

Scottsdale Commercial Green Rating Checklist



Commercial Green Checklist

- Designed to complement not compete with LEED Program
- Designed for full coordination with city ordinances



Commercial Green Checklist

1: Sustainable Sites

- Minimize heat island effect
- Encourages development of microclimates around building entrances
- Encourages avoidance of development in areas identified for habitat loss or desert preserve
- Encourages limitation of building footprint and preserving in place natural desert features
- Encourages use of light pollution reduction methods in excess of city ordinance



Shading

- Three-Tier Approach
 - Tier 1 - Heat avoidance (shading)
 - Tier 2 - Passive cooling
 - Tier 3 - Mechanical equipment
- Shading is a key strategy for achieving thermal comfort in the summer
- 50 sq. ft. of unshaded west window can require one ton of air conditioning

Solar Load

1) Direct radiation

- direct sunlight & glare
- effectively controlled by exterior shading devices

Solar Load

2) Diffuse radiation

- diffuse-sky
 - sunny and humid regions (southeast US)
 - sunny areas with dust or pollution
- large exposure angle
- controlled by additional indoor shading devices or shading within the glazing

Solar Load

3) Reflected radiation

- Problem in hot-dry regions (southwest)
- Intense sunlight and high-reflectance surfaces
- best controlled by reducing the reflectivity of surfaces
 - use of plants

Shading Devices

- Most common external shading devices
 - Horizontal overhang
 - Vertical fin
 - Eggcrate
 - Infinite number of variations

TABLE 9.2 EXAMPLES OF FIXED SHADING DEVICES

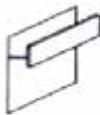
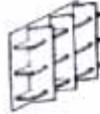
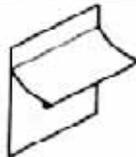
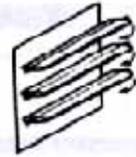
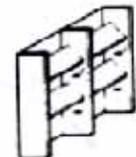
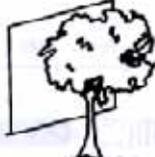
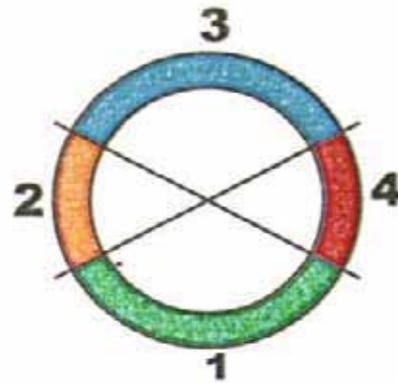
		Descriptive Name	Best Orientation	Comments
I		Overhang Horizontal panel	South, east, west	Traps hot air Can be loaded by snow and wind
II		Overhang Horizontal louvers in horizontal plane	South, east, west	Free air movement Snow or wind load is small Small scale Best buy!
III		Overhang Horizontal louvers in vertical plane	South, east, west	Reduces length of overhang View restricted Also available with miniature louvers.
IV		Overhang Vertical panel	South, east, west	Free air movement No snow load View restricted
V		Vertical fin	East, west, north	Restricts view For north facades in hot climates only
VI		Vertical fin slanted	East, West	Slant toward north Restricts view sig- nificantly
VII		Eggcrate	East, west	For very hot climates View very restricted Traps hot air
VIII		Eggcrate with slanted fins	East, west	Slant toward north View very restricted Traps hot air For very hot climates

TABLE 9.4 EXAMPLES OF MOVABLE SHADING DEVICES

	Descriptive Name	Best Orientation	Comments
IX	 Overhang Awning	South, east, west	Fully adjustable for annual, daily, or storm conditions Traps hot air Good for view Best buy!
X	 Overhang Rotating horizontal louvers	South, east, west	Will block some view and winter sun
XI	 Fin Rotating fins	East, west	Much more effective than fixed Less restricted view than slanted fixed fins
XII	 Eggcrate Rotating horizontal louvers	East, west	View very obstructed but less than fixed eggcrate For very hot climates only
XIII	 Deciduous plants Trees Vines	East, west, southeast, southwest	View restricted but attractive for low-canopy trees Air cooled
XIV	 Exterior roller shade	East, west, southeast, southwest	Very flexible from completely open to completely closed View is restricted when shield is used



Strategy 1 - South

Overhead shade structures



Strategy 2 - West

Protection from adjacent buildings

Protection by trellises and deciduous trees

Small windows



Strategy 3 - North

Wing walls



Strategy 4 - East

Protection from adjacent buildings

Protection by trellises and deciduous trees

Small windows

Strategies by orientation

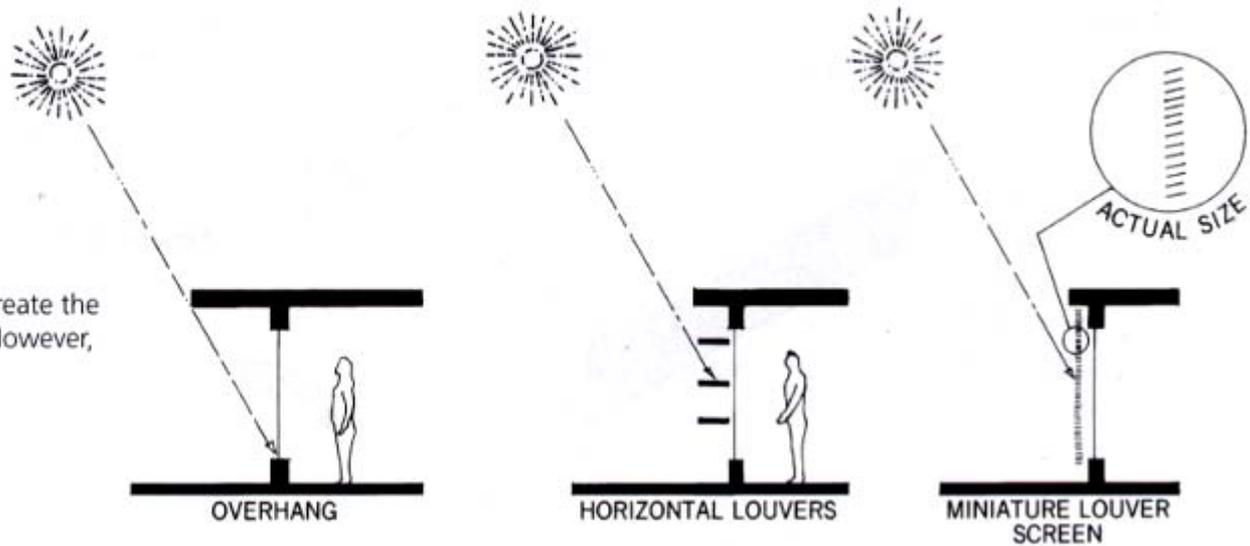
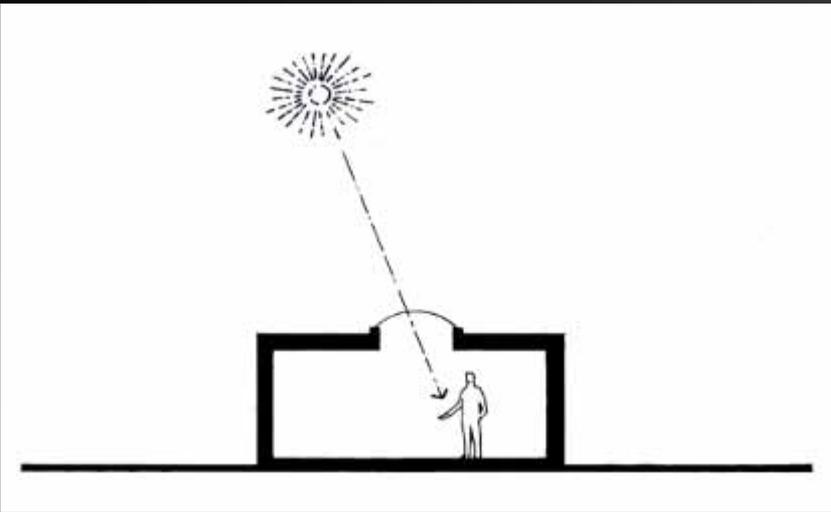


Figure 9.3d Many small elements can create the same shading effect as one large device. However, the view is best with the large overhang.

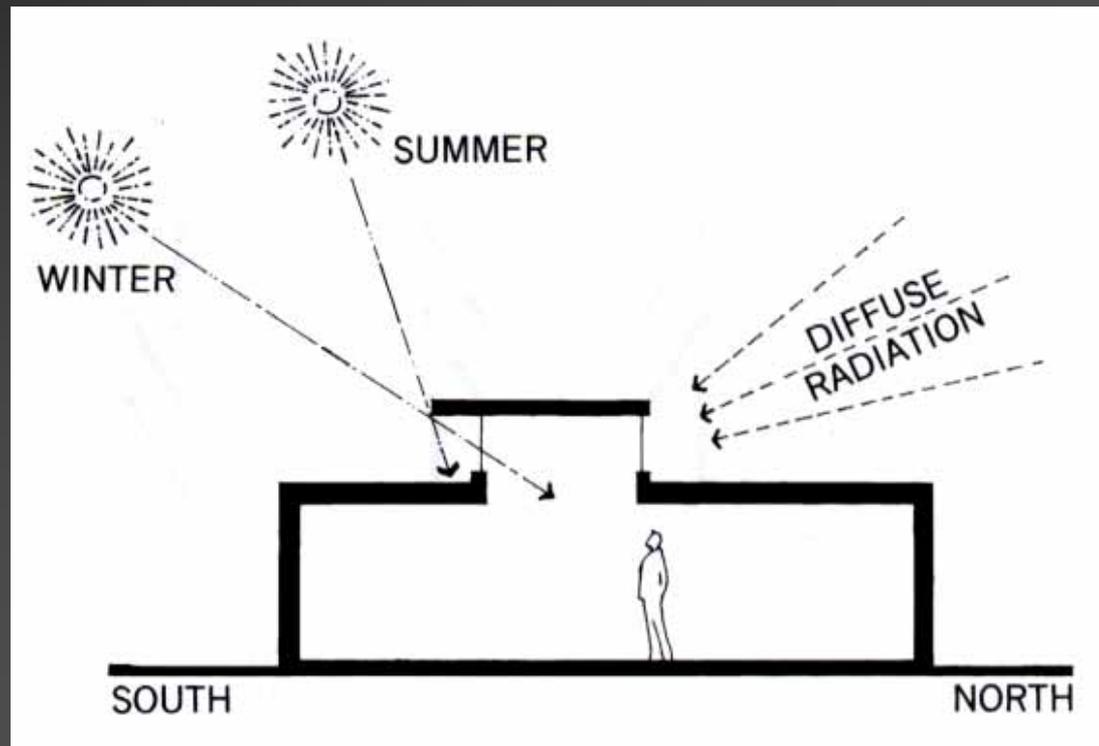


Unitarian Meeting House
Frank Lloyd Wright



Skylights should usually be avoided, unless shaded.

Clerestory windows should be used because they allow the sun to enter in a controlled manner.



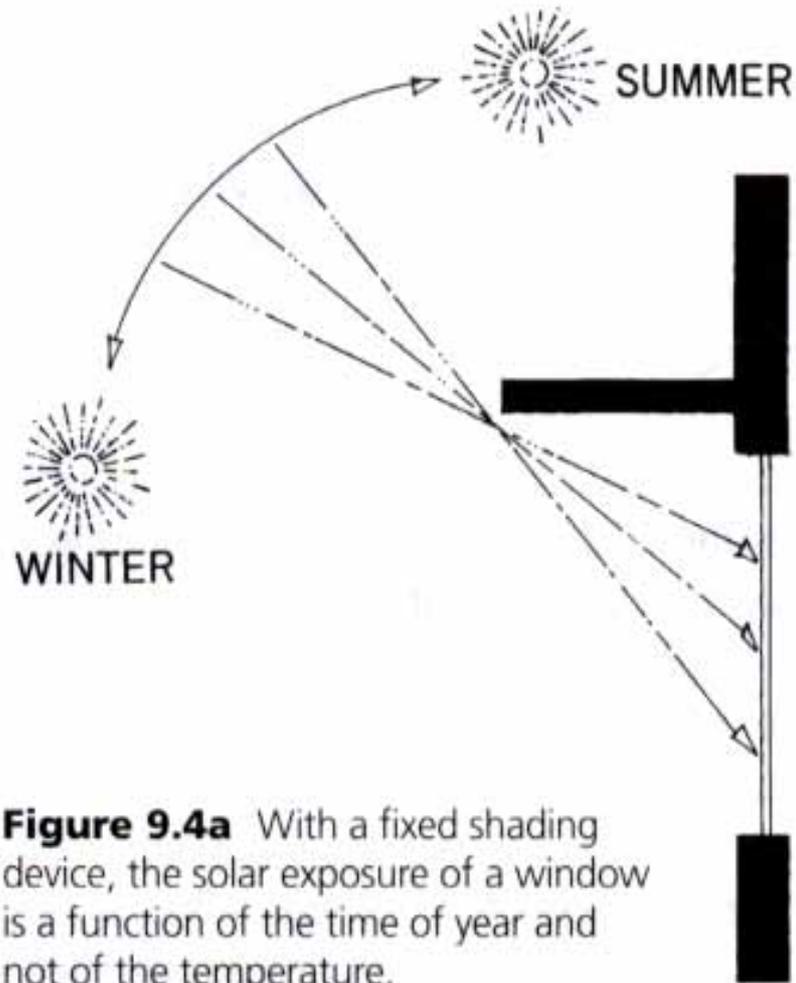


Figure 9.4a With a fixed shading device, the solar exposure of a window is a function of the time of year and not of the temperature.

Fenestration/Shading Systems in Germany





Fenestration/Shading Systems in Germany



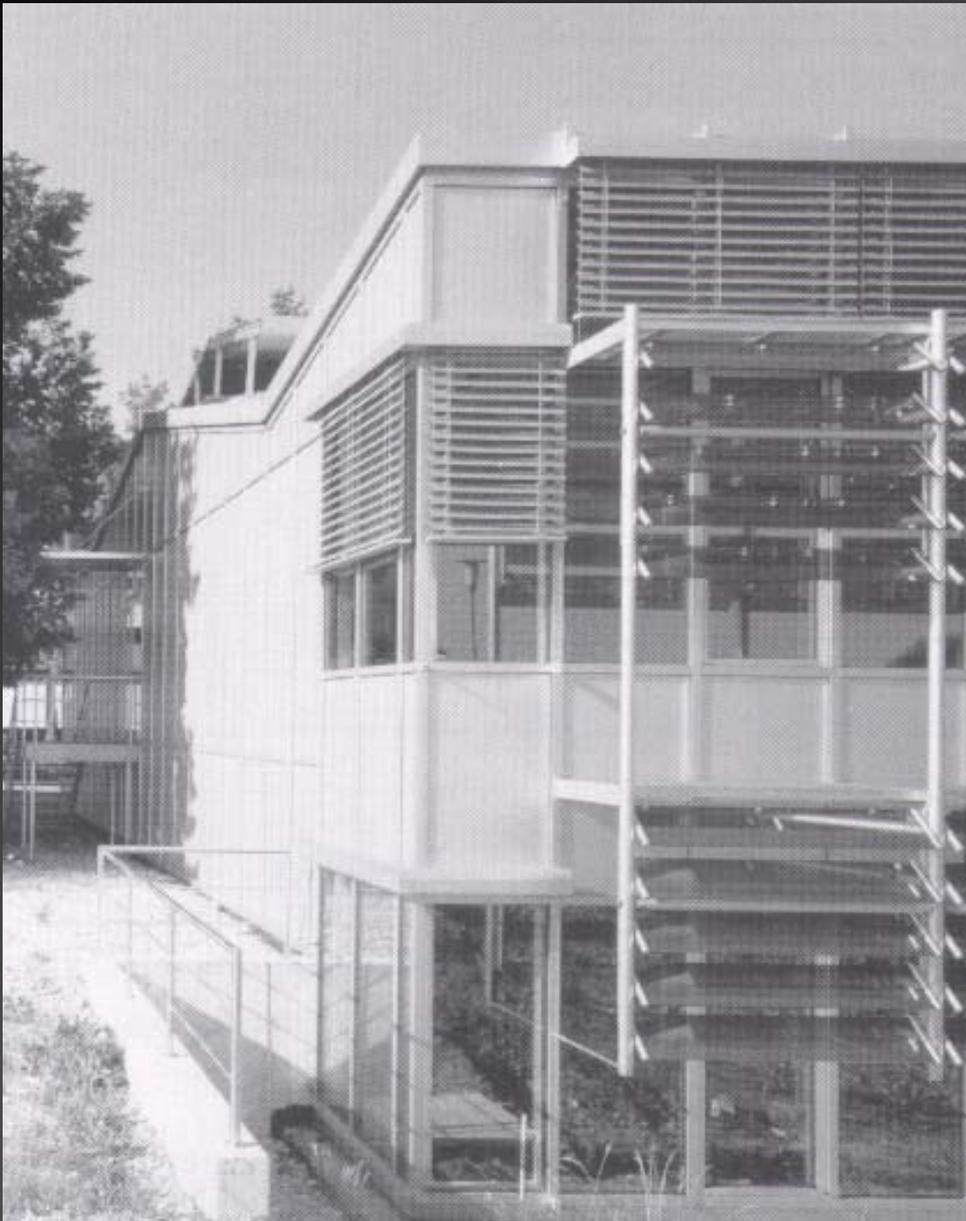


Fenestration/Shading Systems in Germany





Fenestration/Shading Systems in Germany



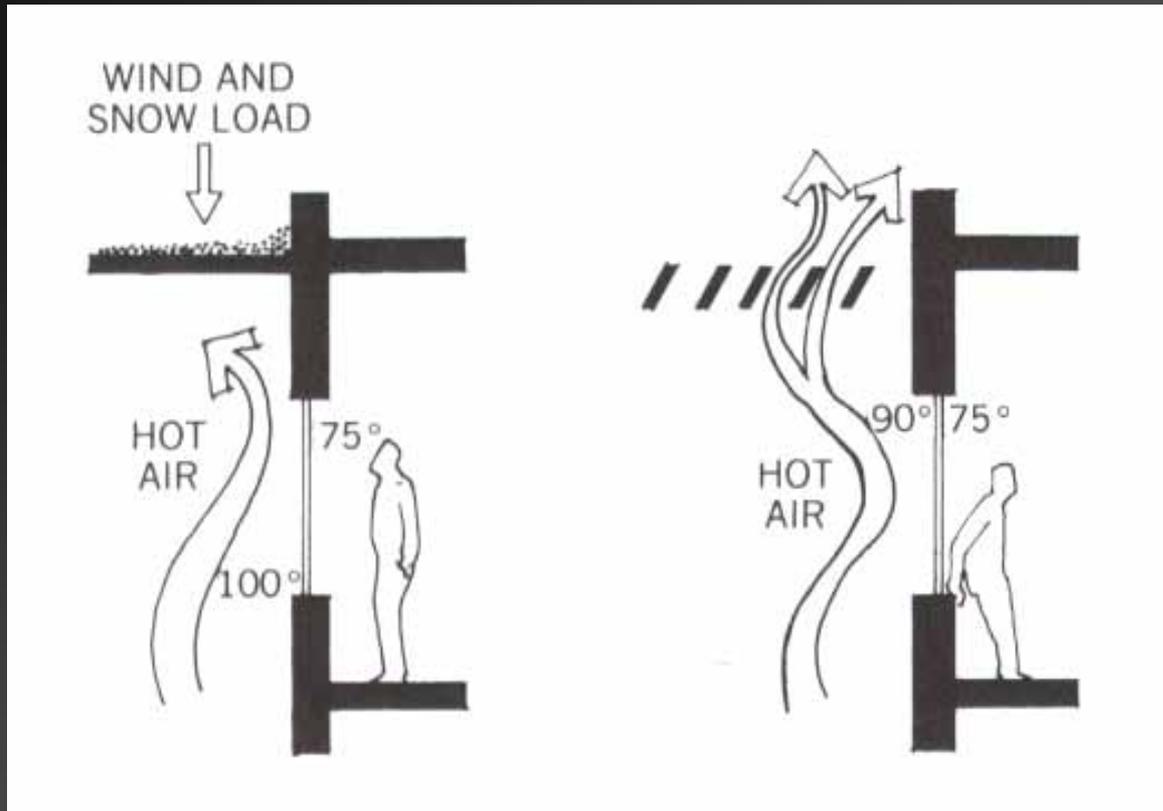
Josef Gartner & Sons
Headquarters,
Gundelfingen, Germany



South facade of the Allopro Administration Building,
Dortmund, Germany

Horizontal Overhangs

- View is the highest priority for most windows
- For this reason, the horizontal overhang is usually the best choice
- Although it obstructs the high sky, the more important horizontal view is unimpeded



Horizontal louvered overhangs both vent hot air and minimize wind loads.



Carré d'Art,
Nîmes, France





West Elevation at ASU Galvin Playhouse

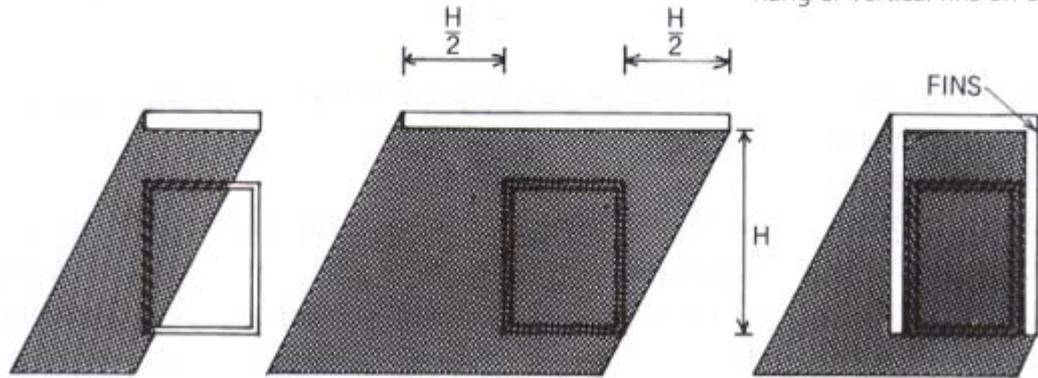
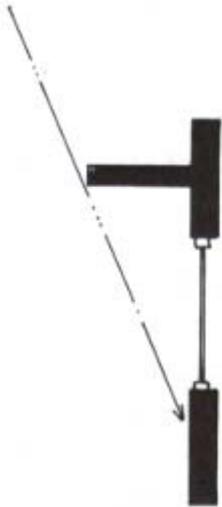


Figure 9.6b The sun easily outflanks an overhang the same width as the window. Use a wider overhang or vertical fins on each side of the window.



Extensive Overhangs at Desert Mountain
(Optima Development)



Starbucks in Lakewood, Washington

Starbucks Corporation is experimenting with the use of PaperStone rainscreen panels as cladding. In this store the lower band is bare PaperStone, while the rest has wood veneers.