



## COMPOSITE SLAB

### TECHNICAL NOTES

#### Material Properties

1. The Westform composite steel deck is the WF Roof Deck with embossments rolled into the web elements to achieve the composite interlocking capacity between the steel deck and concrete.
2. Steel deck section properties were calculated in accordance with CSAS136-16.
3. Steel conforms to ASTM A653 SS Grade 33 and A653M SS Grade 230 with Z275 surface coating.
4. Concrete is based on normal density of  $2300 \text{ kg/m}^3$  (145 pcf) and having a minimum compressive strength of 20 MPa (3 ksi).

#### Load Table

1. Loads are maximum specified uniformly distributed loads resulting from human occupancy and should not be used for concentrated loads.
2. Loads greater than 10 kPa (200 psf) are commonly the result of large concentrated moving loads. In such cases, contact Westform for additional design information.
3. The steel deck provides the positive reinforcement for the simply supported composite slab and no additional reinforcing steel is required. To control shrinkage and temperature cracking, a minimum steel wire mesh of 152 x 152 - MW9.1/MW9.1 (6 x 6 - 10/10) is recommended as per CSSBI S3-03.
4. Shoring requirements shown in shaded areas of the load table were established in accordance with CSSBI 12M-06.
5. To establish the shear-bond capacity of the Westform composite slab system, laboratory tests were carried out at the Structural Testing and Research laboratory, Cambridge, Ontario in accordance with CSSBI S2-02.

6. All technical information and load tables were prepared by Dr. R.M. Schuster, P. Eng., Distinguished Professor Emeritus, University of Waterloo.

#### EXAMPLE (Metric)

Determine the specified uniformly distributed live load that can be placed on the Westform composite floor slab, given the following information:

#### Given:

- Steel deck thickness = 1.22 mm
- Yield strength = 230 MPa
- Normal density concrete =  $2300 \text{ kg/m}^3$
- Overall slab depth = 100 mm
- Double span, each = 2.8 m
- Specified superimposed dead load, DL = 1.8 kPa

#### Solution:

The maximum specified load in (**kPa**) from load table must be  $\geq [LL + (1.25/1.5)DL]$ ,

where

LL = specified live load

DL = specified superimposed dead load

From load table under 2.8 m span, the maximum specified load is **12.0 kPa**, therefore,

$$12.0 \geq [LL + (1.25/1.5)1.8] \text{ and solving for LL,}$$

$$LL = \underline{\underline{10.5 \text{ kPa}}}$$

Since this is in the shaded area, one shore support is required at mid-span in each span.

#### Note:

**The self-weight of the steel deck and concrete slab have already been accounted for in the maximum specified uniformly distributed load given in the composite slab load table.**