

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-S136-01, North American Specification for the Design of Cold Formed Steel Structural Members and the National Building Code of Canada. The factored resistance under consideration, ϕR , 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

1 1/2" DECK (IMPERIAL)

Given:

- ❑ Triple span continuous, $L = 8$ ft each span
- ❑ Deck thickness, $t = 0.030$ in
- ❑ L/180 deflection limit (data in tables are based on L/240)
- ❑ Bearing length, $n = 2$ in.
- ❑ Specified loads
 - 1) Dead loads (DL)
 - a) deck 1.6 psf
 - b) superimposed 8.2 psf $DL = 9.8$ psf
 - 2) Live load (LL) $LL = 40$ psf

Solution:

▪ Strength

- 1) Specified loads $[LL + 0.833 DL]$ $[40 + 0.833 (9.8)] = 48.2$ psf
- 2) Maximum specified load (from Table under "S") is 50 psf
Since $50 > 48.2 \therefore$ OK
- 3) Check end web crippling ($n = 2$ in.)
 - a) Specified end reaction $0.400(48.2)8.0 = 154$ lb/ft
 - b) Maximum specified end reaction (from Section Property Table) $P_e = P_{e1} + P_{e2} \sqrt{n/t}$ $P_e = 174 + 43.5 \sqrt{2/0.030} = 529$ lb/ft
Since $529 > 154 \therefore$ OK
- 4) Check interior web crippling ($n = 2$ in.)
 - a) Specified interior reaction $1.10(48.2)8.0 = 424$ lb/ft
 - b) Maximum specified interior reaction (from Section Property Table) $P_i = P_{i1} + P_{i2} \sqrt{n/t}$ $P_i = 305 + 51.9 \sqrt{2/0.030} = 729$ lb/ft
Since $729 > 424 \therefore$ OK

▪ Deflection

From Table under "D" ($L/240$) = 42 psf
For L/180, multiply 42 by $240/180 = 56$ psf.
Since 56 is $> 40 \therefore$ OK



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