

## FIRE-RESISTANCE DESIGN

### Assembly Usage Disclaimer

#### **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. D996**

August 17, 2017

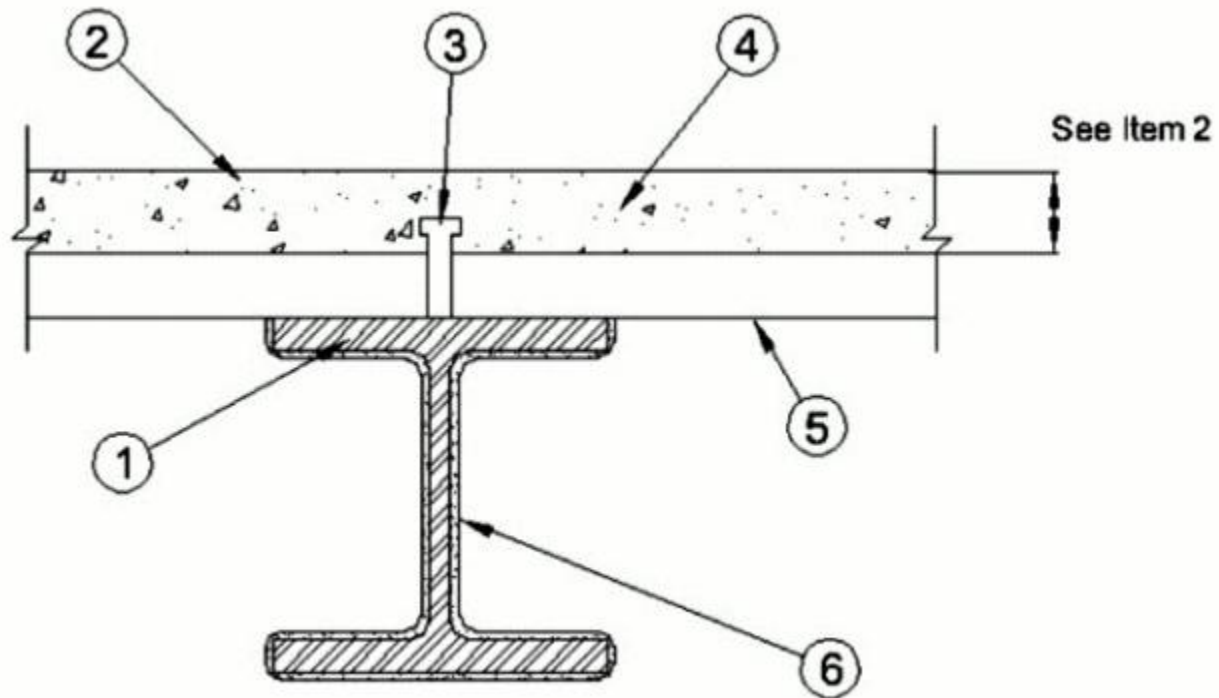
**Restrained Assembly Rating - 2 Hr.**

**Unrestrained Assembly Rating - 0 Hr. (See Item 5)**

**Unrestrained Beam Rating - 2 Hr.**

**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 Beams** — Min W8x28 wide flange beam. When Item 6, **Mastic and Intumescent Coating\*** is used, beam shall be primed with a modified alkyd, or epoxy based primer.

2. **Normal Weight Concrete** — Normal weight concrete, carbonate or siliceous aggregate, 145 lb/ft<sup>2</sup> +/- 3 lb/ft<sup>2</sup>, 4000 psi compressive strength, vibrated. Min thickness shown in the table below:

| Restrained Assembly Rating Hr | Concrete (Type) | Concrete Unit Weight pcf | Concrete Thkns In. |
|-------------------------------|-----------------|--------------------------|--------------------|
| 2                             | Normal Weight   | 142-148                  | 3-3/4              |

3. **Shear Connectors** — Studs, 3/4 in. diam by 3-1/2 in. long, headed type or equivalent per AISC specification. Welded to the top flange of the beam, through the deck.

4. **Fiber Reinforcement\*** — Fibers shall be added to concrete mix at a rate of 2 lb/yd<sup>3</sup>.

5. **Steel Floor and Form Units\*** — Composite 2 in. deep galv fluted units. Min gauge 22 MSG. Spacing of welds attaching units to supports shall be 12 in. OC max unless specified otherwise. Adjacent units button-punched or welded together at side joints 36 in. OC max, unless specified otherwise. When max clear span of the steel floor and form units is less than or equal to 10 ft, the unrestrained assembly rating is increased to 2 Hr. to match the unrestrained beam rating. The upper live load limit for all units is 250 psf.

**ASC STEEL DECK, DIV OF ASC PROFILES L L C** — 36 in. wide Type 2WH-36, 2WHS-36

**VERCO DECKING INC - A NUCOR CO** — FORMLOK™ deck types PLW2, W2, PLW3, W3. Units are min 24 in. wide and may be galvanized, phos./ptd., or mill finish.

**VULCRAFT, DIV OF NUCOR CORP** — 24 or 36 in. wide Types 2VLI, 2.0PLVLI, 3VLI, 3.0PLVLI

**6. Mastic and Intumescent Coating\*** — Coating spray, brush or towel applied directly from containers to 0.143 in. thickness. Flutes above beam to be completely filled with mineral wool insulation having a minimum density of 6 lb/ft<sup>2</sup>.

**CARBOLINE CO** — Type Thermo-Sorb 263. Investigated for Interior Condition Space Purpose and Interior General Purpose. (See Item 7).

**6A. Spray-Applied Fire Resistive Materials\*** — As an alternate to Item 6 — Applied by mixing with water and spraying in more than one coat to the beam to a final thickness of 1-1/16 in. When fluted steel floor units are used, crest areas shall be filled with Spray-Applied Fire Resistive Materials above the beam. Beam surfaces must be clean and free of dirt, loose scale and oil. Min avg and min ind density of 15/14 pcf respectively. Min avg and min ind density of 19/18 pcf respectively for Types 7GP and 7HD. Min avg and min ind density of 22/19 pcf respectively for Types Z-106, Z-106/G, Z-106/HY. For method of density determination, see Design Information Section.

**PYROK INC** — Type LD

**SOUTHWEST FIREPROOFING PRODUCTS CO** — Types 4, 5, 5EF, 5GP, 5MD, 7GP, 7HD, 8EF, 8GP, 8MD, 9EF, 9GP, 9MD

**GCP APPLIED TECHNOLOGIES INC** — Types MK-6/HY, MK-6s, Z-106, Z-106/G, Z-106/HY

**7. Top Coat** — (Not Shown, for use with Item 6, Mastic and Intumescent Coating) — Type Carboguard 1340 or Type Rustbond Penetrating Sealer intermediate coat applied over the base coat at 0.002 in. thickness and Type Carbothane 133HB top-coat or Carbothane 133MC top-coat, Type Carbocrylic 3359 or Type Carbothane 133VOC top-coat applied over the intermediate coat at 0.003 in. thickness.

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Last Updated on 2017-08-17

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### 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.
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