

DESIGN CRITERIA

1. Requirements

Provide for the building occupants a connection between indoor spaces and the outdoors through the introduction of daylight and views into the regularly occupied areas of the building. Use a combination of side-lighting and top-lighting to achieve a total daylighting zone that is at least 75% of regularly occupied sales and customer service areas, and any employee administration spaces occupied for critical visual task, including receiving and staging areas.

A. Side-lighting Daylight Zone

1. Achieve a value, calculated as the product of the visible light transmittance (VLT) and window-to-floor area ratio (WFR) of daylight zone, between 0.150 and 0.180. The window area included in the calculation must be the portion of the window at least 30 inches above the floor.
2. The ceiling should not obstruct a line in section that joins the window-to-head to a line on the floor that is parallel to the plane of the window is twice the height of the window-head above the floor in distance from the plane of the glass as measured perpendicular to the plane of the glass.
3. Provide sunlight redirection and/or glare-control devices to ensure daylight effectiveness

B. Top-lighting Daylight Zone

1. Achieve skylight roof coverage of 4% of the roof area within a minimum 0.5 VLT for the skylights.
2. The distance between the skylights must not be more than 1.4 times the ceiling height.
3. The skylight diffuser must have a measured haze value of greater than 90% when tested according to ASTM D1003.

Provide the integration of automatic dimming, daylight-sensing electric lighting controls to include appropriate glare control measures.

Skylights and other daylighting components shall be designed to comply with UFC 4-010-01, DoD Minimum Antiterrorism Standards for Buildings (latest issue). Use of extensive store front glazing, skylights and other daylighting features need to be reconciled with force protection entry and blast resistance standards when the facility is located outside the installation perimeter or the facility has an identified DBT and LOP that must be designed for.

Skylights shall comply with OSHA regulations. 29 CFR 1910.23 requires skylights in roofs of completed buildings, through which persons may fall while walking or working, be guarded by a standard skylight screen or a fixed standard railing on all exposed sides. The Basis-of-Design Product indicated in Guide Specification Section 08 62 00 DAYLIGHTING, contains an integral curb mounted safety screen and complies with these requirements. 29 CFR 1926 relates to OSHA fall protection safety requirements at roof openings (including skylights) for projects under construction.

2. Benefits

The introduction of daylight has the potential to provide a more comfortable environment for the occupants as well as reduce the buildings energy use. Good daylight is soft and cool, both in temperature and color. The ultimate goal is to control the admission of natural light into the building while balancing heat gain and loss, glare control and variations in daylight availability.

3. Related Sections

Section 26 51 00, Interior Lighting
Section 26 09 23, Lighting Control Devices
Section 08 81 00, Glazing

4. Design Requirements

A. The A/E will develop strategies to address the following concerns:

1. Daylighting Appropriateness – For each space in the commissary, identify where daylighting will be beneficial to the occupants and the energy efficiency of the space.
2. Direct Sunlight Tolerance – For each space in the commissary, identify areas for potential of direct sunlight and provide recommendations to maximize the penetration of diffused direct sunlight.
3. Views and Connection to outdoors – For spaces that are located close to the daylight source, consider the use of transoms or other clear glass to promote views to the outside.
4. In addition to skylights, other means of daylighting should be considered when the building orientation and design allow it, such as light shelves and clerestory windows.

B. The A/E shall use the following design guidelines during the design process:

1. Building Orientation – Where site design limitations allow, design the facility to maximize the north and south façade with windows and minimizing the direct exposure to the east and west.
2. Windows and Skylights – Design windows and skylights to maximize daylighting opportunities through the orientation and angle of windows, clerestories and diffused glazed skylights. The A/E shall investigate methods that are employed to reduce the amount of light leaving the building where clerestories are used. Avoid placing skylights directly above checkout stands or immediately adjacent to walls/soffits.
3. Lighting Design – Orient the electric lighting system parallel to the source of daylight. Integrate the design with automatic dimming (to 20%, except the produce accent lighting.), task lighting, daylight-sensing electric light. Staging and receiving areas can be turned completely off.

5. Submittals

- A. Provide documentation demonstrating that the criterion for daylighting zone has been achieved. Provide area calculations that define the daylight.
- B. Provide anticipated electricity consumption savings for lighting and reduction in cooling and/or heating loads.

END OF SECTION