3000, 3000ES and SB. For Types 400AC and 400ES min average and min individual density of 22 and 19 pcf, respectively. For method of density determination, see Design Information Section, Sprayed Material.

Min. Thickness of SFRM on Steel Member (In.)

Restrained Assembly Rating	Unrestrained Assembly Rating	Min W6 x 16 Steel Beam	Min 10K1 Steel Joist
1	1	7/16	1
1-1/2	1-1/2	9/16	1-3/16
2	1	7/16	1-3/16
2	1-1/2	9/16	1-3/16
2	2	13/16	1-3/16

ISOLATEK INTERNATIONAL — Types 300, 300AC, 300ES, 300HS, 300N, 3000, 3000ES, SB, 400AC or 400ES

10. **Fasteners —** Cafclip (No. 11 SWG) fasteners of sufficient length to accommodate the batt thickness required on the beam or joist plus a minimum of 1/4 in. Excess spike length may be cut or bent. Fitted onto the bottom beam flange edges or bottom joist angles and spaced nominally 14 inches OC and nominally 3 inches from the end of the batts. Fitted onto the top beam flange edges or top joist angles and spaced nominally 3 inches from the end of the batts. Refer to Design No. D915 for illustration of Cafclip fastener.

11. **Clinch Shields —** No. 26 MSG galvanized steel, 1-1/2 inch square, or 1-1/2 inch diameter round clinch shields.

12. **Fasteners —** No. 12 standard, self-tapping insulation screw or equivalent sufficient in length to accommodate the batt thickness required on the underside of the deck plus a minimum of 3/4 inch. As an alternate to self-tapping insulation screws, No. 10 gauge weld pins of sufficient length to accommodate the batt thickness may be secured to the underside of the deck. Spaced nominally 14 inches OC and nominally 3 inches from the butt joints along the flute. Spaced nominally 12 inches OC and nominally 6 inches from the lap joint across the flute. Each 24 inch by 48 inch batts should receive 8 fasteners.

13. **Washers —** For use with Item 12. 3 inch diameter steel plate insulation washers. One washer is required per insulation screw. As an alternate, 1 inch diameter self-locking washers may be used per weld pin.

14. **Adhesive* —** (Not Shown) (Optional) — Applied to the butt joints prior to installation of the batt to the beam, joist and steel deck. **ISOLATEK INTERNATIONAL** — Type CBA

15. **Bridging —** Minimum 1-1/4 by 1-1/4 by 1/8 inch thick steel angles welded to top and bottom chords of each joist. Number and spacing of bridging angles per Steel Joist Institute specifications.

* 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 2018-07-12