LouverShade
harvesting daylight. creating comfort.

12 12500

PART 1- GENERAL

1.1 SECTION INCLUDES

A. Motorized Light-Harvesting and Glare-Reduction system.
   1. Operating hardware.
      a. Controls and Position Sensor
      b. Motors
   2. Accessories

1.2 RELATED REQUIREMENTS

A. Section 06 10 00 - Rough Carpentry: Concealed wood blocking for attachment of head rail brackets.

B. Section ----- - Electrical: Wiring and termination by others; drawings and direction provided by Div 12 subcontractor.

1.4 ADMINISTRATIVE REQUIREMENTS

A. Coordinate the placement of concealed blocking to support system.

B. Coordinate exact placement of motors, power supply, wireways, transformer, and controller location with others. Provide results of coordination in shop drawings.

1.5 SUBMITTALS

A. Product Data: For each type of product indicated. Include styles, material descriptions, construction details, dimensions of individual components and profiles, features, finishes, installation and operating instructions.
   1. Motorized Operators: Include operating instructions.
   2. Motors, controllers, sensors: Show nameplate data, ratings, characteristics, and mounting arrangements.

B. Shop Drawings: Show location and extent of systems. Include elevations, sections, details, and dimensions not shown in Product Data. Show installation details, mountings, attachments to other work, operational clearances, and relationship to adjoining work.
   1. Motorized Operators: Show locations and details for installing operator components, switches, and controls. Indicate motor size, electrical characteristics, drive arrangement, mounting, and grounding provisions.
   2. Wiring Diagrams: Power, system, and control wiring.

C. Samples: Submit two samples, 6 inch long illustrating slat and fabric samples, finish, color, and (where applicable) opacity.

E. Window Treatment Schedule: Use same designations indicated on Drawings.
   1. Coordinate and provide with all other blind types.

F. Product Certificates: For each type of blind, signed by product manufacturer.

G. Qualification Data: For Installer.

H. Product Test Reports: Based on evaluation of comprehensive tests performed by a

qualified testing agency, for each type of blind.

I. Maintenance Data: For blinds to include in maintenance manuals. Include the following:
   1. Methods for maintaining systems and finishes.
   2. Precautions about cleaning materials and methods that could be detrimental to fabrics, finishes, and performance.
   3. Operating hardware.
   4. Motorized operators.

1.7 QUALITY ASSURANCE

A. Manufacturer Qualifications: Company specializing in manufacturing the Products specified in this section with minimum three years experience.

B. Installer Qualifications: Authorized by Manufacturer to install and warrant installation.

C. Source Limitations: Obtain systems through one source from a single manufacturer.

D. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, Article 100, by a testing agency acceptable to authorities having jurisdiction, and marked for intended use.

1.8 MOCK-UPS

A. Build to verify selections made under submittals, to demonstrate aesthetic effects and set quality standards for materials and execution.
   1. Mockup one set of blinds of each type.
   2. Approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Deliver systems in factory packages, marked with manufacturer and product name, and location of installation using same designations indicated on Drawings and in a window treatment schedule.

1.10 PROJECT CONDITIONS

A. Coordinate the work with window installation and placement of concealed blocking to support blinds.

B. Environmental Limitations: Do not install blinds until construction and wet, dusty or dirty finish work in spaces, including painting, is complete and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

C. Field Measurements: Where systems are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings. Allow clearances for operable glazed units' operation hardware throughout the entire operating range. Notify Architect of discrepancies. Coordinate fabrication schedule with construction progress to avoid delaying the Work.

PART 2 - PRODUCTS

2.1 MANUFACTURERS

A. Light Harvesting/Glare Reduction System
   1. Basis of Design: LouverShade Registered Trademark system by LouverShade LLC.
   2. Substitutions: See Section 01 60 00 - Product Requirements.

2.2 PERFORMANCE REQUIREMENTS

A. Must be capable of re-directing natural daylight into space via inverted slat material that has been sized to perform the light penetration required by design. Light-control systems for application in vertical facade openings must therefore be able to deliver following:
   1. For upper portion of glazing -- Flexible daylight utilization

   2. For Lower portion of glazing --
      a. Glare protection for computer working places
      b. Visual contact to the surroundings
      c. Summer heat protection

B. Light Harvesting portion of product must be capable of redirecting light into a space via inverted rotating aluminum louvers (slats) that are infinitely adjustable within the limits of the rotation. Manufacturer must offer the following slat sizes: 50mm, 80mm and 100mm in a full line of architectural and RAL colors, up to and including custom slat finishes.

C. Glare Reduction portion of system should be available in standard and non-PVC sunscreen and blackout shade materials, ranging from 0-15% opacities.

D. Motorization options should include: both low-voltage and line-voltage lift options, as well as low-voltage tilt-only option for the Light Harvesting section.

E. System must have options for electronic control via: Direct switching, hand-held remotes, sun and light sensors (including roof-mounted radiometers), RS232, RS485, dry-contact signals and BMS commands.

F. Construction
   1. Light control slats consist of aluminum whose surface shows a total reflection coefficient of up to 83% (varies by slat type and width) achieved by varied treatment of different slat types.
   3. The geometry of the slats as well as the distance from slat to slat (partitioning) is specifically designed for the optimal transport of daylight.
   4. The light hitting one slat is reflected in a way so as not to irradiate the next higher slat.
   5. This ensures that all of the light hitting the blind is used for illumination of the room.

G. Operation
   1. In the fully-automated configuration, the system must be capable of: Allowing for discrete operation of the louver system separate from the glare-reduction portion. The switchable motor allows for differential control of two groups of slats allowing for light control (upper group) and glare protection (lower group)
      a. Each group may move a full 180 degrees from vertical to horizontal to vertical in the opposite direction

H. Mounting: Provide blind hardware system that allows for field adjustment of motor or replacement of any operable hardware component without damaging blind or adjacent surfaces and finishes or requiring removal of mounting brackets regardless of mounting

position (inside or outside mount)

2.3 LOUVER COMPONENTS

A. Blinds: Finished horizontal slat louvers hung from full-width head rail with full-width bottom rail;

B. Metal Slats: Spring tempered pre-finished aluminum; radiused slat corners, with manufacturing burrs removed.
   1. Width: 50mm.
   2. Thickness: 10 gauge which is.0010 inches or .0254mm (for 50mm slat). This is the unpainted thickness. Once finish is applied, final thickness is .0011 inches or .02794mm.
   3. Color: Two tone slat surface with white upper (concave) surface for light reflecting, superior specular qualities and lower work surface facing (convex) color to be selected from standard RAL colors.
   4. Slat radius concave: as required to provide reflection angle of 30 degrees.

C. Slat Support: Manufacturer's polyester ladders or tape.

D. Head Rail: Pre-finished, formed aluminum or steel box, with end caps; internally fitted with motor, hardware, pulleys, and bearings for operation; same depth as width of slats
   1. Color: As selected.

E. Bottom Rail: Pre-finished with end caps. Color: Same as head rail.

2.4 MOTORIZED LOUVER OPERATORS

A. Provide factory-assembled motorized blind operation systems designed for lifting, and tilting blinds of type, size, weight, construction, use, and operation frequency indicated.
   1. Provide operation systems complete with electric motors and factory-prewired motor controls, power disconnect switches, enclosures protecting controls, and all operating parts and accessories required for reliable operation without malfunction.
   3. Coordinate operator wiring requirements and electrical characteristics with the building electrical system.

B. Comply with NFPA 70.

C. Control Equipment: Comply with NEMA ICS 1, NEMA ICS 2, and NEMA ICS 6 with NFPA 70, Class 2 control circuit, maximum 24-V AC or DC.

D. Electric Motors: UL-approved or -recognized, totally enclosed, insulated motor, complying with NEMA MG 1, with thermal-overload protection, permanently lubricated bearings, and limit switches; sized by blind manufacturer to start and operate size and weight of blind considering service factor or considering Project's service conditions without exceeding nameplate ratings.
   1. Service Factor: According to NEMA MG 1, unless otherwise indicated.
   2. Motor Mounting: Within manufacturer's standard roller enclosure.

E. Limit Switches: Adjustable switches, interlocked with motor controls and set to automatically stop blind at fully raised and fully lowered positions, with optional pre-set to adjust angle to optimum light-harvesting angle.

F. Operating Function: Stop and hold blind at any position.

2.5 FABRICATION

A. Fabricate blinds to fit within openings with uniform edge clearance of 1/4 inch.

B. Fabricate blinds to cover window frames completely.

F. At openings requiring multiple blind units, provide separate blind assemblies with space of 1/2 inch between blinds, located at window mullion centers.

2.6 GLARE REDUCTION COMPONENTS

A. FABRICATION

1. Fabrics: Select from a complete offering of PVC and PVC-free materials, ranging from 0-15% opacity. For purposes of budgeting, architect should choose from one of the following general categories:
   a. Standard PVC coated sunscreen material (1-15% opacity)
   b. PVC-free sunscreen material (3-5%)
   c. Vinyl room darkening fabric (0%)
   d. PVC-free room darkening material (0%)
   e. Hem pockets to be factory heat-sealed or may use an exposed hem bar. Sewn hem pockets will not be permitted.
2. Shade cloth should be fabricated to hang flat without waviness or distortion. Shades that exceed the width of each given fabric will receive a ¼" wide welded seam. Shades with a height-to-width ratio exceeding 4:1 will include a sealed batten.

B. MOTOR DRIVE SYSTEM

1. Shade Motors:
   a. RF (radio) controlled tubular motors operating at 24VDC (standard application; other low-voltage, solar/battery powered and line-voltage systems available). Motors concealed within tube.
   b. The total (hanging) weight of shade band should be no greater than 80% of the motor's rated lifting capacity.

B.

C. MOTOR CONTROL SYSTEMS

1. Wall switches standard. Switches shall be wireless RF (radio) type. To be installed by Electrical Contractor and programmed by SHADE CONTRACTOR

D. ACCESSORIES

1. Options include: Operation by timer, light sensor and interface to various other types of lighting and building management systems.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Verify that openings are ready to receive the work.

B. Ensure structural blocking and supports are correctly placed.

C. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, accurate locations of connections to building electrical system, and other conditions affecting performance.

D. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install systems level, plumb, and aligned with adjacent units according to manufacturer's written instructions

B. Locate system so that the components will not interfere with glass, during operation or by reflectance of light and heat cause glass breakage. Allow clearances for window operation hardware.

C. Connections: Provide direction and drawings to Electrical Contractor for connection of motorized operators to building electrical system.

D. Secure in place with flush countersunk fasteners.

3.3 INSTALLATION TOLERANCES

A. Maximum Variation of Gap at Window Opening Perimeter: 1/8 inch.

B. Maximum Offset From Level: 1/8 inch.

3.4 ADJUSTING

A. Adjust and balance systems to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

3.5 CLEANING AND PROTECTION

A. Clean blind surfaces after installation, according to manufacturer's written instructions.

B. Provide final protection and maintain conditions, in a manner acceptable to manufacturer and Installer, to ensure that blinds are without damage or deterioration at time of Substantial Completion.

C. Replace damaged products that cannot be repaired, in a manner approved by Architect, before time of Substantial Completion.

3.6 DEMONSTRATION

A. Engage a factory-authorized service representative to train Owner's maintenance personnel to adjust, operate, and maintain blinds.

END OF SECTION