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# Building Daylighting Analysis Report

Report generated by LightStanza, a Radiance based program

Enhanced by 3M™ Window Film

# Results Summary

Assumptions are found on page 7.

## East/West

	Maximum Depth of Daylit Zone*		Improvement	sDA300/500**	
	Base Case	3M DRF		Base Case†	3M DRF†
June	4 ft	40 ft	900%	0%	50%
September	2 ft	40 ft	1900%		
December	0 ft	25 ft	2500%		

## South (north in southern hemisphere)

	Maximum Depth of Daylit Zone*		Improvement	sDA300/500**	
	Base Case	3M DRF		Base Case†	3M DRF†
Summer	15 ft	55 ft	266%	3.15%	53.5%
Equinox	25 ft	60 ft	140%		
Winter	35 ft	60 ft	71%		

\* Daylit zone is defined as the area that receives a minimum of 30 foot candles at the work surface.

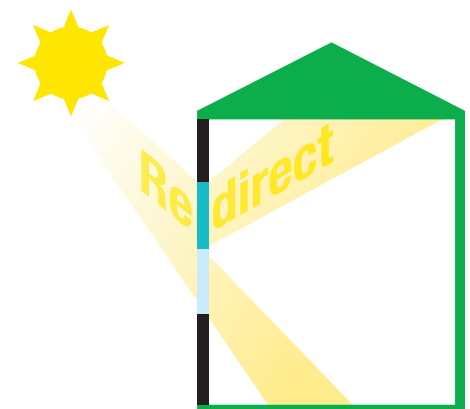
\*\*Spacial Daylight Autonomy (sDA): Describes how much of a space receives sufficient sunlight. It is a measure of daylight illuminance sufficiency for a given area reported as a percentage of floor area that exceeds a specified illuminance level. EXAMPLE: sDA300/50% specifies an illuminance level of 300 lux for 50% of the hours from 8:00 a.m. until 6:00 p.m.

†Annual average

## About LightStanza

LightStanza is a Radiance-based Web Application focused on the integration of natural light into a building. With this technology we are able to model the impacts of daylighting technologies such as 3M™ Daylight Redirecting Film compared to a base case. The program outputs, including images and room renderings, show the improved integration of natural light into a space provided by the daylighting product. In addition, the software can provide documentation for LEED compliance.

For additional information on the program, visit: [lightstanza.com](http://lightstanza.com).

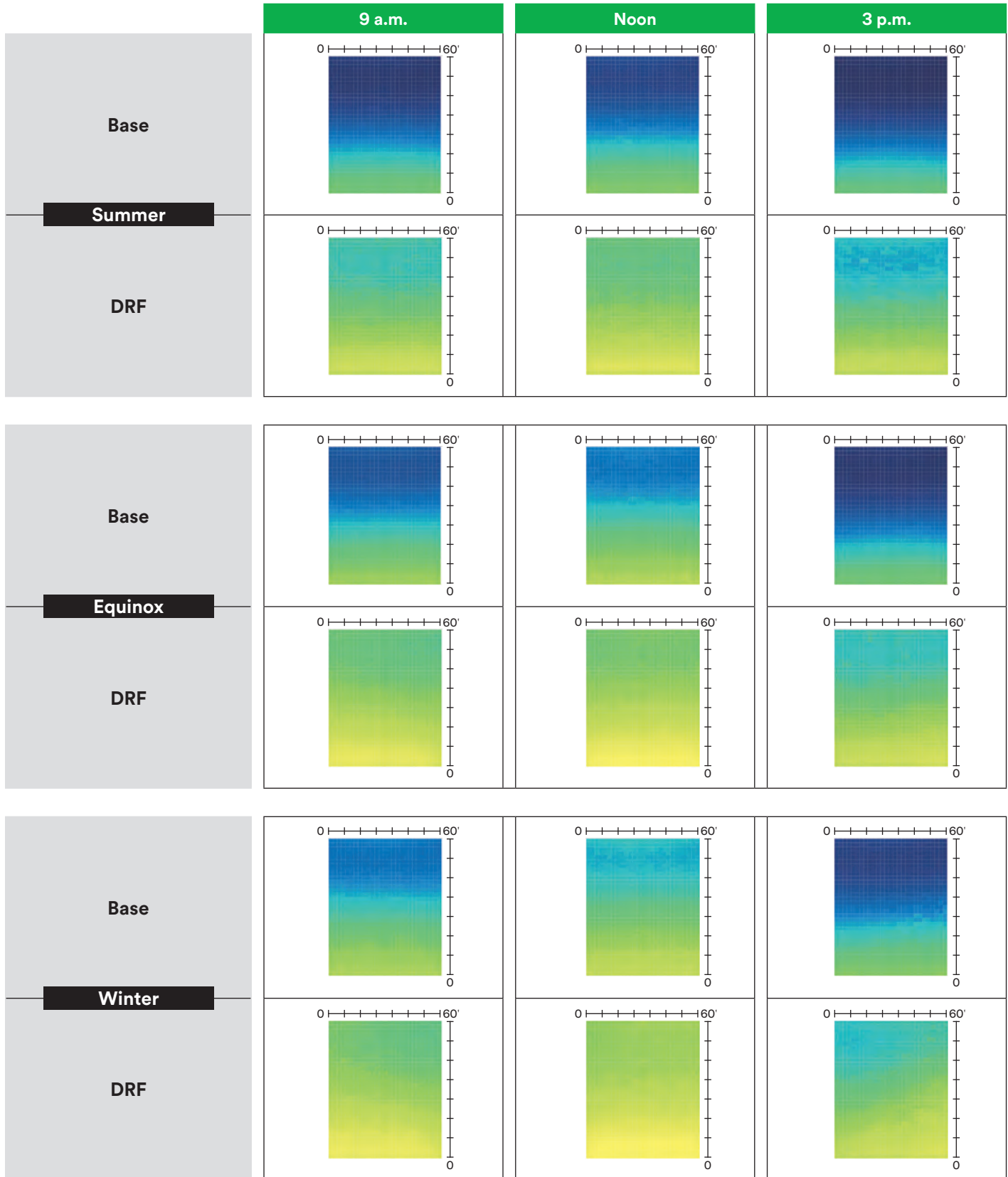


# South Facing Daylighting

North facing for southern hemisphere

- >100 FC
- Daylit Zone 20 FC\*\* <X <100 FC
- Daylit Zone <20 FC

Charts show daylighting level at the work surface\*.



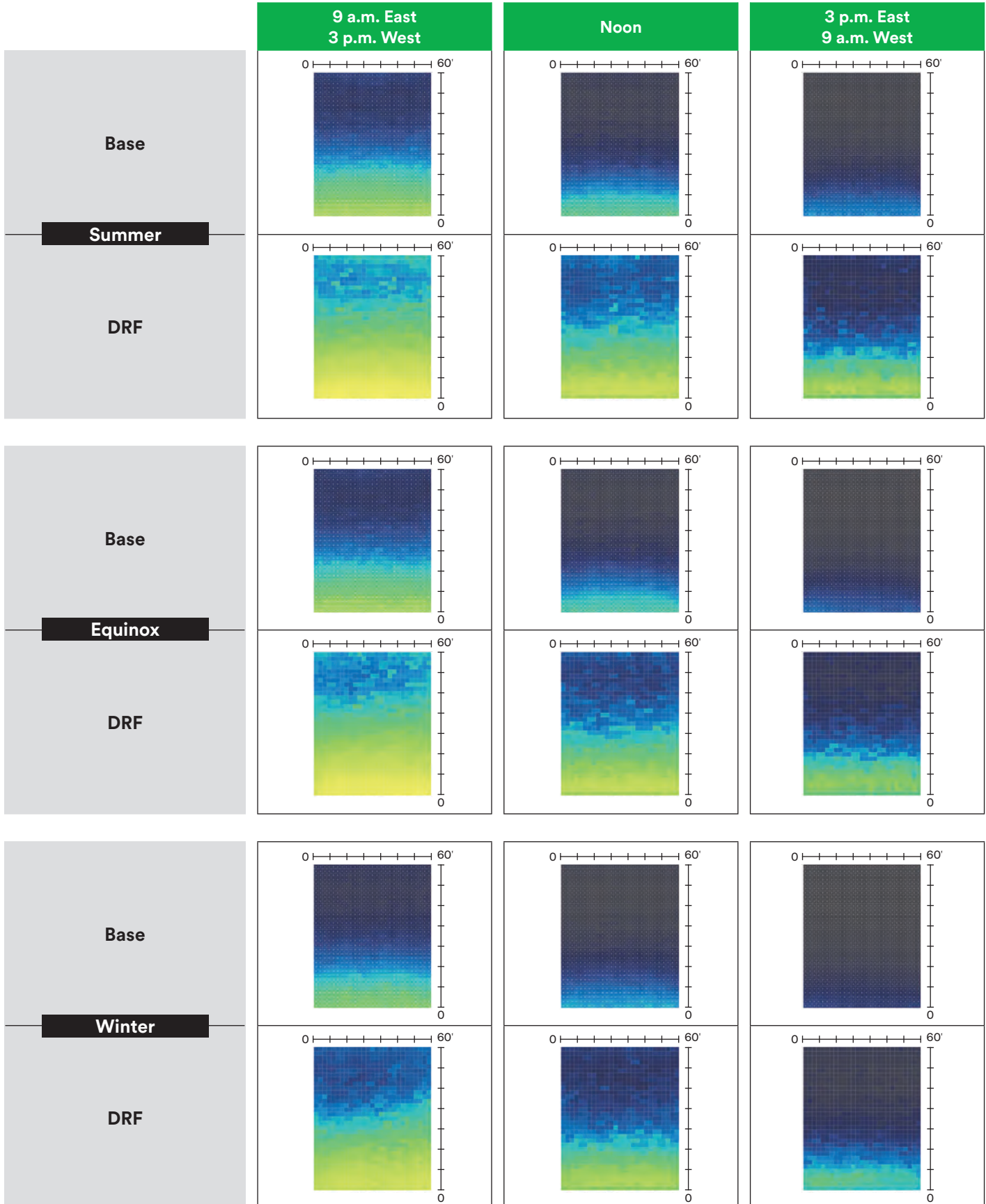
\*Work surface is defined as 30" above the floor.

\*\*FC (Foot-Candle) is a measure of light intensity on a surface from a uniform point source (one candle). A foot-candle is equal to one lumen per square foot.

# East/West Facing Daylighting

Charts show daylighting level at the work surface\*.

- >100 FC
- Daylit Zone 20 FC\*\* <X <100 FC
- Daylit Zone <20 FC



\*Work surface is defined as 30" above the floor.

\*\*FC (Foot-Candle) is a measure of light intensity on a surface from a uniform point source (one candle). A foot-candle is equal to one lumen per square foot.

# Building Renderings — Equinox

## Blinds Open

Notice the glare that can be seen on the ground near the windows. This glare is the common reason that window treatments are closed throughout the year.



9 a.m.



Noon



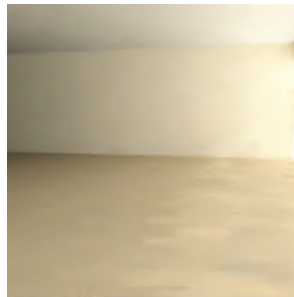
3 p.m.

## Blinds Closed

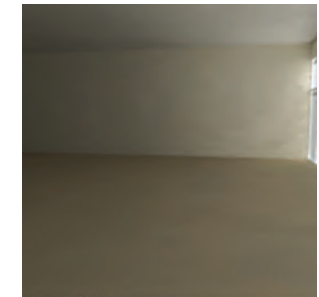
While closing window treatments may support occupant comfort from a glare perspective, rarely are window treatments optimized to maximize occupant comfort and the lighting benefits of natural light.



9 a.m.



Noon



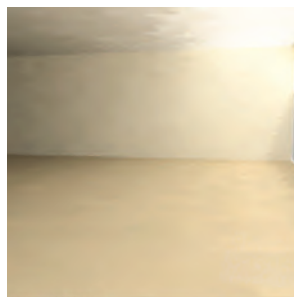
3 p.m.

## DRF Top — Blinds Closed Bottom

3M™ Daylight Redirecting Film redirects and spreads the natural light deeper into the building, reducing glare, while maximizing the benefits of natural light.



9 a.m.



Noon



3 p.m.

# About This Report

This report utilizes the daylighting industry standard radiance algorithm to calculate the added benefit of applying 3M™ Daylight Redirecting Film to clerestory or transom windows versus a base building with closed window treatments. Window treatments are a common solution for occupant comfort for those nearest the windows, yet are rarely optimized to maximize natural light while helping to provide comfort.

This report details the added benefit of applying 3M Daylight Redirecting Film on a base building, where the natural light would not be impeded by interior building infrastructure.

## Assumptions

Parameter	Value
Room depth	68 ft (20.7m)
Room width	55 ft (16.8m)
Ceiling height	13 ft (4.0m)
View window height from floor	0
View window dimensions	48 in x 96 in (122cm x 243.8cm)
Clerestory window height from floor	8 ft (2.4m)
Clerestory window dimensions	42 in x 48 in (107cm x 122cm)
Head space above window	18 in (45.7cm)

Base Glass Visible Light Transmission (VLT)	86%
Blind type	Shade — Pewter
Blind VLT	1%
Work height elevation	30 in (76.2cm)

## Project Information (do the following):

Title	3M Daylight Redirecting Film Installation
Location	

## Analyst

Name	Eric Askeland (LEED Green Associate; 3M Senior Technical Service Engineer)
Company	3M
Address	3M Center, St. Paul, MN 55144

## Building Information

Building type	Office
Building shape	Rectangle
Orientation	South
Floor-to-floor height	

## Dimensions

60 ft	
60 ft	

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