Notes to Designer

Technical Information

General - Presented in these AGWAY METALS INC. load tables are maximum uniformly distributed specified loads. The load tables contained on these data sheets were prepared by Dr. R.M. Schuster P.Eng., Professor Emeritus of Structural Engineering, University of Waterloo, Ontario, Canada.

Steel - Conforms to ASTM A653/A653M or A792/A792M. Grade 33/230; Yield stress 33 ksi/230 MPa and tensile stress 45 ksi/310 MPa. Grade 80 /550; Yield stress 80 ksi/550 MPa and tensile stress 82 ksi/570 MPa.

Finishes - A25/ZF75, G90/Z275 or AZ50/AZM150. For heavier metallic coatings, refer to ASTM A653/A653M or A792/A792M.

Load Tables - Significant changes have been made in the 2005 edition of the National Building Code of Canada (NBCC) regarding the determination of the specified wind and snow loads. Importance factors have been introduced that are applied to both strength (ULS) and deflection (SLS) limit state design considerations. A lower load factor for wind of 1.4, instead of 1.5 used for live and snow loads, has also been introduced. This lower load factor for wind somewhat offsets the higher wind loads (1 in 50 year return) that are now listed in the NBCC by geographic location. The importance category of the end use of the building must also be recognized, such as Normal or Low.
All of these changes impact how the AGWAY METALS INC. load tables are to be used. In an effort to help the design professional with the load tables, the information below was taken directly from Division B, Part 4 (Structural Design) of the NBCC.

Specified Wind Load

$W = I_w \boxed{qC_eC_gC_p}$ [1]

Importance Category	Importance Factor, I_w	
	ULS	SLS
Low	***0.8***	***0.75***
Normal	***1.0***	***0.75***
High	1.15	0.75
Post-Disaster	1.25	0.75

Specified Snow Load

$S = I_s \boxed{[S_s (C_b C_w C_s C_a) + S_r]}$ [2]

Importance Category	Importance Factor, I_s	
	ULS	SLS
Low	***0.8***	***0.9***
Normal	***1.0***	***0.9***
High	1.15	0.9
Post-Disaster	1.25	0.9

The importance factors, I_w and I_s, have been incorporated into the load tables, as well as the importance category. The parameters in the boxed-in portion of Equations [1] and [2] must be determined by the design professional in accordance with the NBCC.

Strength - The maximum uniformly distributed specified load based on strength in the load table must be equal to or greater than the ***specified live load***.

Serviceability (Deflection) - The maximum uniformly distributed specified load based on deflection in the load table must be equal to or greater than the ***specified live load***. The effective moment of inertia for deflection determination was calculated at an assumed specified live load stress of $0.6F_y$.

Example (Use of Load Tables)

7-175 Wall Cladding (Metric)
(**Normal Importance Category**
LLF = 1.4 and I_w = 0.75)

Given:

- Triple span continuous, L = 2.2 m each span
- Deck thickness, t = 0.610 mm
- L/240 deflection limit
- Bearing length, N = 60 mm
- Wind live load, LL = 2.2 kPa

The Live Load is the value of the boxed-in portion of the specified wind load expression [1].

Solution:

Strength "S"

1) Specified loads = 2.2 kPa
2) Maximum specified load (from Load Table) is ***2.59 kPa***
   Since 2.59 > 2.2 ∴ OK
3) Check web crippling (N = 60 mm)

a) End reaction =
0.400(2.2)2.2 = 1.94 kN/m
(from section property table)
$P_e = P_{e1} + P_{e2} [N/t]^{1/2}$
$= 1.45 + 0.362[60/0.610]^{1/2}$
= 5.04 kN/m
Since 5.04 > 1.94 ∴ OK

b) Interior reaction =
1.1(2.2)2.2 = 5.32 kN/m
(from section property table)
$P_i = P_{i1} + P_{i2} [N/t]^{1/2}$
$= 2.90 + 0.494[60/0.610]^{1/2}$
= 7.80 kN/m
Since 7.80 > 5.32 ∴ OK

Deflection "D"

From table L/180 = 3.87 kPa
For L/240, multiply 3.87 by 180/240
= 2.90 kPa
Since 2.90 > 2.2 ∴ OK