SAMSON METALS Ltd.

GENERAL NOTES for ROOF CLADDING

IMPERIAL — L. S. D.

DESIGN CRITERIA:

The properties listed in the following tables are based on one foot panel width.
The properties of the steel profiles have been computed in accordance with CSA - S136-04 for limit states design.

Cs COEFFICIENT OF STRESS:

To determine the maximum uniform factored load, governed by design stress, and not covered by the load tables, proceed as follows;

a) Simple Span:

$$\frac{Cs\ (\text{mid-span})}{(\text{span in feet})^2} \quad \text{psf}$$

b) Double Span: use the lessor of the following;

i) $\frac{Cs\ (\text{support})}{(\text{span in feet})^2}$ psf

ii) $\frac{Cs\ (\text{mid-span}) \times 1.77}{(\text{span in feet})^2}$ psf

c) Triple Span: use the lessor of the following;

i) $\frac{Cs\ (\text{support}) \times 1.25}{(\text{span in feet})^2}$ psf

ii) $\frac{Cs\ (\text{mid-span}) \times 1.56}{(\text{span in feet})^2}$ psf

To determine the maximum specified uniform loads, as listed in the load tables, divide the results of the equations by 1.5.

The loads determined by these formulas are for positive exterior loading on the exterior sheet in the normal position. For negative exterior loading on the exterior sheet in the normal position, or positive exterior loading on the inverted position; interchange the mid-span properties with the support properties.

COEFFICIENT OF DEFLECTION:

To determine the maximum load governed by deflection limitations, and not covered by the load tables, proceed as follows:

a) Simple Span:

$$\frac{Cd}{(\text{span in feet})^3} \quad \text{psf}$$

b) Double Span:

$$\frac{Cd \times 2.4}{(\text{span in feet})^3} \quad \text{psf}$$

c) Triple Span:

$$\frac{Cd \times 1.89}{(\text{span in feet})^3} \quad \text{psf}$$

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The normal allowable deflections are as follows:

Roof Cladding: L / 180

WEB CRIPPLING:

Reactions at exterior and/or interior supports shall be equal or less than the factored bearing resistance shown on each load table. To determine the maximum uniform factored load, governed by web crippling, and not covered by the load tables, proceed as follows;

Exterior bearing: $2 \times \frac{\text{EXT Bearing Resistance}}{\text{(span in feet)}}$ Interior bearing: $\frac{\text{INT Bearing Resistance}}{\text{(span in feet)}}$

To determine the maximum specified uniform loads, as listed in the load tables, divide the results of the equations by 1.5.

SHEAR RESISTANCE:

Panel shear loads at exterior and/or interior supports shall be equal or less than the factored shear resistance shown on each load table.

To determine the maximum specified shear value as listed in the load tables, divide the listed factored shear resistance by 1.5.

INTERACTION EQUATIONS:

The load/span tables provided give the governing value of bending or web crippling. The final selection should be checked for the following interaction equations:

a) Combined bending & shear: $\frac{Mf \times 2}{Øb \times Mr} + \frac{Vf \times 2}{Øv \times Vr} \leq 1.0$

b) Combined bending & web crippling: $0.91 \times \frac{Pf}{Pw} + \frac{Mf}{Mr} \leq 1.0$

SPAN TABLE UNITS AND USE:

a) The allowable spans shown in the load tables are in feet.
b) The "A" column provides the allowable specified load capacity based on strength.
c) The "B" column provides the allowable specified load capacity based on serviceability based on deflection requirements shown on each load table sheet.
d) The table lists the lower value of bending capacity or web bearing resistance. The load is expressed in *Italics* when bearing capacity governs.
e) The loads shown in the tables are specified loads and have not been factored. Strength capacity in column "A" should be checked against the following formula:

Specified Load in Table ≥ [Specified Live Load] + [0.833 x Specified Dead Load]

f) The load tables are based on the material grades and strengths shown on each load table.
g) The minimum recommended roof slope for roof cladding systems with "through screw application" is1 in 12.
h) In addition to normal gravity loads, significant negative or uplift wind pressures and sliding shear forces can be applied to the roof system. The roof field and sidelaps must be adequately fastened to prevent failure due to uplift and shear forces. Resistance to these forces will depend on the following factors.
   1) Regional wind forces.
   2) Roof shape and slope angles.
   3) Cladding profile, gauge, and subgirt system (if applicable)
   4) The nature (wood, steel, plywood, concrete) and spacing of the underlying substructure. It is important that the design of the substructure has taken in consideration the gravity, uplift and shear forces that will be applied from the exterior roof system and that adequate fastening of the substructure to the primary structural framing has been reviewed.

For assistance contact your **Samson Metals** representative.