

**INTERPRETATION IC 90.1-1989-4 OF
ASHRAE/IES STANDARD 90.1-1989
ENERGY EFFICIENT DESIGN OF NEW BUILDINGS
EXCEPT LOW-RISE RESIDENTIAL BUILDINGS**

August 21, 1990

Request from: Mr. Craig Cattelino, Burns & McDonnell, 8055 East Tufts Avenue, Denver, CO 80237

References: This request refers to ASHRAE/IES 90.1-1989, Subsections 8.4.4, 8.5, 8.6 and Section 13.

Background: Paragraph 8.4.4 Shading Coefficients references subsections 8.5 Prescriptive Criteria and 8.6 System Performance Criteria and does not reference Section 13, specifically paragraphs 13.7.3.1 and 13.7.3.4.

Question 1: Are internal shading devices accounted for in the Shading Coefficient?

Answer 1: No

Question 2: If the answer to Question No. 1 is yes, is application of additional internal shades for a reference building under Section 13 redundant and unnecessary?

Answer 2: Not applicable

Comments: Paragraphs 13.7.3.1 and 13.7.3.4 are intended to direct the user to apply the window management strategy of drapes in addition to selecting glass that meets the 0.70 shading coefficient (SC) on its own. The user should model the prototype or reference building using the percentage of glazing obtained from Table 8A-28 (for Denver in this case). The selection occurs in the second row (SC between 0.709 and 0.60) for an internal load density (ILD) between 1.5 and 3.00 (assumed to be appropriate for an airport). This allows a glazing area of 22% with a U of fenestration of 0.68. The window strategy (drapes) of 13.7.3.4 is then applied.

In Table 8A there is a range of SC indicated (0.709 - 0.60). This range size (0.109) is comparable to the differences shown between draped and undraped double glazed assemblies as shown in Fig. 9 and 10 of the ASHRAE Handbook, 1985 Fundamentals Volume (page 27.13). Since this range is allowed in Table 8A, the window management strategy prescribed in 13.7.3.4 is consistent with Table 8A and properly reflects the fact that a 0.70 SC becomes a 0.60 SC when draped.

The committee intends to propose an addendum clarifying the wording of 13.7.3.1 and 13.7.3.4 to resolve any ambiguity for climate locations more severe than Denver's.