



NATURAL INTERIOR DAYLIGHT

A REPORT TO ADVOCATE FOR SOCIALLY RESPONSIBLE SUSTAINABLE DEVELOPMENT

# LARGE SKYLIGHTS LEAD SUSTAINABILITY EFFORT FOR ROOMS TO GO WAREHOUSE

ENEREF INSTITUTE EXAMINES THE DECISIONS BEHIND INSTALLING A LIGHTING SYSTEM THAT COMBINED DAYLIGHT WITH LED.

Rooms To Go is a chain of furniture stores that has grown to 226 outlets across the United States since its founding by Jeffrey Seaman in 1990.

Even as the company has rapidly expanded, they have chosen to engage

environmental stewardship as a way to enhance their leadership position within the retail furniture industry.

The bulk of those efforts has been in the area of minimizing their energy footprint. A significant part of their

# NO LIGHTS ON IS BETTER THAN SOME LIGHTS ON. IF LIGHT IS FULLY AVAILABLE FROM THE SUN, WHY NOT USE IT?

RICHARD MILLER | *VP of Operations*

energy-savings has been the installation of over 300 large domed skylights in their newest shipping and receiving facility in Dunn, North Carolina.

The 1.4 million square foot Dunn facility has been open since late 2015, and is now the company's largest facility in the South Atlantic states.

The company's installation of skylights at their new facility is backed up with five years of successful installation of skylights in other Rooms To Go warehouses. The intent in all of these installations is to reduce energy expenses in these massive facilities. Innovations are a part of the company's culture, as established by founder Seaman.

"Jeff allows us to take risks. We try and make positive change happen," says Richard Miller, VP of Operations and Planning at the furniture retailer. "I think what we've done at Rooms To Go is good business and good for the environment."

During the construction of the Dunn facility, Rooms To Go

installed VELUX prismatic skylights, supplemental LED lighting, and light sensors that connected a number of the skylights to the LEDs. The sensors can automatically dim the LEDs based on the amount of daylight coming through the skylights, so electricity is never wasted at the facility.

"At the end of the day" says operations VP Miller, "no lights on is better than some lights on. If light is fully available from the sun, why not use it?"

As Rooms To Go Operations Manager Malcolm Nightingale explains, reducing lighting costs can be a large part of reducing the overall energy costs at warehouse facilities. The skylights significantly reduced the electric bill at the warehouse, he said.

## IMPROVING LIGHT QUALITY IN WAREHOUSE

"The choice to install skylights at Dunn was the right one," says Rooms To Go Senior Construction Manager Bruce Wallick. "And daylight-capturing sensors in the skylights save the company money."

Still, his warehouse staff were quick to also recognize the human benefits of skylights, Wallick notes. "The people like the lighting." The skylights provide a "more friendly, more inviting, more soothing light to work under," he said. "And people appreciate having natural light."

According to studies conducted by industry-leading daylighting experts, The Heschong Mahone Group, levels of natural interior daylight in workspaces are significantly predictive of improved mental acuity and performance.

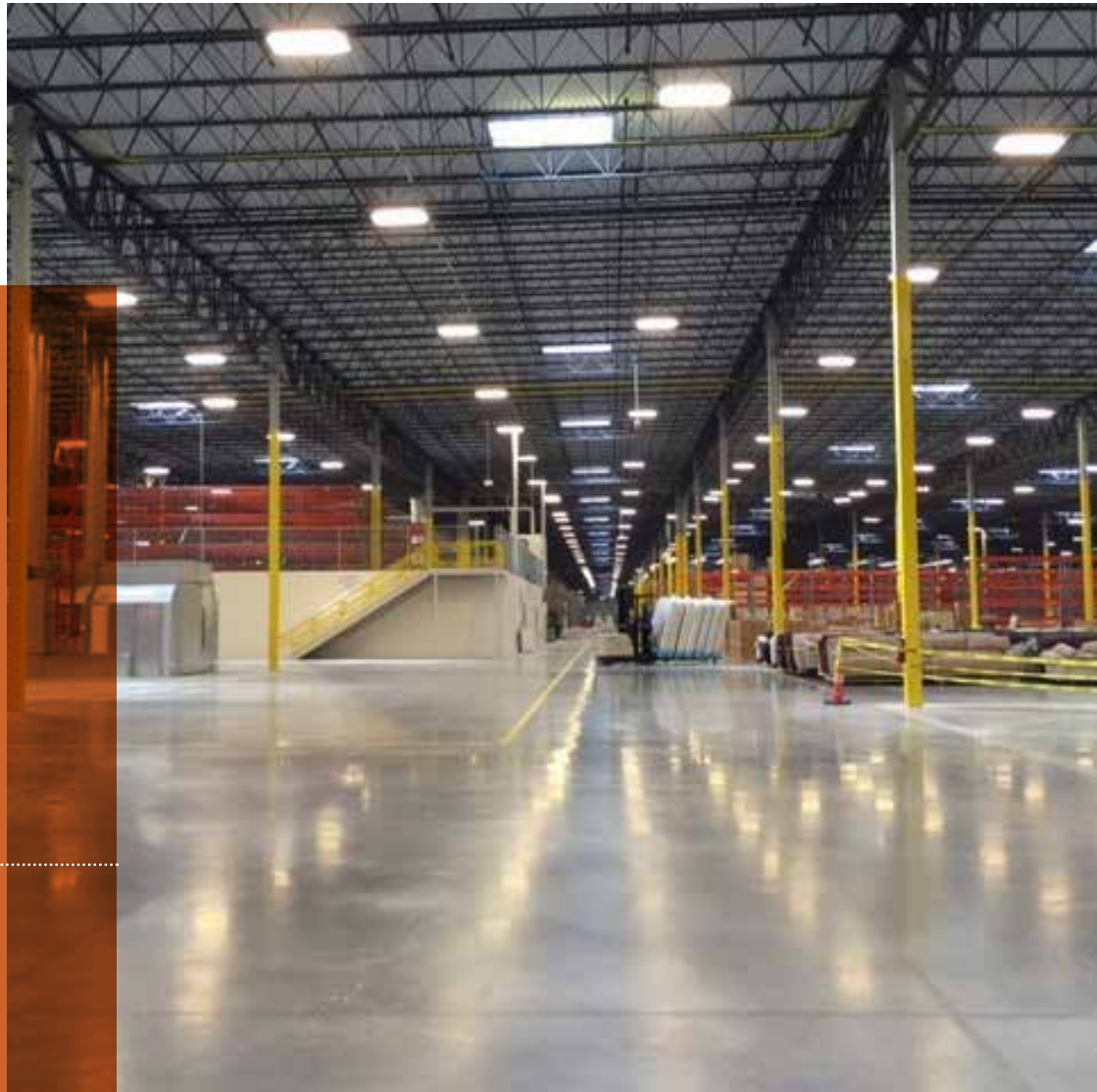
Says Nightingale, "it's a quality of life thing."

## BETTER LIGHT FOR MERCHANDISE INSPECTION

Rooms To Go is the third-largest furniture retailer in the United States. The company popularized retailing whole-room furniture packages. While aligning themselves with environmental ethics and stewardship, Rooms To Go has attained a market leadership position by reducing costs and improving production.

According to Operations Manager Nightingale, appropriate amounts of light are required to successfully inspect merchandise at shipping and receiving facilities, such as Dunn.

An architectural feature of all Rooms To Go retail stores are



## SKYLIGHTS LIGHT THE AISLES

*Rooms To Go carefully selected the optimal location of each skylight, decreasing electricity costs by maximizing each skylight's benefit.*

large glass windows for three of the store's exterior walls. The windows bring a significant amount of daylight into the store.

The warehouse skylights add a competitive advantage; the warehouse staff can view merchandise under the same lighting conditions as in-store customers.

### **ADDING STRENGTH AND DURABILITY TO THE SKYLIGHTS**

Rooms To Go specified large, custom-made, dome-shaped, prismatic VELUX skylights for

installation on the roof of the Dunn facility. The skylights have a clear polycarbonate outer glazing for extra strength.

Like acrylic skylights, polycarbonate skylights have high Visible Light Transmittance (VLT). However polycarbonate offers impact resistance that surpasses Occupational Safety and Health Administration (OSHA) requirements. This makes polycarbonate skylight lenses exceptionally safe and outstandingly durable.

Rooms To Go examined samples of the skylight plastics prior to installation at Dunn. "We felt the polycarbonate was a stronger, more durable product," Senior Construction Manager Wallick says. "We had product samples in the office, and we poked around at them. It's not like we fired two-by-fours through them or anything, but we stabbed sheet samples with a knife, twisted and bent them. The polycarbonate wouldn't snap or break."

# WE'RE VERY SATISFIED WITH THE LIGHT THAT WE'RE GETTING. GOING FORWARD, WE'RE PROBABLY GOING TO INCREASE THE AMOUNT OF SKYLIGHTS THAT WE'RE PUTTING IN OUR FACILITIES.

BRUCE WALLICK | *Senior Construction Manager*

"With little structural steel and no fall-protection bars on the roof, the choice for polycarbonate lenses was primarily a safety decision," Wallick concludes.

## CHOOSING PRISMATIC TO ELIMINATE GLARE

The prismatic lenses provide an even, diffuse distribution of light. Regardless of the sun's angle to the horizon, prismatic lenses spread captured light over the maximum area through refraction within the lens.

The skylights were double-glazed for superior thermal properties, keeping the cold air out in winter and the air conditioned cool air inside, during the summer.

"Rooms To Go wanted as much light through the first lens as possible," explained Wallick. "The prismatic helps throw around the light."

Prismatic lenses also reduces the possibility of glare spots, which have consequences on worker

performance. "The greater the glare potential, the worse office worker performance was on three mental function tests, decreasing performance by 15% to 21%," according to the same study by Heschong Mahone Group mentioned above.

## INSTALLING FLASHING AND SKYLIGHT PLACEMENT

Rooms To Go contractors installed VELUX integral skylight curbs to secure their skylights to the roof. The skylight curb is a protective metal frame sealed around the skylight, lifting it off the roof surface for greater visible light transmittance while also preventing leakage through its seamless flashing.

After initial roof penetration, skylight curbs were positioned, and flashing was installed around the prefabricated curbs, anchoring them to the roof. The skylights were then mounted onto the flashed curbs and fastened

into place. Installing flashing was a "no brainer" says Senior Construction Manager Wallick.

Rooms To Go carefully selected the optimal location of each skylight so as to decrease electricity costs by maximizing each skylight's benefit. At Dunn, this meant using skylights to light the drive-aisles used for production equipment and coordinating the installations to assure the skylights were over the aisles between racks, and not directly above the racks.

"It was just a process of putting the skylights in the right locations," says Wallick. "In a 75ft. run of racking, we'd put in a couple of skylights. Maybe next time we'll put in more."

## REALIZING THE ENERGY SAVINGS

Energy savings became a driving factor in the choice for skylights at Dunn when the company realized the extent to which natural interior daylight could illuminate their facilities and reduce electrical costs. "We wanted to do skylights, but resisted for years," Wallick states. "It started off as a construction cost issue."

On earlier Rooms To Go constructions, skylights were specified by architects, Wallick says. "As we realized the benefits of skylights, we wanted to be more involved in the decisions."

# ACCORDING TO HESCHONG MAHONE STUDIES, LEVELS OF NATURAL INTERIOR DAYLIGHT IN WORKSPACES ARE SIGNIFICANTLY PREDICTIVE OF IMPROVED MENTAL ACUITY AND PERFORMANCE.

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However, reservations about using skylights remained until the company recognized that other large retailers were also confident in having them in their stores, according to the Rooms To Go warehousing group.

As Rooms To Go became a more environmentally-aware company, "skylights slowly worked their way in," Wallick says.

"Over the years we made a determination that skylights make economic sense and absolute sense for our people. We're putting them in all our new warehouses," says Miller.

## TRAINING WORKERS TO TURN LIGHTS OFF

To further control the lighting at Dunn and decrease overall electricity use, Rooms To Go installed localized switches in some of the sky-lit areas. Some days, the skylights offer enough light that the electric lights can be switched off completely.

Training workers to use the light switches when the skylights

alone can light the large warehouse space, however, is a "work in progress," says Wallick.

"I can pretty much promise you that our people don't turn the lights off as often as they could," he says. "I think that's probably typical warehousing. People working hard are not thinking about turning off lights."

## PARTICIPANTS REPORT SUCCESS

Everyone interviewed for Eneref Institute's Natural Interior Daylight report was very satisfied with the choice to install skylights at Dunn.

"People appreciate having natural light available. I think it's far preferable," says VP Richard Miller.

"It exceeded my expectations," says Nightingale. "They actually turned out even better than they

thought they were going to. Even when it's cloudy out."

"I expected some light but not as much as they give. I would absolutely do what we've done here again in a new facility," he continued.

"We're very satisfied with the light that we're getting," says Wallick. "All the warehouses are going to continue to have skylights. And going forward, we're probably going to increase the number of skylights that we're putting in our facilities."

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AS A PART OF OUR NATURAL INTERIOR LIGHTING INITIATIVE, Eneref Institute interviewed key participants in the planning and implementation of the construction at Dunn. Interviewees from Rooms To Go included Vice President of Operations and Planning Richard Miller, Rooms To Go Senior Construction Manager Bruce Wallick, and Regional Operations Manager Malcolm Nightingale.



# LEAD BY EXAMPLE.

***THE NATURAL INTERIOR DAYLIGHT INITIATIVE IS A CAMPAIGN TO PRESERVE OUR NATURAL RESOURCES AND PROMOTE NICER LIGHTING IN OUR HOMES AND BUILDINGS.***

**ENEREF INSTITUTE** launched the Natural Interior Daylight initiative to champion solutions in line with our mission, that deliver sound ideas to significant market influencers. The initiative is designed to encourage responsible behavior within public and private organizations, municipalities and corporations by offering common sense solutions that can achieve effective results.

Our Natural Interior Daylight Virtual Campus is the repository for our Advocacy Reports and Web Forums.

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