



1300 South Wolf Road
P. O. Box 5065
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Energy Efficient Application Example #2

Retail Store

100% Halogen Trac Lighting

Vs.

CMH Downlights w/ Supplemental Halogen Trac Lighting

Space Criteria:

Size: 50 x 50 x 10.

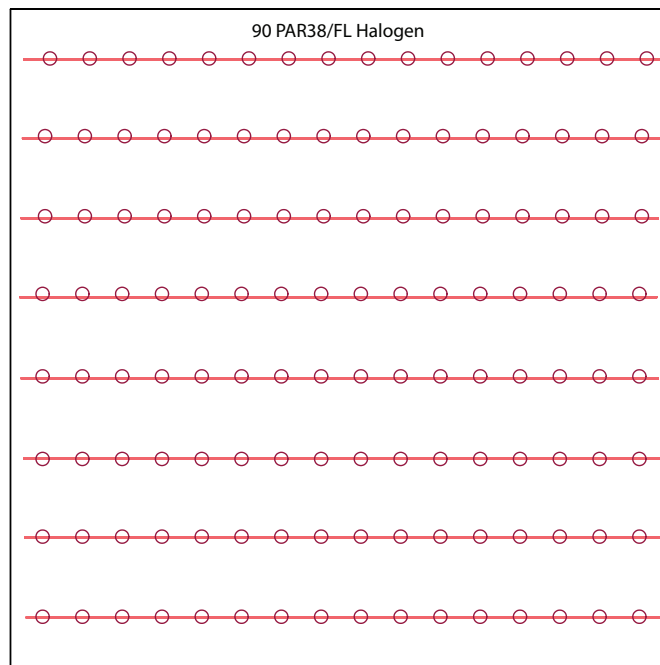
Reflectances: 80 / 50 /20.

Non-Compliant Design

100% Halogen Trac Lighting:

This design calls for 90PAR38/FL lamps placed every 3 feet on continuous track runs spaced 6 feet apart. For the sake of simplicity, let us assume that 90 watts is the maximum-labeled wattage of the chosen track fixture. (If the fixture has a higher rating, the calculation would need to be based off of that rating).

Since the fixtures are placed 3' apart, the watts per fixture accrual and the 30-watt per linear foot accrual would be the same. (128) 90w fixtures give us a UPD of 4.6w/sq. ft. with an average illuminance of 65fc. While uniformity would vary according to how the lampholders were aimed, this layout gives the end-user total design flexibility as compared to a recessed downlight system. However, the UPD for this system is far in excess of the 2.1 watts/sq ft ASHRAE maximum for merchandising areas using the space-by-space method. Even if we were successful including a 1.6 w/sq. ft. display lighting allowance for the entire space bringing the UPD allowance up to 3.7 w/sq. ft., the 4.6 w/sq. ft. is still too high.





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ASHRAE Compliant Alternative:

CMH Downlight/Halogen Trac Lighting Combination

This code-compliant alternative calls for 8" aperture MX8-70E Juno recessed electronic ballasted metal halide downlights using 70ED17 CMH lamps placed on an 8' x 10' spacing. Combined lamp/ballast load is 78 watts per fixture. Average illuminance is 62fc with good uniformity. A UPD of 1.31 leaves plenty of headroom for additional lighting watts. Eight 150W-watt low voltage track circuits using 37W HIR MR16 lamps could be added as additional display lighting (.48w/sq ft) without exceeding the 2.1 UPD maximum. When we consider the additional power allowances of 1.6 watts per square foot allotted local areas of display lighting, this layout has watts to spare.

