SECTION 10 71 13

EXTERIOR SOLAR CONTROL

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\*\* NOTE TO SPECIFIER \*\* Draper Inc.; Solar Control Solution products.  
This section is based on the products of Draper Inc., which is located at:411 S. Pearl Street, P. O. Box 425Spiceland, IN 47385-0425Toll Free Tel: 800-238-7999Tel: 765-987-7999Fax: 866-637-5611Email: [request info (drapercontract@draperinc.com)](https://arcat.com/rfi?action=email&company=Draper%252BInc.&message=RE%253A%2520Spec%2520Question%2520(10710dra)%253A%2520&coid=32063&spec=10710dra&rep=&fax=866-637-5611)  
Web: <http://www.draperinc.com>   
 [ [Click Here](https://arcat.com/company/draper-inc-32063) ] for additional information.  
Solar Control Solutions  
You know Draper as the manufacturer of FlexShade Systems, quality window coverings backed by over 110 years' experience. We are excited to introduce our Solar Control Solutions line of architectural shading products. Solar Control Solutions provide precision control over the natural daylight entering the building, excellent energy savings and interesting facade design options. A wide range of custom products complements our traditional window coverings to meet all your needs for interior and exterior shading.  
Exterior shading is the most efficient way to keep solar heat gain outside the building envelope. Draper can help develop a system that utilizes both interior and exterior shading to maximize efficiency and occupant comfort, and reduce energy consumption. Each custom solution we provide has specific benefits and features to enhance your overall building design and daylighting needs.  
Draper's Solar Control Solutions allow you to control daylight and manage solar heat gain. Using an exterior shading system such as the Omega venetian blind can significantly reduce the heat gain entering the building, allowing the use of smaller more cost effective HVAC systems. Additionally, artificial lighting can account for more than 40% of a building's electrical load. Balancing daylight and artificial light through the use of the right shading system can lead to significant savings in energy consumption.

1. GENERAL
   1. SECTION INCLUDES

\*\* NOTE TO SPECIFIER \*\* Delete items below not required for project.

* + 1. Omega Venetian Blinds (Exterior Window Solar Control)
    2. FlexLouver Rack Arm System (Exterior/Interior Window Solar Control)
    3. FlexShade ZIP (Exterior/Interior Window Solar Control)
    4. Topspin (Exterior Horizontal Skylight Solar Control)
  1. RELATED SECTIONS

\*\* NOTE TO SPECIFIER \*\* Delete any sections below not relevant to this project; add others as required.

* + 1. Section 06 10 00 - Rough Carpentry.
    2. Section 07 90 00 - Joint Protection.
    3. Section 09 21 16.23 - Gypsum Board Shaft Wall Assemblies.
    4. Section 09 51 23 - Acoustical Tile Ceilings.
    5. Section 11 52 13 - Projection Screens.
    6. Section 11 52 16 - Projectors.
    7. Division 16 - Electrical: Electrical supply, conduit, and wiring for motorized window shades.
  1. REFERENCES

\*\* NOTE TO SPECIFIER \*\* Delete references from the list below that are not actually required by the text of the edited section.

* + 1. NFPA 70 - National Electrical Code.
    2. NFPA 701-99 - Fire Tests for Flame-Resistant Textiles and Films.
    3. GREENGUARD Environmental Institute Children & Schools.
    4. US Green Building Council.
  1. SUBMITTALS
     1. Submit under provisions of Section 01 33 26 - Source Quality Control Reporting
     2. Product Data: Manufacturer's data sheets on each product specified, including:
        1. Preparation instructions and recommendations.
        2. Installation and maintenance instructions.
        3. Styles, material descriptions, dimensions of individual components, profiles, features, finishes and operating instructions.
        4. Mounting details and installation methods.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraph for manual operation shades.

* + - 1. Typical wiring diagrams including integration of motor controllers with building management system, audiovisual and lighting control systems as applicable.

\*\* NOTE TO SPECIFIER \*\* Include the following paragraph for projects with complex requirements for window treatment. Delete if not required.

* + 1. Shop Drawings: Plans, elevations, sections, product details, installation details, operational clearances, wiring diagrams and relationship to adjacent work.

\*\* NOTE TO SPECIFIER \*\* Delete the following paragraphs if LEED is not applicable.

* + 1. LEED Submittals: Provide documentation of how the requirements of Credit will be met.

\*\* NOTE TO SPECIFIER \*\* Delete Selection Samples paragraph if colors and shade fabrics have already been selected.

* + 1. Selection Samples: For each finish product specified, two complete sets of shade cloth options and aluminum finish color samples representing manufacturer's full range of available colors and patterns.
    2. Verification Samples: For each finish product specified, two complete sets of system components, unassembled, demonstrating compliance with specified requirements. Include shade fabric or aluminum slat sample and aluminum finish sample as selected, representing actual product, color, and patterns. Mark face of material to indicate interior faces.
    3. Maintenance Data: Methods for maintaining shading system, precautions regarding cleaning materials and methods, instructions for operating hardware and controls.
    4. Manufacturer's Certificates: Certify products meet or exceed specified requirements.
    5. Closeout Submittals: Provide manufacturer's maintenance instructions that include recommendations for periodic checking and adjustment of system and periodic cleaning and maintenance of all components.
  1. QUALITY ASSURANCE
     1. Manufacturer Qualifications: Obtain shading system through one source from a single manufacturer with a minimum of twenty years experience in manufacturing products comparable to those specified in this section.
     2. Installer Qualifications: Experienced in performing work of this section that has specialized in installation of work similar to that required for this project.

\*\* NOTE TO SPECIFIER \*\* Include a mock-up if the project size and/or quality warrant taking such a precaution. The following is one example of how a mock-up on a large project might be specified. When deciding on the extent of the mock-up, consider all the major different types of work on the project.

* + 1. Mock-up: Install one complete shading system at project site. Obtain Architect's approval prior to proceeding with installation of remaining shading systems. Accepted mock-up may remain as portion of final work.
  1. DELIVERY, STORAGE, AND HANDLING
     1. Do not deliver shading system until building is enclosed and construction within spaces where system will be installed is substantially complete.
     2. Deliver products in manufacturer's original, unopened, undamaged containers with labels intact.
     3. Label containers and shading system according to Window Shade Schedule.
     4. Store products in manufacturer's unopened packaging until ready for installation.
  2. SEQUENCING
     1. Ensure that locating templates and other information required for installation of products of this section are furnished to affected trades in time to prevent interruption of construction progress.
     2. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.
  3. PROJECT CONDITIONS
     1. Install shading system after finish work has been completed and ambient temperature, humidity and ventilation conditions are maintained at levels recommended for project upon completion.

\*\* NOTE TO SPECIFIER \*\* Select the paragraphs for the Products specified and delete those that are not required.

* 1. WARRANTY
     1. FlexLouver Rack Arm Shading Assembly: Five years from date of substantial completion, subject to annual Maintenance.
     2. Omega Venetian Blinds: Five years from date of substantial completion, subject to annual Maintenance.
     3. FlexShade Zip exterior zipper shade: Two years from date of substantial completion, subject to annual Maintenance
     4. Topspin exterior shading Assembly: Exterior: One year from date of substantial completion, subject to annual Maintenance. Interior: Two years from date of substantial completion, subject to annual Maintenance.
     5. Motors and Controls: Five year limited warranty from date of substantial completion.

1. PRODUCTS
   1. MANUFACTURERS
      1. Acceptable Manufacturer: Draper Inc., which is located at:411 S. Pearl Street, P. O. Box 425Spiceland, IN 47385-0425Toll Free Tel: 800-238-7999Tel: 765-987-7999Fax: 866-637-5611Email: [request info (drapercontract@draperinc.com)](https://arcat.com/rfi?action=email&company=Draper%252BInc.&message=RE%253A%2520Spec%2520Question%2520(10710dra)%253A%2520&coid=32063&spec=10710dra&rep=&fax=866-637-5611);Web: <http://www.draperinc.com>

\*\* NOTE TO SPECIFIER \*\* Delete one of the following two paragraphs; coordinate with requirements of Division 1 section on product options and substitutions.

* + 1. Substitutions: Not permitted.
    2. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00 - Product Requirements [ 01 25 00].
  1. SOLAR CONTROL EQUIPMENT

\*\* NOTE TO SPECIFIER \*\* The Omega™ venetian blind system has excellent view through when the slats are in the horizontal or partially tilted position and provides effective solar, glare and heat control as the slats are tilted to prevent direct sun penetration. Omega™ systems can be installed on the interior or exterior as well as between the glass inside a curtain wall. The system is available in both manual (interior only) and motorized versions.

* + 1. Omega Venetian Blinds (Exterior Window Solar Control) retractable louver system that can be raised and lowered and the slats tilted to a number of positions between open and closed to control solar energy, light and glare.

\*\* NOTE TO SPECIFIER \*\* Select the application required and delete those not required. Models designed for harsher environmental conditions (sand, dirt, dust) are available. Contact the manufacturer for additional information.

* + - 1. Performance:
         1. Blinds handle wind loads up to a maximum speed of 38 mph (61km) dependent on specific project details.
         2. Motorized exterior systems are equipped with an anemometer control system to automatically retract the blinds if the wind speed exceeds the maximum allowable value.
         3. Blinds can also be automatically deployed, tilted and retracted in response to the sun conditions in order to provide optimum solar control.
      2. Application:
         1. Exterior

\*\* NOTE TO SPECIFIER \*\* The system comes in three different configurations. Select the system required and delete those not required. Note: Metric numbers are exact, imperial numbers are nominal.

* + - 1. Omega Sizes:
         1. Manual Sizes:

From 18.5 inches to 16 feet 1 inch (470 mm to 4900 mm) wide

To 91 sf (8.5 sm).

* + - * 1. Motorized Sizes:

From 22 inches to 16 feet 1 inch (550 mm to 4900 mm) wide

To 195 sf (18 sm).

* + - * 1. Maximum drop: 23 feet 7 inches (7200 mm).
      1. Omega L Sizes:
         1. Manual Sizes:

From 18.5 inches to 16 feet 1 inch (470 mm to 4900 mm) wide

To 91 sf (8.5 sm).

* + - * 1. Motorized Sizes:

From 22 inches to 16 feet 1 inch (550 mm to 4900 mm) wide

To 195 sf (18 sm).

* + - * 1. Maximum drop: 12 feet 1 inch (3700 mm).
      1. Omega XL Sizes:
         1. Manual Sizes:

From 18.5 inches to 16 feet 1 inch (470 mm to 4900 mm) wide

To 91 sf (8.5 sm).

* + - * 1. Motorized Sizes:

From 22 inches to 16 feet 1 inch (550 mm to 4900 mm) wide

To 195 sf (18 sm).

* + - * 1. Maximum drop: 32 feet 1 inch (9800 mm).
      1. Aluminum Slat Sizes:

\*\* NOTE TO SPECIFIER \*\* Slats are available in different sizes. Select the size required and delete those not required. Note: Metric numbers are exact, imperial numbers are nominal.

* + - * 1. 50 mm (2 inches), flexible.
        2. 60 mm (2.4 inches), flexible.
        3. 60 mm (2.4 inches), rolled edge.
        4. 80 mm (3 inches), flexible .
        5. 80 mm (3 inches), rolled edge.
        6. 100 mm (4 inches), flexible.
        7. 150 mm (6 inches), flexible.
      1. Slat Type:

\*\* NOTE TO SPECIFIER \*\* Slats are available in different sizes. Select the size required and delete those not required. Note: Metric numbers are exact, imperial numbers are nominal.

* + - * 1. Solid slats.
        2. Full perforation with 3.8 percent openness factor.
        3. Full perforation with 6.0 percent openness factor.
        4. Full perforation with 9.2 percent openness factor.
        5. Highway perforation with 3.8 percent openness factor.
        6. Highway perforation with 6.0 percent openness factor.
        7. Highway perforation with 9.2 percent openness factor.
        8. Half perforation with 3.8 percent openness factor.
        9. Half perforation with 6.0 percent openness factor.
        10. Half perforation with 9.2 percent openness factor.

\*\* NOTE TO SPECIFIER \*\* Select the color required and delete those not required.

* + - * 1. Color: RAL 9006 (Aluminum).
        2. Color: RAL 9016 (Traffic White).
        3. Color: RAL 9007 (Grey Aluminum).
        4. Color: Custom as selected by the Architect.

\*\* NOTE TO SPECIFIER \*\* Select the manual or motorized operation as required and delete the one not required. Manual crank operator can only be used for interior applications.

* + - 1. Manual Operation: Crank Operator providing raise, lower, and tilt functions with fixed or removable crank handle.
      2. Motorized Operation: 110V AC, single-phase, 60 Hz, thermally protected, with torque rating as required by manufacturer.

\*\* NOTE TO SPECIFIER \*\* The FlexLouver™ Rack Arm System is a non-retractable louver system. Louvers can open and close to control solar energy, light and glare. It is very beneficial when light control is important in venues such as galleries or museums. Each system incorporates standard components but is custom designed to meet the specific application requirements. It is perfect for difficult glazing problems no matter the slope or angle of the window. The system can be used in horizontal, inclined, vertical, or with any shape of window opening. FlexLouver Rack Arm System can be used on interior or exterior windows

* + 1. FlexLouver Rack Arm System (Exterior/Interior Window Solar Control) non-retractable louver system that can tilt between open and closed to control solar energy, light and glare.

\*\* NOTE TO SPECIFIER \*\* Select the application required and delete those not required. Models designed for harsher environmental conditions (sand, dirt, dust) are available. Contact the manufacturer for additional information.

* + - 1. Performance:
         1. System can withstand very high wind speeds but care must be taken where there is a risk of significant ice or snow.
         2. Blinds can also be tilted in response to the sun conditions in order to provide optimum solar control.
      2. Application:

\*\* NOTE TO SPECIFIER \*\* Select the application required and delete those not required.

* + - * 1. Exterior.
        2. Interior.

\*\* NOTE TO SPECIFIER \*\* The system comes in different configurations. Select the configuration required and delete those not required. Note: Metric numbers are exact, imperial numbers are nominal.

* + - 1. FlexLouver 50A: 50 mm (2 inches) Flexible System (interior only):
         1. Maximum width: 15 feet 0 inches (4575 mm).
         2. Maximum drop: 20 feet 0 inches (6100 mm).
         3. Maximum area: Manual 135 sf (12.50 sm).
         4. Maximum area: Motorized 215 sf (20 sm).
      2. FlexLouver 80R: 80 mm (3 inches) Rolled Edge System (interior):
         1. Maximum width: 16 feet 4 inches (5000 mm).
         2. Maximum drop: 19 feet 8 inches (6000 mm.
         3. Maximum area: Manual 215 sf (20sm).
         4. Maximum area: Motorized 260sf (24sm).
      3. FlexLouver 80R: 80 mm (3 inches) Rolled Edge System (exterior):
         1. Maximum width: 16 feet 4 inches (5000 mm).
         2. Maximum drop: 16 feet 4 inches (5000 mm).
         3. Interior: 19 feet 8 inches (6000 mm).
         4. Maximum area: Manual: 215 sf (20 sm).
         5. Maximum area: Motorized: 260 sf (24 sm).
      4. FlexLouver 75E: 75 mm (3 inches) Extruded System (Interior):
         1. Maximum width: 20 feet (6100 mm).
         2. Maximum drop: 15 feet (4575 mm).
         3. Maximum area Manual: 170 sf (16 sm).
         4. Maximum area Motorized: 260 sf (24 sm).
      5. FlexLouver 75E: 75 mm (3 inches) Extruded System (exterior):
         1. Maximum width: 20 feet (6100 mm).
         2. Maximum drop: 15 feet (4575 mm).
         3. Maximum area Manual: 130 sf (12 sm).
         4. Maximum area Motorized: 260 sf (24 sm).
      6. FlexLouver 88E: 88 mm (3-1/2 inches) Extruded System (Interior):
         1. Maximum width: 20 feet (6100 mm).
         2. Maximum drop: 15 feet (4575 mm).
         3. Maximum area Manual: 170 sf (16 sm).
         4. Maximum area Motorized: 260 sf (24 sm).
      7. FlexLouver 88E: 88 mm (3-1/2 inches) Extruded System (exterior):
         1. Maximum width: 20 feet (6100 mm)
         2. Maximum drop: 15 feet (4575 mm)..
         3. Maximum area Manual: 130 sf (12 sm).
         4. Maximum area Motorized: 260 sf (24 sm).
      8. Aluminum Slat Sizes:

\*\* NOTE TO SPECIFIER \*\* Slats are available in different sizes. Select the size required and delete those not required. Note: Metric numbers are exact, imperial numbers are nominal.

* + - * 1. 50 mm (2 inches), flexible.
        2. 75 mm (3 inches), extruded.
        3. 80 mm (3 inches), flexible
        4. 88 mm (3-3/8 inches), extruded.

\*\* NOTE TO SPECIFIER \*\* Select the color required and delete those not required. Clear anodized is available on extruded aluminum slats only.

* + - * 1. Color: RAL 9006 (Aluminum).
        2. Color: RAL 9016 (Traffic White).
        3. Color: RAL 9007 (Grey Aluminum).
        4. Color: Custom RAL as selected by the Architect.
        5. Finish: Clear anodized
      1. Rack arm sizes: Spans between fixing brackets:
         1. Standard: 225 cm (88 inches) interior, 150 cm (59 inches) exterior.
         2. Heavy Duty: 350 cm (137 inches) interior, 280 cm (110) inches exterior.
         3. Box: 500 cm (196 inches) interior, 380 cm (149) inches exterior.
      2. Rack Arm Colors available:

\*\* NOTE TO SPECIFIER \*\* Available in different colors. Select the color required and delete those not required.

* + - * 1. Aluminum:

Mill Finish Aluminum.

Clear Anodized.

Custom RAL as selected by the Architect.

* + - * 1. Nylon components pivot arms, slats clips, bearing brackets:

Gray.

Black.

\*\* NOTE TO SPECIFIER \*\* Select the manual or motorized operation as required and delete the one not required. Manual crank operator can only be used for interior applications.

* + - 1. Manual Operation: Gear box crank operator to rise, lower, and tilt functions with fixed or removable crank handle.
      2. Motorized Operation: 110V AC, single-phase, 60 Hz, thermally protected, with torque rating as required by manufacturer. Mounted to one of the rack arms.
         1. Tubular Motor and reduction gearbox
         2. Radio Technology Tubular Motor and reduction gearbox
         3. Belimo Motor: Connected directly to drive shaft with override feature to allow for manual rotation of the shading assembly.
      3. Control:

\*\* NOTE TO SPECIFIER \*\* Select the controller based on desired group.

* + - * 1. Individual Control
        2. Group Control
        3. Individual and Group Control

\*\* NOTE TO SPECIFIER \*\* FlexShade ZIP system is similar to a standard roller shade but incorporates a 'zip feet detail that is welded to the two vertical sides of the fabric panel. The zip edges of the fabric panel run inside inner channels in the side guide extrusions. These inner channels are held inside the side guide extrusion and have cushioning pads to dampen the movement of the fabric panel under wind load. The zip detail prevents the fabric from being pulled out of the side guides making the product highly wind resistant.

* + 1. FlexShade ZIP (Exterior/Interior Window Solar Control) motorized fabric shade system that can move up or down to control solar energy, light and glare. Can also serve as an insect screen.
       1. Performance:
          1. Wind tunnel tested up to 90 mph.
       2. Application:

\*\* NOTE TO SPECIFIER \*\* Select the application required and delete the one not required.

* + - * 1. Exterior.
        2. Interior.
      1. Sizes and Headbox Designs:

\*\* NOTE TO SPECIFIER \*\* Select the headbox size and design required and delete those not required.

* + - * 1. Square Headbox: 3-5/8 inches (92 mm) high by 3-5/8 inches (92 mm) wide by length required for shade being provided.
        2. Square Headbox: 5 inches (127 mm) high by 5 inches (127 mm) wide by length required for shade being provided.
        3. Curved Headbox: 3-5/8 inches (92 mm) high by 3-5/8 inches (92 mm) wide by length required for shade being provided.
        4. Curved Headbox: 5 inches (127 mm) high by 5 inches (127 mm) wide by length required for shade being provided.
        5. Angled Headbox: 5 inches (127 mm) high by 5 inches (127 mm) wide by length required for shade being provided.
      1. Side Channels: Prevents light penetration at the sides of the system:
         1. Side guide channel size: 1-5/8 inches (42 mm) wide by 1-5/8 inches (42 mm) deep.
         2. Mounting:

\*\* NOTE TO SPECIFIER \*\* Select the mounting required and delete the one not required.

Jamb mounted.

Face mounted.

* + - * 1. Double chamber, 2-piece fabricated from 0.06 inch (1.5 mm) thick extruded aluminum sections.

One chamber accepts zipper retainer in which the zipper edge rides.

Other chamber allows for mounting.

\*\* NOTE TO SPECIFIER \*\* Select the following option if required and delete if not required.

Include with Optional Liner Insert for Zipper Retainer Channel.

* + - 1. Zipper Retainer: Gray plastic with funnel at top for fabric guiding with cushions placed in retainer to reduce movement in channel and adjust for fabric shrink.
      2. Hem Bar: Extruded aluminum, attached to bottom of shade.
         1. Hem bar does not retract into headbox.
         2. Hem bar to incorporate steel weight at manufacturer's discretion to assist deployment of the system and to tension the fabric when system is deployed.
         3. Plastic end caps to fit flush with side channel.
      3. Channel Covers: Cast aluminum insert covering bottom of side channels.
      4. Zipper: Heat welded to edges of fabric. Zipper prevents fabric from being pulled out of the side channel, making the product very wind resistant.
      5. Idler End Assembly: Plastic idle end insert into roller will fit over steel pin and rotate on pin with use of double sealed bearing. Gudgeon assembly is attached via Gudgeon Mounting Slide to aluminum bracket mounted inside the headbox. Systems not using sealed bearings are not acceptable.
      6. "C" Clamp Mounting Bracket: Pre-drilled metal bracket that attaches to extrusions in headbox if studs/attachment points do not line up with endcaps.
      7. Fabric: NFPA Flame-Test: Passes NFPA 701.

\*\* NOTE TO SPECIFIER \*\* Select one of the following fabric paragraphs and delete the ones not required. Contact Draper for more information concerning fabric options.

* + - * 1. Light Filtering Fabric: PVC Coated Polyester.

Soltis 92

Soltis 88

Soltis 86

* + - * 1. Light Filtering Fabric: Vinyl coated fiberglass.

Phifer SheerWeave SW2701

Phifer SheerWeave SW2703

Phifer SheerWeave SW2705

Phifer SheerWeave SW2710

Phifer SheerWeave SW2400

Phifer SheerWeave SW2500

Phifer SheerWeave SW2600

Phifer SheerWeave SW2900

Phifer SheerWeave SW1000

Phifer SheerWeave SW2000

Phifer SheerWeave SW2100

Phifer SheerWeave Basic 3%

Phifer TuffScreen Bug Screen

* + - * 1. Light Filtering Fabric: PVC coated fiberglass

E Screen ME-01 Series by Mermet

E Screen ME-03 Series by Mermet

E Screen ME-05 Series by Mermet

E Screen ME-10 Series by Mermet

Mermet M Screen

Mermet Natte

T Screen 9803 by Mermet

Mermet Satine

Mermet Vienne

* + - * 1. Light Filtering Fabric: Vinyl coated polyester

Phifer SheerWeave Suntex

Phifer SheerWeave Suntex Design

* + - * 1. Blackout fabric:

Soltis B92N

* + - 1. Motorized Operation:

\*\* NOTE TO SPECIFIER \*\* Select one of the following motor option paragraphs and delete the one not required. Contact Draper for more information concerning motor limitations.

* + - * 1. Radio Technology Motor: 110 VAC motor with built-in radio receiver. Tubular motor concealed inside each shade roller tube.
        2. Standard Motor: 110 VAC, single phase, 60 HZ, instantly reversible, lifetime lubricated, and equipped with internal thermal overload protector, electric brake, and pre-set accessible limit switches. Tubular motor concealed inside each shade roller tube.

\*\* NOTE TO SPECIFIER \*\* Topspin® is a retractable exterior shading system that is made up of a series of fabric panels and can shade large areas of glazing. The system can be used as a sun shade allowing vision to the exterior and may be installed on exterior or interior.

* + 1. Topspin (Interior or Exterior Horizontal Skylight Solar Control): Retractable interior or exterior shading system made up of a series of fabric panels. System has spring roller supports every 3-5 feet and installs to brackets that offset system from mounting structure.
       1. Performance:
          1. Can withstand wind speeds up to 38 mph when install on the interior.
       2. Capabilities:
          1. Fabric panels are installed onto spring loaded roller tubes that provide regular intervals of support to the fabric.
          2. System can be installed on horizontal, sloped, vertical and curved glazing.
          3. When retracted, spring rollers stack at one end of the system to leave a clear opening.
          4. Radius can be as tight as 1 meter for curved system.
       3. Sizes available:

\*\* NOTE TO SPECIFIER \*\* Select the headbox size required and delete the one not required. System widths can be coupled. System lengths can be longer depending on the application. Maximum lengths available on curved units vary with radius of the curve: Contact the manufacturer for details.

* + - * 1. System width: Up to 10 feet 4 inches (315 cm). Systems can be coupled.
        2. System length: Straight lengths up to 42 feet 6 inches (1300 cm) are possible, longer depending on application.
      1. Side guides:
         1. Extruded aluminum approximately 2-5/8 inches by 1-3/4 inches (66 mm by 43.5 mm).
         2. Polyester powder coated finish to a standard RAL color as selected.
      2. Fabric: NFPA Flame-Test: Passes NFPA 701.

\*\* NOTE TO SPECIFIER \*\* Select one of the following fabric paragraphs and delete the ones not required. Contact Draper for more information concerning fabric options.

* + - * 1. Light Filtering Fabric: PVC Coated Polyester.

Soltis 86.

Soltis 88.

Soltis 92.

* + - * 1. Light Filtering Fabric: PVC coated fiberglass:

E Screen ME-01 Series by Mermet.

E Screen ME-03 Series by Mermet.

E Screen ME-05 Series by Mermet.

E Screen ME-10 Series by Mermet.

Mermet M Screen.

Mermet Natte.

T Screen 9803 by Mermet.

Mermet Satine.

Mermet Vienne.

* + - 1. Hardware Colors Available:

\*\* NOTE TO SPECIFIER \*\* Available in different colors. Select the color required and delete those not required.

* + - * 1. White: RAL 9016.
        2. Silver: RAL 9006.
        3. Silver Gray: RAL 9007.
        4. Anthracite: RAL 7016.
        5. Custom: As selected by the Architect.
      1. Motorized Operation:

\*\* NOTE TO SPECIFIER \*\* Select one of the following motor option paragraphs and delete the one not required. Contact Draper for more information concerning motor limitations.

* + - * 1. Radio Technology Motor: 110 VAC motor with built-in radio receiver. Tubular motor concealed inside each shade roller tube.
        2. Standard Motor: 110 VAC, single phase, 60 HZ, instantly reversible, lifetime lubricated, and equipped with internal thermal overload protector, electric brake, and pre-set accessible limit switches. Tubular motor concealed inside each shade roller tube.

\*\* NOTE TO SPECIFIER \*\* Edit the following paragraphs to include the operation and control functions required and delete those not required. Contact Draper for more information concerning limitations. Coordinate with Motorized Operation paragraph included with the system specified above.

* + 1. OPERATION AND CONTROL
       1. Radio Technology Motor (Not available with Omega):
          1. Individual Control, Group Control and Individual and Group Control:

Single channel wireless handheld transmitter-Patio Design.

Four channel wireless handheld transmitter- Patio Design.

16-Channel wireless handheld transmitter- Interior Use Only.

1-5 Channel wireless wall switch for radio motor control, Interior Use Only.

Dry Contact - Allows for full control of radio motor shade via dry contact interface.

Sun/Wind Sensor - Allows operation of one group of radio motors per sensor- Patio Remote Required.

Wind Sensor- Allows operation of one group of radio motors per timer-Patio Remote Required.

Universal RTS Interface (16-channel)- system integration.

* + - 1. Standard Motor:

\*\* NOTE TO SPECIFIER \*\* Select one of the following control option paragraphs and delete the ones not required. For each control selected select the control device(s) required and delete those not required.

* + - * 1. Individual Control:

Wall Switch - Toggle three position wall switch- Interior Use Only.

Wall Switch - Key operated three position wall switch- Interior Use Only.

SC1 - ETL listed component allows 1 motor to operate 1 motor. Up to 4 mid-window alignments are programmable for a total of 6 stops with full up and down. Fully programmable. No DIP switches required. Controlled via low voltage input.

SGC1- ETL listed component allows 1 controller to operate 1 motor through low voltage switching, no presets

* + - * 1. Group Control:

ISO relay - ETL listed component. One ISO relay per motor. Allows 110-120V group switching via toggle switch. Allows for up to 12 motors on one switch.

GC4 - ETL listed assembly. Panelized version with four ISO relays. Up to three GC4s can be linked together for control of up to 12 motors from any single 15 amp double throw wall switch. Fully programmable.

SGC4 - ETL listed assembly. Panelized version with 4 ISO relays and low voltage control inputs. Multiple SGC4s can be linked together to form larger groups. Fully programmable. No dip switches required.

* + - * 1. Individual and Group Control:

SPGC4 - ETL listed assembly. Panelized version of fours SC1's. Up to 4 mid-window alignments are programmable for a total of 6 stops with full up and down. Fully programmable. No DIP switches required. Controlled via low voltage input

* + - * 1. External Controller: SFBC2 - 2 motor solarflex building controller.
        2. External Controller: SFBC4 - 4 motor solarflex building controller.

\*\* NOTE TO SPECIFIER \*\* Select the peripheral operator based on desired function. Wall switches operate sun control in groups, to presets. The Sensor and Control System require an interface with an outside system or sensor. The BACnet Router provides separate zones of control, enabling BACnet communication to work more effectively.

* + - * 1. Peripheral Operator: Gen 3 Wall Switch
        2. Peripheral Operator: Sensor and Control System Interface.
        3. Peripheral Operator: BACnet Routner.

\*\* NOTE TO SPECIFIER \*\* Select the desired sensors or DELETE in their entirety. Brightness sensors look at the brightness in the sky, Directional sensors look at a specific point in the sky. Wind Sensor provides feedback to the controls based on wind speed and direction. Multi Sensor provides feedback to the controller based on multiple information points including brightness, wind and temperature. Exterior sun control devices require either the wind sensor or the multisensory so that sun control is retracted during wind events. Wind control is required for all exterior applications, to assess conditions an anemometer is required as part of the system.

* + - * 1. Sensors:

Brightness Sensor: Directionless, Sun Sensor.

Brightness Sensor: Directional, Sun Sensor.

Wind Sensor.

Multi Sensor.

Wind control for exterior sun control devices: Anemometer.

* 1. FABRICATION
     1. Fabricate shading devices for custom installation as indicated.
     2. Finished assemblies shall be square, true to size and free from twist or other defects that affect strength and appearance

1. EXECUTION
   1. EXAMINATION
      1. Do not begin installation until substrates have been properly prepared.
      2. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.
   2. PREPARATION
      1. Clean surfaces thoroughly prior to installation.
      2. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.
   3. INSTALLATION
      1. Install in accordance with manufacturer's instructions.
   4. PROTECTION
      1. Protect installed products until completion of project.
      2. Touch-up, repair or replace damaged products before Substantial Completion.
   5. SCHEDULES

\*\* NOTE TO SPECIFIER \*\* Retain Paragraph below if required to suit project requirements. Identify products by name on the Drawings or use this paragraph to define the location of each type of material to be used. The following are some examples of schedule references. Edit as required to suit project or delete and identify products on the Drawings.

* + 1. :
    2. :

END OF SECTION