Lighting for Parking Facilities

Publication of this Committee Report has been approved by the IESNA. Suggestions for revisions should be directed to the IESNA.

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The Subcommittee on Off-Roadway Facilities of the IESNA Roadway Lighting Committee
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Lighting for Parking Facilities

Foreword

The following is a summary history on the evolution of this document (RP-20). It describes the progress leading to the current RP-20.

A Recommended Practice of Parking Area Lighting was prepared in 1960 by an IESNA Committee. This document specified as a basic value 11 lux (=1 fc) average maintained horizontal illuminance, with a 4:1 or better average/minimum uniformity ratio [minimum spot = 2.5 lux (=0.25 fc)]. A doubling of these values was recommended at parking area entrances and exits.

In 1974, the IESNA Roadway Lighting Committee produced recommendations for lighting safety rest areas along limited access highways. A value of 11 lux (1 fc) was specified for major activity sections, with a 3:1 or better average to minimum uniformity. For lower activity zones (picnic areas, shelters), a 5 lux (0.5 fc) illuminance and a 6:1 uniformity were recommended. These values have been carried forward to the IESNA Lighting Handbook, Eighth Edition and represent minimum values of 0.8 to 3.3 lux (0.08 to 0.33 fc).

In 1984, a new IESNA Recommended Practice, Lighting for Parking Facilities, (RP-20-84) was published. This document contained separate recommendations for lots and garages. Values were based on average illuminance for vehicle-use only areas of lots plus all areas of garages. For general parking and pedestrian areas of lots, the recommendations were based on minimum illuminance values of 2 to 10 lux (0.2 to 1 fc). Maximum average-to-minimum uniformity ratios of 4:1 were specified in most applications, producing average illuminance values of 8 to 40 lux (0.8 to 4 fc) when designed to this ratio. If designed as a highly uniform layout, such as with a 2:1 uniformity, the average values would range from 4 to 20 lux (0.4 to 2 fc). Differences in assumed levels of activity for various land uses formed the basis of setting the range in recommended minimum illuminance values. This Practice also added vertical illuminance recommendations, specifying these to equal the horizontal values, measured at 1.5 meters (5.0 ft.) above the pavement.

RP-20-84 was not based upon surveys or field measurements of existing parking facilities — state-of-the-art prevailing practice relative to actual maintained illuminance. Subsequent to its publication, reports surfaced of field measurements finding significantly lower levels in typical uses. A sampling survey of cities in 1991 found only one-fifth to be applying the RP-20-84 document in checking construction plans for private parking facilities, which constitute the vast majority of lots and garages.

The IESNA Practice dealing with airport parking areas (RP-17-875) recommended 10 to 20 lux (1 to 2 fc), average maintained illuminance, with a 4:1 uniformity ratio [2.5 to 5 lux (0.25 to 0.5 fc) at low point].

In 1992, the Institute of Transportation Engineers (ITE) published its fourth Edition of the Traffic Engineering Handbook. Average illuminance values of 10 to 20 lux (1 to 2 fc) were identified for parking lots, with uniformities not exceeding 6:1 [minimum spot 1.7 to 3.3 lux (0.17 to 0.33 fc)]. This was followed in 1994 with the ITE Recommended Practice Guidelines for Parking Facility Location and Design with the same recommendations. Both ITE publications followed the IESNA RP-20-84 recommendations for parking garages. These are 50 lux (5 fc) average for general parking and pedestrian areas, with higher levels on ramps, in entrance areas, and on stairways.

The Recommended Building Code Provisions for Open Parking Structures, published by the National Parking Association in 1987, specified 65 lux (6.5 fc) average at 75 cm (29.5 in.) above the floor, with a maximum uniformity ratio of 3:1. An earlier publication, Parking in the City Center, commissioned by the Automobile Manufacturers Association, recommended 33 to 54 lux (3.3 to 5.4 fc) in garage parking areas.

1.0 INTRODUCTION

Roadway Lighting Committee studies for the orderly passage of motorists and pedestrians have formed the basis of vehicular and pedestrian illuminance recommendations on public roadways. Combinations of interior, roadway, and pedestrian lighting techniques are applicable to parking lots (open) and parking garages (structures). Included in these facilities are:

- Vehicular traffic circulation, parking access aisles, parking stalls, and interior-access roadways and ramps in garages.
- Pedestrian traffic, including walkways and stairs.

2.0 PURPOSE AND SCOPE

Need exists to update and reach a consensus among the varying recommendations of different organizations. The primary purpose of this Practice is to serve as a guideline for design of fixed lighting for parking facilities. This Practice deals entirely with