ADDENDUM No. 1 TO ORIGINAL INVITATION TO BID

Date: June 30, 2022

Bid No.: Invitation to Bid (ITB) 5696-2023 Sealey Elementary School, Roof Replacement Project

Bid Opening July 12, 2022 @ 2:00 P.M. EST (Addendum does not change the opening date of the bid)

This addendum is being issued to make the following changes, corrections, clarifications and additions to the bidding document. The information in this addendum modifies and changes the original bidding document and takes precedence over the original document.

Failure to file a protest within the time prescribed in Section 120.57(3), Florida Statutes, or failure to post the bond or other security required by law within the time allowed for filing a bond shall constitute a waiver of proceedings under Chapter 120, Florida Statutes.

This Addendum includes the following revisions:

Change No. 1:

V. **INSTRUCTIONS TO BIDDERS AND SCOPE OF WORK:** Item **B. SCHEDULE** is hereby deleted in its entirety and replaced with the Revised **SCHEDULE:**

B. **SCHEDULE:** The Contract resulting from this Bid shall be in effect on or about July 27, 2022, after Board approval with the work to begin upon Notice to Proceed and substantially completed within one hundred thirty days after the vendor receives all roofing materials with final completion thirty days after substantial completion.

Note: The apparent low bidder shall be available to attend a scope review meeting on Monday, July 18, 2022 at 9:00 am at the Facilities and Construction office 3420 West Tharpe Street, Suite 100, Tallahassee, Florida 32303.

This Addendum provides Board's written answers to the timely written questions received. All referenced attachments are posted at: https://www.leonschools.net/Page/4233

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Responses to Written Questions
Invitation to Bid (ITB) 5696-2023
Sealey Elementary School, Roof Replacement Project

Question 1: If an Existing Conditions/Investigation Assessment Report exists, please provide a copy of that report

Answer 1: See attached Exhibit 1 and Exhibit 2

Question 2: Attached is submittal for Comparable Products to be considered on this project See attached Exhibit 3

Answer 2: This product does NOT meet the alternate bid for the PVC system's requirements of an 80 mil PVC.

Question 3: Are all the roof drains being replaced or just the ones that have a 5 and arrow pointing to them?

Answer 3: Replace all roof drains. Work notes state that items indicated are typical and not shown at every specific location which scope is to be completed.

Question 4: Are all the VTR and Exhaust Fans being raised? Some are marked and some are not.

Answer 4: See Renovation Notes #2; Raise all rooftop equipment curbs, VTRs, penetrations, and expansion joints to a minimum of 10" above the finished roof surface.

Question 5: Bilco Guard Hatch Railings are called out in spec. Will railing be added? There is no mention of rails in the Drawings indicating any work on the roof hatch other than raising the curb.

Answer 5: Roof scuttle safety railing will not be needed for the project.

Question 6: Attached is submittal for Comparable Products to be considered on this project. See attached Exhibit 4

Answer 6: Recommend accepting the material as an alternate bid for PVC system, only with an 80 mil product, as it meets those requirements.

Question 6: Please provide a copy of the pre-bid sign in sheet

Answer 6: See attached Exhibit 5

Responses to Written Questions
Invitation to Bid (ITB) 5696-2023
Sealey Elementary School, Roof Replacement Project

Question 7: The existing lightweight concrete roof deck has slope now and is not flat-planed. The existing deck is not flat-planed, giving rise for concern that voids will occur in the placement of the insulations and jeopardize the wind uplift required for the project In addition, with the addition of the tapered system specified, it will add additional slope and create extremely thick insulation at the high sides of the tapered insulation, not to mention the increase of height at the eaves creating the need to install wood nailers. Would you consider a ¼" densdeck or other board that will better conform to the existing roof slope and swales?

Answer 7: No consideration for using ¼" densdeck in lieu of ½". The specified system should conform to any irregularities in the existing lightweight. Contractors should bid system as specified. We are aware that perimeter edge nailers are required to compensate for insulation thickness.

Question 8: If Leon County School board would also consider an alternate of FiberTite 8142 50 mil XT membrane? The data sheet is attached. This membrane will out-perform the 80 mil PVC products when it comes to puncture, rupture, UV resistance, and chemical resistance.
My concern is that if this project is awarded to a contractor that is using FiberTite, the membrane that will be most readily available is the FiberTite 8142 50 mil XT membrane. This membrane has the same fabric package as the specified membrane. Which means that it has the same puncture resistance and strength. The only difference is that it is 50 mil instead of 60 mil. The performance will be the same and the warranty will be the same. Our membrane has a very slow surface erosion and we have multiple 36 mil roofs over 30 years old still performing in Florida.

Answer 8: The request to substitute 50 mil for the specified 60 mil FiberTite is not acceptable.

Exhibit 1

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November 29, 2021

Southern Earth Sciences, Inc.
3642 Peddie Drive
Tallahassee, FL 32303

CLIENT PROJECT: Sealey E.S. - Bldgs 1-5 Roofs, T21-001
CEI LAB CODE: B2112024

Dear Customer:

Enclosed are asbestos analysis results for PLM Bulk samples received at our laboratory on November 22, 2021. The samples were analyzed for asbestos using polarizing light microscopy (PLM) per the EPA 600 Method.

Sample results containing >1% asbestos are considered asbestos-containing materials (ACMs) per EPA regulatory requirements. The detection limit for the EPA 600 Method is <1% asbestos by weight as determined by visual estimation.

Thank you for your business and we look forward to continuing good relations.

Kind Regards,

Tianbao Bai, Ph.D., CIH
Laboratory Director

NVLAP® TESTING
NVLAP LAB CODE 101768-0

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ASBESTOS ANALYTICAL REPORT
By: Polarized Light Microscopy

Prepared for

Southern Earth Sciences, Inc.

CLIENT PROJECT: Sealey E.S. - Bldgs 1-5 Roofs, T21-001

LAB CODE: B2112024

TEST METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORT DATE: 11/29/21

TOTAL SAMPLES ANALYZED: 35

SAMPLES >1% ASBESTOS:

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Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: Sealey E.S. - Bldgs 1-5 Roofs, T21-001 **LAB CODE: B2112024**

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
1		B192902	Black,White	Rolled Roof	None Detected
2	Layer 1	B192903	Brown	Insulation	None Detected
	Layer 2	B192903	Black	Felt Paper	None Detected
	Layer 3	B192903	Black	Tar	None Detected
	Layer 4	B192903	Brown	Fiberboard	None Detected
3	Layer 1	B192904	Silver,Black	Silver Paint	None Detected
	Layer 2	B192904	Black	Tar	None Detected
4		B192905	Silver,Black	Silver Paint	None Detected
5	Layer 1	B192906	Black	Rolled Roof	None Detected
	Layer 2	B192906	Black	Tar	None Detected
6	Layer 1	B192907	Black,White	Rolled Roof	None Detected
	Layer 2	B192907	Black	Tar	None Detected
7		B192908	Gray	Concrete	None Detected
8	Layer 1	B192909	Silver,Black	Silver Paint	None Detected
	Layer 2	B192909	Black	Tar	None Detected
9	Layer 1	B192910	Black	Rolled Roof	None Detected
	Layer 2	B192910	Black	Tar	None Detected
10	Layer 1	B192911	Black	Felt Paper	None Detected
	Layer 2	B192911	Brown	Insulation	None Detected
	Layer 3	B192911	Yellow	Insulation	None Detected
	Layer 4	B192911	Black	Felt Paper	None Detected
11	Layer 1	B192912	Black	Tar	None Detected
	Layer 2	B192912	Black	Felt Paper	None Detected
	Layer 3	B192912	Yellow	Insulation	None Detected
12		B192913	Silver,Black	Silver Paint	None Detected
13	Layer 1	B192914	Black	Rolled Roof	None Detected
	Layer 2	B192914	Black	Tar	None Detected
14	Layer 1	B192915	Black	Felt Paper	None Detected
	Layer 2	B192915	Brown	Insulation	None Detected
15		B192916	Gray	Concrete	None Detected
16		B192917	Black	Rolled Roof	None Detected

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Asbestos Report Summary

By: POLARIZING LIGHT MICROSCOPY

PROJECT: Sealey E.S. - Bldgs 1-5 Roofs, T21-001 **LAB CODE: B2112024**

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

Client ID	Layer	Lab ID	Color	Sample Description	ASBESTOS %
17		B192918	Gray	Concrete	None Detected
18		B192919	Black,Gray	Rolled Roof	None Detected
19		B192920	Black,Gray	Rolled Roof	None Detected
20		B192921	Gray	Concrete	None Detected
21		B192922	Silver,Black	Silver Paint	None Detected
22		B192923	Black,White	Rolled Roof	None Detected
23		B192924	Gray	Concrete	None Detected
24	Layer 1	B192925	Silver,Black	Silver Paint	None Detected
	Layer 2	B192925	Black,White	Rolled Roof	None Detected
25	Layer 1	B192926	Black	Felt Paper	None Detected
	Layer 2	B192926	Black	Tar	None Detected
26	Layer 1	B192927	Silver,Black	Silver Paint	None Detected
	Layer 2	B192927	Black,White	Rolled Roof	None Detected
27		B192928	Black,White	Rolled Roof	None Detected
28	Layer 1	B192929	Black,White	Felt Paper	None Detected
	Layer 2	B192929	Black	Tar	None Detected
29		B192930	Gray	Concrete	None Detected
30	Layer 1	B192931	Silver,Black	Silver Paint	None Detected
	Layer 2	B192931	Black	Tar	None Detected
31		B192932	Black,White	Rolled Roof	None Detected
32		B192933	Black,White	Rolled Roof	None Detected
33		B192934	Gray	Concrete	None Detected
34		B192935	Black	Rolled Roof	None Detected
35		B192936	Gray	Concrete	None Detected

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ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Southern Earth Sciences, Inc.
3642 Peddie Drive
Tallahassee, FL 32303

Lab Code: B2112024
Date Received: 11-22-21
Date Analyzed: 11-29-21
Date Reported: 11-29-21

Project: Sealey E.S. - Bldgs 1-5 Roofs, T21-001

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
1 B192902	Rolled Roof	Heterogeneous Black,White Fibrous Bound	50%	Fiberglass	40% 10%	Tar Gravel	None Detected
2 Layer 1 B192903	Insulation	Homogeneous Brown Fibrous Loosely Bound	85%	Cellulose	15%	Perlite	None Detected
Layer 2 B192903	Felt Paper	Homogeneous Black Fibrous Bound	70%	Fiberglass	30%	Tar	None Detected
Layer 3 B192903	Tar	Homogeneous Black Non-fibrous Bound			100%	Tar	None Detected
Layer 4 B192903	Fiberboard	Homogeneous Brown Fibrous Loosely Bound	100%	Cellulose			None Detected
3 Layer 1 B192904	Silver Paint	Heterogeneous Silver,Black Non-fibrous Bound			80% 20%	Paint Tar	None Detected
Layer 2 B192904	Tar	Homogeneous Black Non-fibrous Bound	2%	Fiberglass	98%	Tar	None Detected

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ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Southern Earth Sciences, Inc.
3642 Peddie Drive
Tallahassee, FL 32303

Lab Code: B2112024
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Project: Sealey E.S. - Bldgs 1-5 Roofs, T21-001

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
4 B192905	Silver Paint	Heterogeneous Silver,Black Non-fibrous Bound			80% 20%	Paint Tar	None Detected
5 Layer 1 B192906	Rolled Roof	Homogeneous Black Fibrous Bound	50%	Fiberglass	50%	Tar	None Detected
Layer 2 B192906	Tar	Homogeneous Black Non-fibrous Bound			100%	Tar	None Detected
6 Layer 1 B192907	Rolled Roof	Heterogeneous Black,White Fibrous Bound	50%	Fiberglass	40% 5% 5%	Tar Gravel Paint	None Detected
Layer 2 B192907	Tar	Homogeneous Black Non-fibrous Bound			100%	Tar	None Detected
7 B192908	Concrete	Homogeneous Gray Non-fibrous Bound			95% 5%	Binder Vermiculite	None Detected
8 Layer 1 B192909	Silver Paint	Heterogeneous Silver,Black Fibrous Bound	5%	Fiberglass	80% 15%	Paint Tar	None Detected

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ASBESTOS BULK ANALYSIS

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ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
Layer 2 B192909	Tar	Homogeneous Black Non-fibrous Bound			100%	Tar	None Detected
9 Layer 1 B192910	Rolled Roof	Homogeneous Black Fibrous Bound	50%	Fiberglass	50%	Tar	None Detected
Layer 2 B192910	Tar	Homogeneous Black Non-fibrous Bound			100%	Tar	None Detected
10 Layer 1 B192911	Felt Paper	Homogeneous Black Fibrous Bound	70%	Fiberglass	30%	Tar	None Detected
Layer 2 B192911	Insulation	Homogeneous Brown Fibrous Loosely Bound	85%	Cellulose	15%	Perlite	None Detected
Layer 3 B192911	Insulation	Homogeneous Yellow Non-fibrous Bound			100%	Foam	None Detected
Layer 4 B192911	Felt Paper	Homogeneous Black Fibrous Bound	70%	Fiberglass	30%	Tar	None Detected

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Project: Sealey E.S. - Bldgs 1-5 Roofs, T21-001

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
11 Layer 1 B192912	Tar	Homogeneous Black Non-fibrous Bound			100%	Tar	None Detected
Layer 2 B192912	Felt Paper	Homogeneous Black Fibrous Bound	70%	Fiberglass	30%	Tar	None Detected
Layer 3 B192912	Insulation	Homogeneous Yellow Non-fibrous Bound			100%	Foam	None Detected
12 B192913	Silver Paint	Heterogeneous Silver,Black Non-fibrous Bound			80% 20%	Paint Tar	None Detected
13 Layer 1 B192914	Rolled Roof	Homogeneous Black Fibrous Bound	50%	Fiberglass	40% 10%	Tar Gravel	None Detected
Layer 2 B192914	Tar	Homogeneous Black Non-fibrous Bound			100%	Tar	None Detected
14 Layer 1 B192915	Felt Paper	Homogeneous Black Fibrous Bound	50%	Fiberglass	50%	Tar	None Detected

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ASBESTOS BULK ANALYSIS

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Project: Sealey E.S. - Bldgs 1-5 Roofs, T21-001

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
Layer 2 B192915	Insulation	Homogeneous Brown Fibrous Loosely Bound	85%	Cellulose	15%	Perlite	None Detected
15 B192916	Concrete	Homogeneous Gray Non-fibrous Bound			95% 5%	Binder Vermiculite	None Detected
16 B192917	Rolled Roof	Homogeneous Black Fibrous Bound	50%	Fiberglass	50%	Tar	None Detected
17 B192918	Concrete	Homogeneous Gray Non-fibrous Bound			95% 5%	Binder Vermiculite	None Detected
18 B192919	Rolled Roof	Heterogeneous Black,Gray Fibrous Bound	50%	Fiberglass	40% 10%	Tar Gravel	None Detected
19 B192920	Rolled Roof	Homogeneous Black,Gray Fibrous Bound	50%	Fiberglass	40% 10%	Tar Gravel	None Detected
20 B192921	Concrete	Homogeneous Gray Non-fibrous Bound	<1%	Fiberglass	95% 5%	Binder Vermiculite	None Detected

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ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Southern Earth Sciences, Inc.
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Tallahassee, FL 32303

Lab Code: B2112024
Date Received: 11-22-21
Date Analyzed: 11-29-21
Date Reported: 11-29-21

Project: Sealey E.S. - Bldgs 1-5 Roofs, T21-001

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
21 B192922	Silver Paint	Heterogeneous Silver,Black Non-fibrous Bound	<1%	Cellulose	80% 20%	Paint Tar	None Detected
22 B192923	Rolled Roof	Heterogeneous Black,White Fibrous Bound	50%	Fiberglass	35% 10% 5%	Tar Gravel Paint	None Detected
23 B192924	Concrete	Homogeneous Gray Non-fibrous Bound	<1%	Fiberglass	95% 5%	Binder Vermiculite	None Detected
24 Layer 1 B192925	Silver Paint	Heterogeneous Silver,Black Non-fibrous Bound	<1%	Cellulose	80% 20%	Paint Tar	None Detected
Layer 2 B192925	Rolled Roof	Heterogeneous Black,White Fibrous Bound	50%	Fiberglass	40% 10%	Tar Gravel	None Detected
25 Layer 1 B192926	Felt Paper	Homogeneous Black Fibrous Bound	50%	Fiberglass	50%	Tar	None Detected
Layer 2 B192926	Tar	Homogeneous Black Non-fibrous Bound			100%	Tar	None Detected

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ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Southern Earth Sciences, Inc.
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Tallahassee, FL 32303

Lab Code: B2112024
Date Received: 11-22-21
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Date Reported: 11-29-21

Project: Sealey E.S. - Bldgs 1-5 Roofs, T21-001

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
26 Layer 1 B192927	Silver Paint	Heterogeneous Silver,Black Non-fibrous Bound	<1%	Cellulose	80% 20%	Paint Tar	None Detected
Layer 2 B192927	Rolled Roof	Heterogeneous Black,White Fibrous Bound	50%	Fiberglass	40% 10%	Tar Gravel	None Detected
27 B192928	Rolled Roof	Heterogeneous Black,White Fibrous Bound	50%	Fiberglass	50%	Tar	None Detected
28 Layer 1 B192929	Felt Paper	Heterogeneous Black,White Fibrous Bound	70%	Fiberglass	20% 10%	Tar Paint	None Detected
Layer 2 B192929	Tar	Homogeneous Black Non-fibrous Bound			100%	Tar	None Detected
29 B192930	Concrete	Homogeneous Gray Non-fibrous Bound			95% 5%	Binder Vermiculite	None Detected
30 Layer 1 B192931	Silver Paint	Heterogeneous Silver,Black Non-fibrous Bound	<1%	Cellulose	80% 20%	Paint Tar	None Detected

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ASBESTOS BULK ANALYSIS

By: POLARIZING LIGHT MICROSCOPY

Client: Southern Earth Sciences, Inc.
3642 Peddie Drive
Tallahassee, FL 32303

Lab Code: B2112024
Date Received: 11-22-21
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Project: Sealey E.S. - Bldgs 1-5 Roofs, T21-001

ASBESTOS BULK PLM, EPA 600 METHOD

Client ID / Lab ID	Lab Description	Lab Attributes	NON-ASBESTOS COMPONENTS Fibrous		Non-Fibrous		ASBESTOS %
Layer 2 B192931	Tar	Homogeneous Black Non-fibrous Bound			100%	Tar	None Detected
31 B192932	Rolled Roof	Heterogeneous Black,White Fibrous Bound	50%	Fiberglass	50%	Tar	None Detected
32 B192933	Rolled Roof	Heterogeneous Black,White Fibrous Bound	50%	Fiberglass	40% 10%	Tar Paint	None Detected
33 B192934	Concrete	Homogeneous Gray Non-fibrous Bound			95% 5%	Binder Vermiculite	None Detected
34 B192935	Rolled Roof	Heterogeneous Black Fibrous Bound	50%	Fiberglass	50%	Tar	None Detected
35 B192936	Concrete	Homogeneous Gray Non-fibrous Bound			95% 5%	Binder Vermiculite	None Detected

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LEGEND:
Non-Anth = Non-Asbestiform Anthophyllite
Non-Trem = Non-Asbestiform Tremolite
Calc Carb = Calcium Carbonate

METHOD: EPA 600 / R93 / 116 and EPA 600 / M4-82 / 020

REPORTING LIMIT: <1% by visual estimation

REPORTING LIMIT FOR POINT COUNTS: 0.25% by 400 Points or 0.1% by 1,000 Points

REGULATORY LIMIT: >1% by weight

Due to the limitations of the EPA 600 method, nonfriable organically bound materials (NOBs) such as vinyl floor tiles can be difficult to analyze via polarized light microscopy (PLM). EPA recommends that all NOBs analyzed by PLM, and found not to contain asbestos, be further analyzed by Transmission Electron Microscopy (TEM). Please note that PLM analysis of dust and soil samples for asbestos is not covered under NVLAP accreditation. *Estimated measurement of uncertainty is available on request.*

This report relates only to the samples tested or analyzed and may not be reproduced, except in full, without written approval by Eurofins CEI. Eurofins CEI makes no warranty representation regarding the accuracy of client submitted information in preparing and presenting analytical results. Interpretation of the analytical results is the sole responsibility of the client. Samples were received in acceptable condition unless otherwise noted. This report may not be used by the client to claim product endorsement by NVLAP or any other agency of the U.S. Government.

Information provided by customer includes customer sample ID and sample description.

ANALYST: Zane Heinz

APPROVED BY: Tianbao Bai, Ph.D., CIH
Laboratory Director

Scott Minyard

NVLAP® TESTING
NVLAP LAB CODE 101768-0

Exhibit 1

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CHAIN OF CUSTODY

730 SE Maynard Road, Cary, NC 27511
Tel: 866-481-1412; Fax: 919-481-1442

LAB USE ONLY:	
CEI Lab Code:	B2112024
CEI Lab I.D. Range:	B192902-B192935

35

COMPANY INFORMATION	PROJECT INFORMATION
CEI CLIENT #:	Job Contact: ROY L. RUSSELL
Company: SOUTHERN EARTH SCIENCES	Email / Tel: rrussell@soearth.com 850-519-1565
Address: 2467 CENTERVILLE, TALLAHASSEE, FL 32308	Project Name: Seeley E.S. - Bldgs 1-5 Roofs
	Project ID#: T21-001
Email: rrussell@soearth.com	PO #:
Tel: 850-576-4652 Fax: 850-576-4710	STATE SAMPLES COLLECTED IN: FL

IF TAT IS NOT MARKED STANDARD 3 DAY TAT APPLIES.

ASBESTOS	METHOD	TURN AROUND TIME					
		4 HR	8 HR	1 DAY	2 DAY	3 DAY	5 DAY
PLM BULK	EPA 600	☐	☐	☐	☐	☑	☐
PLM POINT COUNT (400)	EPA 600	☐	☐	☐	☐	☐	☐
PLM POINT COUNT (1000)	EPA 600	☐	☐	☐	☐	☐	☐
PLM GRAV w POINT COUNT	EPA 600		☐	☐	☐	☐	☐
PLM BULK	CARB 435		☐	☐	☐	☐	☐
PCM AIR	NIOSH 7400	☐	☐	☐	☐	☐	☐
TEM AIR	EPA AHERA	☐	☐	☐	☐	☐	☐
TEM AIR	NIOSH 7402	☐	☐	☐	☐	☐	☐
TEM AIR (PCME)	ISO 10312	☐	☐	☐	☐	☐	☐
TEM AIR	ASTM 6281-15	☐	☐	☐	☐	☐	☐
TEM BULK	CHATFIELD		☐	☐	☐	☐	☐
TEM DUST WIPE	ASTM D6480-05 (2010)	☐	☐	☐	☐	☐	☐
TEM DUST MICROVAC	ASTM D5755-09 (2014)	☐	☐	☐	☐	☐	☐
TEM SOIL	ASTM D7521-16			☐	☐	☐	☐
TEM VERMICULITE	CINCINNATI METHOD			☐	☐	☐	☐
TEM QUALITTATIVE	IN-HOUSE METHOD		☐	☐	☐	☐	☐
OTHER:		☐	☐	☐	☐	☐	☐

REMARKS / SPECIAL INSTRUCTIONS:

☑ Accept Samples
☐ Reject Samples

Relinquished By:	Date/Time	Received By:	Date/Time
[signature]	11/19/21 1600	BNB	11/22/21 10:10

Samples will be disposed of 30 days after analysis

Version: CCOC.01.18.1/2.LD

Exhibit 1

B2112024

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SAMPLING FORM

COMPANY CONTACT INFORMATION	
Company: SOUTHERN EARTH SCIENCES	Job Contact: ROY L. RUSSELL - TALLAHASSEE OFFICE
Project Name: Sealey E.S. Bldgs 1-5 Roofs	rrussell@soearth.com ljackson@soearth.com
Project ID #: T21-001	Tel: 850-519-1565

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST	
1	Bldg 1 W Roof Edge Top	Rolled Roof/Tar	PLM ✓	TEM
2	" " " " " Base	Felt/Tar/Asphalt	PLM ✓	TEM
3	" " " " Cap	Tar/Silver Paint	PLM ✓	TEM
4	" " " " Metal Cap	Tar/Silver Paint	PLM ✓	TEM
5	" " Center " Run Top	Rolled Roof/Tar	PLM ✓	TEM
6	" " " " " Bottom	Felt/Tar/Asphalt	PLM ✓	TEM
7	" " " " " Base	Soft Concrete	PLM ✓	TEM
8	" " Kitchen Roof Base wall	Tar/Silver Paint	PLM ✓	TEM
9	" " Base Upper Roof Top	Rolled Roof/Tar	PLM ✓	TEM
10	" " " " " Mid	Felt/Tar/Asphalt	PLM ✓	TEM
11	" " " " " Bottom	Felt/Tar/Asphalt	PLM ✓	TEM
12	" " Metal Cap	Tar/Silver Paint	PLM ✓	TEM
13	" " E/W Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
14	" " " " " Mid	Felt/Tar/Asphalt	PLM ✓	TEM
15	" " " " " Base	Soft Concrete	PLM ✓	TEM
16	Bldg 5 Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
17	" " " " Base	Soft Concrete	PLM ✓	TEM
18	" " Roof Vent Top	Rolled Roof/Tar	PLM ✓	TEM
19	" " " " Mid	Felt/Tar	PLM ✓	TEM
20	" " " " Base	Soft Concrete	PLM ✓	TEM
21	" " " "	Silver Paint/Tar	PLM ✓	TEM
22	Bldg 4 Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
23	" " Base	Soft Concrete	PLM ✓	TEM
24	" " Roof Vent Top	Rolled Roof/Tar	PLM ✓	TEM
25	" " " " Mid	Felt/Tar	PLM ✓	TEM
26	" " " "	Tar/Silver Paint	PLM ✓	TEM
27	Bldg 2/3 Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
28	" " " " Mid	Tar/Felt	PLM ✓	TEM
29	" " " " Base	Soft Concrete	✓	

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COMPANY CONTACT INFORMATION	
Company: SOUTHERN EARTH SCIENCES	Job Contact: ROY L. RUSSELL - TALLAHASSEE OFFICE
Project Name: Sealey E.S. Bldgs 1-5 Roofs	rrussell@soearth.com ljackson@soearth.com
Project ID #: T21-001	Tel: 850-519-1565

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST			
30	Bldg 2/3 Roof Vent	Tar/Silver Paint	PLM	☑	TEM	☐
31	" " Roof Edge Top	Rolled Roof/Tar	PLM	☑	TEM	☐
32	" " " " Mid	Rolled Roof/Tar	PLM	☑	TEM	☐
33	" " " " Base	Soft Concrete	PLM	☑	TEM	☐
34	" " Roof Run Top	Rolled Roof/Tar	PLM	☑	TEM	☐
35	" " " " Base	Soft Concrete	PLM	☑	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐

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Project Name: Sealey E.S. Bldgs 1-5 Roofs	rrussell@soearth.com ljackson@soearth.com
Project ID #: T21-001	Tel: 850-519-1565

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST	
1	Bldg 1 W Roof Edge Top	Rolled Roof/Tar	PLM ✓	TEM
2	" " " " " Base	Felt/Tar/Fiberglass	PLM ✓	TEM
3	" " " " Cap	Tar/Silver Paint	PLM ✓	TEM
4	" " " " Metal Cap	Tar/Silver Paint	PLM ✓	TEM
5	" " Center " Run Top	Rolled Roof/Tar	PLM ✓	TEM
6	" " " " " Bottom	Felt/Tar/Fiberglass	PLM ✓	TEM
7	" " " " " Base	Soft Concrete	PLM ✓	TEM
8	" " Kitchen Roof Base wall	Tar/Silver Paint	PLM ✓	TEM
9	" " Base Upper Roof Top	Rolled Roof/Tar	PLM ✓	TEM
10	" " " " " Mid	Felt/Tar/Fiberglass	PLM ✓	TEM
11	" " " " " Bottom	Felt/Tar/Fiberglass	PLM ✓	TEM
12	" " Metal Cap	Tar/Silver Paint	PLM ✓	TEM
13	" " East Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
14	" " " " " Mid	Felt/Tar/Fiberglass	PLM ✓	TEM
15	" " " " " Base	Soft Concrete	PLM ✓	TEM
16	Bldg 5 Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
17	" " " " Base	Soft Concrete	PLM ✓	TEM
18	" " Roof Vent Top	Rolled Roof/Tar	PLM ✓	TEM
19	" " " " Mid	Felt/Tar	PLM ✓	TEM
20	" " " " Base	Soft Concrete	PLM ✓	TEM
21	" " " "	Silver Paint/Tar	PLM ✓	TEM
22	Bldg 4 Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
23	" " Base	Soft Concrete	PLM ✓	TEM
24	" " Roof Vent Top	Rolled Roof/Tar	PLM ✓	TEM
25	" " " " Mid	Felt/Tar	PLM ✓	TEM
26	" " " "	Tar/Silver Paint	PLM ✓	TEM
27	Bldg 2/3 Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
28	" " " " Mid	Tar/Felt	PLM ✓	TEM
29	" " " " Base	Soft Concrete	✓	

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SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST			
30	Bldg 2/3 Roof Vent	Tar/Silver Paint	PLM	✓	TEM	☐
31	" " Roof Edge Top	Rolled Roof Tar	PLM	✓	TEM	☐
32	" " " " Mid	Rolled Roof Tar	PLM	✓	TEM	☐
33	" " " " Base	Soft Concrete	PLM	✓	TEM	☐
34	" " Roof Run Top	Rolled Roof Tar	PLM	✓	TEM	☐
35	" " " " Base	Soft Concrete	PLM	✓	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐

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Project ID #: T21-001	Tel: 850-519-1565

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST	
1	Bldg 1 W Roof Edge Top	Rolled Roof/Tar	PLM ✓	TEM
2	" " " " " Base	Felt/Tar/Fiberglass	PLM ✓	TEM
3	" " " " Cap	Tar/Silver Paint	PLM ✓	TEM
4	" " " " Metal Cap	Tar/Silver Paint	PLM ✓	TEM
5	" " Center " Run Top	Rolled Roof/Tar	PLM ✓	TEM
6	" " " " " Bottom	Felt/Tar/Fiberglass	PLM ✓	TEM
7	" " " " " Base	Soft Concrete	PLM ✓	TEM
8	" " Kitchen Roof Base wall	Tar/Silver Paint	PLM ✓	TEM
9	" " Base Upper Roof Top	Rolled Roof/Tar	PLM ✓	TEM
10	" " " " " Mid	Felt/Tar/Fiberglass	PLM ✓	TEM
11	" " " " " Bottom	Felt/Tar/Fiberglass	PLM ✓	TEM
12	" " Metal Cap	Tar/Silver Paint	PLM ✓	TEM
13	" " Ent Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
14	" " " " " Mid	Felt/Tar/Fiberglass	PLM ✓	TEM
15	" " " " " Base	Soft Concrete	PLM ✓	TEM
16	Bldg 5 Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
17	" " " " Base	Soft Concrete	PLM ✓	TEM
18	" " Roof Vent Top	Rolled Roof/Tar	PLM ✓	TEM
19	" " " " Mid	Felt/Tar	PLM ✓	TEM
20	" " " " Base	Soft Concrete	PLM ✓	TEM
21	" " " "	Silver Paint/Tar	PLM ✓	TEM
22	Bldg 4 Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
23	" " Base	Soft Concrete	PLM ✓	TEM
24	" " Roof Vent Top	Rolled Roof/Tar	PLM ✓	TEM
25	" " " " Mid	Felt/Tar	PLM ✓	TEM
26	" " " "	Tar/Silver Paint	PLM ✓	TEM
27	Bldg 2/3 Roof Run Top	Rolled Roof/Tar	PLM ✓	TEM
28	" " " " Mid	Tar/Felt	PLM ✓	TEM
29	" " " " Base	Soft Concrete	✓	

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Project ID #: T21-001	Tel: 850-519-1565

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST			
30	Bldg 2/3 Roof Vent	Tan/Silver Paint	PLM	☑	TEM	☐
31	" " Roof Edge Top	Rolled Roof Tar	PLM	☑	TEM	☐
32	" " " " Mid	Rolled Roof Tar	PLM	☑	TEM	☐
33	" " " " Base	Soft Concrete	PLM	☑	TEM	☐
34	" " Roof Run Top	Rolled Roof Tar	PLM	☑	TEM	☐
35	" " " " Base	Soft Concrete	PLM	☑	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐

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Project ID #: T21-001	Tel: 850-519-1565

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST			
1	Bldg 1 W Roof Edge Top	Rolled Roof/Tar	PLM	✓	TEM	
2	" " " " " Base	Felt/Tar/Bitumen	PLM	✓	TEM	
3	" " " " Cap	Tar/Silver Paint	PLM	✓	TEM	
4	" " " " Metal Cap	Tar/Silver Paint	PLM	✓	TEM	
5	" " Center " Run Top	Rolled Roof/Tar	PLM	✓	TEM	
6	" " " " " Base	Felt/Tar/Bitumen	PLM	✓	TEM	
7	" " " " " Base	Soft Concrete	PLM	✓	TEM	
8	" " Kitchen Roof Base wall	Tar/Silver Paint	PLM	✓	TEM	
9	" " Base Upper Roof Top	Rolled Roof/Tar	PLM	✓	TEM	
10	" " " " " Mid	Felt/Tar/Bitumen	PLM	✓	TEM	
11	" " " " " Base	Felt/Tar/Bitumen	PLM	✓	TEM	
12	" " Metal Cap	Tar/Silver Paint	PLM	✓	TEM	
13	" " E/W Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
14	" " " " " Mid	Felt/Tar/Bitumen	PLM	✓	TEM	
15	" " " " " Base	Soft Concrete	PLM	✓	TEM	
16	Bldg 5 Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
17	" " " " Base	Soft Concrete	PLM	✓	TEM	
18	" " Roof Vent Top	Rolled Roof/Tar	PLM	✓	TEM	
19	" " " " Mid	Felt/Tar	PLM	✓	TEM	
20	" " " " Base	Soft Concrete	PLM	✓	TEM	
21	" " " "	Silver Paint/Tar	PLM	✓	TEM	
22	Bldg 4 Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
23	" " Base	Soft Concrete	PLM	✓	TEM	
24	" " Roof Vent Top	Rolled Roof/Tar	PLM	✓	TEM	
25	" " " " Mid	Felt/Tar	PLM	✓	TEM	
26	" " " "	Tar/Silver Paint	PLM	✓	TEM	
27	Bldg 2/3 Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
28	" " " " Mid	Tar/Felt	PLM	✓	TEM	
29	" " " " Base	Soft Concrete		✓		

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COMPANY CONTACT INFORMATION	
Company: SOUTHERN EARTH SCIENCES	Job Contact: ROY L. RUSSELL - TALLAHASSEE OFFICE
Project Name: Sealey E.S. Bldgs 1-5 Roofs	rrussell@soearth.com ljackson@soearth.com
Project ID #: T21-001	Tel: 850-519-1565

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST			
30	Bldg 2/3 Roof Vent	Tar/Silver Paint	PLM	☑	TEM	☐
31	" " Roof Edge Top	Rolled Roof Tar	PLM	☑	TEM	☐
32	" " " " Mid	Rolled Roof Tar	PLM	☑	TEM	☐
33	" " " " Base	Soft Concrete	PLM	☑	TEM	☐
34	" " Roof Run Top	Rolled Roof Tar	PLM	☑	TEM	☐
35	" " " " Base	Soft Concrete	PLM	☑	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐

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COMPANY CONTACT INFORMATION	
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Project Name: Sealey E.S. Bldgs 1--5 Roofs	rrussell@soearth.com ljackson@soearth.com
Project ID #: T21-001	Tel: 850-519-1565

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST			
1	Bldg 1 W Roof Edge Top	Rolled Roof/Tar	PLM	✓	TEM	
2	" " " " " Base	Felt/Tar	PLM	✓	TEM	
3	" " " " Cap	Tar/Silver Paint	PLM	✓	TEM	
4	" " " " Metal Cap	Tar/Silver Paint	PLM	✓	TEM	
5	" " Center " Run Top	Rolled Roof/Tar	PLM	✓	TEM	
6	" " " " " Bottom	Felt/Tar	PLM	✓	TEM	
7	" " " " " Base	Soft Concrete	PLM	✓	TEM	
8	" " Kitchen Roof Base wall	Tar/Silver Paint	PLM	✓	TEM	
9	" " Base Upper Roof Top	Rolled Roof/Tar	PLM	✓	TEM	
10	" " " " " Mid	Felt/Tar	PLM	✓	TEM	
11	" " " " " Bottom	Felt/Tar	PLM	✓	TEM	
12	" " Metal Cap	Tar/Silver Paint	PLM	✓	TEM	
13	" " Ent Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
14	" " " " " Mid	Felt/Tar	PLM	✓	TEM	
15	" " " " " Base	Soft Concrete	PLM	✓	TEM	
16	Bldg 5 Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
17	" " " " Base	Soft Concrete	PLM	✓	TEM	
18	" " Roof Vent Top	Rolled Roof/Tar	PLM	✓	TEM	
19	" " " " Mid	Felt/Tar	PLM	✓	TEM	
20	" " " " Base	Soft Concrete	PLM	✓	TEM	
21	" " " "	Silver Paint/Tar	PLM	✓	TEM	
22	Bldg 4 Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
23	" " Base	Soft Concrete	PLM	✓	TEM	
24	" " Roof Vent Top	Rolled Roof/Tar	PLM	✓	TEM	
25	" " " " Mid	Felt/Tar	PLM	✓	TEM	
26	" " " "	Tar/Silver Paint	PLM	✓	TEM	
27	Bldg 2/3 Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
28	" " " " Mid	Tar/Felt	PLM	✓	TEM	
29	" " " " Base	Soft Concrete	✓			

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COMPANY CONTACT INFORMATION	
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Project Name: Sealey E.S. Bldgs 1-5 Roofs	rrussell@soearth.com ljackson@soearth.com
Project ID #: T21-001	Tel: 850-519-1565

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST			
30	Bldg 2/3 Roof Vent	Tar/Silver Paint	PLM	☑	TEM	☐
31	" " Roof Edge Top	Rolled Roof Tar	PLM	☑	TEM	☐
32	" " " " Mid	Rolled Roof Tar	PLM	☑	TEM	☐
33	" " " " Base	Soft Concrete	PLM	☑	TEM	☐
34	" " Roof Run Top	Rolled Roof Tar	PLM	☑	TEM	☐
35	" " " " Base	Soft Concrete	PLM	☑	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐
			PLM	☐	TEM	☐

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SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST			
1	Bldg 1 W Roof Edge Top	Rolled Roof/Tar	PLM	✓	TEM	
2	" " " " " Base	Felt/Tar/Flashing	PLM	✓	TEM	
3	" " " " Cap	Tar/Silver Paint	PLM	✓	TEM	
4	" " " " Metal Cap	Tar/Silver Paint	PLM	✓	TEM	
5	" " Center " Run Top	Rolled Roof/Tar	PLM	✓	TEM	
6	" " " " " Bottom	Felt/Tar/Flashing	PLM	✓	TEM	
7	" " " " " Base	Soft Concrete	PLM	✓	TEM	
8	" " Kitchen Roof Base wall	Tar/Silver Paint	PLM	✓	TEM	
9	" " Base Upper Roof Top	Rolled Roof/Tar	PLM	✓	TEM	
10	" " " " " Mid	Felt/Tar/Flashing	PLM	✓	TEM	
11	" " " " " Bottom	Felt/Tar/Flashing	PLM	✓	TEM	
12	" " Metal Cap	Tar/Silver Paint	PLM	✓	TEM	
13	" " East Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
14	" " " " " Mid	Felt/Tar/Flashing	PLM	✓	TEM	
15	" " " " " Base	Soft Concrete	PLM	✓	TEM	
16	Bldg 5 Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
17	" " " " Base	Soft Concrete	PLM	✓	TEM	
18	" " Roof Vent Top	Rolled Roof/Tar	PLM	✓	TEM	
19	" " " " Mid	Felt/Tar	PLM	✓	TEM	
20	" " " " Base	Soft Concrete	PLM	✓	TEM	
21	" " " "	Silver Paint/Tar	PLM	✓	TEM	
22	Bldg 4 Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
23	" " Base	Soft Concrete	PLM	✓	TEM	
24	" " Roof Vent Top	Rolled Roof/Tar	PLM	✓	TEM	
25	" " " " Mid	Felt/Tar	PLM	✓	TEM	
26	" " " "	Tar/Silver Paint	PLM	✓	TEM	
27	Bldg 2/3 Roof Run Top	Rolled Roof/Tar	PLM	✓	TEM	
28	" " " " Mid	Tar/Felt	PLM	✓	TEM	
29	" " " " Base	Soft Concrete	✓			

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Project ID #: T21-001	Tel: 850-519-1565

SAMPLE ID#	DESCRIPTION / LOCATION	VOLUME/ AREA	TEST	
30	Bldg 2/3 Roof Vent	Tar/Silver Paint	PLM ☑	TEM ☐
31	" " Roof Edge Top	Rolled Roof Tar	PLM ☑	TEM ☐
32	" " " " Mid	Rolled Roof Tar	PLM ☑	TEM ☐
33	" " " " Base	Soft Concrete	PLM ☑	TEM ☐
34	" " Roof Run Top	Rolled Roof Tar	PLM ☑	TEM ☐
35	" " " " Base	Soft Concrete	PLM ☑	TEM ☐
			PLM ☐	TEM ☐
			PLM ☐	TEM ☐
			PLM ☐	TEM ☐
			PLM ☐	TEM ☐
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			PLM ☐	TEM ☐

Version: CCOC.01.18.2/2.LD

PARKER BROTHERS ROOFING AND CONSTRUCTION, INC.

Roof Thermal Inspection

Date: October 13, 2021

Weather Conditions: Sunny, 79 degrees and falling at the time of test

Address:Sealey Elementary School - 2815 Allen Rd, Tallahassee, FL 32312

Customer Name:Leon County Public Schools

Thermal Image Equipment: DJI Mavic 2 Pro Dual

Roof Age: Unknown

Roof Area Inspected:Bldgs01-05 totaling 68,767 square foot (base area)

Roofing Material Inspected: 2ply roofing with granulated cap sheet

About Thermal Inspections

Wetness issues are detected with thermal imagers primarily in two ways. The first method takes advantage of wet materials retaining heat longer than most dry construction materials. This means that water soaked material will retain heat and dissipate heat more slowly than dry material. Therefore, if a roof is inspected in the early evening after it has been heated by the sun all day, signs of possible roof wetness will be apparent with a thermal camera because the insulation that has been exposed to moisture will appear warmer than the surrounding dry areas. The second method utilizes the principles of evaporative cooling. When water evaporates, it cools the material it is in contact with. Therefore, water soaked material that is exposed to the same ambient temperatures as the surrounding material without solar loading, will appear cooler if the water has been evaporating.

Thermal images can be shown in several different color pallets. The most common color pallets where brighter colors are hot and darker colors are cold. The pallets allow images displayed in scale and the isolated temperature range.

Per ASTM C1153-10 section 13.1.1 verification of moisture detected should be carried out by invasive testing methods: Cores, or core and moisture meter probes.

Thermography testing is a non-invasive method to isolate the area's most likely to be problematic to the roof system. Failure to conduct core verification may result in false positives.

Inspection Results

Non-invasive thermal roof scans were performed on the roofs of buildings 01to 05 on October 13th,2021. An aerial image of the roofs scanned along with site plan are included for reference in the report.

Bldg 01

Existing conditions: ~49,977sf; 1 story; elev ~15'; ~2" to 3" bur roof system over lwic on steel deck; slope is in lwic; 1636lf edge; 112lf expansion joint; 260lf base flashing; 50ea- vtrs; 18ea pitch pan; 33ea roof drains; 33ea one-way vents; 20ea roof curbs; 6ea large roof curbs; 6" vents 25ea; 1ea 3" gooseneck; ~8,250sf metal mansard

Roof assembly consist of steel deck, extruded polystyrene, light weight concrete, vapor barrier, polyisocyanurate, wood fiber board, and 2 ply mineral modified bitumen. The surface of the roof is significantly aged. Mineral loss on the roof surface is substantial. The roof scanned showed significant signs of wet insulation. However, once the core verification was conducted it was determined that in all cases there was trapped moisture in the system. The vapor barrier layer is preventing the moisture from impacting the lightweight concrete. During each core collection the light weight concrete was powder dry. The wood fiber cover board was saturated.The roof over the auditorium area has a tpo recover system over the original modified system.

Areas highlighted on the roof plan showed the greatest amount of heat retention. Repairs and patches were omitted from the roof plan as the density of the materials could result in a false positive.

Bldg 02

Existing conditions ~4,207sf; 1 story; elev ~15'; 1/2"" modified bitumen over lwic on steel deck; slope in lwic; 289lf edge; 78lf expansion joint; 6ea- vtr; 7ea roof curbs; 7ea roof drains

Roofs on bldgs. 02-05 all consisted of a similar assembly.Roof assembly consist of steel deck, extruded polystyrene, light weight concrete, vapor barrier, and 2 ply mineral modified bitumen. The surface of the roof is significantly aged. Mineral loss on the roof surface is substantial. The roof scan showed less moisture in these areas.

Bldg 03

Existing conditions ~5,861sf; 1 story; elev ~15'; 1/2" modified bitumen over lwic on steel deck; slope in lwic; 423lf edge; 65lf expansion joint; 81lf base flashing;3ea- vtr; 10ea roof curbs; 7ea roof drains

Roofs on bldgs. 02-05 all consisted of a similar assembly. Roof assembly consist of steel deck, extruded polystyrene, light weight concrete, vapor barrier, and 2 ply mineral modified bitumen. The surface of the roof is significantly aged. Mineral loss on the roof surface is substantial. The roof scan showed less moisture in these areas.

Bldg 04

Existing conditions ~4,952sf; 1 story; elev ~15'; 1/2" modified bitumen over lwic on steel deck; slope in lwic; 309lf edge; 5ea- vtr; 9ea roof curbs; 4ea roof drains; 1ea 6" vent

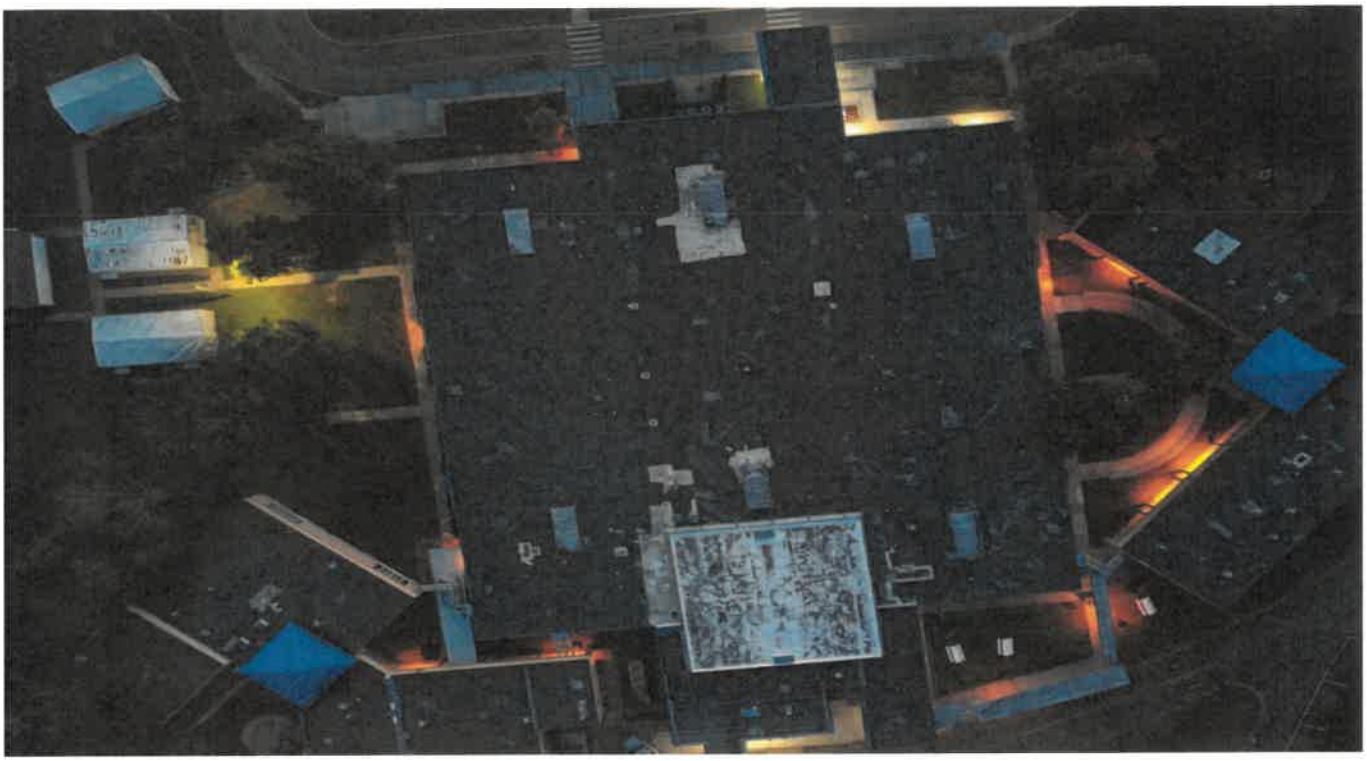
Roofs on bldgs. 02-05 all consisted of a similar assembly. Roof assembly consist of steel deck, extruded polystyrene, light weight concrete, vapor barrier, and 2 ply mineral modified bitumen. The surface of the roof is significantly aged. Mineral loss on the roof surface is substantial. The roof scan showed less moisture in these areas.

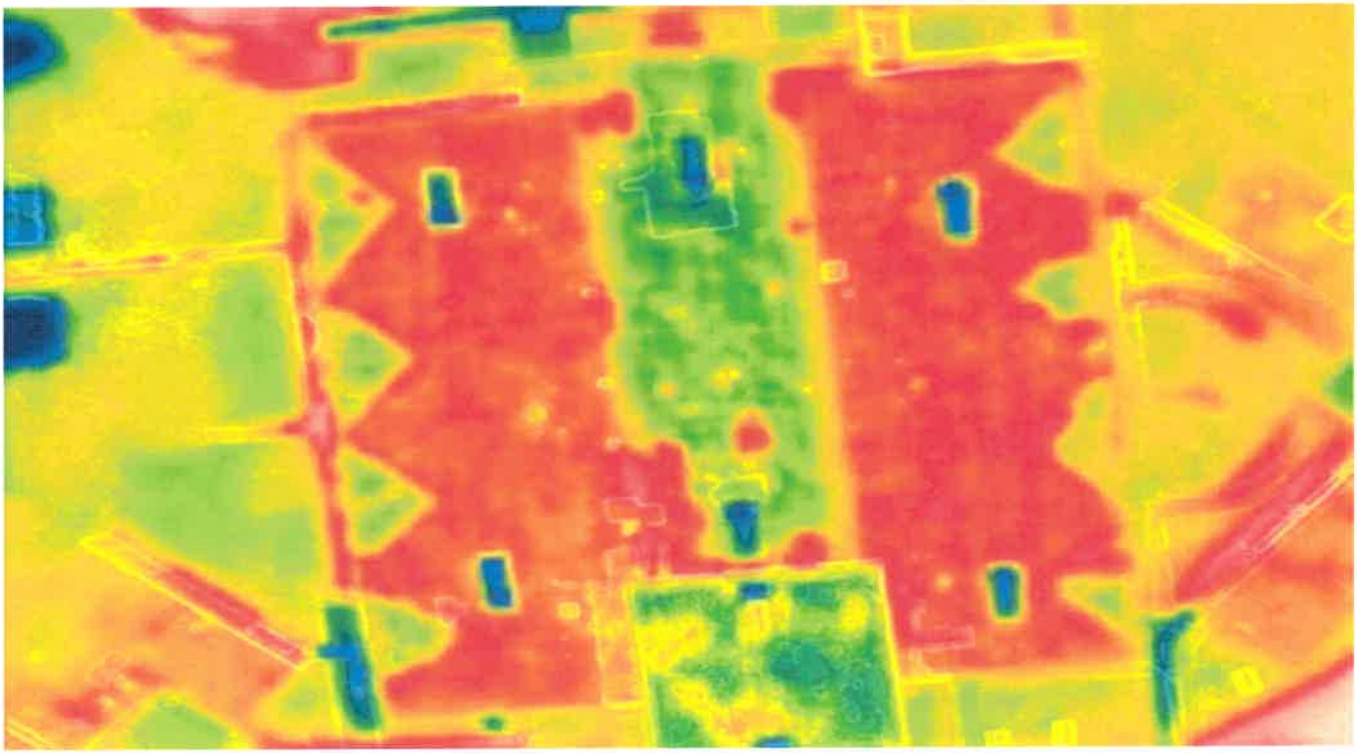
Bldg 05

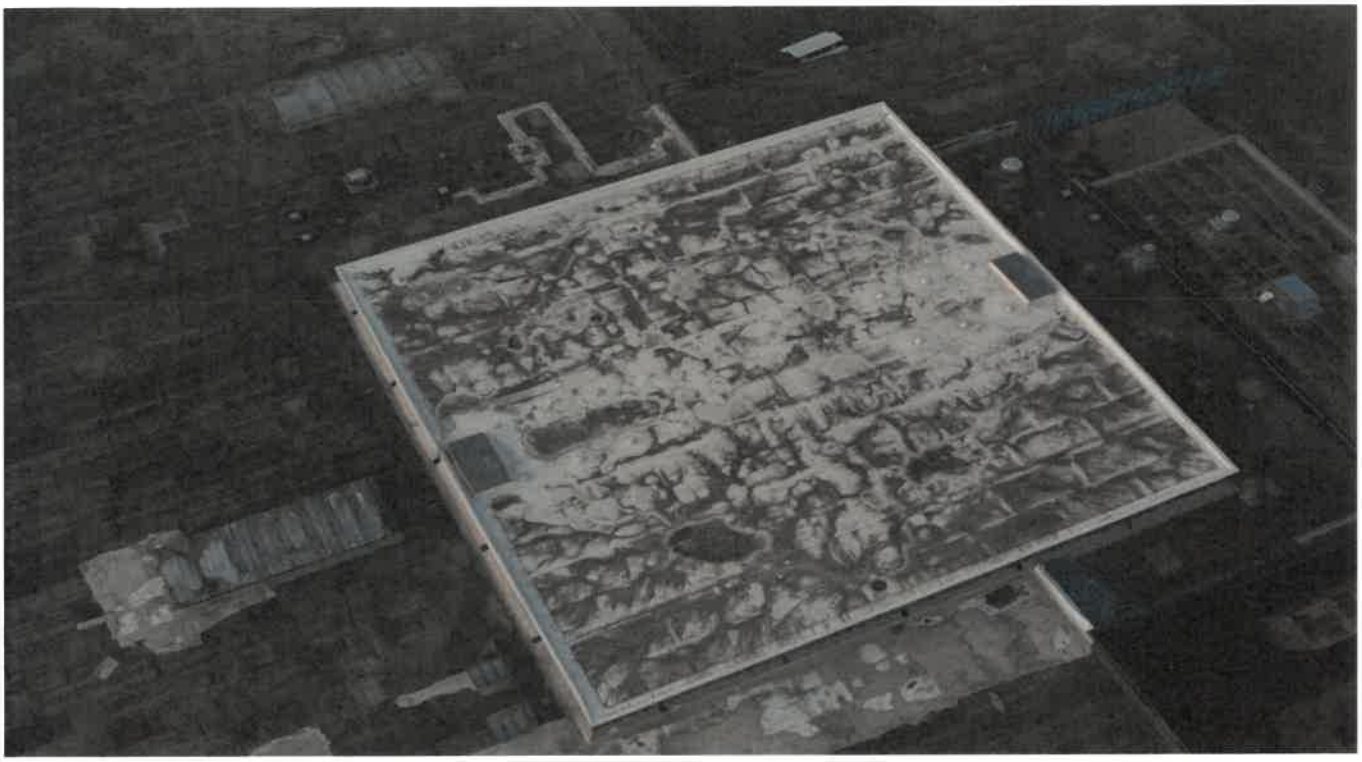
Existing conditions ~3,596sf; 1 story; elev ~15'; 1/2" modified bitumen over lwic on steel deck; slope in lwic; 250lf edge; 3ea- vtr; 8ea roof curbs; 3ea roof drains

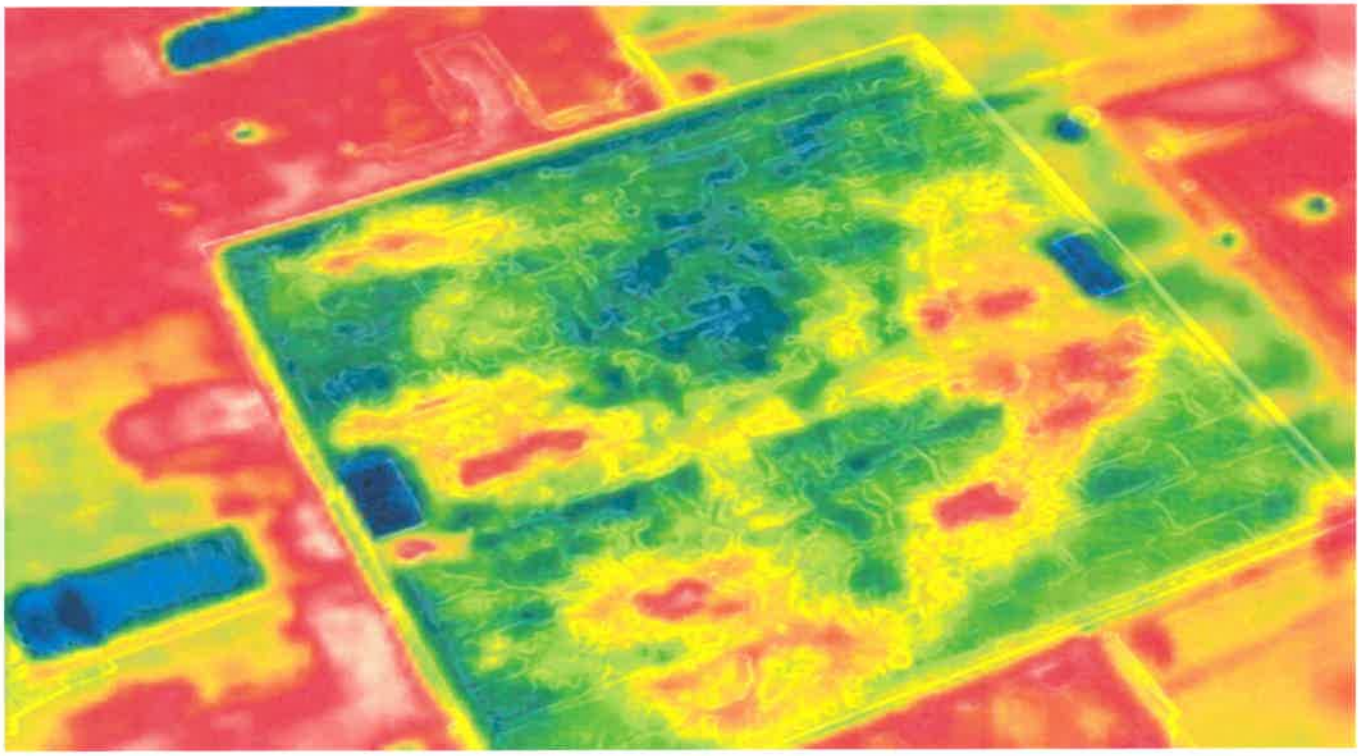
Roofs on bldgs. 02-05 all consisted of a similar assembly. Roof assembly consist of steel deck, extruded polystyrene, light weight concrete, vapor barrier, and 2 ply mineral modified bitumen. The surface of the roof is significantly aged. Mineral loss on the roof surface is substantial. The roof scan showed less moisture in these areas.

Images









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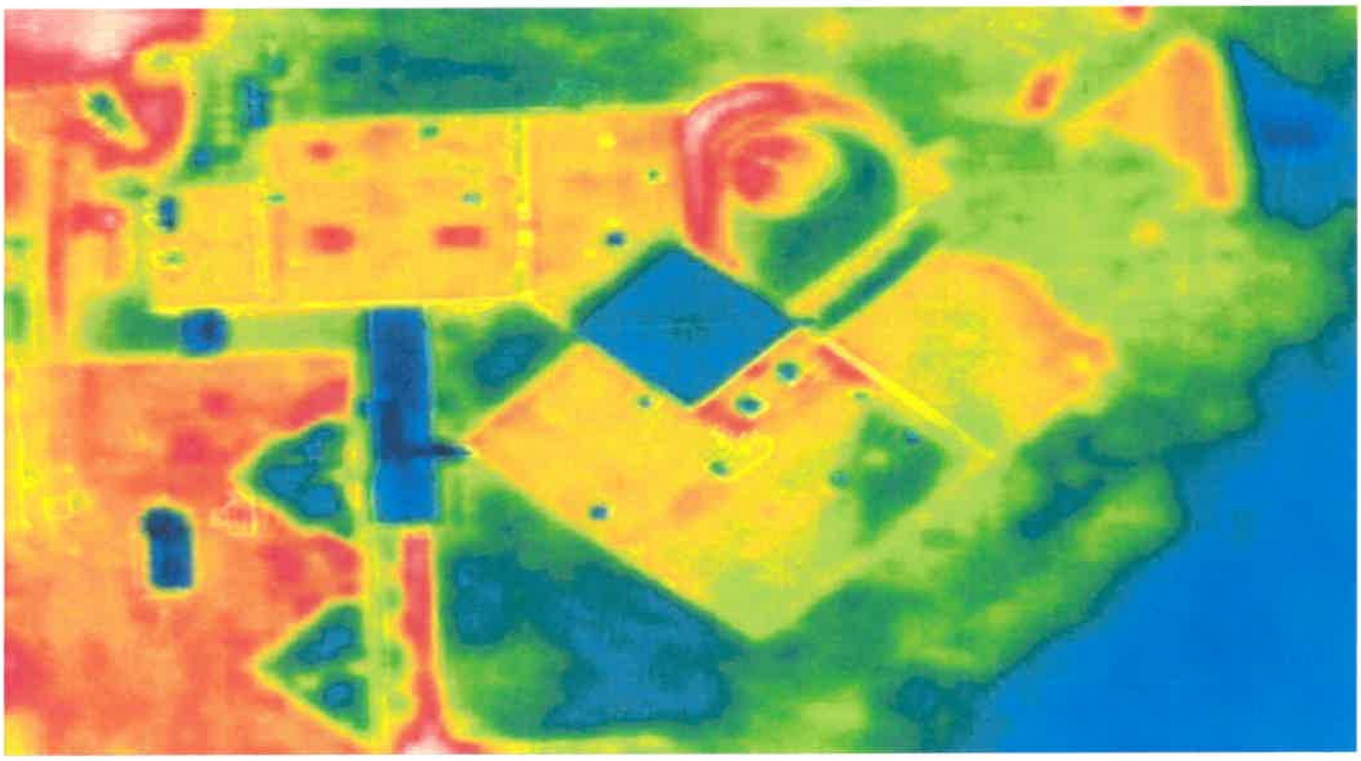

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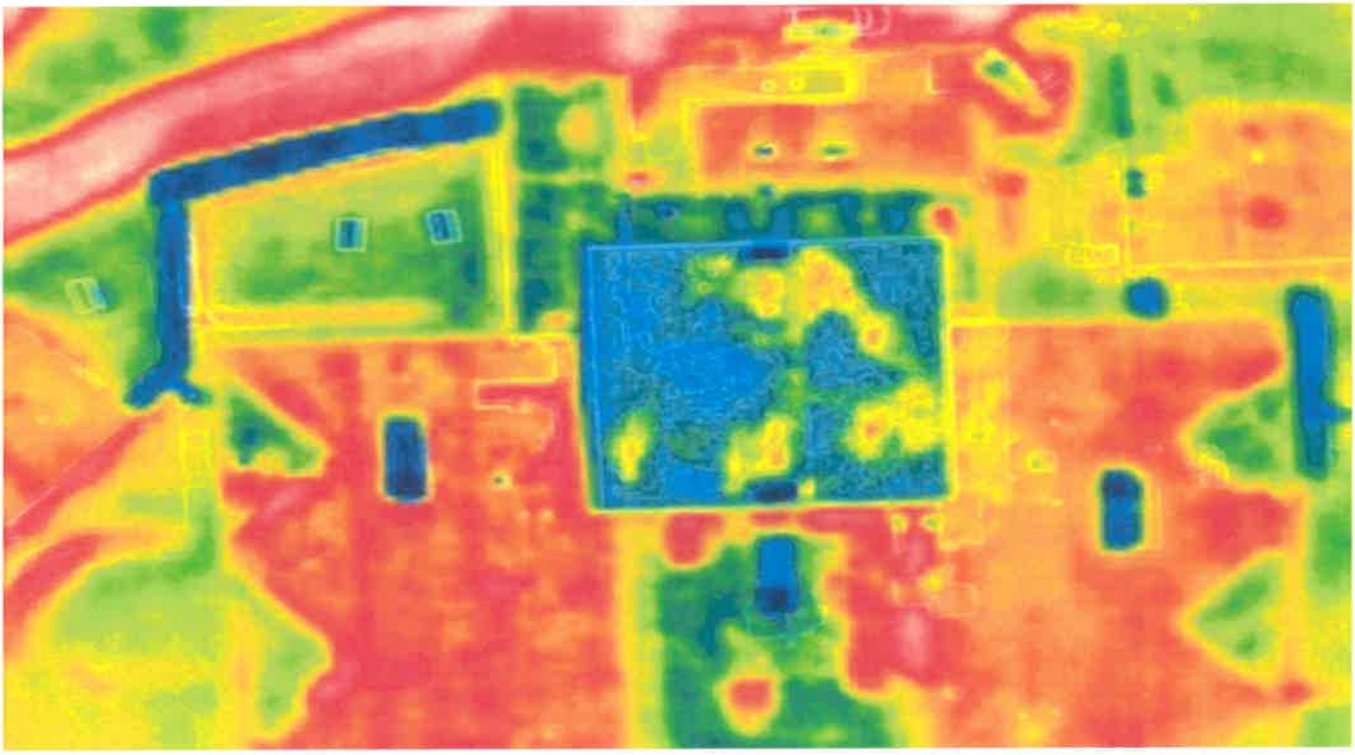

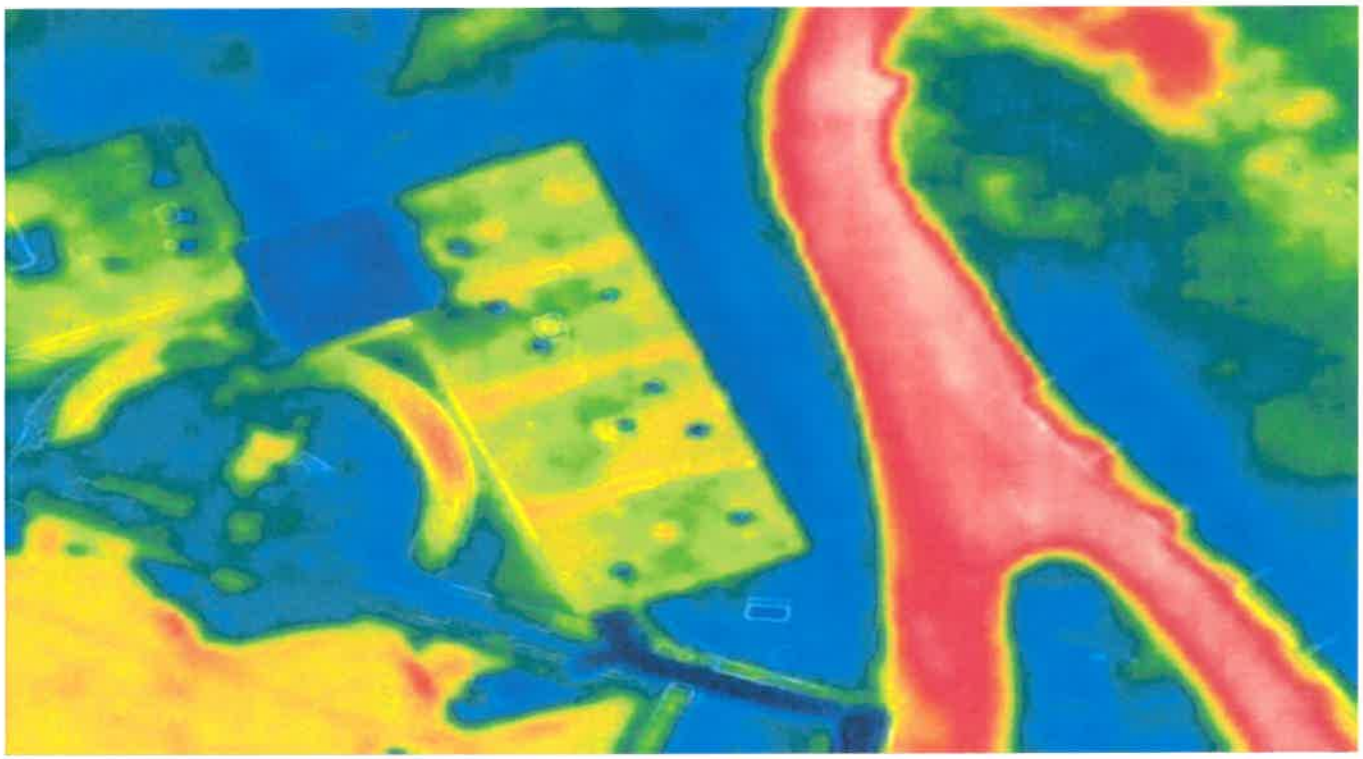

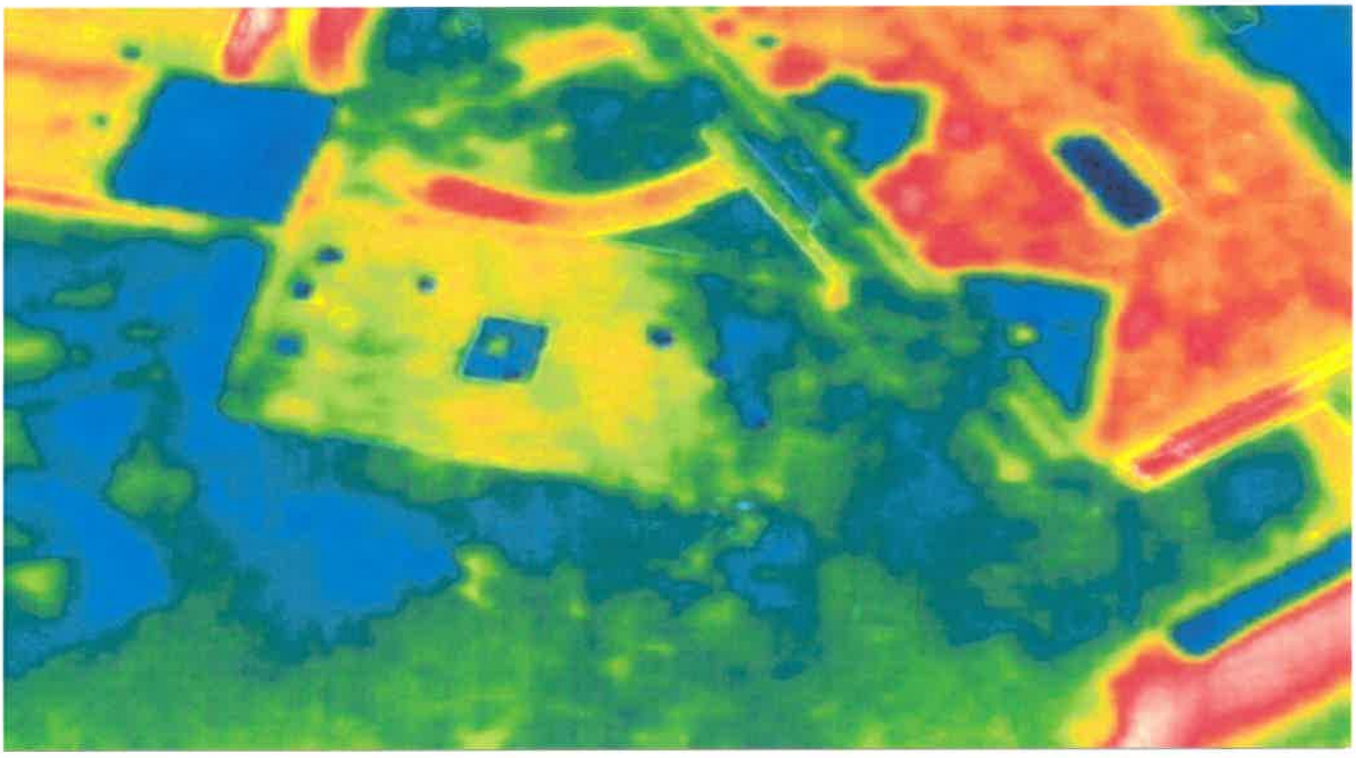

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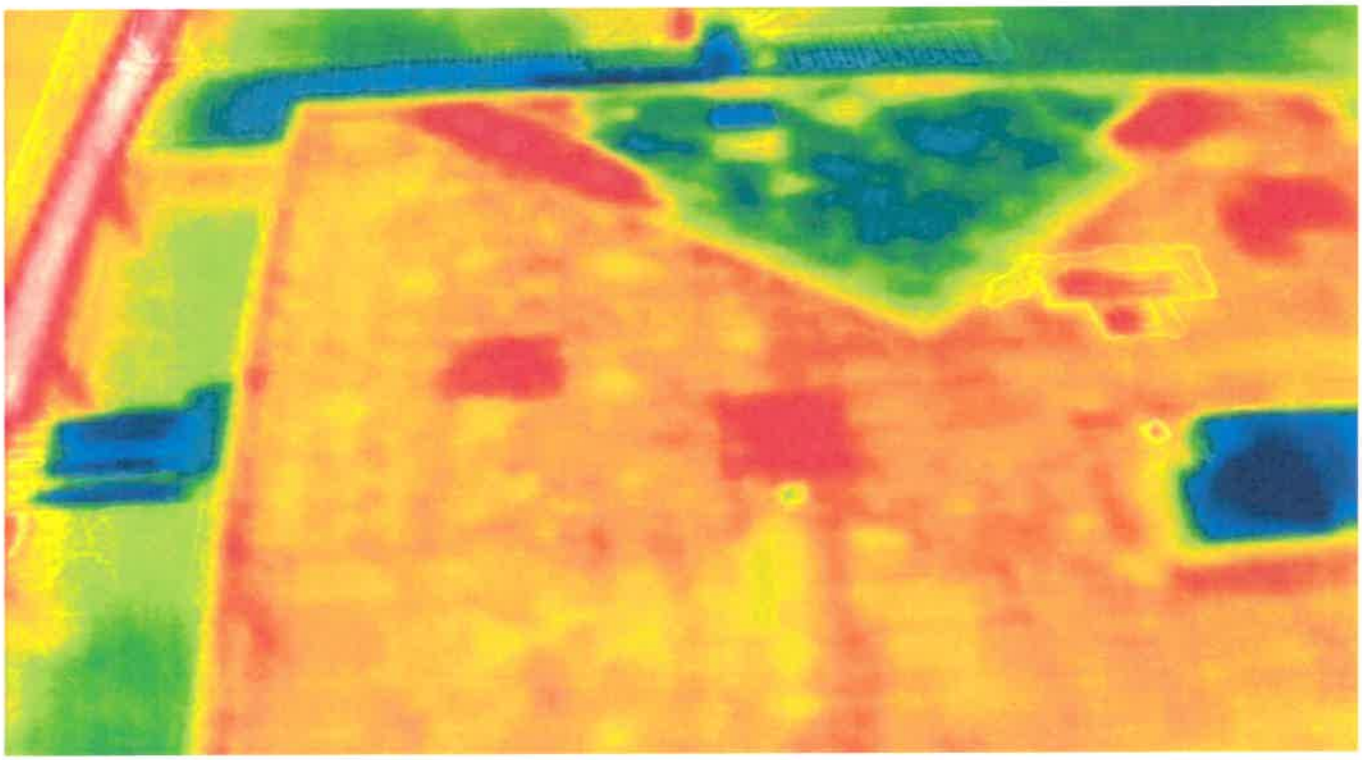

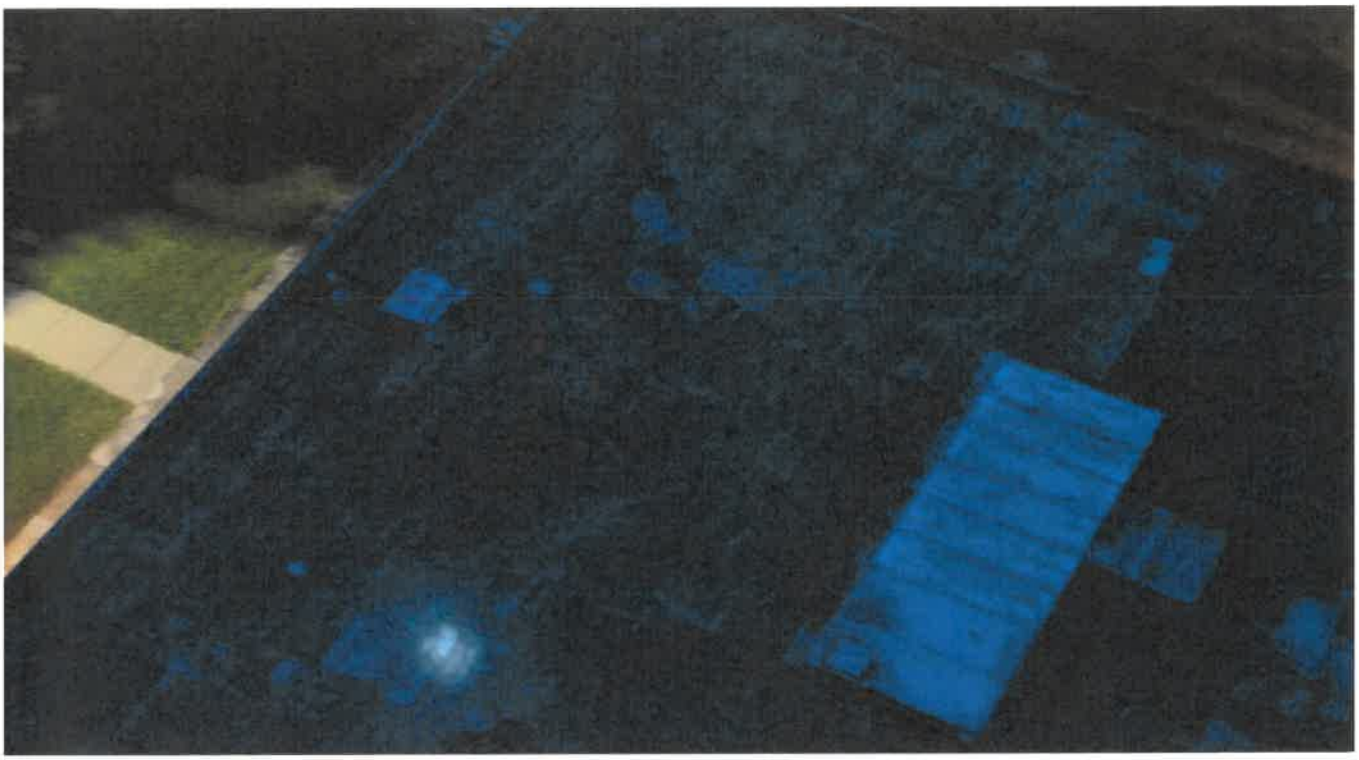

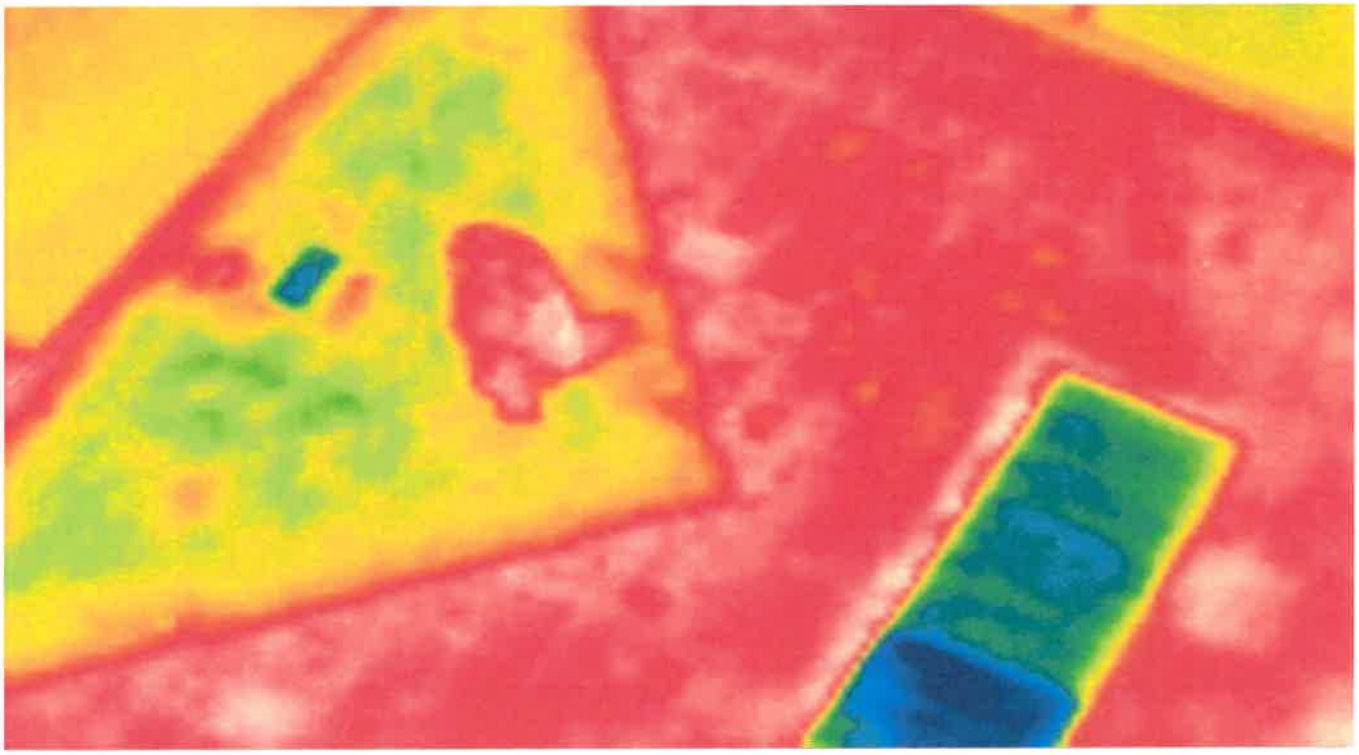

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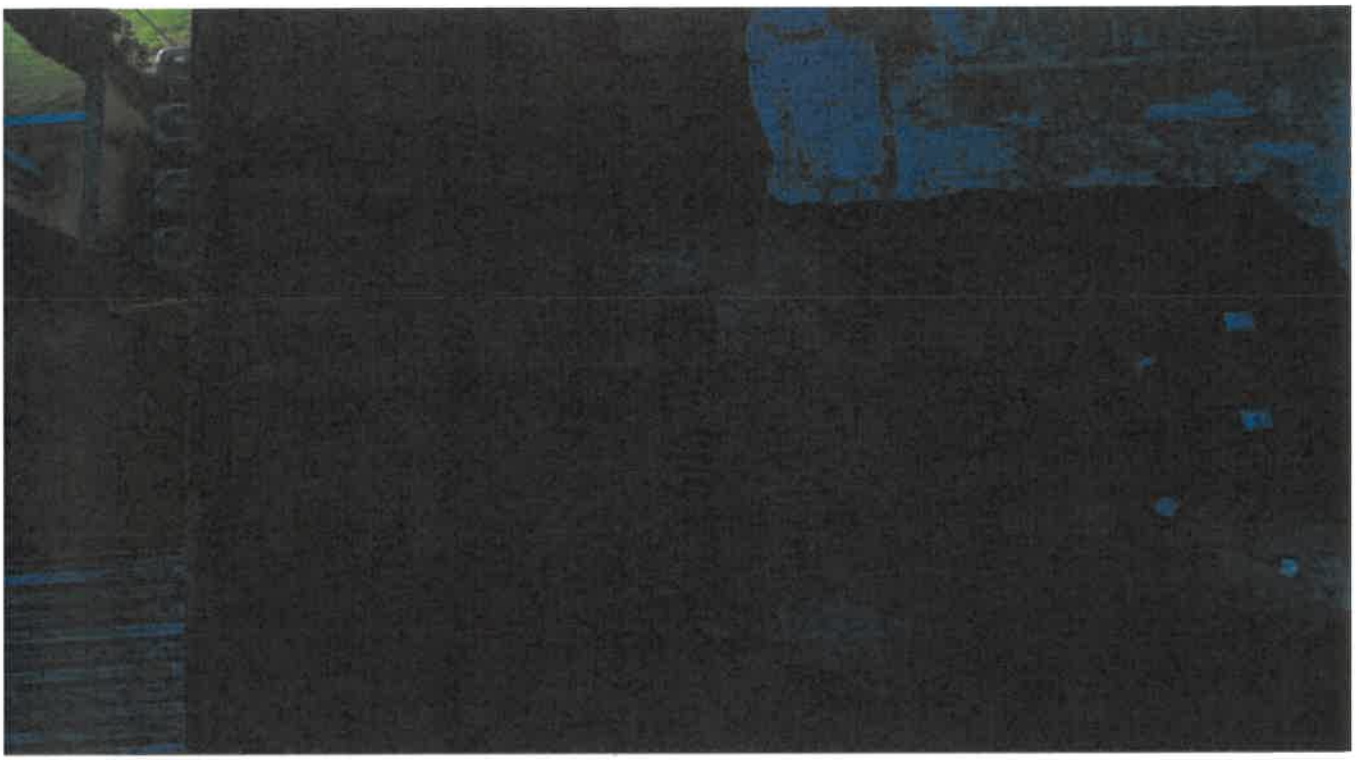

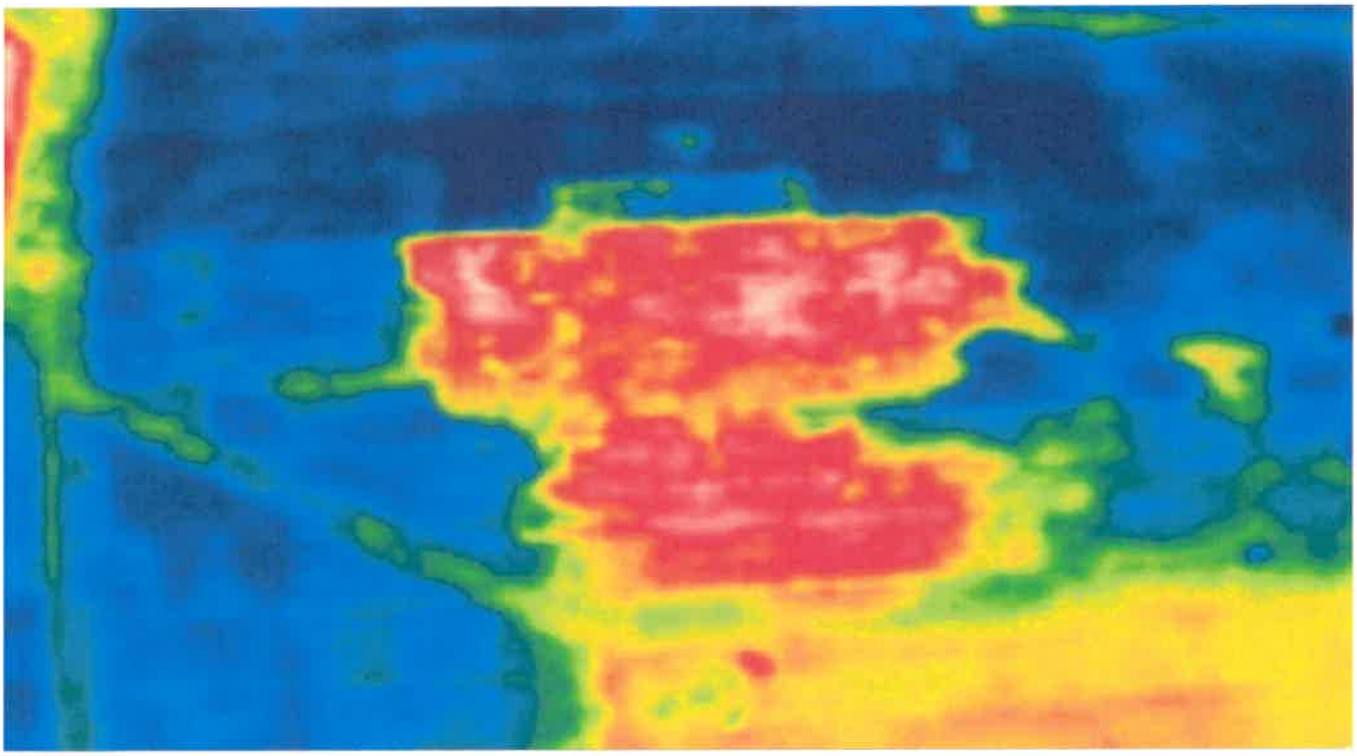

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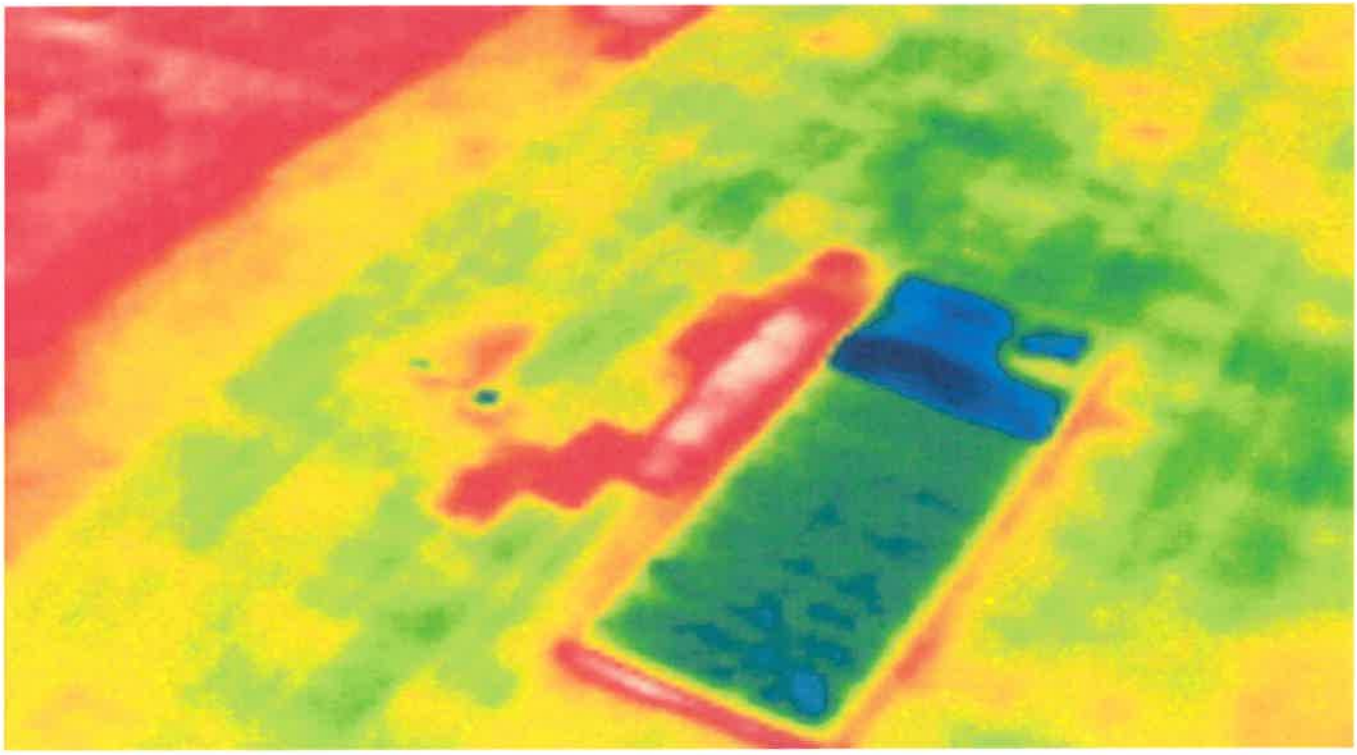

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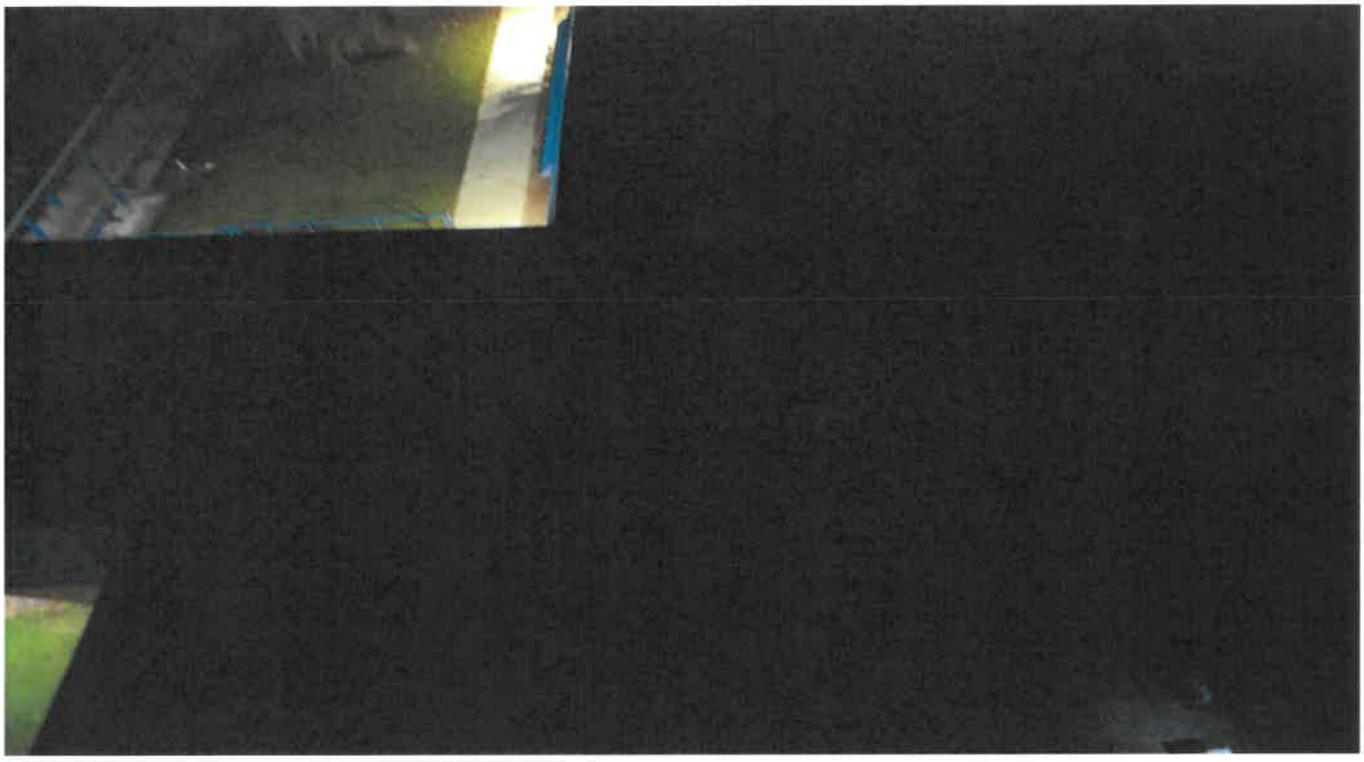

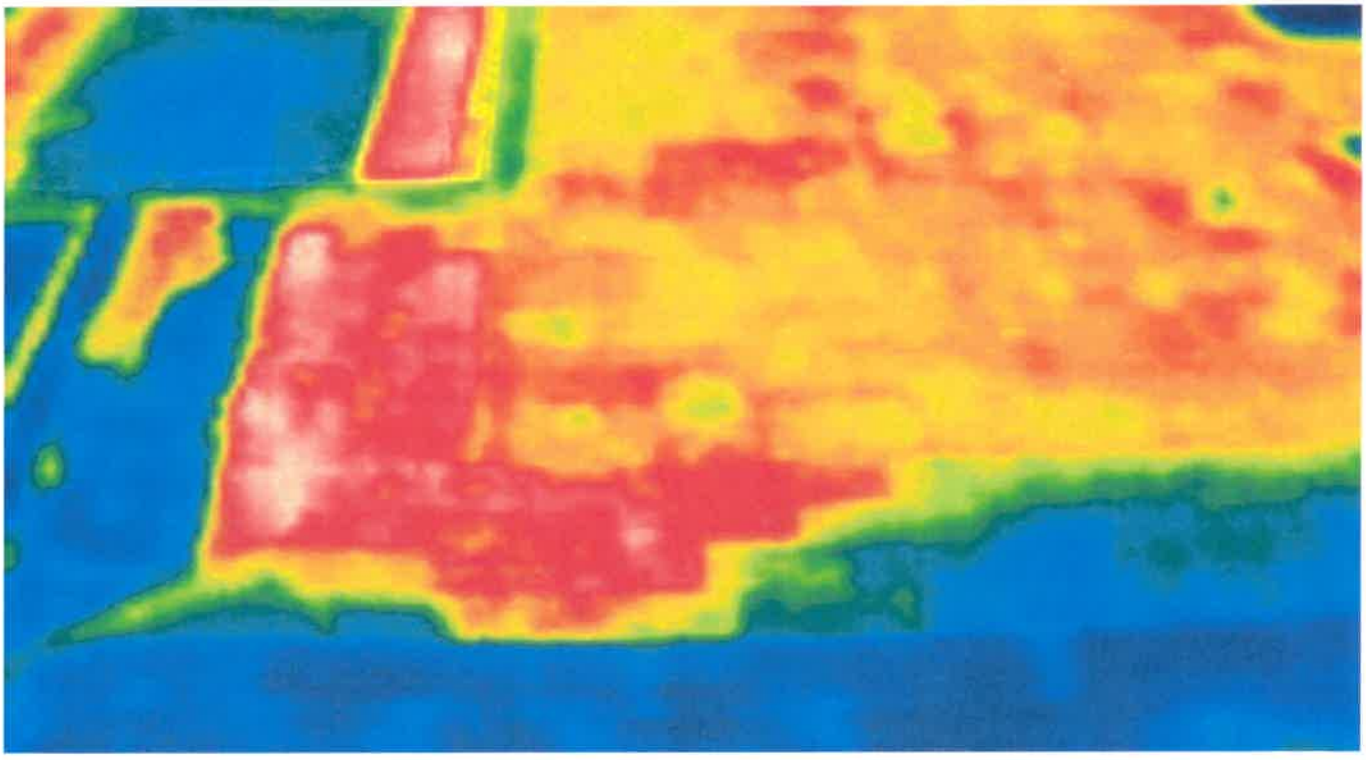

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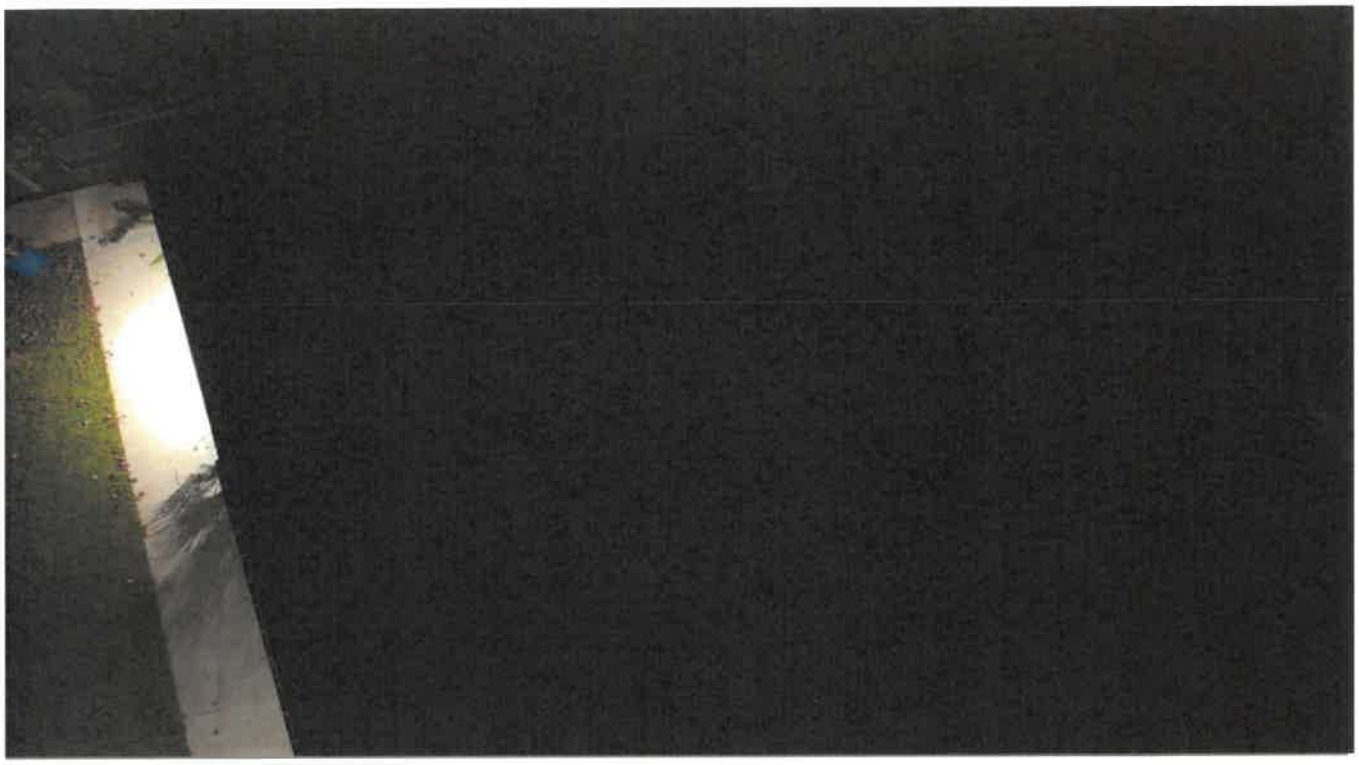

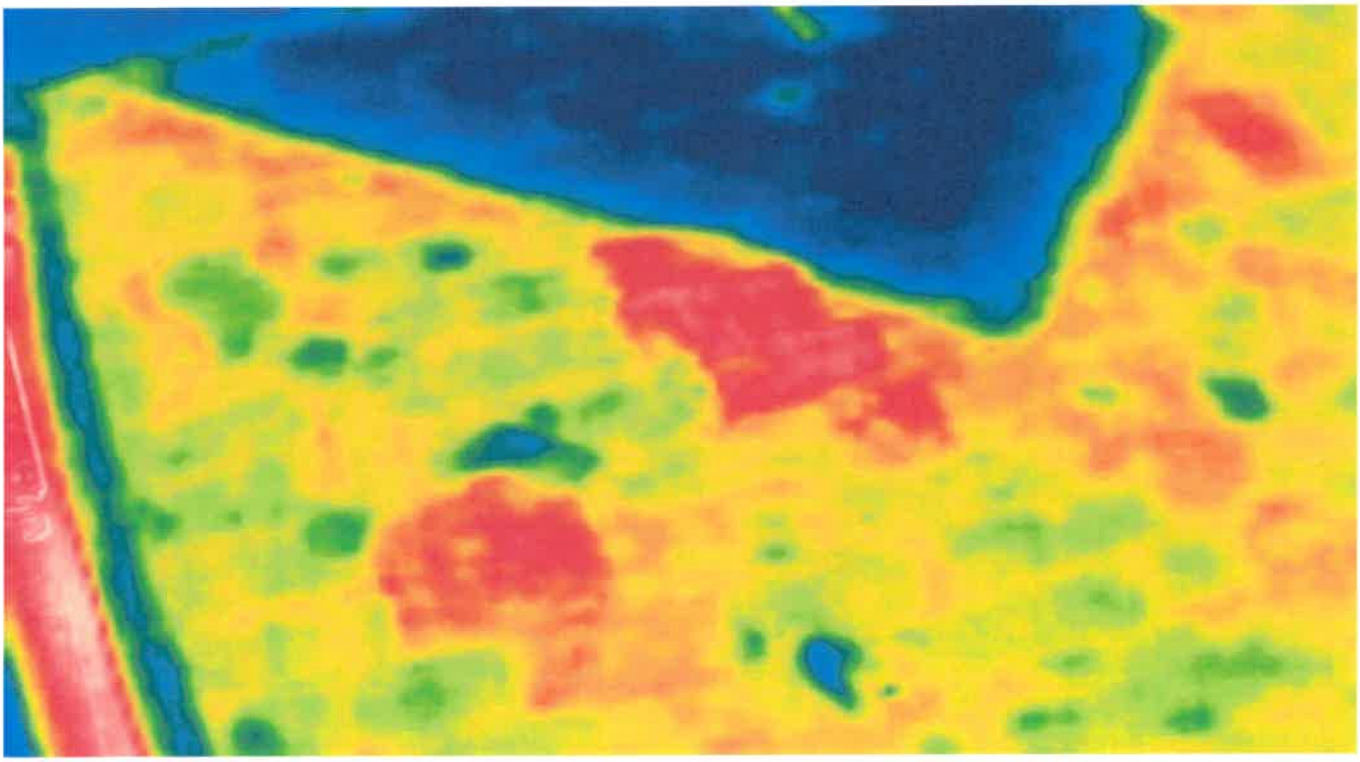

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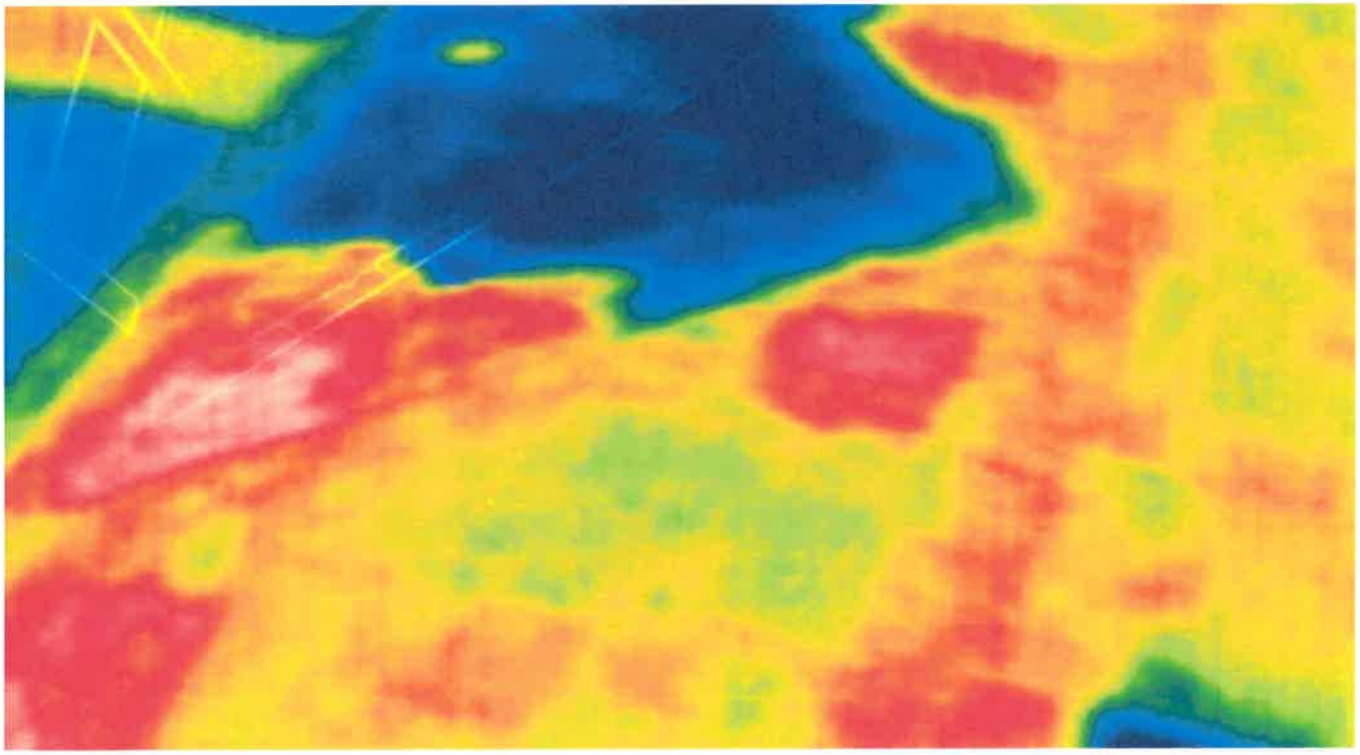

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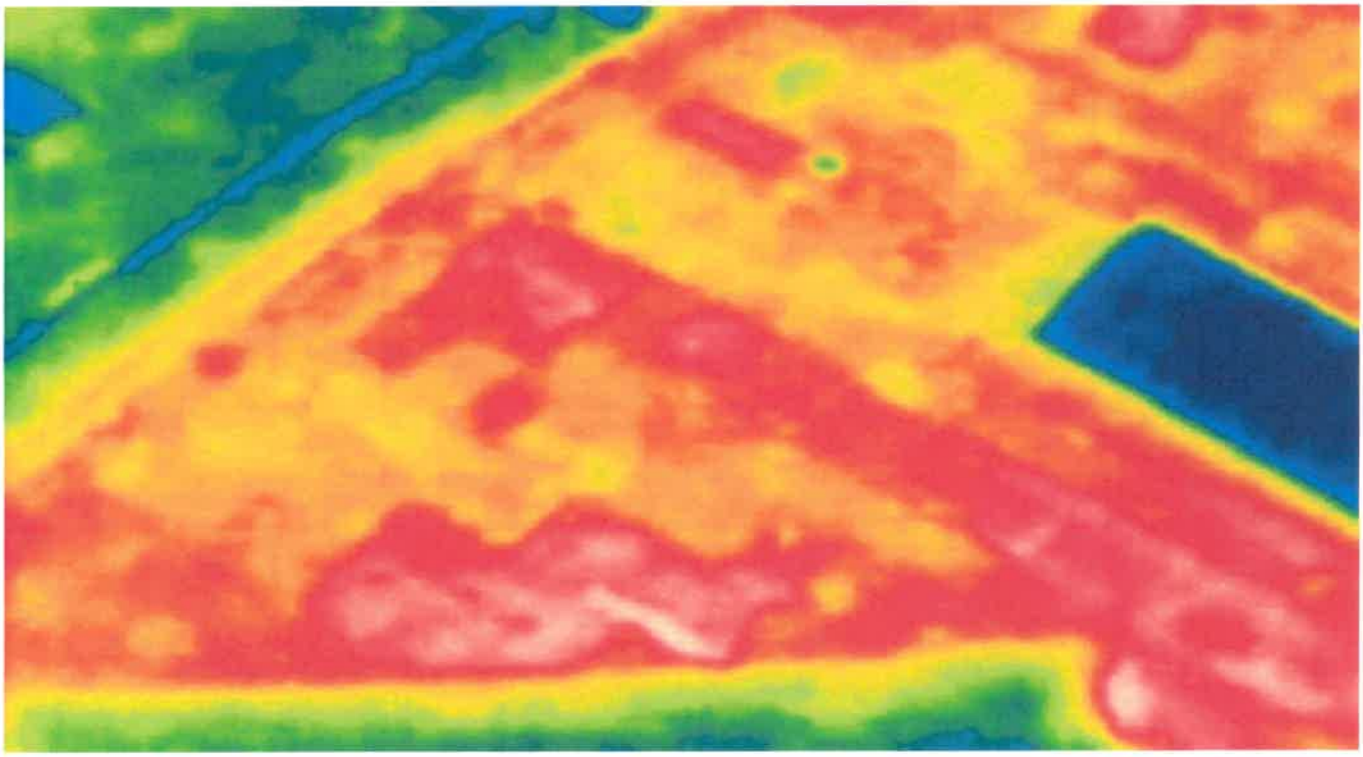

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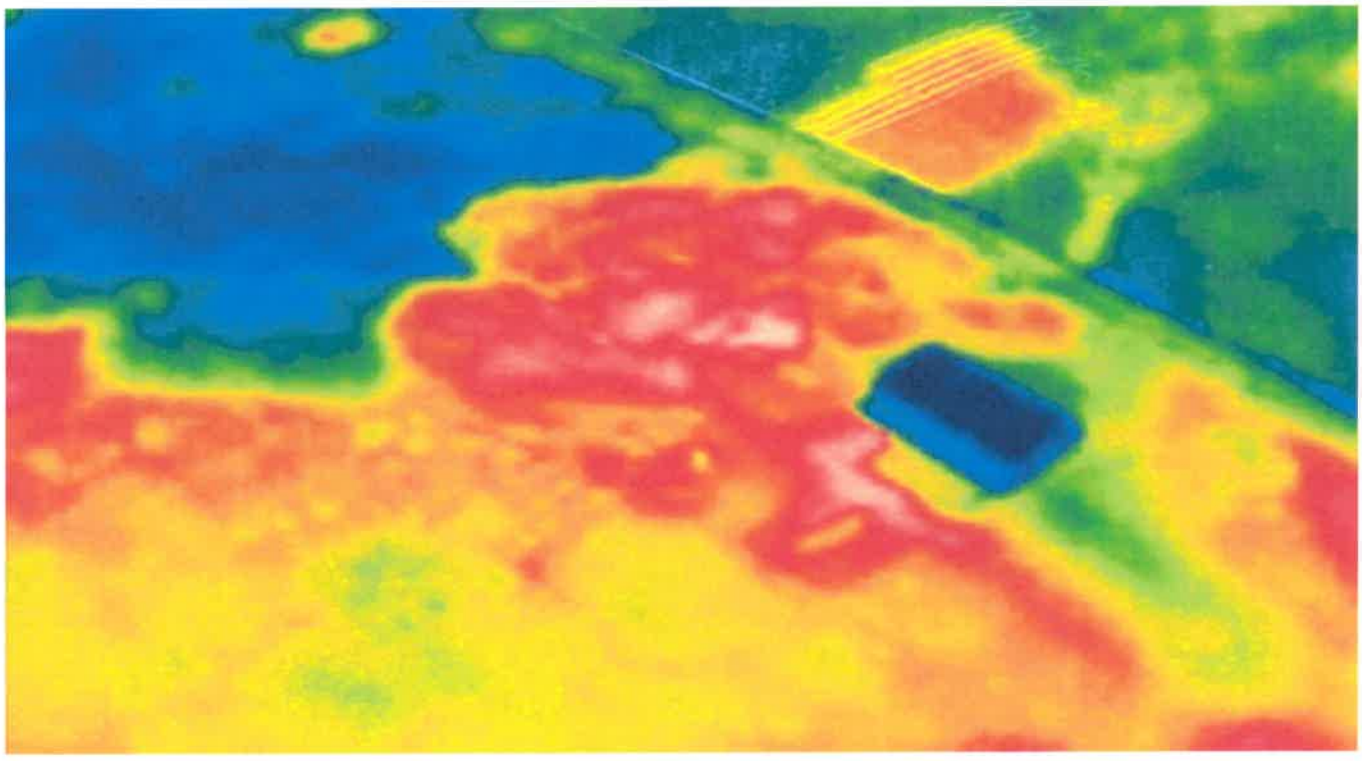

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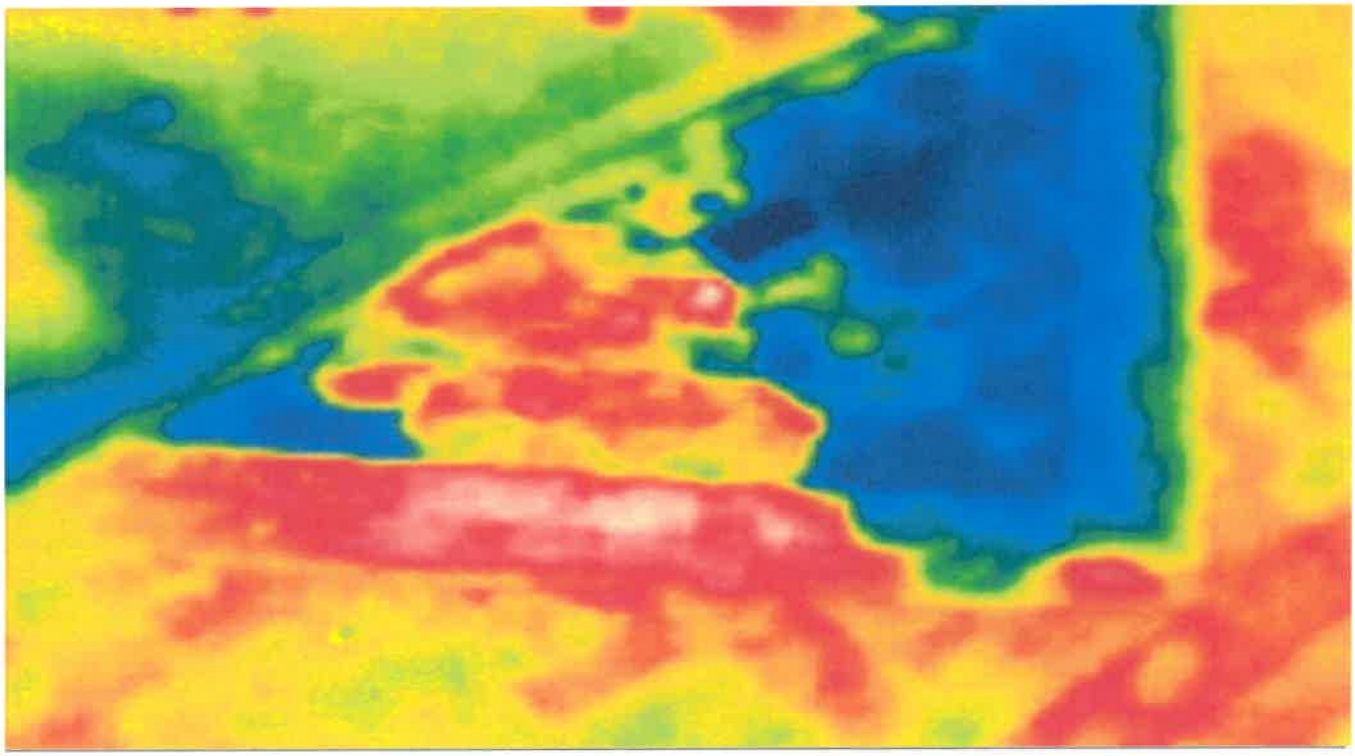

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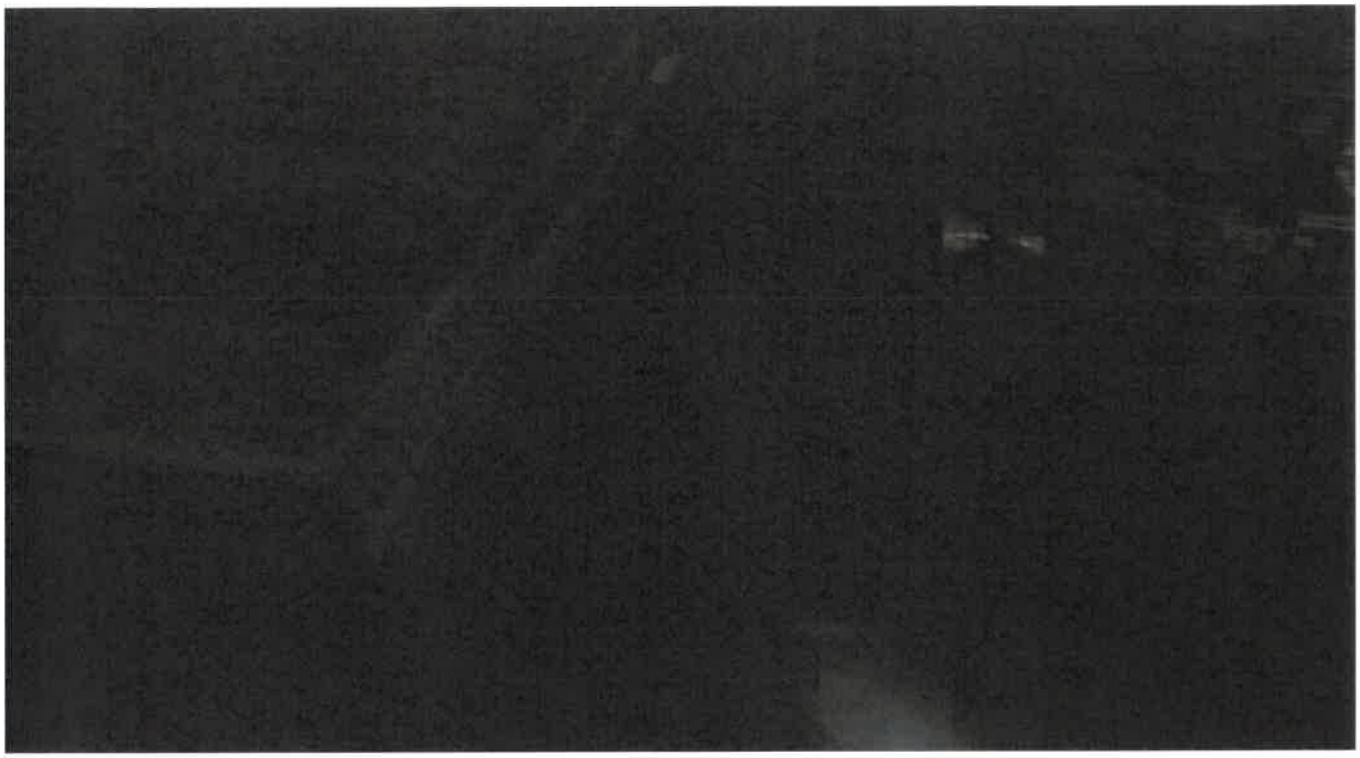

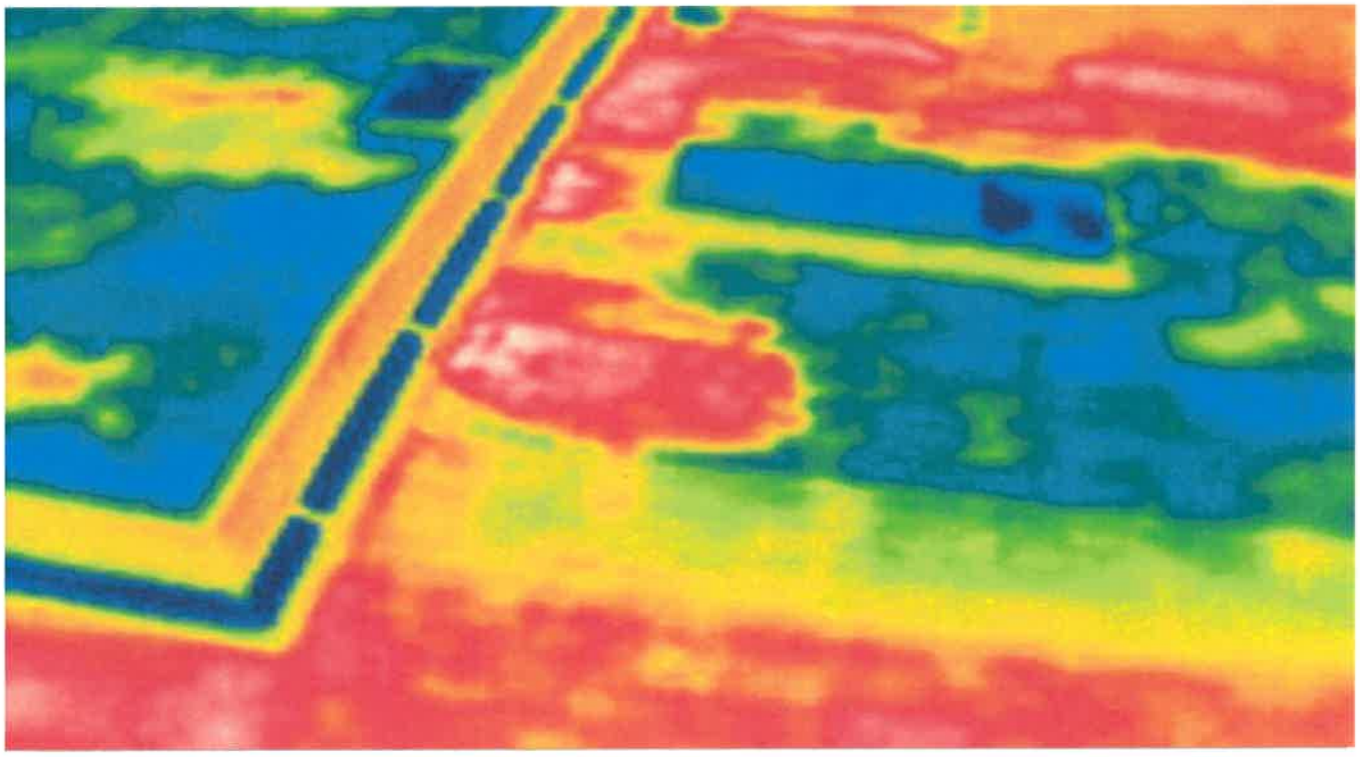

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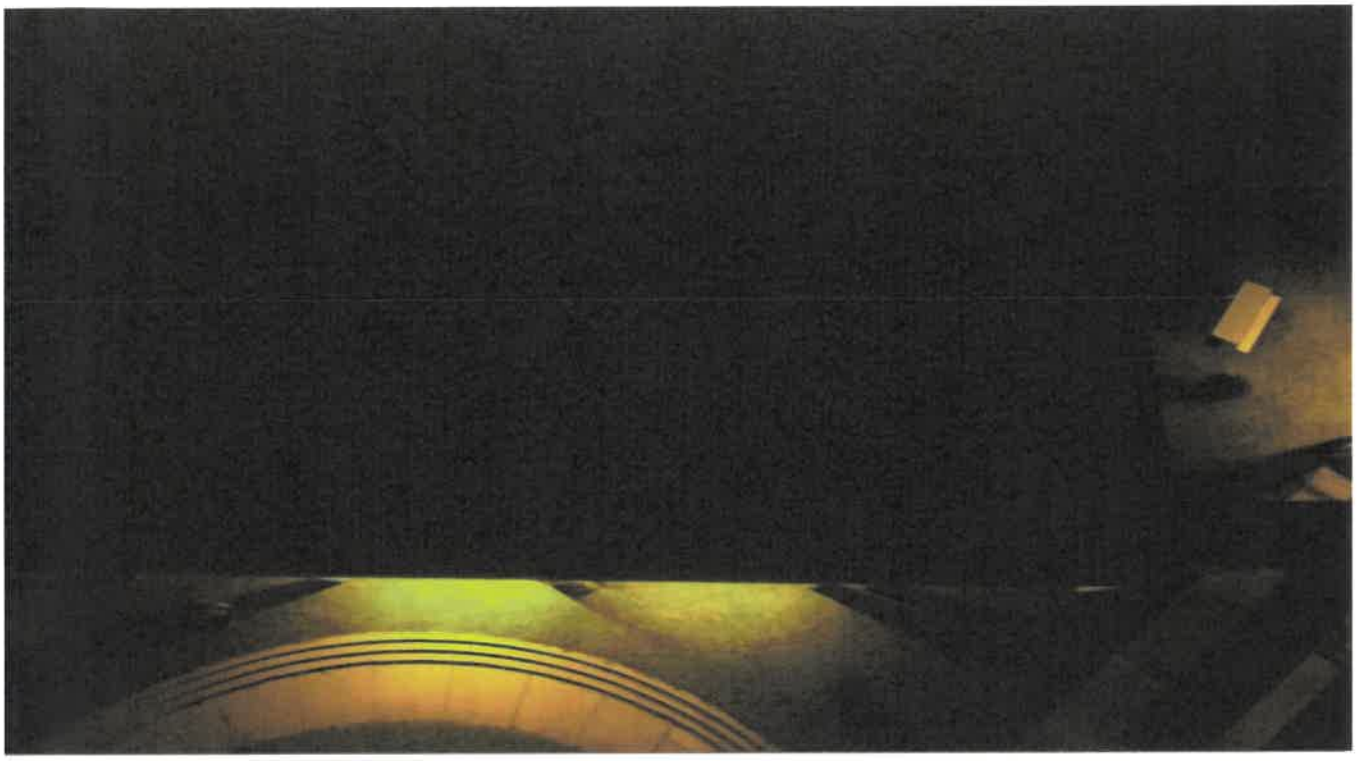
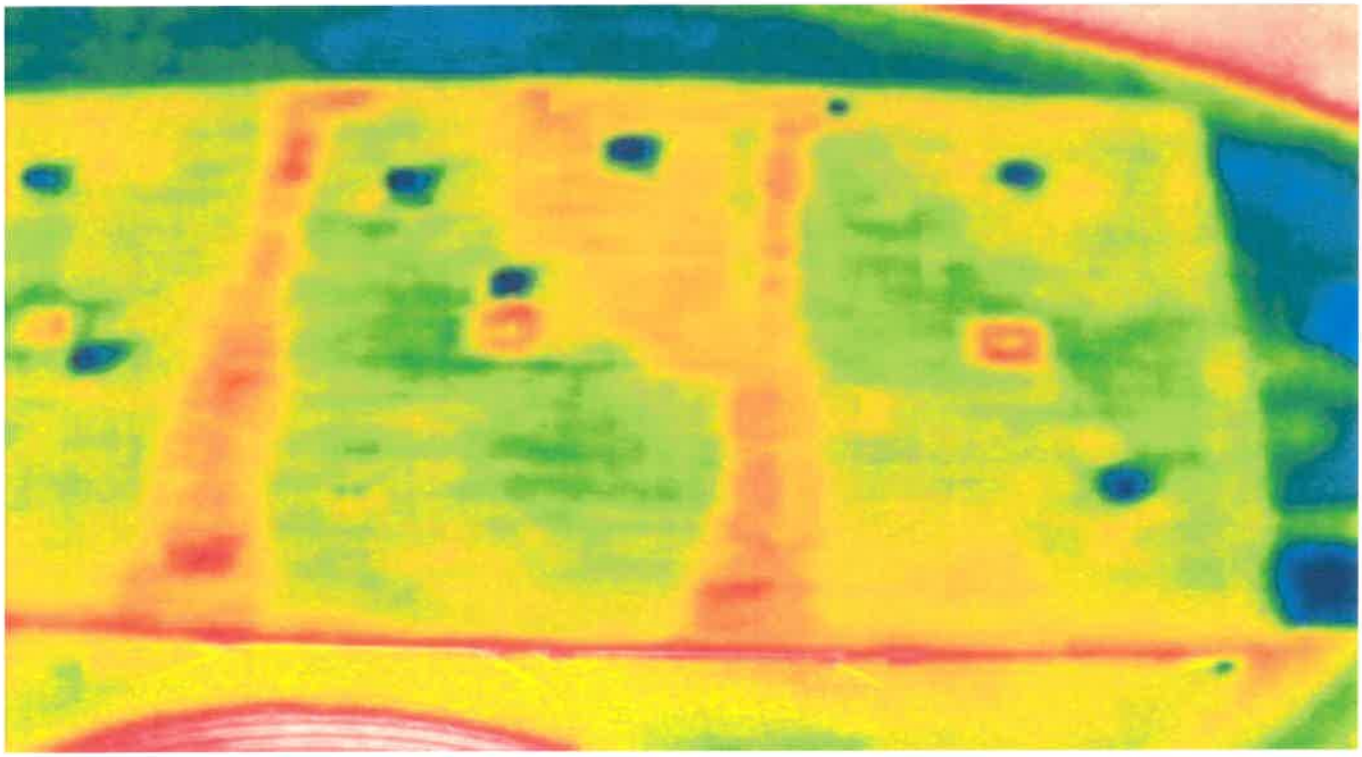
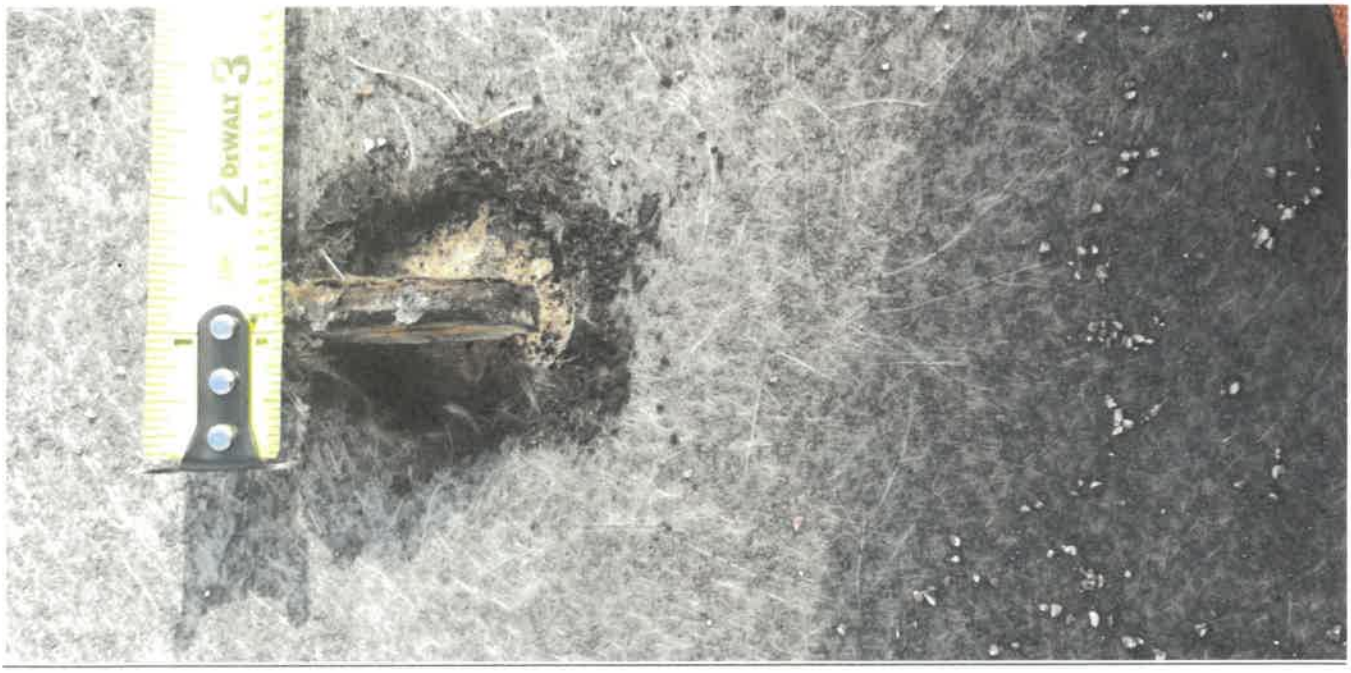




Core Verification

Additional Cores

Bldg 05



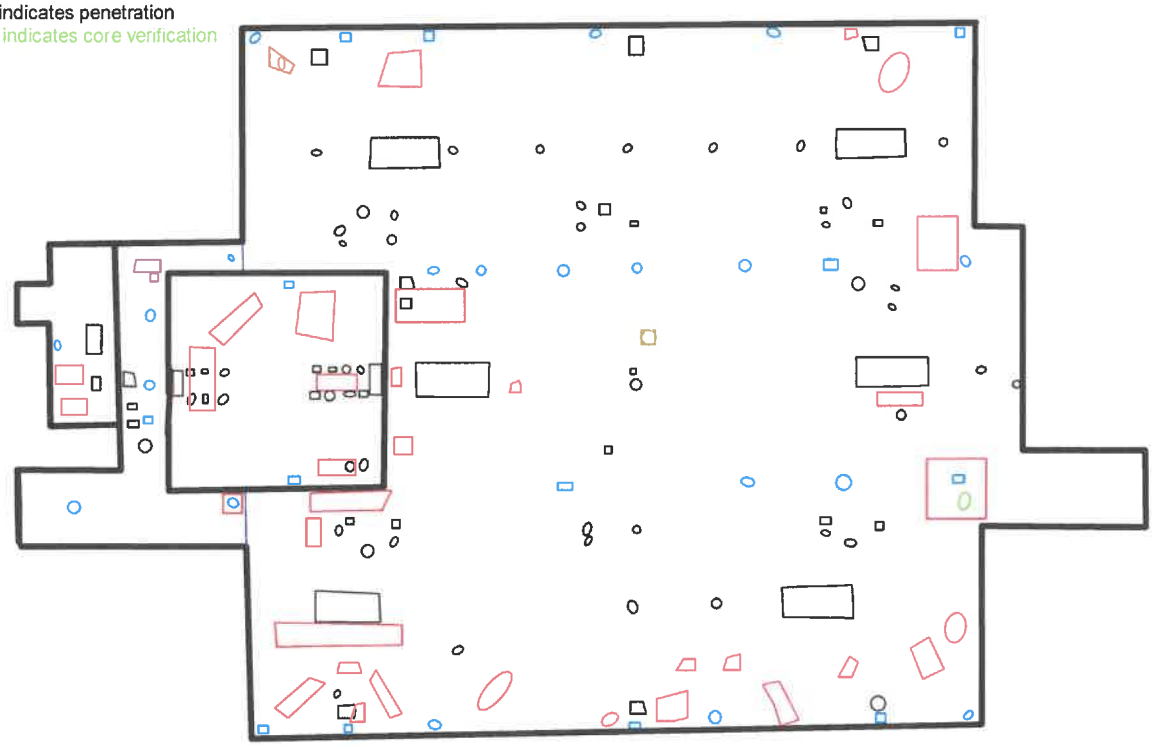
Bldg 04

Auditorium Roof

Exhibit 2

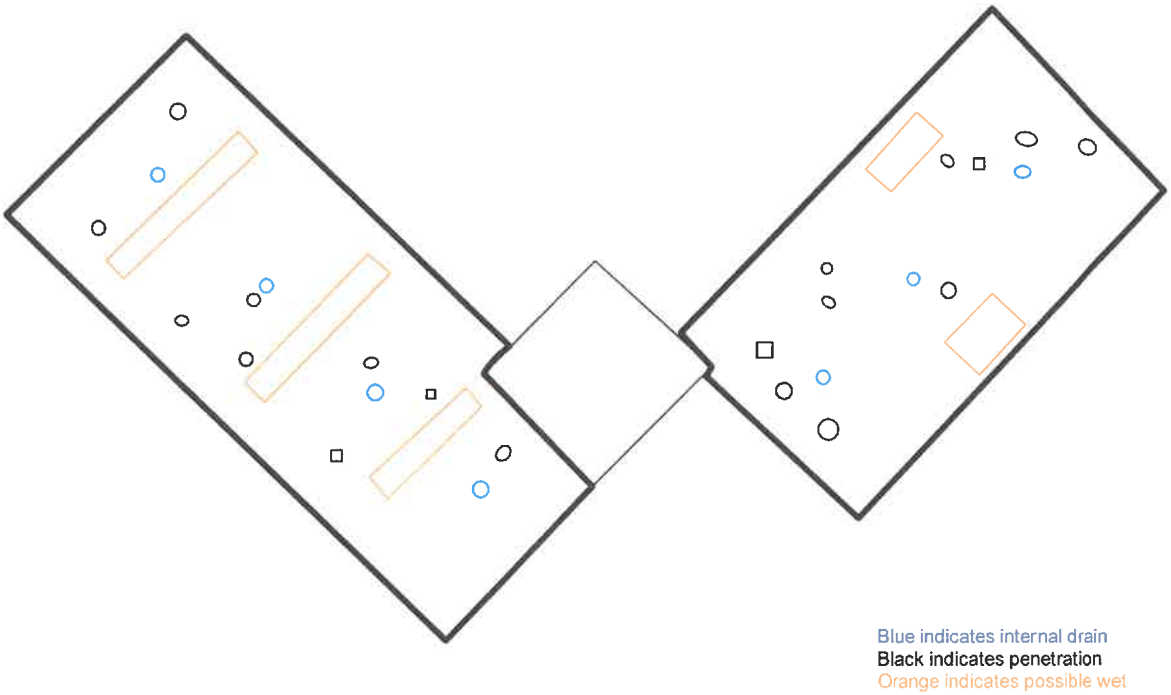
Roof Plan

Blue indicates internal drain
Red indicates wet
Black indicates penetration
Green indicates core verification

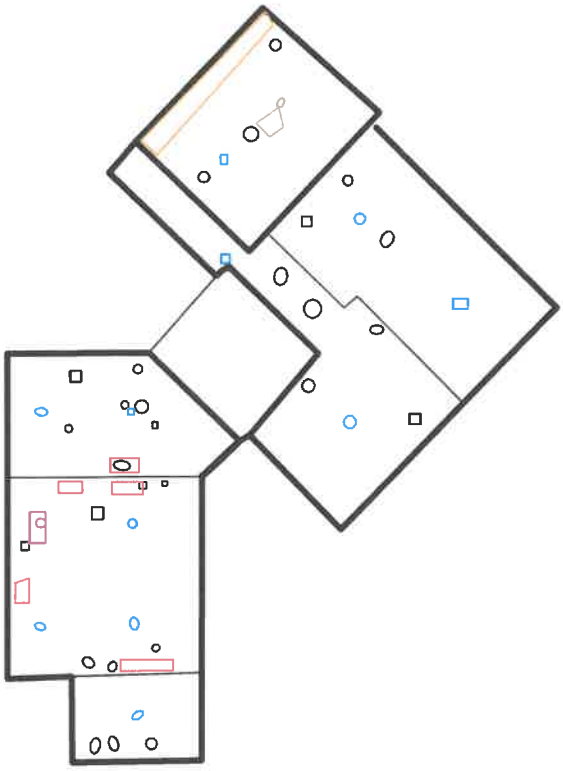


Building 01

Exhibit 2



Buildings 04 and 05

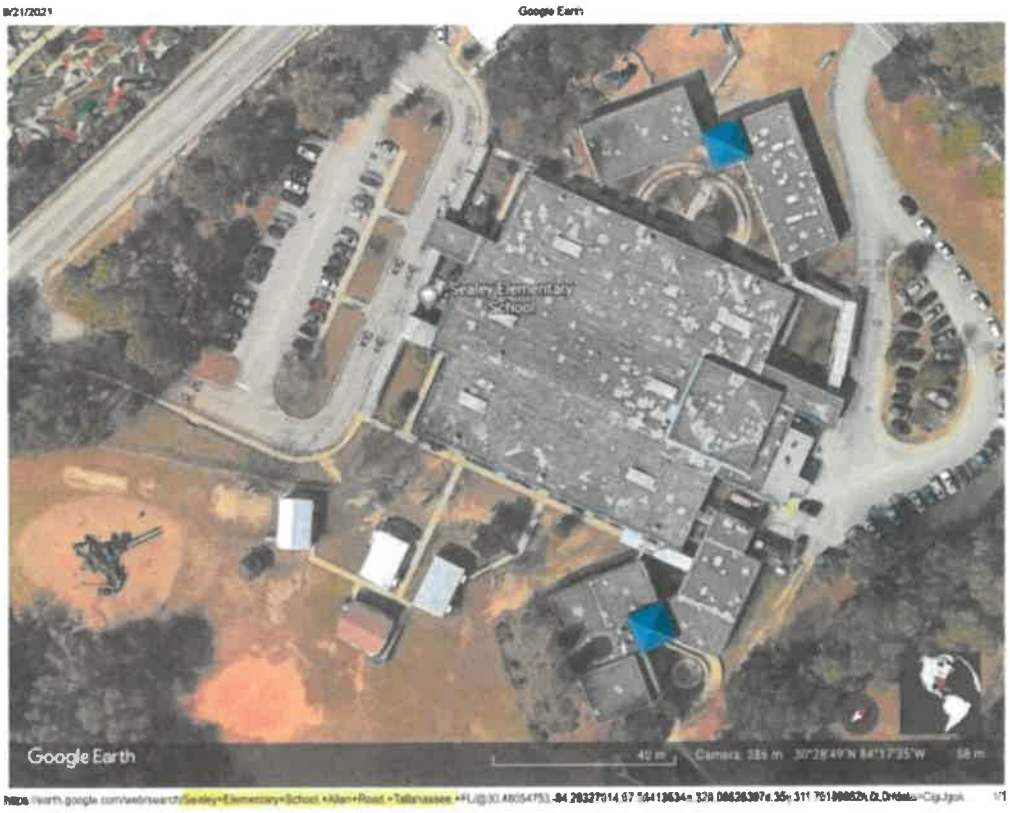


Blue indicates internal drain
Black indicates penetration
Red indicates wet
Orange indicates possible wet

Buildings 02 and 03

Aerial Photo and Site Plan

Exhibit 2


8/21/2021
Google Earth
Google Earth

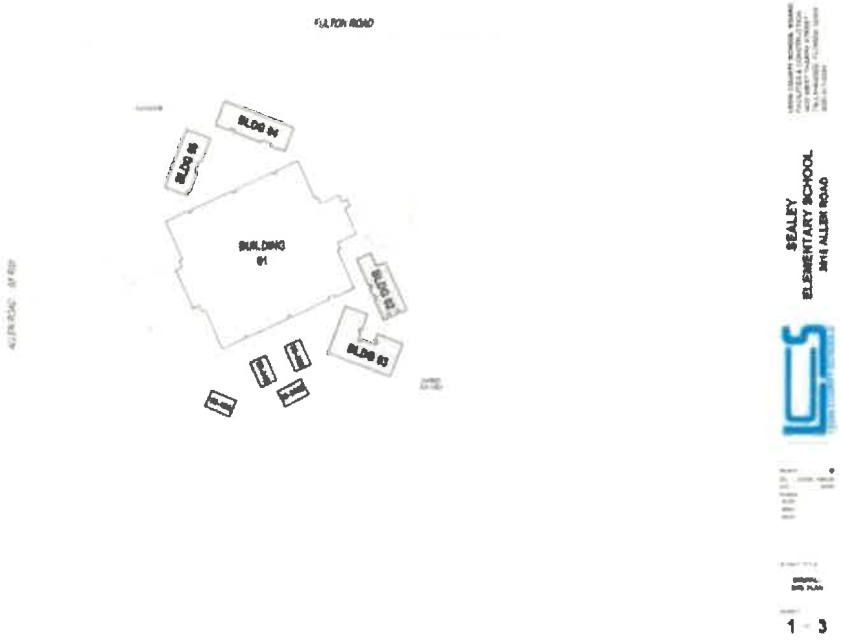

ALDEN ROAD
BLDG 04
BLDG 05
BUILDING 01
BLDG 02
BLDG 03
SEALEY ELEMENTARY SCHOOL
3440 ALDEN ROAD
1 - 3

Exhibit 3

ROWE ROOFING
Since 1974

Comparable Products Submittal
Project: ITB No. 5996-2023
Sealey Elementary School, Roof Replacement Project
Owner: Leon County Schools, 3397 W. Tharpe St, Tallahassee, FL 32303
Architect: MLD Architects, 211 John Knox Rd, Suite 105, Tallahassee, FL 32303
Submitting Contractor: Southland Rowe Roofing, Inc., 1843 Commerce Blvd, Midway, FL 32343

Comparable Products Submittal
Sealey Elementary School, Roof Replacement Project
Specifications 074616 – Ketone Ethylene Ester (KEE) Roofing
Part 2 – Products
Pages 075416 – 6 through 075416 – 10 (attached for reference)

Comparable Products Manufacturer:
Flex Membrane International Corp.
Flex Elvaloy KEE Roofing Systems
5103A Pottsville Pike, Reading, PA 19605

Product Listed in Specification	**Spec Page**	**Comparable Product**
2.1 KEE Membrane Roofing		
60 mil, fabric backing		
FiberTite KEE 60 mil	075416-6	Flex FB 60 Elvaloy KEE: 2 pages
2.4 SBS Mod Bit Base Sheet Material		
C. 1. FiberTite, FTR SBS Ploy 3.7 Base Sheet	075416-7	Flex SBS 80 Mil Base Sheet: 2 pages
2.5 Thermoplastic Membrane Materials		
A. KEE Roof Membrane		
B. Sheet Flashing		
Fibertite, KEE Single Ply Roof Membrane	074516-7 071516-8	Flex MF/R 60 Elvaloy KEE: 2 pages
2.6 Auxiliary Roofing Materials		
B. Membrane Bonding Adhesive		
C. Flashing Membrane Adhesive		
FiberTite Alpha-Tite w/ KEE Bond	075416-8	Flex Low VOC Elvaloy Bond. Adhesive: 2 pages Flex Substrate Adhesive: 2 pages
D. Metal Termination Bars	075416-9	Flex termination Bars: 1 page
F. Edge Metal		
1. FiberClad .040 Alum	075416-9	Flex Elvaloy Clad Metal: 1 page
G. Fasteners	075416-9	Flex XHD Roofing Fasteners: 2 pages Flex Pressure Plates: 2 pages
I. Prefab Pipe Flashings	075416-9	Flex Pipe Flange: 1 page
J. Misc. Accessories	075416-9	Flex 8" trim Strip: 1 page Flrx Elvaloy T-Joint Cover; 1 page Flex Prebab Corners: 1 page

1843 Commerce Blvd ★ Midway, FL 32343
P: 850.386.7663 ★ f: 850.562.5472
www.RoweRoofing.com

Exhibit 3

ROWE ROOFING
Since 1974

2.7 Roof Insulation Materials		
B. Roof Insulation		
1. Polyiso Board		
FiberTite FTR-Value Insulation	07541616-9	Flex Iso II Insulation: 1 page Flex Iso III Taperd Insulation: 1 page
C. Cover Board		
a. FiberTite/DensDeck	075416-10	DensDeck: 1 page Flex HD FR iso: 2 pages
D. Roof Insulation Adhesive		
a. FiberTite Ployset Board-Max Adh.	075416-10	Polyset Board-Max Adh: 2 pages
F. Flexible Walways	075416-10	Flex Walkway Pad: 1 page
Sample Warranty – Flex Membrane International Warranty		2 pages

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www.RoweRoofing.com

SEALEY ELEMENTARY SCHOOL
ROOF REPLACEMENT

TALLAHASSEE, FLORIDA

LEON COUNTY SCHOOLS

CONSTRUCTION DOCUMENTS

MAY 17, 2022

ARCHITECTURE - INTERIOR DESIGN - BUILDING ENVELOPE

211 JOHN KNOX ROAD, SUITE 105
TALLAHASSEE, FLORIDA 32303

AR96289
www.mldarchitects.com

PH: (850) 385 9200 FAX: (850) 422 3140
Email: mld@mldarchitects.com

PART 2 - PRODUCTS

2.1 KEE MEMBRANE ROOFING

A. Ketone Ethylene Ester (KEE) Sheet: ASTM D6754/D6754M, fabric reinforced, 1.5mm (60 mils) with fabric backing

1. Color: White

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

1. Basis-of-Design Manufacturer/Product: FiberTite KEE 60 mil single ply roofing system. Other projects considered equal or better:

a. Garland – KEE-Stone 60 mil roofing system

b. Tremco – TremPly KEE 60 mil roofing system

c. Other products are to be approved as equal prior to bidding.

2. Source Limitations: Obtain components for roofing system from same manufacturer as membrane roofing or manufacturer approved by membrane roofing manufacturer.

2.2 PERFORMANCE REQUIREMENTS

A. General Performance: Installed membrane roofing and base flashings shall withstand specified uplift pressures, thermally induced movement, and exposure to weather without failure due to defective manufacture, fabrication, installation, or other defects in construction. Membrane roofing and base flashings shall remain watertight.

1. Accelerated Weathering: Roofing system shall withstand 10,000 hours of exposure when tested according to ASTM G 152, ASTM G 154, or ASTM G 155.

2. Impact Resistance: Roof membrane shall resist impact damage when tested according to ASTM D 3746/C 3746M, ASTM D 4272/D 4272M, or the "Resistance to Foot Traffic Test" in FM Approvals 4470.

B. Roofing System Design: Provide membrane roofing system that is identical to systems that have been successfully tested by a qualified testing and inspecting agency in accordance with ANSI/FM 4474, UL 580, or UL 1897, and to resist uplift pressures calculated in accordance with ASCE-7 and applicable code.

1. All Zones (Corner, Perimeter, and Field-of-Roof) Uplift Pressures: As indicated on Drawings.

C. Flashings and Fastening: Comply with requirements of Division 07 Sections "Sheet Metal Flashing and Trim" and "Roof Specialties." Provide base flashings, perimeter flashings, detail

flashings and component materials and installation techniques that comply with requirements and recommendations of the following:

1. FM Global 1-49: Loss Prevention Data Sheet for Perimeter Flashings.

2. FM Global 1-29: Loss Prevention Data Sheet for Above Deck Roof Components.

3. NRCA Roofing Manual for construction details and recommendations.

4. SMACNA Architectural Sheet Metal Manual for construction details.

D. Exterior Fire-Test Exposure: UL 790, Class A; for application and roof slopes indicated, as determined by testing identical membrane roofing materials by a qualified testing agency. Materials shall be identified with appropriate markings of applicable testing agency.

E. Solar Reflectance Index: Not less than 78 when calculated according to ASTM E 1980, based on testing identical products by a qualified testing agency.

F. Energy Performance: Roofing system shall have an initial solar reflectance index of not less than 0.70 and an emissivity of not less than 0.75 when tested according to CRRC-1.

2.3 MATERIALS, GENERAL

A. Material Compatibility: Roofing materials shall be compatible with one another and adjacent materials under conditions of service and application required, as demonstrated by roof membrane manufacturer based on testing and field experience.

2.4 SBS MODIFIED BITUMEN BASE SHEET MATERIAL

C. Roofing membrane and flashing base sheet: Type 1 polyester reinforced SBS modified asphalt sheet for application method specified. Subject to compliance with manufacturer's requirements:

1. Basis of Design sheet but not limited to: FiberTite Base Sheet, FTR SBS Poly 3.7 Base Sheet

2.5 THERMOPLASTIC MEMBRANE MATERIALS

A. KEE Roof Membrane:

1. Thermoplastic Ketone Ethylene Ester (KEE) coated polyester fabric-reinforced roof membrane sheet, ASTM D6754.

a. Basis of design product: FiberTite, KEE Single Ply Roof Membrane.

b. Breaking Strength, minimum, ASTM D751: Machine direction, 500 lbf; Cross machine direction, 400 lbf.

c. Tear Strength, minimum, ASTM D751: Machine direction,125 lbf; Cross machine direction, 145 lbf.

d. Elongation at Break, ASTM D751: 20 percent.

e. Dynamic Impact/Puncture Resistance, ASTM D5635: Pass.

f. Minimum Membrane Thickness, nominal, less backing, ASTM D751: 60 mils.

g. Thickness over fiber, optical method: 0.014 inches.

h. Accelerated Weathering, ASTM G155 and ASTM G154: >5,000 hr., no cracking or crazing.

i. Abrasion Resistance, ASTM D3389: >2000 cycles, H-18 wheel, 1,000 g load.

j. Color: White.

k. Solar Reflectance Index (SRI), ASTM E1980: 110 (White, initial), 86 (White, 3-yr aged).

B. Sheet Flashing: Manufacturer's standard smooth-backed sheet flashing of same material, type, reinforcement, thickness, and color as KEE sheet membrane.

2.6 AUXILIARY ROOFING MATERIALS

A. General: Auxiliary membrane roofing materials recommended by roofing system manufacturer for intended use, and compatible with membrane roofing.

1. Liquid-type auxiliary materials shall comply with VOC limits of authorities having jurisdiction.

B. Membrane Bonding Adhesive:

1. Bonding adhesive, solvent based fast drying, VOC-compliant, for bonding KEE smooth-backed single ply membranes and flashings to substrates.

a. Basis of design product: FiberTite, Alpha-Tite with KEE-Bond.

b. VOC, maximum, ASTM D 3960: 200 g/L.

C. Flashing Membrane Adhesive:

1. Bonding adhesive, solvent based fast drying, VOC-compliant, for bonding KEE smooth-backed single ply membranes and flashings to substrates.

a. Basis of design product: FiberTite, Alpha-Tite with KEE-Bond.

b. VOC, maximum, ASTM D 3960: 200 g/L.

D. Metal Termination Bars: Manufacturer's standard, predrilled stainless-steel or aluminum bars, approximately 1 by 1/8 inch thick; with anchors.

E. Metal Battens: Manufacturer's standard, aluminum-zinc-alloy-coated or zinc-coated steel sheet, approximately 1 inch wide by 0.05 inch thick, prepunched.

F. Edge Metal: Perimeter securement system consisting of polymeric factory coated heat weldable aluminum or steel sheet metal flashing.

1. Basis of Design: FiberClad, .040 Aluminum with .020 film thickness.

2. Fabricated and installed to meet ANSI/SPRI ES-1 requirements.

G. Fasteners: Factory-coated steel fasteners and metal or plastic plates complying with corrosion-resistance provisions in FM Approvals 4470, designed for fastening components to substrate, and acceptable to membrane roofing system manufacturer.

H. Termination Joint Sealant: Silicone, S, NS, 25 or 50, NT: Single-component, non sag, plus 25 to 50 percent and minus 25 to 50 percent movement capability, nontraffic-use, neutral-curing silicone joint sealant; ASTM C 920, Type S, Grade NS, Class 25, Use NT, and compatible with adjacent materials.

I. Prefabricated Pipe Flashings: As recommended by roof membrane manufacturer.

J. Miscellaneous Accessories: Provide pourable sealers, preformed cone and vent sheet flashings, preformed inside and outside corner sheet flashings, T-joint covers, lap sealants, termination reglets, and other accessories.

2.7 ROOF INSULATION MATERIALS

A. General: Preformed roof insulation boards manufactured or approved by roofing manufacturer, selected from insulation manufacturer's standard sizes, suitable for application, and of thicknesses indicated.

B. Roof Insulation: Provide roof insulation product in thicknesses indicated in Part 3 as follows:

1. Polyisocyanurate board insulation, ASTM C1289 Type II Class 1 CFC- and HCFC- free, with recycled content glass-fiber mat facer on both major surfaces.

a. Basis of design product: FiberTite, FTR-Value Insulation.

b. Compressive Strength, ASTM C1621: Grade 3: 25 psi.

c. Conditioned Thermal Resistance at 75 deg. F: 14.4 at 2.5 inches thick.

C. Cover Board:

1. Cellulosic fiber reinforced water-resistant gypsum panel, ASTM D1278/C1278M.

a. Basis of design product: FiberTite/DensDeck.

b. Thickness: 1/2 inch.

D. Roof Insulation Adhesive:

1. Cold fluid-applied bead-applied low-rise adhesive, two-component solvent-free low odor elastomeric urethane, formulated to adhere roof insulation to substrate.

a. Basis of design product: FiberTite, Polyset Board-Max Insulation Adhesive.

b. Flame Spread Index, ASTM E84: 10.

c. Smoke Developed Index, ASTM E84: 30.

d. Volatile Organic Compounds (VOC), maximum, ASTM D3960: 0 g/L.

e. Tensile Strength, minimum, ASTM D412: 250 psi.

f. Peel Adhesion, minimum, ASTM D903: 17 lbf/in.

g. Flexibility, 70 deg. F, ASTM D816: Pass.

E. Insulation Cant Strips: ASTM C 208, Type II, Grade 1, cellulosic-fiber insulation board.

F. Flexible Walkways: Roofing membrane manufacturer's factory-formed, nonporous, heavy duty slip-resisting, surface-textured walkway pads, approximately 5 mm thick.

1 Colors and Texture: From manufacturer's standard colors. Color to contrast with finished roof color.

PART 3 - EXECUTION

3.1 EXAMINATION

A. Examine substrates, areas, and conditions, with Installer present, for compliance with the following requirements and other conditions affecting performance of roofing system:

1. Verify that roof openings and penetrations are in place and curbs are set and braced and that roof drain bodies are securely clamped in place.

2. Verify that wood cants, blocking, curbs, and nailers are securely anchored to roof deck at penetrations and terminations and that nailers match thicknesses of insulation.

3. Existing Prepared Roof Substrate: Verify that existing insulation and substrate is sound and dry. Refer to requirements of Section 070150 "Preparation for Reroofing."

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

Product Data Sheet

FLEX FB 60 ELVALOY® KEE ROOF MEMBRANE

(76"and 120" Wide, Reinforced, Thermoplastic Roof Membrane)

PRODUCT DESCRIPTION

The Flex FB 60 Elvaloy® KEE Roofing Membrane is a high performance thermoplastic membrane designed for adhered roofing applications. The Flex FB 60 is produced with DuPont Elvaloy® KEE at a thickness of 60 mils of polyester reinforced membrane plus a 5.50 oz. polyester fleece backing. The Flex FB 60 Elvaloy® KEE Roofing Membrane is an effective choice for new or re-roofing installations as the fleece backing allows the membrane to be installed directly over most substrates with hot steep asphalt or Flex Substrate Adhesive.

FEATURES AND BENEFITS

- The wider sheet reduces installation cost and increases production.
- May be installed fully adhered to a wide range of substrates including structural or lightweight concrete decks and various types of insulation.
- Has a high degree of resistance to exposure from harsh chemicals and extreme environments.
- The Elvaloy® KEE formulation increases the ability of the membrane to remain flexible in temperatures well below freezing.
- Ideal for applications where standard roofing membranes do not perform well such as heavy industrial sites, airports, and food service facilities.
- The hot air welded seams allow the membrane to be installed in extreme low slope conditions as ponding water has no effect on the membrane.

INSTALLATION

The Flex FB 60 Elvaloy® KEE Roofing Membrane may be installed fully adhered with either Type III or IV hot steep asphalt or Flex Substrate Adhesive, a cold process water based asphalt emulsion adhesive. The membrane may be installed directly over lightweight or structural concrete as well as a wide variety of insulations. All seams of the Flex FB 60 Elvaloy® KEE Roofing Membrane are sealed by hot air welding, recognized as the strongest seam in the roofing industry. Flex has a variety of cold process roofing component configurations that allow for fast and efficient installation in areas that are restricted to fumes or flames such as hospitals, schools, and heavily congested city centers or hard to reach areas.

Review Flex Specifications for Complete Installation Information.

APPROVALS

The Flex FB 60 Elvaloy® KEE Roofing Membrane exceeds the requirements of ASTM D4434 standard for thermoplastic sheet roofing. The Flex FB has been thoroughly tested by Factory Mutual and has numerous applications meeting or exceeding Class 1-90. The Flex FB has been approved for Class A fire rating by Underwriters Laboratories. Due to the white heat reflective surface, Flex thermoplastic membranes are approved by the EPA's Energy Star® Program and the Cool Roof Rating Council (CRRC).

PHYSICAL PROPERTIES

Property	Test Procedure	Specification
Color		White, Gray, Tan
Thickness	ASTM D751	.060"
Thickness over scrim	ASTM D7635	.030"
Breaking Strength (lbf)	ASTM D751	325 x 324
Tear Strength (lbf)	ASTM D751	89 x 109
Seam Strength (lbf)	ASTM D751	295
Elongation	ASTM D751	50% x 42%
Heat Aging	ASTM D3045	> 90 %
Low Temp. Bend	ASTM D2136	Pass (-40°F)
Static Puncture Resistance	ASTM D5602	Pass
Dynamic Puncture Resistance	ASTM D5635	Pass
Permeance	ASTM E96	0.003 Perms
Dimensional Stability	ASTM D1204	0.3 %
Weight change after Water Immersion	ASTM D570	1.20 %
Accelerated Weathering	ASTM G155	Pass
Fungi Resistance	ASTM G-21	No Growth
Solar Reflectivity	ASTM C1549	82% (White)
	ASTM C1549	69% (Gray)
	ASTM C1549	68% (Tan)
Emissivity	ASTM C1371	.91 (White)
	ASTM C1371	.86 (Gray)
	ASTM C1371	.87 (Tan)
SRI	ASTM E1980	109 (White)
	ASTM E1980	83 (Gray)
	ASTM E1980	83 (Tan)

Flex FB 60 Elvaloy® KEE Roofing Membranes are thermoplastic in nature and exceed the requirements of ASTM D4434 standard specifications for poly (vinyl chloride) based sheet roofing.

WARRANTY

The Flex FB 60 Elvaloy® KEE Roofing Membrane may receive the manufacturer's standard five (5) year or optional ten (10) year, fifteen (15) year or twenty (20) year guarantee of watertightness.

Elvaloy® KEE is a registered trademark of DuPont.

Product Data Sheet

FLEX SBS 80 Mil S/S BASE SHEET

PRODUCT DESCRIPTION

Flex SBS 80 Mil S/S Base Sheet is designed for use as the base or first ply in Flex's high performance modified bitumen roofing system or multi-ply thermoplastic roofing systems.

FEATURES

- Designed for application in new construction, re-roofing and retrofit roofing.
- SBS polymer provides flow resistance at high temperatures and flexibility at low temperatures
- for lasting durability.
- Glass reinforcement provides stability.

PHYSICAL PROPERTIES

Thickness:	0.080 inches (2.0 mm) ±10%
Tensile Strength @ 0°F	
Machine Direction:	135 lbf / inch
Cross Machine Direction:	117 lbf / inch
Elongation @ 0°F	
Machine Direction:	4%
Cross Machine Direction:	4%
Tensile Tear	
Machine Direction:	80 lbf / inch
Cross Machine Direction:	75 lbf / inch
Low Temperature Flexibility	
Machine Direction:	-10° F
Cross Machine Direction:	-10° F
Dimensional Stability	
Machine Direction:	≤ 0.1%
Cross Machine Direction:	≤ 0.1%

Material tested in accordance with ASTM D5147 Standard Test Method for Sampling and Testing Modified Bitumen Roofing Membranes.

PACKAGING

Thickness:	2.0 mm (80 mils)	Top Surface:	Sanded
Roll Length :	49.2 ft.	Bottom Surface:	Sanded
Roll Width:	39 3/8"	Gross Coverage:	161.4 ft²
Net Coverage:	147.8 ft²		

Flex Membrane International Corp. 2670 Leiscz's Bridge Road, Suite 400, Leesport, PA 19533
Tel: (610) 916-9500 Fax: (610) 916-9501 www.FlexRoofingSystems.com

LIMITATIONS

Non-resistant to oils and solvents. Refer to manufacturer for specific chemical resistance. Not designed for permanent exposure. Install Flex SBS Granulated Cap Sheet Membrane over base sheet for permanent exposure.

STORAGE

Store rolls on end, on original pallets or elevated platform. Protect from weather or store in an enclosed area not subject to heat over 120°F.

SURFACE PREPARATION

Refer to Flex's General Specifications for preparation and acceptable substrates.

APPLICATION

Flex SBS 80 Mil S/S Base Sheet must be mopped, nailed or cold adhered to substrate.
Begin application of the base sheet at the lowest edge or drain. Proceed up the slope from the lowest point. Position and unroll base sheet to achieve correct overlap and alignment. Re-roll one end a minimum of 10' and adhere membrane to substrate. Complete application of remainder of sheet.

Mopping Application: Roofing asphalt shall be Flex SEBS or ASTM D312 Type III on slopes up to 1:16 and Type IV for slopes greater then 1:16. Use Flex SEBS or Type IV for all flashing.

Asphalt must be applied hot, so that it's mopping temperature is not below 400° F when measured at the mop cart, to facilitate correct interply thickness, adhesion and uniformity. The roofing membrane must be unrolled into the hot asphalt immediately. Mopping should not be more than 4' ahead of unrolling. Unroll into asphalt mopped at the rate of 20-30 lbs./100 ft², lapping 3" on sides and 6" on ends. The Presence of a beed of asphalt should be observed flowing out of the seam. Mopping at ambient Temperatures below 40° F requires special care and treatment. Refer to Flex's General Specifications.

Cold Adhered Application: Apply Flex Bitumen Adhesive by notched squeegee to laps as well as the field of the sheet at the rate of approximately 1.5 gal/100 ft².

A notched squeegee with notches ¼" long, 1/8" deep, spaced on 1" is ideal for smooth surfaces. For irregular surfaces the notches should be ¼" deep. Best results occur above 50°F. The adhesive thickens at colder temperatures and proper coverage becomes difficult.

Roll out Flex 80 Mil S/S Base Sheet and allow to relax prior to application. Apply adhesive to substrate and allow 3 to 5 minutes open time prior to rolling in membrane. Installation without allowing open time could result in prolonged softening of the membrane or blisters.

For flashings, apply Flex Flashing Cement adhesive by trowel in a 1/8" coat. Ensure full and uniform coverage. Embed Flex 80 Mil S/S Base Sheet and apply pressure over the entire surface. Ensure a bead appears at laps.

Slopes 1:12 (1" in 12") or Greater: In addition to the above, apply membrane parallel to direction of slope and blind nail or mechanically fasten membrane at end or head lap on 6" centers.

WARRANTY

Flex Membrane International warrants to the owner, that the SBS modified bitumen membrane, when installed by a participating contractor subject to the conditions and limitations contained within the warranty, will remain watertight for a period as outlined. All leaks or roof problems, on warranted roofs, must be reported to the manufacturer in writing within a period of 30 days.

Product Data Sheet

FLEX MF/R 60 ELVALOY® KEE ROOF MEMBRANE

(40.5", 60", 81" and 120" Wide, Reinforced, Thermoplastic Roof Membrane)

PRODUCT DESCRIPTION

The Flex MF/R 60 Elvaloy® KEE Roofing Membrane is a high-performance thermoplastic membrane designed for mechanically attached or adhered roofing applications. The Flex MF/R 60 is produced with DuPont Elvaloy® KEE and is a polyester reinforced roofing membrane with built in chemical, UV and fire resistance. The Flex MF/R 60 results in a highly reflective, low maintenance roof surface that saves the Building Owner energy and labor costs and helps to reduce pollution in the surrounding environment.

FEATURES AND BENEFITS

- Wider membrane saves in labor costs for installation - less seams to weld.
- Wider membrane saves in material costs - less fasteners and plates.
- Hot air welded seams are the strongest most reliable seams in the roofing industry.
- Chemical, Ozone and UV exposure does not affect surface pliability or functional integrity
- Energy Saving White Reflective Roof Surface is more in demand than ever before.
- Increased cold weather flexibility allows installation in below freezing temperatures.
- Effectively tested to perform in high wind situations - meets or exceeds FM Class 1-90 wind uplift requirements.
- Approved by Underwriters Laboratories in Class A fire rated roof systems.

MECHANICALLY ATTACHED INSTALLATIONS

The Flex MF/R 60 Elvaloy® KEE Roofing Membrane is ideal for use as a mechanically attached membrane for new construction and re-roofing. Flex's MF/R 60 membrane is lightweight, just a few ounces per square foot, making it ideal for re-roofing projects where a tear off can be avoided. Flex has several fastener and plate options available to meet a wide range of wind uplift pressure requirements. The wider Flex MF/R 60 membrane allows for a faster and cost effective installation than other mechanically attached roof membrane systems.

ADHERED INSTALLATIONS

The Flex MF/R 60 Elvaloy® KEE Roofing Membrane can be installed with Flex Bonding Adhesive for a fully adhered installation. This system is ideal for installations with unusual or odd shaped contours. Fully adhered installations are the answer for design limitations on mechanical penetrations of the deck or for situations where increased wind uplift pressure requirements must be met.

Review Flex Specifications for Complete Installation Information.

PHYSICAL PROPERTIES

Property	Test Procedure	Specification
Color		White, Gray or Tan
Thickness	ASTM D751	.060"
Thickness over scrim	ASTM D7635	.031"
Breaking Strength (lbf)	ASTM D751	298 x 278
Seam Strength (lbf)	ASTM D751	286
Tear Strength (lbf)	ASTM D751	89 x 109
Elongation	ASTM D751	35% x 34%
Heat Aging	ASTM D3045	> 90 %
Static Puncture Resistance	ASTM D5602	PASS
Dynamic Puncture Resistance	ASTM D5635	PASS
Low Temperature Bend	ASTM D2136	PASS (-40°F)
Permeance	ASTM E96	.003 Perms
Dimensional Stability	ASTM D1204	0.3%
Wt. Change after Water Immersion	ASTM D570	1.20%
Accelerated Weathering	ASTM G155	Pass
Fungi Resistance	ASTM G21	Pass
Solar Reflectivity	ASTM C1549	82% (White)
	ASTM C1549	69% (Gray)
	ASTM C1549	68% (Tan)
Emissivity	ASTM C1371	.91 (White)
	ASTM C1371	.86 (Gray)
	ASTM C1371	.87 (Tan)
SRI	ASTM E1980	109 (White)
	ASTM E1980	83 (Gray)
	ASTM E1980	83 (Tan)

Flex Elvaloy® KEE based membranes meet the requirements of ASTM D4434 standard specification for poly (vinyl chloride) based sheet roofing.

WARRANTY

The Flex MF/R 60 Elvaloy® KEE Roofing Membrane may receive the manufacturer's standard five (5) year or optional ten (10) year, fifteen (15) year or twenty (20) year guarantee of watertightness.

Elvaloy® KEE is a registered trademark of Dupont.

Product Data Sheet

FLEX LA432M
LOW VOC ELVALOY® AND PVC MEMBRANE BONDING ADHESIVE

PRODUCT DESCRIPTION

Flex LA432M is a contact-type bonding adhesive specially designed for bonding Elvaloy® and PVC single ply roofing membranes and flashings to horizontal and vertical substrates. Flex LA432M has been engineered to provide ultimate bonding strength and to meet all VOC restrictions and regulations in the United States.

FEATURES AND BENEFITS

- Low VOC -<250g/L
- Extremely high initial tack
- Fast drying solvent system
- Easy application using roller or brush
- Excellent green strength
- High peel and shear values
- Excellent heat resistance

FLAMMABILITY Red Label – EXTREMELY FLAMMABLE

APPLICATION

1. Use only after careful consideration of the warnings, directions, and first aid instructions given.
2. Apply adhesive when ambient temperature is 40°F (4.4°C) and rising.
3. Stir the adhesive vigorously by hand to achieve a homogeneous mixture prior to application. DO NOT use electrical equipment or open flame near the adhesive.
4. Apply adhesive to the membrane and substrate surfaces which are clean, dry and free of debris. Apply at the rate of approximately 120 square feet per gallon per surface, sufficient to bond 60 square feet of membrane in place. The coverage rate will vary depending on the porosity of the substrate surface.
5. Apply adhesive using a 3/8" medium nap solvent resistant roller.
6. Allow adhesive to partially dry to a tacky feel when touched with the back side of a dry finger before bonding membrane to substrate (approximately 5-10 minutes). Open time prior to mating membrane to substrate may extend up to 60 minutes.
7. Mate the membrane to the substrate avoiding any air entrapment, and apply pressure by means of a push broom or roller to assure complete bonding.

NOTE: The shelf life for an unopened container of this adhesive, stored at temperatures between 60°F (15.5 °C) and 80 °F (26.7 °C) out of direct sunlight, is 1 year from date of manufacture

PHYSICAL PROPERTIES

Base:	Synthetic polymer	Total Solids:	24% +/- 1%
Solvent:	Ketone blend	Voc Content:	199.4 grams/liter
Flash Point:	<0°F (-18°C)	Shelf Life:	1 year, unopened
Weight/Gallon:	7.08lbs	Open Time:	Up to 60 minutes
Color:	Natural	Dry Time:	5-10 minutes
Viscosity:	1,800-2,400 cps	Application:	Roller or brush
Coverage:	60 sq. ft/gallon bonded		

CAUTION

- Keep out of reach of children
- Product for professional or industrial use only
- Sale to consumer is in violation of federal law
- Do not use if you cannot read, or do not understand all directions, cautions and warnings.
- See MSDS for More Information

Flex Membrane International maintains Material Safety Data Sheets on all of its products. Material Safety Data Sheets contain health and safety information for your development of appropriate product handling procedures to protect your employees and customers.

Flex's Material Safety Data Sheets should be read and understood by all of your supervisory personnel and employees before using Flex products in your facilities.

ATTENTION: Empty container may still contain pressure and remains hazardous until all flammable vapors, which may explode upon ignition, are gone from residue and container. Observe all labeled hazard precautions. Do not cut, puncture, or weld while hazard exists. Dispose of according to all federal, state, and local regulations.

Notice To Purchaser: NO WARRANTIES, EXPRESS OR IMPLIED ARE MADE INCLUDING MERCHANTABILITY AND/OR FITNESS FOR A PARTICULAR PURPOSE. UNDER NO CIRCUMSTANCES SHALL FLEX MEMBRANE INTERNATIONAL CORP BE LIABLE FOR ANY LOSS OR DAMAGE ARISING FROM THE PURCHASE, USE, OR INABILITY TO USE THIS PRODUCT, OR FOR ANY SPECIAL, INDIRECT INCIDENTAL, OR CONSEQUENTIAL DAMAGES. THE USER MAY SEND A SAMPLE OF PRODUCT TO FLEX FOR TESTING. IF SUCH TESTING PROVES A PRODUCT DEFECT, THE USER'S SOLE AND EXCLUSIVE REMEDY IS EITHER REIMBURSEMENT OF THE PURCHASE PRICE OF THE PRODUCT OR REPLACEMENT OF THE CONTAINER OF PRODUCT. NO FABRICATOR, INSTALLER, DEALER, AGENT OR EMPLOYEE OF FLEX HAS THE AUTHORITY TO MODIFY THE OBLIGATIONS OR LIMITATION OF THIS WARRANTY. This warranty gives you specific legal rights, and you may also have other rights which vary from state to state; therefore, some of the limitations stated above may not apply to you. It is to your benefit to save your documentation of purchase of a product.

Please direct all inquiries regarding performance of this product to:
Flex Membrane International Corp.
2670 Leiscz's Bridge Road
Suite 400
Leesport, PA 19533
Phone: 800-969-0108 Fax: 610-916-9501

Elvaloy® is a registered trademark of DuPont.

Product Data Sheet

FLEX SUBSTRATE ADHESIVE 7003

PRODUCT DESCRIPTION

Flex Substrate Adhesive is a single component cold applied rubberized asphalt emulsion adhesive designed specifically to adhere Flex Fleeceback Elvaloy® Thermoplastic Roof Membranes to a variety of compatible substrates.

FEATURES AND BENEFITS

- VOC Compliant
- Cold applied and requires no special equipment such as kettles
- Non-flammable

SUGGESTED USES

Flex Substrate Adhesive is applied to an approved substrate in a uniform thickness with a brush, notched squeegee or roller. Coverage is dependent on the porosity and smoothness of the surface to which it is applied. Approved substrates include structural concrete, lightweight insulating concrete, polyisocyanurate insulation, gypsum based roof cover boards, and approved base sheets.

PHYSCAL PROPERTIES

Type:	Rubberized Asphalt Emulsion. Water Vehicle
Color:	Black
Solids by Weight, %:	Approximately > 70%
Viscosity (CPS):	Approximately 18,000 cps
Consistency @ 77°F:	Heavy Paint Consistency, Readily Pourable
Specific Gravity@ 77°F:	0.99
Pounds per Gallon:	8.4 lbs
Flash Point, °F (SETA):	> 212 F°
VOC:	3 g/l
Size:	5 gal. container/50 lb.

COVERAGE

Coverage is dependent of the surface to be coated. Average coverage rate is 60 square feet per gallon. Cementitious surfaces require application of an approved primer or sealer 24 hours prior to adhesive application.

APPLICATION

Flex Substrate Adhesive should be applied at temperatures of 50°F and rising. The adhesive should not be applied at temperatures below 40°F, and should be stored at 70°F for at least 48 hours prior to installation at temperatures below 55°F. Do not apply adhesive if there is a possibility of freezing temperatures within 24 hours of application. Adhesive should not be applied in temperatures over 100°F. Materials to be bonded should be clean, dry, smooth and free from contaminants. Stir adhesive thoroughly before use. Apply adhesive by brush, heavy roller or notched squeegee to the substrate at the

specified coverage rate. Apply a smooth even coat of the adhesive over the substrate to insure 100% coverage. Allow adhesive to become tacky but do not allow a skin to form on the adhesive or allow the adhesive to dry out. Open times may vary depending on weather conditions and film thickness. Average open time can be 10 to 30 minutes depending on weather conditions at time of application. Place the Flex Fleeceback membrane into the adhesive and roll with a heavy (200 lb.) roller to insure contact with the adhesive.

PRODUCT HANDLING

Flex Substrate Adhesive contains ingredients which could be harmful if mishandled. Contact with skin and eyes should be avoided and necessary protective equipment and clothing should be worn.

STORAGE

When Flex Substrate Adhesive is stored indoors, out of direct sunlight, and in the original, unopened container between 60°F and 80°F, the shelf life is six months. Always rotate stock.

CLEANUP

Fresh coating can be removed with water. Dried Flex Substrate Adhesive can be cleaned with mineral spirits.

CAUTION

- Do not allow this product to Freeze.
- Keep out of Reach of Children.
- Do not heat container or store at temperatures greater than 120°F.
- Close Container after each use. Do not take internally.
- Use protective measures to avoid contact with eyes and skin.
- If swallowed, call Physician immediately.
- In case of eye contact, open eyelids and flush immediately with plenty of water for at least 15 minutes. GET MEDICAL ATTENTION.

Flex Membrane International Corp. maintains Safety Data Sheets on all of its products. Safety Data Sheets contain health and safety information for your development of appropriate product handling procedures to protect your employees and customers.

Safety Data Sheets should be read and understood by all of your supervisory personnel and employees before using Flex products in your facilities.

LIMITED WARRANTY

We warrant only that this product is free of defects, since many factors which affect the results obtained from this product such as weather, workmanship, equipment utilized and prior conditions of the substrate, are all beyond our control. We will replace at no charge any product proved to be defective within 12 months of purchase, provided it has been applied in accordance with our written directions for uses we recommended as suitable for this product. Proof of purchase must be provided.

Elvaloy® is a registered trademark of DuPont.

PRESSURE BARS

Flex

Thermoplastic Single Ply and Multi-Ply Roofing Systems

800-969-0108 • 610-916-9501 (Fax)
2670 Leiscz's Bridge Road, Suite 400, Leesport, PA 19533
e-mail: flexroof@cs.com • www.flexroofingsystems.com

PRODUCT DESCRIPTION

The Flex Termination Bar is designed to terminate single-ply membrane to parapet walls and other penetrations. A Flex Heavy Duty Fastener or Masonry Anchor should be used to secure the termination bar.

The Flex Termination Bar is made of extruded aluminum (6063 T6 alloy) with a mill finish. Oval holes that measure 1/4" x 3/8" are punched into each bar, with a standard spacing of 6", 8" or 12" on center (O.C.). Flex Termination Bar can be made to order with special hole spacing.

PHYSICAL DATA

Channel Bar **Cat. No. CHANB__ (06 08 12)**

Physical Data:
Width: 1"
Thickness: .100
Leg Height: 1/4" Top & Bottom
Leg Angle: 90°
Shipping Weight: 76 lbs/tube

Lip Bar **Cat. No. LIPTB__ (06 08 12)**

Physical Data:
Width: 3/4"
Thickness: .090
Lip Width: 3/16"
Lip Angle: 45°
Shipping Weight: 57 lbs/tube

Flat Bar **Cat. No. FLATB__ (06 08 12)**

Physical Data:
Width: 1"
Thickness: .090
Shipping Weight: 57 lbs/tube

Heavy Flat Bar **Cat. No. FLATB__-18 (06 08 12)**

Physical Data:
Width: 1"
Thickness: .125
Shipping Weight: 74 lbs/tube

Packaging: Each length of termination bar measures 10'. There are 50 lengths of bar in each tube (500' total). Pallet quantities equal 5,000' (10 tubes).

TERMINATION BARS

Channel Bar

Lip Bar

Flat Bar

Heavy Flat Bar

AMERICAN MADE

Product Data Sheet

FLEX ELVALOY®/PVC CLAD METAL

PRODUCT DESCRIPTION

The product is fabricated by a layer of 25 mil Flex Elvaloy®/PVC Roofing Membrane permanently laminated to 24 gauge, G-90 Galvanized Steel.

PHYSICAL PROPERTIES

Width:	4'
Length:	8' or 10'
Thickness:	.050 inches
Packaging:	30 sheets/skid
Weight:	43 lbs./sheet - 8'
	53 lbs./sheet - 10'

APPLICATION

Generally shop formed and fabricated as needed. Installation to follow standard sheet metal practice and NRCA guidelines for attachment to roof details.

Elvaloy® KEE is a DuPont Company Registered tramark for Ketone Ethylene Ester.

Flex Membrane International Corp. 2670 Leiscz's Bridge Road, Suite 400, Leesport, PA 19533
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Extra Heavy Duty Roofing Fastener

PRODUCT DATA SPECIFICATIONS

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DECK TYPES

PRODUCT DESCRIPTION

The Flex Extra Heavy Duty Roofing Fastener (#15) is a specialized, high performance fastener designed to secure roofing materials to certain light gauge steel (20 ga. and lighter), O.S.B., plywood or aluminium* roof decks. It is available in lengths from 2- to 16-inches and is Factory Mutual and Miami-Dade approved.

FEATURES & BENEFITS

- Oversized heavy shank and thread diameters for enhanced pullout resistance in light gauge steel and aluminum roof decks.
- Deep buttress threads further increase pullout resistance.
- Miniature drill point penetrates decks quickly and contributes to exceptional resistance to back-out as well as pullout.

APPLICATION

The Flex Extra Heavy Duty Roofing Fastener should **always be tested** on site by a Flex representative to determine performance and proper installation procedure. Call Flex to schedule testing.

COATING

CR-10 corrosion resistant coating passes the corrosion requirements of FM Approval Standard 4470 and ETAG 006.

PLATES & ACCESSORIES

A variety of plates are available. Contact Flex to determine the appropriate plate for your application.

To speed installation, this fastener can be used with the AccuTrac® System and is also available pre-assembled. **See AccuTrac or ASAP®.**

APPROVALS

FM APPROVED

MIAMI-DADE COUNTY APPROVED

**FM does not recognize OSB, plywood or aluminum deck types.*

PHYSICAL DATA†

The data below is constant for each Flex Extra Heavy Duty Roofing Fastener.

HEAD	THREAD
#3 Phillips Truss Head**	.265" Diameter
	SHANK
.435" Diameter	.202" Diameter
	COATING
	CR-10

**#3 Phillips bit included in each bucket/carton.

ORDERING INFORMATION

CAT. NO.	LENGTH	THREAD	PKG	WEIGHT
XHD002B	2"	Full	1000	20 lbs.
XHD003B	3"	Full	1000	29 lbs.
XHD004B	4"	3"	1000	38 lbs.
XHD005B	5"	4"	500	24 lbs.
XHD006B	6"	4"	500	28 lbs.
XHD007B	7"	4"	500	34 lbs.
XHD008B	8"	4"	500	38 lbs.
XHD009B	9"	4"	500	42 lbs.
XHD010B	10"	4"	500	47 lbs.
XHD011B	11"	4"	500	52 lbs.
XHD012B	12"	4"	500	56 lbs.
XHD014	14"	4"	250	32 lbs.
XHD016	16"	4"	250	38 lbs.

B = Bucket

Other sizes available up to 24-in. Call for details.

†All sizes are nominal

KEY:

- S Steel
- W Wood
- G Gypsum
- P Purlins
- AL Aluminum
- SC Structural Concrete
- LC Lightweight Concrete
- LWK Lightweight Insulating Concrete
- CWF Cementitious Wood Fiber

Flex™

Thermoplastic Single Ply and Multi-Ply Roofing & Waterproofing Systems

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e-mail: flexroof@cs.com • www.flexroofingsystems.com

Extra Heavy Duty Roofing Fastener

PRODUCT DATA SPECIFICATIONS

SPECIFICATION

The fastener will be a Flex Extra Heavy Duty Roofing Fastener (#15) with a thread diameter of .265-in. The fastener must have 13 threads per inch and a drill point. Also, the fastener must be heat treated per specification OMG-1. The Flex Extra Heavy Duty Roofing Fastener will be used with a Factory Mutual approved, Flex round pressure plate or pressure bar.

COATING REQUIREMENT

The fastener will be coated with the CR-10 corrosion resistant coating which passes the corrosion requirements of FM Approval Standard 4470 and ETAG 006.

APPLICATION

The Flex Extra Heavy Duty Roofing Fastener should always be tested on site by a Flex representative to determine performance and proper installation procedure. Call Flex to schedule testing.

Note: Care must be taken not to overdrive the fastener. Fastener must be tight enough so that the plate doesn't turn. For best results, use a variable speed 0–2500 RPM screw gun.

To speed installation, this fastener can be used with the AccuTrac® System. See AccuTrac.

PHYSICAL DATA

The data below is constant for each Flex Extra Heavy Duty Roofing Fastener.

HEAD	THREAD
#3 Phillips Truss Head .435" Diameter	.265" Diameter
	SHANK
	.202" Diameter
PACKAGING	COATING
250, 500, 1000/container	CR-10

FLEX EXTRA HEAVY DUTY ROOFING FASTENER LENGTH SELECTION PROCEDURE

1. If applicable, determine the thickness of the existing roofing material.
2. Add thickness of new insulation.
3. **For steel and aluminum:** Add ¾-inch minimum fastener penetration.
4. For OSB and plywood, add ¾-inch mimimum fastener penetration.
5. For wood plank (beam, tongue and groove), add 1-inch embedment.
6. If odd size requirement, always size up in length, not down. See example:

	Example:
Existing Roofing	3"
Cover Board	½"
Min. Penetration	¾"
Total Fastening	4 ¼"
Correct Length	5"

The proper Flex #15 Extra Heavy Duty Roofing Fastener for this project is 5 inches

**FM does not recognize OSB, plywood or aluminum deck types.*

Flex℠
Thermoplastic Single Ply and Multi-Ply Roofing & Waterproofing Systems
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PRESSURE PLATES

Thermoplastic Single Ply and Multi-Ply Roofing Systems

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PRODUCT DESCRIPTION

Flex Steel Plates are made of Galvalume® coated steel. The round design provides an even distribution of loads and eliminates sharp corners that can damage the insulation or membrane. Flex 2" plates should be used for lap seam fastening. Flex 3" plates should be used when fastening insulation. These plates are designed to be used with Flex fasteners.

PHYSICAL DATA

2" Galvalume® Plate

Application: Attaches single-ply membrane to the substrate.
Fastener: Flex Heavy Duty or CD-10

3" Galvalume® Plate

Application: Attaches insulation to the substrate.
Fastener: Flex Heavy Duty or CD-10

Lite-Deck Plate

Application: Attaches insulation to gypsum, Tectum® and lightweight concrete decks.
Fastener: Flex Lite-Deck Fastener.

2" NTB® Plate

Application: Attaches single-ply membrane to gypsum, Tectum® and lightweight concrete decks.
Fastener: Flex NTB-1H w/ or w/o wire or NC 1" head.

3" NTB® Plate

Application: Attaches insulation to gypsum, Tectum® and lightweight concrete decks.
Fastener: Flex NTB-1H w/ or w/o wire or NC 1" head.

Base Sheet Plate

Application: Attaches base sheets to lightweight insulating concrete and various gypsums.
Fastener: Flex Standard or 1.2 Base Sheet Fastener.

Steel plates continue on next page.

PHYSICAL DATA	Cat. No.	Size	Packaging	Weight
2" PLATE	SPGA2	2"	1000	29 lb
3" PLATE	SPGA3-R	3"	1000	37 lb
LITE-DECK PLATE	TCP03	3"	500	19 lb
2" NTB PLATE	SPNTB2	2"	1000	24 lb
3" NTB PLATE	SPNTB3	3"	1000	46 lb
BASE SHEET PLATE	BFSP3	2¾"	1000	20 lb

STEEL PLATES

AMERICAN MADE

PRESSURE PLATES

Thermoplastic Single Ply and Multi-Ply Roofing Systems

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PRODUCT DESCRIPTION (STEEL)

Flex Steel Plates are made of Galvalume® coated steel. The round design provides an even distribution of loads and eliminates sharp corners that can damage the insulation or membrane. Flex 2" plates should be used for lap seam fastening. Flex 3" plates should be used when fastening insulation. These plates are designed to be used with Flex fasteners.

PHYSICAL DATA

2⅜" Galvalume® Barbed Plate

Application: Attaches single-ply membrane to the substrate.
Fastener: Flex Extra Heavy Duty, CD-10, or Purlin

2¾" Galvalume® Barbed Plate

Application: Attaches single-ply membrane to the substrate.
Fastener: Flex Extra Heavy Duty, Super Extra Heavy Duty, CD-10 or Purlin

3" AccuTrac Galvalume® Plate

Application: Attaches insulation to the substrate.
Fastener: Flex Standard, Heavy Duty, or Extra Heavy Duty

PHYSICAL DATA	Cat. No.	Size	Packaging	Weight
2⅜" BARBED PLATE	SPGA238B	2⅜"	1000	52 lb
2¾" BARBED PLATE	SPGA234B-14B	2¾"	500	38 lb
3" ACCUTRAC PLATE FLAT	BKT6862904	3"	1000	43 lb
3" ACCUTRAC PLATE RECESSED	BKT6123904	3"	1000	43 lb

PRODUCT DESCRIPTION (PLASTIC)

Flex 2" plates should be used for lap seam fastening.
Flex 3" plates should be used when fastening insulation.

All Flex plates are round and designed to be used with Flex fasteners.

PHYSICAL DATA

3" Plastic Plate

Application: Attaches insulation to the substrate.
Fastener: Flex Standard or Heavy Duty
Material Polypropylene

3" Locking Plastic Plate

Application: Attaches insulation to the substrate.
Fastener: Flex Standard or Heavy Duty
Material: Polypropylene

PHYSICAL DATA	Cat. No.	Size	Packaging	Weight
3" PLASTIC PLATE	PL003	3"	1000	25 lb
3" LOCKING PLASTIC PLATE	PLL03	3"	1000	25 lb

STEEL PLATES

PLASTIC PLATES

AMERICAN MADE

Product Data Sheet

FLEX PIPE FLANGE

PRODUCT DESCRIPTION

The Flex Pipe Flange is prefabricated for quick and easy flashing installations. The Flex Pipe Flange can be cut to fit various dimensions of 1" to 4 ½" in diameter. The Flex Pipe Flange is installed by the hot air welding method. The Flex Pipe Flange facilitates labor savings and ensures a quality installation.

PHYSICAL PROPERTIES

Property	Test Procedure	Specification
Color		White, Gray or Tan
Size		7" in height / fits diameters up to 4 1/2"
Thickness	ASTM D638	.085" Nominal
Specific Gravity	ASTM D792	1.32g/cm/3
Tensile Strength	ASTM D638	>2500 PSI
Elongation	ASTM D638	>300
Heat Aging	ASTM D3045	90% of Original
Cold Resistance	ASTM D1043	-40 Degrees F
Water Vapor Permeability	ASTM E96	2.8g/m²/day
Dimensional Stability	ASTM D1240	0.5% or less
U.V. Stability	Xenon Arc 150	10,000 hrs. (Excellent)

*All Flex Pipe Flange applications require the included metal clamp to be installed at the top of preformed flange and sealed with an approved caulking applied.

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Product Data Sheet

FLEX 8" TRIM STRIP

PRODUCT DESCRIPTION

The Flex MF/R Plus Elvaloy® Roofing Membrane 8" Trim Strip is specifically designed to be used as a strip-in membrane for FlexClad Metal perimeter edge and flashing details. The Flex 8" Trim Strip is also installed with Flex Fleeceback Membrane for end joint details and for patch installations. The Flex MF/R Plus is produced with DuPont Elvaloy® KEE and is a polyester reinforced roofing membrane with built in chemical, UV and fire resistance. Flex 8" Trim Strip is installed by the hot-air welding procedure, 2" minimum weld.

PHYSICAL PROPERTIES

Property	Test Procedure	Specification
Colors		White, Gray or Tan
Thickness	ASTM D751	.060"
Breaking Strength (lbf)	ASTM D751	298 x 278
Seam Strength (lbf)	ASTM D751	286
Tear Strength (lbf)	ASTM D751	89 x 109
Elongation	ASTM D751	35% x 34%
Heat Aging	ASTM D3045	> 90 %
Static Puncture Resistance	ASTM D5602	PASS
Dynamic Puncture Resistance	ASTM D5635	PASS
Low Temperature Bend	ASTM D2136	PASS (-40°F)
Permeance	ASTM E96	.003 Perms
Dimensional Stability	ASTM D1204	0.3%
Wt. Change after Water Immersion	ASTM D570	1.20%
Accelerated Weathering	ASTM G155	Pass
Fungi Resistance	ASTM G21	Pass
Solar Reflectivity	ASTM C1549	.82 (white)
Emissivity	ASTM C1371	.91 (white)
SRI	ASTM E1980	109 (white)

Flex Elvaloy® based membranes meet the requirements of ASTM D4434 standard specification for poly (vinyl chloride) based sheet roofing.

Elvaloy® is a registered trademark of Dupont.

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Product Data Sheet

FLEX ELVALOY® KEE PVC T-JOINT COVER

GENERAL

Flex Elvaloy® KEE PVC T-Joint Covers are used to seal step-offs at splice intersections. Installation is mandatory on all Flex Elvaloy® KEE Thermoplastic Roof systems with a membrane thickness greater than 45 mil and on 45 mil systems where step-offs have not been properly sealed. Flex Elvaloy® KEE PVC T-Joint Covers are made from 55 mil non-reinforced flashing cut into a 4.5" diameter circle. Packaged in units of 100 covers. Available in white, tan and gray.

PRODUCT INFORMATION

Size:	4.5"
Thickness:	0.055"
Packaging:	100 per unit
Weight (per box):	4.0 lbs.
Material:	Non-reinforced Elvaloy® KEE PVC Flashing
Color:	White, Tan, Gray

CAUTIONS AND WARNINGS

1. The Flex Elvaloy® KEE PVC T-Joint Cover is not intended for use to overlay fasteners and plates as this requires the use of reinforced membrane.

2. Store Flex Elvaloy® KEE PVC T-Joint Covers in a cool, shaded area and cover with light colored, breathable, waterproof tarpaulins.

INSTALLATION

1. Clean splice intersection area with Flex Membrane Cleaner.

2. Use a lower temperature setting on the heat welder than compared to welding reinforced membrane. (Typically a setting of "6" on a scale of "10" is appropriate for welding Elvaloy® KEE PVC T- Joint Covers.)

3. Center the Flex Elvaloy® KEE PVC T-Joint Cover over the splice intersection, begin welding at the center point and work towards the outside. Use the edge of the roller to crease the T-Joint Cover into membrane step-offs to achieve a proper seal.

4. Using a probe, check all splices for voids and cold-welds. Make any needed repairs.

Elvaloy® is a registered trademark of DuPont.

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Product Data Sheet

FLEX INSIDE AND OUTSIDE PREFABRICATED CORNERS

PHYSICAL PROPERTIES

Property	Test Procedure	Specification
Color		White, Gray or Tan
Size	Inside Corner	2 ¾" Height x 2 ¾" Width x 2 ¾" Depth
	Outside Corner	2 ¾" Height x 5 ½" Width x 2 ½" Depth
Thickness	ASTM D 638	.070" Nominal
Specific Gravity	ASTM D 792	1.32g/cm/3
Tensile Strength	ASTM D 638	>2500 psi
Elongation	ASTM D 638	>300%
Heat Aging	ASTM D 3045	90% of Original
Cold Resistance	ASTM D 1043	-400° F
Water Vapor Permeability	ASTM E 96	2.8/m^2/day
Dimensional Stability	ASTM D 1240	0.5% or less
UV Stability	Xenon Arc 150	10,000 hrs. Excellent

APPLICATION

Hot air welded to Flex flashing and/or field membranes

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Flex Item #5001 - Inside Corner
Flex Item #5002 - Outside Corner

FLEX ISO II ROOF INSULATION

PRODUCT DATA SHEET

DESCRIPTION: Closed-cell polyisocyanurate (polyiso) foam core integrally bonded to non-asphaltic, fiber-reinforced organic felt facers. Flex ISO II is offered in a variety of thicknesses, providing long-term thermal resistance (LTTR) values from 5.7 to 26.8. Available in 4ft x 8ft (1220mm x 2440mm) and 4ft x 4ft (1220mm x 1220mm) panels. Manufactured in accordance with **ASTM C1289, Type II, Class 1, Grade 2 (20 psi) or Grade 3 (25 psi) and CAN/ULC-S704 Type 2, Class 3 or Type 3, Class 3.**

ADVANTAGES: Flex ISO II is manufactured using CFC-, HCFC- and HFC-free foam blowing technology with zero ozone depletion potential (ODP) and virtually no (negligible) global warming potential (GWP). Flex ISO II contains between 52.9% and 27.6% recycled materials by weight.

APPLICATION: Manufactured and tested for use in new and re-roofing applications. Flex ISO II is used in built-up (BUR), modified bitumen, metal, ballasted single-ply, mechanically attached single-ply and adhered single-ply roofing systems. These roofing systems depend on proper installation for successful performance. Refer to FM Approvals® RoofNav and UL Online Certifications Directory for additional application details.

INSTALLATION: Flex ISO II shall be kept dry before, during and after installation. This product will burn if exposed to an ignition source of sufficient heat and intensity. Do not apply flame directly to Flex ISO II insulation. Refer to product packaging and PIMA Technical Bulletin #109 for storage and handling recommendations. **An offset or staggered multi-layer application of Flex ISO is strongly recommended when the total insulation thickness exceeds 2.7".** Typical field fastening requirements can be obtained from membrane system manufacturer or FM Global Property Loss Prevention Data Sheets 1-29.

Prior to installation, Flex Membrane International Corp. recommends that you consult your local building codes, contract documents, professional engineer, FM Global, Miami-Dade County and membrane manufacturer for additional installation guidelines as well as design enhancements.

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	RESULTS
DIMENSIONAL STABILITY	ASTM D2126	< 2%
COMPRESSIVE STRENGTH	ASTM D1621	20 psi (140 kPa) or 25 psi (172 kPa)
WATER ABSORPTION	ASTM C209 & D2842	< 1.5%, < 3.5%
WATER VAPOR TRANSMISSION	ASTM E96	< 1.5 perm (85.5ng/(Pa•s•m²))
PRODUCT DENSITY	ASTM D1622	Nominal 2.0 pcf (32.04 kg/m³)
FLAME SPREAD	ASTM E84 (10 min.)	[1]40-60
SMOKE DEVELOPMENT	ASTM E84 (10 min.)	[1]50-170
TENSILE STRENGTH	ASTM D1623	> 730 psf (35 kPa)
SERVICE TEMPERATURE	-	-100° to +250°F

[1]Numerical ratings are not intended to reflect performance under actual fire conditions. Flame spread index of ≤ 75 and smoke development ≤ 450 meet code requirements for foam plastic roof insulation. Codes exempt foam plastic insulation when used in FM 4450 or UL 1256. Physical properties listed above are presented as typical average values as determined by accepted ASTM test methods and are subject to normal manufacturing variation.

THERMAL DATA

LTTR VALUE	THICKNESS		[2]RSI	FLUTE SPANABILITY	
	in	mm		in	mm
5.7	1.0	25.4	1.00	2.625	66.68
8.6	1.5	38.1	1.50	4.375	111.13
11.4	2.0	50.8	2.01	4.375	111.13
14.4	2.5	63.5	2.53	4.375	111.13
17.4	*3.0	76.2	3.06	4.375	111.13
20.5	*3.5	88.9	3.60	4.375	111.13
23.6	*4.0	101.6	4.15	4.375	111.13

LTTR (long term thermal resistance) values were determined in accordance with CAN/ULC-S770-09. Test samples were third-party selected and tested by an accredited material testing laboratory. The LTTR results were reviewed by FM Global and certified by the PIMA Quality Mark Program. [2]RSI is the metric expression of R-value (m² • K/W).
*To minimize the effects of thermal bridging, Atlas strongly recommends the use of multiple layers when the total desired or specified R-value requires an insulation thickness greater than 2.7" thick.

- **ASTM C1289, Type II, Class 1, Grade 2 (20 psi) or Grade 3 (25 psi)**
- **CAN/ULC-S704, Type 2, Class 3 or Type 3, Class 3**
- **CCMC No. 12464-L**
- **UL Certified for Canada—** Insulated Roof Deck Assemblies Construction No. C38 and 52. Meet CAN/ULC-S126, CAN/ULC-S101 and CAN/ULC-S107
- **UL Standard 1256 Classification** Construction No. 120, 123 & 292
- **UL Standard 790 (ASTM E108)** Roofing Systems Classification
- **UL Standard 263 (ASTM E119)** Fire Resistance Classification
- **UL Standard 1897** Uplift Resistance
- **FM Standard 4450/4470 Approved**
  Refer to FM Approvals® RoofNav for Specific System Details
- **IBC Chapter 26 & NBC** Sections on Foam Insulation
- **Miami-Dade County Approved**

FLEX ISO III TAPERED ROOF INSULATION

PRODUCT DATA SHEET

DESCRIPTION: Closed-cell polyisocyanurate (polyiso) foam core integrally bonded to inorganic coated glass facers. Flex ISO III tapered roof insulation is offered in a variety of slopes, to achieve positive drainage as well as long-term thermal resistance (LTTR). Available in 4ft x 4ft (1220mm x 1220mm) panels with 1/8" (3mm), 1/4" (6mm) and 1/2" (12mm) per foot slope. Manufactured in accordance with **ASTM C1289, Type II, Class 2, Grade 2 (20 psi) or Grade 3 (25 psi) and CAN/ULC-S704 Type 2, Class 3 or Type 3, Class 3.**

ADVANTAGES: When using Flex ISO III tapered insulation in adhered systems, field testing has confirmed significantly more efficient use of solvent-based adhesives than with organic faced insulations. Adhesive application rates vary by manufacturer. Check adhesive manufacturer's recommendation for application rates. Manufactured using CFC-, HCFC- and HFC-free foam blowing technology with zero ozone depletion potential (ODP) and virtually no (negligible) global warming potential (GWP). Recognized by the GREENGUARD Environmental Institute as resistant or highly resistant to mold growth based on independent testing using GREENGUARD Test method GGTM.P040 (ASTM D6329) for microbial resistance. Flex ISO III tapered insulation contains between 10.85% and 4.62% recycled materials by weight.

APPLICATION: Manufactured and tested for use in new and re-roofing applications. Flex ISO III tapered insulation is used in built-up (BUR), modified bitumen, metal, ballasted single-ply, mechanically attached single-ply and adhered single-ply roofing systems. These roofing systems depend on proper installation for successful performance. Refer to FM Approvals® RoofNav and UL Online Certifications Directory for additional application details.

INSTALLATION: Flex ISO III tapered insulation shall be kept dry before, during and after installation. This product will burn if exposed to an ignition source of sufficient heat and intensity. Do not apply flame directly to Flex ISO III tapered insulation. Refer to product packaging and PIMA Technical Bulletin #109 for storage and handling recommendations. Typical field fastening requirements can be obtained from membrane system manufacturer or FM Global Property Loss Prevention Data Sheets 1-29.

Prior to installation, Flex Membrane International Corp. recommends that you consult your local building codes, contract documents, professional engineer, FM Global, Miami-Dade County and membrane manufacturer for additional installation guidelines as well as design enhancements.

PHYSICAL PROPERTIES

PROPERTY	TEST METHOD	RESULTS
DIMENSIONAL STABILITY	ASTM D2126	< 2%
COMPRESSIVE STRENGTH	ASTM D1621	20 psi (140 kPa) or 25 psi (172 kPa)
WATER ABSORPTION	ASTM C209 & D2842	< 1.5%, < 3.5%
WATER VAPOR TRANSMISSION	ASTM E96	< 4.0 perm (228.8ng/ (Pa•s•m²))
PRODUCT DENSITY	ASTM D1622	Nominal 2.0 pcf (32.04 kg/m³)
FLAME SPREAD	ASTM E84 (10 min.)	[1]40-60
SMOKE DEVELOPMENT	ASTM E84 (10 min.)	[1]50-170
TENSILE STRENGTH	ASTM D1623	> 730 psf (35 kPa)
SERVICE TEMPERATURE	-	-100° to +250°F

[1]Numerical ratings are not intended to reflect performance under actual fire conditions. Flame spread index of ≤ 75 and smoke development ≤ 450 meet code requirements for foam plastic roof insulation. Codes exempt foam plastic insulation when used in FM 4450 or UL 1256. Physical properties listed above are presented as typical average values as determined by accepted ASTM test methods and are subject to normal manufacturing variation.

THERMAL DATA

PANEL LABEL	AVERAGE		THICKNESS		SLOPE	
	LTTR	[2]RSI	IN	MM	PER FT.	PERCENT
AA	4.3	0.76	0.5-1.0	12-25	1/8"	1%
A	7.1	1.25	1.0-1.5	25-38	1/8"	1%
B	10.0	1.76	1.5-2.0	38-50	1/8"	1%
C	12.9	2.27	2.0-2.5	50-63	1/8"	1%
X	5.7	1.00	0.5-1.5	12-38	1/4"	2%
Y	11.4	2.01	1.5-2.5	38-63	1/4"	2%
Q	8.6	1.51	0.5-2.5	12-63	1/2"	4%

LTTR (long term thermal resistance) values were determined in accordance with CAN/ULC-S770-09. Test samples were third-party selected and tested by an accredited material testing laboratory. The LTTR results were reviewed by FM Global and certified by the PIMA Quality Mark Program.
[2]RSI is the metric expression of R-value (m² • K/W).

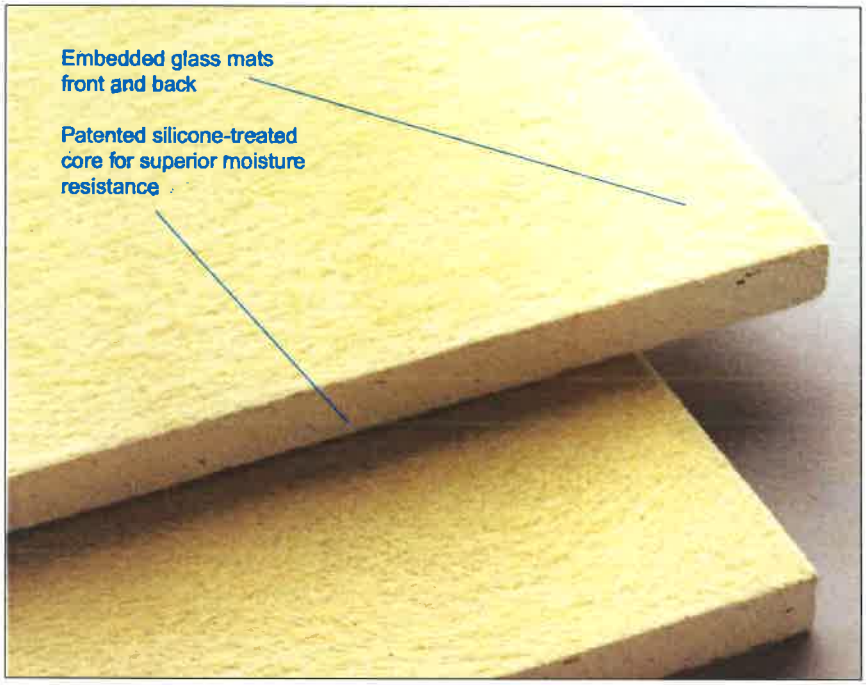
- **ASTM C1289, Type II, Class 2, Grade 2 (20 psi) or Grade 3 (25 psi)**
- **CAN/ULC-S704, Type 2, Class 3 or Type 3, Class 3**
- **CCMC No. 12423-L**
- **UL Certified for Canada—** Insulated Roof Deck Assemblies Construction No. C38 and 52. Meet CAN/ULC-S126, CAN/ULC-S101 and CAN/ULC-S107
- **UL Standard 1256 Classification** Construction No. 120, 123 & 292
- **UL Standard 790 (ASTM E108)** Roofing Systems Classification
- **UL Standard 263 (ASTM E119)** Fire Resistance Classification
- **UL Standard 1897** Uplift Resistance
- **FM Standard 4450/4470 Approved**
  Refer to FM Approvals® RoofNav for Specific System Details
- **IBC Chapter 26 & NBC** Sections on Foam Insulation
- **Miami-Dade County Approved**

Exhibit 3

DENS-DECK® ROOF BOARD

¼" Overlayment/ Underlayment

With its non-combustible core and inorganic surface, ¼" Dens-Deck® Overlayment/Underlayment is the ideal recover, overlayment, and underlayment (thermal barrier) board for commerical roof applications. With 0 Flame Spread and 0 Smoke Developed, Dens-Deck offers superior fire resistance when compared to other conventional roofing products.



Features:

- Moisture-Resistant Patented Silicone-Treated Core
- Glass-mats front and back
- U.L. test 790 and cU.L. Class A Fire Listed*
  U.L. File #R15206
- U.L. test 1256 (thermal barrier)
  U.L. file #15206

*See U.L. Roofing Materials and Systems Directory

Benefits:

- **Water Resistant:** The combination of glass mat surfacing and a patented silicone-treated core renders ¼" Dens-Deck Overlayment/Underlayment more resistant to surface water or penetration of moisture.
- **Dimensionally Stable:** The glass mats are an integral part of the core on the front and back sides for added strength.
- **Non-Combustible:** When tested in accordance with ASTM E-136. Also, Zero Flame Spread and Zero Smoke Developed when tested in accordance with ASTM E-84.
- **Excellent Adhesive Qualities:** The engineered texture of the glass mat surface provides a superior bonding surface.
- **Inorganic Construction:** Does not rot.
- ¼" Dens-Deck spans steel deck types F (1¾"), B (2½"), N (2⅝") with typical live loads in commercial roof systems.
- **Lighweight:** Easy to cut and handle, thin to reduce roof height.

Applications:

- Overlayment for polyisocyanurate and polystyrene insulation.
- Overlayment for combustible decks for single-ply, built-up, modified asphalt, metal and wood shingles.
- Excellent Recover board.
- Excellent Underlayment that meets the UL 1256 (thermal barrier).
- Available in 4' x 8' size.

CLASSIFIED UL C CLASSIFIED UL

Mineral board for Class A Roofing Systems
As to External Fire Exposures Only
U.L. File R15206

Patent Numbers: 4,647,496; 4,810,569; 5,135,805; 5,148,645; and 5,220,762. Patents Pending.

Distributed By
Flex
2670 Lenox Bridge Road
Suite 400
Leesport, PA 19533
Phone 610-916-9500
Fax 610-916-9501

G-P Gypsum
a Georgia-Pacific company

For Sales Information call: 1-800-947-4497

Technical Hotline: 1-800-225-6119

Lit. Item #102160

Thermoplastic Single Ply and Multi-Ply
Roofing & Waterproofing Systems

Flex Membrane International Corp. 5103A Pottsville Pike, Reading, PA 19605 (610) 916-9500, Fax: (610) 916-9501

FLEX ISO HD FR FIRE RATED POLYISOCYANURATE PANEL TECHNICAL DATA SHEET

PRODUCT DESCRIPTION

FLEX ISO HD FR is a ½" thick, high density polyisocyanurate insulation panels specifically designed for direct application to combustible roof decks. It is manufactured on line to a premium performance coated glass facer on both sides (CGF). Flex ISO HD FR delivers an R-value of 2.5 in its ½" profile; significantly higher than other roof materials such as wood fiber or gypsum.

PREMIUM PERFORMANCE ATTRIBUTES

- Manufactured with NexGen Chemistry: Contains no CFCs, HFCCs, is Zero ODP, EPA Compliant, and has no GWP.
- 4 lbs/pcf high density foam core provides enhanced physical properties.
- Sturdy constitution and durability protects the roof system from effects of hail, roof top construction traffic and other potentially damaging elements.
- Passed (10) ASTM D 3273 Resistance to Mold Test.
- Hail Rating: SH-1.

Advantages

- **Achieves a UL 790 Class A combustible deck assembly rating at ½" thickness without the use of a fire-rated slip sheet or the presence of a fire barrier.**
- Lightweight (15.5 lbs. per 4'x8' panel); easy to cut, handle and install.
- 5 times higher R-value than gypsum.
- 1/5 the weight of gypsum.

RECOMMENDED USES

- Achieve a UL Class A Rating using Flex ISO HD FR ½" cover board with any Flex polyisocyanurate board as a base layer.
- Compatible with Flex Thermoplastic Single Ply Roofing Systems.
- Compatible with BUR and Modified Bitumen Systems (APP,SBS).
- Approved for use with Flex insulation board fasteners and plates as well as cold applied and low rise foam adhesives.
- ½":12 maximum slope.

FLEX ISO HD FR THERMAL VALUES

Thickness (inches)	Thickness (mm)	R-Value*
0.5	13	2.5

*tested in accordance with ASTM C518

PACKAGING AND WEIGHT

4x4 Panels		4x8 Panels	
7.8 lbs. per 4'x4' panel	0.243 lbs./sq.ft.	15.5 lbs. per 4'x8' panel	0.484 lbs./sq.ft.
45 pieces per ½ stack bundle	351 lbs. per bundle	45 pieces per ½ stack bundle	698 lbs. per bundle

PANEL CHARACTERISTICS

- Available in ASTM C 1289 Type II, Class 4, Grade 1 (109 psi max.)
- Available in 4'x4' (1220mm x 1220mm) and 4'x8' (1220mm x 2440mm)

CODES AND COMPLIANCES

- ASTM C 1289 Type II, Class 4, Grade 1 (109 psi max)
- UL 790
- California Title 24

UL CLASSIFIED FOR USE IN CANADA

- Refer to UL Directory of Products Certified for Canada for more details.

TYPICAL PHYSICAL PROPERY DATA CHART (polyisocyanurate foam core only)

Property	Test Method	Value
Compressive Strength	ASTM D 1621	Grade 1 (109 psi max)
Dimensional Stability	ASTM D 2126	<0.5% linear change (7days)
Water Absorption	ASTM C 209	< 1% volume
Flame Spread*	ASTM E 84	< 75
Smoke Developed*	ASTM E 84	< 450
Service Temperature		260°F or less
Recycle Content		9% pre-consumer

* Meets the requirements of the IBC Code

INSTALLATION

Each Flex ISO HD FR panels must be secured direct to the combustible deck with Flex fasteners and plates, insulation adhesive or hot asphalt. Flex ISO HD FR requires 16 plates and fasteners per 4'x8' board.* Butt edges and stagger joints of adjacent panels. Install the roof covering in accordance with Flex's specifications.
* For additional information on fastening requirements please contact Flex Technical Services Department

WARNINGS AND LIMITATIONS

Insulation must be protected from open flame and kept dry at all times. Install only as much insulation as can be covered the same day by completed roof covering material. Flex will not be responsible for specific building and roof design by others, for deficiencies in construction or workmanship, for dangerous conditions on the job site or for improper storage and handling. Technical specifications shown in this literature are intended to be used as general guidelines only and are subject to change without notice. For more information refer to PIMA Technical Bulletin No. 109: Storage & Handling Recommendations for Polyiso Roof Insulation at: www.polyiso.org.

LEED POTENTIAL CREDITS FOR POLYISO USE

Energy and Atmosphere: Optimize Energy Performance

Materials and Resources: Building Life-Cycle Impact Reduction, Environmental Product Declaration, Materials Reuse, Recycled Content, and Construction and Demolition Waste Management.

POLYSET®

BOARD-MAX™

INSULATION & COVER BOARD ADHESIVE FOR LOW SLOPE COMMERCIAL ROOFING

Polyset Board-Max is a low-rise, two-component polyurethane foam adhesive specifically engineered to secure insulation and cover boards to various roof decks, cover boards and substrates. Part of the Polyset product line of adhesives and commercial roofing sealants.

NEW FORMULA designed for securing insulation and cover boards to various roof deck types and substrates.

FAST BEAD application method.

VARIOUS SIZE OFFERINGS from small 9 square kits to larger 30 square kits. Refillable systems coming soon.

NO POWER required, allowing for easy transportation.

APPROVALS: UL-R39032, FM, Miami-Dade NOA, FBC Product Approval.

Can be applied as **low as 30°F (-1°C).**

LABOR SAVINGS - significantly reduces the need to "weight down the boards".

COLORWISE® Temperature Warning Nozzles - shows the chemical is being applied at the proper temperature.

BEAD PATTERN

To achieve optimum results, dispense product in straight bead pattern.

Displays proper bead method

The patented Handi-Gun dispensing provides speed and simplicity to the application of Board-Max.

Nozzle changes from clear to blue, indicating the chemical has reached a cold temperature, below 60°F (18°C), and the adhesive should not be dispensed until chemical is back to recommended temperatures.

*See TDS for product specific temperature recommendations.

NEW FORMULA

We absolutely *LOVE* Board-Max and we will absolutely be using you exclusively for all of our fully adhered projects. Thank you for your service. It was a nice change from the norm.

Ty Robertson
Pinnacle Construction
Casper, WY

ADDITIONAL INFORMATION

BOARD-MAX TECHNICAL DATA*

OPEN TIME	1 - 5 minutes**
SET-UP TIME	1 - 5 minutes**
FULLY CURED TIME	24 hours
SHELF LIFE	12 months

*See product specific TDS for additional information.
**Times may be affected by temperature and weather conditions.

APPROVALS/STANDARDS/CLASSIFICATIONS*

UL - Underwriters Laboratories
FM Factory Mutual
Miami Dade NOA
Florida Product Approval

*Visit ICPAdhesives.com for up-to-date approvals/standards/classifications

ORDERING GUIDE

PART #	DESCRIPTION
POLYSET BOARD-MAX	
62496580322	BOARD-MAX ADHESIVE KIT (30 SQUARE)
62000280322	BOARD-MAX ADHESIVE KIT (9 SQUARE)
CLEANERS	
62484448303	POLYSOLV 12 OZ. AEROSOL CLEANER (12 PACK)
PERSONAL PROTECTIVE EQUIPMENT (PPE)	
F65251	CONTRACTOR SAFETY KIT (INCLUDES: SAFETY GLASSES, NITRILE GLOVES (2 PAIRS), MEDIUM SIZE NIOSH APPROVED RESPIRATOR WITH ORGANIC VAPOR CARTRIDGES, DUST/MIST PREFILTERS AND 10 HYGIENIC WIPES, TYVEK® APRON & ARM GAUNTLETS)
ACCESSORIES	
62988499307	25' APPLICATOR & HOSE
F66117	COLORWISE LONG CONE NOZZLES (25 PACK)
F66113	COLORWISE LONG CONE NOZZLE (10 PACK)

THE POLYSET® PROMISE

ALWAYS DELIVER BEST IN-CLASS **TRAINING** & **FIELD SUPPORT**

COMPANY

25 YEARS of product credibility in the market of roof adhesives.

PROFESSIONAL FOCUS only. Polyset is not sold through retail channels.

THOUSANDS OF SQUARES of roofing adhesive applied with Polyset products.

TRAINING & SUPPORT

ON THE ROOF & CLASSROOM product applicator training by highly trained professional roofing adhesive technicians.

MASTERWORKS APPLICATOR TRAINING provides continuous hands-on training, ensuring projects meet code compliance, while delivering The Polyset Promise.

SERVICES

TRUE TESTING VALUES & DATA for uplift and fire ratings, through accredited laboratories.

NO CHARGE adhesion/pull testing for our customers.

MARKET *leader*

DISTRIBUTED BY:

Flex
Thermoplastic Single Ply and Multi-Ply Roofing & Waterproofing Systems

5103A Pottsville Pike
Reading, PA 19605
Phone: 610-916-9500
Fax: 610-916-9501
www.FlexRoofingSystems.com

ICP BUILDING SOLUTIONS GROUP
2775 Barber Road | Norton, OH 44203
330-753-4585 | icpgroup.com

A24101 - Rev 11 2020

Product Data Sheet

FLEX WALKWAY PAD

PRODUCT DESCRIPTION

Flex Walkway Pad is designed to be used as a traffic-bearing rooftop walkway on Flex's Roofing Systems. It can be used as a protection layer around rooftop equiment to protect the roofing membrane from damage. The walkway pad is manufactured in gray or safety yellow colored surfacing that has been designed to highlight traffic and maintenance areas. The traffic-bearing surface provides excellent skid resistance and the low profile does not disrupt roof drainage. Special width and length rolls are also availabile, as well as customer thickness and colors.

PHYSICAL PROPERTIES

Color:	Gray or Safety Yellow
Size:	2.5' wide x 60' long
Slip-Resistant Membrane Thickness:	90 mils (nominal)
Reinforcement:	1000 denier polyester
Tear Strength:	210 lbs. x 200 lbs.
Puncture Resistant:	96 pounds
Shore A Durometer:	85
Low Temperature Bend:	-40° F
Hydrostatic Resistance:	400 psi
Dimensional Stability:	less than 1$

APPLICATION

The Flex Walkway Pad is recommended to be hot air welded to the existing membrane by utilizing the hot air welding method. The Walkway Pad can also be installed with Flex Bonding Adhesive. Walkway Rolls are to be cut in lenghts no longer than 10' sections, with 2" spacing between sections.

Flex Membrane International Corp. 5103A Pottsville Pike, Reading, PA 19605
Tel: (610) 916-9500 Fax: (610) 916-9501 www.FlexRoofingSystems.com

Flex Item #5990 - Gray
Flex Item #5991 - Yellow

Flex™
Thermoplastic Single Ply and Multi-Ply Roofing & Waterproofing Systems

Warranty # Sample

Material & Workmanship Warranty

FLEX MEMBRANE INTERNATIONAL CORP. ("Flex") warrants to the Building Owner named below, subject to the terms, limitations, and conditions set forth herein, for a period of 20* years, in which this Materials and Workmanship Warranty is effective, the Flex Roofing Materials installed on the Building Owner's building at the address and location shown below, shall be free from defects in materials supplied by Flex and/or defective workmanship provided by the Flex Authorized Applicator named below. *TOTAL SYSTEM

TERMS, LIMITATIONS, CONDITIONS

1) Installation of the Flex Roofing Materials must have been performed by a Flex Authorized Applicator and must have been inspected and approved for warranty by Flex. This warranty issuance will not relieve the Flex Authorized Applicator from performing additional work should final inspection discover any failure to comply with Flex current specifications and details or shortcomings in workmanship. This warranty is effective and valid only after final inspection and acceptance by Flex.
2) If, after inspection by Flex, leaks in the Flex Roof System are found by Flex to be the result of defects in Flex materials and/or the workmanship of the below named Flex Authorized Applicator in the installation of Flex's material, Flex will repair any leaks in the roofing system at its own expense, but in no event shall Flex's obligation over the life of this warranty exceed the Building Owner's original cost of the installed roof by the below named Flex Authorized Applicator for the building identified below
3) The warranty stated herein is the SOLE AND EXCLUSIVE REMEDY for defects in or failure of the materials supplied by Flex, including insulation, accessories, etc. and/or defective workmanship provided by the below named Flex Authorized Applicator. Flex shall under no circumstances be liable for damage to the substrate (deck), the structure itself, contents of the structure, any other property, injury to persons or for any consequential damages or incidental damages or loss of any kind whatsoever, whether in contract or tort, including negligence.
4) This warranty does not cover failure of Flex Roofing Material if in Flex's good faith determination, the failure was caused by:
   a) Natural disasters including, but not limited to, the direct or indirect effect of lightning, gales, earthquakes, floods, hail, fire, hurricanes, tornadoes, or other extraordinary natural occurrences.
   b) Vandalism, acts of war, mechanical damage or abuse, traffic or storage of material on roof, negligence, accidents, structure settlement, defects or failure in other material or application of other material not supplied by Flex.
   c) Metal work or other material not furnished by Flex or any workmanship not performed by a Flex Authorized Applicator.
5) This warranty does not apply and shall be null and void if any of the following occur:
   a) Failure of Building Owner to confirm each leak event in writing to Flex, at the below address, within thirty (30) days of discovery of each leak in the Flex Roof System.
   b) Failure of Building Owner or his lessee to use reasonable care in maintaining the roof, including that of sealants and caulking.
   c) Additions, alterations, or repairs made on or through the roof or to any area or surrounding area affecting the roof, other than those approved in writing by Flex.
   d) Failure of Building Owner, named below, to comply with every term, limitation, and condition stated herein.
6) During the term of this warranty, Flex, its agents and employees shall have free access to the roof during regular business hours to perform appropriate inspections and repairs authorized by Flex.
7) Flex shall have no liability under this warranty until all bills for installation, supplies, and service have been paid in full to the applicator of Flex materials and all material suppliers including Flex.
8) The Building Owner shall be responsible for the cost of investigation if any leak is determined not to be covered by this warranty.
9) Flex's sole obligation under this warranty shall terminate immediately in the event of a material change in use or a significant change in the use of the building itself.
10) This warranty is extended solely and exclusively to the Building Owner, named below, at the time the Flex material is installed. It does not extend nor is it otherwise assignable or transferable to any other party unless approved in advance and in writing by Flex and the costs to process the transfer and to inspect and repair the roof, if necessary, are paid for by the original Building Owner.
11) FLEX PROVIDES NO WARRANTY THAT THE FLEX ROOFING SYSTEM IS MERCHANTABLE OR FIT FOR ANY PARTICULAR PURPOSE. THIS AGREEMENT AND THE REMEDIES PROVIDED HEREIN ARE EXCLUSIVE AND GIVEN IN LIEU OF ALL WARRANTIES OR AGREEMENTS (WHETHER WRITTEN, ORAL, IMPLIED OR STATUTORY). NO REPRESENTATIVE OF FLEX HAS THE AUTHORITY TO MAKE ANY REPRESENTATIONS OR PROMISES EXCEPT AS STATED HEREIN.

Name of Building _____

Building Owner's Name _____

Address of Building _____

Flex Authorized Applicator _____

Flex Roof System Type _____ **Area Warranted (Sq. Ft.)** _____

Date Effective From _____ **To** _____

Sample

Flex Membrane International Corp.
5103A Pottsville Pike, Reading, PA 19605 Phone: 610-916-9500 • Fax: 610-916-9501

FLEX MEMBRANE INTERNATIONAL ROOFING SYSTEMS
ROOF MAINTENANCE, CARE REQUIREMENTS & RECOMMENDATIONS

The Flex Engineered Roofing System that now covers your building is a state-of-the-art roofing system that requires very little attention. You have chosen a roofing system that when properly installed on a well designed and functioning building and when properly maintained, will provide years of service. Flex recommends to the building owner that they take the following actions.

RECOMMENDATIONS

A. REGULAR MAINTENANCE:

(1) The roof should be inspected at least twice yearly (in the Spring and Fall) and after any severe storms. Access to the roof should only be permitted to responsible personnel and a log kept of all times and parties working on the roof. Record maintenance procedures as they occur.

(2) All counterflashing metal work, equipment curb and supports, pitch pockets, caulking, grease guards, traps, secondary sheets, walkpads and any other rooftop accessories functioning in conjunction with the membrane roofing system must be kept properly maintained at all times. Have all drains and rainspouts cleaned on a regular basis provide for proper water runoff.

(3) Materials should not be stored on the roof, and the building owner should remove broken bottles, metal, etc., and report all damage and vandalism to Flex Membrane International Corp. Do not permit smoking on the roof.

(4) Regular cleaning and maintenance must be done in areas where contaminants potentially harmful to the roof system may accumulate. Contact the Flex Technical Department on additional preventative maintenance as exposure to certain chemicals could void the warranty.

(5) The Flex Roofing System is designed to be a waterproofing membrane. Protective walkways must be provided if there is to be regular foot traffic on the roof for maintenance of equipment or any other reason.

B. IN THE EVENT THAT YOU HAVE A LEAK:

(1) Determine the cause of the leak (it may be the result of a clogged drain, broken pipes, loose counterflashing, broken skylights, open grills or vents, damages or vandalism). Failure to determine the cause may result in a service charge fee.

(2) Call the roofing contractor who installed the roof and send written notification to Flex Membrane International Corp. within 30 days of discovery, per the terms of your warranty.

(3) Note conditions resulting in leakage. Heavy or light rain, wind direction, temperature and time of day that the leak occurs are all important clues to tracing roof leaks. Note whether the leak stops shortly after each rain or continues to drip until the roof is dry. By being prepared with the facts, the diagnosis and repair of the leak can proceed more rapidly.

(4) If necessary, make temporary repairs as required.

(5) Permanent repairs to the roofing system must be made by an approved Flex contractor with Flex products.

NOTE

A. It is the Owner's responsibility to provide easy access to the roofing membrane surface by removing or moving rooftop equipment, pavers, severely ponded water, snow or any materials that prevent complete investigation and repair.

B. Flex Membrane International Corp. supports and recommends following the guidelines for good roofing practices found in the Single Ply Roofing Institute (SPRI) Manual of Roof Inspection, Maintenance and Emergency Repair for Existing Single-Ply Roofing Systems and National Roofing Contractors Association (NRCA) Roofing and Waterproofing Manual.

CARLISLE
SYNTEC SYSTEMS

SEALEY ELEMENTARY SCHOOL ROOF REPLACEMENT

June 24, 2022

SEALEY ELEMENTARY SCHOOL
ROOF REPLACEMENT

Carlisle SynTec Systems submits for your approval, a single-ply roofing system on the above referenced project. Carlisle's Sure-Flex KEE HP roofing systems meets and/or exceeds the roofing systems listed in the specification.

I have enclosed the product data sheets for your review and acceptance into the bid documents through addendum.

For over 50 years, Carlisle has been supporting architectural and building owner communities with designing and recommending the most effective roofing solutions. Visit the Carlisle website for the most current specifications and details, case studies, code approvals and more - www.carlislesyntec.com.

For questions or inquiries regarding the Sure-Flex KEE HP roofing systems or any other Carlisle single-ply roofing system, please contact me at (228)-369-4175.

Thank you for your time,

Aubrey Mitchell

Aubrey Mitchell
Carlisle Manufacturers Representative
(228)-369-4175
amitchell@rmal.com

CSI Form 1.5C

SUBSTITUTION REQUEST
(During the Bid Period)

Project: SEALEY ELEMENTARY SCHOOL ROOF REPLACEMENT

Substitution Request Number: _____

From: Aubrey Mitchell - Roofers Mart Southeast

To: _____

Date: 6/24/22

A/E Project Number: _____

Re: _____

Contract For: Cole Taylor

Specification Title: Sure-Flex KEE HP

Description: Roofing System

Section: 07 54 16

Page: 6

Article/Parag: _____

Proposed Substitution: Carlisle Sure-Flex KEE HP roofing system

Manufacturer: Carlisle SynTec, P.O. Box 7000, Carlisle, PA 17013

Trade Name: _____

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.

Submitted by: Aubrey Mitchell

Signed by: Aubrey Mitchell

Firm: Roofers Mart Southeast, Inc.

Address: 429 Industrail Lane
Birmingham, AL 35211

Telephone: (228)-369-4175

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: _____ Date: _____

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

CARLISLE SYNTEC SYSTEMS

Sure-Flex™ KEE HP Membrane

Overview

Carlisle's Sure-Flex KEE HP (High Performance) membrane is manufactured using DuPont® Elvaloy® KEE HP resin modifier. KEE HP enhances the performance of PVC compounds by providing outstanding thermal stability and flexibility while extending the low- and high-temperature performance limits of standard KEE. The addition of Elvaloy KEE HP, a non-volatile resin modifier, provides enhanced heat and chemical resistance.

The physical properties of the membrane are enhanced by a tenacious polyester fabric that is encapsulated by thick KEE HP-based top and bottom plies. The smooth surface of the KEE HP membrane allows a total surface fusion weld over a wide temperature range, creating a consistent, watertight, one-piece roof assembly.

Features and Benefits

- Chemical resistance
- Energy efficiency
- Wide window of weldability
- Low-temperature flexibility
- Impact and puncture resistance
- Easy installation
- Solar, UV, ozone, and oxidation resistance
- Available in white, gray, and tan

Installation

KEE HP roof systems are fast to install, as minimal labor and few components are required. The membranes weld quickly, cleanly, and consistently.

Mechanically Fastened Roofing System

The mechanically fastened system starts with approved insulation being fastened with a minimum of 5 fasteners per 4' x 8' board. The KEE HP reinforced membrane is then mechanically fastened to the deck using HP-X™ Fasteners and Piranha Plates™ or HP-XTRA Fasteners and Piranha XTRA Plates. Adjoining sheets of KEE HP membrane are overlapped over the fasteners and plates and joined together with a minimum 1½"-wide hot-air weld.

Fully Adhered Roofing System

The fully adhered system starts with a suitable surface upon which to apply the appropriate bonding adhesive. Refer to respective product data sheets or Carlisle specifications and details for complete installation information.

Review Carlisle specifications and details for complete installation information.

Precautions

- Sunglasses that filter out ultraviolet light are strongly recommended, as the membrane's white surface is highly reflective. Roofing technicians should dress appropriately and wear sunscreen.
- Smooth surfaces may be slippery due to frost and ice buildup. Exercise caution during cold conditions to prevent falls.
- Care must be exercised when working close to a roof edge when the surrounding area is snow-covered, as the roof edge may not be clearly visible.
- Use proper stacking procedures to ensure sufficient stability of the materials.
- Exercise caution when walking on wet membrane. Membranes may be slippery when wet.
- Store KEE HP membrane in the original undisturbed plastic wrap in a cool, shaded area and cover with light-colored, breathable, waterproof tarpaulins. KEE HP membrane that has been exposed to the weather or contaminated with dirt must be prepared with PVC Membrane Cleaner prior to hot-air welding.

Supplemental Approvals, Statements and Characteristics

1. KEE HP meets or exceeds the requirements of ASTM D4434 Standard Specification for Poly(Vinyl Chloride) Sheet Roofing. KEE HP is classified as Type III and/or Type IV as defined by ASTM D4434.

EXPERIENCE THE CARLISLE DIFFERENCE

CARLISLE SYNTEC SYSTEMS

Sure-Flex™ KEE HP Membrane

Typical Properties and Characteristics

Physical Property	ASTM D4434 Requirement	50-mil	60-mil	80-mil
Thickness over scrim, in. (mm) ASTM D4434 optical method average of 3 areas	0.016 min (0.40)	0.024 (0.61)	0.029 (0.74)	0.036 (0.91)
Weight, lbs/ft² (kg/m²)	No requirement	0.33 (1.61)	0.38 (1.86)	0.51 (2.49)
Breaking strength (MD x CD), lbf/in (kN/m) ASTM D751 grab method	275 min (48)	290 x 290 (51 x 51)	320 x 300 (56 x 52)	330 x 320 (58 x 56)
Elongation break of reinforcement (MD x CD), % ASTM D751 grab method	25 min	30 x 30	30 x 30	30 x 30
Tearing strength (MD x CD), lbf (N) ASTM D751 proc. B, 8 in. x 8 in.	90 min (400)	120 x 125 (534 x 556)	120 x 125 (534 x 556)	140 x 150 (623 x 667)
Low temperature bend, ASTM D2136, no cracks 5x at -40°C	PASS	PASS (-46°C)	PASS (-46°C)	PASS (-46°C)
Linear dimensional change, % ASTM D1204, 6 hours at 176°F	±0.5 max	0.4 typ.	0.4 typ.	0.4 typ.
Ozone resistance, no cracks 7x ASTM D1149, 100pphm, 168 hrs	PASS	PASS	PASS	PASS
Water absorption resistance, mass % ASTM D570, 166 hours at 158°F water	±3.0 max	1.25	0.87	0.89
Puncture resistance - Dynamic, J (ft-lbf) ASTM D5635	20 (14.7)	PASS	PASS	PASS
Puncture resistance - Static, lbf (N) ASTM D5602	33 (145)	PASS	PASS	PASS
Xenon-Arc resistance, no cracks/crazing 10x, ASTM G155 0.35 W/m² at 340-nm, 63°C B.P.T. 12,600 kJ/m² total radiant exposure 10,000 hours	PASS	PASS	PASS	PASS
Properties after heat aging ASTM D3045, 56 days at 176°F Breaking strength, % retained Elongation reinf., % retained	90 min 90 min	90 min 90 min	90 min 90 min	90 min 90 min

For information pertaining to Carlisle's FleeceBACK® KEE HP membranes, refer to the FleeceBACK KEE HP FRS Product Data Sheet (601623).

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification or specification range for any particular property of this product.

LEED® Information

Pre-consumer Recycled Content	10%
Post-consumer Recycled Content	0%
Manufacturing Location	Greenville, IL
Solar Reflectance Index (SRI), Initial	White: 103, Tan: 91, Gray: 67

Radiative Properties for ENERGY STAR®*, Cool Roof Rating Council (CRRC), and LEED

Physical Property	Test Method	White KEE HP	Tan KEE HP	Gray KEE HP
ENERGY STAR - E-903 Initial Solar Reflectance	Solar Spectrum Reflectometer	0.82	0.74	0.57
ENERGY STAR - E-903 Solar Reflectance after 3 years	Solar Spectrum Reflectometer (Uncleaned)	Pending	Pending	Pending
CRRC - Initial Solar Reflectance	ASTM C1549	0.87	0.73	0.58
CRRC - Solar Reflectance after 3 years	ASTM C1549 (uncleaned)	0.71*	0.60*	0.50*
CRRC - Initial Thermal Emittance	ASTM C1371	0.89	0.88	0.88
CRRC - Thermal Emittance after 3 years	ASTM C1371 (uncleaned)	0.87*	0.86*	0.84*
Solar Reflective Index (SRI)	ASTM E1980	110	90	69
Solar Reflective Index (SRI) SRI after 3 years	ASTM E1980	87	71*	56*

*Rapid Ratings

CLASSIFIED UL FM APPROVED

CARLISLE SYNTEC SYSTEMS

Sure-Flex™ PVC
Low-VOC Bonding Adhesive

Overview

Sure-Flex PVC Low-VOC Bonding Adhesive is a high-strength solvent-based contact adhesive that allows bonding of PVC and KEE membranes to various porous and non-porous substrates. It is specially formulated using a blend of VOC-exempt and non-exempt solvents to be in compliance with the state of California Clean Air Act of 1988 (updated in 1997) and as further regulated by California's Air Quality Control Districts listing VOC limitations. This product also meets the <250 gpl VOC content requirements of the OTC Model Rule for Single-Ply Roofing Adhesives.

Features and Benefits

- High-strength adhesive that allows quick bonding
- Can be easily applied with a medium nap roller
- Provides excellent adhesion between various substrates and PVC and/or KEE membranes

Coverage Rate

60 ft² (5.6 m²) per gallon finished surface. Coverage rates are average and may vary due to conditions on the jobsite. Porous surfaces and substrates may require more bonding adhesive than the typical coverage rate.

Mixing

Stir thoroughly until the adhesive is uniform in color. Minimum 5 minutes stirring is recommended.

Application

1. The surface on or against which adhesive is to be applied shall be clean, smooth, dry, free of fins, sharp edges, loose and foreign materials, oil and grease. Depressions greater than ¼" (6 mm) should be feathered using epoxy, mortar or other approved patching material. All sharp projections shall be removed by sweeping, blowing or vacuum cleaning.
2. After thorough stirring (minimum 5 minutes), apply PVC Low-VOC Bonding Adhesive to substrate and membrane using a 9" (229 mm) medium nap roller. Application shall be continuous and uniform, avoiding globs or puddles. An open time of 5 to 50 minutes (based on drying conditions) is recommended before assembly. PVC Low-VOC Bonding Adhesive must be allowed to dry until it does not string or stick to a dry finger touch. The membrane and substrate will be dry (non-tacky) to the finger touch. Any coated area that has been exposed to rain should be allowed to dry and then recoated. Do not apply adhesive to splice areas to be hot-air welded.
3. Roll the membrane onto the adhesive-coated substrate while avoiding wrinkles. Immediately brush down the bonded portion of the sheet with a soft-bristle push broom or a clean dry roller applicator to achieve maximum contact.

Review Carlisle specifications and details for complete application information.

Precautions

- Review the applicable Material Safety Data Sheet for complete safety information prior to use.
- PVC Low-VOC Bonding Adhesive is EXTREMELY FLAMMABLE. It contains solvents that are dangerous fire and explosion hazards when exposed to heat, flame or sparks. Do not smoke while applying. Do not use in a confined or unventilated area. Vapors are heavier than air and may travel along ground or may be moved by ventilation and ignited by pilot lights, other flames, sparks, heaters, smoking, electrical motors, static discharge, or other ignition sources at locations distant from material handling point. All containers should be grounded when material is transferred from one container to another. A red caution label is required when shipping. A fire extinguisher should be available. In case of fire, use water spray, foam, dry chemical or carbon dioxide. Do not use a solid stream of water because it can scatter and spread the fire.
- Avoid breathing vapors. Keep container closed when not in use. Use with adequate ventilation. If inhaled, remove to fresh air. If not breathing, perform artificial respiration. If breathing is difficult, give oxygen. Call a physician immediately. During application, efforts must

CARLISLE SYNTEC SYSTEMS

Sure-Flex PVC
Low-VOC Bonding Adhesive

be made to prevent fumes from entering the building via air ventilation ducts. Do not place open containers or mix adhesive near fresh air intake units. When possible, shut down or seal off the closest units.

- If swallowed, DO NOT INDUCE VOMITING. Call a physician immediately.
- Avoid contact with eyes. Safety glasses or goggles are recommended. If splashed in eyes, immediately flush eyes with plenty of clean water for at least 15 minutes. Contact a physician immediately.
- Avoid contact with skin. Wash hands thoroughly after handling. In case of contact with skin, thoroughly wash affected area with soap and water. Contact physician if irritation persists.

  Note: Permeation-resistant gloves (that meet ANSI/ISEA 105-2005) are recommended to be worn when using this product to protect hands from irritating ingredients.
- Do not thin PVC Low-VOC Bonding Adhesive. Thinning will affect performance. Excessively thick or gelled material should be discarded.
- Jobsite storage in excess of 90°F (32°C) may affect product shelf life. Should the PVC Low-VOC Bonding Adhesive be stored at temperatures lower than 60°F (15°C), restore to room temperature prior to use.
- Opened containers of PVC Low-VOC Bonding Adhesive should be used within 48 hours. Adhesives will begin to thicken after this point, making it difficult and eventually impossible to control applied thickness. In hot weather, do not leave sealed containers on roof for prolonged periods of time. In cold weather, keep material at room temperature until ready to use. Stir adhesive occasionally while using.
- Adhesive must be allowed to dry thoroughly. If membrane is mated with the substrate prior to the adhesive being dry, blistering will occur and will not subside over time.
- KEEP OUT OF REACH OF CHILDREN.

Typical Properties and Characteristics

Base	Synthetic rubber
Color	Pale yellow to orange to amber
Solids	23.6 – 29.6%
Flash Point	-4°F (-20°C) SETA
Brookfield Viscosity	1500 – 4500 centipoises
Average Net Weight	6.9 – 7.7 lbs/gal (0.8 – 0.9 kg/l)
Packaging	5-gal pail
Shelf Life	1 year

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

LEED® Information

Pre-consumer Recycled Content	0%
Post-consumer Recycled Content	0%
VOC Content	<250 g/l
Manufacturing Location	Carlisle, PA

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CARLISLE SYNTEC SYSTEMS

Flexible FAST™ Adhesive

Overview

Carlisle pioneered and patented the VOC-free, energy-absorbing, impact-resistant Flexible FAST Adhesive for use with FleeceBACK® membranes and to secure insulation boards to the deck for a totally non-penetrating system application. This industry-leading breakthrough in urethane adhesive technology offers built-in elongation and energy-absorbing properties that work in conjunction with the FleeceBACK membrane to enhance puncture and hail resistance. Flexible FAST Adhesive is applied in full spray, splatter, or extrusions to deliver the two components onto the substrate. Parts A & B are mixed in the spray gun and applied to the roof. A catalytic reaction takes place, causing the Flexible FAST Adhesive to expand and foam. FleeceBACK membrane is then laid into the foamed adhesive after developing "string/body" and rolled with a 150-lb. segmented roller to ensure the fibers of the fleece are embedded into the adhesive. Within 20 minutes, Flexible FAST Adhesive cures to form a tenacious bond between the substrate and the FleeceBACK membrane.

Features and Benefits

» **Added Puncture Resistance**
In side-by-side dynamic puncture tests, Flexible FAST Adhesive increased puncture resistance between 33–50% compared to traditional competitive 2-compoent low-rise adhesives . The energy absorbing nature of the Flexible FAST foam makes this an ideal product for use in Roof Garden, Plaza Paver and Solar Panel applications in conjunction with FleeceBACK membrane.

» FM approved

» **Energy Efficient and Environmentally Sound**
Each layer of Flexible FAST Adhesive expands to 1⁄16"–1⁄8"-thick and provides an additional R-value of 0.20 to 0.50 per layer. The NRCA estimates that up to 10% of R-value can be lost due to joints in the insulation. The expanding nature of Flexible FAST adhesive helps to seal insulation joints, when Flexible FAST Adhesive is specified for insulation attachment in place of mechanical fasteners, the 3–8% loss in R-value can be eliminated. Water is used as the blowing agent in Flexible FAST Adhesive, making it VOC compliant and not labeled as a flammable product.

» **Superior Wind Uplift**
Superior wind uplift resistance is delivered with uplift pressures ranging from 90–945 psf depending on the substrate. Due to its superior wind uplift performance, the FleeceBACK/Flexible FAST Adhesive System can qualify for upgraded wind speed warranties of 80–120 mph with design enhancements. **Contact Carlisle SynTec Systems for design enhancement requirements.**

» **Expedient Installations without Interruption**
Due to the low noise and low odor associated with the system, the FleeceBACK/Flexible FAST assembly is an excellent choice for re-roofing occupied buildings, as there is minimal disruption. Because of these benefits, schools, universities and hospitals are some of the biggest users of the FleeceBACK/Flexible FAST assembly. The speed of application with Flexible FAST Adhesive affords project completion in a timely manner. Flexible FAST offers a significant reduction in free MDI: from 32% to 23% compared to traditional urethane adhesives.

» **System Warranties**
A full range of system warranties are available including 10-, 15-, 20-, and 30-year terms, which are No Dollar Limit, transferable and not voided for ponded water. In summary, the combination of 50 years of single-ply experience, fleece backing reinforcement, and Carlisle's impact-resistant adhesive technology results in an extremely tough and durable roofing composite system with superior wind uplift performance that can be applied with minimal business disruption and no deck penetrations.

Productivity Boosting Features and Benefits:

» Reduces membrane application time up to 93% when compared to traditional installations using bonding adhesives on non-FleeceBACK systems

» Eliminates the need to pre-drill into concrete and gypsum decks

» 15-and 50-gallon drums reduce empty adhesive container stoppage time by 67%-90% when compared to Bag-in-a-Box

Flexible FAST Adhesive

Application

1. The surface to which adhesive is to be applied shall be dry and free of fins, protrusions, sharp edges, loose and foreign materials, oil and grease. Depressions greater than ¼" (6 mm) shall be filled with Flexible FAST Adhesive or other approved patching material. All sharp projections shall be removed. **Previously unweathered asphalt must be primed with CAV-GRIP™ III.**
2. **Seal gaps between the wall/penetration and concrete deck with Carlisle 725TR, Flashing Foam, or other suitable material, to avoid condensation issues and positive pressure from air infiltration.**
3. For reroofing sprayed-in-place (SPF) urethane roofs, all wet areas must be removed. The surface must then be scarified or perforated, depending on the coating, before applying Flexible FAST Adhesive.
4. Apply Flexible FAST Adhesive when the substrate and ambient temperatures are 25°F (-4°C) or above when spraying or extruding with heated or non-heated equipment. Dispense the adhesive between 300-800 psi depending on the equipment used. Consult with your local FleeceBACK Specialist for more details.
5. Set pre-heater and hose temperature to 120°F (49°C). Temperature settings will vary with conditions.

FleeceBACK Installation

Slide-in Method:

1. Unroll FleeceBACK sheet and position. Fold the sheet back in half lengthwise (end-to-end).
2. Spray-apply, splatter, or extrude Flexible FAST Adhesive to the substrate.
   - For full spray applications, spray adhesive at 1-gallon per square to obtain full coverage (approximately ¼ to ½ thick after foaming). Ensure membrane end laps are protected from adhesive.
   - For splatter applications, spray adhesive at ½ gallon per square to obtain 50% coverage (approximately ¼ to ½ thick after foaming). Ensure membrane end laps are protected from adhesive.
   - For extruded applications, apply at 4", 6", or 12" on center with a minimum ½" bead. Ensure membrane end laps are protected from adhesive.
3. Once “string time” occurs, gradually feed FleeceBACK sheet into Flexible FAST Adhesive, checking for “string/body” every few feet. Stop feeding FleeceBACK sheet into adhesive when applicator reaches adhesive that has NOT developed “string/body”. Immediately begin to roll membrane width-wise with a 150-lb. segmented weighted roller. Repeat process until FleeceBACK sheet is fully installed.

Roll-in (Mod Bit) Method:

1. Keeping the FleeceBACK sheet on the core, position roll of FleeceBACK membrane at the designated starting point.
2. Spray-apply, splatter, or extrude Flexible FAST Adhesive to the substrate.
   - For full spray applications, spray adhesive at 1-gallon per square to obtain full coverage (approximately ¼ to ½ thick after foaming). Ensure membrane end laps are protected from adhesive.
   - For splatter applications, spray adhesive at ½ gallon per square to obtain 50% coverage (approximately ¼ to ½ thick after foaming). Ensure membrane end laps are protected from adhesive.
   - For extruded applications, apply at 4", 6", or 12" on center with a minimum ½" bead. Ensure membrane end laps are protected from adhesive.
3. Once “string time” occurs, gradually roll FleeceBACK membrane into Flexible FAST Adhesive, checking for “string/body” every few feet. Stop rolling FleeceBACK into adhesive when applicator reaches adhesive that has NOT developed “string/body”. Immediately begin to roll membrane width-wise with a 150-lb. segmented weighted roller. Repeat process until FleeceBACK sheet is fully installed.

Insulation Attachment

1. Apply Flexible FAST Adhesive to the substrate achieving a light-blue-colored foam.
   - For full spray applications, spray adhesive at 1-gallon per square to obtain full coverage (approximately ¼ to ½ thick after foaming). Ensure membrane end laps are protected from adhesive.
   - For splatter applications, spray adhesive at ½ gallon per square to obtain 50% coverage (approximately ¼ to ½ thick after foaming). Ensure membrane end laps are protected from adhesive.
   - For extruded applications, apply at 4", 6", or 12" on center with a minimum ½" bead. Ensure membrane end laps are protected from adhesive.

Bead Spacing parameters for 5-, 10-, or 15-year 55-mph warranties: (Contact Carlisle Project Review for bead spacing on higher mph warranties or 20- and 30-year warranty projects).

Building Height	Bead Spacing (Perimeter)	Bead Spacing (Field)
0' – 25'	6" o.c. (4' perimeter)	12" o.c.
25' – 50'	6" o.c. (8' perimeter)	12" o.c.
50' – 75'	6" o.c. (12' perimeter)	12" o.c.
75' – 100'	6" o.c. (16' perimeter)	12" o.c.
100' or greater: Contact Carlisle for bead spacing requirements		

2. Factory Mutual bead spacing guidelines in the perimeter and corner may differ from the table above. Beads at 12" o.c. are not acceptable at perimeters and corners.
3. Allow Flexible FAST Adhesive to rise and develop “string/body” (approx. 1½ – 2 min.). String time will vary based on environmental

conditions like temperature and humidity. Do not allow the adhesive to over-cure prior to setting insulation boards.

4. Place insulation boards (maximum 4' x 4' insulation boards when adhesive is extruded at 12" o.c. or when boards exceed 4" thickness, or 4' x 8' insulation boards when adhesive is applied in full spray, 4", or 6" beads) into adhesive after allowing it to rise and develop "string/body". String time will vary based on environmental conditions like temperature and humidity. Do not allow the adhesive to over-cure prior to setting insulation boards.
5. Designate one person to walk boards into place and then roll the boards between 5–7 minutes from the initial adhesive application. Boards may be temporarily weighted or relief-cut where necessary to keep the boards in constant contact with the adhesive until the adhesive cures.
6. At the beginning of the insulation attachment process and periodically throughout the day, check the adhesion of boards to ensure a tight bond is created and maximum contact is achieved.

Review Carlisle specifications and details for complete application information.

Precautions

- Review the Safety Data Sheet for complete safety information prior to use.
- The foam produced is an organic material. It must be considered as combustible and may constitute a fire hazard. The foam adhesive must not be left exposed or unprotected. Shield from heat and sparks.
- Do not smoke during application.
- Use with adequate ventilation. Avoid breathing vapors. Wear a NIOSH- or MSHA-approved respirator for organic vapors with prefilters and solvent-resistant cartridges or supplied airline respirators while spraying. Proper safety training is essential for all persons involved in the installation process. If vapor is inhaled, remove to fresh air and administer oxygen if breathing is difficult. Consult a physician immediately.
- Avoid contact with eyes. Safety glasses or goggles are required.
- If Flexible FAST adhesive is splashed in eyes, immediately flush eyes with plenty of clean water for at least 15 minutes. Contact a physician immediately.
- Avoid contact with skin. Wear long-sleeved shirts and long pants. Wash hands thoroughly after handling. In case of contact with skin, thoroughly wash affected area with soap and water or corn oil. NOTE: Permeation-resistant gloves that meet ANSI/ISEA 105-2005 are required when handling the material or during application.
- Jobsite storage temperatures in excess of 90°F (32°C) may affect product shelf life. When temperates are in excess of 90°F (32°C) utilize white membrane or material to shield the drums from direct sunlight. Should the components be stored at temperatures lower than 70°F (21°C), restore to room temperature prior to use. Do not allow Flexible FAST Adhesive to freeze (storage below 0°F (-18°C) for at least 3 days).
- Use spray booths, windscreens and/or lower spray pressure with spatter tips when spraying.
- Precautions must be taken to prevent Flexible FAST Adhesive vapors or overspray from entering buildings during application. All air-intake vents on roofs must be closed during application of adhesive.
- Use desiccant dryers on Part A drums to avoid formation of crystals from exposure to moisture in the air.
- KEEP OUT OF THE REACH OF CHILDREN.
- Desiccant dryers should be used to prevent atmospheric moisture contamination of the remaining diisocyanate. Even a small amount of contamination by water or other foreign substance could result in excess pressure and catastrophic failure of the jug container. Do not reseal a jug if contamination is suspected. Move container to a well-ventilated area (outside) and allow to stand for at least 48 hours to allow escape of evolved carbon dioxide to avoid hazardous pressure build-up in container.

Coverage Rates

Application rates may vary depending on ambient temperatures, surface, and substrate absorption rate.

	50 Gallon Drums				
	Full Spray	**4" o.c.**	**6" o.c.**	**12" o.c.**	**Splatter Value**
Approximate Coverage Rate (Sq. Ft.)	5,000-10,000	6,700-9,000	10,000-12,500	20,000-25,000	18,000-20,000
	15 Gallon Drums				
	Full Spray	**4" o.c.**	**6" o.c.**	**12" o.c.**	**Splatter Value**
	1,800-3,000	2,110-2,700	3,000-3,750	6,000-7,500	5,400-6,000

LEED® Information

Pre-consumer Recycled Content	0%
Post-consumer Recycled Content	0%
Manufacturing Location	Geismar, LA, Elwood, IL Chattanooga, TN
VOC Content	0 g/L
Solar Reflectance Index	N/A

CARLISLE SYNTEC SYSTEMS

Flexible FAST Adhesive

Substrate Compatibility

Insulation/Underlayments		Roof Decks		Existing Roofing Materials	
HP Polyiso	Yes	Concrete	Yes	Smooth BUR	Yes[5]
HP Recovery Board	Yes	Cellular Lt.Wt. Concrete	Yes	Gravel BUR	Yes[6]
Expanded Polystyrene (EPS)	Yes[1]	NVS Lt.Wt. Concrete	Yes	Mineral Cap Sheet	Yes
Extruded Polystyrene	Yes[2]	Gypsum	Yes	Granular Modified-Bitumen	Yes
New Sprayed Foam	Yes	Cementitious Wood Fiber	Yes	Smooth Modified-Bitumen	Yes
Scarified SPF	Yes	Plywood/OSB	Yes	Coal Tar Pitch	Yes[7]
DensDeck®	Yes	Painted Steel	Yes	Aluminum-Coated BUR	Yes[8]
SECUROCK®	Yes	Galvanized Steel	Yes[3]	Acrylic-Coated SPF	Yes
Oriented Strand Board	Yes	Acoustical Steel	Yes[4]	Silicone-Coated SPF	Yes[9]
SecurShield®	Yes	Wood Plank	Yes	Aged EPDM, Hypalon®, TPO	Yes[10,12]
				Unweathered Asphalt	Yes/No[11]

1. EPS insulation cannot be used directly beneath Sure-Seal® (Black) FleeceBACK membrane unless a light-colored coating is specified. Both Sure-White™ and Sure-Weld® FleeceBACK membranes maybe installed directly over minimum 1.5-lb.-density EPS; however, to obtain UL & FM codes, an overlayment of HP Recovery Board, DensDeck, Securock or HP Polyiso insulation is required.
2. For insulation attachment only.
3. For new galvanized steel decks, power-washing is necessary to remove finishing oil residue if present.
4. For acoustical steel decks, fill the flutes with fiberglass or other suitable fill insulation and tack in place with strips of duct tape 3' o.c., or other adhesive, prior to spraying the deck with Flexible FAST Adhesive.
5. Existing Smooth BUR must be Type III or IV asphalt if the (Black) FleeceBACK EPDM, FleeceBACK PVC and KEE HP, or FleeceBACK TPO membrane is to be installed directly without insulation.
6. A minimum ½" HP Recovery Board or insulation is required over properly prepared gravel BUR. FleeceBACK membrane cannot be installed directly over a gravel/slag surface.
7. An insulation providing the necessary R-value must be specified to prevent the coal tar pitch from softening. FleeceBACK membranes cannot be installed directly to coal tar pitch.
8. Any loose coatings must be removed by power-washing or by physical abrasion prior to the application of Flexible FAST Adhesive. A test installation over the aluminum-coated smooth BUR is recommended to ensure the aluminum coating is fully adhered.
9. Silicone-coated substrates must be scarified (coating removed) prior to the application of Flexible FAST Adhesive.
10. Power-washing aged EPDM, Hypalon, or TPO membrane is required prior to the application of Flexible FAST Adhesive.
11. Requires CAV-GRIP III for all applications.
12. Contact Carlisle for specific requirements on TPO recover.

Typical Properties and Characteristics

Base	A-Side Polymeric Isocyanate	B-Side Surfactants and Catalysts
Mixing Ratios by Volume	1:1 Part A to Part B	
Viscosity (CPS @ 25C)	400	400
MDI Content	23%	
Avg. Net Weight	9.88 lbs/gal	9.23 lbs/gal
Packaging	15-gallon drum (57 L) 50-gallon drum (190 L)	15-gallon drum (57 L) 50-gallon drum (190 L)
Shelf Life	1 year	1 year
Temperature Requirements (Substrate & Ambient)		min. 25°F (Heated Equipment) min. 25°F (Unheated Equipment)

Typical R-value added for FleeceBACK membrane attachment:0.20 to 0.50 R-value. R-value may be higher as more adhesive is used on uneven surfaces.

Physical Property	Test Method	Results
Elongation	ASTM D412	150%
Modulus at 150% Elongation	ASTM D412	20 psi
Dynamic Puncture Resistance - OSB Dynamic Puncture Resistance - HP Recovery Board Dynamic Puncture Resistance - Polyiso	ASTM D5635-04a	33% greater than standard FAST 40% greater than standard FAST 50% greater than standard FAST

EXPERIENCE THE CARLISLE DIFFERENCE

CARLISLE SYNTEC SYSTEMS

Certified Fabricated Accessory

Sure-Flex™ PVC Roofing Systems

Sure-Flex KEE HP Roofing Systems

A ready reference guide for ordering accessories for your next PVC and KEE HP job.

Molded Sealant Pockets

Interlocking, two-piece, injection-molded, weldable pockets used to waterproof pipe clusters or other oddly shaped penetrations.

Sizes Available: 6" wide x 2" high
Can be adjusted from 7½" to 11½" in length

Quantity Per Box: 5 complete pockets

Manufactured using PVC.

Split Pipe Seals

Fabricated flashings made of reinforced Sure-Flex membrane used for flashing pipes with an obstruction that prevents the use of a molded pipe seal.

Sizes Available: 1", 2", 3", 4", 5" and 6" diameter. Other sizes and colors available through special order.

Quantity Per Box: 8

Molded Pipe Seals

Injection-molded, pre-formed flashings.

Sizes Available: ¾" to 8" diameter

Colors Available: White, Gray, Tan

Quantity Per Box: 8

Square Tubing Wraps

Fabricated using reinforced Sure-Flex membrane and are designed to flash square metal tubing. A split and overlap tab are incorporated into these parts to allow the flashings to be opened and wrapped around a square penetration with an obstruction.

Sizes Available: 3" x 3", 4" x 4", and 6" x 6". Other sizes and colors available through special order.

Quantity Per Box: 8

Flashing

Non-reinforced, Sure-Flex membrane used to field-fabricate pipe flashing, flash vinyl-coated sealant pockets, and scuppers when the use of a pre-molded accessory is not feasible.

Sizes Available: 12" x 50' and 24" x 50'

Colors Available: White/Gray and White/Tan

Quantity Per Box: 1 roll

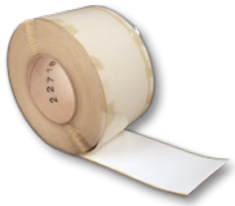
Reinforced Coverstrip

Pre-slit, reinforced membrane used to strip-in fasteners and plates and to cover end laps on FleeceBACK® membranes.

Sizes Available: 8" x 100' (60-mil KEE HP reinforced), 8" x 75' (80-mil KEE HP reinforced), 8" x 75' (80-mil PVC reinforced)

Colors Available: White, Gray, Tan

Quantity Per Box: 2 rolls (60-mil), 1 roll (80-mil)



PVC Pressure Sensitive Cover Strip

Non-reinforced KEE HP flashing laminated to a nominal 35-mil, fully cured, pressure-sensitive, synthetic rubber adhesive.

Sizes Available: 6" x 100'

Colors Available: White, Gray, Tan

Walkway Rolls

Heat-weldable walkway rolls designed to protect Sure-Flex PVC and KEE membranes in areas exposed to repetitive foot traffic and other hazards.

Sizes Available: 36" x 60' (Gray)

Packaged Individually

Manufactured using PVC.

1 - Outside Corners
2 - Inside Corners

Pre-molded and used for flashing inside and outside corners of a variety of details.

Colors Available: White/Gray and White/Tan

Quantity Per Bag: 12

T-Joint Covers

Injection-molded, non-reinforced flashings used to seal T-Joint splice intersections.

Sizes Available: 4.5" diameter

Colors Available: White, Gray, Tan

Quantity Per Box: 100

Curb Wrap Corners

Fabricated flashings made of reinforced Sure-Flex membrane designed to reduce curb flashing time. One curb will require 4 corners.

Sizes Available: 7" Wrap for 12" Curb, 13" Wrap for 24" Curb, 19" Wrap for 36" Curb.
Other sizes and colors available through special orders. Can also be ordered in 1- or 2-piece wraps.

Quantity Per Box: 12 pieces or 3 complete curbs

Overlayment Strip

Carlisle Sure-Flex Overlayment Strip is an non-reinforced PVC based membrane.

Sizes Available: 6" by 100' rolls

Colors Available: White/Gray and White/Tan

Quantity Per Box: 2 rolls

Universal Corners

Universal Corners are pre-molded and are used for flashing outside and inside corners on a variety of details. Installation is fast and easy with no stretching required.

Colors Available: White, Gray, Tan

Quantity Per Box: 20

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CARLISLE SYNTEC SYSTEMS

Sure-Flex™ PVC Walkway Rolls

Certified Fabricated Accessory

Overview

Carlisle's Sure-Flex PVC Heat Weldable Walkway Roll is designed to protect the PVC membrane in those areas exposed to repetitive foot traffic and other hazards.

The PVC Walkway Rolls provide a defined path to walk on for those servicing and repairing HVAC systems and other rooftop equipment found on low-slope roofs.

Walkways must be installed at all traffic concentration points (i.e. roof hatches, access doors, rooftop ladders, etc.) regardless of traffic frequency. Walkways must also be installed if regular maintenance (once a month or more) is necessary to service rooftop equipment.

Carlisle's PVC Walkway Rolls are part of the Certified Fabricated Accessory (CFA) program. Certified Fabricated Accessories are the only factory-fabricated PVC accessories that meet Carlisle's stringent quality tolerances.

Features and Benefits

» Increased slip resistance created with a herring bone tread pattern

» Enhanced PVC formulation

» Superior weathering package for long-term performance

Installation

1. Use PVC Membrane Cleaner to prepare the membrane to be welded to the walkway material.
2. Position the PVC Walkway Rolls. Cut the PVC Walkway Rolls into maximum 10' lengths and position with a minimum 1" gap between adjacent pieces to allow for water drainage. Cut the PVC Walkway Roll so a 4" minimum gap is created over any field splices. (As the attachment of the walkway to the membrane is permanent, this will allow access to the field seams.)
3. Using an automated welder, weld all four sides of the PVC Walkway Roll to the membrane. (Typically the same speed and temperature settings will be used for this procedure as for welding membrane to membrane. A test weld is always recommended prior to performing welds to the installed membrane.) A hand-held welder may be utilized; however, productivity will be decreased.

Review Carlisle specifications and details for complete installation information.

Precautions

» PVC Walkway Rolls are a maintenance item and are not covered under the Carlisle membrane systems warranty.

» This product is to be used as a walkway only and is not designed as a perimeter warning line or a substitute for ballast. PVC Walkway Rolls cannot be installed within 10' (3 m) of the roof perimeter.

» If possible, allow the PVC Walkway Roll to relax prior to welding in place.

Packaging

Each roll individually bagged. Fourteen rolls per skid.
Size: 36" wide x 60' long (91.4 cm x 18.3 m)
Weight: 114 lbs (roll)
Color: Gray and Yellow
Thickness: 110 mils

Typical Properties and Characteristics

Physical Property	Test Method	Typical Properties Minimum	Maximum
Dimensional Conformance Thickness, in. (mm)	ASTM D412	0.110 (2.80)	0.121 (3.07)
Density, lbs./ft³ (gr/cm³)	ASTM D792	80.5 (1.29)	84.3 (1.35)
Tensile Strength, psi (MPa)	ASTM D638	600 (4.1)	
Tear Strength, lbf/in (kN/m)	ASTM D624	100 (17.5)	

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

LEED® Information

Pre-consumer Recycled Content	45%
Post-consumer Recycled Content	20%
Manufacturing Location	Mountain Top, PA
Solar Reflectance Index (SRI)	N/A

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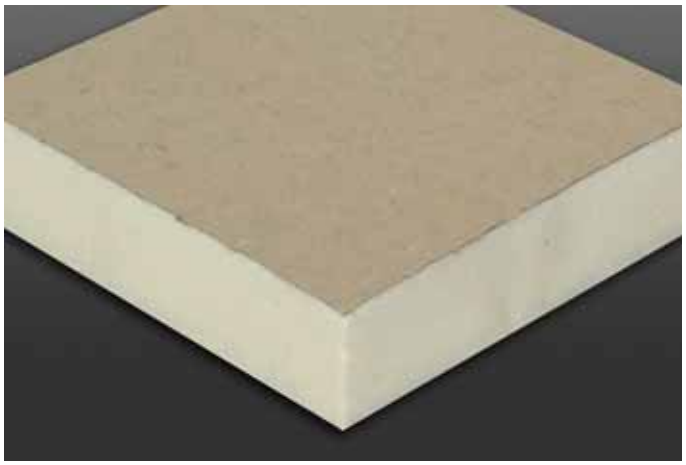
CARLISLE SYNTEC SYSTEMS

InsulBase® POLYISO Insulation



InsulBase Polyiso Thermal Values

Thickness (inches)	Thickness (MM)	LTTR R-value	Flute Spanability
0.50	13	2.8	2 5⁄8"
1.00	25	5.7	2 5⁄8"
1.50	38	8.6	4 3⁄8"
2.00	51	11.4	4 3⁄8"
2.50	64	14.4	4 3⁄8"
3.00	76	17.4	4 3⁄8"
3.50	89	20.5	4 3⁄8"
4.00	102	23.6	4 3⁄8"
4.50	114	26.8	4 3⁄8"

Overview

InsulBase is a rigid-roof insulation panel composed of a closed-cell polyisocyanurate foam core bonded on each side to glass-reinforced felt (GRF).

Features and Benefits

- InsulBase polyiso insulation provides the highest R-value per inch of commercially available insulation products
- Environmentally friendly construction with 0% ozone-depleting components and CFC free
- Approved for direct application to steel decks

Panel Characteristics

- Available in 4' x 4' (1220 mm x 1220 mm) and 4' x 8' (1220 mm x 2440 mm) panels in thickness of ½" (13 mm) to 4.5" (115 mm)

Applications

- Single-Ply Roof Systems (Ballasted, Mechanically Attached, Fully Adhered)

Installation

Ballasted Single-Ply Systems
Each InsulBase panel is loosely laid on the roof deck. Butt edges and stagger joints of adjacent panels. Install the roof membrane according to Carlisle's specifications.

Mechanically Attached Single-Ply Systems
InsulBase panels must be secured to the roof deck with fasteners and plates (appropriate to the deck type). Butt edges and stagger joints of adjacent panels. Install the roof membrane according to Carlisle's specifications.

Fully Adhered Single-Ply Systems
InsulBase panels must be secured to the roof deck with fasteners and plates (appropriate to deck type). Butt edges and stagger joints of adjacent panels. Install the roof membrane according to Carlisle's specifications.

InsulBase 4' x 8' panels can be secured to the roof deck with Carlisle's FAST® Adhesive, either full coverage or bead spacing.

InsulBase 4' x 4' panels may be adhered to prepared concrete deck with a full mopping of Type III or IV asphalt.

Review Carlisle specifications and details for complete installation information.

CARLISLE SYNTEC SYSTEMS

InsulBase POLYISO Insulation

Codes and Compliances

- ASTM C1289, Type II, Class 1, Grade 2 (20 psi), Grade 3 (25 psi)
- International Building Code (IBC) Section 2603
- UL Standard 790, 263 and 1256: Component of Class A Roof Systems (refer to UL Roof Materials' system directory)
- FM® Standards 4450/4470: Class 1 approval for steel roof-deck constructions (refer to FM RoofNav℠)
- California Code of Regulations, Title 24, Insulation Quality Standard License #TI-1418
- Third-party certification with the PIMA Quality Mark for Long-Term Thermal Resistance (LTTR) values
- CAN/ULC S704, Type 2 & 3, Class 2
- Florida Building Code Approval

Precautions

Insulation must be protected from open flame and kept dry at all times. Install only as much insulation as can be covered the same day by completed roof-covering material. Protect installed product from excessive foot traffic. Carlisle will not be responsible for specific building and roof design by others, for deficiencies in construction or workmanship, for dangerous conditions on the job site or for improper storage and handling. Technical specifications shown in this literature are intended to be used as general guidelines only and are subject to change without notice. Call Carlisle for more specific details, or refer to PIMA Technical Bulletin No. 109: Storage & Handling Recommendations for Polyiso Roof Insulation.

Typical Properties and Characteristics (ASTM C1289)

Physical Property	Test Method	Value
Compressive Strength	ASTM D1621	20 psi* minimum (138 kPa, Grade 2)
Dimensional Stability	ASTM D2126	2% linear change (7 days)
Moisture Vapor Permeance	ASTM E96	<1 perm (57.5 ng/(Pa•s•m²))
Water Absorption	C1763	<1% volume

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

*Also available in 25 psi minimum, Grade 3

CLASSIFIED C UL US

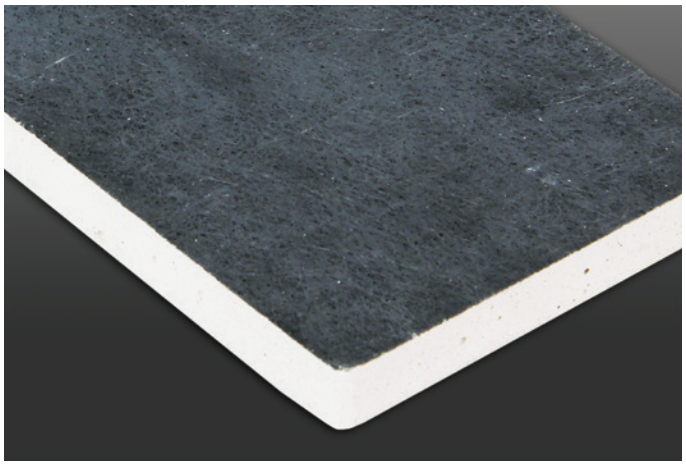
Foamed plastic as roof deck construction material with resistance to an internal fire exposure only for use in construction no.(s) 120 and 123. See UL Directory of Products Certified for Canada and UL Roofing Materials and Systems Directory. 99DL.

U.S. GREEN BUILDING COUNCIL

PIMA QualityMark℠ The Certified LTTR-value

CARLISLE SYNTEC SYSTEMS

DensDeck® Prime Roof Board



Overview

DensDeck Prime Roof Board's patented design features a gypsum core with embedded glass mat facers on the top and bottom of the board. DensDeck Prime can be used in a variety of commercial roof systems and provides an excellent thermal barrier as well as exceptional fire, moisture, and wind uplift resistance properties.

DensDeck Prime is typically used as a cover board over insulation in fully adhered EPDM, TPO, and PVC applications. It is compatible with solvent-based bonding adhesives. For applications in which Flexible FAST™ Adhesive is used to attach insulation and a vapor barrier is specified, DensDeck Prime can be used as a base layer for Carlisle's VapAir™ Seal 725TR Air and Vapor Barrier (in conjunction with CCW 702-LV or CAV-GRIP® III Primer). DensDeck Prime is also compatible with hot asphalt and can be used as a membrane underlayment in hot mopped roofing systems or as a parapet wall substrate in all systems.

Features and Benefits

- UL code ratings available for high slopes and wood decks
- FM Approved
- Improves resistance to foot traffic and hail damage
- Excellent wind uplift ratings
- Resistant to deterioration, warping, and jobsite damage
- ⅝ DensDeck Prime can replace any generic type "X" gypsum board in any roof assembly in the UL Fire Resistance Directory under the prefix "P"

Installation

DensDeck Prime may be secured with Flexible FAST Adhesive, fastened in accordance with an approved fastening pattern, or mopped with Type III or IV asphalt.

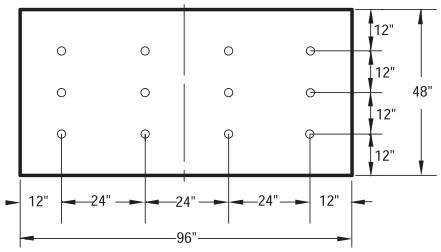
Maximum asphalt application temperatures of 425°F (218°C) to 450°F (232°C) are recommended. Application temperatures above these recommended temperatures may adversely affect roof system performance.

Edge joints should be located on and parallel to deck ribs. End joints of adjacent lengths should be staggered.

1. This material shall be installed with ends and edges butted tightly.
2. When installed over combustible wood decks or insulations, all joints should be staggered.
3. In accordance with approved shop drawings, FM Approved fasteners shall be installed with plates through the roof board, flush with the surface.
4. When attaching VapAir Seal 725TR, use DensDeck Prime in conjunction with CCW-702, 702-LV, or CAV-GRIP III Primer.

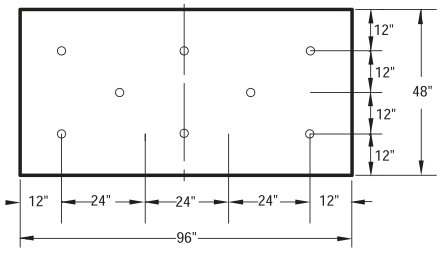
Review Carlisle specifications and details for complete installation information.

FM Approvals 1-90 ¼" DensDeck Prime Cover Board



4' X 8' Boards
(12 fasteners per 4' x 8' board)

FM Approvals 1-90 ½" or ⅝" DensDeck Prime Cover Board



4' X 8' Boards
(8 fasteners per 4' x 8' board)

CARLISLE SYNTEC SYSTEMS

DensDeck Prime Roof Board

Precautions

- Panels must be kept dry before, during and after installation. Apply only as much roof board as can be covered by roof membrane in the same day.
- When applying solvent-based adhesives or primers, allow sufficient time for the solvents to flash off.
- ¼" DensDeck Prime is not recommended for vertical parapet applications.
- In ballasted roofing systems, DensDeck Prime is not an acceptable membrane underlayment.

Ratings and Certifications

- Manufactured to conform to ASTM C-1177
- Tested in accordance with ASTM E-84 or CAN/ULC-S102
- Non-combustible when tested in accordance with ASTM E-136
- UL Classified when tested in accordance with ASTM E-119

LEED® Information

Manufacturing Location[1]	Total Recycled Content[2]	Pre-Consumer Recycled Content2[2]	Post-Consumer Recycled Content[2]
Acme, TX	0%	0%	0%
Antioch, CA	0%	0%	0%
Ft. Dodge, IA	0%	0%	0%
Las Vegas, NV	0%	0%	0%
Lovell, WY	0%	0%	0%
Newington, NH	30%	30%	0%
Savannah, GA	0%	0%	0%
Tacoma, WA	14%	14%	0%
Wheatfield, IN	94%	94%	0%

[1] Manufacturing locations subject to change. Please visit www.gpgypsum.com and click on Sustainability.

[2] Recycled content subject to change +/– 1.0%.

[3] Based on ICC Evaluation Service Verification of Attributes Report for Dens® brand products issued August 1, 2009. www.saveprogram.icc-es.org

Typical Properties and Characteristics

Properties	¼" (6.4 mm)	½" (12.7 mm)	⅝" (15.9 mm)
Thickness, nominal	¼" (6.4 mm) ± 1/16" (1.6 mm)	½" (12.7 mm) ± 1/32" (.8 mm)	⅝" (15.9 mm) ± 1/32" (.8 mm)
Width, standard	4' (1219 mm) ± ⅛" (3 mm)	4' (1219 mm) ± ⅛" (3 mm)	4' (1219 mm) ± ⅛" (3 mm)
Length, standard	4' (1219 mm) 8' (2438 mm) ± ¼" (6.4 mm)	4' (1219 mm) 8' (2438 mm) ± ¼" (6.4 mm)	4' (1219 mm) 8' (2438 mm) ± ¼" (6.4 mm)
Weight, nominal, lbs./sq. ft. (Kg/m²)[7]	1.2 (5.9)	2.0 (9.8)	2.5 (12.2)
Surfacing	Fiberglass mat with non-asphaltic coating	Fiberglass mat with non-asphaltic coating	Fiberglass mat with non-asphaltic coating
Flexural Strength[1], parallel, lbf. min. (N)	≥40 (178)	≥80 (356)	≥100 (444)
Flute Spanability [2]	2⅝" (67 mm)	5" (127 mm)	8" (203 mm)
Permeance[3], Perms (ng/Pa• S• m²)	>30 (>1710)	>23 (>1300)	>17 (>970)
R Value[4], ft²• °F• hr/BTU (m²• K/ W)	0.28	0.56	0.67
Linear Variation with Change in Temp., in/in °F (mm/mm/C°)	8.5 x 10^{-6} (15.3 x 10^{-6})	8.5 x 10^{-6} (15.3 x 10^{-6})	8.5 x 10^{-6} (15.3 x 10^{-6})
Linear Variation with Change in Moisture	6.25 x 10^{-6}	6.25 x 10^{-6}	6.25 x 10^{-6}
Water Absorption[5], %	5	5	5
Compressive Strength[6], psi nominal[1]	900	900	900
Surface Water Absorption, grams, nominal	1.0	1.0	1.0
Flame Spread, Smoke Developed (ASTM E84)	0/0	0/0	0/0
Bending Radius	4' (1219 mm)	6' (1829 mm)	8' (2438 mm)

[1] Tested in accordance with ASTM C473 method B.

[2] Tested in accordance with ASTM E661.

[3] Tested in accordance with ASTM E96 (dry cup method).

[4] Tested in accordance with ASTM C518 (heat flow meter).

[5] Tested in accordance with ASTM C1177.

[6] Tested in accordance with ASTM C473.

[7] Represents approximate weight for design and shipping purposes. Actual weight may vary based on manufacturing location and other factors.

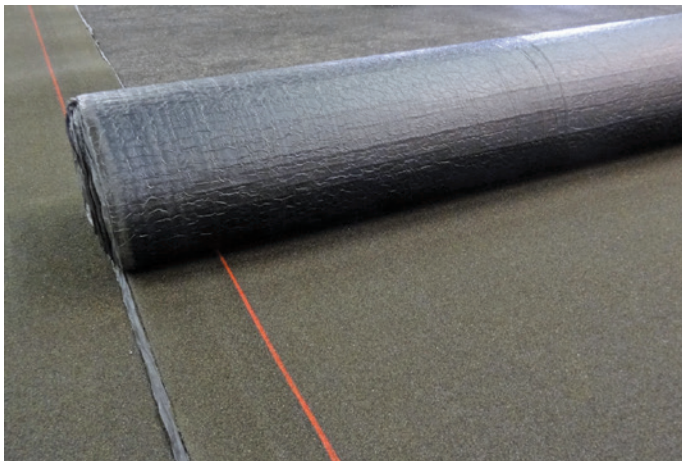
800-479-6832 | P.O. Box 7000 | Carlisle, PA 17013 | Fax: 717-245-7053 | **www.carlislesyntec.com**

REPRINT CODE: 601960 INS_CST-6043 - "DensDeck Prime Roof Board Product Data Sheet"

CARLISLE SYNTEC SYSTEMS

SureMB 90TG Base

Torch-Grade SBS Base Ply



Overview

Carlisle's SureMB 90TG Base is a premium, smooth-surfaced, SBS (Styrene-Butadiene-Styrene), torch-applied membrane. Reinforced with a fiberglass mat that is saturated and coated with high-quality asphaltic bitumen and SBS elastomers, this product offers durability, flexibility and easy maintenance. 90TG Base is designed for use as a base ply or inter-ply in Carlisle's multiple-ply system and can also be used as an air barrier, vapor barrier or temporary roof (for up to 60 days).

Features and Benefits

- Torch-applied or mechanically fastened attachment options
- SBS rubber optimizes waterproofing characteristics, adding redundancy to the roofing system
- Fiberglass reinforcement ensures a tough, flexible, puncture-resistant and durable membrane
- Can be used as a base ply, inter-ply, temporary roof or air and vapor barrier
- Eliminates the use of kettles
- 90TG Base is included in Carlisle's Total System Warranties of up to 20 years

Installation

1. Suitable substrates are primed concrete, base plies (self adhered, mechanically fastened or adhered) or gypsum cover boards such as DensDeck® Prime or SECUROCK®.
2. Membrane should overlap 3" on the sides and 6" on the end laps.
3. To align the sheets, unroll the membrane at least 10' and back-roll the membrane so it remains tight.
4. When installing the sheet, apply the torch flame uniformly to the exposed underside of the membrane until the compound reaches the appropriate application temperature. The best visual indication that the compound has reached the proper temperature is that the compound will have a slight sheen.
5. Be sure that the burnoff film is completely burned off.
6. End laps must be staggered a minimum of 18" from adjacent end laps.
7. The torch flame should be moved from side to side in the shape of an "L", applying about 80% of the heat to the membrane and 20% to the substrate or underlying base, including the lap area of the previously installed courses. The membrane is unrolled as heat is applied to ensure proper adhesion. In colder temperatures, more heat must be applied to the substrate (refer to precautions section).
8. A minimum of ⅜" compound flow-out must be reached at all seam areas.
9. Seam areas must be rolled in, with a standup roller, no less than 3' and no more than 4' away from the torching application to ensure proper seam adhesion.
10. When completing end laps, pre-heat the surface of the bottom sheet first, and use standard procedures to heat and roll the top membrane.
11. When used as a vapor barrier or temporary roof, options for attaching insulation to 90TG Base include Type III or IV asphalt, Carlisle's Cold Applied Adhesive, or Flexible FAST Adhesive.

Review Carlisle specifications and details for complete installation information.

Storage

1. All material should be stored out of the weather in a clean, dry area, in its original unopened packaging, at a minimum of 55°F.
2. If material must be stored temporarily on the roof before application, it must be elevated from the roof's surface on a pallet.
3. Store on end, covered from the weather with a light-colored opaque tarp in a neat, safe manner that does not exceed the allowable load limit of the storage area.
4. Stack 90TG Base squarely in the original unopened packaging, not more than two pallets high.

CARLISLE SYNTEC SYSTEMS

SureMB 90TG Base

Torch-Grade SBS Base Ply

Specifications

- Width: 39 3/8" (1 m)
- Length: 49' 1" (15 m)
- Square Feet/Roll: 164 (excluding side lap)
- Thickness: 2.4 mm (94 mils)
- Weight: 95 lbs/roll (43kg/m^2)
- Rolls/Pallet: 20

Ratings and Certifications

- Meets ASTM D6163 Type I, Grade S
- Listed with Underwriter's Laboratories (UL)
- Factory Mutual (FM) Approved

Precautions

- Do not install 90TG Base without reviewing and implementing all applicable safety and fire watch requirements.
- Remove all potentially flammable articles from the roof application area.
- All roofing application areas should be clean, smooth, dry and prepared according to Carlisle specifications.
- Unsuitable substrates include insulations such as polyiso, perlite and wood fiberboard.
- Other non-acceptable substrates include fresh asphalt glazes, flood coats, solvent-based adhesives or mastics, wood, plywood or oriented strand board.
- If the membrane produces heavy smoke, this means too much heat is being applied.
- In colder temperatures, 60% of the flame heat should be applied to the membrane and 40% should be applied to the substrate. A slower pace may be necessary to ensure proper heating.

Typical Properties and Characteristics

Physical Property (ASTM D5147)	**Test Results**	**ASTM D6163 Minimum**
Tensile Strength (lbf/in), 0°F, (MD/XMD)	108/105	70 lbf/in
Tensile Strength (lbf/in), 73°F, (MD/XMD)	97/67	30 lbf/in
Elongation (% @ Max Load), 0°F, (MD/XMD)	4%	1%
Elongation (% @ Max Load), 73°F, (MD/XMD)	3%	2%
Elongation (% @ 5%, Max Load), 73°F, (MD/XMD)	5/7	3%
Tear Strength (lbf), (MD/XMD), 73°F, minimum	100/75	35 lbf
Low Temperature Flexibility, (°F), maximum	0°F (-18°C)	0°F
Dimensional Stability, %, maximum	< 0.2%	1%
High Temperature Stability, (°F)	215°F (101°C)	215°F
Water Vapor Permeance (ASTM E96)	0.012 perms	N/A

Typical properties and characteristics are based on samples tested and are not guaranteed for all samples of this product. This data and information is intended as a guide and does not reflect the specification range for any particular property of this product.

LEED® Information

Pre-consumer Recycled Content	3.2%
Post-consumer Recycled Content	16.7%
Manufacturing Location	Fort Worth, TX
Solar Reflectance Index (SRI)	N/A

Packaging

Product	SureMB 90TG Base Sheet (Torch Grade Modified Base)
Size/Weight	39.38" x 49' / 95 lbs
Actual Coverage	150 ft^2
Part Number	323887

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Fasteners & Plates

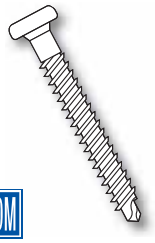
Carlisle SynTec Systems offers an array of fasteners and plates to complement our roofing systems. From pre-assembled choices for EPDM installations to Purlin fasteners for Metal Retrofit Systems and Piranha plates for Sure-Weld® options, our mission continues to be to provide all components necessary for the application of a long-lasting and secure single-ply roofing system from Carlisle.

EPDM Sure-Seal® & Sure-White® EPDM

SW TPO Sure-Weld TPO

SF PVC Sure-Flex™ PVC

HP FASTENER



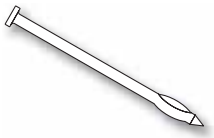
EPDM

Applicable to steel, 22-gauge and heavier, CDX plywood and wood plank deck types. Can be used to secure Sure-Tough membranes, RUSS and insulation. Longer fastener sizes available as special order.

Sizes Available:
1¼", 2"– 15" (1" Increments)

Size & Quantity Per Box:
2"– 6": 1,000; 7"– 12": 500; 13"– 15": 250
1¼":1000

CD-10



EPDM SW TPO SF PVC

Applicable for concrete decks. Used to secure Sure-Seal, Sure-Weld and Sure-Flex membranes and for insulation securement.

Sizes Available:
2"– 6" (½" Increments)
7"– 12" (1" Increments)

Size & Quantity Per Box:
2"– 8": 500; 9"– 12": 250

HP-X FASTENER™ & HP-XTRA FASTENER

EPDM SW TPO SF PVC

Size & Quantity Per Box:
500 (2" – 6"), 250 (7" – 8")

A #15 diameter fastener applicable to steel, wood and CDX plywood. Can be used to secure Sure-Seal, Sure-Weld and Sure-Flex membranes.

Sizes Available:
2"– 8" (1" Increments)
10"– 16" (2" Increments)

Size & Quantity Per Box:
2"– 4": 1,000; 5"– 12": 500; 14"– 16": 250

HP-XTRA FASTENER

Also Available (Not shown)
A #21 diameter fastener applicable to steel, wood and CDX plywood decks.

Sizes Available:
2" – 8" (1" increments)

INSULFAST™

A #12 diameter fastener applicable to wood decks and steel, 22-gauge and heavier, decks. Used only for insulation attachment.

Sizes Available:
2"– 8" (1" Increments)
1⅝", 2¼", 3"– 8" (1" Increments)

Size & Quantity Per Box:
2"– 8": 1,000

SURE-TITE®

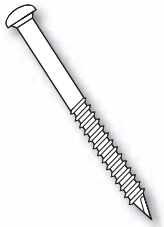
EPDM

A 0.33" diameter fastener applicable to steel, 22-gauge and heavier. Can be used for Sure-Tough membrane securement in mechanically attached systems.

Sizes Available:
2"– 8" (1" Increments)

Size & Quantity Per Box:
2", 3": 500; 4"– 8": 250

HD 14-10



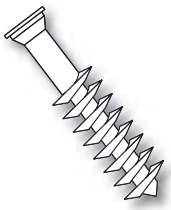
EPDM SW TPO SF PVC

A #14 diameter fastener used for Sure-Tough, Sure-Weld and Sure-Flex membrane securement into wood and concrete decks. Also applicable to insulation securement into steel, wood and concrete decks.

Sizes Available:
2"– 12" (1" Increments)
14"– 24" (2" Increments)

Size & Quantity Per Box:
2"– 4": 1,000; 5"– 11": 500; 12"– 24": 250

GYPTEC FASTENER & PLATE



EPDM SW TPO SF PVC

Applicable to cementitious wood fiber, lightweight concrete and gypsum decks. Can be used to secure Sure-Tough, Sure-Weld and Sure-Flex membranes and insulation.

Sizes Available:
2½"– 10" (½" Increments)

Size & Quantity Per Box:
2½"– 7": 500; 7½"– 10": 250

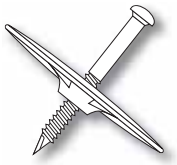
GYPTEC PLATE

Sizes Available:
2" Metal membrane plate
3" Metal insulation plate

Quantity Per Box: 1,000

Fasteners & Plates

ASAP WITH POLYMER PLATE

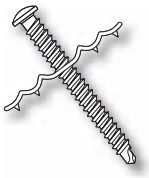


A pre-assembled #12 diameter fastener and plastic insulation plate applicable to steel and wood decks. Used to secure insulation only. Longer fastener sizes available as special order.

Sizes Available:
2¼", 3"– 12" (1" Increments)

Size & Quantity Per Box:
2¼"– 8": 250; 9"– 12": 200

HP-X ASAP



A pre-assembled HP-X Fastener and Piranha Plate™ applicable to steel, wood and CDX plywood decks. Used to secure Sure-Weld and Sure-Flex membranes.

Sizes Available:
2"–10" (1" Increments)
12"–16" (2" Increments)

Size & Quantity Per Box:
2"– 9": 250; 10"– 12": 200; 14"– 16": 150

HP PRE-ASSEMBLED

Pre-assembled HP Fastener and Polymer seam plate applicable to steel, wood and CDX plywood decks. Used to secure Sure-Tough membranes.

Sizes Available:
2¼", 3"– 12" (1" Increments)

Size & Quantity Per Box:
2¼", 3", 3¼", 3¾": 450; 4", 5": 400; 6": 350; 7", 8": 300; 9": 250; 10"– 12": 200

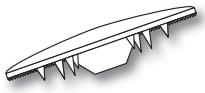
RHINOBOND® PLATE

3"-round, specially coated plates used with HP-X Fasteners and the RhinoBond induction welding system. Available in TPO and PVC versions.

Sizes Available:
3" diameter

Quantity Per Box: 500/carton

HP POLYMER SEAM PLATE



Along with the HP Fastener, used to mechanically fasten reinforced Sure-Tough membrane and RUSS over steel decks.

Sizes Available:
2" diameter

Quantity Per Box: 1,000

HP-XTRA POLYMER SEAM PLATE

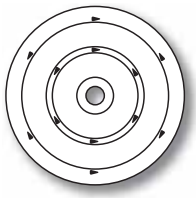
Also Available (Not shown)

For use with HP-XTRA Fastener to secure Sure-Tough membranes to steel decks.

Sizes Available:
2 3/8" diameter

Quantity Per Box: 1,000

PIRANHA PLATE



Along with the appropriate fastener, used to secure Sure-Weld and Sure-Flex membranes to steel, concrete and wood decks.

Sizes Available:
2 3/8" diameter

Quantity Per Box: 1,000

HP-XTRA PIRANHA PLATE

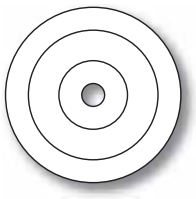
Also Available (Not shown)

For use with HP-XTRA Fastener to secure Sure-Weld and Sure-Flex membranes to steel and wood decks.

Sizes Available:
2 3/8" diameter

Quantity Per Box: 1,000

SEAM FASTENING PLATE

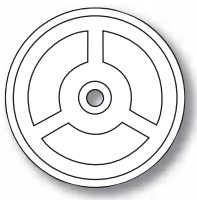


Applicable with HP, HD 14-10 and CD-10 fasteners to mechanically attach reinforced Sure-Tough membrane (excluding steel decks) and RUSS (except when used with mechanically fastened EPDM to steel decks).

Sizes Available:
2" diameter

Quantity Per Box: 1,000

INSULATION FASTENING PLATE



Applicable with InsulFast, HP, CD-10 and HD 14-10 fasteners. Used for insulation securement only on steel, wood and concrete decks.

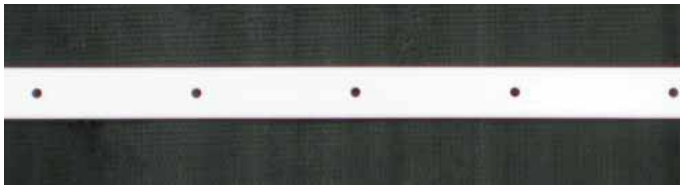
Sizes Available:
3" diameter

Quantity Per Box: 1,000

REPRINT REQUEST CODE: 600269 - Fasteners & Plates Product Data Sheet - 02.19.13 © 2013 Carlisle.

CARLISLE SYNTEC SYSTEMS

Fastening and Termination Bars



Polymer Fastening Bar

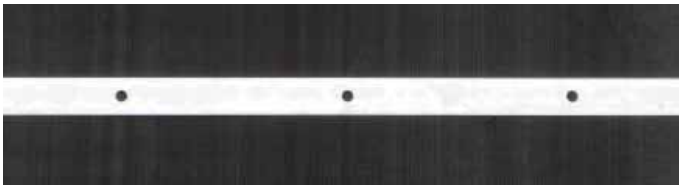
The Polymer Fastening Bar is an engineered polymer bar that's used to mechanically fasten EPDM membranes per Carlisle Specifications. The bar is packaged in a 1" x 250' coil that has pre-punched holes every 3" on center. The bar can be easily cut to any desired length. When installing, make sure that all corners of cut bar are rounded. Install the bar using HP or HP-X Fasteners.

Typical Properties and Characteristics	
Material	Engineered Polymer
Dimensions	1" (25 mm) wide x 250' (76 m) long
Packaging	250 lf (76 m) per carton
Weight	10 lbs. (5 kg) carton
Recycled Content	0% pre-consumer recycled content
Manufacturing Location	Addison, IL

Termination Bar

The Termination Bar is an extruded aluminum bar that's designed for securing and sealing compression type flashing terminations per Carlisle Specifications. The bar is packaged in 1" x 10' lengths, 500 linear feet per package and has pre-punched holes every 6" on center. This bar features a top edge for ease of applying Carlisle's Lap Sealant for EPDM installations or Universal Single Ply Sealant for TPO, PVC, and KEE HP installations. The bar can be easily cut to any desired length. When installing, make sure that all corners of cut bar are rounded. Install the bar using HP-X Fasteners, or Term-Bar Nail In Fasteners.

Typical Properties and Characteristics	
Material	6063-T6 Extruded Aluminum
Dimensions	1" (25 mm) wide x 10' (3 m) long
Packaging	50 pcs; 500 lf (152 m) per carton
Weight	69 lbs. (31 kg) carton
Recycled Content	0% pre-consumer recycled content 15% post-consumer recycled content
Manufacturing Location	Cleveland, OH



Metal Fastening Bar

The Metal Fastening Bar is a Galvalume™ coated metal that's used to mechanically fasten EPDM membranes per Carlisle Specifications. The bar is packaged in 1" x 10' lengths, 500 linear feet per package and has pre-punched holes every 6" on center. The bar can be easily cut to any desired length. When installing, make sure that all corners of cut bar are rounded. Install the bar using HP-X Fasteners.

Typical Properties and Characteristics	
Material	Galvalume Coated Metal
Dimensions	1" (102 mm) wide x 10' (3 m) long
Packaging	50 pcs; 500 lf (152 m) per carton
Weight	85 lbs. (39 kg) carton
Recycled Content	49% pre-consumer recycled content
Manufacturing Location	Cleveland, OH

Sure-Seal Ballast Retaining Bar

The Ballast Retaining Bar is an extruded aluminum bar that's designed as a ballast retaining perimeter securement system, which comes packaged in 4" x 10' lengths, 250 linear feet per package. The ballast retaining bar has pre-punched holes every 6" on center for installation, and also has pre-punched drainage holes every 4" on center.

Typical Properties and Characteristics	
Material	6063-T6 Extruded Aluminum
Dimensions	4" (102 mm) wide x 10' (3 m) long
Packaging	25 pcs; 250 lf (76 m) per carton
Weight	123 lbs. (56 kg) carton

GOLDEN SEAL TOTAL ROOFING SYSTEM WARRANTY

CARLISLE SYNTEC SYSTEMS

WARRANTY NO.:
BUILDING OWNER:
NAME OF BUILDING:
BUILDING ADDRESS:
DATE OF COMPLETION OF THE CARLISLE TOTAL ROOFING SYSTEM:
DATE OF ISSUE:

Carlisle Roofing Systems, Inc., (Carlisle) warrants to the Building Owner (Owner) of the above described building, that; subject to the terms, conditions, and limitations stated in this warranty, Carlisle will repair any leak in the Carlisle Roofing System (Carlisle Total Roofing System) installed by a Carlisle Authorized Roofing Applicator for a period of -- years, commencing with the date of Carlisle's acceptance of the Carlisle Total Roofing System installation. However, in no event shall Carlisle's obligations extend beyond 20.5 years, subsequent to the date of substantial completion of the Carlisle Total Roofing System. See below for exact date of warranty expiration.

The Carlisle Total Roofing System is defined as the following Carlisle brand materials: Membrane, Flashings, Adhesives and Sealants, Insulation, Cover Boards, Fasteners, Fastener Plates, Fastening Bars, Insulation Adhesives and any other Carlisle brand products utilized in this installation.

TERMS, CONDITIONS, LIMITATIONS

1. Owner shall provide Carlisle with written notice via letter, fax or email within thirty (30) days of any leak in the Carlisle Total Roofing System. Owner should send written notice of a leak to Carlisle's Warranty Services Department at the address set forth at the bottom of this warranty. By so notifying Carlisle, the Owner authorizes Carlisle or its designee to investigate the cause of the leak. Should the investigation reveal the cause of the leak to be outside the scope of this Warranty, investigation and repair costs for this service shall be paid by the Owner.

2. If, upon inspection, Carlisle determines that the leak is caused by a defect in the Carlisle Total Roofing System's materials, or workmanship of the Carlisle Authorized Roofing Applicator in installing the same, Owner's remedies and Carlisle's liability shall be limited to Carlisle's repair of the leak. Carlisle shall have sole responsibility in determining the method of repair of the area.

3. This warranty shall not be applicable if, upon Carlisle's inspection, Carlisle determines that any of the following has occurred:
(a) The Carlisle Total Roofing System is damaged by: natural disasters, lightning, fire, insects, animals, windblown debris or objects, earthquakes, tornados, hail, hurricanes, and winds of (3 second) peak gust speeds of -- mph or higher measured at 10 meters above ground; or
(b) Loss of integrity of the building envelope and/or structure, including, but not limited to, partial or complete loss of roof decking, wall siding, windows, roof top units, doors or other envelope components; or
(c) All associated building components, including but not limited to the deck substrate, joists, columns and foundation, must also meet wind speed design requirements.
(d) The Carlisle Total Roofing System is damaged by any acts, accidents, misuse, abuse, vandalism, civil disobedience or the like; or
(e) Deterioration or failure of building components, including, but not limited to, the roof substrate, walls, mortar, HVAC units, non Carlisle brand metal work, etc., occurs and causes a leak, or otherwise damages the Carlisle Total Roofing System; or
(f) Deterioration of metal materials and accessories caused by marine salt water, atmosphere, or by regular spray of either salt or fresh water; or

800-233-0551 | P.O. Box 7000 | Carlisle, PA 17013 | Fax: 717-245-7121 | www.carlislesyntec.com

(g) Acids, oils, harmful chemicals and the like come in contact with the Carlisle Total Roofing System and cause a leak, or otherwise damage the Carlisle Total Roofing System; or
(h) The Carlisle Total Roofing System encounters leaks or is otherwise damaged by condensation resulting from any condition within the building that may generate moisture; or
(i) The Carlisle Authorized Applicator or any additional contractor or subcontractor failed to follow Carlisle's published specifications and details for the approved system assembly or failure to correct all installation deficiencies listed in any Carlisle inspection report.

4. This Warranty shall be null and void if any of the following shall occur:
(a) If, after installation of the Carlisle Total Roofing System by a Carlisle Authorized Roofing Applicator, there are any alterations or repairs made on or through the roof or objects such as, but not limited to, structures, fixtures, solar arrays, wind turbines, roof gardens or utilities are placed upon or attached to the roof without first obtaining written authorization from Carlisle; or
(b) Failure by the Owner to use reasonable care in maintaining the roof, said maintenance to include, but not be limited to, those items listed on Carlisle's Care & Maintenance Guide which accompanies this Warranty.

5. In addition, it shall be Owner's sole responsibility to remove and re-install at Owner's expense, all obstructions, including, but not limited to, structures, fixtures, solar arrays, wind turbines, roof gardens, utilities or other overburden from the affected area as determined by Carlisle that would hinder or impede repairs being made in the most expedient and least expensive manner possible. Owner shall be responsible for all costs associated with any loss of power generation in the event that removal of a solar array is required to repair the roofing system.

6. During the term of this Warranty, Carlisle shall have free access to the roof during regular business hours.

7. Carlisle shall have no obligation under this Warranty while any bills for installation, supplies, service, and/or warranty charges have not been paid in full to the Carlisle Authorized Roofing Applicator, Carlisle, or material suppliers.

8. Carlisle's failure at any time to enforce any of the terms or conditions stated herein shall not be construed to be a waiver of such provision.

9. Carlisle shall not be responsible for the cleanliness or discoloration of the Carlisle Total Roofing System caused by environmental conditions including, but not limited to, dirt, pollutants or biological agents.

10. Carlisle shall have no liability under any theory of law for any claims, repairs, restoration, or other damages including, but not limited to, consequential or incidental damages relating, directly or indirectly, to the presence of any irritants, contaminants, vapors, fumes, molds, fungi, bacteria, spores, mycotoxins, or the like in the building or in the air, land, or water serving the building.

11. This warranty shall be transferable upon a change in ownership of the building when the Owner has completed certain procedures, including a transfer fee and an inspection of the Roofing System by a Carlisle representative.

12. Any dispute, controversy or claim between the Owner and Carlisle concerning this Limited Warranty shall be settled by mediation. In the event that the Owner and Carlisle do not resolve the dispute, controversy or claim in mediation, the Owner and Carlisle agree that any and all suits, proceedings, or claims shall be filed in either the state courts of Cumberland County, Pennsylvania or in the United States District Court for the Middle District of Pennsylvania. Each party irrevocably consents to the jurisdiction and venue of the above-identified courts.

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13. Roof System Design Assembly: Carlisle, as manufacturer of commercial roofing products with the sole purpose of offering products for an Owner, design professional, architect, consultant, or engineer when designing/choosing a roof system assembly, assumes no liability nor implies to the suitability of the products for any particular assembly or specific building operation or structure. The Owner, design professional, architect, consultant, or engineer is solely responsible for the assembly chosen for a particular building structure to include the responsibility to properly calculate wind uplift values, design dead loads and live loads, and suitability and condition of building envelope substrate, decking, parapets, drainage, slope, and other attributes pertaining to the performance of the roof system assembly.

14. The Carlisle Authorized Applicator or any additional contractor or subcontractor are not agents of Carlisle.

CARLISLE DOES NOT WARRANT PRODUCTS UTILIZED IN THIS INSTALLATION WHICH IT HAS NOT FURNISHED AND SPECIFICALLY DISCLAIMS LIABILITY, UNDER ANY THEORY OF LAW, ARISING OUT OF THE INSTALLATION AND PERFORMANCE OF, OR DAMAGES SUSTAINED BY OR CAUSED BY, PRODUCTS NOT FURNISHED BY CARLISLE OR THE PRIOR EXISTING ROOFING MATERIAL OVER WHICH THE CARLISLE ROOFING SYSTEM HAS BEEN INSTALLED.

THE REMEDIES STATED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES FOR FAILURE OF THE CARLISLE TOTAL ROOFING SYSTEM OR ITS COMPONENTS. THERE ARE NO WARRANTIES EITHER EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, WHICH EXTEND BEYOND THE FACE HEREOF. CARLISLE SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGE TO THE BUILDING OR ITS CONTENTS UNDER ANY THEORY OF LAW.

BY: Mark J. Long

AUTHORIZED SIGNATURE
TITLE: Director, Technical and Warranty Services
This Warranty Expires:

800-233-0551 | P.O. Box 7000 | Carlisle, PA 17013 | Fax: 717-245-7121 | www.carlislesyntec.com

Carlisle Care and Maintenance Guide

In order to ensure the long-term performance of your Roofing System and continued warranty service and coverage, regular rooftop maintenance inspections are necessary. While normal aging will occur on all roofs, if not detected early, problems stemming from abuse, contamination, accidents and severe weather can result in extensive and costly repairs or premature failure of the roofing system. Single-ply Roofing Systems are typically low-slope and easy to inspect, but caution must be taken to ensure safety. Carlisle disclaims and assumes no liability for any rooftop activity.

- Owner must retain records related to the Roofing System. Such records include, but are not limited to: the warranty document and serial number, maintenance inspection logs, rooftop traffic logs, service logs, and invoices for work performed on the roofing system.
- Inspect the roof at least every six months (preferably spring and fall) and immediately following any weather event that includes excessive rainfall, high winds and/or hail warnings. Increased number of rooftop maintenance inspections may be required on some roofs as the location may dictate, such as higher trees near the building which will accumulate leaves and debris on the roof and have adverse effects on drainage. In addition, rooftop maintenance inspections should occur after regular maintenance of any rooftop unit.

When inspecting the Roofing System, pay special attention to the following:
- Walls/Parapets/Roof Edge – Wind damage often begins at the perimeter of the roof. Ensure all membrane terminations and edge metal and copings are secure.
- Roof Deck Membrane – Inspect the field of the roof, scanning for damage caused by wind-blown debris or traffic.
- Penetrations/Rooftop Units – Inspect the membrane, flashings and terminations around penetrations and roof top units for possible damage from service work. Ensure the units and terminations are secure.
- Remove debris (leaves, dirt, trash, etc.) – Good roofing practice dictates that water should drain from the roof and that ponded water should evaporate within 48 to 72 hours after a rainfall. Debris can inhibit drainage.

Additional Maintenance Items:
- Foot Traffic – Walkways must be provided if regular traffic is required or if rooftop equipment has a regular thirty (30) day or less maintenance schedule.
- Petroleum Products & Chemicals - Keep all liquids containing petroleum products or chemicals off the membrane to avoid product degradation.
- Animal Fats/Vegetable Oils: EPDM Membranes - Do not exhaust animal fats/vegetable oils directly onto EPDM roof surfaces. TPO & PVC Membranes – Animal fats/vegetable oils must be regularly removed and the rooftop surface cleaned with a mixture of soap and water.

What to do if a leak occurs:
- After verifying the leak is through the roofing system, contact Carlisle at 1-800-233-0551 or at www.carlislesyntec.com.
- If minor, emergency temporary repairs are made to a suspected leak area, use Carlisle's Lap Sealant or a good-grade rubber caulk to address the repair area (do not use asphaltic roof cement). Please note, Carlisle is not responsible for the cost associated with any emergency temporary repairs.

Alterations to the Roofing System:
- Alterations to the Roofing System must be completed by a Carlisle Authorized Applicator. The Carlisle Authorized Applicator must notify Carlisle when the revision work is complete. The necessary form can be found on the Carlisle website via the Authorized Applicators login.

Warranty Transfer:
- Warranties shall be transferable upon a change in ownership of the building when the Owner has completed certain procedures. This form can be found on the Carlisle website for additional guidelines.

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CARLISLE
CONSTRUCTION MATERIALS

September 18, 2020

Re: Carlisle Sure-Flex PVC Membrane

To Whom It May Concern:

This letter is intended to confirm that Carlisle manufactures all of its PVC and KEE HP membrane at its own manufacturing facility in Greenville, IL. This state-of-the-art facility has 10,000 quality control data points and is the most technologically advanced extrusion PVC manufacturing line in the industry.

Carlisle's manufacturing capabilities provide a level of primary manufactured components of the roofing assembly (membrane, insulation, adhesives) that is unmatched by any other PVC suppliers. We also pride ourselves on providing the highest level of technical support, field service, and qualified/trained authorized installers.

Please do not hesitate to call or email should you need any additional information on our PVC membranes and manufacturing capabilities.

Best Regards,

Taylor Gingerich
PVC Product Manager
Carlisle Construction Materials
Taylor.Gingerich@carlisleccm.com
Office: 717-960-4425

CARLISLE

GOLDEN SEAL TOTAL ROOFING SYSTEM WARRANTY

SERIAL NO. **DATE OF ISSUE:**

BUILDING OWNER:

NAME OF BUILDING:

BUILDING ADDRESS:

DATE OF COMPLETION OF THE CARLISLE TOTAL ROOFING SYSTEM:

DATE OF ACCEPTANCE BY CARLISLE:

Carlisle Roofing Systems, Inc., (Carlisle) warrants to the Building Owner (Owner) of the above described building, that; subject to the terms, conditions, and limitations stated in this warranty, Carlisle will repair any leak in the Carlisle Golden Seal™Total Roofing System (Carlisle Total Roofing System) installed by a Carlisle Authorized Roofing applicator for a period of years commencing with the date of Carlisle's acceptance of the Carlisle Total Roofing System installation. However, in no event shall Carlisle's obligations extend beyond years subsequent to the date of substantial completion of the Carlisle Total Roofing System. See below for exact date of warranty expiration.

The Carlisle Total Roofing System is defined as the following Carlisle brand materials: Membrane, Flashings, Adhesives and Sealants, Insulation, Cover Boards, Fasteners, Fastener Plates, Fastening Bars, Metal Work, Insulation Adhesives, and any other Carlisle brand products utilized in this installation.

TERMS, CONDITIONS, LIMITATIONS

1. Owner shall provide Carlisle with written notice via letter, fax or email within thirty (30) days of the discovery of any leak in the Carlisle Total Roofing System. Owner should send written notice of a leak to Carlisle's Warranty Services Department at the address set forth at the bottom of this warranty. By so notifying Carlisle, the Owner authorizes Carlisle or its designee to investigate the cause of the leak. Should the investigation reveal the cause of the leak to be outside the scope of this Warranty, investigation and repair costs for this service shall be paid by the Owner.
2. If, upon inspection, Carlisle determines that the leak is caused by a defect in the Carlisle Total Roofing System's materials, or workmanship of the Carlisle Authorized Roofing Applicator in installing the same, Owner's remedies and Carlisle's liability shall be limited to Carlisle's repair of the leak.
3. This warranty shall not be applicable if, upon Carlisle's inspection, Carlisle determines that any of the following has occurred:
   (a) The Carlisle Total Roofing System is damaged by natural disasters, including, but not limited to, lightning, fire, insect infestations, earthquake, tornado, hail, hurricanes, and winds of (3 second) peak gust speeds of mph or higher measured at 10 meters above ground; or
   (b) Loss of integrity of the building envelope and, or structure including, but not limited to partial or complete loss of roof decking, wall siding, windows, doors or other envelope components or from roof damage by wind-blown objects, or:
   (c) The Carlisle Total Roofing System is damaged by any intentional or negligent acts, accidents, misuse, abuse, vandalism, civil disobedience, or the like.
   (d) Deterioration or failure of building components, including, but not limited to, the roof substrate, walls, mortar, HVAC units, non-Carlisle brand metal work, etc., occurs and causes a leak, or otherwise damages the Carlisle Total Roofing System; or
   (e) Acids, oils, harmful chemicals and the like come in contact with the Carlisle Total Roofing System and cause a leak, or otherwise damage the Carlisle Total Roofing System.
   (f) The Carlisle Total Roofing System encounters leaks or is otherwise damaged by condensation resulting from any condition within the building that may generate moisture.
4. This Warranty shall be null and void if any of the following shall occur:
   (a) If, after installation of the Carlisle Total Roofing System by a Carlisle Authorized Roofing Applicator there are any alterations or repairs made on or through the roof or objects such as, but not limited to, structures, fixtures, solar panels, wind turbines, roof gardens or utilities are placed upon or attached to the roof without first obtaining written authorization from Carlisle; or
   (b) Failure by the Owner to use reasonable care in maintaining the roof, said maintenance to include, but not be limited to, those items listed on Carlisle's Care & Maintenance Information sheet which accompanies this Warranty.
5. Only Carlisle brand insulation products are covered by this warranty. Carlisle specifically disclaims liability, under any theory of law, for damages sustained by or caused by non-Carlisle brand insulation products.
6. During the term of this Warranty, Carlisle shall have free access to the roof during regular business hours.
7. Carlisle shall have no obligation under this Warranty while any bills for installation, supplies, service, and warranty charges have not been paid in full to the Carlisle Authorized Roofing Applicator, Carlisle, or material suppliers.
8. Carlisle's failure at any time to enforce any of the terms or conditions stated herein shall not be construed to be a waiver of such provision.
9. Carlisle shall not be responsible for the cleanliness or discoloration of the Carlisle Total Roofing System caused by environmental conditions including, but not limited to, dirt, pollutants, or biological agents.
10. Carlisle shall have no liability under any theory of law for any claims, repairs, restoration, or other damages including, but not limited to, consequential or incidental damages relating, directly or indirectly, to the presence of any irritants, contaminants, vapors, fumes, molds, fungi, bacteria, spores, mycotoxins, or the like in the building or in the air, land, or water serving the building.
11. This warranty shall be transferable upon a change in ownership of the building when the owner has completed certain procedures including a transfer fee and an inspection of the Roofing System by a Carlisle representative.

CARLISLE DOES NOT WARRANT PRODUCTS UTILIZED IN THIS INSTALLATION WHICH IT HAS NOT FURNISHED; AND SPECIFICALLY DISCLAIMS LIABILITY, UNDER ANY THEORY OF LAW, ARISING OUT OF THE INSTALLATION AND PERFORMANCE OF, OR DAMAGES SUSTAINED BY OR CAUSED BY, PRODUCTS NOT FURNISHED BY CARLISLE OR THE PRIOR EXISTING ROOFING MATERIAL OVER WHICH THE CARLISLE ROOFING SYSTEM HAS BEEN INSTALLED

THE REMEDIES STATED HEREIN ARE THE SOLE AND EXCLUSIVE REMEDIES FOR FAILURE OF THE CARLISLE TOTAL ROOFING SYSTEM OR ITS COMPONENTS. THERE ARE NO WARRANTIES EITHER EXPRESSED OR IMPLIED, INCLUDING THE IMPLIED WARRANTIES OF FITNESS FOR A PARTICULAR PURPOSE AND MERCHANTABILITY, WHICH EXTEND BEYOND THE FACE HEREOF. CARLISLE SHALL NOT BE LIABLE FOR ANY INCIDENTAL, CONSEQUENTIAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGE TO THE BUILDING OR ITS CONTENTS UNDER ANY THEORY OF LAW.

BY: Robert H. McNeill
AUTHORIZED SIGNATURE
TITLE: Director, Technical and Warranty Services

This Warranty Expires:

P.O. Box 7000 Carlisle, PA 17013 Phone: 800.233.0551 Fax: 717.245.7121 www.carlislesyntec.com

Pre-Bid Conference
LEON COUNTY SCHOOL BOARD
Invitation to Bid (ITB) Bid 5696-2023
Sealey Elementary School, Roof Replacement Project
Wednesday, June 22, 2022 at 9:00 a.m.

	Company Name (Please Print Clearly)	Name (Please Print Clearly)	Telephone Number (Please Print Clearly)	Email Address (Please Print Clearly)
1.	Leon County Schools	Alison Garber	850-545-3007	garbera@leonschools.net
2.	ADVANCED Industries	Jeff Schlicher	201 312 2020	schlicherjeff@Gmail.com
3.	DGM Construction Services	Dina Martinez	850-212-0561	dina@dgmcsinc.com
4.	SHAFFIELD BUILDING, INC	DON HORNE	850-528-6560	dhorne@shaffieldbuilding.com
5.	Tremco	Aaron Fitzpatrick	9045251272	afitzpatrick@tremcoinc.com
6.	Tremco	Kris Lingster	904-588-3057	klingster@tremcoinc.com
7.	Space Age Roofing	Garret Hudlow	339-203-0407	Garret@fcoacroftech.com
8.	Streamline Roofing	IAN Miller	(850) 510-9489	ian@streamlineroofing.com
9.	PARKER BROTHER ROOFING	LEO STEWART, JR.	(850) 322-5581	leo@parkerbrothersroofing.net
10.	~~Sika Sarna Fl~~ Michael Tate	Michael Tate	850528-6442	Tate.mike@us.sika.com

MLD ARCHITECTS ROOSEVELT BIVENS 850-385-9200 ROOSEVELT@MLDARCHITECTS.COM

Pre-Bid Conference
LEON COUNTY SCHOOL BOARD
Invitation to Bid (ITB) Bid 5696-2023
Sealey Elementary School, Roof Replacement Project
Wednesday, June 22, 2022 at 9:00 a.m.

	Company Name (Please Print Clearly)	Name (Please Print Clearly)	Telephone Number (Please Print Clearly)	Email Address (Please Print Clearly)
11.	ACME Roofing	DAVID CARROLL	(334) 714-1650	dcarroll@centurytel.net
12.	Jenkins Roofing INC.	Elliot Jenkins	8502512830	elliot@jenkinsroofinginc.com
13.	G & C Construction	Jason Martin	850-890-0204	Jason M@Roofing 32425.com
14.	Burnette Roofing	Glen Bishop	8505084536	Glen@BurnetteRoofing.com
15.	~~Matt@Gansknop~~			
16.	Old World Craftsmen	Matt Gansknop	(386) 758-3264	sales@roof.co
17.	Total Quality Roofing	Randy Bruce	850-320-0411	RandyTaylor outlook.com
18.	LENDL HODGE NLD ARCHITECTS		8503859200	LENDL@NLDARCHITECTS.com
19.	Daniel Hammond	Garland	850-274-9054	dhammond@garlandco.com
20.	Centennial Roofing	Garret Hudlow	850-215-7663	Office@crcroofs40.com
	~~[redacted]~~ Rowe Roofing Leon County Schools	Cole Bracey Jared Steele	850-386-7663 850-556-4090	Cole@rowe roofing.com Steelej@leonschools.net