IESALC Seaview Galloway, New Jersey October 2010

IESNA RP-37

Recommended Practice for Outdoor Lighting for the Airport Environment, Update

IESALC Recommended Practice Subcommittee

Agenda

- Committee Members
- History & Scope
- Review of some sections
- Pictures taken and more to come!
- Table 4.1 results and new information
- Comments on RP-37
- Front cover picture
- Conclusion

- Fred Loeffler, RW Armstrong
- Alfred Seiterle, Aeroplan
- Mike Tebeau, Lambert-St Louis International Airport
- John Wujeck, RW Armstrong
- Richard Larivée, Avia Rupta Solutions
- Manufacturer #1 to be filled
- Manufacturer #2 to be filled
- ▶ Airport #2 to be filled
- Airport #3 to be filled
- Graphics and layout Éclairage Techno

Thanks to: Gilles Lauzière, Urbex

Committee Members

IES Recommended Practice for Airport Service Area Lighting

Prepared by the Recommended Practice Subcommittee of the IES Aviation Lighting Committee

▶ 1968 IESNA RP-17 "Airport

Lighting"

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1987 Publication of RP-14 and BRP Publication of RP-14 and RP-15 Break Publication of RP-14 and RP-15 Break Publication of RP-15 Break Publication

May 2003

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ground service personnel.
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March 2008 meeting

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that service area lighting wing installations, rather that effectiveness,

The Committee believes recommended approach will those involved in airport pli gineers, lighting designers, sonnel, airline operators and

*Advisory

Approved August 2, 1987 by the IUSNA Board of Directors as a Transaction of the Illuminating Expression. No part of this publication may be expressioned in any formal in any electronic selectral assum of otherwise permission of the publisher. Operation 1987 by the filtermoving Expineering Society of North America. All the Illuminating Engineering Society of North America. All Sizes (1986 Works, NY 1997): Provided in the Illuminating Engineering Society of North America. All Sizes (1987 Works, NY 1997): Provided in the Illuminating Engineering Society of North America. All Sizes (1987 Works, NY 1997): Provided in the Illuminating Engineering Society of North America. All Sizes (1987 Works, NY 1997): Provided in the Illuminating Engineering Society of North America.

Recommended Practice Subcommittee

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Foreword

"Lighting for Parking Facilities," prepared by the IPS Readway Lighting Committee, provides recommendations for all parking feerlities and access roads in general but not for those at airports. This is because there is no treatment of the special glare and illumination control requirements to eliminate or minimize interference with nightime visibility of the control tower operators and incoming pilets. This Practice, which is a revision of the 1968 "Recommended Practice for Airport Parking Area Lighting," a has been peepeed specifically for amount roads and submobile parking areas, but is compatible with "Lighting for Parking Facilities."

1. Introduction

This Practice has been prepared as a guide to the application of fixed lighting of automotive roadways and parking areas in and around airports.

2. Scope and Purpose

The lighting of automobile parking areas and roadways in and around an airport must provide two basic requirements: (1) visibility for control newer operators and pilots, i.e., the lighting system must not interfere with nighttime

*Advisory

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History

▶ The scope of this recommended practice covered:

- Outdoor lighting in the airport environment includes aircraft ramp and apron areas, roadways, vehicular parking facilities, passenger loading and unloading areas and pedestrian walkways.
- The recommendations included in this RP are to provide guidance lighting practices for the reasonably safe movement of equipment, enhancing of personal security and the deterring of vandalism.

Table of Contents

- Introduction
- Characteristics of Airport Areas
- Visual Issues
- Specific Area Design Criteria
- Essential Safety and Security Lighting
- Environmental Condition and Sustainable Development
- Maintenance Considerations
- Economics
- Lighting Equipment
- Definition
- Reference
- Annex

RP-37 Recommended Practice



Characteristics of Airport Areas - Pictures







Characteristics of Airport Areas - Pictures

DRAFT FOR IESNA RP-37 OUTDOOR LIGHTING FOR THE AIRPORT ENVIRONMENT

LIST OF PICTURES / DIAGRAM / LAYOUTS

→ Front cover

INTRODUCTION

- Purpose
- Scope
 - → Picture of Airside night time
 - → Picture of Landside night time
 - → Picture of Adjacent development to airport

CHARACTERISTICS OF AIRPORT AREAS

- → ALP Layout
- Aprons; commercial; (air carrier), general aviation, cargo, hangar
 - → Ramp Layout
 - → Picture day and night time
 - 2.1.1 Aircraft Stand
 - → Layout lines, focus on limit of stand, wing tips, roads, building
 - 2.1.2 Passenger Loading and Unloading
 - → Picture of passenger boarding bridges and stairs
 - 2.1.3 Baggage and Catering Loading and Unloading
 - → Picture of incline belt conveyor attached to the back of the aircraft
 - → Picture of catering truck at aircraft door
 - 2.1.4 Cargo Facility Loading and Unloading
 - → Picture of Container lift c/w container
 - → Cargo pallet roller section
 - 2.1.5 Other Aircraft Stand Service Operations
 - → Picture of equipment to show relative dimension: tug, mobile GPU, mobile PCA, sanitary truck, de-icing vehicle
 - 2.1.6 Mechanical Checks and Maintenance and Repair
 - → Picture of first officer inspecting underneath aircraft
 - 2.1.7 Fueling Operations
 - → Picture of fueling operation under wing with task light
 - 2.1.8 Engine Run-up / Test Area
 - → Picture of Engine run-up /test area

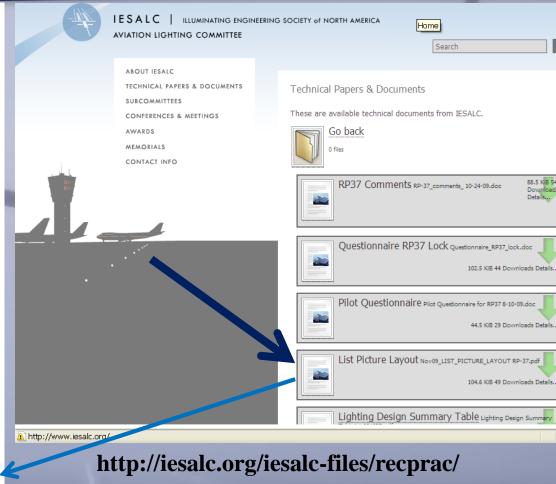
Other Airport Facilities

- 2.2.1 De-icing/anti-icing Facilities
 - → Layout of the facility
 - 2.2.1.a Remote deice pad
 - → Picture of facility
 - 2.2.1.b Deice storage Facilities and Truck Loading
 - → Picture of storage and pumping to truck areas
- 2.2.2 Fuel Facilities

RP-37 Outdoor Lighting for the Airport Environment - Draft version

2.2.3 Ground Services Equipment (GSE) Areas

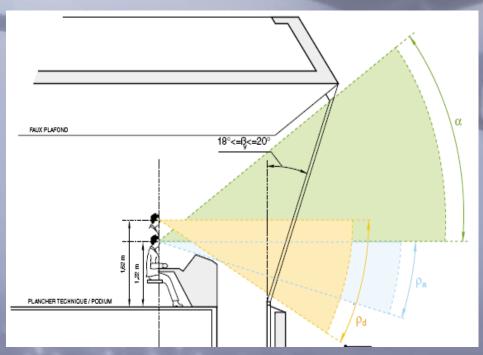
November 2009



Characteristics of Airport Areas - Pictures

Airport control tower

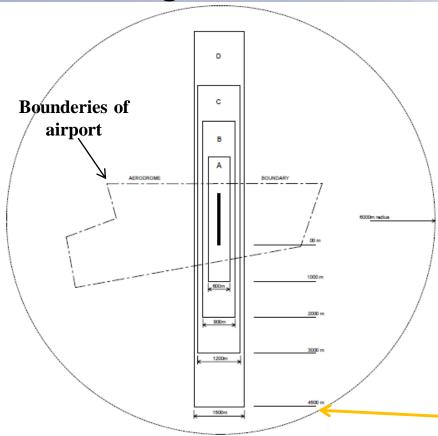
Line of sight
Obtrusive light
Max value at cab 1 Lux
Other criteria?



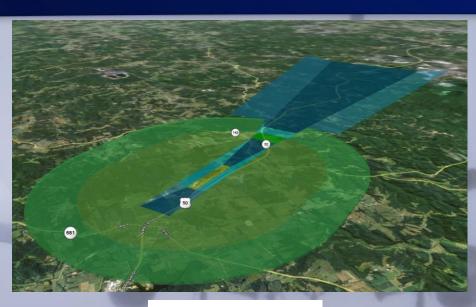
STBA vigie et bloc technique - 1998

Visual Issues

- Approaching the airport
 - Protection of approach
- Coverage and limitation



Visual Issues - Pilot

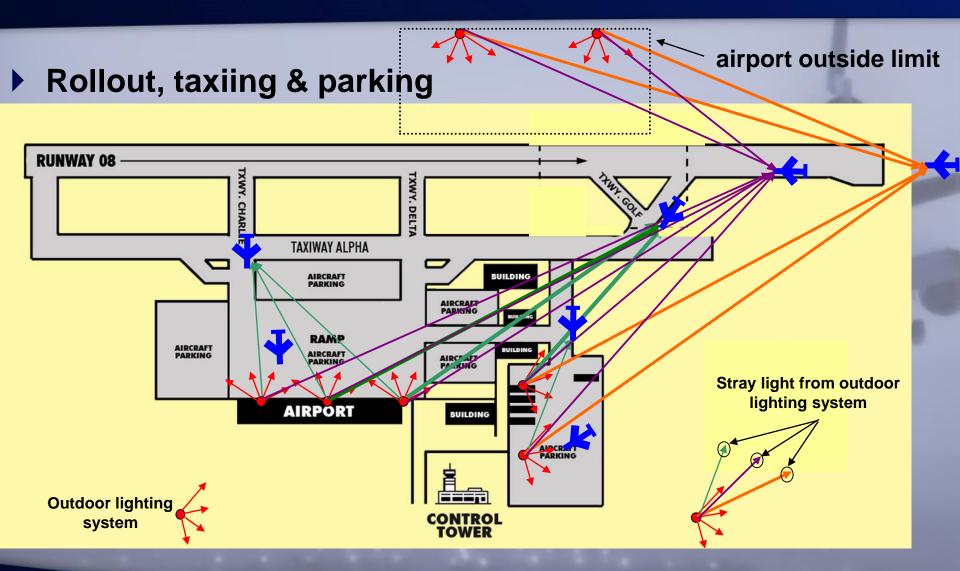


CASA (Australia)

MAXIMUM INTENSITY OF LIGHT SOURCES MEASURED AT 3° ABOVE THE HORIZONTAL

ZONE A 0 cd ZONE B 50 cd ZONE C 150 cd ZONE D 450 cd

Code of airport	Distance from threshold (m)	Width from centre line (m)
4	4500	750
3 & 2	3000	750
1	approach	approach



Visual Issues - Pilot

Design issues table

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	Illuminance, Lux (Horizontal) Average unless otherwise noted	Illuminance, Lux (vertical)	Luminance, Candela/m2	Uniformity Ratios (average to minimum)	Glare	Shadow	Appearance of space and Luminaires (Note a)	Color Appearance of objects (and color discrimination)	Identification of Faces	Identification of Objects	Use of Specific task lighting	Equipment Aesthetic Appearance	Height and Position of Poles	Security / Safety	Emergency Power		Footnotes on Special Considerations	Reference Section(s) in RP- 37 text
Aprons; Commercial, General Aviation, Cargo, Hangar	T			Ī														
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Baggage and Catering Loading and Unloading	50	20 b		4:1	V	٧	S	s	S	V	- 1	s	٧	ı	- 1			
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Secure Acess Point	1				٧	٧	S	٧	٧	V	٧	Ι	Ι	٧	٧			
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S SOMEWHAT IMPORTANT

a Subjective for each Airport b Vertical Lumens at 2m

Factors

- Luminance and illuminance level & ratios
- Glare
- Shadow
- Appearance of space and Luminaires
- Color Appearance of objects (and color discrimination)
- Identification of Faces
- Identification of Objects
- Use of Specific task lighting
- Equipment Aesthetic Appearance
- Height and Position of Poles
- Security / Safety
- Emergency Power

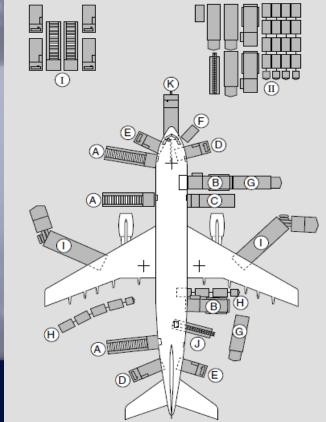
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Landscaping, facade illumination, etc.	117	-	V	s	V S			V S		П	s	Ti	V	٧		S		Īν	l V	-	-	s	s	╗	1 8	: [П	s	1			T	S S	3 V	٠ .	П	П	٧l	٧	s		9	٧	s	s	-	T	s	٧	S		. 7	8		٥Ī

Specific Area Design Criteria - Results

Various criteria to debate!

- Light levels
 - CAA NZ Lighting should not be less 15
 Lux measure on the aircraft parking
 spot
 - CASA Australia Code 3C and smaller, lower light level on apron
- Equipment position and tasks location
 - Illuminance
 - Front
 - Back



Specific Area Design Criteria

- Various light level
 - Challenges #1 coordination among various authority
 - Challenges #2 coordination among stakes holders
- Experience Review and assess apron lighting



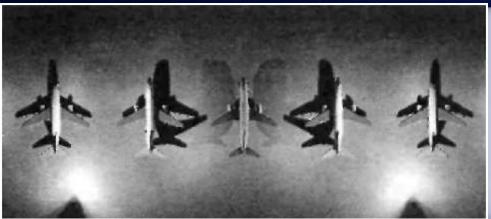
BAA - Performance Standard

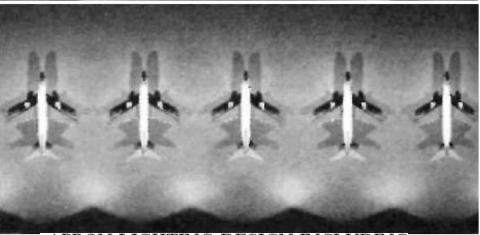




"Remedial actions may include replacement of unserviceable/damaged lamps, cleaning of lamps, replacement of lamps with lamps of a different rating, re-positioning of lamps and re-siting of floodlight masts."

Specific Area Design Criteria





APRON LIGHTING DESIGN INCLUDING AIRCRAFT SHADOWS

A. A. Bartsev

Number of masts	Number of floodlights	Comparative total cost	Average il	luminance (Ix)	$K_S=E_2/E_1$
	per mast	(in%)	E_2 (with aircrafts)	E_1 (without aircrafts)	11,5 12,5 2.7
2	7	38	17.8	22.6	0.79
3	5	53	20.5	25.0	0.82
4	3	68	21.6	26.9	0.80
6	2	100	19.9	21.5	0.93

$$Ks = \frac{E \text{ with aircrafts}}{E \text{ without aircrafts}}$$

Ks > 0.85 to 0.90

Specific Area Design Criteria - Shadow

Model Lighting Ordinance (MLO) concept

- Second public review ended August 2010
- "Overlay zoning"
- "Eye illuminance" LZ0 LZ4
 - values 0, 1, 3, 8 and 15 Lux
- Prescriptive or performance method
- Adaptation for each area of the airport





JOINT IDA-IES

MODEL
LIGHTING
ORDINANCE
(MLO)
with USERS GUIDE

Second Public Review

June 23 to August 23, 2010

Environmental Condition and Sustainable Development

IESNA RP-37-XX

Outdoor Lighting for the Airport Environment Revision 1 – 11/16/09

Release of any draft documents to any person, not a member of the authoring committee, requires prior written approval from the subcommittee or task force Chair.

Following approval to solicit outside opinion or comment, the committee member must communicate in writing to the outside expert that the material is copyright IESNA and is for the recipient's use only and may not be redistributed to anyone else without permission.

Comments for this Recommended Practices must be filled with the appropriate form check at http://www.iesalc.org/subcommittees-recpractices.html

The deadline for comments is January 5th 2010.

Other documentation available at IESALC web site. http://www.iesalc.org/subcommittees_recpractices.html

Other comments or question can be sent to practices@iesalc.org

Prepared by:

The Recommended Practices Subcommittee of the IESNA Aviation Lighting Committee

RP37 document for comments

Name:	Date	Document: IESNA-RP-37
Company/Organization:	(MM / DD / YYYY)	"Recommended Practice for Outdoor Lighting for the Airport Environment"
Email:		Environment
Phone Number:		

	VOTE F	OR RP-37		
	APPROVE	APPROVE WITH COMMENTS	DISAPPROVE	ABSTAIN
YOUR VOTE- MARK SELECTION WITH AN 'X'.				

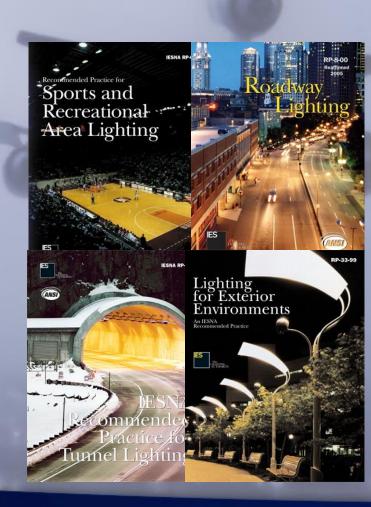
Reviewer	Section	Paragraph Figure/ Table	Type of comment (General/ Technical/Editorial)	COMMENTS	Proposed change	Action Taken By Subcommittee on each comment submitted

- Document to be sent for comments
- Health and safety requirement harmonization
- ACI & ICAO update
- Pilot point of view & adjustment
- ATCT point of view & adjustment
- Review for military use
- IESALC approval from board
- IESNA technical review and approval from board

RP-37 FRONT COVER PAGE

Rules:

- Must show light in airport environment
- One picture per submittal
- Must fill the release form
- Send to practices@iesalc.org
- No later than January 31st 2011







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Richard Larivée

Avia Rupta Solutions Inc.

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IESALC web site - www.iesalc.org

Navaid Lighting Associates, Inc.

Questions?

Comments?

Richard Larivée, Chair IESNA RP-37
IESALC recommended practices subcommittee practices@iesalc.org