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SECTION 122200 - CURTAINS AND DRAPES

TIPS:

To view non-printing **Editor's Notes** that provide guidance for editing, click on MasterWorks/Single-File Formatting/Toggle/Editor's Notes.

To read **detailed research, technical information about products and materials, and coordination checklists**, click on MasterWorks/Supporting Information.

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

- A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Motor-operated drapery tracks with [**wired-**] [**radio-**][**and**][**networked-**]controls.
2. Manual drapery tracks.
3. Drapes.

B. Related Requirements:

1. Section 057500 "Decorative Formed Metal" for drapery pockets.
2. Section [**061000 "Rough Carpentry"**] [**061053 "Miscellaneous Rough Carpentry"**] for wood blocking and grounds for mounting motors, controls and accessories.

3. Section 079200 "Joint Sealants" for sealing the perimeters of installed accessories with sealant.
4. Section 107113 "Exterior Sun Control Devices" for exterior shade systems.
5. Section 122113 "Horizontal Louver Blinds" for louver blinds.
6. Section [122413 "Roller Window Shades"] [122416 "Pleated Window Shades"] for window shades.
7. Section 122509 "Window Treatment Motors, Controls, and Networked Automation Systems" for other motor operators and motor controls.
8. Section 260519 "Low-Voltage Electrical Power Conductors and Cables" for power cables.
9. Section 260523 "Control-Voltage Electrical Power Cables" for balanced twisted pair cabling.
10. Section 260943.16 "Addressable-Luminaire Lighting Controls" for lighting integration into digital shading systems.
11. Section 260943.23 "Relay-Based Lighting Controls" for lighting integration into digital shading systems.
12. Section 262726 "Wiring Devices" for accessory electrical wiring devices.

1.3 DEFINITIONS

- A. Accuracy: Fully-opened and fully-closed positions will remain within +/- 0.39 inch (10 mm) from the set positions over 10,000 cycles (one cycle is a full open and close on a 32.8-foot (10-m) track length).
- B. Curtains/Drapes: Thermal and blackout type fabrics that can be formed into smooth curves, regular ripples, pinch pleats, and accordion shapes.
- C. DCT: Dry-contact Technology; dry contact (mercury-free) input for basic low-voltage switches via data (communication) cable switching.
- D. Digital Network; RS485 wired, bi-directional, bus control technology; integrated network automation system protocol allowing communication between devices and building management systems (BMS), standalone automation systems, or standalone motor-control systems.
- E. Drapery Motor: Motor equipped with line-voltage power cord or low-voltage power connection concealed in aluminum housing; and connected to drapery track drive belt through a reduction box.
- F. Geared AC Motor: A drapery, asynchronous motor, and brushless 120-V ac (60 Hz) single-phase motor, with an integral capacitor, and a thermally protected, permanently lubricated and maintenance-free gearbox with a torque range traversing capacity from a minimum of 5.3 in.-lbf (0.6 Nm) and a maximum of 8.8 in.-lbf (1.0 Nm). Sound level from 3 feet (914 mm) away shall be a maximum of 44 dBA when utilizing designed-for-silence components. Controller shall be embedded microprocessor type or bus connection using RJ12. dc motor and internal transformer with precision planetary-gear-reduction integrating lyre-release system. Lyre-release system allows product to be used without power (manual override). Rated at 1 A at 120 V ac, to provide a nominal torque of 8.85 in.-lbf (1 Nm). Operates a curtain up to 132 lb (59.9 kg) on a two-way 36-foot (11-m) straight track with an adjustable linear speed from 4.9 to 7.86 inch/s

(124 to 200 mm/s). For exact weight capacity on different track configurations and lengths, refer to manufacturer's width/weight capacity chart.

- G. Geared DC Motor: A dc motor with precision planetary gear reduction integrating the lyre-release system. The lyre-release system allows product to be used without power (manual override). Rated at 2 A at 24 V dc with a standby rating of 3 W or less, to provide a nominal torque of 5.3 in-lbf (0.6 Nm). Operates a curtain up to 77 lb (35 kg) on a two-way 36-foot (11-m) straight track with an adjustable linear speed from 4.9 to 7.86 inch/s (124 to 200 mm/s). For exact weight capacity on different track configurations and lengths, refer to manufacturer's width/weight capacity chart. Motor is CE certified. Power supply is UL listed.
- H. Integration: Motors can integrate with systems such as audiovisual, lighting, or building automation system. Motor comes standard with one RJ12 connector to allow connection to two or three dry-contact control devices or Somfy Infrared Sensors. In addition, one of the below control modules can be added to the motor base.
 - 1. Radio frequency plug-in module (RF) to allow wireless control with Somfy RTS transmitters.
 - 2. Wired RS-485 communication plug-in module.
 - 3. Z-Wave® plug-in module.
 - 4. ZigBee® plug-in module.
- I. IP Rating: International (or Ingress) Protection Rating is defined by IEC 60529 and classifies the degrees of protection provided against the intrusion of solid objects (including body parts like hands and fingers), dust, accidental contact, and water in electrical enclosures. The first digit classifies protection against solids (0 to 6) and the second digit (0 to 8) against liquids. The higher the number, the more protected.
- J. Limit Switching: Motor has an electronic encoder that is used to set the end stops and intermediate position during installation. The end stops and the intermediate position do not need to be readjusted during the motor's lifetime or after manual operation.
- K. Manual Override: Achieved through the lyre release system, which automatically disconnects the gearbox from the track to allow manual operation of the drapery. The drapery can be operated manually in both directions when the motor unit is not running or when power is interrupted.
- L. Motor Control: Logic circuit with programmable microprocessor. Motor has overload current sensing, maximum run timer, and speed management. Soft start and stop and speed adjustment from 4.9 to 7.86 inch/s (124 to 200 mm/s).
- M. Motor Design: Patented design that allows the connectors, cables and control modules to be completely concealed. The motor is also concealed by the fabric.
- N. Noise Level: Motor is rated at less than 44 dB.
- O. Operating Mode: Momentary contact directional control for closing, opening, stopping, and one programmable intermediate position. Optional "touch motion" feature allows the user to initiate the drapery to open or close, pulling on the fabric in intended direction of travel.

- P. Radio-Technology Drapery Motor: Motor equipped with built-in radio receiver and concealed inside roller tube with Three-wire drive unit inside roller, instantly reversible, and lifetime lubricated.
- Q. RT: Radio Technology; wireless radio control of motorized applications.
- R. WireFree™: A battery-powered motor-operator control with plug-in option for awnings, pergolas, exterior roller shades, rolling shutters, and venetian blinds.
- S. WT: Wired Technology; control through standard ac (alternating current) or dc (direct current) via power or polarity switching.
- T. ZigBee®: The ZigBee® protocol is a low-powered RF mesh networking technology that uses a 2.4 GHz standard for both residential and commercial applications.
- U. Z-Wave®: An interoperable, two-way RF mesh networking technology used for both residential and light commercial automation applications. 908.42 MHz in United States and Canada. Varies in other countries.

1.4 ALLOWANCES

- A. Drapery fabrics are part of <**Insert name of allowance**>.

1.5 PREINSTALLATION MEETINGS

- A. Preinstallation Conference: Conduct conference at [**Project site**] <**Insert location**>.

1.6 ACTION SUBMITTALS

- A. Product Data: For the following:
 - 1. Drapery Tracks: Include maximum weights of drapes that can be supported.
 - a. Motorized Tracks: Indicate motor weights, motor-mounting requirements, control system, and electrical requirements and wiring diagrams.
 - 2. Fabrics.
 - 3. Textile treatments.
- B. Sustainable Design Submittals:
 - 1. Product Data: For recycled content, indicating postconsumer and preconsumer recycled content and cost.
 - 2. Product Data: For interior lighting, submit data sheets for window drapes[, [**and**] motor operator system[, **BMS interface and**] controls.
 - 3. Overall [**standalone**] [**and**] [**integrated**] system operation description document, Sequence of Operations.
 - 4. Building simulation for daylighting and building performance.

C. Shop Drawings:

1. Drapery Tracks: Show installation and anchorage details and locations of controls.
 - a. Motorized Tracks: Indicate dimensions, weights, loads, and required clearances for track and motor and differentiate between manufacturer-installed and field-installed wiring.
 - b. Motor-Operated Drapes: Include details of installation and diagrams for [**line-voltage AC**] [**low-voltage DC**] power, signal, wiring and [**standard motors**] [**radio motors**] [**networked motors**].
2. Drapes: Show sizes, locations, and details of installation.

D. Samples: As follows:

1. Motorized Drapery Tracks: **18 inches (450 mm)** long, with motors, carriers, controls, and accessories.
2. Drapery Fabrics: For each color and pattern indicated, full width by **36 inches (1000 mm)** long, from dye lot to be used for the Work and with specified textile treatments applied. Show complete pattern repeat if any. Mark top and face of fabric.
3. Textile Trims: For each color and pattern indicated, **18 inches (450 mm)** long.
4. Drape Fabrication: For each heading, fabric, color, and pattern indicated, a complete full-size panel to verify details of fabrication and thread colors.

E. Samples for Initial Selection: For each type of product indicated.

F. Samples for Verification: As follows:

1. Motorized Drapery Tracks: **18 inches (450 mm)** long, with motors, carriers, controls, and accessories.
2. Drapery Fabrics: For each color and pattern indicated, full width by **36 inches (1000 mm)** long, from dye lot to be used for the Work and with specified textile treatments applied. Show complete pattern repeat if any. Mark top and face of fabric.
3. Textile Trims: For each color and pattern indicated, **18 inches (450 mm)** long.
4. Drape Fabrication: For each heading, fabric, color, and pattern indicated, a complete full-size panel to verify details of fabrication and thread colors.

G. Product Schedule: For [**drapes**] [**and**] [**drapery tracks**], each motor-operator unit and [**networked automation**] motor controls. Use same designations indicated on Drawings.

H. Certificates: Manufacturer's documentation that line-voltage components are UL listed or UL recognized.

1.7 INFORMATIONAL SUBMITTALS

A. Qualification Data: For manufacturer and installer.

B. Coordination Drawings: For drapery track installation; reflected ceiling plans drawn to scale and coordinating track installation with openings and ceiling-mounted items, on which the following items are shown:

1. Suspended ceiling components.
2. Structural members to which motors are attached.
3. Size and location of motor access panel.

C. Product Certificates:

1. For each drapery fabric treated with flame retardant, signed by fabric supplier and indicating treatment durability and cleaning procedures required to maintain treatment effectiveness.
2. For each type of motor operator and control system.
 - a. [BACnet® MS/TP] [BACnet® IP] [Modbus™] [Z-Wave®] [ZigBee®] BMS or third-party integration protocols.
 - b. Submit functional description for data points required by BMS system.
 - c. Submit documentation that line-voltage components are UL listed or UL recognized.
 - d. Complies with FCC.

D. Sample Warranty: For manufacturer's warranty.

1.8 CLOSEOUT SUBMITTALS

- A. Maintenance Data: For each product type installed to include in maintenance manuals.
- B. Warranty: For motor-operator and control system manufacturer's executed warranty documentation.

1.9 MAINTENANCE MATERIAL SUBMITTALS

- A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.
 1. Drapery Track Carriers: For each size indicated, equal to [5] <Insert number> percent of amount installed, but no fewer than [10] <Insert number> of each size.
 2. Drapery Track Controls: For each type indicated, equal to [5] <Insert number> percent of amount installed, but no fewer than [10] <Insert number> of each type.
 3. Drapery Fabrics: For each fabric, color, and pattern indicated, from the same product run, full-width lengths equal to [5] <Insert number> percent of amount installed, but no fewer than [10] <Insert number> yards of each fabric, color, and pattern.
 4. Drapery Snaps, Loops, and Hooks: For each type provide manufacturer standard accessories.

1.10 QUALITY ASSURANCE

- A. Manufacturer Qualifications: Motor operators, controls, and controllers certified by an NRTL to provide UL recognized or listed wired ac and dc powered motors.
 1. ISO 9001 certified including in-house engineering and product design activities.

2. Controls manufacturer capable of supplying commissioning services for control systems.
3. Motor manufacturer capable of supplying a full range of wirefree (12-V dc battery and solar powered) direct voltage dc (24-V dc) main, or line-voltage (120-V ac) motor and control products.

B. Installer Qualifications: For drapes and motorized drapery tracks, fabricator of drapes.

1. Motor operator and control system installer to be manufacturer trained[**and certified**].

C. Mockups: Build mockups to verify selections made under Sample submittals, to demonstrate aesthetic effects, [**networked automation**]operation, and to set quality standards for fabrication and installation.

1. Build mockup at location and in size shown on Drawings.
2. Subject to compliance with requirements, approved mockups may become part of the completed Work if undisturbed at time of Substantial Completion.

1.11 DELIVERY, STORAGE, AND HANDLING

- A. Deliver motor operators, control systems, and accessories in factory packages, marked with manufacturer, product name, and location of installation using same designations indicated on Drawings.
- B. Store equipment in accordance with manufacturer's written instructions. Store indoors in clean, dry space with uniform temperature to prevent condensation. Protect from exposure to dirt, fumes, water, corrosive substances, and physical damage.

1.12 FIELD CONDITIONS

- A. Field Measurements: Verify dimensions by field measurements before drape fabrication, and where motor operators and control systems are indicated to fit to other construction, verify dimensions of other construction by field measurements before fabrication and indicate measurements on Shop Drawings.
1. Allow clearances for operating hardware of operable glazed units through entire operating range.
 2. Notify Architect of installation conditions that vary from Drawings. Coordinate fabrication schedule with construction progress to avoid delaying the Work.
- B. Scheduling: Do not deliver or install drapes until after other finish work, including painting, is complete and spaces are otherwise ready for occupancy.

1.13 WARRANTY

- A. Manufacturer's Special Non-Prorated Warranty for Motor Operators and Control Systems: Manufacturer agrees to repair or replace motor and control units that are not free from defects in material and workmanship under normal and proper use within specified warranty period.

1. Warranty Period: Five years from date of manufacture.

PART 2 - PRODUCTS

2.1 MOTORIZED DRAPERY TRACKS

A. Motorized Track **<Insert drawing designation>**:

1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. County Draperies Inc.
 - b. Del Motorized Solutions/Lister.
 - c. Evolve Guest Controls, Inc.
 - d. Lancaster Associates.
 - e. Miceli Drapery Company.
 - f. Orion Ornamental.
 - g. Polar Shades.
 - h. Porter Preston.
 - i. Professional Workroom Design, LT.
 - j. Springs Window Fashions; SWFcontract.
 - k. The Finial Co.
 - l. Unique Wholesale.
 - m. VQC Inc.
 - n. **<Insert manufacturer's name>**.

B. Standard Motors with Wired Controls: Provide factory-assembled, [**curtain-**] [**drape-**]operator system, complete with electric motor and factory-prewired motor controls with a connector that disconnects motor from power, enclosures protecting controls and operating parts, and accessories necessary for a complete installation. Include wiring from motor controls to motors. Coordinate operator wiring requirements and electrical characteristics with building electrical system.

1. Electrical Components, Devices, and Accessories: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Electric Motor: Motorized drapery track system with quiet operation, timing belt for precise control, touch motion, manual override, and adjustable speeds.
 - a. Basis-of-Design Product: Somfy Systems; [**Glydea® 35e DCT**] [**Glydea® 60e DCT**] [**Glydea® 35e WT**] [**Glydea® 60e WT**].
 - b. Control Type: Wired; [**local control**] [**and**] [**group control**] via [**dry-contact switches**].
 - c. Electrical Characteristics: 120 V ac, 60 Hz.
 - d. Maximum Drapery Weight Capacity: **132 lb (60 kg)** at **36-foot (11-m)** wide [**side opening**] [**center opening**].
 - e. Tandem-Alternative Drapery Maximum Weight Capacity: **264 lb (120 kg)** at **72 feet (21.9 m)**.

- f. Amperage: **[0.6]** **[1]** A.
 - g. Power Consumption: **[60]** **[120]** W.
 - h. Torque: **[5.3 in.-lbf (0.6 Nm)]** **[8.8 in.-lbf (1.0 Nm)]** maximum.
 - i. Average Linear Speed: **4.9 to 7.86 inch/s (125 to 200 mm/s)**.
 - j. Power Cable: NEMA 5-15P; **[Three-wire cable with molded NEMA plug (DCT)]** **[Four-wire cable (hard-wired version only)]**.
 - k. Control Connector Type: RJ12.
 - l. Sound Level: 44 dBA or less.
 - m. Motor Mount: **[Left]** **[Right]** side and **[top]** **[bottom]** mount.
3. Electric Motor: Motorized drapery track system with quiet operation, drive belt for precise control, touch motion, manual override, and adjustable speeds.
- a. Basis-of-Design Product: Somfy Systems; Irismo™ 35 Mini DC DCT.
 - b. Control Type: Wired; **[local control]** **[and]** **[group control]** via **[dry-contact switches]**.
 - c. Electrical Characteristics: 24 V dc.
 - d. Maximum Track Length: **32 feet (9.7 m)**.
 - e. Max Drapery Weight Capacity: **77 lb (35 kg)** at **32-foot (9.7-m)** wide **[side opening]** **[center opening]**.
 - f. Tandem-Alternative Drapery Maximum Weight Capacity: **154 lb (70 kg)** at **64 feet (19.5 m)**.
 - g. Amperage: 2 A or less.
 - h. Power Consumption (Standby): 3 W or less.
 - i. Average Linear Speed: **4.9 to 7.86 inch/s (125 to 200 mm/s)**.
 - j. Power Supply (Transformer Included with Motor 120 V ac to 24 V dc): Plug-in to motor power port with **0.217-inch (5.5-mm)** barrel connector; and **13.2-foot (4-m)** long cable.
 - k. Control Connector Type: RJ12.
 - l. Sound Level: 44 dBA or less.
 - m. Motor Mount: **[Left]** **[Right]** side and **[top]** **[bottom]** mount.
4. Application: Draperies; **[Pinch pleat]** **[Ripplefold®]** **[Accordia®]**.
5. Track: **[Single drapery]** **[Single track tandem motor drapery]**.
- a. Track Type: **[One way]** **[Center opening]** **[Asymmetrical]** **[One way with a bend]** **[Center opening with bend]** **[One way with two bends]** **[Center opening with two bends]** **[One way with continuous curve]** **[Center opening with continuous curve]**.
 - b. Track Mount: **[Wall]** **[Ceiling]**.
 - c. Maximum Track Length: **[32 feet (9.7 m)]** **[36 feet (10.9 m)]**.
6. Local Controls: **[Wired]** **[Dry-contact]** (power and control) wall switch; **[low-voltage, dc]** **[line-voltage, ac]**.
- C. Radio-Controlled Motors: Provide factory-assembled, **[curtain-]** **[drape-]**operator system of sizes and capacities and with features, characteristics, and accessories suitable for conditions indicated, complete with electric motor, enclosures protecting controls and operating parts, and accessories required for reliable operation without malfunction. Include wiring from motor controls to motors. Coordinate operator wiring requirements, radio-control requirements, and electrical characteristics with building electrical system.

1. Electrical Components: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
2. Electric Motor: Motorized drapery track system with quiet operation, timing belt for precise control, touch motion, manual override, and adjustable speeds.
 - a. Basis-of-Design Product: Somfy Systems; [Glydea® 35e RTS] [Glydea® 60e RTS].
 - b. Control Type: Radio; [local control] [and] [group control] via [smart switches] [smart devices] [RT timer] [sun sensor].
 - c. Electrical Characteristics: 120 V ac, 60 Hz.
 - d. Maximum Drapery Weight Capacity: 132 lb (60 kg) at 36-foot (11-m) wide [side opening] [center opening].
 - e. Tandem-Alternative Drapery Maximum Weight Capacity: 264 lb (120 kg) at 72 feet (21.9 m).
 - f. Amperage: [0.6] [0.8] A.
 - g. Power Consumption (Standby): [60] [120] W.
 - h. Torque: [5.3 in.-lbf (0.6 Nm)] [8.8 in.-lbf (1.0 Nm)] maximum.
 - i. Average Linear Speed: 4.9 to 7.86 inch/s (125 to 200 mm/s).
 - a. Power Cable: NEMA 5-15P; Three-wire cable with molded NEMA plug.
 - b. Control Connector Type: RJ12.
 - c. Sound Level: 44 dBA or less.
 - d. Motor Mount: [Left] [Right] side and [top] [bottom] mount.
3. Electric Motor: Motorized drapery track system with quiet operation, timing belt for precise control, touch motion, manual override, and adjustable speeds.
 - a. Basis-of-Design Product: Somfy Systems; Irismo™ 35 Mini DC RTS.
 - b. Control Type: Radio; [local control] [and] [group control] via [smart switches] [smart devices] [RT timer] [sun sensor].
 - c. Electrical Characteristics: 24 V dc.
 - d. Maximum Track Length: 32 feet (9.7 m).
 - e. Max Drapery Weight Capacity: 77 lb (35 kg) at 32-foot (9.8-m) wide [side opening] [center opening].
 - f. Tandem-Alternative Drapery Maximum Weight Capacity: 154 lb (70 kg) at 64 feet (19.5 m).
 - g. Amperage: 2 A or less.
 - h. Power Consumption (Standby): 3 W or less.
 - i. Average Linear Speed: 4.9 to 7.86 inch/s (125 to 200 mm/s).
 - j. Power Supply (Transformer Included with Motor 120 V ac to 24 V dc): Plug-in to motor-power port with 0.217-inch (5.5-mm) barrel connector; and 13.2-foot (4-m) long cable.
 - k. Control Connector Type: RJ12.
 - l. Sound Level: 44 dBA or less.
 - m. Motor Mount: [Left] [Right] side and [top] [bottom] mount.
4. Electric Motor: Motorized drapery track system with quiet operation, timing belt for precise control, touch motion, manual override, and adjustable speeds.
 - a. Basis-of-Design Product: Somfy Systems; Irismo™ 45 WireFree™ RTS.
 - b. Control Type: Radio; [local control] [and] [group control] via [smart switches] [smart devices] [RT timer] [sun sensor].

- c. Electrical Characteristics: 26.5-V dc lithium-ion (rechargeable) batteries.
 - 1) Battery Pack Discharge Rate: 2950 mAh.
 - 2) Plug-In Charger for lithium-ion rechargeable batteries.
 - d. Max Drapery Weight Capacity: **99 lb (44.9 kg)** at **33 foot (10-m)** wide [**side opening**] [**center opening**].
 - e. Tandem-Alternative Drapery Maximum Weight Capacity: **198 lb (89.8 kg)** at **66 feet (20.1 m)**.
 - f. Average Linear Speed: **4.9 to 7.86 inch/s (125 to 200 mm/s)**.
 - g. Sound Level: 44 dBA or less.
 - h. Motor Mount: [**Left**] [**Right**] side and [**top**] [**bottom**] mount.
5. Radio Remote Control: Electric controls with NEMA ICS 6, Type 1 enclosure for [**surface mounted**] [**recessed mount**] [**handheld**] [**table top**] [**sensors**] [**timers**] [**integrated third-part interface(s)**]. Provide the following for remote-control activation of shades:
- a. Radio/WiFi Control Interface: 433.42 MHz/2.4 GHz network with WEP, WPA2, open and mixed mode encryption; single-zone unit may be joined to create a multi-zone system; capable of serving as an Internet protocol (IP) to radio bridge for third-party control systems.
 - 1) Basis-of-Design Product: Somfy Systems; myLink™.
 - 2) Enclosure: ABS; UL listed; UL-94V zero flame rating; RoHS compliant.
 - 3) Electrical Characteristics: 120 to 220 V ac, 50 to 60 Hz; plugs into ac outlet.
 - 4) Control Interface: [**iPhone and iPad version 7 and higher**] [**Android and Android Tablet version Jelly Bean and higher**].
 - 5) Controllable over open application program interface (API).
 - 6) Control Functions: [**Open, Close, My**] [**Timer**] [**enable/disable sensor**] [**Scene**].
 - 7) Timer Control: Clock timer based on astronomic timeclock with 60-minute offset, [**24-hour**] [**seven-day**] <Insert period> programmable for regular events.
 - b. Handheld Radio-Control Remote: [**LCD Display**] [**Tactile button**]; 433.32 MHz.
 - 1) Basis-of-Design Product: Somfy Systems; [**Telis 1**] [**Telis 4**] [**Telis 16**] [**Telis 1Chronis**] [**Telis Soliris**] [**Telis Modulis**].
 - a) Finish: [**Lounge (black)**] [**Silver**] [**Pure (white)**] [**Patio (white and blue)**].
 - 2) Electrical Characteristics: Battery; [**2-AAA (LR3) lithium-ion**] [**CR 2430 Lithium-ion 3 V**].
 - a) Do not use rechargeable batteries.
 - 3) Transmitter: [**16-**][**Five-**][**Single-**]channel.
 - 4) Open Air Range: **65-foot (20-m)** radius through two concrete walls **11.81 inches (30 cm)** thick or less, or **100 feet (30.48 m)** through open-air.

- 5) IP Rating: IP[**30**] [**44**].
 - 6) Control Functions: [**Open, Close, My (stop)**] [**Timer**] [**Enable/disable sensor**] [**Incremental-scroll wheel**].
 - 7) Timer Control: Clock timer based on astronomic timeclock with zero to 120-minute offset, [**24-hour**] [**seven-day**] <Insert period> programmable for regular events.
 - 8) Accessories: [**Wall-mount holder with screw cover and screw kit**] [**Decora low-voltage mud ring with faceplate**] [**Table top Decora enclosure**].
- c. Radio-Control [**Wall Switch**][**and**] [**Table top**]: Button-operated station.
- 1) Basis-of-Design Product: Somfy Systems; Decoflex Wirefree™ RTS [**Table Top**] [**Switch**].
 - 2) Channel - Wireless Transmitter: [**Five**] [**Four**] [**Three**] [**Two**] [**Single**].
 - 3) Electrical Characteristics: Battery; CR 2450 lithium-ion 3 V.
 - 4) Open Air Range: **65-foot (20-m)** radius through two concrete walls **11.81 inches (30 cm)** thick or less, or **100 feet (30.48 m)** through open-air.
 - 5) Control Functions: Open, Close, My (stop).
 - 6) FCC Approval: Part 15, Class B.
- d. Radio-Control Surface-Mounted Wall Switch: Touchpad-operated station.
- 1) Basis-of-Design Product: Somfy Systems; Smoove® 1 RTS.
 - 2) Switch Plate: [**Single**] [**Double**].
 - 3) Channel - Wireless Transmitter: Single.
 - 4) Electrical Characteristics: Battery; CR 2450 Lithium-ion 3 V.
 - 5) Open-Air Range: **65 ft. (20 m)** radius through two concrete walls **11.81-inch (30-cm)** thick or less, or **100 ft. (30.48 m)** through open-air.
 - 6) Control Functions: Up, Down, My (stop).
 - 7) CE rated and FCC certified.
- e. Radio Sun-Sensor Control: Adjustable system consisting of digital displays detecting sun intensity, responding by automatically adjusting draperies. Wireless, solar-powered, LED indicator lights, sun-level sensor with user-selected thresholds that automatically operate radio-controlled motors.
- 1) Basis-of-Design Product: Somfy Systems; Ondeis™ WireFree.
 - 2) Housing material: ABS
 - 3) Operation Modes: Six; Demo testing.
 - 4) Open Air Range: **65-foot (20-m)** radius through two concrete walls **11.81 inches (30 cm)** thick or less, or **100 feet (30.48 m)** through open-air.
 - 5) Index Protection Rating: IP 55.
 - 6) FCC Approved.
 - 7) Accessories: Gutter mount bracket and socket head screws.
- f. Microprocessor Control: Electronic programmable means for setting, changing, and adjusting control features; isolated from voltage spikes and surges.
- 1) Basis-of-Design Product: Somfy Systems; myLink™.

- g. Control Unit Color: [As selected by Architect from manufacturer's full range] <Insert color>.
 - 6. Limit Switches: Default end limits are set through stall detection at motor, and limits in learning mode are set to stop drapes automatically at fully open and fully closed positions. Limit switches can be adjusted per application.
 - 7. Operating Features:
 - a. Capable of interface with [audiovisual] [multiroom] <Insert description> control system.
 - b. Capable of accepting input from networked building automation control system.
 - c. Override switch.
 - 8. Accessories:
 - a. <Insert accessory>.
 - 9. Application: Draperies; [Pinch pleat] [Ripplefold®] [Accordia®].
 - 10. Track: [Single drapery] [Tandem alternative drapery].
 - a. Track Type: [One way] [Center opening] [Asymmetrical].
 - b. Track Mount: [Wall] [Ceiling].
 - c. Maximum Track Length: 33 feet (10 m).
 - 11. Transmitter Control: [Handheld remote] [Wireless wall switch] [Tabletop remote] [Smart devices].
- D. Networked Automation-Controlled Motors: Provide factory-assembled, [curtain-] [drape-] operator system of size and capacity and with features, characteristics, and accessories suitable for conditions indicated, complete with electric motor, enclosures protecting controls and operating parts, and accessories required for reliable operation without malfunction. Include wiring from motor controls to motors or radio controls to motors. Coordinate operator [wiring requirements] [radio controls] and electrical characteristics with building electrical system.
- 1. Electrical Components: Listed and labeled as defined in NFPA 70, by a qualified testing agency, and marked for intended location and application.
 - 2. Electric Motor: Motorized drapery track system with quiet operation, timing belt for precise control, touch motion, manual override, and adjustable speeds
 - a. Basis-of-Design Product: Somfy Systems; [Glydea® 35e RS485] [Glydea® 60e RS485].
 - b. Control Type: Network; automated control via [recessed mount] [handheld] [tabletop] [integrated third part interface(s)] [standalone window treatment control system] [lighting control system] [audiovisual system] [building management system].
 - c. Electrical Characteristics: 120 V ac, 60 Hz.
 - d. Maximum Drapery Weight Capacity: 132 lb (60 kg) at 36-foot (11-m) wide [side opening] [center opening].
 - e. Tandem-Alternative Drapery Maximum Weight Capacity: 264 lb (120 kg) at 72 feet (21.9 m).
 - f. Amperage: [0.6] [1] A.

- g. Power Consumption (Standby): **[60 W] [120 W]**.
 - h. Torque: **[5.3 in.-lbf (0.6 Nm)] [8.8 in.-lbf (1.0 Nm)]** maximum.
 - i. Average Linear Speed: **4.9 to 7.86 inch/s (125 to 200 mm/s)**.
 - j. Power Cable: NEMA 5-15P; Three-wire cable with molded NEMA plug.
 - k. Control Cable: Cat. 5e or higher; ANSI/TIA/EIA-485-A (RS-485) standard, capacitance controlled, unshielded twisted-pair cable.
 - l. Control Connector Type: RJ12.
 - m. Sound Level: 44 dBA or less.
 - n. Motor Mount: **[Left] [Right]** side and **[top] [bottom]** mount.
3. Electric Motor: Motorized drapery track system with quiet operation, timing belt for precise control, touch motion, manual override, and adjustable speeds.
- a. Basis-of-Design Product: Somfy Systems; **[Irismo™ 35 Mini DC RS485] [Irismo™ 35 Mini DC DCT]**.
 - b. Control Type: Network; automated control via **[recessed mount] [handheld] [tabletop] [integrated third-party interface(s)] [standalone window treatment control system] [lighting control system] [audiovisual system] [building management system]**.
 - c. Electrical Characteristics: 24 V dc.
 - d. Maximum Track Length: **32 feet (9.7 m)**.
 - e. Max Drapery Weight Capacity: **77 lb (35 kg)** at **32 foot (9.7-m)** wide **[side opening] [center opening]**.
 - f. Tandem-Alternative Drapery Maximum Weight Capacity: **154 lb (70 kg)** at **64 feet (19.5 m)**.
 - g. Amperage: 2 A or less.
 - h. Power Consumption (Standby): 3 W or less.
 - i. Average Linear Speed: **4.9 to 7.86 inch/s (125 to 200 mm/s)**.
 - j. Power Supply (Transformer Included with Motor 120V ac to 24V dc): Plug-in to motor power port with **0.217-inch (5.5-mm)** barrel connector; and **13.2-foot (4-m)** long cable.
 - k. Control Connector Type: RJ12.
 - l. Sound Level: 44 dBA or less.
 - m. Motor Mount: **[Left] [Right]** side and **[top] [bottom]** mount.
 - n. Digital Keypad Wall Switch: Button-operated station.
 - 1) Basis-of-Design Product: Somfy Systems; Decoflex digital keypad for SDN.
 - 2) Buttons: **[Six-button] [Eight-button]** digital transmitter.
 - 3) Standard Decora-style faceplate.
 - 4) Colors: **[White] [Ivory] [Black]**.
 - 5) Material: Lexan 945U.
 - 6) LED Indicators:
 - a) Red-rear of switch powered.
 - b) Red-front of switch status, flashing when transmitting.
 - 7) Electrical Characteristics:
 - a) Power Input: 24-V dc low-voltage.
 - b) Power Consumption: 10 mA supplied by SDN Bus.

- 8) Wiring Range: **30 ft. (20 m)** or more from a SDN data hub connection.
 - 9) Temperature Range: Ambient temperature.
 - 10) Control Functions: Up, Down, Stop, [**three presets**] [**five presets**].
4. Application: Draperies; [**Pinch pleat**] [**Ripplefold®**] [**Accordia®**].
 5. Track: [**Single drapery**] [**Single tandem drapery**].
 - a. Track Type: [**One way**] [**Center opening**] [**Asymmetrical**] [**One way with bend**] [**Center opening with bend**] [**One way with two bends**] [**Center opening with two bends**] [**One way with continuous curve**] [**Center opening with continuous curve**].
 - b. Track Mount: [**Wall**] [**Ceiling**].
 - c. Maximum Track Length: [**32 feet (9.7 m)**] [**36 feet (10.9 m)**].
 6. Transmitter Control: [**Handheld remote**] [**Wired wall switches**] [**Tabletop remote**] [**Smart devices**].
- E. Track Components and Materials:
1. Tracks:
 - a. Headrail: Manufactured from 6063-T5 AL (coated) extruded aluminum of **1.2-inch (30.5-mm)** wide, **1.03 inch (25.1 mm)** high, and curvable to an **11.8-inch (300-mm)** minimum radius. Curves shall be factory made in accordance with template or specification.
 - b. Drive Belt: Synchronous, pre-lubed, toothed belt that circulates internally within headrail to ensure smooth travel for each track type.
 - c. Drive and Return Assembly: Manufactured from injection-molded plastic, equipped with a bush bearing, and allowing multiple curtain-hook attachments.
 - d. Carriers: Wheel-mounted type with rotating eyelet and able to accommodate a pinch pleat, or ripple-fold heading.
 2. Brackets: Manufactured from steel; [**one-touch type for easy mount**] [**swivel type for maximum of 1/16-inch (2-mm) light gap**].
 3. Construction: 6063-T5 AL (coated) extruded aluminum, adjustable mounting brackets clipped to top channel track at intervals of not more than **24 inches (610 mm)** o.c., and **bendable to radii indicated.**
 - a. Lengths and Configurations: **1.2 inch (30.5 mm)** wide, **1.03 inch (25.1 mm)** high, and curvable to an **11.8-inch (300-mm)** minimum radius.
 - b. Maximum Track Support Capability: [**Weight of drape indicated**] [**77 lb (35 kg)**] [**99 lb (45 kg)**] [**132 lb (60 kg)**] mounted on single track length.
 - c. Finish: [**Manufacturer's standard**] [**White, baked enamel**] [**Bronze, baked enamel**].
 4. Mounting Brackets: Suitable for fastening steel track to surface indicated and designed to support weight of track assembly and drape plus force applied to operate track.
 - a. Mounting Surface: [**As indicated on Drawings**] [**Wall**] [**Ceiling**] [**Drapery pocket**] <Insert description>.
 - b. Motor Location: [**Left side**] [**Right side**] and [**top mounted**] [**bottom mounted**].

- c. Finish: **[Manufacturer's standard] [White, baked enamel] [Bronze, baked enamel]**.
 - 5. Installation Fasteners: Sized to support track assembly and drape, and fabricated from metal compatible with track, brackets, and supporting construction. Provide two fasteners to fasten each bracket to supporting construction.
 - 6. Carriers: Wheel-mounted type with rotating eyelet and able to accommodate a pinch pleat or ripple-fold heading.
 - a. Master Carriers: **[Butt] [Overlap]**.
 - b. Drapery Type: **[Pinch pleat] [Ripplefold®] [Accordia®]**.
 - c. Finish: **[Manufacturer's standard] [White, baked enamel] [Bronze, baked enamel]**.
 - 7. End Stops: Manufacturer's standard **[with track end cap]**.
 - a. Finish: **[Manufacturer's standard] [White, baked enamel] [Bronze, baked enamel]**.
 - 8. Pulleys: Standard duty.
 - a. Finish: **[Manufacturer's standard] [White, baked enamel] [Bronze, baked enamel]**.
 - 9. Drive Belt: Synchronous, pre-lubed, toothed belt.
 - 10. Drive and Return Assembly: Manufactured from injection-molded plastic, equipped with bush bearings with multiple curtain hook attachment capability.
 - 11. Brackets: Manufactured from **[steel] [bronze], [one-touch type for easy mount] [swivel type for a maximum of 1/16-inch (2-mm) light gap]**.
 - a. Finish: **[Manufacturer's standard] [White, baked enamel] [Bronze, baked enamel]**.
 - 12. Accessories: **<Insert accessories>**.
- F. Manually Operated Track **<Insert drawing designation>**:
- 1. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - a. Forest Group USA, Inc.
 - b. Kirsch Window Fashions; a Newell Rubbermaid brand.
 - c. Silent Gliss.
 - d. Springs Window Fashions; SWFcontract.
 - e. **<Insert manufacturer's name>**.
 - 2. Construction: Extruded aluminum, slotted for mounting at interval of not more than **24 inches (610 mm) o.c.**, **and bendable to radii indicated.**
 - a. Lengths and Configurations: **[As indicated on Drawings] <Insert requirements>**.

- b. Support Capability: [**Weight of drape indicated**] [**30 lb (14 kg)**] [**45 lb (20 kg)**] [**60 lb (27 kg)**] [**80 lb (36 kg)**] [**140 lb (64 kg)**] [**210 lb (95 kg)**] <Insert weight> mounted on track length indicated.
 - c. Finish: [**White, baked enamel**] [**Clear, anodic coating**] <Insert finish>.
- 3. Mounting Brackets: Aluminum, of type suitable for fastening track to surface indicated and designed to support weight of track assembly and drape plus force applied to operate track.
 - a. Mounting Surface: [**As indicated on Drawings**] [**Wall**] [**Ceiling**] [**Drapery pocket**] <Insert description>.
 - b. Size: [**Adjustable**] <Insert dimension>.
- 4. Installation Fasteners: Sized to support track assembly and drape, and fabricated from metal compatible with track, brackets, and supporting construction. Provide two fasteners to fasten each bracket to supporting construction.
- 5. Operation: [**Baton**] [**Cord complying with WCMA A 100.1**] [**Cord tension pulley complying with WCMA A 100.1**].
 - a. Pulley Mounting Location: [**Wall**] [**Baseboard**] [**Floor**].
 - b. Draw: [**One way, stack as indicated on Drawings**] [**One way, stack left**] [**One way, stack right**] [**Two way, center opening**].
 - c. Operating Hardware Location: [**On stack side**] [**Left**] [**Right**] [**As indicated on Drawings**].
- 6. Carriers: [**Rollers**] [**Rollers with hooks**] [**Rollers with snaps**] [**Slides**] [**Slides with hooks**] [**Coordinate with drapery headings indicated**] <Insert description>.
 - a. Master Carriers: [**Butt**] [**Overlap**].
 - b. Finish: [**White, baked enamel**] [**Bronze, baked enamel**].
- 7. End Stops: Manufacturer's standard[**with track end cap**].
- 8. Pulleys: [**Standard**] [**Heavy**] duty.
- 9. Accessories: <Insert accessories>.

2.2 DRAPES

- A. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1. Barjan Manufacturing Ltd.
 - 2. Contract Shading Systems.
 - 3. County Draperies, Inc.
 - 4. Creative Draperies Inc.
 - 5. DFB Sales Inc.
 - 6. Fabricut.
 - 7. Fabtex.
 - 8. Quiltcraft Industries, Inc.
 - 9. Standard Textile Co., Inc.
 - 10. Wesco Fabrics, Inc.

11. <Insert manufacturer's name>.

- B. Source Limitations: Obtain each color and pattern of drapery fabric and trim from one dye lot.
- C. Fire-Test-Response Characteristics: For fabrics treated with fire retardants, provide products that pass NFPA 701 as determined by testing of fabrics that were treated using treatment-application method intended for use for this Project by a testing and inspecting agency acceptable to authorities having jurisdiction.
- D. Drape <Insert drawing designation>:

1. Heading:

- a. Pinch (French) Pleats: [100] [150] [200] [250] percent fullness; [two] [three] [four] [five]-fold (fingers) each pleat.
- b. Stack Pleats: [60] [80] [100] [120] percent fullness.
- c. Roll Pleats: [60] [80] [100] [120] percent fullness.
- d. Accordion Pleats: [40] [80] [100] [120] percent fullness.
- e. <Insert heading description>: <Insert number> percent fullness.
- f. Pleat Spacing: <Insert dimension>.
- g. Heading Accessories:
 - 1) Nonwoven buckram.
 - 2) Woven snap tape, [7/8 inch (22 mm) wide, with nickel-plated snaps at 4 inches (102 mm) o.c.] <Insert description>.
 - 3) Hooks.
 - 4) <Insert accessory>.

2. Drapery Fabric:

- a. Manufacturers: Subject to compliance with requirements, provide products by one of the following:
 - 1) Applied Textiles.
 - 2) Arc-Com.
 - 3) Architex International.
 - 4) Carnegie.
 - 5) DesignTex Inc.
 - 6) Maharam.
 - 7) Robert Allen.
 - 8) Standard Textile Co., Inc.
 - 9) Wesco Fabrics, Inc.
 - 10) <Insert manufacturer's name>.
3. Fiber Content: <Insert description>.
4. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than <Insert value> percent.
5. Orientation: Run right (up the bolt).
6. Width: <Insert width>.
7. Pattern Repeat Distance: <Insert vertical distance> vertically; <Insert horizontal distance> horizontally.

8. Textile Treatments: [Stain repellent] [Flame retardant, polymer type] [Stain repellent; and flame retardant, polymer type] <Insert requirements>.
9. Lining Fabric:
 - a. Lining Type: [Blackout] [Thermal reflective] [Water resistant] <Insert description>.
 - b. Product: [Selected by fabricator for use with drapery fabric indicated] <Insert manufacturer's name; product name or designation>.
 - c. Color: <Insert description or colorway designation>.
 - d. Fiber Content: <Insert description>.
 - e. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than <Insert value> percent.
 - f. Width: <Insert width>.
 - g. Textile Treatments: [Stain repellent] [Flame retardant, polymer type] [Stain repellent; and flame retardant, polymer type] <Insert requirements>.
10. Interlining: [Acoustical] [Blackout] [Thermal] <Insert description>.
 - a. Product: [Selected by fabricator for use with drapery fabric indicated] <Insert manufacturer's name; product name or designation>.
11. Textile Trim: <Insert description for each type of trim required; include manufacturers, products, and colors>.
12. Tiebacks: <Insert description; include manufacturer's name, product name or designation, and color>.
13. Hem Weights: [~~1-inch~~ (~~25-mm~~)] square lead weights [Tape type (string weights)].

2.3 DRAPE FABRICATION

- A. Fabricate drapes in heading styles and fullnesses indicated. Fabricate headings to stand erect. If less than a full width of fabric is required to produce panel of specified fullness, use equal widths of not less than one-half width of fabric located at ends of panel.
 1. One-Way-Stacking Drapes: Add ~~5 inches~~ (~~127 mm~~) to overall width for returns.
 2. Center-Opening Drapes: Add ~~10 inches~~ (~~254 mm~~) to overall width for overlap.
- B. Seams: Sew vertical seams with twin-needle sewing machine with selvage trimmed and overlocked. Join widths so that patterns match and vertical seams lay flat and straight without puckering. Horizontal seams are unacceptable.
- C. Side Hems: Double-turned, ~~1-1/2-inch~~ (~~38-mm~~) wide hems consisting of three layers of fabric, and blindstitched so that stitches are invisible on face of drape.
- D. Bottom Hems: Double-turned, ~~4-inch~~ (~~102-mm~~) wide hems consisting of three layers of fabric, and weighted and blindstitched so that weights and stitches are invisible on face of drape.
 1. Sew in square lead weights at each seam and at panel corners.

- E. Interlinings: Extend from top of drape to within **1/2 inch (13 mm)** of lining's bottom hem and to leading edge of side hems to produce full-shadowed appearance.
- F. Linings: Equal to widths of drapery fabric and joined to drapery fabric at top by inside invisible seam, and hand stitched at side hems and shadowed with **1-1/2-inch (38-mm)** return of face fabric.
 - 1. Bottom Hem: [**Hem separately from**] [**Blind stitch to**] drapery fabric.

PART 3 - EXECUTION

3.1 EXAMINATION

- A. Examine substrates, areas, and conditions, with Installer present, for compliance with requirements for installation tolerances, operational clearances, blocking, [**locations of connections to building electrical system,**] [**lighting,**] and other conditions affecting performance of Work.
- B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 DRAPERY TRACK INSTALLATION

- A. Install track systems in accordance with manufacturer's written instructions, level and plumb, and at height and location in relation to adjoining openings as indicated on Drawings. Use mounting methods of types described and in compliance with Shop Drawings and fabricator's written instructions.
- B. Isolate metal parts of tracks and brackets from concrete, masonry, and mortar to prevent galvanic action. Use tape or another method recommended in writing by track manufacturer.

3.3 MOTOR(S) AND CONTROL(S) INSTALLATION

- A. General: Install drapery motors and controls at locations and in position indicated, level, plumb, securely connected to supports, free of rack, and in proper relation to adjacent construction. Use mounting methods of types described and in compliance with Shop Drawings and fabricator's written instructions.
 - 1. Mount controls, sensors, and other standalone equipment in accordance with manufacturer's written instructions.
- B. Installation of Motors, Controllers and Accessories:
 - 1. Comply with NECA 1 and NECA 130.
 - 2. Comply with FCC guidelines.
 - 3. Electrical Connections: Connect wired motor operators and stationary control systems to building electrical system in accordance with NEC requirements.
 - a. Grounding: Provide electrical grounding in accordance with NFPA 70.

4. Networked BMS: Connect networked automation controls for motorized equipment to BMS.
5. Sun, Rain, and Wind Sensor Locations: Mount on window glass or sill in accordance with manufacturer's written instructions.
6. Install drapery track, motors, and controls after other finishing operations, including joint sealing and painting, have been completed.

3.4 DRAPE INSTALLATION

- A. Where drapes abut overhead construction, hang drapes so that clearance between headings and overhead construction is **1/4 inch (6.4 mm)**.
- B. Where drapes extend to floor, install so that bottom hems clear finished floor by not more than **1 inch (25 mm)** and not less than **1/2 inch (13 mm)**.
- C. Where drapes extend to windowsill, install so that bottom hems hang above sill line and clear sill line by not more than **1/2 inch (13 mm)**.

3.5 ADJUSTING

- A. After hanging drapes, test and adjust each drapery track to produce unencumbered, smooth operation.
- B. Steam and dress down drapes as required to produce crease- and wrinkle-free installation.
- C. Remove and replace drapes that are stained or soiled.
- D. Adjust motorized equipment to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.
 1. Program each motor operator control system to **[manufacturer's standard settings]** **[Owner-provided program settings]**.
- E. Commissioning Control Systems: Perform commissioning of integrated automation control systems[**and connection to BMS**].
 1. Managed by **[shade manufacturer/supplier]** **[motor and control manufacturer]** **[digital network integrator]** <Insert name of commissioning agency>.
 2. Control systems to be commissioned on a per floor basis followed by complete system programming of the window treatment network.

3.6 CLOSEOUT ACTIVITIES

- A. Demonstration and Training: Engage a factory-authorized service representative to demonstrate and train Owner's maintenance personnel to adjust, operate, and maintain motor-operated units and[**networked automation**] motor control systems.

END OF SECTION 122200