

SUMMARY REPORT 75-4(S)

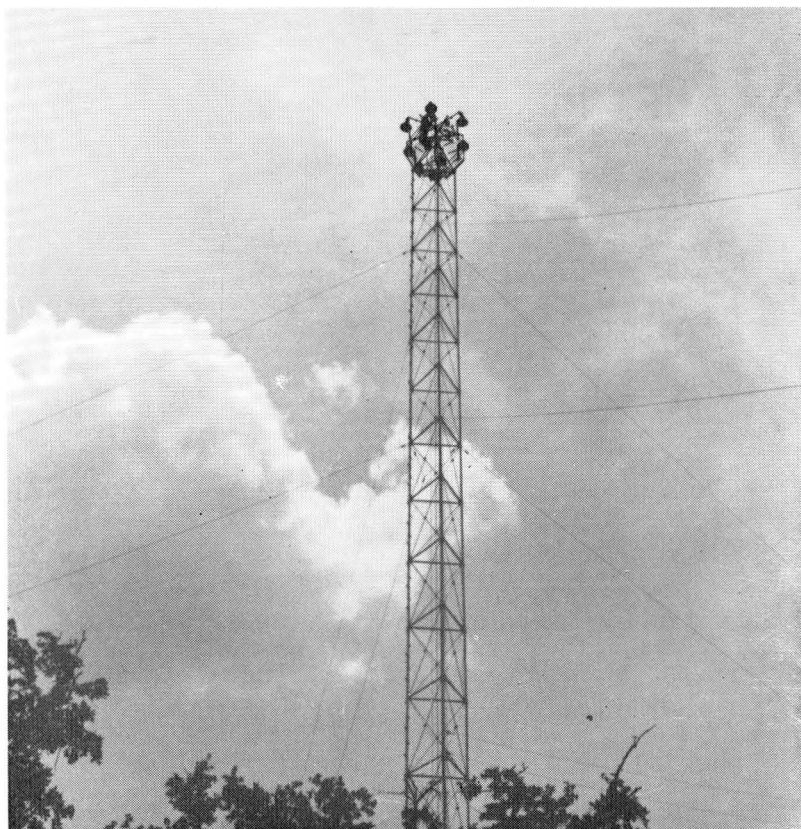
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PHOTOMETRIC STUDIES OF THE AUSTIN "MOONLIGHT" TOWER LIGHTING SYSTEMS

SUMMARY REPORT
of
Research Report Number 75-4
Study 2-8-64-75



Cooperative Research Program of the
Texas Transportation Institute and the Texas Highway Department
In Cooperation with the
U. S. Department of Commerce, Bureau of Public Roads

October, 1966

TEXAS TRANSPORTATION INSTITUTE

Texas A&M University
College Station, Texas

Photometric Studies of the Austin "Moonlight" Tower Lighting Systems

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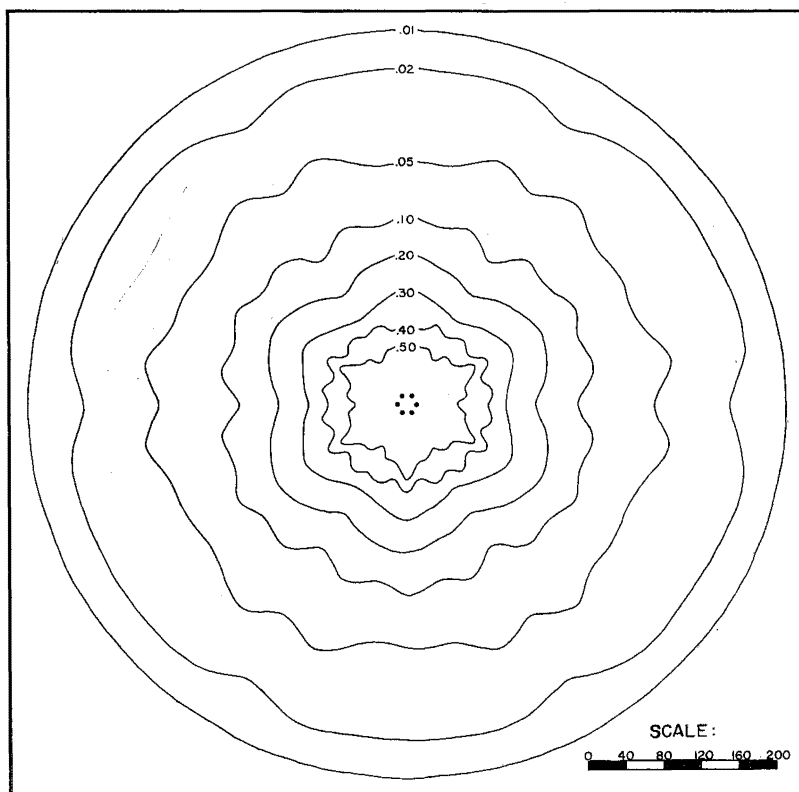
Research Assistant

Through the cooperation of the City of Austin, Texas, and the Texas Highway Department, the Texas Transportation Institute conducted a study of photometrics at the location of one of the 150-foot "Moonlight" towers in Austin. Photometric data were obtained for clear and phosphor coated mercury vapor lamps of 400- and 1000-watt type to determine the applicability of this simplified system to interchange "area" lighting. This study constituted one step in the high-level lighting phase of Research Project 2-8-64-75, "Supplementary Studies in Highway Illumination."

A street lighting meter, designed and calibrated to measure horizontal footcandles, was used to make measurements for each system which consisted of six lamps mounted in 18-inch radial type porcelain reflectors on a 10-foot circle with 60° spacings.

A study of the photometrics for the 400-watt systems reveals that a 300-foot diameter area can be uniformly illuminated with a 0.05 horizontal footcandle minimum. An area of approximately 400-foot diameter can be uniformly illuminated using 1000-watt lamps. Figures 1 and 2, isofootcandle curves for two of the systems studied, indicate the relative area and uniformity of illumination.

This study showed that the horizontal footcandle measurements were not indicative of visibility provided by the system; that is, vertical surfaces were clearly visible in areas where the vertical component of light (horizontal footcandles) was not of a measurable quantity. The panoramic view, enhanced by the presence of vertical surfaces, was excellent. From this study it was apparent that current standards for conventional roadway

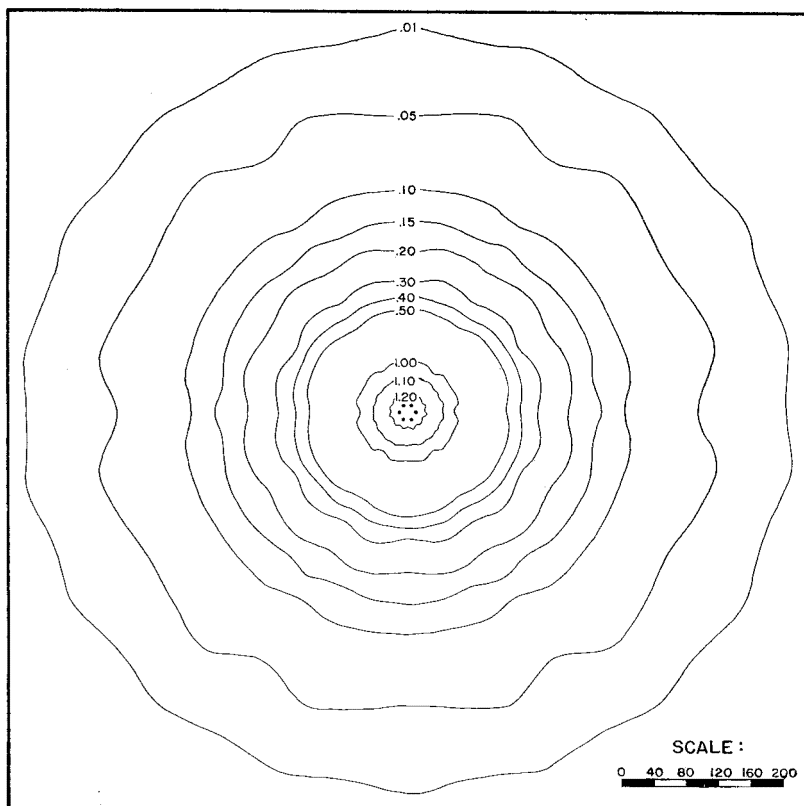


ISO-FOOTCANDLE CURVE 400 WATT PHOSPHOR COATED
MOUNTING HEIGHT :150'

Figure 1.

lighting are not applicable to high-level lighting. It is possible that vertical footcandles, a combination of horizontal and vertical footcandles, or effective contrast may be more realistic measures of the performance of high-level lighting systems.

Continued efforts should be directed to the establishment of new area lighting criteria and to the science of developing more effective high-level lighting systems.



ISO-FOOTCANDLE CURVE

1000 WATT PHOSPHOR COATED

MOUNTING HEIGHT : 150'

Figure 2.