



**Product-Based Construction Specifications  
for the LightLouver™ Daylighting System**

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## Notices

LightLouver™ and LightLouver Daylighting System™ are registered trademarks of LightLouver LLC.

The LightLouver Daylighting System is protected under U.S. Patent Numbers 6,239,910 B1, 6,48,336 B2 and 6,714,352.

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## Use of Product-Based Construction Specifications

The following product-based construction specification has been developed to assist architects, engineers, and construction specification writers prepare construction specifications for incorporating the LightLouver Daylighting System into a commercial building project. The specifications are written in a CSI Format and address the specific performance requirements of the LightLouver Daylighting System. This product-based construction specifications is a guide that the construction specification writer can use to create a project-specific construction specification for the LightLouver Daylighting System.

Please contact LightLouver LLC should additional information be needed to prepare appropriate construction specifications for incorporating the LightLouver Daylighting System in your specific project.

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DIVISION 12 – FURNISHINGS  
SECTION 12 26 00 – INTERIOR DAYLIGHTING DEVICES

( This is a new Division 12 Section Number for Interior Daylighting Devices recently approved by CSI )

**PART 1 - GENERAL**

1.01 SCOPE

- A. Furnish and install the LightLouver™ Daylighting System

1.02 RELATED SECTIONS

- A. Section 08 51 13 – Aluminum Windows
- B. Section 08 41 13 – Glazed Aluminum Framed Entrances and Storefronts
- C. Section 08 44 13 – Glazed Aluminum Framed Curtain Walls
- D. Section 08 51 23 – Steel Windows
- E. Section 26 08 00 – Commissioning of Electrical Systems
- F. Section 26 09 19 – Lighting Control Devices
- G. Section 26 09 36 – Modular Dimming Controls
- H. Section 26 09 43 – Network Lighting Controls

1.03 SYSTEM DESCRIPTION

- A. The LightLouver™ Daylighting System is a passive, optical side-daylighting device which sits inboard in the “daylight” window, and intercepts and redirects incident daylight uniformly onto the ceiling of the daylit space. Its optical design has been optimized so that all direct sunlight above a 5-degree solar altitude angle will be intercepted and redirected upward onto the ceiling, thus increasing the daylit area while eliminating any direct sunlight from striking a work surface. When integrated with daylight dimming controls on the electric lighting system serving the daylit space, the optical side-daylighting system can save a significant amount of energy and energy costs.

1.04 PERFORMANCE REQUIREMENTS

- A. The LightLouver unit reflecting slats shall have, at a minimum, the following

optical properties:

Reflective Surfaces:

- Total Reflectance (Nominal) -- 85%
- Direct Image Reflectance, Specularity (Nominal) -- 84%

Non-Reflective Surfaces:

- Total Reflectance (Nominal) -- Less than 40%
- Direct Image Reflectance, Specularity (Nominal) -- Less than 5%

- B. Optical design / geometry of the reflective slat shall be such that all direct sunlight above a 5-degree solar altitude angle striking the slat shall be redirected in an upward direction.
- C. The reflective slat film shall be durable, and ultra-violet light stable, and shall not peel or discolor.
- D. The LightLouver reflecting slats shall not have an offset from level of more than 0.125 inch over the length (span) of the slat.
- E. The LightLouver unit shall securely attach to the window frame so that seismic or other forces will not dislodge the unit, causing it to fall.
- F. The LightLouver unit shall pivot into the room, without the potential to become dislodged, so that the window glass behind the unit can be cleaned.
- G. The LightLouver unit shall be removable with minimum potential for damage.
- H. It shall be possible to replace the LightLouver reflective slats. This may require the removal of the unit from "daylight" window, and disassembling of the LightLouver unit.

1.05 PRODUCT SCHEDULE

- A. The LightLouver units shall be fabricated in the following quantities:

Unit Type	No. of Units	Unit Dimensions
A		
B	[Indicate Unit Type]	
C		

- B. Location of LightLouver units is designated on the architectural drawings.
- C. Schedule of LightLouver units by room number / name and unit type is designated on the architectural drawings. (See Page 6 for an example)

## 1.06 SUBMITTALS

- A. See Section 01300 - Administrative Requirements, for submittal procedures.
- B. Product Data: Provide data indicating physical and dimensional characteristics and operating features, photometric properties of the reflective slats, and other data substantiating that the Performance Requirements of Section 1.04 have been met.
- C. Shop Drawings: Indicate opening sizes, tolerances required, methods of assembly and attachment, clearances, and operation.
- D. Manufacturer's Installation Instructions: Indicate special procedures. Include manufacturer's recommended maintenance and cleaning instructions.
- E. Manufacturer's Maintenance Instructions.

## 1.07 QUALITY ASSURANCE

- A. The supplier of the LightLouver Daylighting System shall prepare shop drawings and specifications to substantiate that the Performance Requirements specified in Section 1.04 have been met, and inform the general contractor and / or the installing subcontractor of the required installation procedures.

## 1.08 PROJECT CONDITIONS

- A. Coordinate the work with window blind / shade installation, or whatever trade will install the LightLouver units.
- B. Field measurements of the "daylight" windows (window openings receiving the LightLouver units) shall be made to determine sizes of LightLouver units required. Measurements from construction documents or shop drawings can be used to determine sizes of LightLouver units required if final installed tolerances can be ensured.

## 1.09 DELIVERY, STORAGE AND HANDLING

- A. Deliver LightLouver units packaged in a manner to prevent damage to components or marring of surfaces.
- B. Store in a clean, dry area. Store in a manner recommended by the manufacturer to avoid damage.

## PART 2 - PRODUCTS

### 2.01 ACCEPTABLE MANUFACTURER

#### A. LightLouver LLC

LightLouver LLC is the only known source for the LightLouver Daylighting System meeting the Performance Requirements in Section 1.04. Their address and contact information are as follows: LightLouver LLC, 685 South Arthur Avenue, Unit 11 B, Louisville, Colorado 80027, telephone (303) 444 8773, fax (866) 929 8991, and e-mail [info@lightlouver.com](mailto:info@lightlouver.com).

### 2.02 LIGHTLOUVER UNIT COMPONENTS

- A. Reflective Slats: Horizontal reflective slats, with the optical and physical properties specified in Section 1.04, and formed into an optical geometric shape designed to achieve the daylighting and solar control functions specified in Section 1.04.
- B. Reflective Surfaces: Reflective surfaces of the optical slats shall consist of a heat applied reflective film with an appropriate pressure sensitive adhesive which meets the optical and physical performance properties specified in Section 1.04.
- C. Unit Support: Integrated support system shall include a unit support bar at the top of the unit that connects to vertical support rods which support the reflective slats and that engages specially designed support brackets that are fastened to the window frame.
- D. Accessory Hardware: All accessory hardware, such as light-blocking elements and unit glazing stand-offs, shall be provided with the LightLouver units, with no substitutions allowed.

### 2.03 FABRICATION

- A. Fabricate LightLouver units to fit within “daylight” window openings with uniform side edge clearance of 3/8 inch +/- 1/8 inch. Top and bottom edge clearance may vary due to size of window specified by the architect. Variation in the “daylight” window finished opening dimensions may result in larger tolerances to minimize the number of different unit types fabricated.
- B. Fabricate LightLouver units to easily install into the “daylight” window openings without damaging the LightLouver unit or the surrounding window frame. Variation in the “daylight” window finished opening dimensions may

result in larger tolerances to minimize the number of different unit types fabricated.

## 2.04 REPLACEMENT PARTS

[Use this section if replacement units are desired or required.]

A. Replacement LightLouver units shall be fabricated in the following quantities:

Unit Type	No. of Units
Unit A	
Unit B	[Put number of replacement units as appropriate]
Unit C	
Unit D	
Unit E	

B. All replacement LightLouver units shall be properly protected, remain in their original packaging materials, and properly labeled by unit type.

C. The packaged replacement LightLouver units shall be delivered to the building O+M staff just prior to occupancy.

## PART 3 - EXECUTION

### 3.01 INSPECTION

A. Verify that “daylight” window openings are ready to receive the LightLouver units.

### 3.02 INSTALLATION

A. Install the LightLouver units in accordance with manufacturer’s instructions and procedures as detailed in the LightLouver Unit Installation Manual. To avoid damage and accumulation of dust and debris on the surfaces of the reflecting slats, install the LightLouver units just prior to building turnover to the owner and when all final cleaning and air handling equipment filter changes have occurred.

B. Install proper LightLouver unit type in the “daylight” window.

C. Field apply the light-blocking seals as required.

D. As required, clean reflective surfaces of the slats to remove any dust or fingerprints following the manufacturer’s instructions for cleaning and handling, as detailed in the LightLouver Unit Maintenance Manual.

E. Leave work area clean and free of debris.

### 3.03 INSTALLATION TOLERANCES

A. Maximum Variation of Gap at Window Opening Perimeter: side edge -- 3/8 (0.375) inch. Top / bottom edge -- varies based on "daylight" window sizing. Variation in the "daylight" window finished opening dimensions may result in larger tolerances to minimize the number of different unit types fabricated.

B. Maximum Offset From Level: 0.0625 inch.

### 3.04 CLEANING

A. As required, clean LightLouver unit slat reflective surfaces just prior to occupancy, following the manufacturer's instructions for cleaning and handling as detailed in the LightLouver Unit Maintenance Manual.

END OF SPECIFICATION SECTION 12 26 00

### ***LightLouver Unit Size and Room Schedules***

The following LightLouver Unit Size and Room Schedules should be prepared by the architect and included on the drawings as a separate schedule or as part of the window schedule, or included in the construction specifications. These schedules will ensure that the windows receiving LightLouver units are properly identified and sized, and that the number of LightLouver units is correct for cost estimating and bidding purposes.

#### **LightLouver™ Unit Schedule**

<u>Unit Type</u>	<b>Unit Dimensions</b>		<b>No. of Units</b>
	<b>Width</b>	<b>Height</b>	
<b>A</b>			
<b>B</b>	[List as many unit types and sizes as are included in the project.]		
<b>C</b>			
<b>D</b>			
<b>E</b>			



