Minnkota Agri-Builders and Equipment

Suppliers Association Meeting

UNDER CONSTRUCTION
“Building Codes”

Do I Stand

OR

Do I Fall
What is ASCE 7-’10 Statute?

A = American
S = Society
C = Civil
E = Engineers

7 = Chapter 7 from the ’10 International Building Code (IBC)
Why should we consider ASCE 7-’10?

Industry standard to determine snow and wind loads on:

- Residential (IRC),
- Commercial (IBC), and
- Ag Buildings???
What is a Snow Load?

Snow loads represent the primary gravity load that buildings must support throughout the majority of the U.S.
How are snow and wind loads determined?

By using an engineering firm on all aspects of the buildings’ integrity. The engineer will then determine the Sloped Roof Snow Load ($P_s$) in Pounds Per Square Foot (psf).

Sloped Roof Snow Load is determined by the following factors:
• Importance Factor/Occupancy of the Building (Category I., II., III., IV.)
• Wind Exposure Factor (B & C) ($C_e$)
• Ground Snow Load Factor ($P_g$)
• Thermal Factor ($C_t$)
• Snow Load Factor ($I_s$)
• Roof Slope Factor ($C_s$)
The factors reviewed determines the buildings sloped roof snow load ($P_s$). As an example:

$$50 \, P_g \times 1.1 \, C_t \times 1 \, C_e \times 0.87 \, C_s \times 0.8 \, I_s = 38 \, P_s$$

- $50 = \text{ground snow load}$
- $1.1 = \text{thermal factor}$
- $1 = \text{wind exposure}$
- $0.87 = \text{roof slope factor}$
- $0.8 = \text{snow load factor}$
- $38 = \text{sloped roof snow load}$
**ROOF TOP CHORD LIVE LOAD CALCULATION:**

<table>
<thead>
<tr>
<th>I</th>
<th>= Occupancy Category (I, II, III, or IV)</th>
<th>Refer to: Table 1-1 ASCE 7-05</th>
</tr>
</thead>
<tbody>
<tr>
<td>B</td>
<td>= Wind Exposure (B, C, D)</td>
<td>Refer to: IBC Section 1609.4</td>
</tr>
<tr>
<td></td>
<td>= Pg (Ground Snow Load (psf))</td>
<td>Note: Roof pitch as follows:</td>
</tr>
<tr>
<td></td>
<td>= Ct (Thermal Factor)</td>
<td>Buildings 10′ to 76′ = 4/12.</td>
</tr>
<tr>
<td></td>
<td>= Ce (Snow Exposure Factor)</td>
<td>Buildings 78′ to 82′ = 3.7/12</td>
</tr>
<tr>
<td></td>
<td>= Cs (Roof Slope Factor)</td>
<td>102′ wide buildings = 3.12/12</td>
</tr>
<tr>
<td></td>
<td>= Is (Snow Load Factor)</td>
<td>*Roof assumed to have steel roofing</td>
</tr>
<tr>
<td></td>
<td>= Ps (Sloped-Roof Snow Load, (psf))</td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
<td>---</td>
</tr>
<tr>
<td></td>
<td>= Additional Roof Snow Load Requested by Dealer (psf)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= Total Roof Snow Load (psf)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= Dead load top chord</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= Dead load bottom chord</td>
<td></td>
</tr>
<tr>
<td></td>
<td>= Total Roof Load, *** Roof truss designed for unbalanced snow load ***</td>
<td></td>
</tr>
</tbody>
</table>

Base building designed for the calculated snow load on the top chord, 5 lbs dead load on the top chord, and 5 lbs dead load on the bottom chord. Wind load design is for 90 mph wind (Exposure B) and Snow Load Importance factor, Iw=0.87 (Cat I) Snow Load Importance factor, Is=0.80 (Cat I)

See EPS building specification book for Exposure B definitions.
See EPS building specification book for Category I definitions.
May 5, 2014

Dear Bert

Per your request, the purpose of this letter is to confirm that the 60’ x 84’ x 18’ building constructed for Bruce Maurel, 58523 139th St, Mapleton MN 55365, by RAM Buildings, Inc. of Winsted MN, meets the design requirements of ASCC 7-05.

In addition, I have attached to this letter a copy of the truss drawing. #2 under the “Notes” section of the drawing shows that the truss is designed for ASCC 7-05.

If you have any questions, please don’t hesitate to contact me at 320-485-2844. A copy of this letter is also being forwarded to Mr. Maurel.

Respectfully,

Craig Jackson
General Manager
RAM Buildings, Inc.
### PITCHED TRUSS

**WARNING:** Failure to follow these recommendations could result in severe personal injury or damage to trusses or buildings.

<table>
<thead>
<tr>
<th>SPAN</th>
<th>MINIMUM PITCH DIFFERENCE</th>
<th>TOP CHORD LATERAL BRACE SPACING (DR)</th>
<th>TOP CHORD DIAGONAL BRACE SPACING (DR)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Up to 28</td>
<td>2.5</td>
<td>8</td>
<td>8</td>
</tr>
<tr>
<td>Over 28 - 42</td>
<td>3.0</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Over 42 - 60</td>
<td>3.0</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Over 60</td>
<td>See a registered professional engineer</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DF - Douglas Fir-Larch
SPF - Southern Pine
SFF - Spruce-Fir-Fir

Continuous Top Chord Lateral Brace Required
10' or Greater
Attachment Required

All lateral braces tapped at least 2 trusses.

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### SCISSORS TRUSS

Continuous Top Chord Lateral Brace Required
10' or Greater
Attachment Required

All lateral braces tapped at least 2 trusses.

Top chords that are laterally braced can become disconnected and cause collapse. Diagonal bracing stiffens the span and helps to resist the loads of the top chord.

Top chords that are laterally braced can become disconnected and cause collapse. Diagonal bracing stiffens the span and helps to resist the loads of the top chord.
OPTION "A"

1 LAYER 5/8" SHEETROCK W/ CLASS "A" FRP LAMINATED FINISH, OR
1 LAYER 5/8" SHEETROCK APPLIED TO STUDS, W/ CLASS "A" FRP/3/8" PLYWOOD OVER APPLIED

60 MIN (OR GREATER) FIRE DOOR

COVER TRANSITION W/ METAL FLASHING

INTERIOR FINISH OF REMAINDER OF WALKWAY TO HAVE CLASS "A" FRP/3/8" PLYWOOD FINISH, WALLS AND CEILING
OPTION "A" SECTION (WALKWAY TO FIT UNDER MAIN ROOF)

- 2 LAYERS 1/8" SHEETROCK IN ROOF SYSTEM EXTEND TO ROOF STEEL
- 1 LAYER 1/8" SHEETROCK W/ CLASS "A" FRP LAMINATED FINISH, OR
- 1 LAYER 1/8" SHEETROCK APPLIED TO STUDS, W/ CLASS "A" FRP/9/16" PLYWOOD OVER APPLIED

10"

INTERIOR FINISH OF REMAINDER OF WALKWAY TO HAVE CLASS "A" FRP/9/16" PLYWOOD FINISH, WALLS AND CEILING
OPTION "A2" SECTION (WALKWAY TO VALLEY INTO MAIN BUILDING)

2 LAYERS 5/8" SHEETROCK IN ROOF SYSTEM EXTEND TO ROOF STEEL

1 LAYER 5/8" SHEETROCK W/ CLASS "A" FRP LAMINATED FINISH, OR
1 LAYER 1/2" SHEETROCK APPLIED TO STUCCO, W/ CLASS "A" FRP/1/4" PLYWOOD OVER APPLIED SHEETROCK.

WALL SHEETROCK TO CONTINUE TO ROOF STEEL

INTERIOR FINISH OF REMAINDER OF WALKWAY TO HAVE CLASS "A" FRP/1/4" PLYWOOD FINISH, WALLS AND CEILING.
There are enough risks in farming without gambling on your next building.
INTERMISSION

[Image of popcorn, candy, and a hot dog]