

# SCOPE

arctecon

High Performance Business Environments

Pittsburgh, PA

## The Benefits of Indirect Lighting: It's Good Design



*Telvista, Odessa, TX*

STUDIES HAVE SHOWN, that in keyboard intensive environments, the cost to mitigate health problems averages \$1,200 per employee per year. Many health problems relate to eye strain caused by lighting that does not respond to the unique requirements of video-display terminals (VDTs).

If the design criteria unique to VDTs are not incorporated into the solution, the adverse effect on employee health can outweigh the productivity advantages of using computers in the workplace. Call center environments require two separate, but complementary lighting systems, including uniform ambient lighting for VDTs and task lighting for hard copy reading and writing. Terminals act as mirrors that reflect ceiling glare causing eye strain. Therefore, a uniform light level at the ceiling is important. In addition, because VDTs produce their own illumination, the level of illumination required for comfortable viewing is approximately half the level (25 to 30 foot candles) necessary for hard copy reading and writing (50 to 70 foot candles).

By far, the best ambient lighting system to satisfy VDT design criteria is indirect lighting, usually mounted between and 18 and 24 inches below the ceiling and shining upward. If properly designed, the result is a uniform luminance level on the ceiling, as well as a uniform 25 to 30 foot candle level of illumination at the work surface. More conventional, and far more common, lighting solutions include ceiling-mounted fluorescent fixtures with either parabolic or prismatic lenses. Although parabolic lenses are superior to prismatic lenses, both produce uneven lighting levels on the ceiling that reflect off VDTs and cause eye strain.



*American Waterworks, St. Louis, MO*

SCOPE, the call center design newsletter, is published by:

**arctecon**

ARCHITECTS/PLANNERS/

INTERIOR DESIGNERS/PROJECT MANAGERS

3441 Butler Street  
Pittsburgh, PA 15201-1312

Tel: 412-252-1500

FAX: 412-252-1510

E-mail: d.knox@arctecon.com

Internet: www.arctecon.com



311 Center, Toronto, ONT

## arctecon

Roger L. Kingsland, AIA

Deborah Knox, *SCOPE* Editor

3441 Butler Street  
Pittsburgh, PA 15201-1312

Tel: 412-252-1500

FAX: 412-252-1510

E-mail: [d.knox@arctecon.com](mailto:d.knox@arctecon.com)

Internet: [www.arctecon.com](http://www.arctecon.com)

©arctecon, 2009

Indirect lighting not only eliminates glare, but also produces a comfortable calming level of lighting throughout the space. Task lighting, either fixed or movable, can be designed for specific work surfaces where hard copy reading and writing occurs. Task lighting should be designed with the objective of keeping the “contrast ratio” between the various work surfaces as low as possible. Otherwise, when the eye moves between tasks, excessive pupil dilation, another form of eye strain, will occur.

It is important to incorporate all valid criteria into the design process. Successful lighting installation is not only dependent on the design of the lighting system, but also on the harmony of the lighting solution with the architecture of the space. Call centers should not be treated as traditional office environments. If properly designed, the resultant benefits to employees produce bottom line results.