EXPANSION & RENOVATE AS NEW – PHASE 1

CRYSTAL LAKE ELEMENTARY SCHOOL
284 SANDY BEACH ROAD
ELLINGTON, CT 06029
STATE PROJECT NO. 048-0058 EA/RR/PS

S/P+A PROJECT NO. 12.140

DATE: December 16, 2013

The following changes to the Drawings and Project Specifications shall become a part of the Drawings and Project Specifications; superseding previously issued Drawings and Project Specifications to the extent modified by Addendum No. 2.

General Information/Clarifications:

- See attached RFIs. (7)
- See attached Substitution Requests. (47)
- See attached prebid meeting sign-in sheet for reference. (3)
- The building will be open for a second, non-mandatory walk through on Monday, December 30, 2013 from 10:00am to 12:00pm.

Changes to Addenda:

- ADDENDUM #1, Changes to Drawings, DRAWING A912, delete change in its entirety.

New Specifications:

- SECTION 055300, METAL GRATINGS has been added and is attached as part of this addendum. (5)

Changes to the Specifications:

- TABLE OF CONTENTS:
  - Page 2, Division 5 – Metals, add the following:

    "Section 055300 Metal Gratings 5"
  - Page 4, Division 9 – Finishes, Section 098433, Pages, revise "7" to read "6".
- SECTION 028200, ASBESTOS REMEDIATION, Page 2, Article 1.2.B.3., revise to read as follows:

  "Work Area 6 – Classrooms, Office Area – 1955 Wing – 1st Floor – (As shown on Drawing HAZ002)

  Remove ACM in the form of:

- VAT and mastic (all layers)
- Blackboard glue and blackboard (all layers)
- Bulletin board glue and bulletin board (all layers)
- Mudded fittings
- Pipe insulation

under full containment with a pressure differential and contiguous decontamination units. Selectively demolish pipe chases, fixed walls and ceilings to access pipe insulation and mudded fittings. Abate floor tile/mastic and blackboard/bulletin board glue located under and behind all cabinets and reinstall cabinets. Perform a majority of the work in the Summer of 2014. Remove pipe insulation and mudded fittings in early 2015 when there are no students in the school. Abatement work in the kitchen must be done in 2015 when there are no students in the school. Carpet over floor tile can be disposed of as construction debris if no tiles are attached."

- SECTION 090000, SCHEDULE OF FINISHES:

  - Page 3, Floors, VCTT-1, Backing, revise "Powerboll" to read "Powerbond".
  - Page 4, Floors:

    - WOM-1:

      - Thickness, revise "¾"" to read "1¾"".
      - Style, revise "Great" to read "Grate".

    - WOM-3, add the following:

      - Weight, revise "36 oz/sq yd" to read "24 oz./sq. yd."
      - "**Thickness:** ¼ inch".

  - Page 10, Ceilings, ACT-2, Location, revise "Waiting 102" to read "Waiting C102" and delete "Conference Room C143" in its entirety.

- SECTION 096513, RESILIENT BASE AND ACCESSORIES:

  - Page 1, Article 1.2.A.2., delete in its entirety.
  - Page 2, Article 2.2.C.2.a., revise "in areas with resilient flooring" to read "where indicated on Drawings".
  - Page 3, Article 2.3, delete in its entirety.
  - Page 4:

    - Article 2.5.C., delete in its entirety.
    - Article 3.2.B., delete in its entirety.

  - Page 5, Article 3.4.B., delete in its entirety.

- SECTION 096766, FLUID-APPLIED ATHLETIC FLOORING:

  - Page 2, Article 2.1.A., add the following:

"5. Basis of Design: Signature Sports Flooring; **Signaflor Pad & Pour**".

- Page 3:

  - Article 2.1.D.1.a., revise "10 mm" to read "9 mm".
  - Article 2.1.E.1., revise to read as follows:

    "Color: As indicated in Section 090000 "Schedule of Finishes"."

- SECTION 096813, TILE CARPETING, Page 3:

  - Article 1.10.A.3., revise "Ten (10) years" to read "Lifetime".
  - Article 2.1.A.1., revise to read as follows:

    "Milliken Floor Coverings (**CPT-1**, **CPT-2**, **CPT-3**, **CPT-4**, **CPT-5**)"

  - Article 2.1.A.2., delete in its entirety.
  - Article 2.1.C.4., revise "thirty-nine percent (39%)" to read "thirteen percent (13%)".

- SECTION 096816, SHEET CARPETING:

  - Page 1:

    - Article 1.2.B.1., delete "Structure" in its entirety.

  - Page 2, Article 1.4.B., add the following:

    "2. Product Data for Section 16a-38k-6(d)(9): For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content."

  - Page 4:

    - Article 2.1.B., revise to read as follows:

      "Color and Pattern: As indicated in Section 090000 Schedule of Finishes".

    - Article 2.1.C.2. to .7., revise to read as follows

      "2. Fiber Type: Dynex.
      3. Pile Characteristic: Level loop.
      4. Pile Height Average: 0.117 inch.
      5. Stitches: 7.2 per inch.
      6. Gauge: 1/13.
      7. Face Weight: 17 oz./sq. yd."

    - Article 2.1.C.12.b., revise "3.5 kV" to read "1.9 kV".
    - Article 2.1.C.12., add the following:

"g. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than seven percent (7%)."

- Page 5:
  - Article 2.2.D., delete in its entirety.
  - Article 3.1.B.2., revise "Cast-in-Place Concrete" to read "Concrete Work".
  - Article 3.2.B., add to the end the following:

    "**Expect and include in the Base Bid the requirement to apply and machine level at least three (3) coats of leveler in all spaces.**"

- SECTION 098433, SOUND-ABSORBING UNITS has been deleted in its entirety. A new SECTION 098433, SOUND-ABSORBING UNITS has been added and is attached as part of this addendum. (6).

- SECTION 098439, ACOUSTICAL CEILING CLOUDS has been deleted in its entirety. A new SECTION 098439, ACOUSTICAL CEILING CLOUDS has been added and is attached as part of this addendum. (5).

- SECTION 124816, ENTRANCE FLOOR GRILLES:
  - Page 2:
    - Article 2.1.A.1., revise "**Advanced Track**" to read "**Grate Grid**".
    - Article 2.2.B., revise "seventy-four percent (74%)" to read "twenty-three percent (23%)".
    - Article 2.3, revise "**EMC1**" to read "**WOM-1**".
    - Article 2.3.B.2., revise "1-5/16 inches" and "3/16-inch" to read "1½ inches" and "1/8-inch", respectively.
    - Article 2.3.B.3., revise "29 oz./sq. yd." to read "33 oz./sq. yd."

- SECTION 124813, ENTRANCE FLOOR MATS AND FRAMES:
  - Page 1, Article 1.3, delete in its entirety.
  - Page 2:
    - Part 1, add the following:

      "1.6 MAINTENANCE MATERIAL SUBMITTALS

      A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

      1. Entrance Mats: Full-size units equal to two percent (2%) of amount installed, but no fewer than ten (10) units."

    - Article 2.2, delete "(**EM1**)" in its entirety.
    - Article 2.2.C.,after "Mats" add "(**WOM-3**).
    - Article 2.2, add the following:

"F. Carpet-Type Tiles (**WOM-2**): One hundred percent (100%) solution-dyed polypropylene fiber with bitumen backing.

1. Thickness: ¼ inch pile, 3/8 inch tile.
2. Size and Color: As indicated in Section 090000 "Schedule of Finishes".
3. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than twenty-two percent (22%)."

Changes to the Drawings:

- DRAWING A302, EXTERIOR ELEVATIONS, Partial North Elevation 1, revise "CW-C11.1" to read "CW-C2C".

- DRAWING A303, EXTERIOR ELEVATIONS:

  - Partial South Elevation, Courtyard 2, revise "CW-C11" to read "CW-C2B".
  - Partial East Elevation, Courtyard 3, revise "CW-C11" to read "CW-C2B".

- DRAWING A304, EXTERIOR ELEVATIONS, Partial North Elevation, Courtyard 1, Door C134B, revise "CW-C5" to read "CW-C6".

- DRAWING A630, WINDOW DETAILS, Head Detail N, revise "2" heavy duty" to read "1¾" heavy duty".

- DRAWING A910, DOOR SCHEDULE AREA 'A' & 'B', Door Schedule – First Floor Area 'B', Saddle Detail:

  - Door B112B, add "/B".
  - Door B113A, add "/H".
  - Doors B115C and B121C, revise "J" to read "P".

- DRAWING A911, DOOR SCHEDULE AREA 'C', Door Schedule – First Floor Area 'C', Saddle Detail, Door C106A, add "/H".

- DRAWING A912, DOOR & FRAME ELEVATIONS, Saddle Details 3, Type J, add "Alternate" under the title.

- DRAWING A930, FINISH SCHEDULE, Room Finish Schedule – First Floor Area 'C', C143, Ceiling, Material, revise "ACT-2" to read "ACT-4".

- DRAWING HAZ002, 1ST FLOOR & BASEMENT HAZARDOUS MATERIAL ABATEMENT, General Notes, Asbestos Note 2, revise to read as follows:

  "Work Area 6 – '55 Wing

  Remove ACM in the form of:

  - VAT and mastic (all layers)
  - Blackboard glue and blackboard (all layers)

- Bulletin board glue and bulletin board (all layers)
- Mudded fittings
- Pipe insulation

under full containment with a pressure differential and contiguous decontamination units. Selectively demolish pipe chases, fixed walls and ceilings to access pipe insulation and mudded fittings. Abate floor tile/mastic and blackboard/bulletin board glue located under and behind all cabinets and reinstall cabinets. Perform a majority of the work in the Summer of 2014. Remove pipe insulation and mudded fittings in early 2015 when there are no students in the school. Abatement work in the kitchen must be done in 2015 when there are no students in the school. Carpet over floor tile can be disposed of as construction debris if no tiles are attached."

The bid dates are unchanged by this addendum.
The addendum consists of seventy-nine (79) pages of 8½" x 11" text.

End of Addendum #2

RFI #1

Paul Jorgensen

From: Paul Jorgensen
Sent: Friday, December 06, 2013 9:17 AM
To: 'Mike Garneau'
Cc: Rebecca Bouchard
Subject: RE: Crystal Lake RFI - Addendum 1

Mike,

To clarify: Page 94 of Addendum #1 is an attachment to the storm water permit which just lists the drawings involved. These are part of the drawing sets. The 3 phasing plans that are in the addendum were revised.

Let us know if you have any further questions.

Paul Jorgensen, AIA
Associate/Project Architect

www.silverpetrucelli.com

SILVER / PETRUCELLI + ASSOCIATES
Architects/Engineers/Interior Designers

3190 Whitney Avenue Bldg 2
Hamden, Connecticut 06518
P: 203-230-9007 ext. 208
F: 203-230-8247
M: 203-435-7447
S/P+A is a member of the U.S. Green Building Council

From: Mike Garneau [mailto:MGarneau@wjmountford.com]
Sent: Friday, December 06, 2013 8:54 AM
To: Paul Jorgensen
Subject: Crystal Lake RFI - Addendum 1
Importance: High

Paul – On page 94 of the addendum, attachment #3 lists 9 site plans but only 3 are in the addendum (C700, C701, C702). Are the other 6 site plans being revised per this addendum?
Please let me know.
Thanks.

Mike Garneau
Project Manager
W. J. Mountford Co.
P 860-291-9448 x 124
F 860-289-6382
mgarneau@wjmountford.com

RFI #2

Paul Jorgensen

From: Paul Jorgensen
Sent: Friday, December 06, 2013 2:30 PM
To: 'Walt Fisher'
Cc: Rebecca Bouchard
Subject: RE: Crystakl Lake School

Walt, please see our responses in **Red** below.

Paul Jorgensen, AIA
Associate/Project Architect

www.silverpetrucelli.com

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Architects/Engineers/Interior Designers

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F: 203-230-8247
M: 203-435-7447
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From: Walt Fisher [mailto:walt@bfeinc.us]
Sent: Friday, December 06, 2013 1:58 PM
To: Paul Jorgensen
Subject: Crystakl Lake School

Paul:
I have been looking at the plans and specs for this job, and I do have a couple of questions:

Section 08900 Louvers: Notes on the drawings refer to a louver schedule. Maybe I missed this, however, I could not find this
schedule. **Louver schedule is on the elevation sheets.**

Section 074213 Composite Wall Panels: There appears to be a small amount of this on the job. The bulk of the wall panel work is indicated to be a Flat Aluminum RainScreen System. Is there going to be a specification issued for this item? **Wall panel specifications were included in Addendum #1, which was issued yesterday.**

We thank you for including some of our products in your specifications ,such as in 079500 Expansion Control . **YW**

Walt Fisher

Walter S. Fisher, Secretary/Treasurer
The Bill Fisher Enterprise, Inc.
7 Blueberry Lane – Burlington, CT 06013
Tel: 860-673-3261 Fax: 860-673-4500
Email: walt@bfeinc.us

RFI #3

Request for Information

Job Name: Crystal Lake Elementary School KBE Project #:13-160

Job Address:284 Sandy Beach Road, Ellington, CT 06029

RFI# 1	Date Created: 12-12-13

Submitted To:	***Submitted By:***
Paul Jorgensen	Ray Suite
Silver/Petrucelli + Associates, Inc.	KBE Building Corporation
3190 Whitney Avenue, Building 2	30 Batterson Park Road
Hamden, CT 06518	Farmington, CT 06032
Phone: 203-230-9007 X208	***Phone:*** 860-284-7630
Email:pjorgensen@silverpetrucelli.com	***Email: 860-284-0121***

Subject:	***Discipline:***	***Co-Author:***
CONNDOT Class-4 Binder		

Submittal #:	***Drawing #:***	***Addendum:***	***Spec Section:***	***Schedule #:***

Distribution:

Information Requested:	***Date Required:***

Detail 8 on Sheet C-601 of the plans shows 2-1/2" CONNDOT Class-4 Binder. CONNDOT does not approve placement of Class-4 Binder of a thickness less than 3 inches.

We can quote a Class-1 binder in lieu of the Class-4.

Please advise.

BSC Response (December 13, 2013)

Bituminous asphalt binder course shall be Class 1.

Answer Received:	***Date Received:***

30 Batterson Park Road, Farmington, CT 06032
Phone: (860)284-7110 Fax: (860)284-1174

RFI #4

KBE BUILDING CORPORATION

Request for Information

Job Name: Crystal Lake Elementary School KBE Project #:13-160

Job Address:284 Sandy Beach Road, Ellington, CT 06029

RFI# 2	Date Created: 12-12-13

Submitted To:	***Submitted By:***
Paul Jorgensen	Ray Suite
Silver/Petrucelli + Associates, Inc.	KBE Building Corporation
3190 Whitney Avenue, Building 2	30 Batterson Park Road
Hamden, CT 06518	Farmington, CT 06032
Phone: 203-230-9007 X208	***Phone:*** 860-284-7630
Email:pjorgensen@silverpetrucelli.com	***Email: 860-284-0121***

Subject:	***Discipline:***	***Co-Author:***
Power Service		

Submittal #:	***Drawing #:***	***Addendum:***	***Spec Section:***	***Schedule #:***

Distribution:

Information Requested:	***Date Required:***

Answer Received:	***Date Received:***

Please confirm the Contractor shall be permitted to use the Owner's power service for work related to the project as stated in Article 9.9 of the Supplementary Instructions to Bidders, at no additional cost.

This is confirmed.
D. Stein 12.16.13

30 Batterson Park Road, Farmington, CT 06032
Phone: (860)284-7110 Fax: (860)284-1174

RFI #5

Request for Information

Job Name: Crystal Lake Elementary School KBE Project #:13-160

Job Address:284 Sandy Beach Road, Ellington, CT 06029

RFI# 3	Date Created: 12-12-13

Submitted To:	***Submitted By:***
Paul Jorgensen	Ray Suite
Silver/Petrucelli + Associates, Inc.	KBE Building Corporation
3190 Whitney Avenue, Building 2	30 Batterson Park Road
Hamden, CT 06518	Farmington, CT 06032
Phone: 203-230-9007 X208	***Phone:*** 860-284-7630
Email:pjorgensen@silverpetrucelli.com	***Email: 860-284-0121***

Subject:	***Discipline:***	***Co-Author:***
Quality-Control Personnel		

Submittal #:	***Drawing #:***	***Addendum:***	***Spec Section:***	***Schedule #:***

Distribution:

Information Requested:	***Date Required:***

Answer Received:	***Date Received:***

Please confirm the Project Quality-Control Manager shall not have any other Project responsibilities, as stated in para. B1., Section 014000

This is confirmed.
R. Bouchard 12.16.13

30 Batterson Park Road, Farmington, CT 06032
Phone: (860)284-7110 Fax: (860)284-1174

RFI #6

Rebecca Bouchard

From: Rebecca Bouchard
Sent: Monday, December 16, 2013 1:49 PM
To: 'WFMJr@aol.com'
Subject: RE: Crystal Lake Elementary School-Ellington, CT

Good afternoon Fred.
We will not be adding this to our list of alternates however you may submit as a voluntary alternate that the Owner can review.
Thank you and have a great day.

Rebecca Bouchard, CSI, CDT
Intern Architect

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Hamden, Connecticut 06518
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F: 203-230-8247
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From: WFMJr@aol.com [mailto:WFMJr@aol.com]
Sent: Monday, December 16, 2013 11:51 AM
To: Dean Petrucelli
Cc: lcarrio@depaolimosaic.com
Subject: Crystal Lake Elementary School-Ellington, CT

Attn: Mr Dean Petrucelli
Would you consider an Alternate to your Alternate #4 on the above project? We would like to propose a beautiful Cast in Place Epoxy Terrazzo Floor in lieu of the Precast Terrazzo Tiles. We installed Epoxy Terrazzo Floors at the Putnam Vocational School in Springfield, MA and the East Hartford/Glastonbury Magnet School.
Thank you for your consideration.

Fred Morgan
DePaoli Mosaic Company
52 York Avenue
Randolph, MA 02368
fax 781-961-6596
cell 617-797-0519
fmorgan@depaolimosaic.com
www.depaolimosaic.com
WFMJr@aol.com
DePaoli Mosaic Company is a certified WBE/DBE.

RFI #7

R&R WINDOW CONTRACTORS, INC.

RFI - Request for Information

Project: Crystal Lake Elementary School **Date:** 12-16-13

To: Mr. Paul Jorgensen
Silver/Petrucelli + Associates, Inc.
3190 Whitney Ave, Bldg 2
Hamden, CT 06518
pjorgensen@silverpetrucelli.com

From: Steven Bushnik
R&R Window Contractors, Inc.
One Arthur Street
Easthampton, MA 01027
413-527-7500 x156
413-527-6380 FAX
sbushnik@rrwindow.com

Bid Package:

Description:

1. Specification 084113, 2.2.A and 2.5.A calls an 1-3/4" thick, Wide Stile Door. Detail N/A630 shows a Thermally Broken 2" Door. Please clarify which is correct. Specification is correct.
2. Specification 084113 and 084413 calls for a custom color 2 coat 70% Kynar in a 'manufacture's full range'. Is this to include exotics and metallics? No, exotics and metallics are not included.
3. Detail 1/A302 shows CW-C11.1. A622 shows CW-C11 as not used. Please clarify the proper call out for these openings. CW C11.1 on 1/A302 should be revised to CW C2C (frame elevated on A621).
4. Detail 2/A303 shows CW-C11. A622 shows CW-C11 as not used. A103 shows these as CW-C2B. Please clarify the proper call out for the openings CW C11 on 2/A303 should be revised to C2B. A103 is correct.
5. Detail 3/A303 shows CW-C11. A622 shows CW-C11 as not used. A103 shows these as CW-C2B. Please clarify the proper call out for the openings CW C11 on 3/A303 should be revised to C2B. A103 is correct.
6. Reference 1/A304 – Door C134B is shown in frame CW-C5. Frame is shown as CW-C6 on A103. Please clarify the proper call out for this opening. CW C5 at door C134B on 1/A304 should be revised to CW C6. A103 is correct.

P. Jorgensen
12.16.13

SR #1

larson® by Alucoil

Alucoil North America, LLC

Equal Material Approval Request

General Information

Project Name: Crystal Lake Elementary School

Bid Date: 01/08/14

Submitting To: Silver Petrucelli Architects
Architect/General Contractor

Hamden, CT
City & State

Paul Jorgensen
Contact Name (Project Manager)

Specified Item: Metal Composite Wall Panels

Section & Par: 074213 P2.2A2

Proposed Substitute: larson PE by Alucoil North America, Manning, SC

Reason for Substitution: larson by Alucoil ACM equal to specified products

Effects of Proposed Substitution

	YES	NO
Does Substitution affect dimensions indicated in the Contact Documents?	☐	☒
Does substitution affect work of other Specification Sections?	☐	☒
Does substitution require modifications to design, changes to Drawings, or revisions to specification to be in incorportated in the project?	☐	☒
Will substitution affect the construction schedule?	☐	☒
Are maintenance and service parts locally available for the proposed substitute?	☒	☐

If yes, explain: **Manufactured in Manning, SC for close proximity to any replacement needs. Product is sold through nationwide fabrication network for easy replacement.**

List ALL differences between proposed substitute and specified product/material:
larson PE/FR is an equal product in every way to MCM products specified. larson is produced in a continuous process using no glues or adhesives in the bonding process. The product meets all requirements for Class A flame spread and smoke developed by ASTM E-84. In addition, larson FR has passed the NFPA 285 test. The product is produced in Manning, SC USA. The core is Low Density Polyethylene (PE/FR), which is the same as the other MCM suppliers use and the finish is Kynar 500 by PPG with full 30 year warranty from PPG.

Submitted By:

The undersigned certifies/agrees:

- Same warranty/guarantee will be furnished for proposed substitute as for specified products? **YES**
- Same maintenance service and source for replacement parts, as applicable, is available? **YES**
- Building design changes, architect/engineer design changes, detailing and construction costs will not be affected by the proposed substitution? **NO**

Submitted By:

Firm: **Alucoil North America**

Address: **1976 Joe Rogers Jr. Blvd; Manning, SC 29102**

Contact: **Camille Knezevich** Job Title: **Project Developer**

Signature: *Camille Knezevich* Date: **12/05/13**

Email: **camille.knezevich@alucoilnorthamerica.com**

Office #: **803-505-6543** Mobile: **803-464-3418**

Reviewed for subcontractor of supplier by (GC or CM)

Firm:

Address:

Phone:

Email:

Signature:

Date:

Architect/Engineer's Review and Action

☒ **Accepted – Make submittals in accordance with Specification Performance Requirements**

☐ **Accepted as Noted Below**

☐ **Rejected – Use specified materials**

☐ **Received too Late – Use specified materials**

If accepted as noted, explain:

Remarks

Signature: **R. Bouchard** **Date:** **12.16.13**

Remarks:

Aluminum Composite Panels

Top Quality in ACM - Worldwide

larson®
by Alucoil®

Alucoil North America

Alucoil®
North America

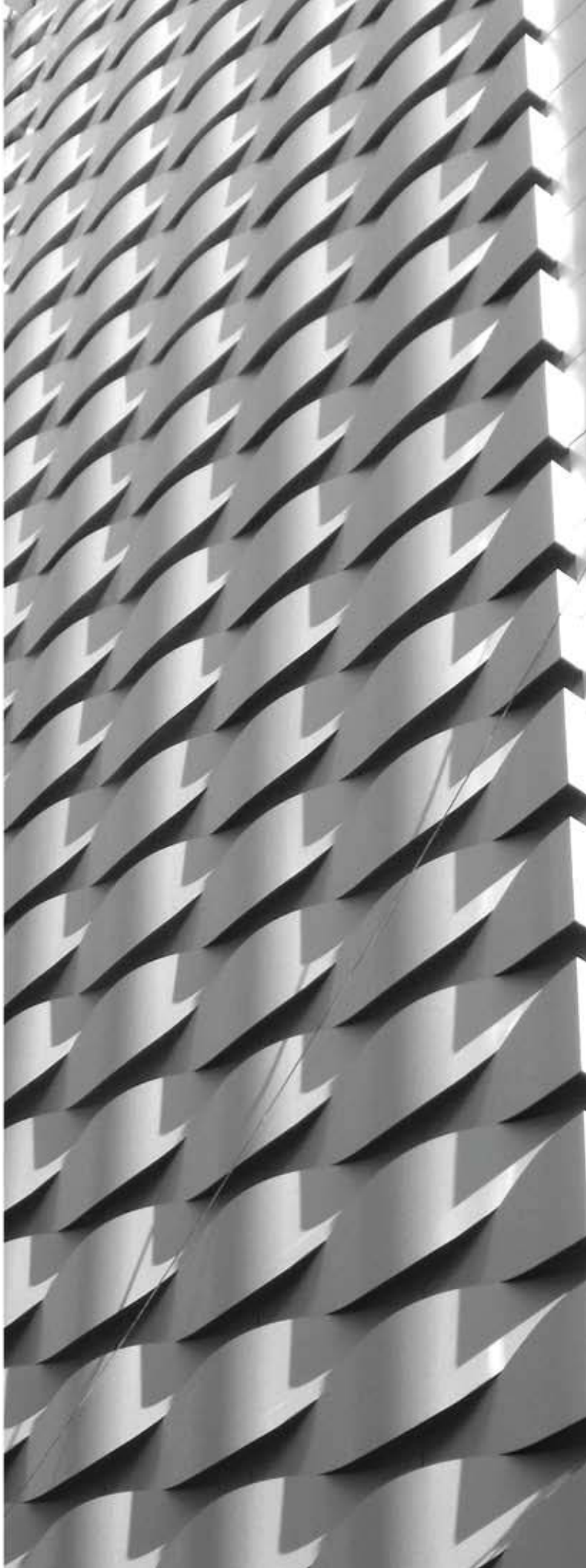
Alucoil North America is dedicated to the manufacturing of top quality aluminum composite panels (ACM) for building and construction applications such as wall cladding, signage, and corporate imaging design. Located in Manning, South Carolina USA, its 48,000 square foot facility boasts two continuous process manufacturing lines capable of producing both polyethylene (PE) and fire retardant (FR) core panels.

Alucoil North America in Manning, South Carolina USA

It is part of the **Alucoil** S.A. group of businesses - a top-tier manufacturer of high-tech aluminum products for building & construction, transportation, and industrial applications. Based in Miranda de Ebro, Spain, its 300,000 square foot facility possesses a diverse line of unique product and coating technologies that complement its core **larson by Alucoil®** ACM product line.

Schluter Project, Nevada USA

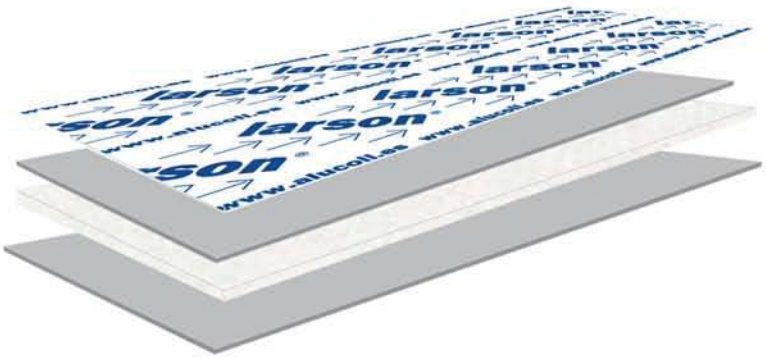
Alucoil is backed by the **Alibérico Group**, a privately held leader in the world of aluminum with over 1000 employees worldwide. Based in Spain, it is composed of 17 companies and 35 affiliates with exports to over 45 countries on 5 continents. It manufactures products for key aluminum sectors such as packaging, coil coating, transportation, building products, and many others. With US$300 million plus in annual sales, it transforms over 100,000 tons of aluminum annually.

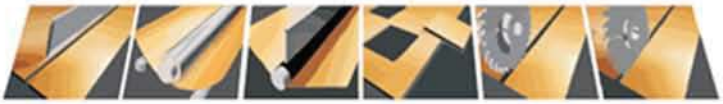


larson® by Alucoil®

Aluminum Composite Panels - ACM

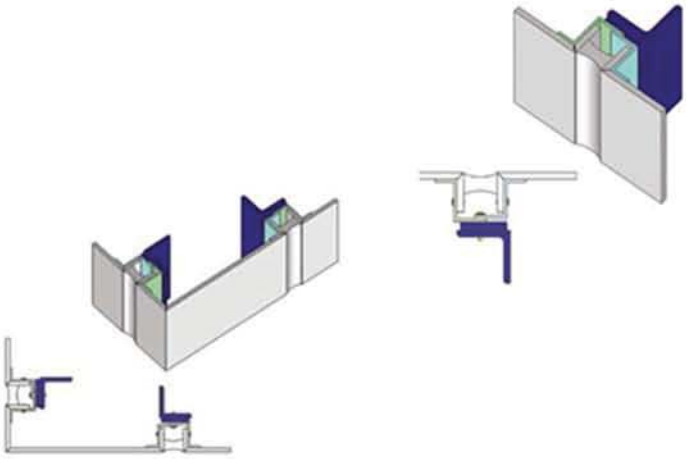
larson by Alucoil® ACM is a fully tested and certified, top quality architectural wall cladding panel providing the strength and flexibility required for the most demanding design criteria. Made in Manning, South Carolina USA, it is a continuous process manufactured ACM panel consisting of two sheets of coil coated 3105 H24 alloy aluminum bonded to either a polyethylene (PE) or a mineral filled Fire Retardant (FR) extruded core.





Applications

larson by Alucoil® ACM panels are fabricated and installed using a variety of techniques and systems common in the exterior wall cladding industry. Typically, panels are fabricated via rout & return and installed with wet-seal, dry-seal, rain-screen wall systems, or integrated into curtain wall systems.



larson® by Alucoil®

Premium Coil Coated Finishes

Powered by Duranar® 30-Year Exterior Coatings

larson by Alucoil® ACM is coil coated utilizing Duranar® coatings from PPG. Backed by a 30 year exterior performance warranty, these (PVdF) fluoropolymer paint finishes contain 70% Kynar 500®/ Hylar 5000® resins and are formulated to meet or exceed industry performance requisites such as AAMA 620.

25 Standard Architectural Colors

larson by Alucoil® ACM panels are available in 25 standard colors matched to a combination of popular ACM and steel foam panel colors – enabling greater flexibility in design choice.

The offering includes:

- 12 Solid, 2-coat finishes
- 7 Mica, 2-coat finishes
- 6 Metallic, 3-coat finishes
- 62" standard width for all standard colors
- 50" and 39.37"widths on select colors
- Finished panel inventory in key colors and sizes

Bright Vibrant Colors for Corporate ID and More

Alucoil North America has partnered with Beckers to provide high quality paint systems that deliver bright, vibrant colors in gloss ranges from 10% to 80%, as well as 2-coat and 3-coat metallic finishes. Performance warranties range from 10 to 20 years depending on specific color formulation – making them ideal for meeting the dynamic and demanding requirements of corporate branded colors which, when combined with the benefits of ACM, make building design part of projecting a strong brand and image.

Greater Flexibility in Custom Colors

With a 1,000 square foot minimum for custom color production orders, **larson by Alucoil®** takes a different approach to addressing a growing trend in the market. Available in 62", 50", and 39.37" widths, there are no hidden set up charges – just one price for the quantity required.

A Product Line Full of Possibilities

Alucoil S.A. in Spain is uniquely positioned to supply specialty composite products and finishes worldwide including:

larson wood®: 6 wood grain finishes coil coated with full strength Kynar 500®/ PVdf resin coating technology.

Colonial Red	Ahorn	Oak
Walnut	Wengé	Sunglow

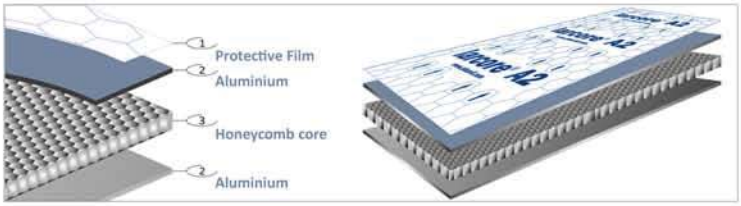
larson metals®:

Stainless Steel	Copper	Brass

larson specials®: Imitation zinc, slate, copper patina, color shifting paints, corten steel effect and exterior grade mirror finish.

Almirr®: Multilaminar Aluminium Mirror for solar energy applications.

larcore® A2: A continuous process manufactured, 100% aluminum honeycomb composite panel. It is available in a standard 1 inch thick configuration in standard or custom lengths - making it ideal as a spandrel in-fill panel between curtain wall mullions.



larcore® A2	Standard	Range
Width	62" (1575mm)	39.37" to 78.75" (1000mm to 2000mm)
Lengths	196" (4978mm)	59" to 432" (1.5 m to 11 m)
Skins	0.040"/0.040" (1mm / 1mm)	0.032" to 0.060" (0.7mm to 1.2mm)
Panel Thickness	1" (25.4mm)	5/16" to 13/16" (8mm to 30mm)
Painted Finish	PVdF both sides	Single or both sides

Comparing larcore® A2 10mm with other materials

Vs. ACM 4mm FR	Vs. 5mm Aluminum	Vs. 5mm Steel
✔ 100% Aluminum	✔ 70% Lighter	✔ 90% Lighter
✔ 50% Lighter	✔ 20% More rigid	✔ 10% More rigid
✔ 10x More rigid	✔ Less sub-structure	✔ Less sub-structure
✔ 78.75" / 2 meter widths	✔ Greater moment of inertia	✔ Greater moment of inertia

larson® by Alucoil®

Technical Information

Engineering Properties

Top Quality in ACM - Worldwide

#	PROPERTY	TEST	UNITS	4MM FR CORE	3MM LDPE CORE	4MM LDPE CORE	6MM LDPE CORE
1	Thickness	-	mm in	4.0 0.157	3.0 0.118	4.0 0.157	6.0 0.236
2	Weight	-	kg/m^2 lb/ft^2	7.18 1.47	4.55 0.93	5.47 1.12	7.32 1.5
3	Temperature Range	-	ºC ºF	-48 to +80 -55 to +175	-48 to +80 -55 to +175	-48 to +80 -55 to +175	-48 to +80 -55 to +175
4	Bond Strength	ASTM D1781	Nm/m in-lb/in	≥100 ≥22.5	≥100 ≥22.5	≥100 ≥22.5	≥100 ≥22.5
5	Coeficient of Expansion	Based on aluminium skins	mm/mm/ºC in/in/ºF	2.36×10^{-5} 1.31×10^{-5}	2.36×10^{-5} 1.31×10^{-5}	2.36×10^{-5} 1.31×10^{-5}	2.36×10^{-5} 1.31×10^{-5}
6	Core Density	ASTM D792	kg/m^3 lb/in^3	1500 5.42×10^{-2}	920 3.32×10^{-2}	920 3.32×10^{-2}	920 3.32×10^{-2}
7	Flame Spread Index	ASTM E84	-	Pass = Class A	Pass = Class A	Pass = Class A	Pass = Class A
8	Smoke Developed Index	ASTM E84	-	Pass = Class A	Pass = Class A	Pass = Class A	Pass = Class A
9	Intermediate Scale Multi-Story Test	NFPA 285	-	30 minutes passed	-	-	-
10	Interior Room Corner Burn	UL 1715	-	15 minutes passed	-	-	-
11	Fire Test of Building Construction & Materials	ASTM E119	-	1 hour passed	-	-	-
12	Flatwise Tensile Strength	ASTM C297	Mpa psi	-	-	-	6.17 894
13	Flexural Evaluation	ASTM D7249	Mpa psi	68,115 9.879×10^6	-	69,685 10.107×10^6	62,663 9.089×10^6
14	Metal Skin Specifications	ASTM B 209	-	3000 Series	3000 Series	3000 Series	3000 Series
15	Metal Skin Ultimate Tensile Strength	ASTM E8	Mpa ksi	≥159 ≥23	≥159 ≥23	≥159 ≥23	≥159 ≥23
16	Metal Skin Yield Strength	ASTM E8	Mpa ksi	≥131 ≥19	≥131 ≥19	≥131 ≥19	≥131 ≥19
17	Metal Skin Thickness	-	mm in	0.5 ± 0.05 Nominal 0.020	0.5 ± 0.05 Nominal 0.020	0.5 ± 0.05 Nominal 0.020	0.5 ± 0.05 Nominal 0.020
18	Metal Skin Finishes	-	-	70% PVdF	70% PVdF	70% PVdF	70% PVdF
19	Core Material Specifications	-	-	Polymer w/fire retardant filler	Polyethylene	Polyethylene	Polyethylene

Notes:

1. All testing and certifications are performed by accredited third party testing agencies.
2. Test information contained in the above chart is representative of **Alucoil North America, LLC** FR and PE ACM and is provided for technical evaluation purposes.

Technical Information

Top Quality in ACM - Worldwide

Paint Finish Availability

	Duranar®	Beckrytech 5001®	Beckrytech 2001®
Warranty	30 years	20 years	10 years
Resin Type	70% PVdF	Super Durable Polyester	Super Durable Polyester
Gloss Range	20% to 35%	25% to 50%	10% to 80%
Colors	Solids, Micas, Metallics	Solids, Metallics	Bright Colors, Solids, Metallics
Application	Architectural, all other	Architectural, Corporate ID	Corporate ID, Accent Colors

Product Availability

Core	PE - Polyethylene FR- Fire Retardant
Thicknesses	3mm (0.118 in.) 4mm (0.157 in.) 6 mm (0.236 in.)
Widths	39.37" (1000 mm) 50" (1270 mm) 62" (1575 mm)
Lengths	96" min. - 252" max. (2438mm - 6400mm)

Building Code Recognition

Intertek Design Listing	Consult website
Canada	CAN S102, CAN S134
Municipal	Florida Product Approval New York City Los Angeles Research Report

Please check our website for
up to date listings and approval reference numbers at:
www.alucoilnorthamerica.com

LEED (Leadership in Energy and Environmental Design)

larson by Alucoil® composite panels qualify for point awards under the LEED International Building Industry Certification Program. Complete information and calculations on our entire product line can be downloaded from our website at www.alucoilnorthamerica.com.

larson by Alucoil® 4mm PE ACM	% Weight	%Post Content	%Pre Content	TOTAL % Content
Aluminium Skin	50.02	12.5	65	45.0
Polyethylene Core	49.95	0	50	25.0
TOTAL	100.00	6.3	57.5	35.0

MR Credit 4: Recycled Content. One point is awarded if the sum of post-consumer recycled content plus one half of the pre-consumer content is at least 10%. If the same value is at least 20% as determined by the same method then 2 points are awarded.

Product Summary	Total Content (100% post + 50% Pre)	LEED Points
3 mm PE	37%	2 points
4 mm PE	35%	2 points
4 mm FR	17.3%	1 point
6 mm PE	32.5%	2 points

Aluminum Composite Panels

Top Quality in ACM - Worldwide

larson®
by Alucoil®

Alucoil North America, LLC
1976 Joe Rogers Jr. Blvd.
Manning, SC 29102 U.S.A.

Tel: 803-505-6543
Fax: 803-505-6549

Email: info@alucoilnorthamerica.com

www.alucoilnorthamerica.com

Edition 04.12

larson® by Alucoil

Technical Data Comparison

	larson® by Alucoil	Alpolic (by Mitsubishi)	Alucobond (by 3A composites)
Composition:			
Aluminum Skin	3105 H24	3105 H14	AA3000
Thickness	.020"	.020"	.020"
Core Material	Extruded LDPE	Extruded LDPE	Extruded LDPE
Thickness	.117"	.117"	.117"
Lamination Tie Layer	Heat Activated Film	Heat Activated Film	Heat Activated Film
Panel Weight (lbs/ft^2)	1.16	1.12	1.12
Core Density (lbs/ft^3)	54.5	57.4	65
Sizes:			
Standard Widths	50",62"	50",62"	50",62"
Standard Lengths	96",122",146",196"	96",122",146",196"	96",122",146",196"
Tolerances:			
Width	- 0 + .08"	+/- .08"	-0 + .188"
Length	-0 + .12"	+/- .16"	-0 + .375"
Thickness	+/- .008"	+/- .008"	+/- .008"
Squareness	.16"	.20"	.25"
Test Data:			
Minimum Peel Strength ASTM D1781 (in-lb/in)	>30.0	33.6	22.5
Coeff. of Thermal Expansion ASTM 696 (in/in/oF)	1.1 x 10-5	1.31 x 10-5	1.18 x 10-5
Insulating Value ASTM C518 (hr.ft2.oF/BTU)	0.14	0.09	0.049
Heat Deflection Temp D648 (oC)	196	232	260
Shear Through Resistance D732 (psi)	4502	4000	
Tensile Strength of Skin E8 (psi)	8100	6900	6180
Steiner Tunnel Test ASTM E84 Smoke <450, Flame <25	Passed Class A	Passed Class A	Passed Class A
Warranty:			
Panel Warranty (bonding)	10	10	5

30-YEAR LIMITED FINISH WARRANTY

Effective Date: **Insert Date**

To: **Owner's Name**
Address City, ZIP

This Limited Warranty ("Limited Warranty") applies to any Product shipped for the _____Project. Alucoil® North America, LLC ("Alucoil") warrants that the painted finish on the Product listed above will retain its Film integrity, Color and Chalk, as defined below, after the installation of the painted MCM consistent with the table attached hereto.

Definitions:

1. Film Integrity shall be defined as the absence of peeling, checking, chipping or cracking, except for such crazing or slight cracking as may occur on tightly rollformed edges or brake bends at the time of forming the pre-painted sheet.

2. Color Change shall be defined as freedom from fade or change as warranted in ΔE units calculated in accordance with ASTM D2244-02, paragraph 6.2.2 CIE L*a*b*, 10^0 Observer, specular included. Color Change is measured on an exposed painted surface that has been cleaned of surface soils and chalk and then compared to corresponding values measured on the original or unexposed coated surface.

3. Chalk or Oxidation shall be defined as a numerical rating as warranted when measured in accordance with the standard procedures specified in ASTM D4214-98.

THIS LIMITED WARRANTY IS SUBJECT TO THE FOLLOWING CONDITIONS AND LIMITATIONS. ALL OF THE FOLLOWING CONDITIONS AND ADDITIONAL CONDITIONS CONSTITUTE MATERIAL TERMS OF THIS LIMITED WARRANTY AND FAILURE TO SATISFY ANY ONE OR MORE ARE OF THE CONDITIONS OR ADDITIONAL CONDITIONS BY OWNER OR THEIR AGENTS OR REPRESENTATIVES SHALL RENDER THIS LIMITED WARRANTY NULL AND VOID AND RELEASE ALUCOIL FROM ITS OBLIGATIONS HEREUNDER.

Limitations:

1. Non-uniform color changes that result from unequal exposure to sunlight and/or the elements are not covered by this Limited Warranty unless such color change meets the definition of Color Change above.

2. This Limited Warranty does not extend to, or cover: (a) damage to the Product occasioned by improper storage of the coated MCM prior to installation or moisture or other contamination detrimental to the Product because of improper packaging, handling, shipping, processing and/or installation; or (b) damage to the Product which suffers from improper forming, fabrication, cut edge exposure, corrosion of the substrate or any other condition between the substrate and coating which causes coating degradation or delamination or (c) any external contaminant or condition which causes coating degradation or delamination.

3. This Limited Warranty does not cover damage or failure of Product which damage or failure is attributable to acts of God, falling objects, external forces, explosions, fire, or other such similar or dissimilar occurrences beyond Alucoil's control.
4. Owner's sole and exclusive remedy, and Alucoil's liability under this Limited Warranty will be limited, at Alucoil's option, to recoating or replacing the MCM with the Product claimed to be defective, including re-installation costs. Under no circumstances will Alucoil be held liable for any incidental, special, punitive or consequential damages.
5. Alucoil must approve any recoating of the Metal substrate through submission of three (3) estimates that each includes the name of the coating products to be used, labor and material costs as well as any other costs associated with the work for refinishing or replacing the metal substrate. Alucoil reserves the right to approve or negotiate the contract for such recoating or replacement work if the initial estimate is unacceptable to Alucoil. In no event will the original applicable warranty period set forth in the warranty table be extended by a warranty claim.
6. In the event of any subsequent failure of any recoated or replaced coated MCM, the Owner shall first make any claims against the supplier of those replacement materials.
7. The warranty for any refinished or replaced metal substrate shall be only for the remainder of the original warranty period applicable to the original coated metal substrate.
8. **EXCEPT AS EXPRESSLY PROVIDED ABOVE, IN NO EVENT SHALL ALUCOIL BE LIABLE UNDER ANY THEORY OF RECOVERY, WHETHER BASED ON NEGLIGENCE OF ANY KIND, STRICT LIABILITY OR TORT, FOR ANY DIRECT, INDIRECT, SPECIAL, PUNITIVE INCIDENTAL OR CONSEQUENTIAL DAMAGES IN ANY WAY ARISING OUT OF THE PURCHASE OF THE PRODUCT OR FROM ANY POSSESSION OR USE MADE OF A PRODUCT.**
9. This Limited Warranty is given solely to the Owner and is non-transferable and non-assignable.
10. The applicable warranty period shall be limited to, and shall in no event extend beyond, the warranty period as set forth in the warranty table.

EXCEPT AS SET FORTH HEREIN, ALUCOIL MAKES NO OTHER EXPRESS WARRANTIES AND DISCLAIMS ANY IMPLIED WARRANTIES, INCLUDING ANY IMPLIED WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE OR USE, WITH RESPECT TO ANY OF THE PRODUCTS.

Miscellaneous:

1. All notices given under or pursuant to this Agreement shall be in writing and documented in any of the following forms: personally delivered, via email, fax, or certified mail, postage prepaid, return receipt requested, to the party to whom such notice is to be given as follows:

Alucoil
Alucoil North America LLC
1976 Joe Rogers Jr Blvd
Manning, SC 29102
ATTN: Warranties Department

2. No terms or conditions other than those stated herein, and no agreement or understanding, oral or written, in any way purporting to modify this Limited Warranty shall be binding on Alucoil unless made in writing and signed by its authorized representative.
3. This Agreement shall be governed by and construed in accordance with the laws of the State of South Carolina, United States of America without giving effect to any choice of conflict of law provision or rule that would cause the application of the law of the jurisdiction other than South Carolina.

Alucoil®North America, LLC

Signature: _____
Samuel Chastain – Vice President & General Manager

Date: _____

WARRANTY TABLES

Warranty in years for all Exposure Conditions			
Type of Environment or Location	**Film Integrity (Years)**	**Color Δ E ≤ 5.0 (Years)**	**Chalking ≥ 8 Rating (Years)**
Residential, Commercial and School – Buildings used for habitation Distribution Centers, Hotels, Shopping Malls, Office Buildings Assembly Factories and Schools located in rural or residential areas	**30**	**30**	**30**
Industrial – Steel mills, Power Generating Stations, Oil Fields, Oil Refineries, Ore Mines, Chemical Plants, Paper Mills, or other unusual environmental exposure	**10**	**No Warranty**	**7**
Severe Marine – Less than one mile of salt water. *(Standard two coat system)*	**15**	**15**	**15**
Severe Marine – Less than one mile of salt water**.** **EXTENDED WARRANTY REQUIRES:** Thick film primer over steel, not required over aluminum Clear coat required over both aluminum and steel	**20**	**20**	**20**

THIS WARRANTY IS FOR PRODUCTS USED FOR TRIM AND SIDEWALL APPLICATIONS ONLY

THIS LIMITED WARRANTY APPLIES ONLY TO PRODUCTS SOLD BY ALUCOIL USED IN THE **CONTINENTAL UNITED STATES, ALASKA, CANADA, AND MEXICO** (HAWAII AND THE CARIBBEAN EXCLUDED) unless Alucoil specifically and in writing notifies the Customer otherwise prior to sale of the Product

Alucoil retains the right to determine the Environmental Location condition during a warranty investigation and may deem the specific warranty performance based on close proximity to one of the severe environmental conditions noted above.

This limited warranty is intended for use only for those applications shown above. Customer is required to consult with Alucoil **before** any installation takes place if this product is used for a different end use.

For the purpose of this Limited Warranty, Standard Colors use a group of pigments suitable for the majority of color matches. Some color requests cannot be formulated with durable pigments and will not carry the above mentioned warranty.

FOR ALL INDUSTRIAL APPLICATIONS - **Customer is required to consult with Alucoil before any installation takes place and Alucoil reserves the right to change the terms of this warranty** based on the findings of such environmental exposures and/or conditions.

FOR ALL SEVERE MARINE APPLICATIONS - Owner is required by Alucoil to perform annual maintenance of the building in the form of a sweet water rinse (tap water). Owner is required to keep records of such maintenance for the warranty to be enforceable.

SR #2

SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project CRYSTAL LAKE ELEMENTARY SCHOOL (EXPANSION/RENOVATION)

To: DEAN PETRUCELLI

Re: REQUEST FOR ALTERNATE PRODUCT

Substitution Request Number:

From **LEN ANASTASI /TAYLOR WARDELL-KERN**

Date: December 5, 2013

A/E Project Number 200800872741

Contract For:

Specification Title: FLUID-APPLIED MEMBRANE AIR BARRIER

Description: LIQUID SYNTHETIC RUBBER AIR/VAPOR BARRIER

Section 072726 Page: 3 Article/Paragraph P 2, 2.A

Proposed Substitution **AIR-SHIELD™ LSR LIQUID MEMBRANE AIR/VAPOR AND LIQUID MOISTURE BARRIER**

Manufacturer: W. R. MEADOWS Address: 300 Industrial Drive, Hampshire IL Phone: (781) 408-9040

Trade Name: SEALTIGHT Prod No.:

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.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- 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.

Submitted **LEN ANASTASI /TAYLOR WARDELL-KERN**

Signed by:

Firm: W.R. MEADOWS, INC.

Address: 300 INDUSTRIAL DRIVE, PO BOX 338

HAMPSHIRE, IL 60140

Telephone (781) 408-9040

☒ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
☐ Substitution rejected - Use specified materials.
☐ Substitution Request received too late - Use specified materials.

Signed by: R. BOUCHARD Date: 12.16.13

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ____ ☐

PRODUCT DATA

W. R. MEADOWS SEALTIGHT

MasterFormat: 07 27 26

NO. 724-C

JANUARY 2012

AIR-SHIELD™ LSR

Liquid Membrane Air/Vapor and Liquid Moisture Barrier

DESCRIPTION

AIR-SHIELD LSR (liquid synthetic rubber) is an asphalt-free, single-component, synthetic rubber based liquid air/vapor and liquid moisture barrier. AIR-SHIELD LSR cures to form a tough, seamless, elastomeric membrane, which exhibits excellent resistance to air and moisture transmission.

USES

AIR-SHIELD LSR has been specifically formulated to act as an air/vapor and liquid moisture barrier within the building envelope. It may be applied to most common surfaces and integrated into various wall systems. AIR-SHIELD LSR is suitable for both new construction and restoration.

FEATURES/BENEFITS

- Non-asphaltic – designed to meet stringent fire wall codes and requirements.
- Low permeability - prevents the transmission of air and inhibits moisture and vapor from passing through porous building materials.
- Highly flexible - bridges cracks, which may form in the substrate.
- Environmentally compatible - AIR-SHIELD LSR is non-toxic.
- User friendly – single-component, water-based technology allows for simple, safe application and easy cleanup.
- Liquid applied - simplifies detailing and assures a monolithic, seamless membrane when applied to a rough or smooth surface.
- Sprayable - with appropriately configured airless spray equipment - low application costs.
- Excellent adhesion - remains firmly bonded to the substrate, even when applied over damp surfaces.
- Low VOC content (<100 g/L). Produces no harmful odors.
- Compatible with asphalt-based emulsion products.
- UV resistant – membrane can be left exposed up to four months.

PACKAGING

5 Gallon (18.93 L) Pails
55 Gallon (208.20 L) Drums

COVERAGE

Application Rate	17-22 ft.^{2}/gal. (1.59 – 2.05 m^2/3.8 L)
Wet Film Thickness	80 mil
Cured Film Thickness	40 mil (1 mm)

Coverage dependant on substrate type, weather, and application conditions.

SHELF LIFE

One year in unopened container. Do not store in temperatures over 90° F (32° C) or below 40° F (4° C).

SPECIFICATIONS

- Complies with all current federal, state, and local maximum allowable VOC requirements, including U.S. EPA, LADCO, SCAQMD, and OTC.
- Complies with Canada VOC Concentration Limits for Architectural Coatings Regulations

TECHNICAL DATA

Solids Content, %:	56
Color:	Light Tan
Flexibility @ -26° C (-15° F), (ASTM C 836):	PASS
Tensile Strength, PSI	250
Elongation (ASTM D 412), %:	700
Water Vapor Permeance (ASTM E 96, Procedure B) Perms:	0.1
Service Temperature:	Not to exceed 175° F (80° C)
Nail Sealability (ASTM D 1970):	Pass
Storage and Application Temperature of AIR-SHIELD LSR For Roller Application: For Spray Application:	 40 - 90° F (4 - 32° C) 60 - 90° F (16 - 32° C)
Air/Substrate Temperature (At Time of Application):	> 40° F (4° C)

Air Leakage

Test Method	**ASTM E 2178-01**
Pressure:	75 Pa (1.57 lb/ft.^{2})
ABAA Requirements, maximum:	0.004 cfm/ft.^{2} (0.02 L/S/M^2)
AIR-SHIELD LSR Results:	<0.004 cfm/ft.^{2} (0.02 L/S/M^2)

*Independent test available upon request

CONTINUED ON REVERSE SIDE…

W. R. MEADOWS, INC.
P.O. Box 338 • HAMPSHIRE, IL 60140-0338
Phone: 847/214-2100 • Fax: 847/683-4544
1-800-342-5976
www.wrmeadows.com

HAMPSHIRE, IL /CARTERSVILLE, GA /YORK, PA
FORT WORTH, TX /BENICIA, CA /POMONA, CA
GOODYEAR, AZ / MILTON, ON /ST. ALBERT, AB

APPLICATION

Surface Preparation … All surfaces must be clean (free of all coatings and curing compounds), structurally sound, and relatively smooth. Prepare substrate per manufacturer's instruction prior to application of membrane.

Exterior Sheathing Panels … Exterior sheathing panels are to be installed and fastened per manufacturer's recommendation. Joints <1/4" should be filled with AIR-SHIELD JOINT FILLER in order for the material to create a continuous film when applied. Joints >1/4" in exterior sheathing panels (drywall and glass-faced) should be filled with AIR-SHIELD JOINT FILLER and then covered with 3" (76.2 mm) wide REINFORCING FABRIC HCR from W. R. MEADOWS. For optimum performance, REINFORCING FABRIC HCR and AIR-SHIELD JOINT FILLER should be utilized on all joints. For plywood and oriented strand board (OSB), use AIR-SHIELD self-adhesive membrane over all joints.

Details and Protrusions … Before application of AIR-SHIELD LSR, apply a 6" (152 mm) minimum wide strip [lapped 3" (76 mm) on each side] of AIR-SHIELD self-adhering air/vapor and liquid moisture barrier where joints between dissimilar building materials occur, i.e. details around doors and windows, as well as protrusions.

Concrete Masonry Units … Before applying AIR-SHIELD LSR to CMU surfaces, patch all cracks, protrusions, small voids, offsets, details, irregularities, and small deformities with MEADOW-PATCH® 5 or MEADOW-PATCH 20 from W. R. MEADOWS at least two hours before application.

Application Method … AIR-SHIELD LSR may be applied by spraying or a 3/4" minimum nap roller. (For recommendations on spray equipment, consult W. R. MEADOWS technical staff.)

AIR-SHIELD LSR may be sprayed on at the minimum coverage rate of approximately 17-22 ft.^{2}/gal. (80 mils wet) (40 mils dry). Note: For roller applications or during periods of extremely hot weather, two coats (40 mils wet) may be necessary if the material begins to slump. Apply second coat after first coat has completely dried, approximately one to two hours after first coat. Frequently inspect surface area with a wet mil gauge to ensure consistent thickness. Work material well into any fluted rib forming indentations. Porous masonry block walls may require additional coats to obtain desired thickness.

Curing and Drying ... Allow material to dry at air and surface temperatures of 40° F (4° C) or higher. Curing times will be affected by relative humidity, temperature and airflow. The following times are given for average conditions and standard thicknesses. Actual times may differ, depending on specific conditions present on job at time of application. It is recommended that AIR-SHIELD LSR be allowed to air dry to a tack-free film before application of specified insulation. Maximum exposure time for AIR-SHIELD LSR is four months.

Tack-free film: 2 hours
Full cure: 48 hours

Cleanup … Uncured AIR-SHIELD LSR cleans up easily while wet with water. Cured material is best removed by xylene (xylol) or by mechanical means.

PRECAUTIONS

AIR-SHIELD LSR is not designed to perform as a permanently exposed membrane. Maximum UV exposure period for membrane is four months. Keep containers tightly sealed. KEEP FROM FREEZING. Do not apply AIR-SHIELD LSR if rainfall is forecast within 12 hours. Do not apply AIR-SHIELD LSR when air, material, and surface temperatures are expected to fall below 32º F (0º C) within 24 hours of completed application.

TECHNICAL ASSISTANCE

Please contact W. R. MEADOWS for specific details and/or data not outlined in this literature. Technical assistance, from design to product application, is available upon request.

LEED INFORMATION

May help contribute to LEED credits:

- EA Credit 1: Optimize Energy Performance
- IEQ Credit 3.1: Construction IAQ Management Plan: During Construction
- IEQ Credit 7.1: Thermal Comfort - Design
- MR Credit 2: Construction Waste Management
- MR Credit 5: Regional Materials

For most recent data sheet, further LEED information, and MSDS, visit www.wrmeadows.com.

GreenLine® Environmentally Responsible Products for Concrete Performance

LIMITED WARRANTY

W. R. MEADOWS, INC. warrants at the time and place we make shipment, our material will be of good quality and will conform with our published specifications in force on the date of acceptance of the order. Read complete warranty. Copy furnished upon request.

Disclaimer

The information contained herein is included for illustrative purposes only, and to the best of our knowledge, is accurate and reliable. W. R. MEADOWS, INC. cannot however under any circumstances make any guarantee of results or assume any obligation or liability in connection with the use of this information. As W. R. MEADOWS, INC. has no control over the use to which others may put its product, it is recommended that the products be tested to determine if suitable for specific application and/or our information is valid in a particular circumstance. Responsibility remains with the architect or engineer, contractor and owner for the design, application and proper installation of each product. Specifier and user shall determine the suitability of products for specific application and assume all responsibilities in connection therewith.

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SR #3

Rebecca Bouchard

From: Rebecca Bouchard
Sent: Monday, December 16, 2013 12:20 PM
To: 'danm@elitefence.com'
Subject: RE: Crystal Lake Elementary School (Expansion/Renovation)

Good afternoon Dan.
Your product has been accepted as noted for this project.
Please see the Civil Engineer's response below.
Thank you.

Rebecca Bouchard, CSI, CDT
Intern Architect

www.silverpetrucelli.com

SILVER / PETRUCELLI + ASSOCIATES
Architects/Engineers/Interior Designers

3190 Whitney Avenue Bldg 2
Hamden, Connecticut 06518
P: 203-230-9007 ext. 202
F: 203-230-8247
S/P+A is a member of the U.S. Green Building Council

From: Walter, William G. [mailto:wwalter@bscgroup.com]
Sent: Wednesday, December 11, 2013 9:48 AM
To: David Stein
Cc: Paul Jorgensen; Rebecca Bouchard
Subject: RE: Crystal Lake Elementary School (Expansion/Renovation)

Dave/Paul – Heavy industrial aluminum fence is acceptable as a substitute for steel tubing provided it meets AAMA 2603, AAMA 2604 and ASTM B85.

Will Walter, PE, LEED AP | Manager of Civil Engineering

BSC Group
180 Glastonbury Boulevard | Glastonbury | CT 06033
main | 860-652-8227 EXT 4548
direct | 617-896-4548
cell | 860-818-1399

Begin forwarded message:

From: "Daniel Mongello" <DanM@elitefence.com>
To: "Dean Petrucelli" <dpetrucelli@silverpetrucelli.com>
Subject: Crystal Lake Elementary School (Expansion/Renovation)

Dean,
I am contacting you in regards to the following project. I have reviewed the "Decorative Fence"

specifications and noticed it calls out for an industrial steel product to be installed. There is no listed supplier for this project so I was reaching out to in an effort you would consider a heavy industrial aluminum fence that meets the same requirements listed in the specifications.
Our product meets and exceeds all of the AAMA and ASTM guidelines and all of our powder coated material carries a lifetime warranty as well. Our fence panels come pre-assembled and care packaged compared to the specified product which is unassembled and accrues labor for assembly. I believe we can provide a high quality product that would work great with this application and we would be able to show a significant cost savings as well. I have attached some of our product data for your review in case this is something you would consider.
Any feedback you can provide would be greatly appreciated,

Best Regards,
Dan Mongello
Specification Writer
Elite Fence Products Inc.
50925 Richard W Blvd., Chesterfield Twp., MI 48051
T (800) 783-1331, P (586) 468-4448, F (586) 468-4884,
C (410) 926-6382
danm@elitefence.com
www.elitefence.com<http://www.elitefence.com/>

AMERICAN ARCHITECTURAL MANUFACTURERS ASSO

	Test Parameter	AAMA 2603 (Competition)	AAMA 2604 (Elite Fence Products)
Pretreatment Requirements	Metal Preparation and Pretreatment	Multi-Stage Cleaning and Pretreatment	Multi-Stage Cleaning and Pretreatment
	Pretreatment Type	Chemical Conversion Coating	Chrome or Non-Chrome Chemical Conversion Coating
	Pretreatment Coating Weight	None Specified	Chrome @ 30 mg/ft2 Minimum; Non-Chrome Per Supplier's Specs.
Paint Film Requirements	Dry Film Thickness	0.8 Mills Min.	2 Mills (for Multi-Coat, 2.0 mil Topcoat Min & 0.3 +/-0.1 mil Primer)
	Sealant Compatibility	Meets AAMA 800	Meets AAMA 800
	Specular Gloss	+/- 5 Units of Specification (High = 80+, Medium = 20-79, Low 19 -)	+/- 5 Units of Specification (High = 80+, Medium = 20-79, Low 19
	Dry Film Hardness	H Minimum	F Minimum
Chemical	Dry Adhesion	0% Failure (No Loss)	0% Failure (No Loss)

Resistance Requirements	Wet Adhesion	0% Failure (No Loss)	0% Failure (No Loss)
	Boiling Water Adhesion	None Specified	0% Failure (No Loss)
	Impact Resistance	No Removal of Film from Substrate	No Removal of Film from Substrate
	Abrasion Resistance	None Specified	Abrasion Coefficient value = 20 Min
Chemical Resistance Requirements	Muriatic Acid Resistance	15 Minute Exposure, No Blistering or Visual Change for AAMA 2603, 2604, 2605	
	Mortar Resistance	24 Hour Exposure: No Loss of Film Adhesion or Visual Change for AAMA 2603, 2604, 2605	
	Nitric Acid Resistance	None Specified	30 Minute Exposure: 5 Delta E (Hunter) Maximum Color Change
	Detergent Resistance	72 Hour Exposure: No Loss of Film Adhesion No Blistering or No Significant Visual Change for AAMA 2603, 2604, 2605	
	Window Cleaner Resistance	None Specified	24 Hour Exposure: No Blistering or Visual Change
Corrosion Resistance Requirements	Humidity Resistance	1500 Hours: No More Than "Few" Blisters Size 8, Figure # 4 (ASTM D 714)	3000 Hours: No More Than "Few" Blisters Size 8, Figure # 4 (ASTM D 714)

	Salt Spray Resistance	1500 Hours of Salt Solution: Minimum Rating of 7 on Scribe or Cut Edges; Minimum Blister Rating of 8 In the Field (ASTM D 1654)	3000 Hours of Salt Solution: Minimum Rating of 7 on Scribe or Cut Edges; Minimum Blister Rating of 8 In the Field (ASTM D 1654)
Weathering Resistance Requirements	Accelerated Exposure	1000 Hours In Atlas Type "XW" Weatherometer: No Adhesion Loss; Slight Chalking or Color Change	None Specified
	Outdoor Exposure	1 Year South Florida No Adhesion Loss; Slight Chalking or Fading	5 Years South Florida: 5 Delta E (Hunter) Maximum Color Change; Chalking ≤ 8 (ASTM D 4214); Gloss Retention ≥ 30% Erosion Resistance < 10% Film Loss

Buy American, Be America

ELITE
FENCE PRODUCTS, INC.

LIMITED LIFETIME WARRANTY

Elite Fence Products, Inc. (Elite) warrants to the original purchaser of the Elite Fence (the "Fence") that the Fence will be free from defects in material and workmanship for as long as the original purchaser owns the Fence. Elite also warrants to the original purchaser that the Fence's paint finish will not crack, chip or peel for as long as the original purchaser owns the Fence. This warranty does not extend to damage caused by use other than the normal use for which the Fence is intended, negligence, alteration, accident, improper installation, abuse, misuse, vandalism, extreme environmental conditions, or acts of God.

All claims for a breach of this warranty shall be submitted to Elite in writing specifically describing the nature of the breach, together with a photograph of the defective portion of the Fence and a copy of the original retail bill of sale. Elite reserves the right to inspect the defective portion at Elite's factory to determine if the claim is valid. If the claim is valid, Elite shall at its discretion, either repair or replace the defective portion of the Fence. However, all removal, shipping and reinstallation costs are the sole responsibility of the purchaser. Material must not be returned to the factory without prior written authorization from Elite.

The above sets forth Elite's complete warrant and the exclusive remedies against Elite with respect to the Fence. **NO ADDITIONAL WARRANTIES ARE GIVEN, EXPRESSLY, STATUTORY OR IMPLIED, ANY IMPLIED WARRANTY OF MERCHANTIBILITY OR FITNESS FOR A PARTICULAR PURPOSE IS HEREBY EXPRESSLY DISCLAIMED.** Elite shall not in any event be responsible for consequential, personal injury or incidental damages. No person or entity is authorized to change, modify or supplement this warranty, and any such attempt and any other written or implied agreement shall not be valid as against Elite.

This warranty extends only to the original purchaser of the Fence, is not transferable and is void unless the attached registration card is completed and returned to Elite, along with dated proof of purchase within thirty (30) days of the purchase of the Fence. In addition, if the purchaser of the Fence is other than a natural person, (ie. corporation, L.L.C.or similar) this warranty shall terminate twenty-five (25) years after the date of purchase of the Fence, notwithstanding anything else herein.

This warranty gives the purchaser specific legal rights. The purchaser may also have other rights which vary from state to state. Also, some of the limitations set forth above may not be allowed in certain states and therefore may not apply to particular purchasers.

ELITE FENCE PRODUCTS, INC.

25551 JOY BOULEVARD, HARRISON TOWNSHIP, MI 48045 (586) 468-4448

© 2008-EliteFence Products, Inc

Complete and return to: Elite Fence Products, Inc. 25551 Joy Blvd, Harrison Twp, Mi

Name:_____

Address:_____

Installing Contractor: Invalid Sample Only

Date of Installation:_____

SR #4

Advancement of Construction Technology

SUBSTITUTION REQUEST
(During the Bidding Phase)

Project: Crystal Lake Elementary School

Substitution Request Number:

From: BASF Wall Systems

To: Silver Petrucelli & Associates

Date: 12/10/2013

A/E Project Number:

Re:

Contract For:

Specification Title: Fluid Applied Membrane Air Barrier

Description:

Section: 072726 Page: 3

Article/Paragraph: 2.3-2C

Proposed Substitution: Enershield-I

Manufacturer: BASF Address: 3550 St John's Bluff , Jacksonville, Fl Phone: 904-996-6074

Trade Name: Model No.:

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.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- 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. BASF must first approve any additional charges

Submitted by: John Walker

Signed by:

Firm: BASF Wall Systems

Address: 3550 St John's Bluff Rd South, Jacksonville, Fl 32224

Telephone: 904-996-6074

A/E's REVIEW AND ACTION

☐ Substitution approved - Make submittals in accordance with Specification Section 012500

☒ Substitution approved as noted - Make submittals in accordance with Specification Section 012500

☐ Substitution rejected - Use specified materials.

☐ Substitution Request received too late - Use specified materials.

Block filler must be used in order to provide a full 40 mil thickness.
R. Bouchard 12.16.13

Supporting Data Attached: ☐ Drawings ☒ Product Data ☐ Samples ☒ Tests ☐ Reports ☐

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99 Canal Center Plaza, Suite 300 Alexandria, VA 22314

Side by Side Comparison of Specified Vs. Enershield-I

Physical Properties	Test Method	BASF Enershield-I	Grace Perm-A-Barrier Liquid	RPC - Rub-R-Wall Airtight	Henry Air Bloc 06
Application Type		**Fluid-Applied -- spray, roller, brush or trowel. Back rolling possible**	Fluid-Applied	Fluid-Applied	Fluid-Applied
Air Leakage of Air Barrier Assemblies	ASTM E2357	**0.0007 l/sm2 @ 75 Pa Positive/post conditioning**	<.0008 cfm/ft2 (<0.004 L/s.m2)	Not Reported	
Air Permeance of Building Materials	ASTM E2178	**0.00098 cfm/ft2 (0.0049 L/sm2)**	<.0002 cfm/ft2	.Not Reported	0.000023 CFM/ft2
Rate of Air Leakage	ASTM E 283	**0.0037 cfm/ft2 (0.0185 L/sm2)**		0.0004 cfm/ft2 on block/drywall	
Water Vapor Transmission	ASTM E 96	**0.09 Perms**	.08 Perms	.08 perms	.02 perms
Pull-off Strenth of Coatings	ASTM D 4541	**Pass**	Pass	Not Reported	
Nominal Wet Film Thickness on Sheathing	C1177	**26 Mils**	60 Mils	60-80 mils	90 Mils
Nail Sealability (without Sheathing Fabric)	ASTM D 1970	**Pass**	Unaffected	Not Reported	
Flame Spread	ASTM E 84	**15 (class 1)**	Not Reported	Not Reported	Burns
Acceptance for Flexible Flashing Materials	ICC-E AC 148	**Pass - Single Component System**	Requires Separate Component - Detail Membrane	Not Reported	Requires Separate Component - Detail Membrane
Maximum exposure period		**180 days**	60 days	30 days	Cover ASAP
Cure Time		**2-10 Hours (depending on ambient conditions)**	3 days	1 hour	48 Hours
ABAA Approved		**Yes**	Yes	No	No
LEED IEQ 4.2 - VOC Content		**11 g/L**	75 g/l	Not Reported	370
Single Component		**Yes**	No	Not Reported	yes
Warrranty		**Manufacturer's minimum 5-year Limited Materials warranty**	Not published	Limited Warranty	Limited Warranty

The Wall Systems business of BASF Corporation - has made every effort to provide accurate, complete, usable, and timely information. However, with a wide variety of products available from various manufacturers, we cannot guarantee that there will be no errors or omissions. If an error or omission is found please forward the correct information to BASF Wall Systems Technical Service Department.

Product Bulletin

Enershield®-I

Air/Water-Resistive Barrier Membrane

Class 1 Vapor Retarder

BASF
The Chemical Company

Enershield®-I

DESCRIPTION

ENERSHIELD-I is a one-component fluid-applied air/water-resistive barrier that can also function as a Class I vapor retarder[1]. This water-resistant, resilient membrane may be spray-, roller-, or brush-applied directly to approved above grade wall substrates. It provides excellent secondary moisture protection behind most wall claddings including brick, siding, metal panels, EIFS and stucco. A slipsheet is required for stucco claddings. **Do not use ENERSHIELD-I for below-grade applications or on surfaces subject to water immersion.**

USES

For use over the following exterior wall substrates:
Poured concrete/unit masonry, ASTM C1177 type sheathings, including DensGlass™ exterior sheathing, e²XP™ sheathing, GlasRoc® sheathing, Securock™ glass-mat sheathing, Weather Defense™ Platinum sheathing, GreenGlass® sheathing, PermaBase™ cement-board by National Gypsum and other cement-boards (ASTM C1325 Type A Exterior), Untreated Exposure I or exterior plywood sheathing (grade C-D or better), Untreated Exposure I OSB, gypsum sheathing (ASTM C79/ASTM C1396).

PACKAGING

27.2 kg per 19-liter pail (60 lbs per 5-gallon pail)
4" SHEATHING FABRIC: 101.5 mm x 54.8 m (4" x 180 ft) roll
6" SHEATHING FABRIC: 152.4 mm x 54.8 m (6" x 180 ft) roll
9" SHEATHING FABRIC: 228.5 mm x 54.8 m (9" x 180 ft) roll

COLOR

Reddish Brown

COVERAGE*

Substrate

Over ASTM C1177 Type Sheathing
27 m² (290 ft²) per pail
Over Cement Board
27 m² (290 ft²) per pail
Over Plywood**
24 m² (265 ft²) per pail
Over Oriented Strand Board (OSB)**
24 m² (265 ft²) per pail
Over Concrete Masonry Units (CMU)**
21 m² (230 ft²) per pail
Over Poured Concrete
27 m² (290 ft²) per pail

Embed Sheathing Fabric

4" Sheathing Fabric
192 m (630 ft) per pail
6" Sheathing Fabric
128 m (420 ft) per pail
9" Sheathing Fabric
85 m (280 ft) per pail

* Spray Application. Actual results may vary depending on surface porosity, moisture uptake, application and other factors.

** Spray and backroll for optimum coverage rate. Other application methods may provide less coverage. For CMU, coverage assumes use of low porosity block.

Note:
SHEATHING FABRIC saturated with ENERSHIELD-I, when applied per manufacturer instructions, self gauges to a 30-40 mil thickness.

ENERSHIELD-I complies with the air barrier requirements of the Massachusetts State Energy Code.

Features	Benefits
ICC-ESR 3310 evaluation report	Confirms compliance with ICC-ES AC 212 and ICC-ES AC148
ABAA certified	Approved for projects requiring ABAA specifications and quality assurance
<1% of allowable air leakage per ASTM E2357 Air Leakage of Building Assemblies test	Easily meets air tightness requirements defined by ASHRAE 189.1, ASHRAE 90.1 and ABAA
Meets ASTM D1970 nail sealability requirements with and without Sheathing Fabric	Self sealing performance
One component, low-VOC formulation	Easy to apply, meets VOC requirements in all 50 states
TF Membrane accessory	Seamless membrane at expansion joints and transitions to roof and foundation, and across dissimilar substrates
Nonflammable as applied	Workplace safety
Mineral oil and plasticizer free	Will not dry out or crack due to loss of oil / plasticizer over time
Water based	Cleans up with water; solvent and citrus based cleaners not required
Tough, abrasion resistant	Rugged membrane resists damage after installation
Approved for use with BASF EIFS and stucco systems	Full system warranty, seamless membrane for buildings with multiple claddings
Low temperature performance with LT Additive	Extends minimum application temperature to 4˚ C (25˚ F)
180 day outdoor exposure rating	Flexible construction scheduling

Solids *74% solids.* **VOC Content** *21 g/l, or 0.17 lbs/gal less water and exempt solvents per ASTM D2369 (based in part on EPA method 24).*

Notes
1. Based on 2012 IBC definitions

TEST RESULTS

TEST	RESULT
Air Leakage of Air Barrier Assemblies ASTM E 2357	0.0007 l/s·m² (0.0001 cfm/ft²) @ 75 Pa (1.57 psf) positive / post conditioning 0.0014 l/s·m² (0.0003 cfm/ft²) @ 75 Pa (1.57 psf) negative / post conditioning
Air Permeance of Building Materials ASTM E 2178	0.0049 l/s·m² @ 75 Pa (0.00098 cfm/ft² @ 1.57 psf)
Rate of Air Leakage ASTM E 283	0.0185 l/s·m² @ 75 Pa (0.0037 cfm/ft² @ 1.57 psf)
Water Vapor Transmission ASTM E 96 Method A	0.09 Perms (grains/Hr. in Hg. ft²) @ 26 mils wet film thickness 0.18 Perms (grains/Hr. in Hg. ft²) @ 10 mils wet film thickness
Pull-Off Strength of Coatings ASTM D 4541	Pass - Min. 110 kPa (15.9 psi) or substrate failure (Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood; pvc and galvanized flashing)
Nail Sealability (without Sheathing Fabric) ASTM D 1970	Pass - No water penetration at galvanized roofing nail penetration under 127 mm (5") head of water after 3 days at 4° C (40° F)
Compound Stability (Elevated Temperature) ASTM D 5147 Section 15	No flowing, dripping or drop formation up to 177° C (350° F).
Surface Burning ASTM E 84	Class A Flame Spread (<25) Class A Smoke Developed Spread (<450)
Multi-Story Fire Tests NFPA 285	Passed using several wall designs. Engineering analyses available upon request.
Resistance to Fungal Defacement ASTM D 5590	Pass
ICC-ES AC 212 Acceptance Criteria for Water-Resistive Coatings used as Water-Resistive Barriers over Exterior Sheathing	
Sequential Testing - Structural, Racking, Restrained Environmental Conditioning and Water Penetration	
1. **Structural:** ASTM E 1233 Procedure A	No cracking at joints or interface of flashing
2. **Racking:** ASTM E 72	No cracking at joints or interface of flashing
3. **Restrained Environmental Conditioning:** ICC-ES AC 212	No cracking at joints or interface of flashing
4. **Water Penetration :** ASTM E 331	No water penetration after 90 min @ 299 Pa (6.24 psf) Tested over OSB and gypsum sheathing
Sequential Testing - Weathering	
1. **UV Light Exposure:** ICC-ES AC 212	No cracking or bond failure to substrate
2. **Accelerated Aging:** ICC-ES AC 212	No cracking or bond failure to substrate
3. **Hydrostatic Pressure Test:** AATCC 127-1985	No water penetration
Freeze-Thaw ASTM E 2485 (Method B)	No sign of deleterious effects after 10 cycles (Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood)
Water Resistance ASTM D 2247	No sign of deleterious effects after 14 day exposure (Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood)
Tensile Bond ASTM C 297	>103 kPa (15 psi) Tested over exterior gypsum sheathing, ASTM C1177 glass-mat sheathing, cement board, OSB, plywood, CMU; pvc and galvanized flashing
Tensile Bond (before & after freeze-thaw) ASTM C 297	>103 kPa (15 psi) avg; no failure of the lamina after 10 cycles freeze-thaw (Tested over various substrates)

TEST RESULTS

ICC-ES AC 148 Acceptance Criteria for Flexible Flashing Materials	
Sequential Testing - Weathering	
1. **UV Light Exposure:** ICC-ES AC 148	No cracking or bond failure to substrate
2. **Accelerated Aging:** ICC-ES AC 148	No cracking or bond failure to substrate
3. **Hydrostatic Pressure Test:** AATCC 127-1985	No water penetration
Peel Adhesion ASTM D 3330 Method F	Tested over ASTM C1177 glass-mat sheathing, OSB, plywood, pvc and uncoated aluminum
After UV Exposure	Pass
After Accelerated Aging	Pass
After Elevated Temperature Exposure	Pass
After Water Immersion	Pass
Nail Sealability after Thermal Cycling ASTM D 1970 (Modified), AAMA 711	Pass
Tensile Strength after UV Exposure ASTM D 5034, AAMA 711	All samples meet the minimum requirement of 3.5 N/mm (20 lbs/in)
Cold Temperature Pliability ASTM D 1970, AAMA 711	No cracking after bending around a 25 mm (1”) mandrel after 2 hour exposure to -18° C (0° F)
Resistance to Peeling AAMA 711	No signs of distress or failure after 24 hours of exposure at room temperature, 50° C (122° F), 65° C (149° F), 80° C (176° F)

MIXING

1. Use directly from original packaging or prepare in a container that is clean and free of foreign substances. Do not use a container which has contained or been cleaned with a petroleum-based product.
2. Mix ENERSHIELD-I with a clean, rust-free paddle and drill until thoroughly blended. Dilution of Enershield-I is not recommended.
3. Additives are not permitted.
4. Close container when not in use.
5. Clean tools and equipment with water immediately after use. Dried material can only be removed mechanically.

APPLICATION

Job Conditions

To apply ENERSHIELD-I at ambient temperatures below 4°C (40°F) but greater than -4°C (25°F), thoroughly blend 1 full quart container of LT ADDITIVE with one full 5-gallon pail of ENERSHIELD-I. When using LT ADDITIVE, extended drying time can be expected. Do not apply ENERSHIELD-I to frozen or frost-laden substrates.

Do not apply ENERSHIELD-I in ambient temperatures below 4°C (40°F) or onto substrates below 4°C (40°F) unless LT ADDITIVE is used.

Limit the weather exposure of ENERSHIELD-I to a maximum of 180 days.

Surface Preparation

Substrate shall be dry, clean, sound and free of release agents, paint or other residue or coatings. Unsatisfactory conditions shall be reported to the general contractor and corrected before application of ENERSHIELD-I.

Equipment

Use a 20 mm (3/4") nap roller or paint brush. If spraying, refer to *Spray Application* technical bulletin for spray application equipment and application instructions.

Note: If using roller application, it is necessary to pre-wet the synthetic roller pad with water and spin out the excess water. The pre-wetting only needs to be done once at the start of application.

Procedure

1. Substrate shall be of a type acceptable by BASF and shall be installed per substrate manufacturer's instructions and local code requirements.

2. Wrap openings with QUICK CORNERS and SHEATHING FABRIC by applying a generous amount of mixed ENERSHIELD-I to all surfaces and immediately embedding the QUICK CORNERS and SHEATHING FABRIC, completely saturating the QUICK CORNERS and SHEATHING FABRIC. If necessary, apply a second coat of ENERSHIELD-I to ensure a complete, void-free membrane.
3. Spot all fasteners and precoat sheathing joints, terminations, inside and outside corners with mixed ENERSHIELD-I using a 101 mm (4") wide by 20 mm (3/4") nap roller, brush or spray.

4.a. Immediately place and center SHEATHING FABRIC over wet ENERSHIELD-I at all sheathing joints, terminations, inside and outside corners, as well as knot holes and check cracks that may

exist in plywood or OSB. Ensure SHEATHING FABRIC extends evenly on both sides of the sheathing joint. Completely saturate SHEATHING FABRIC with ENERSHIELD-I.

b. Lap SHEATHING FABRIC 63.5 mm (2 1/2") minimum at intersections.

c. If using roller or brush application, allow to dry to the touch before applying ENERSHIELD-I to entire wall surface. If spraying, "wet on wet" application is acceptable.

5. Apply ENERSHIELD-I to DensGlass™ exterior sheathing, e²XP™ sheathing, GlasRoc® sheathing, Securock™ glass-mat sheathing, Weather Defense™ Platinum sheathing, GreenGlass® sheathing, PermaBase™ cement-board by National Gypsum and other cement-boards (ASTM C1325 Type A Exterior), gypsum sheathing (ASTM C79/ASTM C1396) plywood, OSB, concrete or CMU substrate(s) with a 20 mm (3/4") nap roller or spray to a consistent, minimum 13 wet mil thickness. Prior to application of the second coat, visually inspect to assure that the surface is blister free and coating is free of voids and pinholes. Repair if needed and then apply a second coat after the initial coating is sufficiently dry. A minimum of two (2) 13 mil wet coats of ENERSHIELD-I is required. ENERSHIELD-I may be sprayed to a 26-mil thickness in one wet application. Backrolling may be needed to produce a pinhole-free film. If backrolling is required, a second spray application may be needed. **Note: Refer to *Spray Application* technical bulletin for spray application equipment and application instructions.**

Drying Time

Allow to dry completely, typically 2 to 10 hours, depending on prevailing temperature, humidity and substrate conditions. Protect from rain and from temperatures less than 4°C (40°F) for 24 hours.

For Best Performance

Visually inspect the ENERSHIELD-I for voids, pinholes, surface deficiencies, etc. Repair deficiencies and areas that are not intact. Apply additional ENERSHIELD-I as necessary such that ENERSHIELD-I is free of voids, pinholes, etc. All sheathing joints, terminations, inside and outside corners must be reinforced with 4", 6" or 9" SHEATHING FABRIC or TF MEMBRANE 4 or 9. Reference *Air/Vapor/Water-Resistive Barrier Guidelines* technical bulletin for proper treatment of rough openings and sheathing joints.

LIMITATIONS

Shipping & Storage

Protect BASF materials during transportation and installation to avoid physical damage. Store BASF materials in a cool, dry place protected from freezing. Store at no less than 4°C (40°F). Protect from extreme heat and direct sunlight.

Stacking

Do not stack pallets.

Shelf Life

Approximately 2 years, properly stored in original containers.

TECHNICAL SUPPORT

Consult the BASF Wall Systems Technical Services Department for specific recommendations concerning all other applications. Consult the Enershield website, www.enershield.basf.com, for additional information about products and systems and for updated literature.

Caution

May be harmful if vapors or mist are inhaled, if absorbed through skin, or if swallowed. May cause eye, skin and respiratory tract irritation. Swallowing this product can cause kidney damage.

Precautions

Avoid getting in eyes, on skin, or on clothing. Avoid breathing vapors or mist. Wear safety glasses or goggles, impervious gloves, and clothing with long sleeves and pants. If TLV or PEL can be exceeded, wear respirator selected by a technically qualified person. Wash thoroughly after handling. Wash contaminated clothing before reuse.

Spills

Wipe up small spills with rags. Absorb larger spills with sand, vermiculite, or kitty litter; sweep up and place in a suitable container for disposal.

First Aid

Eyes: For eye contact, rinse eyes with water. Remove any contact lenses, and continue flushing with plenty of water for several minutes. Seek medical attention if irritation develops and persists.

Skin: For skin contact, wash affected areas with plenty of water, and soap if available, for several minutes. Seek medical attention if irritation develops and persists.

Internal: If inhaled, remove from area to fresh air. Seek medical attention if respiratory irritation develops or if breathing becomes difficult. If swallowed, give 3-4 glasses of water, but do not induce vomiting unless directed to do so by a physician. Do not give anything by mouth to an unconscious or convulsing person. Get medical attention.

Read Material Safety Data Sheet before using this product.

Solids

74% solids

VOC Content

21 g/l, or 0.17 lbs/gal less water and exempt solvents per ASTM D2369 (based in part on EPA method 24).

For medical emergencies only call CHEMTREC at (800) 424-9300.

HEALTH AND SAFETY

NOTE

BASF Wall Systems is an operating unit of BASF Corporation (herein referred to as "BASF Wall Systems")

DISCLAIMER

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Scan this code to find the most current Enershield literature

BASF Wall Systems | 3550 St. Johns Bluff Road South Jacksonville, FL 32224-2614
P: 800.221.9255 F: 904. 996.6300 www.enershield.basf.com

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BASF
The Chemical Company

Product Bulletin

9 | 09 97 26
Cementitious Coatings

Enershield®-FIL

Air Barrier Block Filler

COLOR
White

PACKAGING
5-gallon (19 L) pails

COVERAGE
100-200 ft^2 / pail
Actual results may vary widely depending on substrate texture and porosity.

STORAGE
Store in unopened containers in a clean, dry area, away from sunlight and heat sources. Protect from freezing.

SHELF LIFE
2 Years

VOC CONTENT
.08 lbs/gal or 10 g/L

RELATED DOCUMENTS
- Enershield-HP product bulletin
- Enershield-I product bulletin
- Enershield-HP / -I details
- Enershield TWF product bulletin

DESCRIPTION
A a one-component, water-based block filler designed specifically for use with ENERSHIELD air/water-resistive barrier products. It has been formulated to create a smooth, continuous film on rough cementitious substrates.

PRODUCT HIGHLIGHTS
- Low shrinkage; fills voids and pores
- High moisture vapor permeability;
- Excellent workability
- Water-based; nonflammable, low toxicity

USES
ENERSHIELD-FIL is designed for use on above-grade, interior or exterior, vertical cementitious substrates such as CMU and poured concrete.

MIXING
Agitate to a uniform consistency with a low-speed mixer prior to use.

APPLICATION
JOB CONDITIONS
Do not apply ENERSHIELD-FIL to substrates that are below 40ºF (4ºC), or if ambient air temperature is expected to drop below 40ºF with 24 hours of applications. Do not apply when rain is expected within 24 hours of application. Do not apply to uncapped or unsealed walls subject to heavy rain within 3-5 days after application.

SURFACE PREPARATION
Masonry surfaces shall be clean, structurally sound and full cured. Allow mortared structures to cure for a minimum of 10 days before application. Point or seal any cracks or voids over 1/16" (1.6 MM).

SPRAY APPLICATION
Spray ENERSHIELD-FIL uniformly onto the wall, maintaining a wet edge. Backrolling ENERSHIELD-FIL after application is not required.

ROLLER APPLICATION
A 1-1/2" (38 mm) nap roller is recommended. Prewet new synthetic roller pads and spin out excess water. This should be done once only to ensure that new roller pads fully saturate with ENERSHIELD-FIL.

Keep the roller fully loaded with material. Work ENERSHIELD-FIL uniformly onto the wall, maintaining a wet edge. Apply sufficient material to completely fill all pores and create a consistent, pinhole-free film.

DRYING TIME

ENERSHIELD-HP or ENERSHIELD-I can be applied once ENERSHIELD-FIL has cured to a hardened, moderately tacky state. This typically occurs within 4 hours when applied at 70ºF (21ºC) at 50% relative humidity. Air temperature, humidity, wind, substrate temperature and substrate moistness can all affect curing time.

LIMITATIONS

- Protect BASF materials during transportation and installation to avoid physical damage.
- Store BASF materials in a cool, dry place protected from freezing. Store at no less than 4°C (40°F). Protect from extreme heat and direct sunlight. Shelf life is two years when unopened and stored as directed.
- Do not apply BASF materials in ambient temperature below 4°C (40°F). Provide supplementary heat during installation and drying period (at least 24 hours after installationn and until dry) when temperatures less than 4°C (40°F) prevail.
- Do not apply BASF materials to frozen surfaces.

TECHNICAL SUPPORT

Consult the BASF Wall Systems Technical Services Department for specific recommendations concerning all other applications. Consult the Enershield website, www.enershield.basf.com, for additional information about products and systems and for updated literature.

HEALTH, SAFETY AND ENVIRONMENTAL

CAUTION

Contains copolymer, titanium dioxide, and crystalline silica

RISK

May cause skin, eye or respiratory irritation. Ingestion may cause irritation.

PRECAUTIONS

Avoid contact with skin, eyes and clothing.Wash thoroughly after handling. Keep container closed when not in use. DO NOT take internally. Use only with adequate ventilation. Use impervious gloves, eye protection and if the TLV is exceeded or used in a poorly ventilated area, use NIOSH/MSHA approved respiratory protection in accordance with applicable Federal, state and local regulations.

Typical Properties

Viscosity @ 25°C, PU	85
Percent Solids	75
Weight per Gallon, lbs	13

Test Data

TEST	RESULTS
Flexibility - Mandrel Bend ASTM D522	Pass

FIRST AID

1. For eye contact, flush thoroughly with water for at least 15 minutes.
2. For skin contact, wash affected areas with plenty of water, and soap if available, for several minutes. SEEK MEDICAL ATTENTION if irritation develops and persists. Remove and wash contaminated clothing.
3. If inhalation causes physical discomfort, remove to fresh air. If discomfort persists or any breathing difficulty occurs or if swallowed, SEEK IMMEDIATE MEDICAL ATTENTION.

PROPOSITION 65

This product contains materials listed by the state of California as known to cause cancer, birth defects or other reproductive harm.

MSDS

Read, understand and follow all Material Safety Data Sheets and product label information for this product prior to use. The MSDS can be obtained by calling 1-800-221-9255, visiting www.enershield.basf.com or e-mailing a request to bwscustomerservice@basf.com. Use only as directed.

For medical emergencies only, call ChemTrec® 1-800-424-9300.

WARRANTY

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Product Bulletin, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. In the absence of an extended warranty issued by BASF, any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

Purchaser must determine the suitability of the products for the intended use and assumes all risks and liabilities in connection therewith. This information and all further technical advice are based on BASF's present knowledge and experience. However, BASF assumes no liability for providing such information and advice including the extent to which such information and advice may relate to existing third party intellectual property rights, especially patent rights, nor shall any legal relationship be created by or arise from the provision of such information and advice. BASF reserves the right to make any changes according to technological progress or further developments. The Purchaser of the Product(s) must test the product(s) for suitability for the intended application and purpose before proceeding with a full application of the product(s). Performance of the product described herein should be verified by testing and carried out by qualified experts.

For the most current version of this literature, please visit our website at www.enershield.basf.com.

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Technical Bulletin

BASF
The Chemical Company

Enershield® Application Guidelines

For Flashing Rough Openings on Concrete and Masonry

Enershield® Application Guidelines

For Flashing Rough Openings on Concrete and Masonry

ENERSHIELD products can be used to create a seamless air/water-resistive barrier with integrated flexible flashings on most concrete and masonry substrates. This bulletin outlines approved methods for application of ENERSHIELD, and a choice of four methods of flashing window rough openings.

Methodologies described in this bulletin can be used to apply ENERSHIELD-HP or ENERSHIELD-I to concrete masonry units (CMU), precast concrete and tilt-up concrete substrates.

This bulletin describes flashing window rough openings; other rough openings, such as doors, vents and scuppers, can be treated using a similar approach.

Enershield® Application Guidelines

Pre-application Inspection

Examine surfaces to receive ENERSHIELD and verify that substrate and adjacent materials are clean, dry, sound, and free of release agents, paint or other residue. Verify that masonry joints are struck flush and completely filled with mortar. Ensure that window returns are smooth and clean. Report unsatisfactory conditions to the General Contractor. Application of ENERSHIELD shall not proceed until unsatisfactory conditions have been corrected.

Porous Surfaces

In some cases it may be necessary to address the porosity of concrete or CMU surfaces prior to application of ENERSHIELD-HP or ENERSHIELD-I. When necessary, apply a coat of ENERSHIELD-FIL block filler. ENERSHIELD-FIL is a premium block filler that is acceptable for use under ENERSHIELD air barrier systems.

Flashing Window Openings with no Wood Bucks

Cementitious window openings that are smooth and continuous, with no holes, gaps, voids or wood bucks can be flashed with ENERSHIELD-HP or ENERSHIELD-I. If the sill, head or jamb are too porous to allow installation of a continuous pinhole-free ENERSHIELD membrane, apply ENERSHIELD-FIL into the returns. Allow ENERSHIELD-FIL to cure before applying ENERSHIELD-HP or ENERSHIELD-I.

Using spray equipment, roller or brush, apply sufficient ENERSHIELD to the window opening to create a continuous membrane. For ENERSHIELD-HP, apply minimum 20-mils wet film thickness at rough openings. ENERSHIELD-I shall be applied to a minimum 26-mils wet film thickness.

Typically ENERSHIELD-HP and ENERSHIELD-I are applied to rough openings in two coats. The second coat can be applied while treating the main body of the wall. Using two-coat application makes it easier to obtain a void and pinhole-free application. In any case, if voids or pinholes do occur, they must be repaired by applying additional ENERSHIELD-HP or ENERSHIELD-I.

Flashing Window Openings with Flush-Mounted Wood Bucks

Rough openings with wood bucks that are flush with the exterior wall can be flashed with SHEATHING FABRIC or TF MEMBRANE. If SHEATHING FABRIC is used, gaps between wood bucks and CMU greater than ¼" must be filled with SONOLASTIC 150 VLM sealant (or equal).

Window Corner Treatment

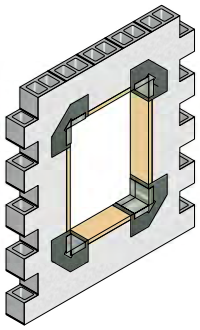

Figure 1

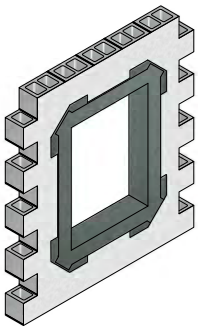

Figure 2

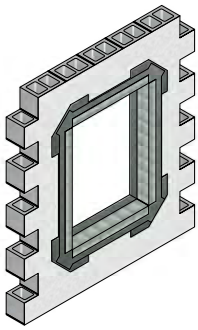

Figure 3

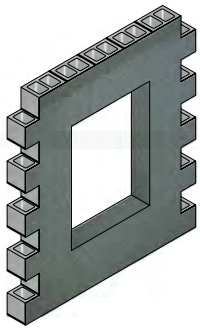

Figure 4

1. Apply a generous receiving coat of well-mixed ENERSHIELD-HP or ENERSHIELD-I to the window corners, fully saturating the entire corner area.
2. Remove a QUICK CORNER from the dispenser package.
3. Place the QUICK CORNER into the wet ENERSHIELD-HP or ENERSHIELD-I. (See Figure 1)
4. Use a brush or roller loaded with ENERSHIELD-HP or ENERSHIELD-I to completely saturate and embed the QUICK CORNER, ensuring that the QUICK CORNER is fully embedded and free of fishmouths and voids.
5. Repeat steps 1-4 on the other three corners.

Head, Sill and Jamb Flashing with SHEATHING FABRIC

Fast, easy application combined with demonstrated code compliance makes this a preferred method for creating a seamless air/water-resistive barrier and flashing system.

1. Apply a generous receiving coat of well-mixed ENERSHIELD-HP or ENERSHIELD-I to the sill. (See Figure 2)
2. Cut 9" SHEATHING FABRIC to the desired length. Allow minimum 2 inches of overlap with previously embedded QUICK CORNERs.

3. To simplify application, SHEATHING FABRIC can be creased lengthwise so that one side is the same length as the depth of the window. Gently rub the SHEATHING FABRIC on a scaffold or other hard, smooth surface to crease the SHEATHING FABRIC.
4. Place SHEATHING FABRIC into wet ENERSHIELD-HP or ENERSHIELD-I. If a crease is used, ensure that the crease runs along the outside edge of the sill and SHEATHING FABRIC extends to the full depth of the rough opening. (See Figure 3)
5. Using a roller loaded with ENERSHIELD-HP or ENERSHIELD-I, apply additional ENERSHIELD to the 9" SHEATHING FABRIC, fully embedding the fabric. Roll from the center outward to prevent SHEATHING FABRIC from spooling onto the roller. Ensure that SHEATHING FABRIC is fully embedded, with no fishmouths, voids, pinholes or dry areas.
6. Repeat steps 2 – 5 on the head and jambs.

A second coat of ENERSHIELD-HP or ENERSHIELD-I is typically applied to window flashing when ENERSHIELD is applied to the main body of the wall. Wet-on-wet spray application is acceptable. (See Figure 4)

Head, Sill and Jamb Flashing with TF MEMBRANE and QUICK CORNERs

Allow the ENERSHIELD saturated QUICK CORNERS on all four window corners to dry. Then:

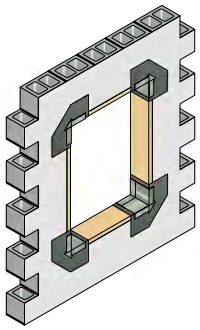

Figure 5

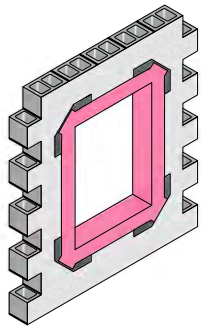

Figure 6

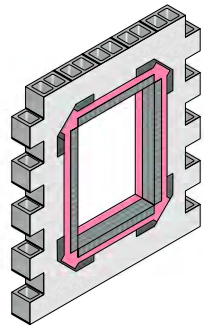

Figure 7

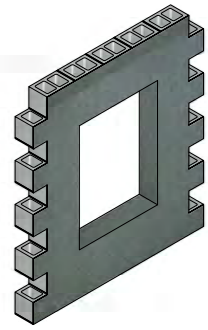

Figure 8

1. Apply FLASHING PRIMER to the head, sill and jambs, including the QUICK CORNERs, covering all areas that will subsequently bond to TF MEMBRANE. (See Figure 6)
2. Allow FLASHING PRIMER to become tacky. Reapply FLASHING PRIMER if time or contamination causes FLASHING PRIMER to lose its tackiness.
3. Cut a length of 9" TF MEMBRANE that extends to the full length of the sill, allowing a minimum 5" overlap onto embedded QUICK CORNERs.
4. Remove half of the release paper lengthwise and fold it, exposing half of the adhesive. Stick one corner to the inside edge of the sill, and then attach the TF MEMBRANE across the top of the sill, ensuring that the TF MEMBRANE covers the entire sill. Do not overlap sections of TF MEMBRANE onto each other at window corners.
5. Remove the release paper. Starting from the center of the sill, fold the TF MEMBRANE down onto the sheathing, fully adhering the TF MEMBRANE to the sheathing.
6. Use a hard roller to firmly post-roll the TF MEMBRANE, compacting it onto the sill and sheathing. Ensure that the TF MEMBRANE is free of fishmouths.
7. Repeat steps 3 – 6 on the head and jambs. (See Figure 7)
8. Saturate TF MEMBRANE and QUICK CORNERS with ENERSHIELD-HP or ENERSHIELD-I. This can be done when applying ENERSHIELD-HP or ENERSHIELD-I to the main body of the wall. Ensure that no red coloration from the previous application of FLASHING PRIMER is visible – the window opening shall be entirely covered with ENERSHIELD-HP or ENERSHIELD-I. (See Figure 8)

Flashing Window Openings with Wood Bucks that are not Flush Mounted

Recessed and protruding wood bucks create complicated geometries that are not easily flashed with traditional flashing products. ENERSHIELD offers significant advantages in these cases. While it is possible to use TF MEMBRANE or other self-adhesive membrane flashing, saturating SHEATHING FABRIC with ENERSHIELD-HP or ENERSHIELD-I is the preferred approach.

1. In many cases it will be advisable to seal dissimilar materials and corners with SONOLASTIC 150 VLM sealant to provide secondary moisture protection and create a smooth transition between the wood buck and cementitious substrate. Gaps greater than ¼" between the wood buck and cementitious substrate must be filled with sealant. (See Figure 9)

Figure 9

Enershield® Application Guidelines

2. Trim two or more pieces of SHEATHING FABRIC such that they conform to each corner. Embed the SHEATHING FABRIC in ENERSHIELD-HP or ENERSHIELD-I, fully encapsulating the corner. (See Figures 10, 11 &12)

Figure 10

Figure 11

Figure 12

3. Repeat Step #2 on the other three corners.
4. Apply ENERSHIELD-HP or ENERSHIELD-I to a head, sill or jamb. (See Figure 13)

Figure 13

5. Embed SHEATHING FABRIC in the ENERSHIELD-HP or ENERSHIELD-I receiving coat on the head, sill or jamb, completely covering the length of the head, sill or jamb with minimum 2" overlap onto the QUICK CORNERs. (See Figure 14, 15, 16)
6. Repeat Steps #4 and 5 on the remaining three sides of the window opening.
7. A second coat of ENERSHIELD-HP or ENERSHIELD-I is typically applied to the flashing, often when applying ENERSHIELD-HP or ENERSHIELD-I to the main body of the wall.

Windows with protruding wood bucks can be flashed in a similar manner.

Figure 14

Figure 15

Figure 16

ENERSHIELD Inspection Guidelines for Cementitious Substrates

Key aspects of ENERSHIELD application should be considered during inspection.

1. Complete coverage. ENERSHIELD-HP or ENERSHIELD-I shall form a continuous, pinhole-free membrane on all sheathing, sheathing joints, window rough openings, expansion joints penetrations and transitions to other parts of the air barrier system. If ENERSHIELD-FIL has been applied, it shall not be visible through the subsequently applied ENERSHIELD-HP or ENERSHIELD-I.
2. Reinforcement shall be present where required. Presence of SHEATHING FABRIC and TF MEMBRANE can be visually confirmed.
3. SHEATHING FABRIC and TF MEMBRANE shall be fully saturated with ENERSHIELD-HP or ENERSHIELD-I, and free from fishmouths. This can be visually confirmed. If SHEATHING FABRIC and TF MEMBRANE are fully saturated with ENERSHIELD, there is no need to confirm thickness in these locations.
4. Application thickness. ENERSHIELD-HP is applied at minimum 20-mils wet film thickness (15 mils when dry) on cementitious substrates. ENERSHIELD-I is applied at minimum 26-mils wet film thickness (19 mils when dry).
5. ENERSHIELD shall be kept from freezing prior to and during application. If ENERSHIELD must be applied at temperatures below 40°F, verify that one quart of LT ADDITIVE has been thoroughly mixed into each pail of ENERSHIELD. ENERSHIELD mixed with LT ADDITIVE shall not be exposed to temperatures below 25°F until it has fully dried.

BASF Technical Application Consultant confirming thickness of Enershield-HP

ENERSHIELD-HP is applied at minimum 20-mils wet film thickness (15 mils dry)

ENERSHIELD-I is applied at minimum 26-mils wet film thickness (19 mils dry)

Applicator Notes

Note that new ¾" nap roller pads must be pre-moistened before use. Dip new rollers in clean water and spin out excess water. This is only needed the first time the roller is used.

Warranty

BASF warrants this product to be free from manufacturing defects and to meet the technical properties on the current Product Bulletin, if used as directed within shelf life. Satisfactory results depend not only on quality products but also upon many factors beyond our control. BASF MAKES NO OTHER WARRANTY OR GUARANTEE, EXPRESS OR IMPLIED, INCLUDING WARRANTIES OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE WITH RESPECT TO ITS PRODUCTS. The sole and exclusive remedy of Purchaser for any claim concerning this product, including but not limited to, claims alleging breach of warranty, negligence, strict liability or otherwise, is shipment to purchaser of product equal to the amount of product that fails to meet this warranty or refund of the original purchase price of product that fails to meet this warranty, at the sole option of BASF. In the absence of an extended warranty issued by BASF, any claims concerning this product must be received in writing within one (1) year from the date of shipment and any claims not presented within that period are waived by Purchaser. BASF WILL NOT BE RESPONSIBLE FOR ANY SPECIAL, INCIDENTAL, CONSEQUENTIAL (INCLUDING LOST PROFITS) OR PUNITIVE DAMAGES OF ANY KIND.

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SR #5

Knowledge for Creating and Sustaining the Built Environment

SUBSTITUTION REQUEST

(During the Bidding/Negotiating Stage)

Project: Crystal Lake Elementary School
Ellinginton CT

Substitution Request Number: 001

From: Lori Clark (Focused Sales Associates)

To: Mr. Dean Petrucelli
Silver Petrucelli & Associates

Date: December 16.2013

A/E Project Number: N/A

Re: Insulated Roof Sheathing

Contract For: Town of Ellington

Specification Title: Sheathing

Description: Polyisocyanurate Foam Sheathing

Section: 061600 Page: 04

Article/Paragraph: 2.7 A. 1-4

Proposed Substitution: Nailable Base-3

Manufacturer: Rmax Address: 13524 Welch Rd, Dallas TX 75244 Phone: 972-387-4500

Trade Name: N/A Model No.: N/A

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.

The Undersigned certifies:

- Proposed substitution has been fully investigated and determined to be equal or superior in all respects to specified product.
- 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.

Submitted by: Lori J Clark

Signed by: Lori Clark Digitally signed by Lori Clark DN: cn=Lori Clark, o=Delmarvel Sales Corp, ou, email=lori.clark@clarkconstructiondata.com, c=US Date: 2013.07.12 10:32:26 -05'00'

Firm: Focused Sales Associates

Address: 32 Waterside Lane
Clinton CT 06413

Telephone: Lori Clark: 785-550-3034 Focuses Sales Associates/John Wagner: 203.892.2388

A/E's REVIEW AND ACTION

- ☐ Substitution approved - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- ☐ Substitution approved as noted - Make submittals in accordance with Specification Section 01 25 00 Substitution Procedures.
- ☒ Substitution rejected - Use specified materials.
- ☐ Substitution Request received too late - Use specified materials.

Signed by: R. Bouchard Date: 12.16.13

Section 061600-4, 2.7.A.4 requires spacers. Product submitted does not include them.

Supporting Data Attached: ☐ Drawings ☐ Product Data ☐ Samples ☐ Tests ☐ Reports ☐ _____

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99 Canal Center Plaza, Suite 300, Alexandria, VA 22314

Form Version: June 2004

SR #6

Rebecca Bouchard

From: Rebecca Bouchard
Sent: Monday, December 16, 2013 9:55 PM
To: 'Dina.Baird@avlonline.com'
Subject: RE: Crystal Lake Elementary School (Prior Approval)

Good evening Dina.
Your AcousTech High Impact and Endure products are accepted and will be noted in forthcoming Addendum.
The referenced spec sections will be reissued in said Addendum and as a result the remainder of products you requested substitutions for are no longer valid.
Thank you.

Rebecca Bouchard, CSI, CDT
Intern Architect

www.silverpetrucelli.com

SILVER / PETRUCELLI + ASSOCIATES
Architects/Engineers/Interior Designers

3190 Whitney Avenue Bldg 2
Hamden, Connecticut 06518
P: 203-230-9007 ext. 202
F: 203-230-8247
***S/P+A** is a member of the U.S. Green Building Council*

From: Dina Baird [mailto:Dina.Baird@avlonline.com]
Sent: Friday, December 13, 2013 12:37 PM
To: Dean Petrucelli
Subject: Crystal Lake Elementary School (Prior Approval)

Dean,
Please see attached cut sheets for our line of Acoustech Wall/Ceiling products as manufactured by AVL Systems Inc. We would like to be approved as an equal for the products in spec section 098433 Sound Absorbing Units (Section 2.2 A, C & D) and Section 098439 Acoustical Ceiling Clouds (Section 2.4 A & B) for the Crystal Lake Elementary School Expansion. Please see the attached proposed products that match your specifications. Please feel free to contact me with any questions or if you require additional information to approve the request.
Please note that no affect to the construction schedule or cost will occur by using these products.

Dina Baird
Project Coordinator

AcousTech™ High-Impact

High Performance - Abuse Resistant Acoustical Wall & Ceiling Panels

AVL AcousTech™ Sound Absorption Products are extremely effective wall and ceiling panel treatments for the control of excessive reverberation and echoes that interfere with the intended use of interior spaces. AVL Systems' custom manufactured AcousTech™ panel cores are designed to provide the highest levels of sound absorption, product strength and rigidity, indoor air health quality, and purchase value.

AVL Systems' GreenSafe™ Technologies

AcousTech™ Products are manufactured from naturally occurring and/ or recycled materials using rapidly-renewable raw materials and bio-based technology free of formaldehyde, phenols, acrylics and dyes. The recycle content of AVL products exceeds the EPA Recovered Material Guideline for pre-consumer and post-consumer materials. All products are inert, non -combustible, do not support mold or mildew, and are dimensionally stable with hard, framed edges. Eligibility for LEED Credits is available with this product.

Features

- Highest Sound Absorption Efficiency & Performance
- Dual-Density Core Engineered for Exceptional Low Frequency Absorption and Added Benefit of High Impact Resistance
- Abuse Resistant and Extremely Durable
- Wide Selection of Standard Colors, Textures & Finishes
- Custom-Printed Digital Imaging Available
- Tackable Face
- Easy to Install with Fully-Concealed Mounting Hardware Included
- Edge Profile Options Include Square, Bevel, Radius, Miter
- Standard and Custom Sizes
- Fire Performance Class 1/A, UL 723 and ASTM E-84
- Indoor Air Quality (IAQ) and Low VOC Meets GREENGUARD Children & Schools Certification and California Title 24
- LEED Credit Eligibility With Installation of These Products

Children & Schools GREENGUARD® Indoor Air Quality Certified

79% Total Recycled Content

43% post-consumer recycled, balance (36%) pre-consumer recycled

AVL Systems' products and technologies are aligned with the highest social consciousness and environmental standards for green, earth friendly, sustainable practices.

Applications

Suitable for new walls and ceilings in new construction and renovation of interior spaces. Applications include auditoriums, worship space, sanctuaries, convention and conference centers, schools, music and performance space, cinemas, home theaters, offices, public buildings, or any area where acoustics, aesthetics and value are a consideration.

U.S. GREEN BUILDING COUNCIL MEMBER

AVL Hear + Feel the Difference™

AVL Systems, Inc.
5540 SW 6th Place · Ocala, FL 34474 · www.AVLonline.com
Toll Free: 1-800-228-7842 · Fax: 352-854-1278 · Email: info@AVLonline.com

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AcousTech™ High-Impact

High Performance - Abuse Resistant Acoustical Wall & Ceiling Panels

AcousTech™ High Performance, Abuse Resistant - High Impact Wall & Ceiling Panels

Panels are a decorative, high-performance, sound absorption product for interior spaces. At its core is an engineered, dual component substrate that is manufactured from naturally occurring and/or recycled materials using rapidly-renewable raw materials and bio-based technology that is free of formaldehyde, phenols, acrylics and dyes. It will not support mold or mildew, is inert, non-combustible, dimensionally stable with solid edges that will not warp or separate. Panels may be installed individually as an accent of color and shape, or together as a grouping. Standard or client-specified facings are factory applied to the face, sides and back-returned to provide a finished product with fully-tailored edges and corners. AcousTech™ panels are manufactured to any size specified and come with totally concealed mounting hardware. If changes should occur during installation, alterations are easily performed in the field by the installer.

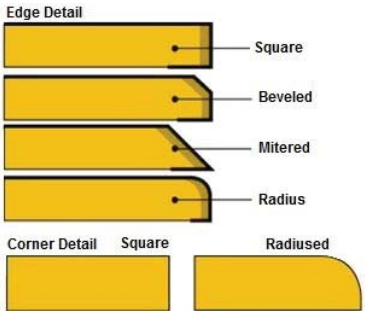
Interactive Product Performance

The AcousTech™ family of interactive performance products is designed to provide the acoustical engineer and specifier with a complete "toolbox" of technically compatible products for any application. These engineered products can be used individually or as an interactive system, working together to optimally enhance the interior design, functionality and acoustics of the architectural space. AVL Systems, Inc. is pleased to offer a full range of standard and custom architectural acoustical products for virtually every application and technical requirement.

Technical Features & Information

- Lightweight Systems for Ceiling & Wall Installations
- Decorative Fabric Facings or Designer Selection/ C.O.M.
- Core: Facing: ⅛" 16-18 lb./cu. ft. high density fiberglass

  Backing: 7 lb./cu. ft. fiberglass
- Thickness: 1-⅛", 1-⅝", 2-⅛", 3-⅛", 4-⅛"
- Sizes (+/- 1/16" nominal): Any Size Up To 48" x 120"
- Special Sizes: Available Upon Request
- Edge Profile: Square, Bevel, Radius, Miter
- Fasteners: Z-Clip, Impaling, Velcro, Magnet



- Fire Performance: Class 1/A, UL 723 / ASTM E-84
- Indoor Air Quality (IAQ) and Low VOC Meets GREEN-GUARD Children & Schools Certification and California Title 24
- LEED Credit Eligibility with Installation of these Products

Acoustical Performance - Absorption Coefficients

Frequency (Hz)		125	250	500	1K	2K	4K	NRC
ATP 1.1	1- ⅛" Panel	0.19	0.54	0.97	1.1	1.13	1.42	0.95
ATP 1.6	1-⅝" Panel	0.36	0.78	1.13	1.1	1.15	1.39	1.05
ATP 2.1	2-⅛" Panel	0.54	1.01	1.16	1.11	1.19	1.59	1.1
ATP 3.1	3-⅛" Panel	0.94	1	1.14	1.21	1.2	1.47	1.15
ATP 4.1	4-⅛" Panel	1.04	1.11	1.16	1.2	1.19	1.59	1.15

Warranty

AVL Systems' *Limited Warranty* extends for ONE FULL YEAR from the original date of shipment. AVL Systems' literature, presentations and published data are correct to the best of our knowledge at time of publication. AVL Systems, Inc. reserves the right to change or amend any of the products or the information presented or published without liability or notice.

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AcousTech Endure™ High Abuse-Resistant Wall & Ceiling Panels

The AVL Systems AcousTech Endure™ High Abuse-Resistant Acoustical Panel is a lightweight, general purpose, decorative acoustical product. The core is one piece, inert, non-combustible, dimensionally stable and will not warp or separate. Additional abuse protection is supplied by a concealed perforated acoustical template between the facing and core, and edges can be chemically hardened to further resist damage. Panels may be installed individually as an accent in color or shape or continuous for a featured area. Standard or customer specified finishes are factory applied to the face of the panel and returned around the sides and back to provide a finished product with fully tailored edges and corners. AcousTech™ Panels are supplied to finished sizes, as specified, with totally concealed, factory installed mounting hardware. When necessary, field cuts or modification can easily be accomplished by the installer.

Interactive Product Performance

The AcousTech™ family of interactive performance products is designed to provide the acoustical engineer and specifier with a complete "toolbox" of technically compatible products for any application. These engineered products can be used individually or as an interactive system, working together to optimally enhance the interior design, functionality and acoustics of the architectural space. AVL Systems, Inc. is pleased to offer a full range of standard and custom architectural acoustical products for virtually every application and technical requirement.

Technical Features & Information

- Lightweight for Ceiling & Wall Installations
- Decorative Fabric Facings or Designer Selection/ C.O.M.
- Custom-Printed Digital Imaging Available
- Core: 7 lb./cu. ft. fiberglass
- Thickness: 1-1/16", 1-9/16", 2-1/16"
- Sizes: Any Size Up To 48" x 120"
- Special Sizes: Available Upon Request
- Fasteners: Mechanical, Impaling, Velcro, Magnetic
- Fire Performance: Class A

Applications

AcousTech™ Endure High Abuse-Resistant Acoustical Panels are the ideal decorative wall and ceiling treatment for areas where sound and noise control are a consideration along with resistance to impact, damage or abuse. They are suitable for new construction and renovation such as gymnasiums, schools, conference areas, public buildings, offices or any area where acoustics, aesthetics and value are a consideration.

Acoustical Performance - Absorption Coefficients

Frequency (Hz)		125	250	500	1K	2K	4K	NRC
ATPE 1.1	1-1/16" Panel	0.13	0.31	0.80	1.05	1.15	1.45	0.90
ATPE 1.6	1-9/16" Panel	0.36	0.78	1.13	1.10	1.15	1.39	1.05
ATPE 2.1	2-1/16" Panel	0.54	1.01	1.16	1.11	1.19	1.59	1.10

Warranty

AVL Systems' *Limited Warranty* extends for TWO FULL YEARS from the original date of shipment. AVL Systems' literature, presentations and published data are correct to the best of our knowledge at time of publication. AVL Systems, Inc. reserves the right to change or amend any of the products or the information presented or published without liability or notice.

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Sign-in Sheet

December 9, 2013

Project: Crystal Lake Elementary School, Mandatory Pre-Bid Walk
4:15 PM

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SECTION 055300 - METAL GRATINGS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section Includes:

1. Metal bar gratings.
2. Metal frames and supports.

B. Related Sections:

1. Section 051200 "Structural Steel" for structural-steel framing system components.
2. Section 055213 "Pipe and Tube Railings" for metal pipe and tube handrails and railings.

1.3 PERFORMANCE REQUIREMENTS

A. Delegated Design: Design gratings, including comprehensive engineering analysis by a qualified professional engineer, using performance requirements and design criteria indicated.

B. Structural Performance: Gratings shall withstand the effects of gravity loads and the following loads and stresses within limits and under conditions indicated.

1. Floors: Uniform load of 125 lbf/sq. ft. or concentrated load of 2000 lbf, whichever produces the greater stress.
2. Walkways and Elevated Platforms Used as Exits: Uniform load of 100 lbf/sq. ft.

C. Seismic Performance: Provide gratings capable of withstanding the effects of earthquake motions determined according to ASCE/SEI 7.

1.4 ACTION SUBMITTALS

A. Product Data: For the following:

1. Clips and anchorage devices for gratings.

B. HPBS Submittals:

1. Product Data for Section 16a-38k-6(d)(8): For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.

C. Shop Drawings: Include plans, sections, details, and attachments to other work.

D. Delegated-Design Submittal: For installed products indicated to comply with performance requirements and design criteria, including analysis data signed and sealed by the qualified professional engineer responsible for their preparation.

1.5 INFORMATIONAL SUBMITTALS

A. Qualification Data: For qualified professional engineer.

B. Welding certificates.

1.6 QUALITY ASSURANCE

A. Metal Bar Grating Standards: Comply with NAAMM MBG 531, "Metal Bar Grating Manual."

B. Welding Qualifications: Qualify procedures and personnel according to the following:

1. AWS D1.2, "Structural Welding Code - Aluminum."

C. Installer: Firm with not less than three (3) years of successful experience in the installation of systems similar to those required by this project and acceptable to the manufacturer of the system.

1.7 PROJECT CONDITIONS

A. Field Measurements: Verify actual locations of walls and other construction contiguous with gratings by field measurements before fabrication.

1.8 COORDINATION

A. Coordinate installation of anchorages for gratings, grating frames, and supports. Furnish setting drawings, templates, and directions for installing anchorages, including sleeves, concrete inserts, anchor bolts, and items with integral anchors, that are to be embedded in concrete or masonry. Deliver such items to Project site in time for installation.

1.9 WARRANTY

A. Submit manufacturer’s warranty that materials furnished will perform as specified for a period of not less than one (1) year when installed in accordance with manufacturer’s recommendations.

PART 2 - PRODUCTS

2.1 ALUMINUM

A. Aluminum, General: Provide alloy and temper recommended by aluminum producer for type of use indicated, and with not less than the strength and durability properties of alloy and temper designated below for each aluminum form required.

B. Extruded Bars and Shapes: ASTM B 221, alloys as follows:

1. 6061-T6 or 6063-T5, for bearing bars of gratings and shapes.

2. 6061-T1, for grating crossbars.

C. Aluminum Sheet: ASTM B 209, Alloy 5052-H32.

D. Aluminum Plate: ASTM B 209, Alloy 6061-T651.

2.2 FASTENERS

A. General: Unless otherwise indicated, provide Type 304 stainless-steel fasteners for exterior use and zinc-plated fasteners with coating complying with ASTM B 633 or ASTM F 1941, Class Fe/Zn 5, at exterior walls. Select fasteners for type, grade, and class required.

1. Provide stainless-steel fasteners for fastening aluminum.

2.3 MISCELLANEOUS MATERIALS

A. Welding Rods and Bare Electrodes: Select according to AWS specifications for metal alloy that is welded.

B. Bituminous Paint: Cold-applied asphalt emulsion complying with ASTM D 1187.

2.4 FABRICATION

A. Shop Assembly: Fabricate grating sections in shop to greatest extent possible to minimize field splicing and assembly. Disassemble units only as necessary for shipping and handling limitations. Use connections that maintain structural value of joined pieces. Clearly mark units for reassembly and coordinated installation.

B. Cut, drill, and punch material cleanly and accurately. Remove burrs and ease edges to a radius of approximately 1/32 inch unless otherwise indicated. Remove sharp or rough areas on exposed surfaces.

C. Form from materials of size, thickness, and shapes indicated, but not less than that needed to support indicated loads.

D. Fit exposed connections accurately together to form hairline joints.

E. Welding: Comply with AWS recommendations and the following:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.

F. Provide for anchorage of type indicated; coordinate with supporting structure. Fabricate and space the anchoring devices to secure gratings, frames, and supports rigidly in place and to support indicated loads.

2.5 METAL BAR GRATINGS

A. Basis of Design:

1. Ohio Gratings, Inc.; **Aluminum Lite I-Bar 7-SGLI-4**

B. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. All American Grating
2. Fisher & Ludlow; Division of Harris Steel Limited
3. Substitutions: Under provisions of Section 012500 “Substitution Procedures”.

C. Pressure-Locked, Aluminum I-Bar Grating: Fabricated by swaging crossbars between bearing bars.

1. Bearing Bar Spacing: 7/16 inch o.c.
2. Bearing Bar Depth: 2½ inches.
3. Bearing Bar Flange Width: 3/16 inch.
4. Crossbar Spacing: 4 inches maximum o.c.
5. Grating Mark: As indicated.
6. Aluminum Finish: Mill finish.

D. Fabricate cutouts in grating sections for penetrations indicated. Arrange cutouts to permit grating removal without disturbing items penetrating gratings.

1. Edge-band openings in grating that interrupt four or more bearing bars with bars of same size and material as bearing bars.

E. Do not notch bearing bars at supports to maintain elevation.

2.6 FRAMES AND SUPPORTS

A. Frames and Supports for Metal Gratings Assemblies: Fabricate from metal shapes, plates, and bars of welded construction to sizes, shapes, and profiles indicated and as necessary to receive gratings. Miter and weld connections for perimeter angle frames. Cut, drill, and tap units to receive hardware and similar items.

1. Unless otherwise indicated, fabricate from same basic metal as gratings.
2. Equip units indicated to be cast into concrete or built into masonry with integrally welded anchors. Unless otherwise indicated, space anchors 24 inches o.c. and provide minimum anchor units in the form of steel straps 1¼ inches wide by ¼ inch thick by 8 inches long.

PART 3 - EXECUTION

3.1 INSTALLATION, GENERAL

A. Fastening to In-Place Construction: Provide anchorage devices and fasteners where necessary for securing gratings to in-place construction. Include threaded fasteners for concrete and masonry inserts, through-bolts, lag bolts, and other connectors.

B. Cutting, Fitting, and Placement: Perform cutting, drilling, and fitting required for installing gratings. Set units accurately in location, alignment, and elevation; measured from established lines and levels and free of rack.

C. Provide temporary bracing or anchors in formwork for items that are to be built into concrete or masonry.

D. Fit exposed connections accurately together to form hairline joints.

1. Weld connections that are not to be left as exposed joints but cannot be shop welded because of shipping size limitations. Do not weld, cut, or abrade the surfaces of exterior units that have been hot-dip galvanized after fabrication and are for bolted or screwed field connections.

E. Field Welding: Comply with the following requirements:

1. Use materials and methods that minimize distortion and develop strength and corrosion resistance of base metals.
2. Obtain fusion without undercut or overlap.
3. Remove welding flux immediately.

F. Corrosion Protection: Coat concealed surfaces of aluminum that will come into contact with grout, concrete, masonry, wood, or dissimilar metals, with a heavy coat of bituminous paint.

3.2 INSTALLING METAL BAR GRATINGS

A. General: Install gratings to comply with recommendations of referenced metal bar grating standards that apply to grating types and bar sizes indicated, including installation clearances and standard anchoring details.

B. Attach nonremovable units to supporting members by welding where both materials are same; otherwise, fasten by bolting as indicated above.

3.3 CLEANING

A. Clean exposed surfaces as recommended by the manufacturer.

3.4 ADJUSTING AND PROTECTION

A. Inspect system components for proper fit. Adjust, repair or replace components not conforming to requirements. Repair or replacement of an individual unit shall be as approved by the Architect.

B. Finished units shall be without damage. Units damaged during shipping or construction shall be repaired by the Contractor at the expense of the party damaging the material, in accordance with the contract requirements.

C. Protect installation from damage by work of other Sections.

END OF SECTION 055300

SECTION 098433 - SOUND-ABSORBING UNITS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes shop-fabricated, fabric-wrapped panel units tested for acoustical performance, including:

1. Sound-absorbing wall panels.

1.3 DEFINITIONS

A. NRC: Noise Reduction Coefficient.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of fabric facing, panel edge, core material, and mounting indicated.

B. HPBS Submittals:

1. Product Data for Section 16a-38k-6(d)(9): For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating cost for each product having recycled content.
2. Product Certificates for Section 16a-38k-6(d)(10): For products and materials required to comply with requirements for regionally manufactured materials. Include statement indicating cost, location of manufacturer, and distance to Project for each regionally manufactured material.

C. Shop Drawings: For sound-absorbing units. Include mounting devices and details; details at panel head, base, joints, and corners; and details at ceiling, floor base, and wall intersections. Indicate panel edge and core materials.

1. Include elevations showing panel sizes and direction of fabric weave and pattern matching.

D. Samples for Initial Selection: For each type of fabric facing from sound-absorbing unit manufacturer's full range.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Elevations and other details, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Electrical outlets, switches, and thermostats.
2. Items penetrating or covered by sound-absorbing units including the following:

    a. Lighting fixtures.
    b. Air outlets and inlets.
    c. Speakers.
    d. Alarms.
    e. Sprinklers.
    f. Access panels.

3. Show operation of hinged and sliding components covered by or adjacent to sound-absorbing wall units.

B. Warranty: Sample of special warranty.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For sound-absorbing units to include in maintenance manuals. Include fabric manufacturers' written cleaning and stain-removal recommendations.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials from same production run that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Fabric: For each fabric, color, and pattern installed, provide length equal to ten percent (10%) of amount installed, but no fewer than 10 yards.
2. Mounting Devices: Full-size units equal to five percent (5%) of amount installed, but no fewer than five (5) devices.

1.8 QUALITY ASSURANCE

A. Fire-Test-Response Characteristics: Provide sound-absorbing wall units meeting the following as determined by testing identical products by UL or another testing and inspecting agency acceptable to authorities having jurisdiction:

1. Surface-Burning Characteristics: As determined by testing per ASTM E 84.

    a. Flame-Spread Index: 25 or less.
    b. Smoke-Developed Index: 450 or less.

2. Fire Growth Contribution: Meeting acceptance criteria of local code and authorities having jurisdiction when tested according to NFPA 265 or NFPA 286.

B. Preinstallation Conference: Conduct conference at Project site.

1.9 DELIVERY, STORAGE, AND HANDLING

A. Comply with fabric and sound-absorbing unit manufacturers' written instructions for minimum and maximum temperature and humidity requirements for shipment, storage, and handling.

B. Deliver materials and units in unopened bundles and store in a temperature-controlled dry place with adequate air circulation.

1.10 PROJECT CONDITIONS

A. Environmental Limitations: Do not install sound-absorbing units until spaces are enclosed and weathertight, wet work in spaces is complete and dry, work at and above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

B. Lighting: Do not install sound-absorbing units until a permanent level of lighting is provided on surfaces to receive the units.

C. Air-Quality Limitations: Protect sound-absorbing units from exposure to airborne odors, such as tobacco smoke, and install units under conditions free from odor contamination of ambient air.

D. Field Measurements: Verify locations of sound-absorbing wall units and actual dimensions of openings and penetrations by field measurements before fabrication.

1.11 WARRANTY

A. Special Warranty: Manufacturer's standard form in which manufacturer agrees to repair or replace components of sound-absorbing units that fail in materials or workmanship within specified warranty period.

1. Failures include, but are not limited to the following:

a. Acoustical performance.
b. Fabric sagging, distorting, or releasing from panel edge.
c. Warping of core.

2. Warranty Period: Manufacturer’s standard but minimum one (1) year from date of Substantial Completion.

PART 2 - PRODUCTS

2.1 SOUND-ABSORBING UNIT MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Acoustical Panel Systems (APS, Inc.).
2. Acoustical Solutions, Inc.
3. Decoustics Limited; a CertainTeed Ceilings company.
4. Sound Management Group LLC.
5. Substitutions: Under provisions of Section 012500 “Substitution Procedures”.

2.2 SOUND-ABSORBING UNITS

A. Sound-Absorbing Wall Panel (**AWP-1**, **AWP-2**, **AWP-3**, **AWP-4**): Manufacturer's standard panel construction consisting of facing material stretched over front face of edge-framed core and bonded or attached to edges and back of frame.

1. Basis-of-Design Product:

   a. Armstrong World Industries; **Soundsoak Custom**

2. Mounting: Back mounted with manufacturer's standard metal clips, secured to substrate.
3. Core: Manufacturer's standard fiberglass.

   a. Core-Face Layer: Manufacturer's standard tackable, impact-resistant, high-density board at Gymnasium B113 only.

4. Edge Construction: Manufacturer's standard chemically hardened core with no frame.
5. Edge Profile: Square.
6. Corner Detail in Elevation: Square with continuous edge profile indicated.
7. Configuration: Flat.
8. Facing Material: As indicated in Section 090000 “Schedule of Finishes”.
9. Acoustical Performance: Sound absorption NRC of not less than 0.80 according to ASTM C 423 for Type A mounting according to ASTM E 795.
10. Nominal Overall Panel Thickness: 1 inch.
11. Panel Width and Height: As indicated on Drawings.

2.3 MATERIALS

A. General:

1. Minimum Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than sixty-seven percent (67%) by weight.
2. Regional Materials: Sound-absorbing wall units shall be manufactured within five hundred (500) miles of Project site.

B. Core Materials:

1. Glass-Fiber Board: ASTM C 612, Type standard with manufacturer; nominal density of 6 to 7 lb/cu. ft., unfaced, and dimensionally stable, molded rigid board; and with maximum flame-spread and smoke-developed indexes of 25 and 50, respectively.
2. Tackable, Impact-Resistant, High-Density Board for Face Layer: 1/8-inch-thick layer of compressed molded glass-fiber board with a nominal density of 16 to 18 lb/cu. ft. laminated to face of core.

C. Mounting Devices: Concealed on back of unit, recommended by manufacturer to support weight of unit, and as follows:

1. Metal Clips or Bar Hangers: Manufacturer's standard two-part metal "Z" clips, with one part of each clip mechanically attached to back of unit and the other part to substrate, designed to permit unit removal.

2.4 FABRICATION

A. General: Use manufacturer's standard construction except as otherwise indicated; with facing material applied to face, edges, and back border of dimensionally stable core; and with rigid edges to reinforce panel perimeter against warpage and damage.

1. Glass-Fiber Board Cores: Chemically harden core edges and areas of core where mounting devices are attached.

B. Core-Face Layer: Evenly stretched over core face and edges and securely attached to core; free from puckers, ripples, wrinkles, or sags.

C. Facing Material: Apply fabric facing fully covering visible surfaces of unit; with material stretched straight, on the grain, tight, square, and free from puckers, ripples, wrinkles, sags, blisters, seams, adhesive, or other visible distortions or foreign matter.

1. Square Corners: Tailor corners.

D. Dimensional Tolerances of Finished Units: Plus or minus 1/16 inch for the following:

1. Thickness.
2. Edge straightness.
3. Overall length and width.
4. Squareness from corner to corner.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine fabric, fabricated units, substrates, areas, and conditions, for compliance with requirements, installation tolerances, and other conditions affecting performance of sound-absorbing wall units.

B. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 INSTALLATION

A. Install sound-absorbing units in locations indicated with vertical surfaces and edges plumb, top edges level and in alignment with other units, faces flush, and scribed to fit adjoining work accurately at borders and at penetrations.

B. Comply with sound-absorbing unit manufacturer's written instructions for installation of units using type of mounting devices indicated. Mount units securely to supporting substrate.

C. Align and level fabric pattern and grain among adjacent units.

3.3 INSTALLATION TOLERANCES

A. Variation from Plumb and Level: Plus or minus 1/16 inch.

B. Variation of Panel Joints from Hairline: Not more than 1/16 inch wide.

3.4 CLEANING

A. Clip loose threads; remove pills and extraneous materials.

B. Clean panels on completion of installation to remove dust and other foreign materials according to manufacturer's written instructions.

END OF SECTION 098433

SECTION 098439 - ACOUSTICAL CEILING CLOUDS

PART 1 - GENERAL

1.1 RELATED DOCUMENTS

A. Drawings and general provisions of the Contract, including General and Supplementary Conditions and Division 01 Specification Sections, apply to this Section.

1.2 SUMMARY

A. Section includes acoustical clouds, exposed suspension systems for ceilings and attachment fasteners for walls.

B. Related Requirements:

1. Section 095113 “Acoustical Panel Ceilings”
2. Section 092900 “Gypsum Board”
3. Division 21 Sections - “Fire Suppression”
4. Division 22 Sections - Plumbing
5. Division 23 Sections - HVAC
6. Division 26 Sections - Electrical

1.3 PREINSTALLATION MEETINGS

A. Preinstallation Conference: Conduct conference at Project site.

1.4 ACTION SUBMITTALS

A. Product Data: For each type of product and system.

B. HPBS Submittals:

1. Product Data for Section 16a-38k-6(d)(9): For products having recycled content, documentation indicating percentages by weight of postconsumer and preconsumer recycled content. Include statement indicating costs for each product having recycled content.

C. Shop Drawings: Layout and details of acoustical clouds. Show locations of items which are to be coordinated with acoustical clouds.

D. Samples: For each exposed product and for each color and texture specified, 6 inches in size.

1.5 INFORMATIONAL SUBMITTALS

A. Coordination Drawings: Reflected ceiling plans, drawn to scale, on which the following items are shown and coordinated with each other, using input from installers of the items involved:

1. Suspended ceiling components.
2. Structural members to which suspension systems will be attached.

3. Size and location of initial access modules for acoustical panels.
4. Items penetrating finished ceiling including the following:

    a. Lighting fixtures.
    b. Air outlets and inlets.
    c. Speakers.
    d. Sprinklers.
    e. Access panels.

5. Perimeter moldings.

B. Installation Instructions: Submit manufacturer's installation instructions.

C. Certifications: Manufacturer's certifications that products comply with specified requirements, including laboratory reports showing compliance with specified tests and standards.

1.6 CLOSEOUT SUBMITTALS

A. Maintenance Data: For finishes to include in maintenance manuals.

1.7 MAINTENANCE MATERIAL SUBMITTALS

A. Furnish extra materials that match products installed and that are packaged with protective covering for storage and identified with labels describing contents.

1. Acoustical Ceiling Panels: Full-size panels equal to two percent (2%) of quantity installed.
2. Suspension-System Components: Quantity of each exposed component equal to two percent (2%) of quantity installed.
3. Wall Attachment Components: Quantity of each exposed component equal to two percent (2%) of quantity installed.

1.8 DELIVERY, STORAGE, AND HANDLING

A. Deliver acoustical panels, suspension-system components, and accessories to Project site in original, unopened packages and store them in a fully enclosed, conditioned space where they will be protected against damage from moisture, humidity, temperature extremes, direct sunlight, surface contamination, and other causes.

B. Before installing acoustical panels, permit them to reach room temperature and a stabilized moisture content.

C. Handle acoustical panels carefully to avoid chipping edges or damaging units in any way.

1.9 FIELD CONDITIONS

A. Environmental Limitations: Do not install acoustical ceilings until spaces are enclosed and weatherproof, wet work in spaces is complete and dry, work above ceilings is complete, and ambient temperature and humidity conditions are maintained at the levels indicated for Project when occupied for its intended use.

1.10 WARRANTY

A. Acoustical Clouds: Submit a written warranty executed by the manufacturer, agreeing to repair or replace acoustical clouds that fail within the warranty period. Failures include, but are not limited to:

1. Rusting and manufacturing defects.

B. Warranty Period:

1. Acoustical Clouds: One (1) year from date of substantial completion.
2. Attachment devices: Ten (10) years from date of substantial completion.

PART 2 - PRODUCTS

2.1 PERFORMANCE REQUIREMENTS

A. Seismic Performance: Acoustical ceiling shall withstand the effects of earthquake motions determined according to ASCE/SEI 7.

B. Surface-Burning Characteristics: Comply with ASTM E 84; testing by a qualified testing agency. Identify products with appropriate markings of applicable testing agency.

1. Flame-Spread Index: Comply with ASTM E 1264 for Class A materials.
2. Smoke-Developed Index: 50 or less.

2.2 ACOUSTICAL PANELS, GENERAL

A. Source Limitations:

1. Acoustical Ceiling Panel: Obtain each type from single source from single manufacturer.
2. Suspension System: Obtain each type from single source from single manufacturer.

B. Acoustical Panel Colors and Patterns: Match appearance characteristics indicated for each product type.

2.3 ACOUSTICAL CLOUD MANUFACTURERS

A. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include, but are not limited to, the following:

1. Armstrong World Industries, Inc.
2. CertainTeed Corp.
3. Chicago Metallic Corporation
4. USG Interiors, Inc.; Subsidiary of USG Corporation
5. Substitutions: Under provisions of Section 012500 “Substitution Procedures”.

2.4 ACOUSTICAL CLOUDS

A. Basis-of-Design Product (**ACT-1**):

1. Armstrong World Industries, Inc.; **Serpentina Waves**
2. Classification: Provide panels complying with ASTM E 1264, Class A.
3. Material: Metal.
4. Edge/Joint Detail: Hemmed and upturned for interface with grid system.
5. Color, Size and Perforation: As indicated in Section 090000 “Schedule of Finishes”.
6. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than fifty percent (50%).

B. Basis-of-Design Product (**ACT-2**):

1. Armstrong World Industries, Inc.; **Metalworks Torsion Spring**
2. Classification: Provide panels complying with ASTM E 1264, Class A.
3. LR: Not less than 0.77, white.
4. Material: Aluminum.
5. Edge/Joint Detail: Butt edge.
6. Color, Size and Perforation: As indicated in Section 090000 “Schedule of Finishes”.
7. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than twenty-five percent (25%).

2.5 METAL SUSPENSION SYSTEMS, GENERAL

A. Recycled Content: Postconsumer recycled content plus one-half of preconsumer recycled content not less than twenty-five percent (25%).

B. Metal Suspension-System Standard: Provide manufacturer's standard direct-hung metal suspension systems of types, structural classifications, and finishes indicated that comply with applicable requirements in ASTM C 635.

C. Seismic Stabilizer Bars: Manufacturer's standard perimeter stabilizers designed to accommodate seismic forces.

D. Seismic Struts: Manufacturer's standard compression struts designed to accommodate seismic forces.

E. Seismic Clips: Manufacturer's standard seismic clips designed and spaced to secure acoustical panels in place.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, including structural framing to which acoustical ceilings attach or abut, with Installer present, for compliance with requirements specified in this and other Sections that affect ceiling installation and anchorage and with requirements for installation tolerances and other conditions affecting performance of acoustical panel ceilings.

B. Examine acoustical panels before installation. Reject acoustical panels that are wet, moisture damaged, or mold damaged.

C. Proceed with installation only after unsatisfactory conditions have been corrected.

3.2 PREPARATION

A. Measure each ceiling area and establish layout of acoustical panels to balance border widths at opposite edges of each ceiling. Avoid using less-than-half-width panels at borders, and comply with layout shown on reflected ceiling plans.

3.3 INSTALLATION

A. General: Install acoustical panel ceilings to comply with ASTM C 636 and seismic design requirements indicated, according to manufacturer's written instructions and CISCA's "Ceiling Systems Handbook."

B. Install panels in accordance with the manufacturer’s instructions and in compliance with the authorities having jurisdiction.

C. Install acoustical ceiling clouds using suspensions systems and wall mounting attachments as recommended by the manufacturer.

1. Provide concealed hardware where 360° finishing is required.

3.4 ADJUSTING AND CLEANING

A. Replace damaged and broken panels.

B. Clean exposed surfaces of acoustical cloud ceilings, including suspension-system members. Comply with manufacturer's written instructions for cleaning and touchup of minor finish damage. Remove and replace ceiling components that cannot be successfully cleaned and repaired to permanently eliminate evidence of damage.

END OF SECTION 098439