

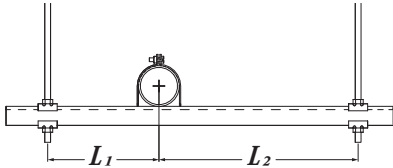
Channel - Beam Loading

PROCEDURE FOR CALCULATING THE BEAM LOAD CAPACITY (G_{ALLOW})

METHOD 1

Step 1: Determine the Maximum Allowable Uniform Load (V_{allow} or D_{allow}) for the selected channel at the span between supports from pages 4b.1 – 4b.6. V_{allow} capacities for Span/180, Span/240 and Span/360 deflection criteria are provided in the tables on pages 4b.1 - 4b.6.

Step 2: Multiply the value from Step 1 by the Unbraced Length Factor (Φ_{LV}). Φ_{LV} can be found on pages 4b.1 – 4b.6.



$$L_2 > L_1$$

Use Unbraced Length Factor (Φ_{LV}) for maximum length (L_2 in this scenario)

Step 3: Subtract the channel weight ($W_{channel}$) from the Step 2 value. $W_{channel}$ is found on pages 4b.1 – 4b.6, note 3.

Step 4: Multiply the value from Step 3 by the Load Factor from the table below that matches the loading condition.

Tip: Trapeze supports will typically be condition 1, 2 or 3.

	Load & Support Condition	Load Factor		Load & Support Condition	Load Factor
1		1.00	4		1.30
2		0.50	5		1.00
3		1.00	6		0.62

For Strength Limitation: Beam load capacity (G_{allow}) per Equation 4b.0-1 below

$$\text{Equation (4b.0-1): } G_{allow} = ((V_{allow} * \Phi_{LV}) - W_{channel}) * \text{Load Factor}$$

For Deflection Limitation: Beam load capacity (G_{allow}) is the lesser of Equations 4b.0-1 and 4b.0-2

$$\text{Equation (4b.0-2): } G_{allow} = (D_{allow} - W_{channel}) * \text{Load Factor}$$

METHOD 2

G_{allow} may be calculated using the Allowable Moment M_{allow} and basic beam load calculations. M_{allow} can be found on pages 4b.1 – 4b.6, note 4.

Notes:

- 1) V_{allow} , D_{allow} , M_{allow} and $W_{channel}$ account for “T”, “WT” and “HS” piercings. No additional pierced hole reductions are necessary.
- 2) The above procedure is for bending along the 1-1 axis, when the channel slot is facing up or down. For bending along the 2-2 axis, section properties are provided on page 4c.1.

Atkore
Unistrut

16100 S. Lathrop Ave
Harvey, IL 60426
Toll-Free: (800) 882-5543

www.unistrutseismic.com

Rami Elhassan

Structural Engineer: Rami Elhassan
California SE No. 3930

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