OVERALL ENVELOPE METHOD (Part 5 of 7) ENV-3-C

ROOF ABSORPTANCE CALCULATION: Use this table to determine the value of the absorptance for the proposed design, \( \alpha_{\text{prop}} \).

See Section 3.7.3 Roof Absorptance Calculation

✓ CHECK APPLICABLE BOXES

1. CRRC-1 Certified?  
   YES Go to 2. NO Go to 3.

2. Is the thermal emittance \( \geq 0.75? \)  
   YES Go to 4. NO Go to 6.

3. Is the roof a nonresidential low sloped roof? (2:12 of less)  
   YES Go to 9. NO Go to 10.

4. Enter the initial reflectance \( \rho_{\text{Ri,prop}} \) value \( \rho_{\text{Ri,prop}} = \)  
   Y N Go to 5. Insert value in calculation

5. Calculate \( \alpha_{\text{prop}} = 0.94 - 0.7 \rho_{\text{Ri,prop}} \) \( \alpha_{\text{prop}} = \)  
   Is the roof a nonresidential low sloped roof? (2:12 of less) \( \square \) \( \square \)

Case 2 - CRRC-1 Tested

6. Enter initial reflectance & emittance values from CRRC-1 \( \rho_{\text{Ri}} = \), \( \varepsilon_{\text{Ri}} = \)  
   Go to 7. Insert values in calculation

7. Calculate \( \rho_{\text{Ri,prop}} = -0.448 + 1.121 \rho_{\text{Ri}} + 0.524 \varepsilon_{\text{Ri}} \) \( \rho_{\text{Ri,prop}} = \)  
   Y N

8. Calculate \( \alpha_{\text{prop}} = 0.94 - 0.7 \rho_{\text{Ri,prop}} \) \( \alpha_{\text{prop}} = \)  
   Is the roof a nonresidential low sloped roof? (2:12 of less) \( \square \) \( \square \)

Case 3 - Not CRRC-1 Tested

9. Use the default values for absorptance, \( \alpha_{\text{prop}} \) \( \alpha_{\text{prop}} = 0.87 \) Enter default value in Column F below.

10. Use the default values for absorptance, \( \alpha_{\text{prop}} \) \( \alpha_{\text{prop}} = 0.73 \) Enter default value in Column F below.

Standard absorptance values \( \alpha_{\text{std}} \) for Column J are either

For nonresidential low-sloped roofs \( \alpha_{\text{std}} = 0.45 \) Enter standard value in Column J below.

For nonresidential high-sloped roofs \( \alpha_{\text{std}} = 0.73 \) Enter standard value in Column J below.

OVERALL HEAT GAIN FROM RADIATION OPAQUE SURFACES

<table>
<thead>
<tr>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
<th>H</th>
<th>I</th>
<th>J</th>
<th>K</th>
</tr>
</thead>
<tbody>
<tr>
<td>ASSEMBLY NAME</td>
<td>AREA</td>
<td>SOLAR FACTOR</td>
<td>WEIGHT FACTOR</td>
<td>U-FACTOR</td>
<td>Absorp</td>
<td>HEAT_GAIN</td>
<td>AREA</td>
<td>U-FACTOR</td>
<td>Absorp</td>
<td>HEAT_GAIN</td>
</tr>
<tr>
<td>(e.g. Roof-1)</td>
<td>(Adjusted)</td>
<td>(BxCxDxExF)</td>
<td>(CxDxH-1xJ)</td>
<td></td>
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</tr>
</tbody>
</table>

Subtotals are entered under "Subtotal" in COLUMNS I and M of ENV-3-C, Part 6 of 7.