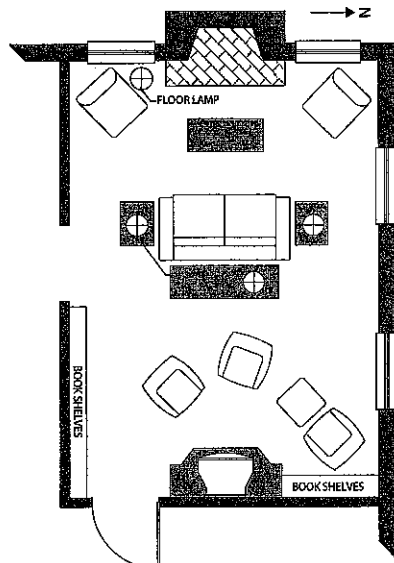


CASE STUDY 1

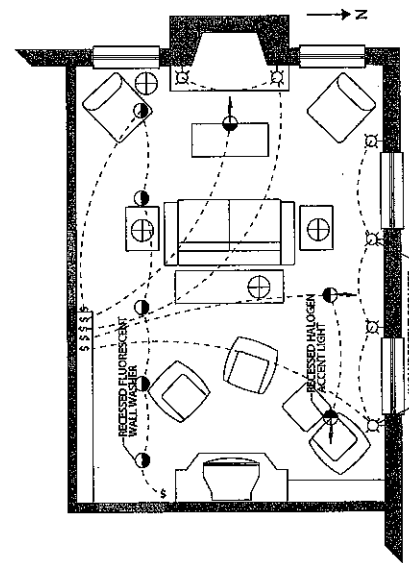
Living Room Lighting

Most living rooms require flexible lighting design solutions because they serve a broad variety of changing functions. The lighting in a typical living room should comfortably serve small group conversation, larger social gatherings that include casual eating and drinking, and more solitary activities such as reading, music listening, and TV viewing. Somewhat less typically, a living room may have a desk or home office corner, a place for card or board games, a major library collection, or an art collection to be prominently displayed.

The visual tasks in living rooms range from basic and simple to complex and highly technical, depending on the size and intended purpose of the room. It is usually safe to assume that ambient illumination levels in all areas of the room are always great enough to comfortably accommodate personal navigation through the space. The typical living room shown below, which is of ample but moderate size and furnished to serve several functions, presents the following visual tasks to be accommodated:



Living Room Floor Plan



Living Room Reflected Ceiling Plan

1. *Ambient lighting* for conversation and social functions. Illumination levels may vary from as little as 7–8 fc to 25–30 fc depending on the desires of people involved. More specifically, critical or extended-period visual tasks are not expected to be performed under these lighting conditions.
2. *Task lighting* for extended-period visual tasks. In this case, the only task planned for is reading in two locations.
3. *Focal light* is required for the large floor-to-ceiling bookshelves on the east end of the south wall and the north end of the east wall, as well as for graphic material anticipated on the west side of the south wall, the center wall area of the north wall, and above the fireplace mantel.
4. *Lighting for television viewing.* TV viewing presents unusual lighting requirements because the rest of the lighting in the living room is unwanted and detrimental for this purpose. If TV viewing is an expected function, the lighting design solution should accommodate it.

The lighting solution shown below addresses the visual tasks in the following manner:

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1. The need and desire for ambient lighting is met by several lighting elements. The sconces on the north wall provide a blanket of light for that side of the room, the intensity of which can be adjusted by the controlling dimmer switch. The portable lighting adds to the quantity and effectiveness of the ambient lighting, with three table lamps and the floor lamp contributing primarily to the conversation area at the west end of the room. The sconces and the floor and table lamps, if their baffles and shades are translucent, can also add much eye-level glow, a desirable quality if a sense of sparkle or warmth is sought. While their contribution is secondary to those mentioned above, the five wallwashers and three accent luminaires represent still another element of ambient light. The many luminaires in the room (14 fixed and 4 portable), call for many ways of adjusting the quality of ambient light by selecting those to be turned on as well as by adjusting their output through dimmer controls.
2. The primary reading chair is positioned in the northeast corner of the room, where the adjacent sconce should serve as an adequate light source. The chairs in the northwest and southwest corners of the room can also serve as reading chairs, with the former receiving light from the adjacent sconces and the latter having a floor lamp nearby. Depending on the users' habits, an additional floor lamp can be placed adjacent to the primary reading chair.
3. Focal lighting requirements are met with the five recessed wallwashers directed toward the south wall and the three adjustable accent luminaires directed toward the wall above the fireplace mantel, the center area of the north wall, and the shelving/cabinetwork unit at the north end of the east wall.
4. Television viewing presents lighting problems in multipurpose spaces such as living rooms. When TV is viewed in a room or space used primarily for that purpose, creating appropriate lighting is simply accomplished. In this example, many of the luminaires could create unwanted reflections on the TV screen. The only luminaires that will not adversely affect TV viewing are the wallwashers facing the south wall. If the sconces on the north wall are

dimmed for low output, their negative effect could be quite minor. Adding a floor lamp in the northeast corner of the room would balance the lighting of the room during the viewing period.

Because flexibility in lighting is essential in living rooms, most lighting should be controlled with dimmer switches. With dimmers, the lighting of the room can be adjusted to achieve just the right quality for any occasion.

Luminaire and lamp selections should be based on the following considerations:

Sconces: direct-indirect ratio, task (reading) light for adjacent chair, degree of eye-level glow and/or sparkle.

Wallwashers: recessed or surface mounted, spread of light (depending on graphics, if known).

Table lamps: direct-indirect ratio, diffuse shade, degree of eye-level glow and/or sparkle.

Floor lamp: direct-indirect ratio, task (reading) light for adjacent chair, diffuse shade, degree of eye-level glow and/or sparkle.

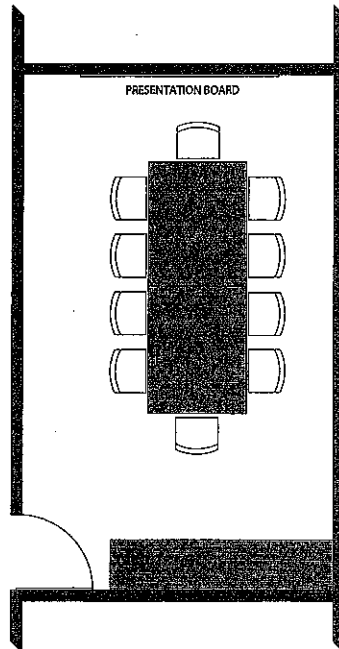
Lamp selection in all cases can be compact fluorescent or incandescent, with wattage based on personal preference.

The design quality or style of the selected luminaires will be determined primarily by the quality or style of the architectural and interior design detailing and materials, from traditional cut glass (sconces) and fringed shades (portables) to contemporary woods, plastics, and metals to high-tech materials. This element of luminaire selection is difficult to articulate because it deals with the elusive elements of aesthetics, style, and taste. Only long experience in a trial-and-error process over the course of many projects will inform the designer in making intelligent aesthetic decisions.

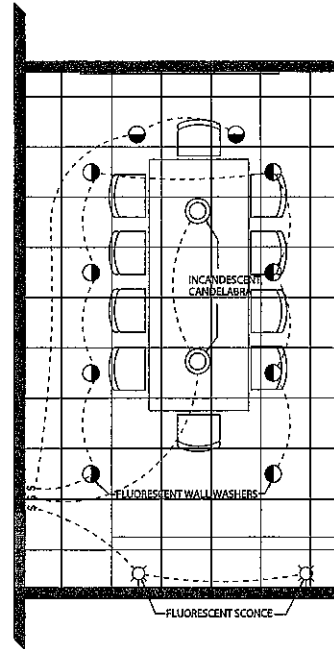
CASE STUDY 10

Conference Room Lighting

Conference rooms generally serve a limited range of functions where a group of people meet for verbal exchange. While some conference rooms can accommodate scores of people for large-scale presentations, more typically they contain a central table of a size that permits personal eye contact, conversation, and a limited amount of reading and note-taking. Conference rooms are frequently used for presentations, from a simple personal talk to a group of presenters to the deployment of a variety of electronic media.



Conference Room Floor Plan



Conference Room Reflected Ceiling Plan

A few basic visual tasks are performed in most conference rooms. The primary visual task is reading and writing at the conference table. Good lighting of the faces of those seated at the table is also important. Personal presentations that include graphic material such as diagrams and charts require focal light on those items. While conference rooms require comfortable navigational ambient light, consideration should be given to adjusting it for video, PowerPoint, and other electronic presentations. A less critical consideration is providing comfortable task light for a surface from which beverages and food are served.

The conference room shown in the following figures are typical of many modest-sized conference rooms, including their lighting requirements. As indicated in the previous paragraph, the primary lighting requirement (1) is to provide

appropriate task light for reading and writing at the conference table. That light source should also provide appropriate illumination of the faces of those seated at the table. The presentation board at the north end of the room (2) requires strong focal light when it is in use. The credenza surface (3), used for beverage and casual food service, requires modest task light. The perimeter of the room (4) behind the chairs must receive sufficient ambient light.

The lighting solution shown in the preceding figure addresses the visual tasks in the following manner:

1. *Conventional task light* at the conference table is accomplished with two incandescent candelabras placed symmetrically on either side of the center line of the conference table, lamped to provide about 30 fc at the tabletop.
2. *Focal light* for the graphics/presentation wall is achieved with recessed wallwashers placed 4' o.c. While many types of wallwashers can be used in a situation of this kind, MR-16 luminaires have been selected in order to maximize coverage and precise focusing.
3. *Secondary task light* for the credenza surface is provided by a pair of fluorescent sconces.
4. *Ambient light* for the perimeter of the room is accomplished by the fluorescent uplights, which not only provide adequate task light for the conference table but also create a more than adequate wash of soft light for the perimeter of the room. When the wallwashers for the walls and the second-

ary task light for the credenza are on, they supplement the ambient light for the room's perimeter.

Each of the three groups of luminaires are separately switched at the room's entry door.

Luminaire and lamp selections should be based on the following considerations:

Fluorescent uplights: narrow distribution band to concentrate task light on table

Low voltage downlights: controlled narrow beam, well baffled for inconspicuousness

Wallwashers: evenness of distribution, inconspicuous appearance

Lamps shall have similar K and CRI values in order to present a unified (non-dramatic) visual environment.

Luminaire design characteristics and style should be consistent with the architectural and interior design qualities of the room, including materials, color, furniture, and detailing. In this case, the only significantly visible luminaires are the pendant fluorescents. Depending on the overall design characteristics of the room, those pendants could be selected to be visually dominant or unobtrusive.