RTL-24
STANDING SEAM ROOF

TECHNICAL NOTES

ROOF DEAD LOAD

The structural support for the roof system should include the dead weight of the panel system in the design calculations.

LATERAL STABILITY

Since the roof panels are attached to the supporting structure with sliding clips, the roof panels do not provide lateral bracing to the secondary structural members. Bridging or brace angles may be required to stabilize the roof secondary structurals. The design of the supporting structural members should be reviewed by a professional engineer.

IN-PLANE DEFLECTION

Since the roof system is rigidly attached only to one structural member per roof section, usually the eave member, that member must have sufficient strength and stiffness or be braced to resist any in-plane (outward) deflection caused by the roof load. As the roof pitch increases, other factors being equal, the in-plane load increases.

WIND UPLIFT

Under wind uplift loads, the RTL-24 roof acts as a system. The capacity values listed in the gravity load tables cannot be used for wind uplift loads. Based on the results of the ASTM uplift testing, special uplift load tables have been developed.

SEAMING REQUIREMENTS

The RTL-24 roof system has been designed with three available field seams; ***RollLoc***, ***TripleLoc*** and ***QuadLoc***. Each seam has been lab tested and can effectively provide greater strength levels to meet any roof wind load condition. Since all roofs have varying wind uplift zones, the designer can specify a different panel seam for each roof zone, thereby reducing installation time with the mechanical power seamer. For example, you may require a ***QuadLoc*** seam in the corner zones, ***TripleLoc*** in the edge zones and ***RollLoc*** for the interior zones. Also note, a wider floating clip is available for the corner zones if required. Be sure to use both gravity and uplift tables to check your specific roofing requirements and support spacing.

DESIGN EXAMPLE (METRIC)

Determine the gravity load capacity and wind uplift seaming requirements on the RTL-24 roof system, given the following information:

Given:

- Building location = London, Ontario
  Roof snow load = 1.36 kPa (normal occupancy)
  Roof wind load = 0.42 kPa (q1:50); Open exposure
- RTL-24 (0.5613 mm base thickness) roof system with floating clips
- Secondary structural spacing = 1219 mm
- Building size = 30m x 61m x 7.3m (eave ht.)
  ridge centered; roof slope = 42mm in 1m
- Internal pressure category 2

Solution:

From the load table under 1219 mm support spacing, 3-span panel condition, the maximum allowable load is 6.0 kPa.
Gravity check: 6.0 kPa > 1.36 kPa OK
End bearing: 1.36 kPa x1.22m/2 = 0.83 kPa > 4.7 kPa OK

WIND UPLIFT CHECK

Before you can determine the seaming requirements of the RTL-24 roof, you must first calculate the wind uplift pressures for each roof zone. To assist with this calculation, The National Research Council of Canada has developed an on-line program called Wind-RCI. You can access this program from the following link:
http://irc.nrc-cnrc.gc.ca/bes/prsi/calc_new/rciintro_e.html

From the Wind-RCI program for London, On, the following roof zone uplift pressures were calculated:
Interior zone = -3.2 kPa
Edge zone = -1.6 kPa
Corner zone = -1.2 kPa, end zone width = 3m

From the RTL-24 wind uplift table, 1.2 m support spacing, the following panel sidelap field seams are required:
Interior = ***RollLoc*** (1.3 kPa > -1.2 kPa load OK)
Edge zone = ***TripleLoc*** (2.1 kPa > -1.6 kPa load OK)
Corner zone = ***QuadLoc*** (4.4 kPa* > -3.2 kPa load OK)
* Note 305mm wide roof clips are required in corners