LIGHT IN ARCHITECTURE

FORM AND FUNCTION IN HARMONY

LIGHTING THE INTERIOR
• Light has the ability to transform a space, revealing all of the structure to its best advantage, and is perfectly demonstrated when the expertise of the architect, the interior designer, the lighting designer and the building services engineer work together to create something special.

• We have evolved under daylight and we feel very comfortable under these conditions. So this should always be our starting point.
THE PATTERN OF DAYLIGHT

How does the interior change?
VISUAL INTEREST

There are not many shadows from a diffuse source
Form and function in harmony

ADD CONTRAST

Light and shade make it more interesting

Does this need to be modified if we are to work in the space or spend a lot of time there?
• All of these questions are fundamental elements of lighting design and have always been considered, but sometimes we get side tracked by the latest legislation or new technology.

• The new LG7 tries to reconnect with the basic design principles and steer us away from a prescriptive solution, however we do have to have guidelines and some common standards to ensure all buildings are lit to the required level. But it should not end there – this is the minimum we want from a design.

Lighting for the built environment

LG7: Offices
LET’S START WITH SURFACES

• LG7 encourages us to use fairly reflective surfaces
  – Colour
  – Texture
  – not forgetting carpets
REVEALING TEXTURE - GRAZING LIGHT
GRAZING LIGHT
WE CAN BORROW FROM THE RETAIL SECTOR

Spar – Middelburg, South Africa
THIS CAN BE USEFUL TO CREATE A CORPORATE IMAGE IN RECEPTIONS

Hoare Lea Lighting – Helicon Building
Hoare Lea Lighting – Helicon Building
One Eighty Light – Imperial Tobacco
Tobias-Link-Lichtplannung
• The new LG7 focuses on the principles of using light only when and where it is needed.

• But then we have to think about the resultant dark spaces.
Isometrix Lighting Design – Trinity Golf Club, Korea
• How can we provide the long distance view?

• Again the guide often mentions the purpose of this to relax the eyes and to avoid strain.
WE CAN BORROW FROM THE RETAIL SECTOR AGAIN

Oktalite – Jelmoli Zürich Interstore
Hoare Lea Lighting – Western Transit Shed
TRILUX Lateralo - Besprechungsraum
• The biggest message in the new guide is encouraging early collaboration between the design team.

- Architect
- Interior Designer
- Lighting Designer
- Electrical Consultant
FOLLOWING THE ARCHITECTURE
Maurice Brill Lighting Design
• Accent light can have one of the biggest impacts on a space and becomes more important if we are using the principles of only lighting where it is needed.

• The question of where it is needed is important.
ACCENT LIGHT IS USED EXTENSIVELY IN RETAIL

Oktalite – Leffers Intersport
IN CULTURAL BUILDINGS

Sutton-Vane-Associates - Keble_Mosaics
AND MUSEUMS

DHA Designs – Mary Rose
CREATE SPACES WITHIN SPACES

Speirs + Major – Maggies, Newcastle, James Newton
CREATE MOOD
• Early collaboration is essential if we are to make any changes to the traditional building model.

• The biggest challenge is with spec office buildings.
13 Practical examples of design approach

13.1 Introduction

13.2 Example 1 – large open-plan office with known furniture layout

This example considers an open-plan office with full-height windows on the north and south sides (Figure 13.1). The desk layout is regular and surfaces are known to be:

- one and two walls - a pale matt finish, cream or grey
- ceiling - white matt finish ceiling tiles
- floor - light grey carpet
- blinds - a pale matt finish to match the walls
- desks - a broad, flat wood finish.

The ceiling height is typical of modern offices at around 3.6m.

The room dimensions are approximately 16 x 22m.

The occupants work in three jobs for 6 hours a day, taking the usual breaks.

Their work entirely on desktop computers and standards.

Some internal seating is provided along the perimeter of the room.

There are two approaches that could be applied to this office. The first is to consider a lighting design that provides a general illumination across the space, suitable for carrying out the required tasks.

In the office, a deep-plan configuration, the lighting level in the centre will need to be higher than at the sides.

Figure 13.1: Open-plan office with full-height windows and light fixtures.

13.3 Example 2 – small open-plan office

This example considers a small open-plan office (Figure 13.2). The office layout is irregular and surfaces are known to be:

- one and two walls - a medium gloss finish, dark brown
- ceiling - white matt finish ceiling tiles
- floor - dark grey carpet
- blinds - a medium gloss finish to match the walls
- desks - a broad, flat wood finish.

The ceiling height is typical of modern offices at around 3.6m.

The room dimensions are approximately 12 x 16m.

The occupants work in two jobs for 6 hours a day, taking the usual breaks.

Their work entirely on desktop computers and standards.

Some internal seating is provided along the perimeter of the room.

There are two approaches that could be applied to this office. The first is to consider a lighting design that provides a general illumination across the space, suitable for carrying out the required tasks.

In the office, a deep-plan configuration, the lighting level in the centre will need to be higher than at the sides.

Figure 13.2: Small open-plan office with partial-height windows and light fixtures.

13.4 Example 3 – office with display windows

This example considers an office with display windows (Figure 13.3). The office layout is irregular and surfaces are known to be:

- one and two walls - a medium gloss finish, dark brown
- ceiling - white matt finish ceiling tiles
- floor - dark grey carpet
- blinds - a medium gloss finish to match the walls
- desks - a broad, flat wood finish.

The ceiling height is typical of modern offices at around 3.6m.

The room dimensions are approximately 12 x 16m.

The occupants work in two jobs for 6 hours a day, taking the usual breaks.

Their work entirely on desktop computers and standards.

Some internal seating is provided along the perimeter of the room.

There are two approaches that could be applied to this office. The first is to consider a lighting design that provides a general illumination across the space, suitable for carrying out the required tasks.

In the office, a deep-plan configuration, the lighting level in the centre will need to be higher than at the sides.

Figure 13.3: Office with display windows and light fixtures.

13.5 Example 4 – office with large windows

This example considers an office with large windows (Figure 13.4). The office layout is irregular and surfaces are known to be:

- one and two walls - a medium gloss finish, dark brown
- ceiling - white matt finish ceiling tiles
- floor - dark grey carpet
- blinds - a medium gloss finish to match the walls
- desks - a broad, flat wood finish.

The ceiling height is typical of modern offices at around 3.6m.

The room dimensions are approximately 12 x 16m.

The occupants work in two jobs for 6 hours a day, taking the usual breaks.

Their work entirely on desktop computers and standards.

Some internal seating is provided along the perimeter of the room.

There are two approaches that could be applied to this office. The first is to consider a lighting design that provides a general illumination across the space, suitable for carrying out the required tasks.

In the office, a deep-plan configuration, the lighting level in the centre will need to be higher than at the sides.

Figure 13.4: Office with large windows and light fixtures.

13.6 Example 5 – office with small windows

This example considers an office with small windows (Figure 13.5). The office layout is irregular and surfaces are known to be:

- one and two walls - a medium gloss finish, dark brown
- ceiling - white matt finish ceiling tiles
- floor - dark grey carpet
- blinds - a medium gloss finish to match the walls
- desks - a broad, flat wood finish.

The ceiling height is typical of modern offices at around 3.6m.

The room dimensions are approximately 12 x 16m.

The occupants work in two jobs for 6 hours a day, taking the usual breaks.

Their work entirely on desktop computers and standards.

Some internal seating is provided along the perimeter of the room.

There are two approaches that could be applied to this office. The first is to consider a lighting design that provides a general illumination across the space, suitable for carrying out the required tasks.

In the office, a deep-plan configuration, the lighting level in the centre will need to be higher than at the sides.

Figure 13.5: Office with small windows and light fixtures.
COLOUR APPEARANCE AND COLOUR RENDERING

‘It is a popular misconception that the colour temperature of a lamp and its CRI are directly related.

Simply using lamps that mimic the colour of daylight will not necessarily provide an acceptable level of colour correctness (colour rendering).

Reflected light from coloured wall, ceilings, floors, furniture and equipment will all affect the colour rendering.’
COLOUR APPEARANCE AND COLOUR RENDERING

• Colour appearance (or colour temperature) is the easy bit.
  
  – There isn't a right or wrong
  – We can use it for different times of day
  – Or to differentiate spaces
COLOUR TEMPERATURE - AS SEEN IN RETAIL

Oktalite – Center Lustfeld, Nienburg
Oktalite – Edeka Niemerszein, Hamburg
Oktalite – Edeka Brueggendick-Braunlage
COLOUR RENDERING

• Good colour rendering is much harder to see.

• The light source should have a full spectrum with equal weight given to each wavelength i.e. colour.

• The ideal is daylight, however we subconsciously adjust to different light sources, and sometimes this is appropriate – think of candle light!

• Colour rendering is also much harder to document.
REDS

• CRI is now getting a bit out of date and has fundamental flaws by using the average of only 8 colours. Ra₈

• R1 to R8 does not include a true red

• R9 is saturated red

• New methods include all 14 test colours, Colour Quality Scale and TM-30