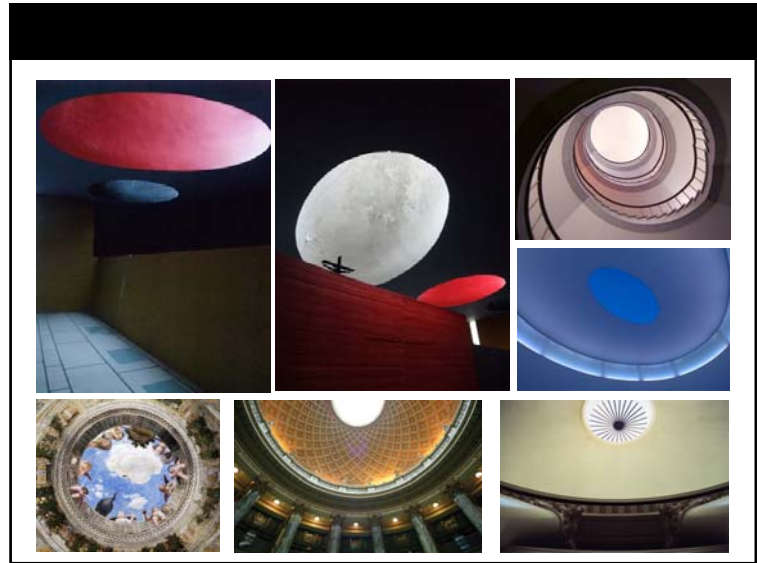




Fixture and Design Applications – Part 2

Lighting Systems Applications 2

- Architectural Solutions
 - Coves
 - Wall Grazing Slots

Horizontal Surface - Coves



Fixture and Design Applications – Part 2

Martin Residence
Architects: Briggs Knowles

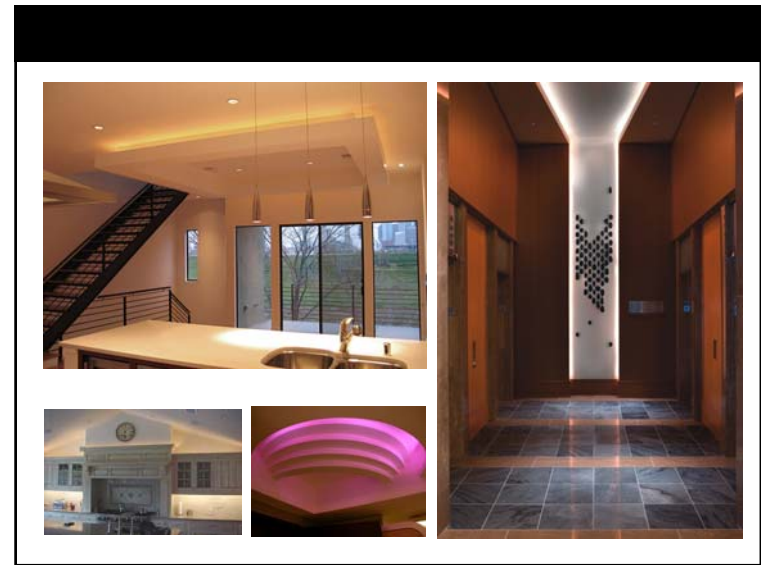
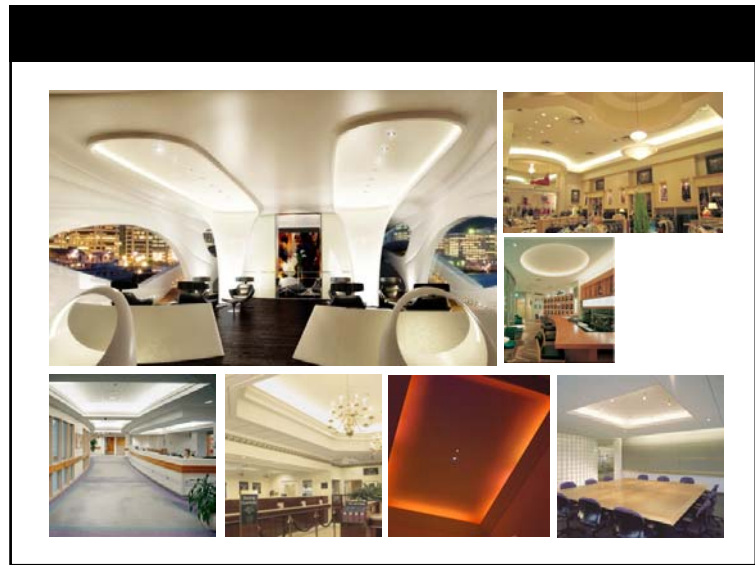
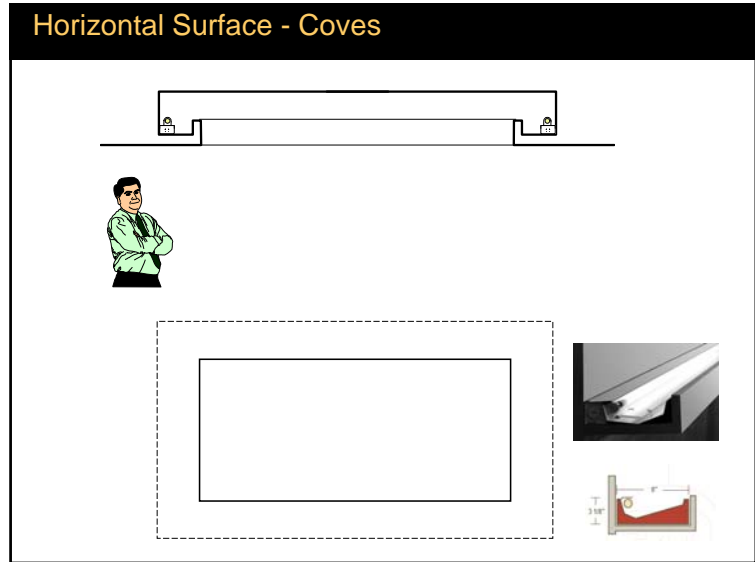
Briggs and Knowles based their design of the oculus on traditional Victorian skylights but tweaked it to fit a more modern sensibility and outfitted it with fluorescent tubing to recreate the effect in the evening.

- Flat ceiling Small drop distance
- Flat ceiling Medium drop distance
- Flat ceiling Large drop distance
- Sloped or vaulted ceiling
- Floated ceiling
- Wall washer using floating ceiling
- Brightest point directly above fixture (no attractive hot spot)
- Smooth, even gradient of light across ceiling. More light projected into the room below. (if needed)

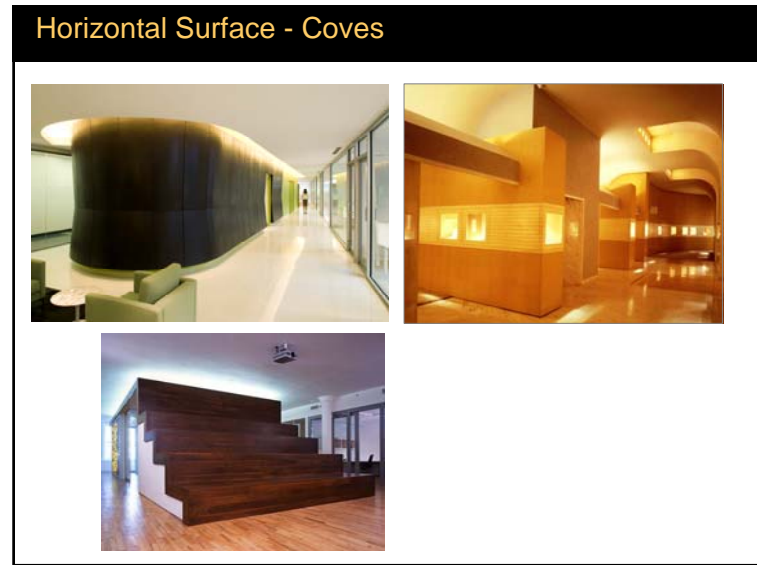
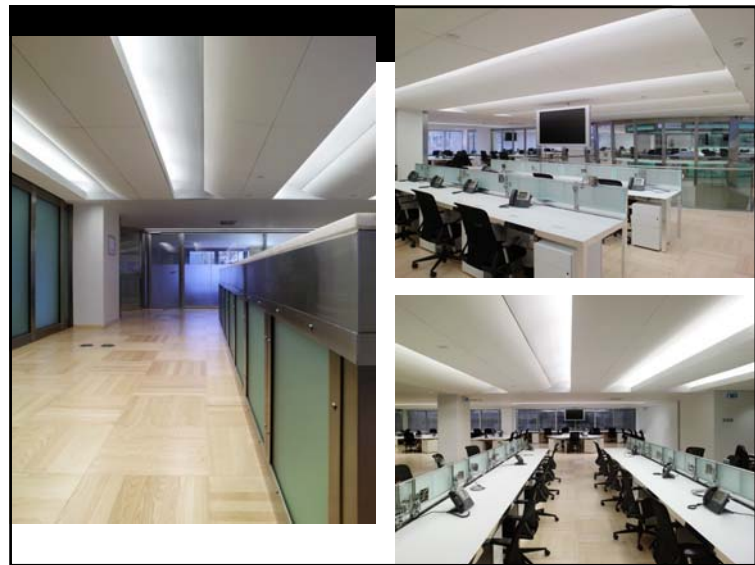
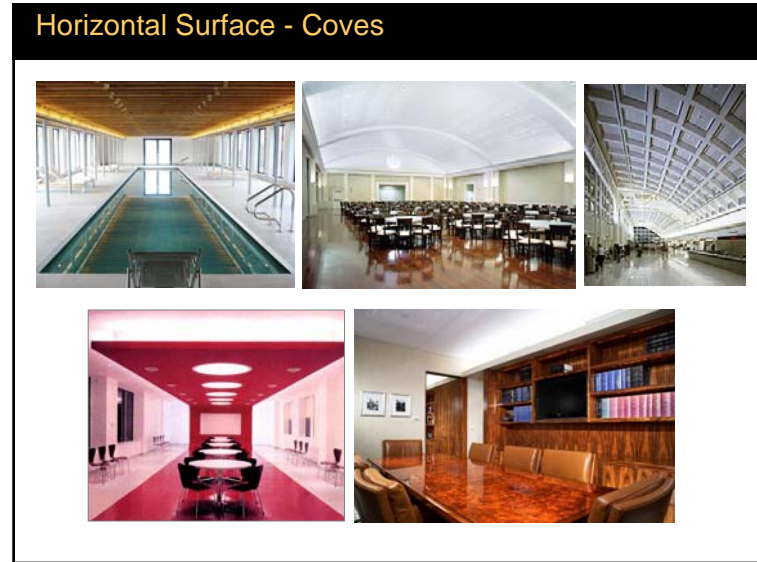
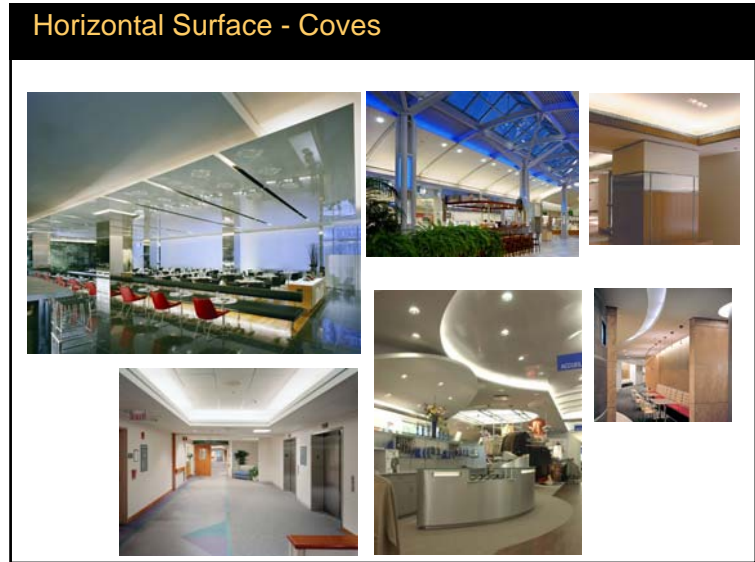
Horizontal Surface - Coves

Horizontal Surface - Coves

Fixture and Design Applications – Part 2



Fixture and Design Applications – Part 2



Fixture and Design Applications – Part 2



Horizontal Surface - Coves

Vertical Surface - Wall Gazing

WHAT IS WALL GAZING

Wall gazing is the technique of preparing an area directly in light or very close angles above the full height of a wall, to illuminate the wall and to accentuate its texture.

WHAT IS NOT WALL GAZING

Recessed strips in coves both do not push to graze walls fully lighting the top of the wall for much like the beam, and they are limited to fluorescent colors.

Track fixtures in coves may use lamps with enough power that they may be indirectly aimed, resulting in an inconsistent pattern down the wall, especially after reworking.

Undercoves, recessed areas to light a wall from joints come distance away with their lamp from the surface may be a wall illuminated and their other surface texture is diminished rather than accentuated.

Fixture and Design Applications – Part 2

What Makes A Good Wall for Grazing

TEXTURED
Any wall surface with an interesting texture is a good candidate for wall grazing, including:

- stone, like matte marble, granite or travertine
- wood, especially with expressed graining
- fabric, either stretched or draped
- tile, particularly mosaics
- glass with an etched pattern
- plaster or stucco, but only when well executed



SMOOTH
Smooth wall surfaces, like polished stone, are often best illuminated by wall grazing because the technique minimizes annoying lamp reflections. In comparison, lighting a slick wall with ceiling-mounted wallwash fixtures results in a pattern of bright reflections visible from all angles below.



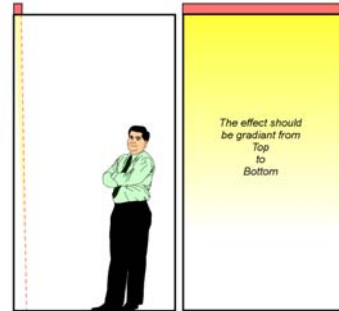

WHAT MAKES A BAD WALL

Any wall surface with an unpleasant texture is a bad candidate for wall grazing. A common example is a badly taped and spalled sheet rock wall: all of the wall's imperfections will be highlighted.

Any wall to which things will be mounted should be considered carefully before grazing. Two of the more annoying effects possible are pronounced shadows, as those from framed paintings, and blinding reflections, as those from a chrome-trimmed building directory.


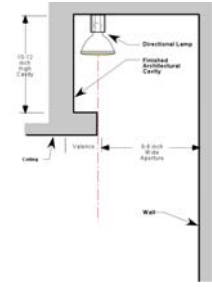
Vertical Surface - Wall Grazing

Fixtures close to ceiling




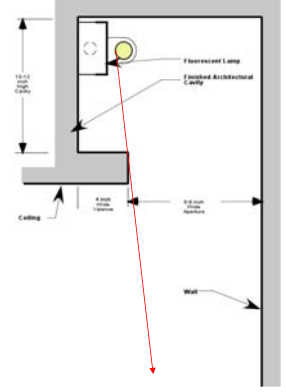
The effect should be gradient from Top to Bottom

Section Elevation

Vertical Surface - Wall Grazing





Vertical Surface - Wall Grazing



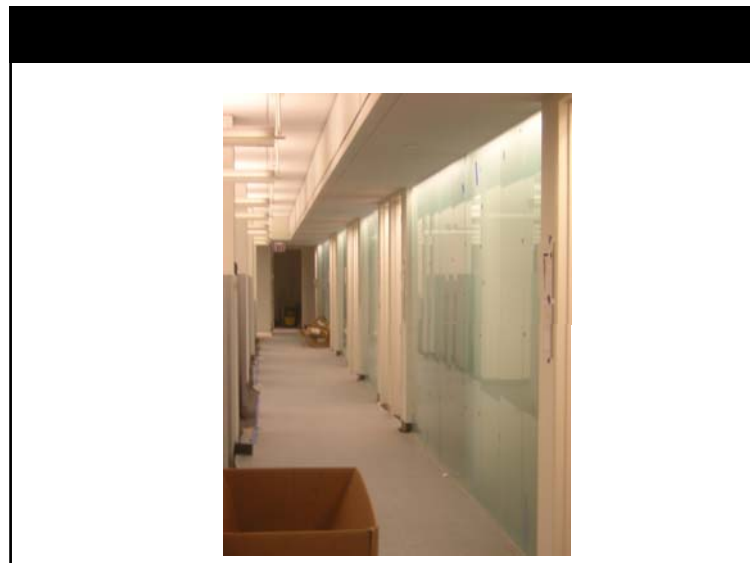
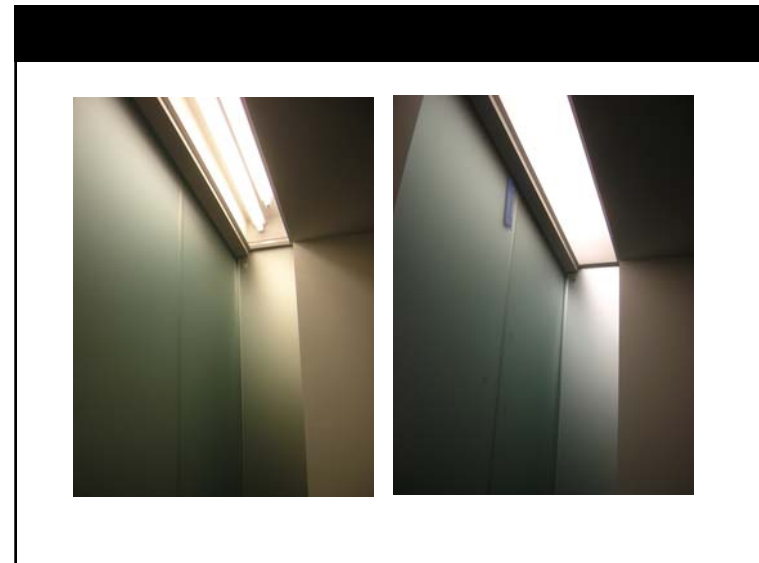
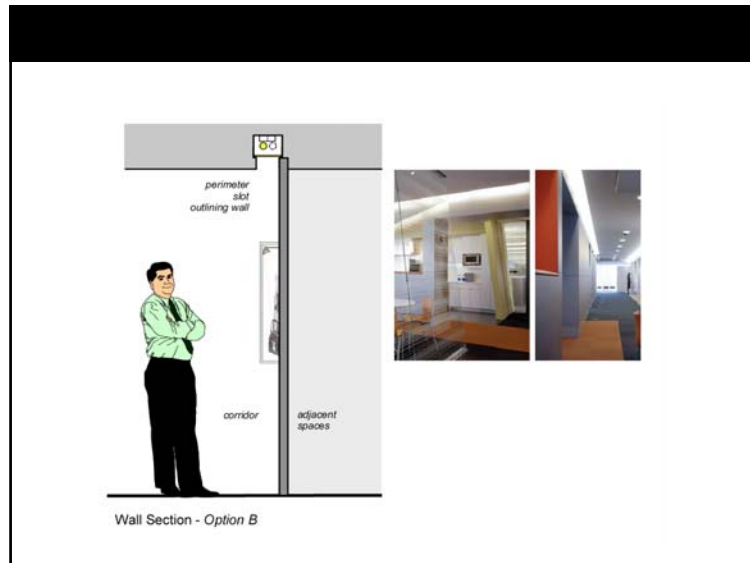




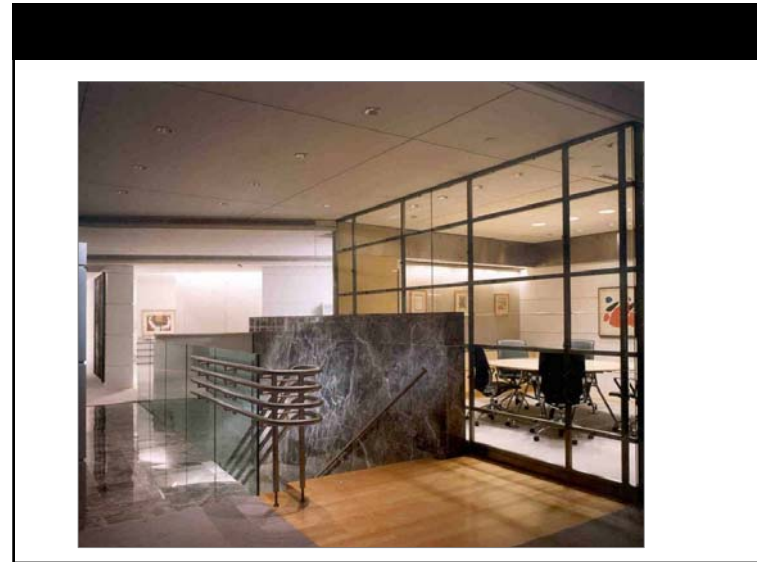
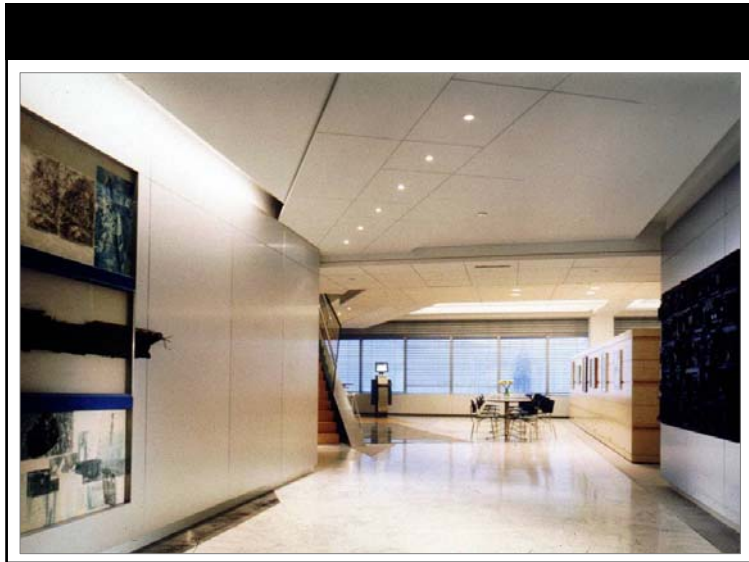




Fixture and Design Applications – Part 2



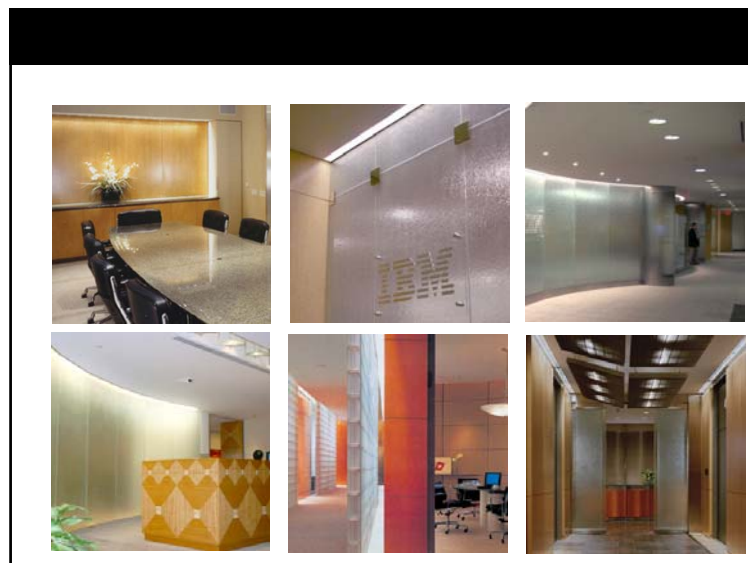
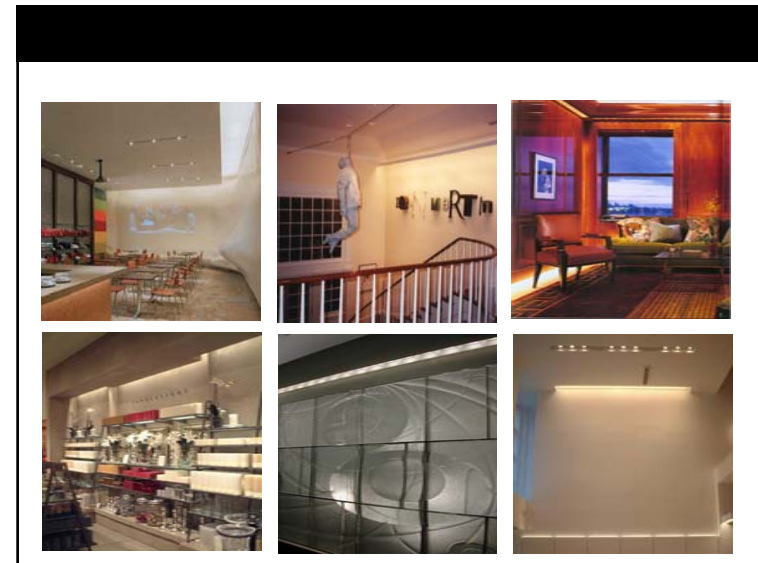
Fixture and Design Applications – Part 2



Vertical Surface - Wall Gazing

Vertical Surface - Wall Gazing

Fixture and Design Applications – Part 2





Lighting Systems Applications 2

- Direct Fixtures
 - Down Lighting: Fixed Symmetrical Distribution
 - Accent Lighting: Adjustable Directional Distribution
 - Wall Wash Lighting: Fixed Asymmetrical Distribution

Fixture and Design Applications – Part 2

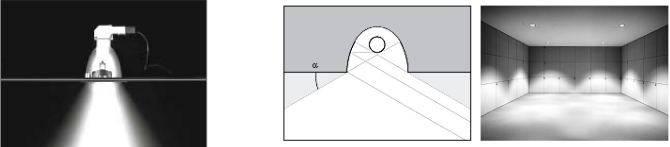
Direct Illumination - Downlights

Open Reflector Downlight

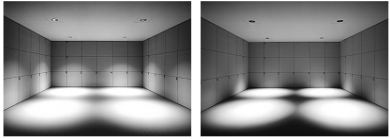
Direct Illumination - Downlights

Open Reflector Downlight



No light is emitted beyond the cut-off angle.

30° cut-off angle




40° cut-off angle

50° cut-off angle

Direct Illumination - Downlights

Open Reflector Downlight

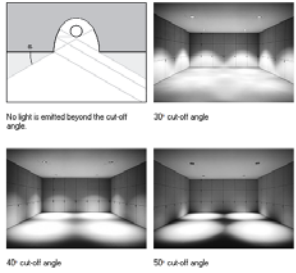


The greater the cut-off angle, the greater the visual comfort provided by the luminaire due to improved glare control.

The greater the cut-off angle, the narrower distribution of light.

The same lighting layout of downlights produces different distributions in the room


- Downlights with a 30° cut-off angle distribution is towards vertical surfaces
- Downlights with a 40° cut-off angle best possible compromise between the lighting horizontal surfaces below and vertical
- Downlights with a 50° cut-off angle a high visual comfort for high rooms and emphasize the objects below – ie accent lighting.



30° cut-off angle

40° cut-off angle

50° cut-off angle



Will housing be in direct contact with insulation?

Do you have above ceiling access?	Yes. Choose New Construction Housing	ICT Housing	T Housing
	No. Choose Remodel Housing	RICT Housing	RT Housing

Yes. Insulation can cover housing

No. Keep insulation 3" away from housing

Fixture and Design Applications – Part 2

Direct Illumination - Distribution

The diagram illustrates the distribution of light from two fixtures. The fixture on the left is labeled 'Narrow' and has a smaller, more concentrated beam. The fixture on the right is labeled 'Wide' and has a larger, more spread-out beam. A person is standing to the left of the fixtures for scale.

Spacing Criteria

Luminaire manufacturers provide spacing criteria (SC) or mounting height ratios (S/MH), for specific light fixtures with direct lighting distribution. These light fixtures include downlights, troffers, and high and low-bay light fixtures. These ratios are used to calculate the maximum recommended installation spacing to obtain an even pattern of light on the surface below the light fixtures. SC ratios help ensure that a space is evenly lighted by slightly overlapping the light distribution from each light fixture.

SC typically range from 0.9 to 1.7, but can be as low as 0.5 or higher than 2.

SC x Mounting Height = recommended spacing for "even" pattern of light

The diagram shows two fixtures mounted on a ceiling. The mounting height is indicated as 8 feet. The spacing between the fixtures is indicated as 9 feet 7 inches. The light beams from each fixture overlap, creating an even pattern of light on the surface below.

THE PERFECT SLOPE

Available in 10" and 12" diameters
 • 1000-1500 lumens
 • 1000-1500 lumens
 • 1000-1500 lumens

DETAILS

Direct Illumination

For mirrored walls, the lighting layout should be chosen such that the pattern continues uniformly in the reflection.

The diagram shows two cross-sections of a room with mirrored walls. The top section shows a light fixture and its reflection. The bottom section shows a different lighting layout where the light fixture and its reflection create a continuous pattern.

Fixture and Design Applications – Part 2

Vertical Surface - Wall Washing

Vertical Surface - Wall Washing

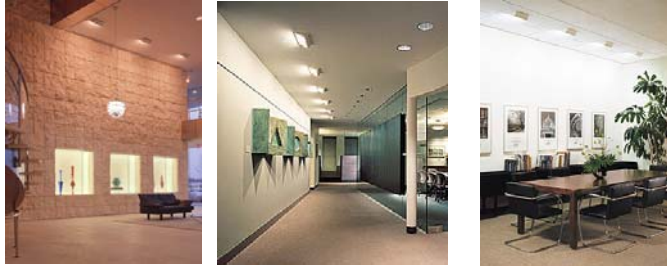
1. **Rule of Thumb: Mounting Distance = Spacing Distance**
2. **Rule of Thumb: Mounting Distance = 1/3 the Ceiling height**
 1. Mount the wall wash fixtures 2 to 3 feet from the wall on ceilings up to 9 feet high.
 2. Mount the wall wash fixtures 3 to 4 feet from the wall on ceilings up to 9 feet and 11 feet high.
3. Applies to recessed or track fixtures
4. Layout at corners aligns 45 degrees to the corner
5. **Follow Manufactures Recommendations!**

Wall Washers

Vertical Surface - Wall Washing

Fixture and Design Applications – Part 2

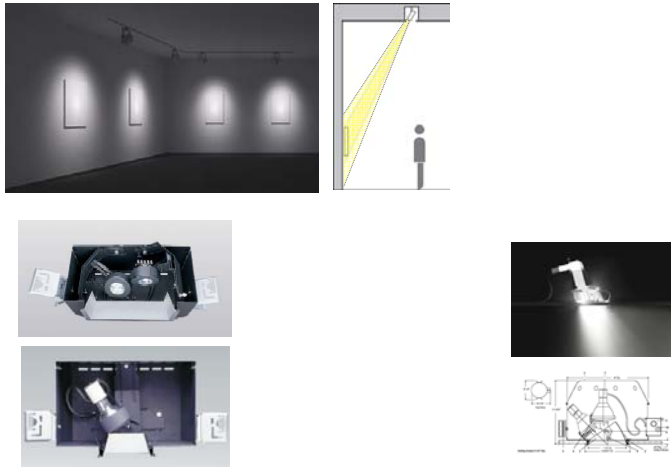
Vertical Surface - Wall Washing



Vertical Surface - Wall Washing



Accent Lighting



Accent Lighting

60° (Actual location)

Up to 30° (to minimize reflected glare)

60° (60°)

30°

Zone in which reflected glare may occur

Zone in which reflected glare may occur

Reflected glare on a glossy whiteboard can occur when a laminaire is mounted at a distance greater than 30 inches from the board.

Reflected glare can be minimized by mounting the laminaire up to 30 inches from the board to form an angle of less than 30° from vertical.

Generally Rule of Thumb

- fixtures should be aimed at a 30 degree angle from the vertical to prevent light from shining in anyone's eyes and to avoid disturbing reflections on the surface of the object.

Fixture and Design Applications – Part 2

Accent Lighting

Generally Rule of Thumb

- Usually, one fixture is required for each object being accented, but two can provide softer shadows and provide a wider wash of light

Accent Lighting

Objects can be illuminated with light directed from between 30° to 45° to the vertical. The steeper the incident light, the more pronounced the three-dimensionality of the illuminated object.

If the angle of incidence of the light is approximately 30°, the so-called "museum angle", this produces maximum vertical lighting and avoids reflected glare that may disturb the observer.

In the case of reflecting surfaces, e.g. oil paintings or pictures framed behind glass, attention must be paid to the angle of incidence of the light to avoid disturbing reflections that may arise in the observer's field of vision. This will also avoid any heavy shadow, e.g. picture frame shadows on the picture.

Accent Lighting

Accent Lighting

Fixture and Design Applications – Part 2



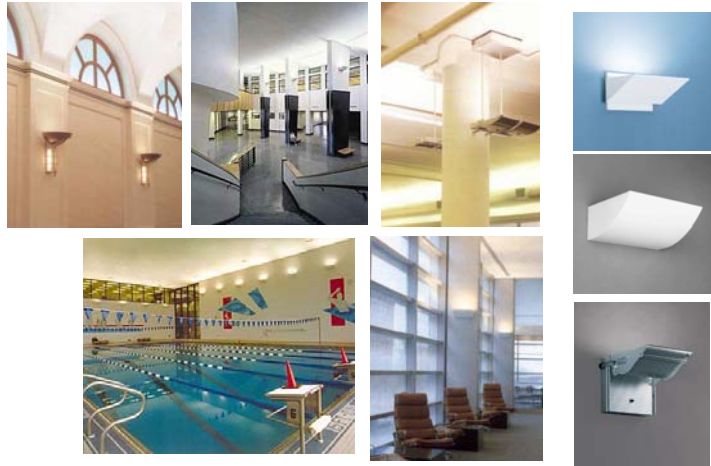
- Indirect Fixtures
 - Ceiling Lighting: Wall Mounted Uplight
 - Ceiling Lighting: Suspended Uplight

Horizontal Surface - Indirect Uplighting


Ceiling lighting requires sufficient room height to achieve even light distribution. Uplights should be mounted above eye-level to avoid direct glare. The ceiling offset depends on the degree of evenness required.

Fixture and Design Applications – Part 2

Horizontal Surface - Indirect Uplighting



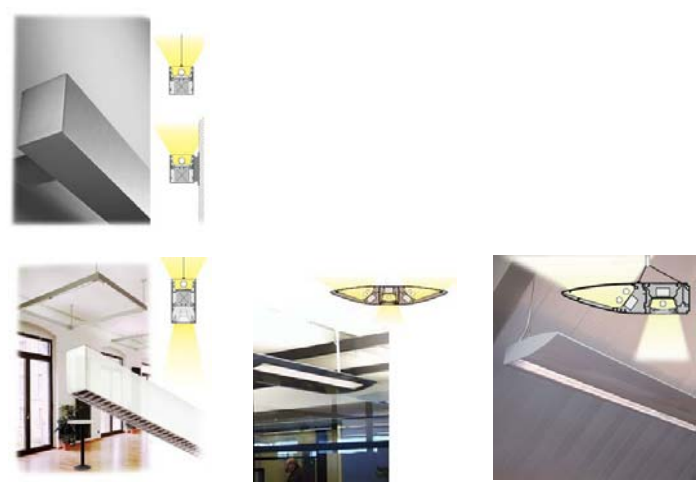
Horizontal Surface - Linear Uplighting



Horizontal Surface - Linear Uplighting



Horizontal Surface - Linear Uplighting



Fixture and Design Applications – Part 2

