

LIGHTING RESEARCH LABORATORY

Design • Testing • Consulting

FIELD MEASUREMENT OF SKYLIGHT PERFORMANCE

Abstracted from LRL Report #1085-8B

TEST PROGRAM

Field measurements of the performance of 4' x 8' industrial skylights were performed comparing the Sunoptics Skylight domed white prismatic design to standard smooth acrylic domed skylights. Comparisons were made between a commercially available "medium-white" domed skylight vs. the Sunoptics "medium-white" prismatic skylight; and a "high-white" domed skylight vs. the Sunoptics "high-white" prismatic skylight.

SUMMARY OF RESULTS

1. The Sunoptics prismatic design produced an average illumination level ranging up to 20% higher than the standard smooth acrylic domes in the early morning and late afternoon hours; in general, for sun angles less than 17 degrees. This effect occurs for both medium and high white units.
2. Transmittance of the standard and Sunoptics "medium-white" skylights is essentially the same. The "high-white" standard skylight has a higher transmittance but lower diffusion than the Sunoptics unit. As a result, the additional light appears as a more intense, glare producing "sunspot" rather than being distributed more smoothly as in the Sunoptics unit. The lower transmittance of the Sunoptics unit also results in less heat entering the building.
3. During the middle hours, the "sunspot" image for the standard domed skylight is approximately double that of the Sunoptics unit. The increased diffusion of the Sunoptics unit is therefore reducing the sunspot by half.
4. The Sunoptics "high-white" prismatic design produced a higher uniformity and lower glare than the standard "high-white" unit. The uniformity and low glare of this unit approaches that produced by the "medium-white" skylights without the loss in overall lighting level that these units produce.

FOR LRL:



Bill F. Jones, P.E.
Consulting Illumination Engr

P.O. BOX 6193 • Orange, California 92667 • (714) 771-1312

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