



Weaver

CONSTRUCTION MANAGEMENT

3679 S Huron Street, Suite 404 Englewood, Colorado 80110

Phone: (303) 789-4111 FAX: (303) 789-4310

SUBMITTAL TRANSMITTAL

February 20, 2012

WGC Submittal No: 15800-008

PROJECT: **Harold Thompson Regional WRF**
Birdsall Rd.
Fountain, CO 80817
Job No. 2908

ENGINEER: **GMS, Inc.**
611 No. Weber St., #300
Colorado Springs, CO 80903
719-475-2935 Roger Sams

OWNER: **Lower Fountain Metropolitan
Sewage Disposal District**
901 S. Santa Fe Ave.
Fountain, CO 80817
719-382-5303 James Heckman

CONTRACTOR: **Kuck Mechanical Contractors, LLC.**
395 West 67th Street
Loveland, CO 80593
970-461-3553 Melanie Peterson

SUBJECT: Louver in the EM Building (L-1) Pottorff - Approve as Equal

SPEC SECTION: 15800 - Heating & Ventilating

PREVIOUS SUBMISSION DATES:

DEVIATIONS FROM SPEC: ___ YES X NO

CONTRACTOR'S STAMP: This submittal has been reviewed by Weaver General Construction and approved with respect to the means, methods, techniques, & safety precautions & programs incidental thereto. Weaver General Construction also warrants that this submittal complies with contracted documents and comprises on deviations thereto:

Contractor's Stamp:

Engineer's Stamp:

Date: 2/20/12

Reviewed by: Leslie Brown
() Reviewed Without Comments
(x) Reviewed With Comments

ENGINEER'S
COMMENTS: _____



395 West 67th Street
P.O. Box 388
Loveland, CO 80539-0388
Phone: (970) 461-3553
Fax: (970) 461-3443

DATE: 02/15/12

SENT TO: Weaver General Contractors

Attn: John Jacob

JOB: Harold D. Thompson WRF (#01135)
9001 Birdsall Rd.
Fountain, CO 80817

SUBMITTAL NO.: 00009

SUBMITTAL DUE:

PACKAGE: n/a

VENDOR NAME: Air Purification

SPECIFICATION #: 15800

SUBJECT: EM Bldg - Louvers

REVIEW DETAILS:

Review #: 1	Received: 02/15/12	Priority: Normal
Desc: EN Bldg - Louvers	Sent: 02/15/12	Status: Open
Reviewer: John Jacob	Returned:	Sepias: 0
Weaver General Contractors	Forwarded:	Prints: 0

Sent for the following action(s):

- For Approval
 For Distribution
 For Your Use/Files
 As Req'd per

Action Needed:

Sincerely,
Melanie Peterson
Kuck Mechanical Contractors
PM Assistant
395 W. 67th Street
Loveland, CO 80538



Air Purification Company

1861 West 64th Lane, Denver, Colorado 80221

Phone: 303.428.2800 • Fax: 303.428.2700

Project:	HDT Regional WRF
Location:	Fountain
Architect:	GMS
Engineer:	GMS
Contractor:	Kuck Mechanical
Specification Section:	15800 2.1
Manufacturer:	Pottorff
Documents:	Submittals
Document Number:	F03.S01
Job Number:	2C011F

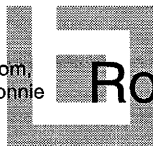
To avoid any lengthy delays that resubmittals may cause, please contact Ronnie Cheney at 303.704.9188 or ronnie@airpurificationcompany.com to work out any discrepancies or questions on the submittals.

Submitted for Approval By:

Ronnie Cheney

Ronnie Cheney

Digitally signed by Ronnie Cheney
DN: C=US,
E=ronnie@airpurificationcompany.com,
O=Air Purification Company, CN=Ronnie
Cheney
Date: 2012.02.07 11:51:11-07'00'



Ronnie Cheney



Air Purification Company

1861 West 64th Lane, Denver, Colorado 80221

Phone: 303.428.2800 • Fax: 303.428.2700

Document: Equipment Notes, Schedules and Catalog Data

Spec Section: 15800 2.1 - Louvers

<u>Tag</u>	<u>Quantity</u>	<u>Model</u>	<u>Size</u>	<u>Frame</u>	<u>Options</u>
L-1	1	EFD-445	12x12	Channel	Extended sill, prime coat finish, paint color matching and painting is not in this suppliers scope.

Equipment Schedule

Options

Accessories:	Closed End Sill Flashing	Construction:	Mechanically Fastened, 0.081"
Dimensions:	Nominal	Finish:	Prime Coat Finish
Frame:	Visible Mullion	Screen:	Screen 1- Bird Screen Aluminum (1/2" x 0.063") Rear/Interior Mount, Mill Finish

Qty	W x H	D	Tag	Actuator						
				Qty	Model	Pos	Loc	Volts	Amps	VA
1	12 x 12									

Project: HDT Regional WRF
Location:
Addendum #:
Submitted By:

Architect:
Engineer:
Contractor: Kuck Mechanical Contractors
Date: February 07, 2012

Application

The EFD-445 drainable blade louver is designed to prevent water penetration in non-wind-driven rain applications by collecting water in frame and blade gutters and channeling it into downspouts and away from airflow paths. The EFD-445 is available in a wide array of anodized and painted finishes including custom color matching.

Standard Construction

Material: Mill finish 6063-T5 extruded aluminum.

Frame: 4" deep × 0.081" thick (102 × 2) channel.

Blades: 45° × 0.081" (2) thick drainable style.

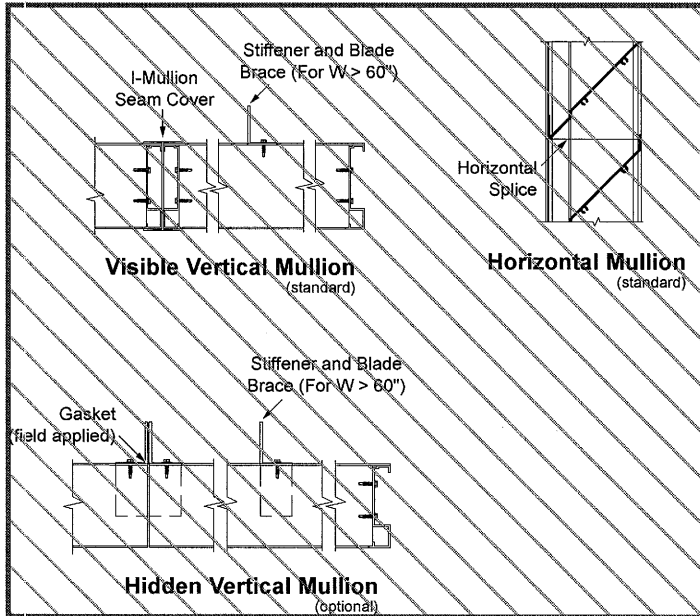
Screen: 1/2" × 0.063" (12.7 × 1.6) expanded and flattened aluminum.

Mullion: Visible.

Minimum Size: 4.5" × 7.5" (114 × 191)

Maximum Size: Single section: 60" × 120" (1524 × 3048)
120" × 60" (3048 × 1524)

Multiple section: Unlimited



Ratings

Free Area: [48" × 48" (1222 × 1222) unit]: 7.5 ft² (0.70 m²)
47.1%

Performance @ Beginning Point of Water Penetration

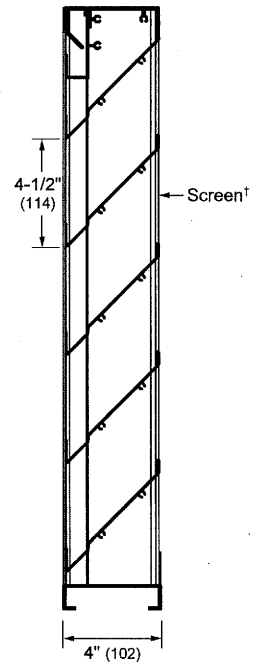
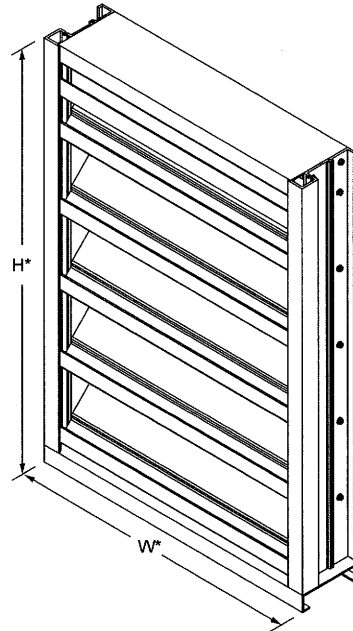
Free Area Velocity: 990 fpm (5.03 m/s)

Air Volume Delivered: 7,425 cfm (3.50 m³/s)

Pressure Loss: 0.14 in.wg. (35 Pa)

Velocity @ 0.15 in.wg. Pressure Loss: 1050 fpm (5.33 m/s)

Design Load: 30 psf



Model **EFD-445**
(standard)

*Louver dimensions furnished approximately 1/2" (13) undersize.

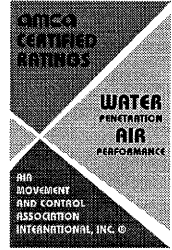
Vertical Section

†Screen adds approximately 3/16" (5) to louver depth.

Performance Data

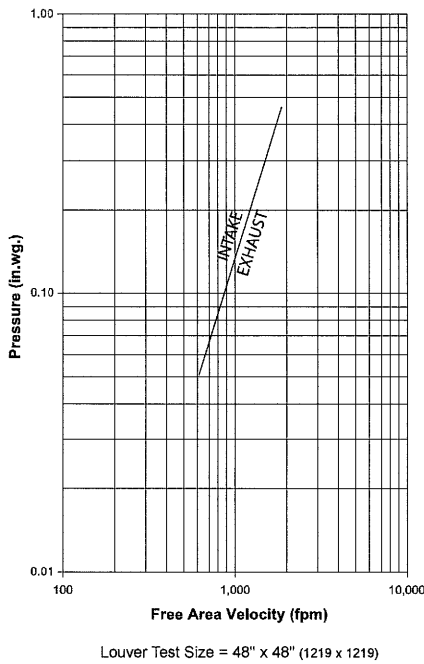
Free Area (ft²)

Height (Inches)	Width (Inches)																			
	4.5	12	18	24	30	36	42	48	54	60	66	72	78	84	90	96	102	108	114	120
7.5	0.0	0.1	0.1	0.2	0.2	0.3	0.3	0.3	0.4	0.4	0.5	0.5	0.6	0.6	0.6	0.7	0.7	0.8	0.8	0.9
12	0.1	0.2	0.4	0.5	0.7	0.8	1.0	1.1	1.3	1.4	1.6	1.7	1.9	2.0	2.2	2.3	2.5	2.6	2.8	2.9
18	0.1	0.5	0.8	1.1	1.3	1.6	1.9	2.2	2.5	2.8	3.1	3.4	3.6	3.9	4.2	4.5	4.8	5.1	5.4	5.7
24	0.2	0.7	1.1	1.6	2.0	2.4	2.8	3.3	3.7	4.1	4.6	5.0	5.4	5.8	6.3	6.7	7.1	7.5	8.0	8.4
30	0.2	0.9	1.5	2.1	2.6	3.2	3.8	4.3	4.9	5.5	6.0	6.6	7.2	7.7	8.3	8.9	9.4	10.0	10.6	11.1
36	0.3	1.2	1.9	2.6	3.3	4.0	4.7	5.4	6.1	6.8	7.5	8.2	8.9	9.6	10.3	11.0	11.7	12.5	13.2	13.9
42	0.4	1.4	2.3	3.1	3.9	4.8	5.6	6.5	7.3	8.2	9.0	9.8	10.7	11.5	12.4	13.2	14.1	14.9	15.8	16.6
48	0.4	1.6	2.6	3.6	4.6	5.6	6.6	7.5	8.5	9.5	10.5	11.5	12.5	13.4	14.4	15.4	16.4	17.4	18.4	19.3
54	0.5	1.9	3.0	4.1	5.2	6.4	7.5	8.6	9.7	10.8	12.0	13.1	14.2	15.3	16.5	17.6	18.7	19.8	20.9	22.1
60	0.5	2.1	3.4	4.6	5.9	7.1	8.4	9.7	10.9	12.2	13.5	14.7	16.0	17.2	18.5	19.8	21.0	22.3	23.5	24.8
66	0.6	2.3	3.7	5.1	6.5	7.9	9.3	10.7	12.1	13.5	14.9	16.3	17.7	19.1	20.5	21.9	23.3	24.7	26.1	27.5
72	0.6	2.6	4.1	5.6	7.2	8.7	10.3	11.8	13.3	14.9	16.4	18.0	19.5	21.0	22.6	24.1	25.7	27.2	28.7	30.3
78	0.7	2.8	4.5	6.2	7.8	9.5	11.2	12.9	14.5	16.2	17.9	19.6	21.3	22.9	24.6	26.3	28.0	29.7	31.3	33.0
84	0.8	3.0	4.8	6.7	8.5	10.3	12.1	13.9	15.8	17.6	19.4	21.2	23.0	24.8	26.7	28.5	30.3	32.1	33.9	35.7
90	0.8	3.3	5.2	7.2	9.1	11.1	13.0	15.0	17.0	18.9	20.9	22.8	24.8	26.7	28.7	30.7	32.6	34.6	36.5	38.5
96	0.9	3.5	5.6	7.7	9.8	11.9	14.0	16.1	18.2	20.3	22.4	24.5	26.5	28.6	30.7	32.8	34.9	37.0	39.1	41.2
102	0.9	3.7	5.8	8.2	10.4	12.7	14.9	17.1	19.4	21.6	23.8	26.1	28.3	30.5	32.8	35.0	37.2	39.5	41.7	44.0
108	1.0	4.0	6.0	8.7	11.1	13.5	15.8	18.2	20.6	22.9	25.3	27.7	30.1	32.4	34.8	37.2	39.6	41.9	44.3	46.7
114	1.0	4.2	6.3	9.2	11.7	14.2	16.8	19.3	21.8	24.3	26.8	29.3	31.8	34.3	36.9	39.4	41.9	44.4	46.9	49.4
120	1.1	4.4	6.7	9.7	12.7	15.0	17.7	20.3	23.0	25.6	28.3	30.9	33.6	36.2	38.9	41.5	44.2	46.9	49.5	52.2



Certified Ratings:
 Pottorff certifies that the model EFD-445 shown herein is licensed to bear the AMCA seal. The ratings shown are based on test 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 and water penetration ratings.

Pressure Loss



Selection Criteria

Follow the steps listed below to calculate the louver size needed to satisfy the required air volume while minimizing the adverse effects of water penetration and pressure loss.

- Determine the Free Area Velocity (FAV) at the maximum allowable pressure loss using the *Pressure Loss* chart to the left. While job conditions vary, typically, the maximum allowable pressure loss should not exceed 0.15 in.wg., and the FAV for 0.15 in.wg. pressure loss is listed on the front page of this sheet.
- Intake Applications** If the FAV at the Beginning Point of Water Penetration (shown below) is less than the FAV from step 1, then use the FAV at the Beginning Point of Water Penetration in step 3, otherwise use the FAV from step 1.

Exhaust Applications Use the FAV from step 1 in step 3.

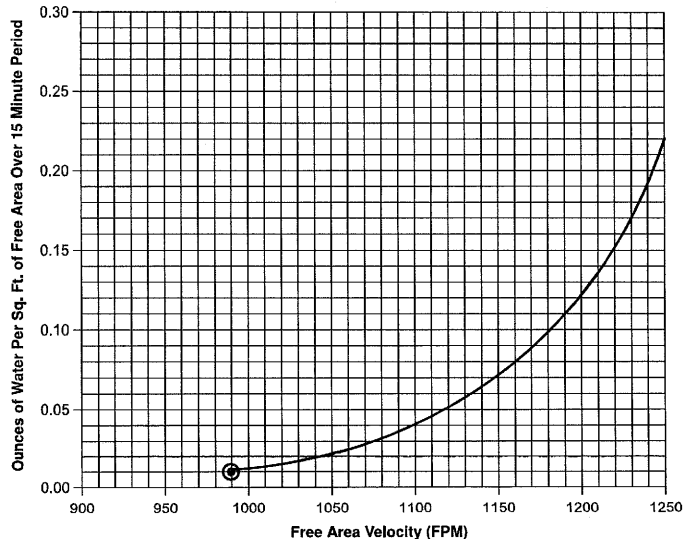
- Calculate the total louver square footage required using the following equation.

$$\frac{\text{Required Air Volume}}{\text{cfm}} \div \frac{\text{FAV}}{\text{fpm}} = \frac{\text{Required Louver (Free-Area) Size}}{\text{ft}^2}$$

- Using the *Free Area* chart above, select a louver width and height that yields a free area ft² greater than or equal to the required louver size calculated in step 3.

Water Penetration

Beginning Point of Water Penetration = 990 fpm



Water Penetration

AMCA defines the beginning point of water penetration as the free area velocity at the intersection of a simple linear regression of test data and the line of 0.01 ounces of water per square foot of free area and is measured through a 48" x 48" louver during a 15 minute period. The AMCA water penetration test provides a method for comparing louver models and designs as to their efficiency in resisting the penetration of rainfall under specific lab conditions. Pottorff recommends that intake louvers are selected with a reasonable margin of safety below the beginning point of water penetration in order to avoid unwanted penetration during severe storm conditions.

Information is subject to change without notice or obligation.

NOTE: Dimensions in parentheses () are millimeters.