

**Interdisciplinary Science Building  
Webster University  
Cannon Design Project No. 004561.01**

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Project: Webster ISB Substitution Request Number: 16  
From: Doug Mayhew  
To: Melissa Pirtle stl-  
cac@cannondesign.com Date: \_\_\_\_\_  
Re: \_\_\_\_\_ Contract For: \_\_\_\_\_

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Specification Title: Fixed Louvers Description: Fixed extruded-aluminum louver  
Section: 089119 Page: 2 Article/Paragraph: 2.3.A.1

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Proposed Substitution: Fixed Aluminum Louver  
Trade Name: \_\_\_\_\_  
Model No.: LE-69  
Manufacturer: American Warming and Ventilating  
Address: 7301 Internation Drive, Holand, Ohio  
\_\_\_\_\_  
Phone: 419-865-5000 Manufacturer Web Page: \_\_\_\_\_

Attached data includes product description, specifications, drawings, photographs, and performance and test data adequate for evaluation of the request; applicable portions of the data are clearly identified.

Attached data also includes a description of changes to the Contract Documents that the proposed substitution will require for its proper installation.

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Savings to Owner for  
accepting substitution: \_\_\_\_\_ (\$ \_\_\_\_\_)

Proposed substitution  
changes Contract Time: ☐ No ☐ Yes [Add] [Deduct] \_\_\_\_\_ days.

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The Undersigned Bidding General Contractor/Construction Manager Certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified products.
- Same warranty will be furnished for proposed substitution as for specified product.
- Same maintenance service and source of replacement parts, as applicable, is available.
- Proposed substitution will have no adverse effect on other trades and will not affect or delay progress schedule.
- Proposed substitution does not affect dimensions and functional clearances.
- Payment will be made for changes to building design, including A/E design, detailing, and construction costs caused by the substitution.

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- The following supporting data is attached to this request and verifies the above statements:

- ☐ Drawings
- ☒ Product Data
- ☐ Samples
- ☐ Tests
- ☐ Reports
- ☐ Other (explain) \_\_\_\_\_

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Submitted by: Rich Manchester

Signed by: \_\_\_\_\_

Contractor: Manchester hackett

Address: \_\_\_\_\_

Phone: \_\_\_\_\_ Email : \_\_\_\_\_

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**Review and Action**

- ☐ Substitution approved – Make submittals in accordance with the Specifications.
- ☐ Substitution approved as noted – Make submittals in accordance with the Specifications.
- ☒ Substitution rejected – Use specified materials.
- ☐ Substitution received too late – Use specified materials.

Comments: Blade Material is 0.060" thick. Specs state "not less then 0.080 inch" for the  
Blades and Frame.

Signed by: Kelvin Patel Date: 05/11/2016

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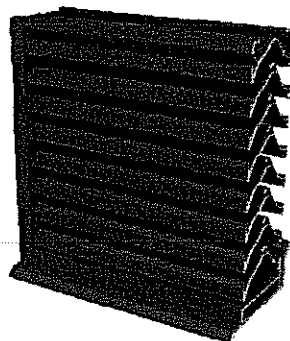
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[\(http://elsapps.com/louver/\)](http://elsapps.com/louver/) <http://louvers.elsapps.com/louver.php?model=LE-69>

LE-69 SPEC WRITER

LOUVER SELECTOR

## LE-69



### Specifications:

|                          |                                                                       |
|--------------------------|-----------------------------------------------------------------------|
| <b>Louver Depth</b>      | 6"                                                                    |
| <b>Description</b>       | Wind-Driven Rain Louver                                               |
| <b>Free Area</b>         | 8.02 sqft or 50.1%                                                    |
| <b>Water Penetration</b> | 1250 fpm                                                              |
| <b>Pressure Drop</b>     | 0.44 in w.g. at 1250 fpm and 10025 scfm                               |
| <b>Min Size</b>          | 12" x 12"                                                             |
| <b>Max Size</b>          | 96" x 96"                                                             |
| <b>Frame Material</b>    | 0.081" Thick 6063-T5 Extruded Aluminum                                |
| <b>Blades Material</b>   | 0.060" Thick 6063-T5 Extruded Aluminum                                |
| <b>Blade Spacing</b>     | 2"                                                                    |
| <b>Blade Orientation</b> | Horizontal                                                            |
| <b>AMCA</b>              | Certified for Air Performance, Water Penetration and Wind-driven Rain |
| <b>Miami - Dade</b>      | No                                                                    |
| <b>Sightproof</b>        | Yes                                                                   |



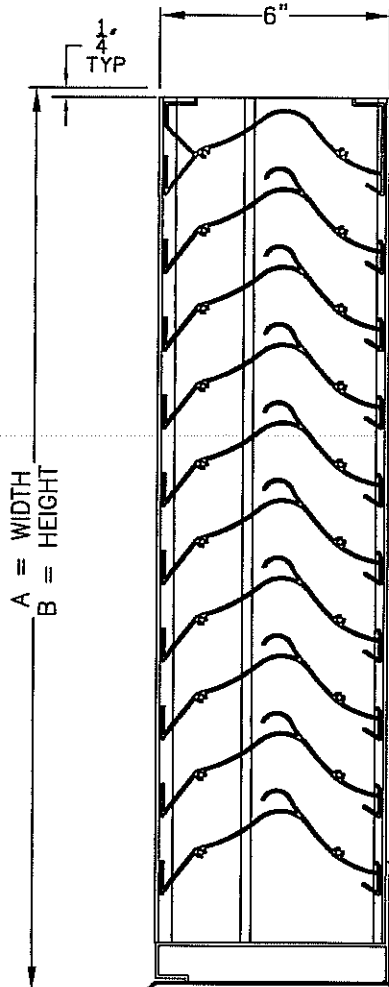
Made in USA



### Wind Driven Rain Water Penetration Test

|                           |                   |
|---------------------------|-------------------|
| <b>Wind Velocity</b>      | 29 mph            |
| <b>Rainfall</b>           | 3"/hr             |
| <b>Effectiveness</b>      | 0.997             |
| <b>Core Velocity</b>      | 376 fpm (1.9 m/s) |
| <b>Free Area Velocity</b> | 676 fpm (3.4 m/s) |
| <b>Wind Velocity</b>      | 50 mph            |
| <b>Rainfall</b>           | 8"/hr             |
| <b>Effectiveness</b>      | 0.992             |
| <b>Core Velocity</b>      | 201 fpm (1 m/s)   |
| <b>Free Area Velocity</b> | 362 fpm (1.8 m/s) |

# EXTRUDED ALUMINUM, 6" DEEP, HORIZONTAL FIXED TYPE BLADE FOR WIND DRIVEN RAIN



SECTION VIEW

## MODEL LE-69 STANDARD SPECIFICATIONS

FRAME: 6" DEEP CHANNEL, .081" THICK 6063-T6 EXTRUDED ALUMINUM ALLOY.

BLADES: .060" THICK 6063-T6 EXTRUDED ALUMINUM ALLOY.

FINISH:

SILL PAN: .060 THICK FORMED ALUMINUM.

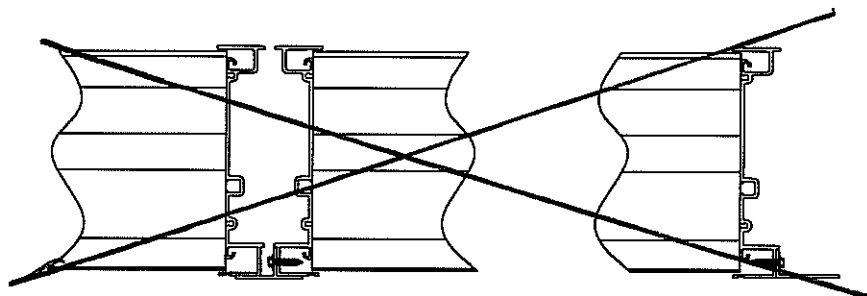
SCREEN: 1/2" REMOVABLE EXPANDED ALUMINUM BIRD SCREEN, LOCATED ON INTERIOR.

MAXIMUM PANEL SIZE: 96" X 96".

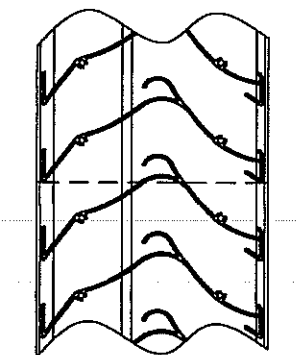
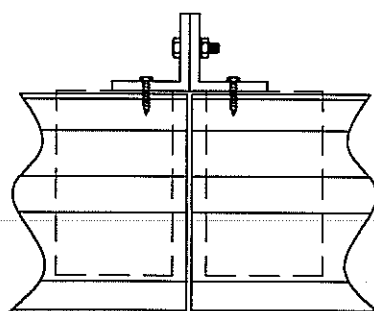
MINIMUM PANEL SIZE: 12" X 12".

DIMENSIONS: "A" (WIDTH) AND "B" (HEIGHT) ARE OPENING SIZES. LOUVERS ARE MADE 1/2" UNDERSIZE.

\* PANELS OVER 60" WIDE WILL BE 7-1/2" DEEP DUE TO A VERTICAL INTERIOR BLADE SUPPORT ANGLE.



STANDARD VERTICAL MULLION

OPTIONAL FLANGED FRAME  
(JAMB SHOWN)STANDARD HORIZONTAL  
MULLIONARCHITECTURAL VERTICAL  
MULLION OPTIONAL

American Warming and Ventilating LE-69 louver shown herein is licensed to bear the AMCA Seal. The ratings shown are based on tests and procedures performed in accordance with AMCA Publication 511 and comply with the requirements of the AMCA Certified Ratings Program. The AMCA Certified Ratings Seal applies to air performance ratings, water penetration ratings, and wind driven rain ratings.

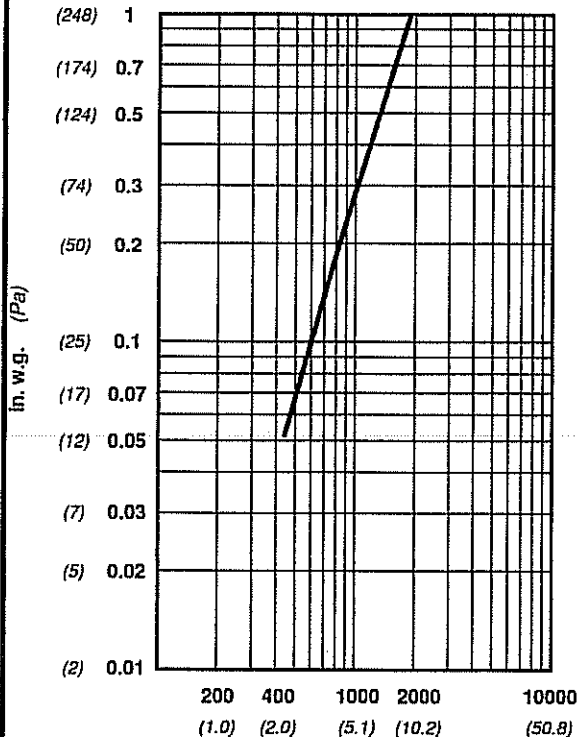
**awv** american warming and ventilating  
A MESTEK COMPANY  
7301 INTERNATIONAL DRIVE HOLLAND, OHIO  
Phone (419) 865-5000 Fax (419) 865-1375

## LE-69 STATIONARY LOUVER

|             |          |      |
|-------------|----------|------|
| DRN. BY     | DWG. NO. | REV. |
| DATE 7/3/12 | LE-69    |      |

**Water Penetration** : 0.01 oz (3.0 g) at 1250 fpm (6.35 m/s) recommended free area velocity  
**Pressure Drop** : 0.44 in wg (110 Pa.) at 1250 fpm(6.35 m/s) and 10025 scfm(4.73 scm/s)  
**Free Area** : 8.02 sq ft (0.745 sq m) = 50.1% for 48" x 48" (1.22m x 1.22m) test size

### INTAKE PRESSURE DROP



**VELOCITY THROUGH FREE AREA fpm (m/s)**

standard air- .075 lbs per cu ft

Ratings do not include the effect of a wire bird screen  
 Test based on a 48" x 48" test size per AMCA Standard 511  
 Figure 5.5. Data are based on intake performance.

### FREE AREA IN SQUARE FEET (sq meters)

| HEIGHT | WIDTH |       |       |       |       |       |       |       |      |
|--------|-------|-------|-------|-------|-------|-------|-------|-------|------|
|        | in.   | 12    | 24    | 36    | 48    | 60    | 72    | 84    | 96   |
|        | mm    | 305   | 610   | 914   | 1219  | 1524  | 1829  | 2134  | 2438 |
| 12     | 0.30  | 0.69  | 1.07  | 1.45  | 1.84  | 2.22  | 2.60  | 2.99  |      |
| 305    | 0.028 | 0.064 | 0.099 | 0.135 | 0.171 | 0.206 | 0.242 | 0.278 |      |
| 24     | 0.75  | 1.71  | 2.67  | 3.63  | 4.59  | 5.55  | 6.51  | 7.47  |      |
| 610    | 0.070 | 0.159 | 0.248 | 0.337 | 0.426 | 0.515 | 0.605 | 0.694 |      |
| 36     | 1.20  | 2.74  | 4.27  | 5.81  | 7.34  | 8.88  | 10.41 | 11.95 |      |
| 914    | 0.112 | 0.254 | 0.397 | 0.540 | 0.682 | 0.825 | 0.967 | 1.110 |      |
| 48     | 1.66  | 3.77  | 5.88  | 8.02  | 10.10 | 12.21 | 14.32 | 16.43 |      |
| 1219   | 0.154 | 0.350 | 0.546 | 0.745 | 0.938 | 1.134 | 1.330 | 1.526 |      |
| 60     | 2.11  | 4.79  | 7.48  | 10.16 | 12.85 | 15.54 | 18.22 | 20.91 |      |
| 1524   | 0.196 | 0.445 | 0.695 | 0.944 | 1.194 | 1.443 | 1.693 | 1.942 |      |
| 72     | 2.56  | 5.82  | 9.08  | 12.34 | 15.60 | 18.86 | 22.13 | 25.39 |      |
| 1829   | 0.238 | 0.541 | 0.844 | 1.147 | 1.450 | 1.753 | 2.055 | 2.358 |      |
| 84     | 3.01  | 6.85  | 10.68 | 14.52 | 18.36 | 22.19 | 26.03 | 29.87 |      |
| 2134   | 0.280 | 0.636 | 0.992 | 1.349 | 1.705 | 2.062 | 2.418 | 2.775 |      |
| 96     | 3.46  | 7.87  | 12.29 | 16.70 | 21.11 | 25.52 | 29.93 | 34.35 |      |
| 2438   | 0.322 | 0.731 | 1.141 | 1.551 | 1.961 | 2.371 | 2.781 | 3.191 |      |

### Wind-Driven Rain Penetration Classes:

| Class | Effectiveness |
|-------|---------------|
| A     | 100% to 99%   |
| B     | 98.9% to 95%  |
| C     | 94.9% to 80%  |
| D     | Below 80%     |

### Discharge Loss Coefficient Classes:

| Class | Coefficient   |
|-------|---------------|
| 1     | 0.4 & above   |
| 2     | 0.3 to 0.399  |
| 3     | 0.2 to 0.299  |
| 4     | 0.199 & below |

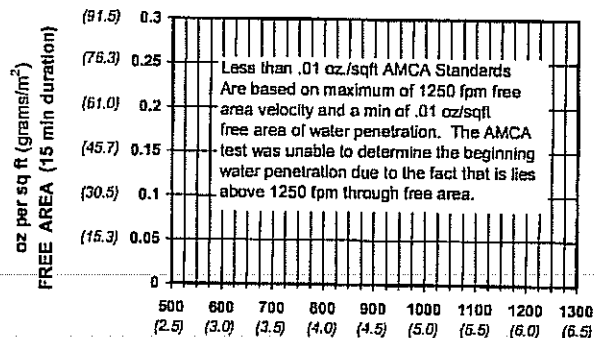
### Wind Driven Rain Performance 29 mph (46.7 kph) with 3 in/h (76 mm/h)

| Water Penetration | Effectiveness Ratio | Coefficient of Discharge | Core Velocity     | Ventilation Airflow | Free Area Velocity |
|-------------------|---------------------|--------------------------|-------------------|---------------------|--------------------|
| Class A           | 99.7%               | Class 3                  | 376 fpm (1.9 m/s) | 4044 cfm (1.9 cm/s) | 676 fpm (3.4 m/s)  |

### Wind Driven Rain Performance 50 mph (80.5 kph) with 8 in/h (203 mm/h)

| Water Penetration | Effectiveness Ratio | Coefficient of Discharge | Core Velocity   | Ventilation Airflow | Free Area Velocity |
|-------------------|---------------------|--------------------------|-----------------|---------------------|--------------------|
| Class A           | 99.2%               | Class 3                  | 201 fpm (1 m/s) | 2165 cfm (1 cm/s)   | 362 fpm (1.8 m/s)  |

### WATER PENETRATION



**VELOCITY THROUGH FREE AREA fpm (m/s)**

Both maximum recommended free area velocity and beginning of water penetration are 1250 fpm at standard air - .075 lbs per cu ft. The above water penetration data is based on mill finish, 48" x 48" test size per AMCA Standard 511.



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**LE-69**