*(****Specifier Note****: The purpose of this guide specification is to assist the Specifier in correctly specifying sun control devices and their installation.*

*The Specifier needs to edit these guide specifications to fit the needs of each specific project. References have been made within the text of the specification to MasterFormat section numbers and titles. The Specifier needs to coordinate these numbers and titles with sections included for the specific project.*

*Throughout the guide specification, there are Specifier Notes to assist in the editing of the file. Brackets have been used to indicate when a selection is required. Contact a Draper, Inc. representative for further assistance with appropriate product selections.*

*Sun Control Devices/Window Blinds are manufactured to metric dimensions. Nominal imperial dimensions have been included in (\_).*

*Because Draper Venetian Blinds by Warema can be mounted either inside the building or on the exterior façade, the specifier needs to select the appropriate section number and title. Utilizing the Division 10 number and title for exterior applications or the Division 12 number and title for interior applications.)*



[SECTION 10 71 13 - Exterior Sun Control Devices]

***OR***

[SECTION 12 21 00 - Window Blinds]

Draper, Inc. Venetian Blinds by Warema

PART 1 - GENERAL

* 1. SUMMARY
1. SECTION INCLUDES: [Electrically] [Manually] operated [exterior] venetian blinds

1.2 ACTION SUBMITTALS

A. Refer to Section [01 33 00 Submittal Procedures] [Insert section number and title].

B. Product Data: For each type of shading device, including manufacturer recommended installation procedures.

C. Shop Drawings: Include shading assembly dimensions, [electrical and control wiring], method of attachment and structural support.

1.3 CLOSEOUT SUBMITTALS

A. Refer to Section [01 78 00 Closeout Submittals] [Insert section number and title].

B. Operation and Maintenance instructions, including the name, address and contact information of local service provider.

1.4 QUALITY ASSURANCE

A. Source Limitation: Obtain shading assembly from single manufacturer as a complete unit including necessary mounting hardware and accessories.

B. Mock-up: Install one complete shading assembly at project site. Obtain Architect’s approval prior to proceeding with installation of remaining shading assemblies. Accepted mock-up [may] [may not] remain as portion of final work.

1.5 DELIVERY, STORAGE AND HANDLING

A. Refer to Section [01 60 00 Product Requirements] [Insert section number and title].

B. Deliver shade assembly in manufacturer’s original, unopened, undamaged containers with identification labels intact.

C. Store shade assembly in accordance with manufacturer’s recommendations, protecting materials and finishes from damage.

1.6 WARRANTY

A. Manufacturer Warranty: Manufacturer agrees to repair or replace shade assembly components that fail in materials within specified warranty period.

1. Failures include but are not limited to venetian blind hardware, metal finishes, electronic controls, accessories and motors.

2. Warranty Period: 2 years from date of Substantial Completion.

PART 2 - PRODUCTS

*(****Specifier Note****: Product information is proprietary to Venetian Blinds supplied by Draper, Inc. If additional products are required for competitive procurement, contact Draper, Inc. for assistance in listing competitive products that may be available.)*

2.1 MANUFACTURER

A. Basis of Design: Venetian Blinds by Warema. Contact Draper, Inc.; 411 South Pearl Street; Spiceland, IN 47385; Phone 765.987.7999; website [www.draperinc.com](http://www.draperinc.com)

1. Subject to compliance with requirements, manufacturers of products of equivalent design may be acceptable if approved in accordance with [Section 01 25 00 Substitution Procedures] [Insert section number and title].

2.2 HARDWARE

*(****Specifier Note****: SELECT the appropriate attachment method for the specific project. Spacing and quantity of brackets is dependent on width of blind, contact Draper for assistance.)*

1. Mounting Brackets
2. [Top-Fixing]: Manufacturer standard aluminum ‘saddle’ brackets incorporating rubber inserts to prevent noise transmission to the building structure.

*(***Specifier Note***: Face fixing is in addition to top fixing. Contact Draper for assistance in determining required quantity and spacing of angle brackets.)*

2. Face Fixing]: In addition to [top fixing] [direct fixing], provide additional angle brackets for face fixing of the system to the building structure.

B. Headrail

1. Material: Extruded aluminum, alloy 6063-T6, 1.5 mm (1/16 inch) thick

2. Size: 2 5/16” wide by 2” tall (59mm by 51mm).

3. Head rail closed on the underside.

*(****Specifier Note****: Sliding couplings are required for connecting multiple shading devices to a single motor.)*

4. Internal drive shaft of extruded aluminum tube [with sliding couplings at ends]

C. Slats

*(****Specifier Note****: SELECT slats based on desired aesthetic. DELETE perforation options if slats are solid.)*

1. Flexible Crowned Slats: [150 mm (6 inches)] [100 mm (4 inches)] [80 mm (3 inches)] [60 mm (2‑1/2 inches)] [50 mm (2 inches)]
	1. Perforations
	2. Openness factor: [3.8 percent] [6 percent] [9.2 percent]
	3. Pattern: [Half] [Highway] [Full]

*(****Specifier Note****: Coordinate perforation options for the Rolled Edge Louvers with Draper.)*

1. Rolled Edge Slats: [80 mm (3 inches)] [60 mm (2‑1/2 inch)]

 3. Rolled Edge Dim-out Slats: [73mm (2-7/8 inch)] [90mm (3-9/16 inch)] [93mm (3-5/8 inch)]

 4. Slats to incorporate a special profile and front rolled edges with a sealing strip made from flexible plastic to provide increased light exclusion with the slats in the closed position.

D. Tape: Manufacturer standard

1. Lifting tape: Manufactured from polyester with a special coating. Color: [Black] [grey] [white].

2. Ladder tape:

a. Flexible crowned and rolled edge slats: Manufactured from polyester with Kevlar core, with cross webs. Color: [Black] [grey].

b. Dim-out slats: Polyester with additional aramide fibers, weatherproof and UV stable. Color: [Black] [grey].

 c. Flexible crowned and rolled edge slats: Each slat is threaded through the double webs and fixed to the top web of the ladder tape by means of a [black] [grey] plastic slat insert.

 d. Dim out louvers: The loops of the ladder tape are fixed to the slats by means of stainless steel clips

E. Bottom Rail: Extruded aluminum, 2 mm (3/32 inch) thick minimum, with [black] [grey] plastic end pieces.

*(****Specifier Note****: Generally match size of bottom rail to size of slat.)*

1. Size: [150 mm by 20 mm (6 inches by 7/8 inch)] [100 mm by 20 mm (4 inches by 7/8 inch)] [93 mm by 20mm (3-5/8 inch by 7/8 inch)] [90 mm by 20mm (3-9/16 inch by 7/8 inch)] [80 mm by 15 mm (3 inches by 19/32 inch)] [73 mm by 20mm (2-7/8 inch by 7/8 inch)] [60 mm by 15 mm (2‑1/2 inches by 19/32 inch)]

F. Side Guides

1. Polyamide coated stainless steel cables: 3.3 mm (1/8 inch) diameter with [black] [transparent] coating.

a. Cable guides are fixed in the head rail with a spring tension device to compensate for thermal movements.

b. Cable guides run through all the slats and the bottom rail.

c. Depending on the blind width, intermediate guide cables may be required.

 d. Cables fixed to the building structure by extruded aluminum bracket or a special clamping bolt.

2. Extruded aluminum side channels with plastic infill.

a. ‘C’ profile 25mm x 18mm (1 inch x 23/32 inch)

b. Guides incorporate a weather proof, UV resistant black gasket for noise reduction

c. [Black] [grey] plastic end caps

d. Guide rails attached to the building structure with two-piece brackets manufactured from aluminum and plastic.

e. Slat guide pins: Impact resistant polyamide slat guide pins are attached to the ends of the slats by means of 2 ultrasonic welds.

Rolled edge slats: One guide pin per slat alternating left and right over the height of the blind.

Flexible crowned slats: Every third slat, guide pins fitted at both ends of the slat.

Side Channels: Extruded aluminum with plastic fill.

***Specifier Note****: Head Boxes are optional accessories. Exterior shading devices must be protected in the raised position. Head Boxes are required if pockets are not designed as part of the building structure.*

G. Head Box: Custom fabricated from [1.5 mm (0.059 inch)] [2.0 mm (0.079 inch)] thick aluminum, to protect device in raised position.

2.3 OPERATOR

A. Electric Operator to provide raise, lower, and tilt functions.

1. Motor equipped with a disconnect plug, concealed in aluminum head rail. Motor shall incorporate output shafts to allow the motor to be located in the center of the head rail with drive shafts extended in both directions.

a. Standard Motor: 110V AC, single-phase, 60 Hz, thermally protected, with torque rating as required by manufacturer.

b. Motor speed range: 20 to 35 RPM

c. Amperage range: 1.21 to 1.80

 d. Motor to incorporate push button limit switches in addition to separate push button safety cut off switch to prevent motor running beyond upper limit.

2. IntelliFlex I/O Network Devices.

 a. Network Device Connector. Connects lntelliFlex I/O devices into a network. Distributes power and communications between devices. One provided with each IntelliFlex I/O motor and network device. Approved for use in plenum spaces. LED Indicators indicate network status. Includes built-in terminating resistor, and network bypass switch for troubleshooting. Material: ABS plastic. Operating temperature: Ambient. Dimensions: 3 3/8" x 2" x 1 1/16" (90 x 31 x 27mm). Mounting hardware provided. Indoor use only.

 1) NDC1. Connects a single device.

 2) NDC3. Connects up to 3 devices.

 b. Wireless Network Gateway. Allows wireless devices to control shades on the wired network. Required when using Radio Frequency handheld remote. LEDs indicate the status of both the wired and wireless networks. Allows wireless control of the entire network from a single receiving point. Material: ABS plastic. Operating temperature: Ambient. Dimensions: 3 3/8" x 2" x 1 1/16" (85 x 52 x 27mm). Mounting hardware provided. Indoor use only.

 c. A\V Gateway. Used to integrate with third party control systems. Single entry point must support RS-232 and RS-485 and contain at least 6 contact closure inputs, low voltage trigger, and IR receiver input. Approved for use in plenum spaces. LCD display allows for commissioning of serial groups. Material: ABS plastic. Operating temperature: Ambient. Dimensions: 4 7/8" x 3" x 1" (124 x 83 x 32m). Mounting hardware provided. Indoor use only.

 d. Contact Closure Interface. Allows up to 6 contact closure inputs to be connected to the network. These are grouped into 3 sets of Up/Down signals, each of which can control any number of shades on an lntelliFlex I/O network. Configuration must be done using onboard programming buttons, without rewiring or the use of external configuration devices. Power is provided through the lntelliFlex I/O network using a single Ethernet cable for power and communication. Material: ABS plastic. Operating temperature: Ambient. Dimensions: 3" x 3" x 1" (76 x 76 x 25mm). Mounting hardware provided. Indoor use only.

 e. Sensor/Schedule Interface. Allows up to 4 sensors to be added to an IntelliFlex I/O network. Must include built-in support for brightness, temperature, wind, and precipitation sensors, and pyranometers. Must support up to 8 scheduled override events. Configuration must be done using on-board buttons and LCD display. Supports 0-10V, 4-20mA, photodiode and pulse sensors. External power input for sensors provides support for any sensor power requirements. Material: ABS plastic. Operating temperature: Ambient. Dimensions: 4 7/8” x 3¼” x 1¼” (124 x 83 x 32m). Mounting hardware provided. Indoor use only.

 1) SSI Transformer. To be used when adding third party sensors to the network.

 f. Sensor/Schedule Interface with Automated Glare Control. The IntelliFlex® I/O Sensor / Scheduler Interface with automated glare control allows up to 4 sensors to be added to an IntelliFlex I/O network. Includes built-in support for brightness, temperature, wind, and precipitation sensors as well as pyranometers. Also provided support for up to 8 scheduled override events. Configuration is done using on-board buttons and LCD display. Supports 0-10V, 4-20mA, photodiode and pulse sensors. Configuration using built-in buttons and LCD display. Scheduled events can be configured to run on any combination of days of the week. External power input for sensors provides support for any sensor power requirements. Material: ABS plastic. Operating temperature: Ambient. Dimensions: 4 7/8" x 3" x 1" (124 x 83 x 32m). Mounting hardware provided.

 g. Central Network Controller. Touchscreen device to add advanced functionality to a network. It also acts as a router between the control network and a building IP network. Graphical user interfaces on local touchscreen as and remote access web interfaces. Automated glare control and scheduling. BACnet/IP integration. Interface to monitor and override network devices. Allows logging of shade movements, sensor readings, and user overrides. Input power: Micro USB. Operating temperature: ambient. Dimensions: 9 7/8" x 5¾" x 2" (251 x 146 x 51mm). Rough cutout: 8" x 5" x 1¾" (203 x 127 x 44mm). Mounting hardware provided.

 h. IP Gateway. For connecting a network of IntelliFlex I/O devices to an IP network. Built-in two port network switch for connecting directly to a building network. Can be daisy chained to other IPGs to form a stand-alone network for access to all connected IntelliFlex I/O devices. Each IPG is a BACnet/IP device and allows for an additional 120 devices to be added to the network. Configuration is done using the built-in buttons and display. Material: ABS plastic. Operating temperature: ambient. Dimensions: 4 7/8" x 3" x 1" (124 x 83 x 32mm). Mounting hardware provided.

3. IntelliFlex I/O User Input Devices.

 a. Single Zone Wall Switch. Allows user to move roller shades to any position with a single touch. Swipe gestures must be recognized to move shades to fully open or closed positions. Power provided through lntelliFlex I/O network using a single Ethernet cable for power and communication. Switch shall be capable of controlling any number of shades on an lntelliFlex I/O network using onboard programming buttons without rewiring or the use of external configuration devices. Must allow unlimited number of preset alignment positions. Push button switches not permitted.

 b. Dual Zone Wall Switch. Allows user to control two independent zones of roller shades, moving them to any position with a single touch. Swipe gestures must also be recognized to move shades to fully open or closed positions. Power for switch must be provided through the lntelliFlex I/O network using a single Ethernet cable for power and communication. Each zone must be configured to control any number of shades on an lntelliFlex I/O network using the onboard programming buttons, without rewiring or the use of external configuration devices. Unlimited number of preset alignment positions. Push button switches not permitted.

 c. Radio Frequency Handheld Remote Control. Display must allow for any number of channels, up to 32 channels. Touch control to position the shades anywhere with one touch. Must be capable of serving as a simple commissioning tool. lntelliFlex I/O Wireless Network Gateway is required with remote. Range is 40 feet from closest IntelliFlex I/O device. Push button remotes not permitted.

 d. Infrared (IR) Remote Control Kit. Includes handheld remote transmitter and IR receiver. For use with A\V Gateway.

4. IntelliFlex I/O Sensors.

 a. External Brightness Sensor. For mounting on the exterior side of the window. For use with Sensor/Schedule Interface.

 b Wind Speed Sensor. For use with Sensor/Schedule Interface.

 c. Internal Brightness Sensor. To be mounted on the interior side of the window with adhesive or with provided mounting bracket. For use with Sensor/Schedule Interface.

*(****Specifier Note****: Crank operator can only be used for interior applications.)*

* + - * 1. Crank Operator to rise, lower, and tilt functions.

Gear box: Concealed in headrail.

Incorporate: [fixed] [removable] crank handle for operation of the window blinds.

2.4 FINISHES

A. Slats: Double Stove Enameled

1. Color:

a, All slats: [RAL 9006 white aluminum] [RAL 9007 grey aluminum]

1. Flexible (60, 80, 100), rolled edge (60, 73, 80, 90, 93):

RAL 9016 Traffic white

1. Flexible (60, 80), rolled edge (60, 73, 80, 90, 93):

[RAL7016 Anthracite grey] [RAL 7035 Light grey] [RAL 7038 Agate grey] [DB 703 Anthracite iron mica effect]

1. Flexible 80, rolled edge (73, 80, 90, 93):

[RAL 1015 Light ivory] [RAL 1019 Grey beige] [RAL 1036 Pearl gold] [RAL 3004 Purple red] [RAL 5011 Steel blue] [RAL 6009 Fir green] [RAL 8014 Sepia brown] [RAL 9010 Pure white] [DB 502 Blue iron mica effect] [DB 603 Green iron mica effect] [DB 702 Grey iron mica effect] [W 3005 Wine red pearl mica effect] [W 4800 Light beige] [W 4919 Earth brown mica effect] [W 4922 Cappuccino] [W 7329 Dark bronze] [W 8000 Selective slat, RAL 9006 on bottom surface] [W 8100 Mill finish, RAL 9006 on bottom surface] [W 8780 Light bronze] [RAL 9006 EcoClean White aluminum, matt] [RAL 9007 EcoClean Grey aluminum, matt] [RAL 9016 EcoClean Traffic white, matt] [DB 703 EcoClean Anthracite iron mica effect, matt]

2. Slats with a Reynolux EcoClean coating are self-cleaning due to a titanium oxide coating on the slat surface which is activated with solar radiation and humidity.

Custom colors available on request

1. Other exposed aluminum components: [clear anodized] [Polyester powder coated to match the slats]
2. Concealed aluminum components: mill finish
3. Factory finishes are to be uniform, smooth and without blemishes.

2.5 CONTROLS

*(****Specifier Note****: SELECT controller based on desired function. BC2 controller will operate sun control in upward and downward direction upon activation. SFBC2 controller will operate sun control based on sun levels and preset stops.)*

1. External Controller [1MC - 1 motor building controller, C156.285 SA] [4MC – 4 motor building controller, C156.286SA].
2. Peripheral Operator: [Single Zone (C112.161) or Dual Zone Wall Switch (C112.162)]. IntelliFlex I/O Touchscreen wall switches connected to the communication BUS line via single CAT5e cable to a network device connector (NDC).
3. IntelliFlex I/O Input Device:
	1. AV Gateway (C156.269)- AV Integration device for operating shading systems from contact closures, RS 232/285, IR, or Low Voltage Trigger. Connects to BUS line via NDC.
	2. Contact Closure Interface (C156.273)- Device designed to take contact closure input and distribute commands on the BUS line. Connected to the BUS line via an NDC.
	3. Wireless Network Gateway (C156.268)- Wireless receive to work with RF remote (C156.270). Remote has 32 channels of operation to control units.
	4. Schedule/Sensor Interface (C156.272)- Device is design to handle up to 4 sensors and send commands to the BUS line. Connected to the BUS line via an NDC.
	5. Schedule/Sensor Interface + (C156.304)- Device is design to handle up to 4 sensors and send commands to the BUS line. Can be programmed with up to 8 zones of sun automation if programmed with project location. Connected to the BUS line via an NDC.
	6. Central Network Controller (C156.271)- Device is a head end unit for a shading control system. Device can run full automation, provide an end user GUI, send commands out to the BUS line via an NDC. Allows for BACnet IP integration with BAS.
	7. IP Gateway (C156.305)- Device is used to split large network to smaller manageable sizes or provide a head end unit connection to floors with a CNC.

*(****Specifier Note****: Wind control is required for all exterior applications, to assess conditions an anemometer is required as part of the system.)*

1. Wind control for exterior sun control devices: Anemometer.

2.6 FABRICATION

A. Fabricate shading devices for custom installation as indicated.

B. Finished assemblies shall be square, true to size and free from twist or other defects that affect strength and appearance.

PART 3: EXECUTION

3.1 PREPARATION

A. Verify field dimensions of windows prior to fabrication of shading device.

B. Coordinate structural requirements of shading device to ensure proper attachment and support.

*(****Specifier Note****: DELETE requirements related to power and motors for manually operated installations.)*

* + - * 1. Coordinate requirements and location of power supply, conduit, and wiring required for motors and controls.
				2. Test and verify all set motor limits prior to wiring.

3.2 INSTALLATION

A. Comply with shading assembly manufacturer’s written instructions and shop drawings.

3.3 TESTING AND DEMONSTRATION

A. Operate shade through complete cycle of lowering, raising and tilting to ensure proper operation. Correct deficiencies.

B. Demonstrate operation of shading assembly to Owner's designated representatives.

3.4 PROTECTION

A. Clean and protect shading assembly after installation from damage during construction operations. If damage occurs, remove and replace damaged components or entire unit as required to provide units in their original, undamaged condition.

END OF SECTION