



Indirect lighting has come to represent a family of fixtures in which 90-100% of the light output of the fixture is bounced off of room surfaces before reaching the workplane. It is available in a broad range of configurations, mounting options, materials, shapes, colors and distributions. Typical indirect fixtures include pendant-mounted linear

fluorescent, workstation-integrated/mounted, disk-shaped pendant-mounted decorative compact fluorescent, and others.

Indirect lighting for open office plans began to grow in popularity with the rapid adoption of computers in the early '90s. The computers feature a video display terminal (VDT), a vertical workplane and a highly reflective surface. Since lensed recessed fluorescent troffers in the ceiling of many open offices are brighter than the surrounding ceiling space, they can be reflected on the VDT screen. The eye tends to drift towards the brightest spot in our field of view, making these reflections distracting and visually fatiguing. In many cases, veiling reflections from VDT screens can obscure tasks on the screen.

One of the most exciting new developments in indirect lighting is the introduction of the T5/HO lamp, which reduces required fixture profiles, increases possible fixture spacing distances, and reducing the number of fixtures required in a space.

Advantages & Disadvantages

Indirect lighting's advantages include:

- Provides soft, uniform light distribution
- Minimizes harsh shadowing
- Minimal glare on VDT screens
- Good for lighting vertical surfaces such as bookshelves in libraries
- Reveals faces well
- Makes the space appear brighter and more spacious by adding more light to ceiling and upper walls
- At peak performance, direct/indirect fixtures are much more efficient than direct parabolic fixtures, with efficiencies as high as 95% for direct/indirect vs. 50-70% for lay-in fixtures
- Works well to provide low ambient illumination while task lighting provides most of the task illumination, reducing energy costs

The disadvantages of indirect lighting include:

- Possibility that details in three-dimensional objects will not be rendered as well as direct lighting
- Higher installed cost in many cases than direct lighting schemes
- Fixture reflectors and room surfaces must be cleaned regularly to ensure maximum performance

A greatly expanded version of this article is posted on our website. Many examples of indirect and direct/indirect lighting are on display at the Lighting Design Lab.

indirect lighting



Above: The lighting in the meeting room at the Lighting Design Lab is almost completely indirect, using T5HO lamps.

News

in this issue.

- 1 ... Indirect Lighting
- 2 ... Classes
- 3 ... Registration
- 4 ... Contact List

spring / summer 2003 events.

Registration on Page 3

did you know?

Members of professional design organizations (AIA, NCQLP/LC, ALA, BOC, and others) may be able to receive continuing education credits for attending events offered by the LDL.

To self-certify your credits (sometimes called learning units) make sure you keep the Certificate of Completion that we distribute at each event.

Learning unit credits are almost always issued at a rate equal to the contact hours. So a 2 hour class would be worth 2 credits.

For information about how your organization works with continuing education credits visit their website at:

AIA
aia.org

ALA
americanlightingassoc.com

ASID
asid.org

BOC
nec.net/boc.htm

BOMA
boma.org

IFMA
ifma.org

IIDA
iida.com

NCQLP
ncqlp.org

NWBOA
nwboa.org



NORTHWEST
ENERGY
EFFICIENCY
ALLIANCE
www.nwea.org

All Registration **must be in advance**. All fees must be **paid in advance**. No registrations or fees will be accepted at the door. On-line registration is available at <http://www.lightingdesignlab.com/classes>

1 • office lighting design workshop. \$50

To be truly successful, any architectural conception must include an awareness of the play of light, shadow, and vision. This hands-on interactive workshop will help participants learn to balance conceptual application of light with human vision and task requirements. Integration of the two results in superior projects.

Seattle:	Wednesday 4/30	• 9:00am - 4:00pm
Boise:	Wednesday 5/14	• 9:00am - 4:00pm (Eric Strandberg x28)
Bozeman:	Wednesday 5/21	• 9:00am - 4:00pm (Shaun Darragh x27)
Eugene:	Tuesday 6/10	• 9:00am - 4:00pm (Michael Lane x26)
Portland:	Wednesday 6/11	• 9:00am - 4:00pm (Michael Lane x26)

Participants in the workshop will learn the process of developing a lighting design by working with a provided office space. Students will explore the conceptual effect of daylight and electric lighting in providing both task and ambient lighting for the space and occupants. The initial concept will be refined through an interactive process into a working design. Issues of increased productivity, design flexibility, system efficiency and controls will also be addressed.

The participants will leave with an understanding of the steps involved in creating a successful office lighting design. Participants will gain an understanding of daylighting integration, lighting for VDT's, ambient lighting solutions and how to properly control the lighting to maximize efficiency and occupant comfort. They will leave with an understanding of lighting concepts and strategies applicable to future office projects. Additional resource information will be available to participants.

Class size is limited to 16
(6 CEU contact hours)



• project design reviews. no cost.

The lighting specialist will be available by appointment on the day following the workshop for schematic design review of proposed lighting strategies on your commercial and industrial lighting projects. Please contact the specialist for your territory to directly set up an appointment in your office.

2 • daylighting fundamentals series. \$15 each

2a. 100 Introduction to Daylighting Design

Seattle: Wednesday 5/7 • 3:30pm - 5:00pm • \$15

Daylighting 100 introduces WHY daylight in a preferable architectural light source, WHAT daylight is as a light source and HOW to conceptualize daylighting as an integrated building design element.



2b. 101 Schematic Design — Simple Ideas for Making It Happen!

Seattle: Wednesday 5/28 • 3:30pm - 5:00pm • \$15

Daylighting 101 introduces the idea of using daylight as a primary source of illumination, and rules of thumb for quick and easy use in sizing windows and skylights.



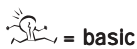
2c. 102 Physical Modeling for Daylighting Design

Seattle: Wednesday 6/18 • 3:30pm - 5:00pm • \$15

Daylighting 102 introduces the various way of using physical models for understanding how an architectural project attains its daylighting design goals.



You can register instantly and securely online. Payment is accepted by credit card, check and purchase order. www.lightingdesignlab.com/classes



= basic



= Intermediate



= expert

registration form.

Spring / Summer 2003 Classes

PAYMENT POLICY: Fees MUST BE PAID IN ADVANCE before attending class. Purchase Orders, checks, and credit cards are accepted. A credit toward future LDL classes will be issued for unused registration fees.
NO PAYMENT OR REGISTRATION WILL BE ACCEPTED AT THE DOOR.

registration fee paid by. (circle one)

credit card • enclosed check • purchase order • credit from previous LDL event •

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Expiration Date • _____

**please check the circles of the class(es) and event(s) you wish to attend (online registration available).
event locations on page 5.**

1 • office lighting workshop. \$50

- Seattle: Wed 4/30 • 9:00am - 4:00pm
- Boise: Wed 5/14 • 9:00am - 4:00pm
- Bozeman: Wed 5/21 • 9:00am - 4:00pm
- Eugene: Tue 6/10 • 9:00am - 4:00pm
- Portland: Wed 6/11 • 9:00am - 4:00pm

2 • daylighting fundamentals series. \$15 each

- 2a daylighting 100 — Introduction
- Seattle: Wed 5/7 • 3:30am - 5:00pm
- 2c daylighting 102 — Physical Modeling
- Seattle: Wed 6/18 • 3:30am - 5:00pm
- 2b daylighting 101 — Schematic Design
- Seattle: Wed 5/28 • 3:30am - 5:00pm

class locations:

Bozeman: Montana State University
Strand Union Bldg, Room 276
7th & Grant
Bozeman MT

Boise: Owyhee Plaza Hotel
1109 Main St
Room?
Boise ID

Portland: BetterBricks Daylighting Lab
U. of Oregon Portland Ctr, Rm 100
722 SW 2nd Ave
Portland, OR

Seattle: Lighting Design Lab
400 E Pine St
Suite 100
Seattle WA

Eugene: EWEB Training Center
N. Bldg. Community Rm.
500 E 4th Ave
Eugene, OR



lighting design lab



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The Northwest Energy Efficiency Alliance is a nonprofit group of electric utilities, state governments, public interest groups, and industry representatives committed to bringing affordable, energy-efficient products to the marketplace.



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www.nwalliance.org