OPEN WAREHOUSE
T8 FLUORESCENT HIGH PERFORMANCE

THE OPPORTUNITY

In a typical high, open ceiling warehouse application, it is possible to provide high quality lighting that illuminates the warehouse floor area to recognized standards, and meets or beats the local energy codes. This layout provides broad, even lighting throughout the space, allowing for better product recognition and improved productivity.

THE SOLUTION

Install industrial high bay fluorescent luminaires on 20' x 24' centers, equipped with T8 electronic ballasts and (6) 32w T8 high performance lamps. For this application, uniformity of illumination is desirable, and vertical illumination is far less important. This layout distributes light evenly throughout the space, at contrast ratios of about 3:1, and maintains an average illumination level of about 20+ footcandles.

DESIGN CONSIDERATIONS

In this application, the emphasis is not only on appropriate horizontal illumination, but on uniformity as well. The layout achieves a desirable contrast ratio.

ROOM CHARACTERISTICS

- Length: 150'
- Width: 72'
- Height: 32' Open Ceiling
- Reflectivity:
  - Ceiling = 80%
  - Walls = 30%
  - Floor = 20%

PRODUCT SPECIFICATIONS

- Dimensions: 17" x 48"
- Optics: Specular Aluminum Reflector
- Lamps: (6) F32T8 HP
- CCT: 3100K
- CRI: 84
- Lumens per Lamp: 3500
- Ballast Factor: 1.15*
- Lamp Lumen Depreciation: 0.95
- Luminaire Efficiency: 87%
- Watts: 217

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

NOTE: Lower wattage T8 lamps may be an option in climate controlled spaces, however T8 lamps can experience performance degradation in temperatures below 60°F.
LIGHTING LAYOUT GUIDE SERIES

INSTALLATION SPECS
Number of Luminaires: 21 (12 shown here)
Luminaire Spacing: 20’ x 24’
Mounting Condition: Pendant
Mounting Height: 28’
Average Illumination: ~22 fc
Watts/sq. ft.: ~0.42
IES Recommended Footcandles (fc): 10 - 30 fc

CONTROLS STRATEGY
Significant energy savings can be gained by using occupancy sensors to turn light off automatically after hours and when the space is empty during business hours.

ENERGY CODE INFORMATION

<table>
<thead>
<tr>
<th>JURISDICTION</th>
<th>CODE</th>
<th>LIGHTING POWER ALLOWANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Seattle</td>
<td>2012 Seattle Energy Code</td>
<td>0.50 w/sq. ft. (0.58 space x space)</td>
</tr>
<tr>
<td>Washington</td>
<td>2012 WSEC</td>
<td>0.50 w/sq. ft. (0.58 space x space)</td>
</tr>
<tr>
<td>Oregon</td>
<td>2014 OEESC</td>
<td>0.66 w/sq. ft. (0.58 space x space)</td>
</tr>
<tr>
<td>Idaho</td>
<td>2012 IECC</td>
<td>0.60 w/sq. ft. (0.60 space x space)</td>
</tr>
<tr>
<td>Montana</td>
<td>2012 IECC</td>
<td>0.60 w/sq. ft. (0.60 space x space)</td>
</tr>
</tbody>
</table>

ENERGY SAVING STRATEGIES

<table>
<thead>
<tr>
<th>STRATEGY</th>
<th>BENEFIT</th>
<th>TECH NOTE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Daylight dimming sensors near skylights</td>
<td>Can balance light levels within the space, while using only enough wattage to maintain target light levels</td>
<td>Light levels maintained from daylight</td>
</tr>
<tr>
<td>Integrated occupancy sensors</td>
<td>Simple to commission and minimizes installation costs</td>
<td>Light levels remain equal to base design</td>
</tr>
<tr>
<td>Lower ballast factor</td>
<td>Can reduce wattage considerably</td>
<td>Be sure target light levels are not compromised</td>
</tr>
</tbody>
</table>

OPEN WAREHOUSE | T8 FLUORESCENT