Section 5.2. Loads and Procedures

5.2.1. Environmental Loads and Design Procedures

5.2.1.1. Exterior Environmental Loads

1) Above ground climatic loads shall be determined according to Subsection 1.1.3.

2) Except as provided in Sentence (3), below ground exterior environmental loads not described in Subsection 1.1.3. shall be determined from existing geological and hydrological data or from site tests.

3) Where local design and construction practice has shown *soil* temperature analysis to be unnecessary, *soil* temperatures need not be determined. (See Note A-5.2.1.1.(3).)

5.2.1.2. Interior Environmental Loads

1) Interior environmental loads shall be determined in accordance with good practice as described in Sentence 6.2.1.1.(1) based on the intended use of the space. (See Note A-5.2.1.2.(1).)

5.2.1.3. Environmental Load and Transfer Calculations

1) Calculations related to the transfer of heat, air and moisture and the transmission of sound shall conform to good practice such as that described in the ASHRAE Handbooks.

2) For the purposes of any analysis conducted to indicate conformance to the thermal resistance levels required in Article 5.3.1.2., *soil* temperatures shall be determined based on annual average *soil* temperature, seasonal amplitude of variation and attenuation of variation with depth.

3) Wind load calculations shall conform to Subsection 4.1.7.

5.2.2. Structural Loads and Design Procedures

5.2.2.1. Determination of Structural Loads and Effects

1) Where materials, components or assemblies that separate dissimilar environments or are exposed to the exterior, or their connections, are required to be designed to withstand structural loads, these loads shall be determined in accordance with Part 4. (See also Subsection 2.2.5. of Division C.)

2) Except as provided in Article 4.1.8.18., the structural loads referred to in Sentence (1) and their related effects shall include

a) *dead loads* transferred from structural elements,

b) wind, snow, rain, hydrostatic and earth pressures,

c) earthquake effects for *post-disaster buildings*, depending on their intended function (See Note A-5.2.2.1.(2)(c).),

d) *live loads* due to use and *occupancy*, and

e) loads due to thermal or moisture-related expansion and contraction, deflection, deformation, creep, shrinkage, settlement, and differential movement.

3) Where materials, components or assemblies that separate dissimilar environments or are exposed to the exterior, or their connections, can be expected to be subject to loads or other effects not described in this Subsection or in Part 4, such loads or effects shall be taken into account in the design based on the most current and applicable information available.

5.2.2.2. Determination of Wind Load

(See Note A-5.2.2.2.)

1) This Article applies to the determination of wind load to be used in the design of materials, components and assemblies, including their connections, that separate dissimilar environments or are exposed to the exterior, where these are

a) subject to wind load, and

b) required to be designed to resist wind load.

2) Except as provided in Sentence (3), the wind load referred to in Sentence (1) shall be 100% of the specified wind load determined in accordance with Article 4.1.7.1.

3) Where it can be shown by test or analysis that a material, component, assembly or connection referred to in Sentence (1) will be subject to less than 100% of the specified wind load, the wind load referred to in Sentence (1) shall be not less than the load determined by test or analysis.

4) Except as provided in Sentence (5) and (6), the wind uplift resistance of membrane roofing assemblies shall be determined in accordance with the requirements of CAN/CSA-A123.21, "Standard test method for the dynamic wind uplift resistance of membrane-roofing systems." (See Note A-5.2.2.2.(4).)

5) Membrane roofing assemblies with proven past performance for the anticipated wind loads need not comply with Sentence (4). Rev 14078

(See Note A-5.1.4.1.(5).)

6) The wind resistance of *vegetated roof assemblies* shall be determined in accordance with the requirements of CAN/CSA-A123.24, "Standard test method for wind resistance of vegetated roof assembly." (See Note A-5.2.2.2.(6).)

5.2.2.3. Design Procedures

1) Structural design shall be carried out in accordance with Subsection 4.1.3. and other applicable requirements in Part 4.