

## GENERAL INFORMATION

### General

Presented in these load tables are maximum uniformly distributed specified loads.

### ❖ Limit States Design (LSD)

**Strength** - Limit States Design principles were used in the development of the load tables in accordance with CSA-S136-07, North American Specification for the Design of Cold Formed Steel Structural Members and the National Building Code of Canada,. The factored resistance under consideration,  $\phi R$ , must be equal to or greater than the effect of the factored loads, i.e.,

$$\phi R \geq \text{Effect of Factored Loads.}$$

Hence, a short calculation must be carried out to compute the specified live load. See example.

**Serviceability** – Maximum specified deflection loads given in the tables must be compared with their respective specified live loads.

### ❖ Steel

**Specification** - Conforms to ASTM A653M grade 230; Yield strength 230 MPa (33 ksi) and tensile strength of 310 MPa (45 ksi).

**Finishes** – ZF 075 (A25) or Z275 (G90). For heavier galvanizing, refer to ASTM A653-A653M.

### ❖ Design Considerations

**Strength** - The maximum uniformly distributed specified load obtained from the load table must be equal to or greater than (*Specified live load + 0.833 times the specified dead load*).  
Where  $0.833 = 1.25/1.5$ .

**Conservative Strength Approach** - The maximum uniformly distributed specified load obtained from the load table must be equal to or greater than (*Specified live load + specified dead load*).

**Web Crippling Check** – If  $n/t > 210$ , use  $n/t = 210$ .

**Serviceability (Deflection)** – The effective moment of inertia for deflection determination has been calculated at an assumed specified live load stress of  $0.6F_y$ .

## EXAMPLE

### 76 mm (3") DECK (METRIC)

#### Given:

- Triple span continuous,  $L = 3.8$  m each span
- Deck thickness,  $t = 0.914$  mm
- L/180 deflection limit (data in tables are based on L/240)
- Bearing length,  $n = 60$  mm ( $n/t = 65.6$ )
- Specified loads
  - 1) Dead loads (DL)
    - a) deck 0.15 kPa
    - b) superimposed 0.85 kPaDL = 1.0 kPa
  - 2) Live load (LL)  
LL = 2.0 kPa

#### Solution:

##### ▪ Strength

- 1) Specified loads  
[LL + 0.833 DL]  
[2.0 + 0.833 (1.0)] = 2.83 kPa
  - 2) Maximum specified load (from Table under “S”) is 2.89 kPa  
Since  $2.89 > 2.83 \therefore$  OK
  - 3) Check end web crippling ( $n = 60$  mm)
    - a) Specified end reaction  
 $0.400(2.83)3.8 = 4.30$  kN/m
    - b) Maximum specified end reaction (from Section Property Table)  
 $P_e = P_{e1} + P_{e2} \sqrt{n/t}$   
 $P_e = 3.18 + 0.796 \sqrt{60/0.914} = 9.63$  kN/m  
Since  $9.63 > 4.30 \therefore$  OK
  - 4) Check interior web crippling ( $n = 60$  mm)
    - a) Specified interior reaction  
 $1.10(2.83)3.8 = 11.8$  kN/m
    - b) Maximum specified interior reaction (from Section Property Table)  
 $P_i = P_{i1} + P_{i2} \sqrt{n/t}$   
 $P_i = 6.04 + 1.03 \sqrt{60/0.914} = 14.4$  kN/m  
Since  $14.4 > 11.8 \therefore$  OK
- ##### ▪ Deflection
- From Table under “D” (L/240) = 2.95 kPa  
For L/180, multiply 2.95 by  $240/180 = 3.93$  kPa  
Since  $3.93$  is  $> 2.0 \therefore$  OK



**Head Office**  
1418 Michael St.  
Ottawa, Ont., Canada K1B 3R2  
Tel: (613) 746-3206  
Fax: (613) 746-0445  
Wats Line: 1-800-267-0860  
E-mail: info@idealroofing.ca

**Québec Regional Sales Office**  
600 des Canetons, Suite 250  
Québec, Qc., Canada G2E 5W6  
Tel: (418) 874-0010  
Fax: (418) 874-0011  
Wats Line: 1-888-313-0010

**Toronto Manufacturing Facility**  
223 Corporation Drive  
Brampton, Ont., Canada