DIVISION 12 – FURNISHINGS

SECTION 12410 – ATCT TRANSPARENT PLASTIC WINDOW SHADES

PART 1 – GENERAL

1.01 RELATED SECTIONS

The General Provisions of the contract, including the General Provisions for Construction Projects (2016), Special Provisions, and General Requirements of the Specifications, apply to the work specified in this section.

1.02 SUMMARY

This Section includes requirements for material, fabrication and installation of transparent plastic window shades for use in Airport Traffic Control Tower (ATCT) cabs. These shades are required to reduce the sun's direct and reflective glare and to contribute to temperature control of tower cabs. Shades shall be installed on all exposures of the cab. The use of single or dual shades as specified in the Solicitation.

1.03 REFERENCES

The current issues of the publications listed below form a part of this specification to the extent referenced. The publications are referred to in the text by the basic designation only.

A. FEDERAL SPECIFICATIONS (FS)

FS L-P-377: Plastic Sheet and Strip Polyester

B. ASSOCIATION OF INDUSTRIAL METALIZERS, COATERS AND LAMINATORS (AIMCAL)

AIMCAL: STANDARD METHODS

C. FEDERAL STANDARD (FED-STD)

FED-STD-102: Preservation, Packaging, and Packing Level

1.04 SUBMITTALS

A. Where the contractor elects to use the manufacturer and model number specified herein, no technical information or shop drawing need to be submitted.

B. Where the desires to utilize the products of another manufacturer or where no make or model number is specified, a complete set of shop drawings and descriptive literature shall be submitted during the bidding process and in accordance with the General and Special provisions of this specification. The contractor shall submit copies of descriptive literature, shop drawings and/or samples of to the Engineer for approval for any item he wishes to submit as equal to the brand name(s) as specified.

C. The use of a brand name with or without an or equal statement following the purchase description in this specification or on the project drawings is intended to promote competition by encouraging the offering of products that are equal in all materials respects to the brand name products cited in such descriptions.

D. Identification by brand names does not indicate a preference for the products mentioned but indicates the quality and characteristics that will meet the government needs. All characteristics of a specified brand name product, which are essential to the government, are described in the specification or on the project drawings. The contractor shall obtain product literature from the manufacturer of the specified brand name product to determine its general quality and functional characteristics and shall use that information in making any desired substitutions.

1.05 PERFORMANCE REQUIREMENTS

A. Shade material shall be manufactured from a polyester type polymer in accordance with Federal Specification L-F-377b for type weatherable DuPont Mylar clear sheet film or other manufacturer approved by the COTR. Fire resistant rated "self-extinguishing to very slow burning" U.S. Testing Company, fire test 302; melting point 500 deg. F, combustion 977 deg. F. no toxic hazard.

B. Transparent Plastic Shade Film Construction: Shade product shall consist of a 5 mil, 3-ply laminated polyester film. Two sheets of polyester vat dyed gray, hard coat S/R applied to one side. The final film construction shall be 5 gauge thick, optically clear and totally transparent. Surface tinting or color adhesives will not be acceptable.

C. Visible Light Transmission: Shade shall transmit no more than 4 percent of the visible solar energy (from 380 to 780 nanometers) when measured by Association of Industrial Metalizers, Coaters, and Laminators (AIMCAL) Standard Methods.

D. Ultra-Violet Transmission: Shade shall transmit no more than 2 percent of the ultra-violet solar energy (from 800 to 780 nanometers) when measured by AIMCAL Standard Methods.

E. Total Solar Energy Rejected: Shade will reject 60.5 percent of the total solar energy transmitted (from 360 to 2 100 nanometers) when measured by AIMCAL Standard Methods.

1. Solar Absorptions: 61 percent.

2. Shading Coefficient: 0.45.

3. Solar Heat Gain Coefficient: 0.40.

1.06 QUALTITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer who can comply with applicable standard methods of the Association of Industrial Metalizers, Coaters, and Laminators (AIMCAL) for manufacture and fabrication of transparent plastic window shades. Manufacturer shall be recognized producer of transparent plastic window shades for the previous 10 years.

B. Fire-Test-Response Characteristics: Provide products passing flame-resistance testing according to NFPA 701 by a testing agency acceptable to authorities having jurisdiction.

1.07 WARRANTY

A. Furnish to the State three copies of the product warranty that certifies that all the specification requirements have been met. Warranty shall be for a minimum of two full years from date of acceptance against faulty materials and workmanship.

B. Contractors Surety shall not be held liable beyond 2 years from project acceptance date.

PART 2 – PRODUCTS

2.01 TRANSPARENT PLASTIC WINDOW SHADES

Manufacturers listed are for color and material reference and are not intended to limit selection of other manufacturers' products with similar colors and materials.

A. Primary Shades

Primary Shades shall be dark, heavy duty, F72 SR shades by Plastic-View, Simi Valley, CA (800) 468-6301 or approved equal. Surface tinting and/or color adhesives will not be accepted as equal without independent reports qualifying the color stability in comparison with the vat dyed process.

2.02 ROLLER SHADE SYSTEM FABRICATION

A. Bottom Bar: Shades shall have a flat l-inch by 1/2 inch, dull black, full width metal hemline bar, minimum of 26 gage, at bottom onto which the pull cord and shade are attached. Black plastic caps shall be provided on each end of hemline bar to cover any sharp exposed edges.

B. Shade Cords: Shade cords shall be black and of sufficient length to route around equipment to cord lock positions whenever required. The cords shall be 9/64 inch diameter rope made of 4.5 Duro Nylon and shall be attached underneath the center of the bottom of the hemline bar.

C. Shade Rollers: Shades shall be mounted on a 1-3/4 inch diameter corrosion resistant metal wrapped roller. The rollers shall be spring loaded, single piece barrel, with a reusable safety cotter key type retainer installed through both end pins and washers to prevent roller from falling out of mounting brackets. Constant tensions in shades is required.

D. Mounting Brackets: Provide mounting brackets with a 2-1/4 inch resting ledge. Standard ceiling brackets are not acceptable. A label stating "This End Down" with an arrow pointing in the proper installation direction of the roller into the mounting brackets shall be placed on the spring motor end of each shade roller. The shade film laminate material shall be mounted on rollers to minimize ridgings. Roll-off direction of material from roller shall be as directed by the shade manufacturer for use in the tower cab.

E. Each shade shall have a label or whatever suitable means required to specify and identify the proper roll-off direction.

F. Each shade shall have a manufacturer's label attached to the metal bar hemline giving cleaning instructions and the telephone number for emergency service.

G. Lock Pulley. Lock pulleys shall consist of a roller and a spring return side action earn cord grip.

H. Cord Direction Change Pulley: Provide cord direction change pulley which shall be used to route shade cord around obstructions where they exist. Pulleys shall be positioned in direct line with cord outlet on metal hemline.

I. Shade Size: Shade roller width shall be within 1/2-inch of maximum possible width as determined by physical limitations. Shade material with shade fully drawn shall be to within 1 inch of columns on bias cut sides and to within 1-3/4 inch of columns on vertical cut sides. Horizontal seam shall be located a minimum of 70 inches from the bottom of the shade. Shades in ATCT cabs shall be bias cut when required. To ensure a safe roll-up, a minimum of 15 inches of shade material shall remain on the roller when the shade is fully extended.

J. Measuring for Shades: Measuring for shades and positioning shall be strictly in accordance with the shade manufacturer's instructions. Marks showing the precise position of all brackets, pulleys, and metal hemline positions as related to the factory measuring instructions shall be provided. All measurements shall be taken per instructions from shade manufacturer.

PART 3 – EXECUTION

3.01 ROLLER SHADE INSTALLATION

A. Install roller shades level, plumb, and aligned with adjacent units according to manufacturer's written instructions. Allow clearances for window operation hardware.

B. Shades shall be installed in shade recess pockets or on wood or metal plates. Shades shall follow the slope of cab glass as closely as practical within physical limitations of air ducts and other equipment. No drilling shall be done in vertical uprights of cab because some uprights may contain electrical cables.

C. Spring tension in roller shall be manually adjusted so that shades roll comfortably and do not bind.

D. In order to safely control and limit the shade travel, the installer shall make two knots in the shade cord. One knot shall be placed before the lock pulley to prevent the metal hemline bar from hitting the windowsill. The second know shall be placed after the lock pulley to prevent the metal hemline bar from hitting and overrunning the shade roller. Adherence to THIS END UP label when installing shade will prevent improper roller installation which can result in a locked shade situation when the metal bar hemline is near the lock pulley and cannot be pulled down to release the spring motor cam lock.

E. Shade shall be able to operate at a moment's notice; to gain unimpeded rapid access for the use of emergency light guns. The inability for one controller to "snap-up" the shade in an emergency endangers lives, any system that does not meet the unimpeded rapid access will not be approved.

F. Adjust and balance roller shades to operate smoothly, easily, safely, and free from binding or malfunction throughout entire operational range.

G. Clean roller shade surfaces after installation, according to manufacturer's written instructions.

PART 4 – MEASUREMENT AND PAYMENT

4.01 BASIS OF MEASUREMENT AND PAYMENT

A. Work under this section will not be measured nor paid for separately, but shall be considered incidental to and included in the price bid for the various items of work in this project.

END OF SECTION