**PART 2 PRODUCTS**

**2.01 Manufacturers**

A. The louvers and related materials herein specified and indicated on the drawings shall be as manufactured by:

Construction Specialties, Inc.
49 Meeker Avenue
**Cranford, New Jersey 07016**
Telephone: 800-631-7379

Construction Specialties (UK) LTD
1010 Westcott Venture Park, Westcott,
Aylesbury,
**Bucks HP18 0XB. United Kingdom.**
Telephone: +44 (0) 1296 652800

Construction Specialties, LLC
1705 World Trade Centre
PO Box 9260
**Dubai, U.A.E.**
Telephone: +971-4-3312167

CS Group Construction Specialties Ltd.
Room 616-617
No.899 Cross Region Plaza, Lingling Road
**Xuhui District, Shanghai, China 200030**
Telephone: +86-21-64329257

**Manufacturer Note:** Project Gallery
http://www.c-sgroup.com/gallery/louvers

Case Studies
http://www.c-sgroup.com/louvers/case-studies

B. Products equal to the CS materials may be offered providing that the manufacturer and materials are pre-approved at least 10 working days before the bid date.

**2.02 Materials**

A. Aluminum Extrusions: ASTM B211, Alloy 6063-T5, 6063-T6 or 6061-T6.
B. Aluminum Sheet: ASTM B3209, Alloy 1100, 3003 or 5005.

**2.03 Fabrication, General**

A. Provide CS louver models, bird screens, blank-off panels, structural supports and accessories as specified and/or shown on the drawings. Materials, sizes, depths, arrangements and material thickness to be as indicated or as required for optimal performance with respect to strength; durability; and uniform appearance.
B. Louvers to be mechanically assembled using stainless steel or aluminum fasteners.
C. Include supports, anchorage, and accessories required for complete assembly.

**Manufacturer Note:** A superior method vs welded assembly.

**2.04 Louver Models**

**A. CS 5" (127.0 mm) Deep Storm Resistant Fixed Vertical Louver Model RS-5605**

1. **Material:** Heads, sills, jambs and mullions to be one-piece structural aluminum members. Louver consists of a 5" deep system. Louver to consist of vertical blade in a drainable frame. Louvers to be supplied with 4" (101.6mm) high by full depth sill flashings formed from minimum 0.050" (1.27mm) thick aluminum. Sill flashings to have welded side panels. Louvers and sill flashings to be installed in accordance with the manufacturer's recommended procedures to ensure complete water integrity performance of the louver system. Material minimum thickness to be as follows: Heads, sills, jambs and mullions: 0.081" (2.06mm). Fixed blades: .060" (1.52mm).
2. **AMCA Performance:** A 4' x 4' unit shall conform to the following:

| | |
|---|---|
| Free Area | 9.46 sq. ft. (0.879 sq. m.) |
| Intake Pressure drop at 900 fpm free area velocity (4.57 m/s) | 0.082 in WG. (20.4 Pa) |

3. **Wind Driven Rain Performance:** AMCA certified and licensed to bear the AMCA seal. The louver test was based on a 39.370"(1.00m) x 39.370" (1.00 m) core area. Unit tested at a rainfall rate of 3.0 inches per hour (75 mm/hr) and with a wind directed to the face of the louver at a velocity 29.1-mph (13 m/s). The test data shall show the water penetration effectiveness rating at each corresponding ventilation rate.

**Manufacturer Note:** Storm Resistant louvers are specifically tested and certified in WIND DRIVEN RAIN conditions to simulate real-world weather events. Specify Storm Resistant Louvers anywhere the louver face will be exposed to wind driven rain. Generally, select a louver with a Class A (99%-100% effectiveness rating at rejecting rain under the test conditions). This Class A rating should always apply to the expected actual building service condition for the specific louver location or greater (i.e.- "Class A at 1000 fpm free area velocity", where the actual FAV will be 1000 fpm or less based on CFM through the louver).

**Manufacturer Note:** AMCA is the Air Movement and Control Association which is a third party testing agency for the louver industry.
http://www.amca.org/

**Manufacturer Note:** Free area goal is generally around 50%, however many factors impact a louver's selection besides Free Area. Louvers with less than 50% free area may be considered if their pressure drop at project service conditions is agreeable to the Mechanical Engineer. Look for a pressure drop at or below the .15"- .19" at 900 – 1,000 fpm (feet per minute) range for intake louvers. Pressure drop for exhaust louvers can be higher, as deemed acceptable by the ME (mechanical engineer). Note this louver's Free Area is under 50%, but the pressure drop at high velocity FAV is under .15" (desirable)

http://ww.c-sgroup.com/louvers/louver-selector/free-area-program

| | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Core Ventilation Rate (m/s): | 0.0 | 0.5 | 1.0 | 1.5 | 2.0 | 2.5 | 3.0 | 3.5 | 4.0 | 4.5 | 4.9 |
| Core Ventilation Rate (ft/min): | 0 | 96 | 194 | 284 | 400 | 496 | 571 | 678 | 779 | 880 | 965 |
| Free Area Velocity (ft/min): | 0 | 146 | 296 | 433 | 610 | 756 | 871 | 1034 | 1188 | 1342 | 1471 |
| Rating Effectiveness: | A | A | A | A | A | A | A | A | A | A | A |
| Effectiveness Ratio: | | | | | | | | | 99.4 | 99.3 | 99.2 |
| Effectiveness Rating: | A = 1 to 0.99 | | B = 0.989 to 0.95 | | C = 0.949 to 0.80 | | D = 0.80 to 0 | | | | |

**2.05 Finishes**

A. General: Fluoropolymer finish complying with AAMA-2605-5 standards. Protect finishes on exposed surfaces prior to shipment. Remove scratches and blemishes from exposed surfaces, which will be visible after completing finishing process.

**Provide Color as indicated or, if not otherwise indicated, as selected by architect from standard CS Powder Coat colors.**

B. 100% Fluoropolymer Resin Powder Coat System. Finish thickness to be 1.5 to 3.0 mils.
   1. Finish to allow zero VOCs to be emitted into facility of application or at job site.
   2. Finish to adhere to a 4H Hardness rating.
   3. Furnish manufacturer's twenty (20) year warranty for finish.
   4. Finish shall be applied in a wholly owned plant by manufacturer. All supports, blade braces and blades to be painted in the same color.
   5. Polyester powder or solvent based fluoropolymer finishes not acceptable.

OR

A. General: Comply with NAAMM "Metal Finishes Manual" for finish designations and application recommendations, except as otherwise indicated. Apply finishes in factory. Protect finishes on exposed surfaces prior to shipment. Remove scratches and blemishes from exposed surfaces that will be visible after completing finishing process. Provide color as indicated or, if not otherwise indicated, as selected by architect.

B. Fluorocarbon Coating
   1. Louvers to be finished with an inhibitive thermo-cured primer, 0.2 mil minimum dry film thickness, and a thermo-cured fluorocarbon coating containing "Kynar 500" resin, 1.0 mil minimum dry film thickness.
   2. All aluminum shall be thoroughly cleaned, etched and given a chromated conversion pre-treatment before application of the Kynar/Hylar coating. The coating shall receive a bake cycle of 17 minutes at $450^0$F. All finishing procedures shall be one continuous operation in the plant of the manufacturer.
   3. Manufacturer to furnish an extended 20 limited warranty for the Kynar/Hylar coating. This limited warranty shall begin on the date of material shipment.

OR

B. Three Coat Fluorocarbon Coating
   1. Louvers to be finished with a minimum 1.4 mil (0.035mm) thick full strength 70% resin, 3 coat Fluoropolymer system.
   2. All aluminum shall be thoroughly cleaned, etched and given a chromated conversion pre-treatment before application of the Kynar/Hylar coating. The coating shall consist of a primer, a high metallic color coat and a clear $PVF_2$ topcoat. It shall receive a bake cycle of 17 minutes at $450^0$F. All finishing procedures shall be one continuous operation in the plant of the manufacturer.
   3. Manufacturer to furnish an extended 20 limited warranty for the Kynar/Hylar coating. This limited warranty shall begin on the date of material shipment.

**Manufacturer Note:** Standard color chart
http://www.c-sgroup.com/louvers/colors

**Manufacturer Note:**
http://www.c-sgroup.com/louvers/powder-coat

http://www.aamanet.org/general/1/351/aluminum-finishes

**Manufacturer Note:** CS Powder Coat is available in custom colors. Includes AAMA-2605 20-year warranty, 4H Hardness, no VOC's emitted during application.

OR

B. Two Coat Fluorocarbon Coating
   1. Louvers to be finished with a minimum 1.0 mil (0.025mm) thick full strength 70% resin, 2 coat Fluoropolymer system.
   2. All aluminum shall be thoroughly cleaned, etched and given a chromated conversion pre-treatment before application of the MICA II coating. The coating shall consist of a primer and a pearlescent pigmented PFV2 topcoat. It shall receive a bake cycle of 17 minutes at 4500F. All finishing procedures shall be one continuous operation in the plant of the manufacturer.
   3. Manufacturer to furnish an extended 20 limited warranty for the Kynar/Hylar coating. This limited warranty shall begin on the date of material shipment.

OR

B. Clear Anodize
   1. Louvers to be given a one hour 215R1 Architectural Class I anodic coating of 0.7 mil (0.018mm) thickness (Aluminum Association designation AA-C22A41).
   2. The thickness of the coating shall be tested in accordance with ASTM B244-68.
   3. The coating shall be sealed to pass the ASTM B136-77 Modified Dye Stain Test.

OR

B. Bronze Anodic
   1. Louvers to be given a Bronze Anodic Architectural Class 1 coating of 0.7 mil (0.018mm) minimum thickness; and a minimum weight of 27 mg. per sq. in.
   2. The thickness of the coating shall be tested in accordance with ASTM B244-68.
   3. The coating shall be sealed to pass the ASTM B136-77 Modified Dye Stain Test

**2.06 Bird Screens**

A. Unless otherwise indicated, all louvers to be furnished with mill finish bird or insect screens.
B. Screens to be 5/8" (15.9mm) mesh, 0.050" (1.27mm) thick expanded and flattened aluminum bird screen secured within 0.055" (1.40mm) thick extruded aluminum frames. Frames to have mitered corners and corner locks.

OR

B. Screens to be 18 x 16 aluminum mesh 0.011" (0.279mm) diameter wire insect screens secured within 0.055" (1.40mm) thick extruded aluminum frames. Frames to have mitered corners and corner locks.

**2.07 Blank Offs**

A. Furnish where indicated on the drawings blank–off panels fabricated by the louver manufacturer.
B. Blank-off panels to be 0.050" (1.27mm) thick aluminum sheet. Panels to be finished with Kynar 500 minimum 1 mil (0.025mm) thick full strength 70% resin Fluoropolymer coating. Color to be selected by the architect.

OR

B. Blank-off panels to be 1" (25.4mm) thick and to be faced on both sides with 0.032" (0.81 mm) thick aluminum sheet. Panels to be fabricated with an expanded polystyrene (EPS) core having an R-value of 4 (0F*ft2*h/Btu). Panel perimeter frame to be 0.050" (1.27mm) thick-formed aluminum channels. Panel frame to be mitered at the corners. Panels to be finished to match louvers.

OR

B. Blank-off panels to be 2" (50.8mm) thick and to be faced on both sides with 0.032" (0.81 mm) thick aluminum sheet. Panels to be fabricated with an expanded polystyrene (EPS) core having an R-value of 8 (0F*ft2*h/Btu). Panel perimeter frame to be 0.050" (1.27mm) thick-formed aluminum channels. Panel frame to be mitered at the corners. Panels to be finished to match louvers.