

LIGHTING LAYOUT GUIDE SERIES

GYMNASIUM GUIDE 1

ROOM CHARACTERISTICS

Length: 140'
Width: 120'
Height: 30' Open Ceiling
Reflectivity:
Ceiling = 50%
Walls = 50%
Floor = 20%

PRODUCT SPECIFICATIONS



Dimensions: Various
Optics: Narrow Distribution
Light Source: High Output LEDs
CCT: 4000K
CRI: 80
Lumens: 40,000-46,000 Delivered
Depreciation: 0.85 @ 50,000 hrs.
Rated Life: 100,000 hrs.
Watts: 394

GYMNASIUM (K-12 INSTITUTIONS)

LED HIGH BAY



THE OPPORTUNITY

Provide high-quality lighting that illuminates the gymnasium floor area to recognized light level standards, and meets or beats the local energy codes. LED sources offer instant full brightness and significant longevity. When used in conjunction with an appropriate control system, the fixtures can be dimmed to allow the gymnasium to be used for other assembly functions.

THE SOLUTION

Install industrial LED high bay luminaires on 25' x 25' centers. Fixture options allow for integrally mounted occupancy sensors, photo cells, emergency lighting and dimming. It should be noted that the highest light levels are required at the playing area, while the spectator area requires less light.

DESIGN CONSIDERATIONS

In this application the emphasis is not only on appropriate horizontal and vertical illumination, but also on uniformity. This layout achieves a desirable contrast ratio of less than 3 to 1. Note: Recommended light levels for collegiate facilities and televised events are significantly higher than for K-12 institutions.



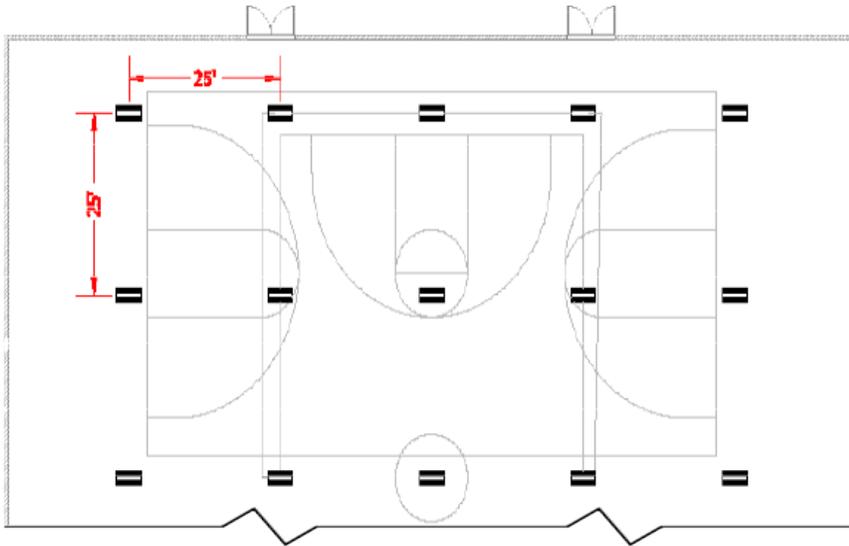
www.lightingdesignlab.com

NORTHWEST
LIGHTING NETWORK

www.nwlightingnetwork.com

LAYOUT OPTIONS

Gymnasium (K-12 Institutions) LED High Bay | 25' x 25' Spacing



INSTALLATION SPECS

Number of Luminaires: 30
Luminaire Spacing: 25' x 25'
Mounting Condition: Pendant
Mounting Height: 25'
Average Illumination: ~49 fc
Watts/sq. ft.: ~0.70

IES Recommended Footcandles (fc):

30 fc Class IV - Elementary
 50 fc Class III - High School
 80 fc Class II - College
 125 fc Class I - Professional

CONTROLS STRATEGY

Occupancy sensors or building energy management systems can be used to turn lights OFF automatically after hours or when occupants are away. One cost effective solution is specifying luminaires with integral occupancy sensors. This will minimize wiring labor costs.

Consider sensors that turn lights ON to 50% power, and use manual switch sensors to increase lighting in occupied zones. In large gymnasiums with perimeter seating, use lights for seating areas on low power or zoned separately on high/low. Daylight harvesting controls, by code, must be used on all luminaires within the Daylight Zone. This is typically 70% of the ceiling height in all directions from the edge of the skylight, or equal to the window height away from the wall and the window width plus 2' at each side. Installing a dimming system to take advantage of the inherent dimming capabilities of LEDs simplifies compliance with mandated control requirements.

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 levels maintained from daylight.
Integrated occupancy sensors	Simple to commission and minimizes installation costs.	Light levels remain equal to base design.

CODE INFORMATION

JURISDICTION	CODE	LIGHTING POWER ALLOWANCE	
Seattle	2012 Seattle Energy Code	0.95 w/sq. ft.	(1.2 play area) (0.72 fitness area)
Washington	2012 WSEC	0.95 w/sq. ft.	(1.2 play area) (0.72 fitness area)
Oregon	2014 OEESC	1.00 w/sq. ft.	(1.2 play area) (0.72 fitness area)
Idaho	2012 IECC	1.10 w/sq. ft.	(1.4 play area) (0.90 fitness area)
Montana	2012 IECC	1.10 w/sq. ft.	(1.4 play area) (0.90 fitness area)