LIGHTING LAYOUT GUIDE SERIES

WAREHOUSE GUIDE 2

WAREHOUSE

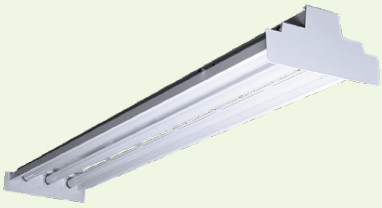
T8 FLUORESCENT

ROOM CHARACTERISTICS

Length: 72'
Width: 150'
Height: 28' Open Ceiling
Reflectivity:

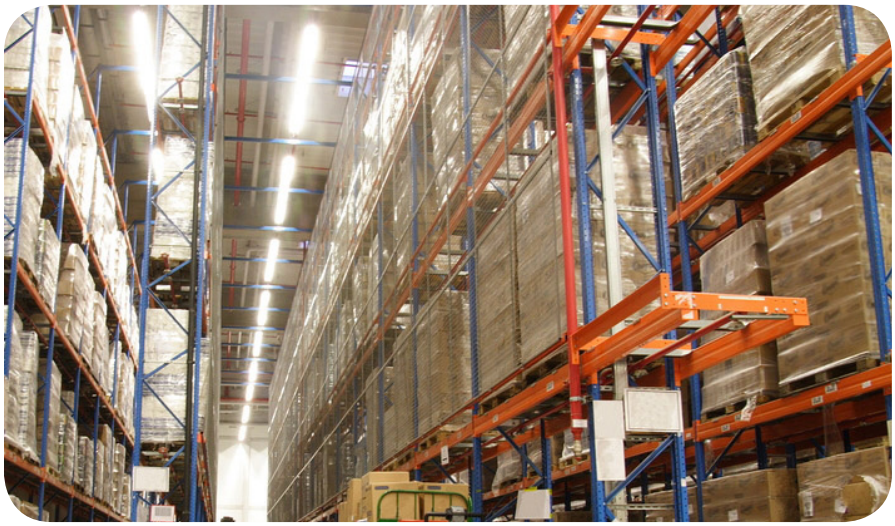
Ceiling	= 80%
Walls	= 30%
Floor	= 20%
Product	= 30%

PRODUCT SPECIFICATIONS



Dimensions: 9.75" x 4'
Optics: Structural Aluminum Reflector
Lamps: (4) F32T8 HP
CCT: 3500K
CRI: 84
Lumens per Lamp: 3100
Ballast Factor: 0.88*
Lamp Lumen Depreciation: 0.95
Efficiency: ~83%
Watts: 83

* If the light levels are higher than required, consider a lower ballast factor (BF) for greater savings.



THE OPPORTUNITY

In a typical high, open ceiling warehouse application, it is possible to provide high quality lighting that adequately illuminates the warehouse shelves while meeting or beating the local energy code. The situation requires luminaires with optical control capable of effectively distributing light onto the vertical surfaces, which provides excellent product recognition and improved productivity.

THE SOLUTION

Install industrial high bay fluorescent luminaires with narrow optical distribution located over the center of each aisle. Luminaires equipped with T8 high efficiency electronic ballasts and (3) 32w T8 high performance lamps will deliver 10 or more average maintained vertical footcandles on the face of the stacks.

DESIGN CONSIDERATIONS

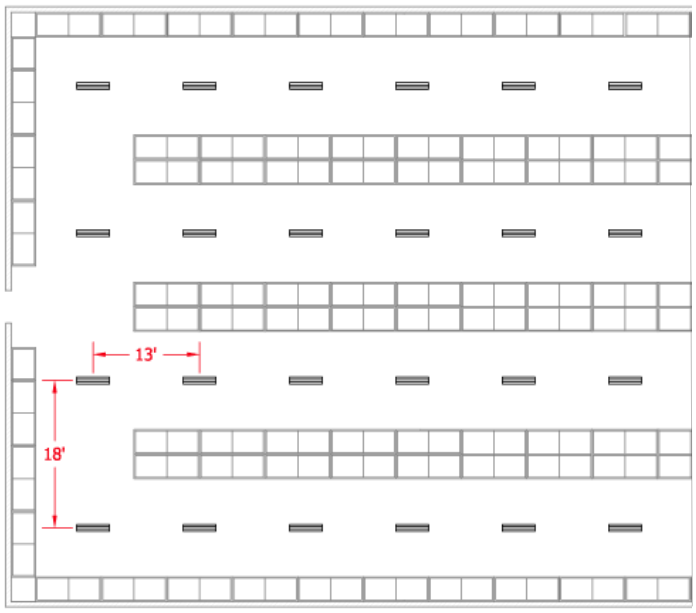
Stacks have a large impact on the illumination of the space. Vertical surfaces absorb and block light. The stack layout must correspond to the lighting layout to minimize shadows (if luminaires are installed in the center of the aisles.

lighting design lab
www.lightingdesignlab.com

NORTHWEST LIGHTING NETWORK
www.nwlightingnetwork.com

LAYOUT OPTIONS

Warehouse (3) T8 Fluorescent | 18' x 13' Spacing



INSTALLATION SPECS

Number of Luminaires: 44 (24 shown here)
Luminaire Spacing: 18' x 13'
Mounting Condition: Pendant
Mounting Height: 24'
Average Illumination:
~15 fc horizontal
~11 fc vertical
Watts/sq. ft.: ~0.34

IES Recommended Footcandles (fc):
10 - 30 fc horizontal
5 - 15 fc vertical

CONTROLS STRATEGY

Many jurisdictions require automatic OFF occupancy sensors in these types of spaces. Even when not required, occupancy control is an excellent strategy that allows the lights to switch OFF, with the exception of egress lighting such as emergency lights.

Controlling each aisleway independently is also a good energy saving strategy. Using fixtures with integrated sensors can increase savings in spaces with long aisles.

ENERGY SAVING STRATEGIES

STRATEGY	BENEFIT	TECH NOTE
Daylight dimming sensors near skylights	Can balance light levels within the space while using only enough wattage to maintain target light levels	Light level maintained from daylight
Integrated occupancy sensors	Simple to commission and minimizes installation cost	Light levels remain equal to base design
Lower ballast factor	Can reduce wattage considerably	Be sure light levels are not compromised

ENERGY CODE INFORMATION

JURISDICTION	CODE	LIGHTING POWER ALLOWANCE
Seattle	2012 Seattle Energy Code	0.05 w/sq. ft. (0.58 space x space)
Washington	2012 WSEC	0.05 w/sq. ft. (0.58 space x space)
Oregon	2014 OEESC	0.66 w/sq. ft. (0.58 space x space)
Idaho	2012 IECC	0.60 w/sq. ft. (0.60 space x space)
Montana	2012 IECC	0.60 w/sq. ft. (0.60 space x space)