

Fire-Rated Composite Slabs



FORMLOK composite slabs may be used to meet hourly fire ratings. The type and thickness of concrete specified will determine whether fireproofing will be required on the underside of the FORMLOK deck. Typically 2½ in. of concrete over the top of the deck is required for fire ratings with fireproofing on the underside of the deck. Refer to the specific UL assembly, or use the fireproofing manufacturer's data to determine fireproofing thickness required to meet a specific hourly rating.

Table 1 summarizes the thickness of concrete required over the top of the FORMLOK deck to achieve restrained unprotected hourly ratings with no fireproofing on the underside of the deck. See specific UL assemblies for unrestrained hourly ratings.

**Table 1: Unprotected Fire Resistance Rating
Concrete Thickness over FORMLOK Deck**

Restrained Assembly Rating	Normal Weight (in.)	Light Weight (in.)
1 Hour	3½	2½
2 Hour	4½	3¼
3 Hour	5¼	4⅝

Refer to Table 9 on pages 32–33 for a listing of UL fire-rated assemblies utilizing FORMLOK profiles. Refer to the particular UL assembly being considered for full details of construction, including specific information about concrete thickness, strength requirements, and span limitations.

Venting Floor Deck

Factory vent tabs are available as an option for FORMLOK deck as shown in Figure 2. The structural performance and fire rating of the FORMLOK composite slab are not affected by the venting.

The drying performance of concrete cast on steel deck can be expected to be similar to that of a slab cast on grade over a vapor barrier. The nominal venting provided by vent tabs will not significantly affect concrete drying. Vent tabs should only be specified based on the requirements of the materials installed over the slab. Leakage will occur during concrete placement with vented deck.

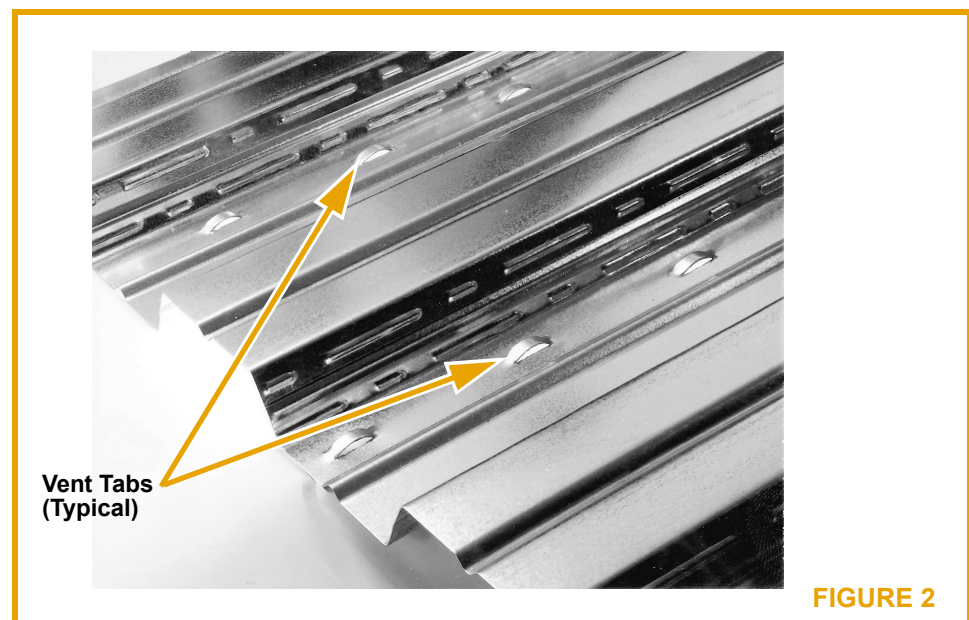


FIGURE 2

Vent tabs projecting upwards are staggered in interior low flutes at approximately 6 in. on center:

- 5 rows in PLB and B FORMLOK.
- 3 rows in PLW2 and W2 FORMLOK, and PLW3 and W3 FORMLOK (each low flute except at male side joint).
- 3 rows in PLN3 and N3 FORMLOK.
- 2 rows in PLN and N FORMLOK.

Deep and Shallow VERCOR decks are available with rolled-in sidelap vents as shown in Figure 3. Vents are spaced at approximately 10 in. on center.

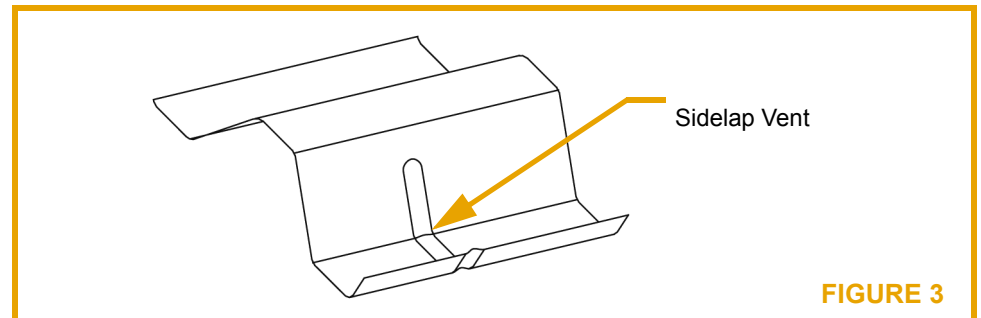


FIGURE 3

FLOOR DECK DIAPHRAGMS

Diaphragm Load Tables

The allowable diaphragm shear strengths in the FORMLOK deck tables are based on the attachment of the deck to the perpendicular supports with puddle welds. Mechanical fasteners may be used in lieu of puddle welds as described below.

Allowable diaphragm shear strength tables for VERCOR deck with structural concrete fill are based on attachment of the deck to the perpendicular supports with minimum #12 SDI recognized self-drilling self-tapping screws.

The attachment patterns for each profile are shown in the illustrations following the section properties for each profile. The attachments to the supports provide shear transfer between the deck and the structure.

Increased diaphragm shear values may be achieved when steel headed stud anchors are used. Refer to Table 5 on page 22 for further information about concrete diaphragms using steel headed stud anchors.

- The allowable stress increase permitted for load combinations in IBC Section 1605.3.2, including wind or seismic forces, shall not be used for allowable diaphragm shear strengths.
- The flexibility factor (F) is the number of micro-inches a diaphragm web will deflect in a span of 1 ft under a shear load of 1 pound per ft.
- Allowable diaphragm shear strengths and flexibility factors for concrete-filled decks apply to either FORMLOK deck or deck without deformations or indentations (embossments).