



PIER Lighting Research Program



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Photosensor Control System Study Classroom Models

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1516 Ninth Street, 1st Floor
Sacramento, CA 95814

Submitted By:
Architectural Energy Corporation
2540 Frontier Avenue, Suite 201
Boulder, Colorado 80301

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Contact Information:

Subcontract Project Manager
 Doug Paton
 The Watt Stopper
 2800 De La Cruz Blvd.
 Santa Clara, CA 95050
 (408)-486-7501 voice
 (408)-987-5320 fax
Doug_Paton@WattStopper.com

AEC Program Director
 Judie Porter
 Architectural Energy Corporation
 2540 Frontier Avenue
 Boulder, CO 80301
 303-444-4149 – Voice
 303-444-4304 - Fax
jporter@archenergy.com

Prepared by:
 Dr Richard G. Mistrick, Associate Professor of Architectural Engineering, Pennsylvania State University

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Photosensor Control System Study Classroom Models

Executive Summary

This deliverable consists of the Desktop Radiance computer models that were used in the simulation studies conducted at Penn State University as part of this project. These files are provided in the form of AutoCAD .DWG files with surface and glazing materials attached to each of the surfaces. Six different classrooms models are provided.

Introduction

The project team surveyed and evaluated daylight delivery systems that have been applied in classrooms within the state of California. From these discussions, six different classroom arrangements were selected to apply to the study of photosensor system configuration and performance. Each of these systems represents a different method of delivering daylight to a classroom space, which is likely to impact a photosensor control system through the different daylight distribution provided within the space. Different electric lighting systems are also considered. Data files for the lighting systems applied in this study are also provided on these disks.

Diskette Contents

The accompanying computer zip file contains a .DWG file for each of the six classroom spaces, as well as alternate material files that need to be exchanged for some of the glazing materials. These glazing files were necessary because Desktop Radiance does not currently have a glazing library editor. In addition, .RAD files are included for each row of luminaires, generally for two different luminaire configurations (one indirect and one direct), along with the luminaire .RAD and .DAT files. View (.VF) and analysis grid (.PTS) files are also provided.

In the case of classrooms 2 and 4, the diffuse skylights were analyzed separately from the vertical window glazing. A separate .DWG file is provided for each of these analysis configurations. The skylight glazing .RAD file provided must replace the glazing file that is produced by these Radiance files and the space model must be re-run from the respective .BAT file.

To run the electric lighting cases, the .RAD file(s) provided for a single luminaire type must be added to the .RIF file sequence, and daylight must be eliminated from the run.

A list of the files and a description of each is provided in Table 1. These files should be extracted from the .ZIP file provided to their individual classroom folders prior to use.

Table 1. Desktop Radiance Classroom Models and other related files included on diskette.

Folder/Classroom	File	Description of file
Classroom1	Classroom1.dwg	Full Model
	Brn-lite.rad	Skylight glazing
	ALL-LUMS.rad	Luminaire file
	Lensedtroffer.dat	2x4 photometry
	L5121.dat	.6 x 4 photometry
	1-V1.vf through 1-V4.vf	Photosensor View Files
	Grid1.pts	Workplane Analysis Grid
Classroom2	Classroom2.dwg	Window Model
	Classroom2-SKYLT.dwg	Skylight Model
	Brn-lite.rad	Skylight glazing
	bl2.rad	Blind file for 0 deg. tilt
	bl2-30.rad	Blind file for 30 deg. tilt
	Lum1.rad	Row 1, Pendant
	Lum2.rad	Row 2, Pendant
	Lum3.rad	Row 3, Pendant
	WLum1.rad	Row 1, Wrap-around
	WLum2.rad	Row 2, Wrap-around
	WLum3.rad	Row 3, Wrap-around
	Enzo.dat	Pendant Photometry
	Wlwrap.dat	Wrap-around Photometry
	2-V1.vf through 2-V3.vf	Photosensor View Files
	Grid2pts	Workplane Analysis Grid
Classroom3	Classroom3.dwg	Full Model
	bl3A.rad (<i>2 blind files needed</i>)	Blind file for 0 deg. tilt
	bl3B.rad	Blind file for 0 deg. tilt
	bl3A-30.rad (<i>2 blind files needed</i>)	Blind file for 30 deg. tilt
	bl3B-30.rad	Blind file for 30 deg. tilt
	Lum1.rad	Row 1, Pendant
	Lum2.rad	Row 2, Pendant
	Lum3.rad	Row 3, Pendant
	3LTLum1.rad	Row 1, Troffer
	3LTLum2.rad	Row 2, Troffer
	3LTLum3.rad	Row 3, Troffer
	classica.dat	Pendant Photometry
	3ltroffer.dat	Troffer Photometry
	3-V1.vf through 3-V5.vf	Photosensor View Files
	Grid3pts	Workplane Analysis Grid

Folder/Classroom	File	Description of file	
Classroom4	Classroom4.dwg	Window Model	
	Classroom4-CLERESTORY.dwg	Clerestory Model	
	Bl4A.rad (<i>2 blind files needed</i>)	Blind file for 0 deg. tilt	
	Bl4B.rad	Blind file for 0 deg. tilt	
	Bl4A-30.rad (<i>2 blind files needed</i>)	Blind file for 30 deg. tilt	
	Bl4B-30.rad	Blind file for 30 deg. tilt	
	Lum1.rad	Row 1, Pendant	
	Lum2.rad	Row 2, Pendant	
	Lum3.rad	Row 3, Pendant	
	Enzo.dat	Pendant Photometry	
	4-V1.vf through 4-V4.vf	Photosensor View Files	
	Grid4.pts	Workplane Analysis Grid	
	Classroom5	Classroom5.dwg	Full Model
Bl5A.rad (<i>2 blind files needed</i>)		Blind file for 0 deg. tilt	
Bl5B.rad		Blind file for 0 deg. tilt	
Bl5A-30.rad (<i>2 blind files needed</i>)		Blind file for 30 deg. tilt	
Bl5B-30.rad		Blind file for 30 deg. tilt	
Lum1.rad		Row 1, Pendant	
Lum2.rad		Row 2, Pendant	
Lum3.rad		Row 3, Pendant	
Enzo.dat		Pendant Photometry	
3TLum1.rad		Row 1, Troffer	
3TLum2.rad		Row 2, Troffer	
3TLum3.rad		Row 3, Troffer	
3ltroffer.dat		Troffer Photometry	
5-V1.vf through 5-V4.vf		Photosensor View Files	
Grid5.pts		Workplane Analysis Grid	
Classroom6		Classroom6.dwg	Window Model
		Classroom6-SKYLT.dwg	Skylight Model
	Brn-lite.rad	Skylight glazing	
	Bl6A.rad (<i>2 blind files needed</i>)	Blind file for 0 deg. tilt	
	Bl6B.rad	Blind file for 0 deg. tilt	
	Bl6A-30.rad (<i>2 blind files needed</i>)	Blind file for 30 deg. tilt	
	Bl6B-30.rad	Blind file for 30 deg. tilt	
	Lumall.rad	Luminaire file	
	2LTroffer.dat	Troffer Photometry	
	6-V1.vf through 6-V3.vf	Photosensor View Files	
	Grid6.pts	Workplane Analysis Grid	