

If the Manufacturer Notes do not display in the right margin go to Review and select Show Comments

Commented [MN1]: www.c-sgroup.com

| Architectural Louvers

Suggested Specifications | Section 08 90 00

Model: RS-4700

Part 1 - General

1.01 Summary

- A. Furnish and install louvers, bird screens, blank-off panels, structural supports and attachment brackets as shown on the drawings, as specified, and as needed for a complete and proper installation.
- B. The louvers to be furnished include the following:
 - 1. Fixed extruded storm resistant louvers.
- C. Related sections include:
 - 1. Division 7 Section "Joint Sealants" for sealants installed in perimeter joints between louver frames and adjoining construction.

1.02 References

- A. Air Movement and Control Association International, Inc.
 - 1. AMCA Standard 500-L Laboratory Methods of Testing Louvers for Rating
 - 2. AMCA Publication 501 Application Manual for Louvers
- B. The Aluminum Association Incorporated
 - 1. Aluminum Standards and Data
 - 2. Specifications and Guidelines for Aluminum Structures
- C. American Society of Civil Engineers
 - 1. Minimum Design Loads for Buildings and Other Structures
- D. American Society for Testing and Materials
 - 1. ASTM B209
 - 2. ASTM B211
 - 3. ASTM B221
 - 4. ASTM E90-90
- E. Architectural Aluminum Manufacturers Association
 - 1. AAMA 800 Voluntary Specifications and Test Methods for Sealants
 - 2. AAMA 605.2 Voluntary Specification for High Performance Organic Coatings on Aluminum Extrusions and Panels.
 - 3. AAMA TIR Metal Curtain Wall Fasteners
 - 4. AAMA 2605-98 Superior Performing Organic Coatings on Aluminum Extrusions and Panels
- F. Canadian Standards Association
 - 1. CAN3-S157-M83 Strength Design in Aluminum
 - 2. S136 94 Cold Formed Steel Structural Members

1.03 Submittals

- A. Product Data
 - 1. Air flow and water entrainment performance test results.
 - 2. Material types and thickness.
- B. Shop Drawings

1. Include elevations, sections and specific details for each louver.
 2. Show anchorage details and connections for all component parts.
 3. Include signed and sealed structural calculations.
- C. Samples
- D. Submit color chips for approval.

1.04 Quality Assurance

- A. Single subcontract responsibility: Subcontract the work to a single firm that has had not less than six years' experience in the design and manufacturing of work similar to that shown and required.
- B. Performance Requirements: Provide AMCA and BSRIA test data as required to confirm that the louvers have the specified air and water performance characteristics.
- C. Acoustical Performance: Where applicable, submit test reports to confirm that the louvers meet the specified STC and Noise Reduction requirements.
- D. Structural Requirements: Design all materials to withstand wind and snow loads as required by the applicable building code. Maximum allowable deflection for the louver structural members to be $l/180$ or 0.75 inch, whichever is less. Maximum allowable deflection for the louver blades to be $l/120$ or 0.50 inch across the weak axis, whichever is less.
- E. Professional Engineer Requirements: Drawings and structural calculations to be signed and sealed by a professional engineer licensed to practice in the state of New Jersey (or Mississauga, Ontario).
- F. Warranty: Provide written warranty to the owner that all products will be free of defective materials or workmanship for a period of one year from date of installation.

1.05 Delivery, Storage and Handling

- A. Delivery: At the time of delivery all materials shall be visually inspected for damage. Any damaged boxes, crates, louver sections, etc. shall be noted on the receiving ticket and immediately reported to the shipping company and the material manufacturer.
- B. Storage:
1. Material may be stored flat, on end or on its side.
 2. Material may be stored either indoors or outdoors.
 3. If stored outdoors the material must be raised sufficiently off the ground to prevent it being flooded.
 4. If stored outdoors the material must be covered with a weather proof flame resistant sheeting or tarpaulin.
- C. Handling:
1. Material shall be handled in accordance with sound material handling practices and in such a way as to minimize racking.
 2. Louver sections may be hoisted by attaching straps to the jambs and lifting the section while it is in a vertical position.
 3. Louver sections should only be lifted and carried by the jambs. Heads, sills and blades are not to be used for lifting or hoisting louver sections.

PART 2 PRODUCTS

2.01 Manufacturers

A. Basis of Design – manufactured by Construction Specialties subject to compliance with requirements listed. The louvers and related materials herein specified and indicated on the drawings shall be manufactured by: Construction Specialties, 3 Werner Way, Lebanon, NJ 08833. Tel: 800.233.8493. Email: cet@c-sgroup.com. No substitutions.

B. Drawings and specifications are based on manufacturer’s literature from Construction Specialties, Inc. drawings and specifications unless otherwise indicated. Other manufacturers must be approved equal by Architect/Owner.

Commented [MN2]: Project Gallery

<http://www.c-sgroup.com/gallery/louvers>

Case Studies

<http://www.c-sgroup.com/louvers/case-studies>

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.

Commented [ES3]: A superior method vs welded assembly.

Commented [ES4]: 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).

2.04 Louver Models

- A. CS 4" (101.6 mm) Deep Storm Resistant Fixed Horizontal Louver Model RS-4700
 - 1. **Material:** Heads, sills, jambs and mullions to be one-piece structural aluminum members with integral caulking slot and retaining beads. Mullions shall be sliding interlock type. Blades to be one-piece aluminum extrusions with front lip gutter and multiple secondary gutters designed to catch and direct water to sill. 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 thickness to be as follows: Heads, sills, jambs and mullions: Minimum of 0.075" (1.91mm). Fixed blades: 0.060" (1.52mm)
 - 2. **AMCA Performance:** A 4' x 4' unit shall conform to the following:

Commented [ES5]: AMCA is the Air Movement and Control Association which is a third party testing agency for the louver industry. <http://www.amca.org/>

Commented [ES6]: 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).

<https://www.c-sgroup.com/Architectural-Louvers/Louvers-Airflow-Tool>

Free Area	8.25 sq. ft. (0.77 sq. m.)
Free Area Velocity at Beginning Point of Water Penetration	1250 ft/min (6.35m/s)
Intake Pressure drop at 1,050 fpm free area velocity (5.3 m/s)	0.37 in. H ₂ O (91.2 Pa)

Exhaust pressure drop at 1,357 fpm free area velocity (6.9 m/s) 0.50 in. H₂O (124.2 Pa)

3. **Wind Driven Rain Performance:** 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.

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	5.0
Core Ventilation Rate (ft/min):	0	132	197	287	377	469	600	684	773	880	985
Free Area Velocity (ft/min):	0	231	344	502	659	820	1049	1195	1351	1538	1721
Rating Effectiveness @ 29 & 3:	A	A	A	A	A	A	A	B	C	D	D
Effectiveness Ratio @ 29 & 3:					99.6	99.5	99.0	95.7	86.3	78.1	66.4
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	5.0
Core Ventilation Rate (ft/min):	0	94	197	290	399	499	570	686	796	879	968
Free Area Velocity (ft/min):	0	164	344	507	697	872	996	1199	1391	1536	1692
Rating Effectiveness @ 50 & 8:	A	A	A	A	B	B	B	C	C	D	D
Effectiveness Ratio @ 50 & 8:		99.4	99.2	99.0	98.4	97.1	95.1	89.5	81.2	75.7	68.5
Effectiveness Rating:	A = 1 to 0.99		B = 0.989 to 0.95		C = 0.949 to 0.80		D = 0.80 to 0				

2.04 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.

Commented [ES7]: Standard color chart <http://www.c-sgroup.com/louvers/colors>

Commented [ES8]: <http://www.c-sgroup.com/louvers/powder-coat>
<http://www.aamanet.org/general/1/351/aluminum-finishes>

Commented [ES9]: CS Powder Coat is available in custom colors. Includes AAMA-2605 20-year warranty, 4H Hardness, no VOC's emitted during application.

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°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 PVF₂ topcoat. It shall receive a bake cycle of 17 minutes at 450°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. 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.

PART 3 EXECUTION

3.01 Examination: Examine openings to receive the work. Do not proceed until any unsatisfactory conditions have been corrected.

3.02 Installation

- A. Comply with manufacturer's instructions and recommendations for installation of the work.
- B. Verify dimensions of supporting structure at the site by accurate field measurements so that the work will be accurately designed, fabricated and fitted to the structure.
- C. Anchor louvers to the building substructure as indicated on architectural drawings.
- D. Erection Tolerances:
 - 1. Maximum variation from plane or location shown on the approved shop drawings: 1/8" per 12 feet of length, but not exceeding 1/2" in any total building length or portion thereof (non-cumulative).
 - 2. Maximum offset from true alignment between two members abutting end to end, edge-to-edge in line or separated by less than 3": 1/16" (shop or field joints). This limiting condition shall prevail under both load and no load conditions.
- E. Cut and trim component parts during erection only with the approval of the manufacturer or fabricator, and in accordance with his recommendations. Restore finish completely. Remove and replace members where cutting and trimming has impaired the strength or appearance of the assembly.
- F. Do not erect warped, bowed, deformed or otherwise damaged or defaced members. Remove and replace any members damaged in the erection process as directed.

G. Set units level, plumb and true to line, with uniform joints.

3.03 Protection

A. Protect installed materials to prevent damage by other trades. Use materials that may be easily removed without leaving residue or permanent stains.

3.04 Adjusting and cleaning

- A. Immediately clean exposed surfaces of the louvers to remove fingerprints and dirt accumulation during the installation process. Do not let soiling remain until the final cleaning.
- B. Before final inspection, clean exposed surfaces with water and a mild soap or detergent not harmful to the material finishes. Thoroughly rinse surfaces and dry.
- C. Restore louvers and accessory components damaged during installation and construction so no evidence remains of corrective work. If results of restoration are unsuccessful, as determined by the Architect, remove damaged materials and replace with new materials.
 - 1. Touch up minor abrasions in finishes with a compatible air-dried coating that matches the color and gloss of the factory applied coating.

End of Section