

FLOOR DECK CONCRETE FILL

Concrete Reinforcing

Reinforcement for temperature and shrinkage crack control should be provided by welded wire fabric (WWF), reinforcing bars or fibers.

Welded wire fabric or reinforcing bars with an area equal to 0.00075 times the area of concrete fill over the FORMLOK deck, but not less than the area provided by 6 x 6 - W1.4 x W1.4 WWF is required.

Steel fibers meeting the criteria of ASTM A820, Types I, II or V, may be used in concrete specified in accordance with ASTM C1116, Type I. Follow the steel fiber manufacturer's recommended dosage rate, but not less than 25 lbs/yd³.

Macro synthetic fibers meeting the criteria of ASTM D7508 may be used in concrete specified in accordance with ASTM C1116, Type III. Follow the macro synthetic fiber manufacturer's recommended dosage rate, but not less than 4 lbs/yd³.

Use of alternative fibers or combinations of fibers, which the designer is satisfied will effectively resist temperature and shrinkage cracking, should be based on the fiber manufacturer's recommended dosage rate.

The use of fibers may affect the choice of UL assemblies if a fire-rated composite slab is required.

Concrete Type

The decision to use normal weight (NW) or structural light weight (LW) concrete is typically based on the relative costs and availability. The dead load of structural concrete slabs vary considerably with concrete type. Table 4 lists the concrete weight to be added to the deck weight to determine slab dead load.

Note: The concrete weights listed in Table 4 do not include the allowance for deck deflection discussed on page 16.

Concrete Thickness

A minimum 2 in. thickness of concrete over the FORMLOK deck is required to achieve composite action. A 2½ in. thickness is suggested for better stiffness of the composite slab. Greater thickness may be required to attain fire ratings or meet specific load requirements.

FLOOR DECK DESIGN CONSIDERATIONS

Composite Slab Floor Vibrations

FORMLOK composite slab stiffness increases as the span to total slab depth ratio decreases. Span to depth ratios in the low to mid-20s are suggested. Evaluation of floor vibrations must consider the entire floor assembly, including the slab and supporting structure. "Floor Vibrations Due to Human Activity" (AISC Steel Design Guide Series 11) is one source of additional information.