

Meets the requirements of ASTM D 4637, Type I

Features and Components

Membrane: Nonreinforced, cured EPDM (ethylene propylene diene monomer).

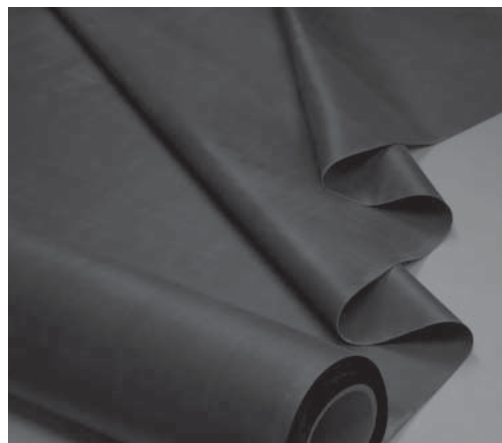
Fully Extruded: Produces fewer air voids, more uniform thickness and smoother sheets.

Vulcanization Process: Combines two layers of membrane to produce a fully cross-linked monolithic membrane.

Membrane Formulation: Performs in extreme temperature climates and withstands differential movement (elongation).

UV-Stabilization Properties: Offers outstanding ozone and weather resistance delivering one of the longest service lives available.

Technical Expertise: Backed by 30+ years of EPDM experience and installations.



Component
M
Membrane
Single Ply

Color

Black

System Compatibility This product may be used as a component in the following systems. Please reference product application for specific installation methods and information.

Multi-Ply	BUR		APP		SBS			
	HA	CA	CA	HW	HA	CA	HW	SA
	Do not use with Multi-Ply systems							

Single Ply	TPO		PVC		EPDM		
	MF	FA	MF	FA	MF	FA	BA
	Compatible with the selected Single Ply systems above						

Key: HA = Hot Applied CA = Cold Applied HW = Heat Weldable SA = Self Adhered MF = Mechanically Fastened FA = Fully Adhered BA = Ballasted

Energy and the Environment

Property	Value
Reflectivity* (ASTM C 1549)	0.06
Emissivity* (ASTM C 1371)	0.88
Post-consumer Recycled Content	0%
Pre-Consumer Recycled Content	0%

*Test methods for reflectivity and emissivity are LEED®- and CRRC®-approved.

Peak Advantage® Guarantee Information

Enhanced guarantees are now available on certain systems for wind and puncture. Consult your local sales representative for more information and for specific guarantee terms and costs.

Product	Guarantee Term
When used in most JM EPDM Systems*	Up to 30 years

*Contact JM Technical Services for specific systems.

Installation/Application



Refer to JM EPDM Application Guides and Detail Drawings for instructions.

Packaging and Dimensions

Roll Size	Roll Coverage
10' x 50' (3.05 m x 15.24 m)	500 ft² (46.45 m²)
10' x 100' (3.05 m x 30.48 m)	1000 ft² (92.9 m²)
Extruded in:	Milan, OH

*Assumes 48' flatbed truck.

Codes and Approvals



Meets the requirements of ASTM D 4637, Type I

Tested Physical Properties

Physical Properties		ASTM Test Method	Standard for ASTM D 4637, Type I	JM EPDM – NR 90 mil
Strength	Tensile Strength (psi)	D 412	> = 1305	1604
	Elongation, Ultimate (%)	D 412	> = 300	426
	Tensile Set (%)	D 412	< = 10	0.4
	Tear Resistance (lbf/in.)	D 624	> = 150	171
	Dynamic Puncture Resistance, 5J, Type I	D 5635	pass	pass
	Static Puncture Resistance, 44.1 lbf, Type I	D 5602	pass	pass
Longevity	Overall Sheet Thickness (in.)	D 751	+/- 10%	pass
	Brittleness Point (°F)	D 2137	< = -49	pass
	Ozone Resistance	D 1149	pass	pass
	Water Absorption (mass %)	D 471	< = 8	0.4
Heat Aged Performance	Heat Aged 670 hrs @ 240°F	D 573		
	Tensile Strength (psi)	D 412	> = 1205	1461
	Elongation, Ultimate (%)	D 412	> = 200	284
	Tear Resistance (lbf/in.)	D 624	> = 125	145
	Linear Dimensional Change (%)	D 1204	< +/- 1	0.4
Weathering Performance	Weathering Resistance, 5040 KJ/(m ² -nm) @ 340 nm	D 4637 / G 151 / G 155		
	Visual Inspection	–	pass	pass
	Elongation, Ultimate (%)	D 412	> = 200	394

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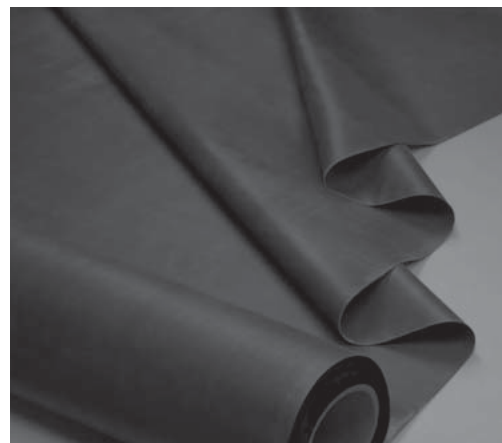
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Extruded in:	Milan, OH

*Assumes 48' flatbed truck.

Codes and Approvals



Refer to the Safety Data Sheet and product label prior to using this product. The Safety Data Sheet is available by calling (800) 922-5922 or on the Web at www.jm.com/roofing.

Meets the requirements of ASTM D 4637, Type I

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Weathering Performance	Weathering Resistance, 5040 KJ/(m ² -nm) @ 340 nm	D 4637 / G 151 / G 155		
	Visual Inspection	–	pass	pass
	Elongation, Ultimate (%)	D 412	> = 200	394

DATE:	September 13, 2016
PROJECT:	Interdisciplinary Science Building 8274 Big Bend Blvd. Webster Groves, MO 63119
OWNER:	Webster University 470 E. Lockwood Ave. Webster Groves, MO 63119
ROOFING CONTRACTOR:	Kirberg Company 1400 South Third Street St. Louis, MO 63104
SPECIFICATION SECTION:	075323
SUBMITTAL ITEMS:	FM Submittals (Both Concrete and Metal Areas) Shop Drawings Product Data Compatibility Letters MSDS



ASSEMBLY LETTER

Roofing Systems

717 17th St. Denver, CO 80202 (800) 922-5922

September 12, 2016

Kirberg Roofing Inc.
1400 S Third Street
Saint Louis, MO 63104

RE: Webster ISB

Johns Manville
James Nunns
Technical Services Rep
Roofing Systems Group
10100 W Ute Ave
Littleton, CO 80127
800-922-5922 Option 3
nunnsj@jm.com

To Whom It May Concern:

The above named contractor is currently a Johns Manville Approved Roofing Contractor in good standing, certified as a Peak Level Contractor. As such, the contractor is eligible to receive Peak Advantage Guarantees for Johns Manville EPDM roofing systems. These guarantees will be issued to the contractor in accordance with all procedures and requirements of the Johns Manville Peak Advantage Guarantee Program.

Roofing Assembly as proposed to Johns Manville

<i>Deck:</i>	Steel, min 22 ga	
<i>Thermal Barrier:</i>	JM Securock Gypsum Fiber Board, 5/8"	Field Fastening: 8 fasteners and plates per board; Perimeter Fastening: 16 fasteners and plates per board; Corner Fastening: 32 fasteners and plates per board (4'x8' boards) using UltraFast Fasteners and flat-bottom Plates
<i>Insulation:</i>	ENRGY 3 – 2 layers 2.5" and tapered	Field bead spacing: 12" o.c.; Perimeter bead spacing: 6" o.c.; Corner bead spacing: 4" o.c. (4'x4' maximum board size) using JM Two-Part Urethane Insulation Adhesive (2UIA) 3/4" bead
<i>Cover Board:</i>	JM Securock Gypsum Fiber Board, 5/8"	Field bead spacing: 12" o.c.; Perimeter bead spacing: 6" o.c.; Corner bead spacing: 4" o.c. (4'x4' maximum board size) using JM Two-Part Urethane Insulation Adhesive (2UIA) 3/4" bead
<i>Membrane:</i>	JM EPDM NR 90 mil 10 ft sheets	Adhered using JM EPDM Membrane Adhesive (Low-VOC)
<i>Flashings:</i>	JM EPDM NR 90 mil	Adhered using JM EPDM Membrane Adhesive (Low-VOC)

Roofing Assembly as proposed to Johns Manville

<i>Deck:</i>	Structural Concrete	
<i>Vapor Barrier:</i>	JM Vapor Barrier SA with SA Primer, 1 ply	Self-adhered
<i>Insulation:</i>	ENRGY 3 - 2 layers 2.5" and tapered	Field bead spacing: 12" o.c.; Perimeter bead spacing: 6" o.c.; Corner bead spacing: 4" o.c. (4'x4' maximum board size) using JM Two-Part Urethane Insulation Adhesive (2UIA) 3/4" bead
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<i>Flashings:</i>	JM EPDM NR 90 mil	Adhered using JM EPDM Membrane Adhesive (Low-VOC)

Perimeter and Corner Dimensions

Perimeter and corner dimensions for buildings less than 60 ft. in height:

Equal to the smaller of:

- 0.1 times the building lesser plan dimension (overall length or width)
- 0.4 times the eave height

but will never measure less than 0.04 times the building lesser plan dimension and never less than 3 ft.

Perimeter and corner dimensions for buildings greater than 60 ft. in height:

Equal to 0.1 times the building lesser plan dimension (overall length or width), but never less than 3 ft.

Corners are "L" shaped with legs twice the width of the perimeter.

Buildings with continuous parapets 36" or greater may treat corners as perimeters.

Ensure any whole or partial insulation board that falls within the calculated perimeter or corner has the increased securement applied over the entire board. This must also be true for any roof cover/base sheet width when the roll is parallel to the building edge.

Performance/ Technical Information

- The steel deck assembly has FM 1A-90 rating under RoofNav number 392147-0-0.
- The concrete deck assembly has FM NC-270 rating under RoofNav number 374588-0-0
- These systems meets UL Class A up to 2" per foot slopes as tested in accordance with UL 790.

These systems meets the specified performance require under section 2.2 A1, B, C, D and E with in the specification

All Johns Manville materials installed as listed above are compatible and made in the USA. The system(s) shall be eligible for a 30 year No Dollar Limit (NDL) Johns Manville Peak Advantage Roofing System Guarantee when installed by a certified Johns Manville contractor and inspected and approved by a Johns Manville Technical Representative. All materials supplied or marketed by Johns Manville will be covered under the terms and conditions of this agreement.

Thank you for your interest in our roofing products and services. Please contact Johns Manville if any information is incomplete or incorrect so that appropriate modifications can be made. If you have any questions, please do not hesitate to contact our technical department at 1-800-922-5922 Option 3.

Regards,

A handwritten signature in dark ink, appearing to read 'James Nunns', is written over a light green vertical line.

James Nunns
Technical Services Rep
Johns Manville Roofing Systems

Johns Manville is a manufacturer of commercial roofing products and offers this general conceptual information to you as a courtesy. This complimentary assistance is not to be used or relied upon by anyone as a substitute for professional engineering design or documentation required by building code, contract or applicable law. By accepting these comments you agree they do not constitute any representations, endorsements of, or an assumption by Johns Manville of any liability for either the adequacy of the design of this building or of any material not supplied by Johns Manville. These comments are for Johns Manville Guarantee purposes only. Additional requirements may be necessary as determined by contract documents, building code and regulations, or governing entity.

Roofing Membranes, Cover Boards, Insulations and Accessories

Version 2.1

Revision Date 02/18/2015

Print Date 11/11/2015

SECTION 0. GENERAL INFORMATION

This item meets the definition of article in the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

SECTION 1. PRODUCT AND COMPANY IDENTIFICATION

Trade name : Roofing Membranes, Cover Boards, Insulations and Accessories

Manufacturer or supplier's details

Company : Johns Manville
Address : P.O. Box 5108
Denver, CO USA 80127
Telephone : 303-978-2000 8:00AM-5:00PM M-F
Emergency telephone : 1-800-424-9300 (Chemtrec, in English)
number

Prepared by : productsafety@jm.com

SECTION 2. HAZARDS IDENTIFICATION**GHS Classification**

Not a hazardous substance or mixture.

GHS Label element

Not a hazardous substance or mixture.

Other hazards

None known.

SECTION 3. COMPOSITION/INFORMATION ON INGREDIENTS**Chemical nature**

This item meets the definition of article in the OSHA Hazard Communication Standard, 29 CFR 1910.1200.

Hazardous components

Non-hazardous according to 29 CFR 1910.1200, when used as intended.

SECTION 4. FIRST AID MEASURES

General advice : Do not leave the victim unattended.

If inhaled : If unconscious place in recovery position and seek medical advice.
If symptoms persist, call a physician.

In case of eye contact : Remove contact lenses.

Roofing Membranes, Cover Boards, Insulations and Accessories

Version 2.1

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Protect unharmed eye.
If eye irritation persists, consult a specialist.

If swallowed : Keep respiratory tract clear.
Never give anything by mouth to an unconscious person.
If symptoms persist, call a physician.

SECTION 5. FIREFIGHTING MEASURES

Specific extinguishing methods : Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Further information : Standard procedure for chemical fires.

Special protective equipment for firefighters : Wear self-contained breathing apparatus for firefighting if necessary.

SECTION 6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures : Avoid dust formation.

Methods and materials for containment and cleaning up : Pick up and arrange disposal without creating dust.
Sweep up and shovel.
Keep in suitable, closed containers for disposal.

SECTION 7. HANDLING AND STORAGE

Advice on safe handling : For personal protection see section 8.
Smoking, eating and drinking should be prohibited in the application area.

Conditions for safe storage : Keep in a dry, cool place.

SECTION 8. EXPOSURE CONTROLS/PERSONAL PROTECTION**Components with workplace control parameters**

Not applicable

Personal protective equipment

Respiratory protection : No personal respiratory protective equipment normally required.

Hand protection
Remarks : For prolonged or repeated contact use protective gloves.

Eye protection : Safety glasses

Skin and body protection : If used and stored as directed, no special protective

Roofing Membranes, Cover Boards, Insulations and Accessories

Version 2.1

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equipment is necessary.

Hygiene measures

: Handle in accordance with good industrial hygiene and safety practice.
Written instructions for handling must be available at the work place.

SECTION 9. PHYSICAL AND CHEMICAL PROPERTIES

Appearance

: solid

SECTION 10. STABILITY AND REACTIVITY

Reactivity

: No decomposition if stored and applied as directed.

Chemical stability

: No decomposition if stored and applied as directed.

Possibility of hazardous reactions

: Stable under recommended storage conditions.
No hazards to be specially mentioned.

Conditions to avoid

: No data available

SECTION 11. TOXICOLOGICAL INFORMATION**Further information**No data available

SECTION 12. ECOLOGICAL INFORMATION**Further information**No data available

SECTION 13. DISPOSAL CONSIDERATIONS**Disposal methods**

Contaminated packaging

: Empty containers should be taken to an approved waste handling site for recycling or disposal.
Packaging that can not be reused after cleaning must be disposed or recycled in accordance with all federal, national and local regulations.

Roofing Membranes, Cover Boards, Insulations and Accessories

Version 2.1

Revision Date 02/18/2015

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SECTION 14. TRANSPORT INFORMATION**International transport regulations**

These products are not classified as dangerous goods according to international transport regulations.

SECTION 15. REGULATORY INFORMATION**California Prop 65**

: This product does not contain any chemicals known to State of California to cause cancer, birth defects, or any other reproductive harm.

SECTION 16. OTHER INFORMATION**Further information**

Prepared by

productsafety@jm.com

The information provided in this Safe Use Instruction is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guidance for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other materials or in any process, unless specified in the text.

APPLICATION FOR ACCEPTANCE OF ROOFING SYSTEM

CONTACT INFORMATION:

INDEX NUMBER:



ROOFING CONTRACTOR (NAME & ADDRESS) Kirberg Company 1400 South Third Street St. Louis, MO 63104	TELEPHONE NO.: 314-333-4710 E-MAIL ADDRESS: aaron.hammerstone@kirberg.com	FAX: 314-534-2626 CONTACT: Aaron Hammerstone
CLIENT (NAME & ADDRESS) Webster University 470 East Lockwood Avenue St. Louis, MO 63119	TELEPHONE NO.: 800.981.9801 E-MAIL ADDRESS:	FAX: CONTACT:

OVERVIEW OF WORK: (Submit 1 form per roof area)

Building Name & Number: Webster University - Interdisciplinary Science Building			
Building Dimensions: Length: 220'	ft/m;	Width: 120'	ft/m.;
Roof Slope: 0.25:12 - 2:12		Height 40'	
Parapet Height ,max (in./m): 6'		Parapet Height ,min (in /m): 12"	
Type of Work: ☒ New Construction ☐ Recover (New roof over existing Roofing System) ☐ Reroof (New cover/remove existing roofing system to deck) ☐ Other			
FM Approved RoofNav Assembly Numbers: 392147-0-0			

ROOF SURFACING:

☒ None			
☐ Coating		(Trade Name/Application Rate)	
☐ Granules		(Application Rate)	
☐ Gravel/Slag		(Application Rate)	
☐ Ballast:	☐ Stone Size	☐ Pavers	(Beveled or square edge); ☐ Other:
Ballast Weight (psf): Field:		Perimeter: Corners:	

ROOF COVER/MEMBRANE:

(Please provide ALL applicable details including trade name, type, number of plies, thickness, reinforced, adhesive)

☐ Panel:	☐ Through Fastened Metal
	☐ Standing Seam metal
	☐ Fiber Reinforced Plastic (FRP)
	☐ Other:
☐ Built Up Roofing (BUR)	
☐ Modified Bitumen	
☒ Single Ply:	☒ Adhered 90 MIL EPDM ☐ Fastened ☐ Ballasted
☐ Spray Applied	
☐ Other:	

BASE SHEET:

(Please include Trade Name, Type, and Width)

☒ None	
Trade Name:	Width: ☐ 36 In. ☐ 1 meter (39 In.)
☐ Fastened	☐ Adhered
☐ Secured per RoofNav	☐ Per FM Global Loss Prevention Data Sheet 1-29
Comments:	
☐ Air Retarder	
☐ Vapor Retarder	

INSULATION

Layer	Trade Name	Thickness (In.)	Fastened	Adhered	Tapered
1. Top	Cover Board - Securock - 4'x4' FA 12"/6"/4" OC Ribbons	5/8"	☐	☒	☐
2. Next	POLYISO - 4'x4' FA 12"/6"/4" OC Ribbons	2 1/2"	☐	☒	☐
3. Next	POLYISO - 4'x4' FA 12"/6"/4" OC Ribbons	2 1/2"	☐	☒	☐
4. Next	Thermal Barrier - Securock - 4'x8' MF 8/16/32	5/8"	☒	☐	☐

☐ Glass Fiber/Mineral Wool/Batt	☐ Facer Type/Vapor Barrier
☐ Thermal Barrier	
☐ Other:	
☒ None	



APPLICATION FOR ACCEPTANCE OF ROOFING SYSTEM

DECK:

(Please include manufacturer, type, yield strength, thickness/gage, etc.)

☒ Steel: 22 GA	
☐ LWIC (Form Deck):	☐ Cementitious Wood Fiber:
☐ Concrete: ☐ Pre-cast panels or ☐ Cast in Place	
☐ Wood	
☐ Fiber Reinforced Cement	☐ Fiber Reinforced Plastic
☐ Gypsum: ☐ Plank	☐ Poured
☐ Other:	
Comments:	

ROOF STRUCTURE (Include Size, Gage, Etc.):

☐ Purlins ☐ "C" OR ☐ "Z"		
☐ Joists ☐ Wood OR ☐ Steel		
☒ Beams ☐ Wood OR ☒ Steel		
☐ Other:		
Spacing: Field:	Perimeter:	Corners:
Comments:		

FASTENERS USED IN ROOF ASSEMBLY:

Roof Cover Fasteners: Trade Name:		Length:	Diameter:
Stress Plate/Batten:			
Spacing: Field: X	Perimeter: X	Corners: X	
Insulation Fasteners: Trade Name: JM (OMG)		Type: Insulation Fastener/Plate	
Size: 2"		Stress Plate:	
Spacing: Field: 8 Per Board	Perimeter: 16 Per Board	Corners: 32 Per Board	
Deck Or Roof Panels Fasteners:			
Trade Name:		Type:	
Length:		Size Washer:	
If Weld: Size:	Weld:	Washer:	
Deck Side Lap Fasteners: Field: X	Perimeter: X	Corners: X	
Spacing: Field: X	Perimeter: X	Corners: X	
Base Sheet Fasteners			
Trade Name:		Type:	
Head Diameter:		Length:	
Spacing: (Attached Sketches as necessary)			
Spacing Along Laps: Field:	Perimeter:	Corners:	
No. Intermediate Rows: Field:	Perimeter:	Corners:	
Spacing Along Intermediate Rows: Field:	Perimeter:	Corners:	

PERIMETER FLASHING:

(Attach a detailed sketch of metal fascia, gravel stop, nailer, coping, etc.)

☒ FM Approved Flashing	☐ Per FM Global Loss Prevention Data Sheet 1-49
☐ Other:	Comments:

DRAINAGE:

For new construction: Has roof drainage been designed by a Qualified Engineer per FM Global Loss Prevention Data Sheet 1-54 and the local building code? ☐ Yes ☐ No (Attach details)
For re-roofing and recovering: will the roof drainage be changed from the original design (for example: drain inserts, drains covered or removed, new expansion joints, blocked or reduced scupper size)? ☐ Yes ☐ No
If yes, were the changes reviewed by a Qualified Engineer? ☐ Yes ☒ No (Attach details)
Is secondary (emergency) roof drainage provided per FM Global Data Sheet 1-54? ☐ Yes ☐ No (Attach details)

Signature of Property Owner: _____

Title: _____ Date: _____

Signature of Installing Contractor:  _____

Title: PROJECT MANAGER Date: 9/13/16

APPLICATION FOR ACCEPTANCE OF ROOFING SYSTEM



FM Global OFFICE REVIEW

(Please leave blank for FM Global Office Review)

WIND:

Design Wind Speed: _____ (mph)	Ground Terrain: ☐ B ☐ C ☐ D
Uplift Pressure in field: _____ (psf)	Uplift Rating Required:
Adequate Uplift Rating Provided:	Adequate? ☐ Yes ☐ No

FIRE:

Internal Assembly Rating: ☐ Class 1 ☐ Class 2 ☐ Non-Combustible	
External Fire Rating: ☐ Class A ☐ Class B ☐ Class C ☐ None	
Concealed Spaces? ☐ Yes ☐ No	Sprinklers below Roof? ☐ Yes ☐ No
Adequate? ☐ Yes ☐ No	

HAIL:

Hail Rating Needed? ☐ SH ☐ MH ☐ None	Hail Rating Provided? ☐ SH ☐ MH ☐ None
Adequate? ☐ Yes ☐ No	

COLLAPSE:

If standing seam, has collapse been reviewed? ☐ Yes ☐ No
--

COMMENTS:

Reviewed By: _____

Date: _____

FM Global Field Review:

(Leave blank for on-site review by FM Global Loss prevention Consultant):

System installed per reviewed/accepted plans? ☐ Yes ☐ No

If no, explain:

Installation witnessed by FM Global? ☐ Yes ☐ No

Uplift test needed? ☐ Yes ☐ No

(Uplift testing is REQUIRED for applicable new and recover roofs in hurricane, typhoon or tropical cyclone prone regions (see DS 1-29 and 1-52 for more information))

Uplift testing satisfactorily completed ☐ Yes ☐ No ☐ DNA

If yes, note pressures held for the: Field _____ Perimeter _____ Corners _____

If no, explain and provide required and obtained uplift pressures and other details and attach to this form.

Reviewed By: _____

Date: _____



ROOFING SYSTEM CONTRACTOR PACKAGE

CONTACT INFORMATION

Roofing Contractor: Aaron Hammerstone, Kirberg Roofing **Email:** aaron.hammerstone@kirberg.com
Telephone: 3143334710 **Fax:** 3145342626
Address: 1400 S. Third Street
 St. Louis, Missouri, 63104
 United States of America

Roofing Designer/Observer: **Email:**
Telephone: **Fax:**
Address:

Client/Property Owner: Jason Szachnieski, Paric Corporation **Email:** jrszachnieski@paric.com
Telephone: 6365619608 **Fax:** 6365619500
Address: 77 Westport Plaza
 St. Louis, Missouri, 63146
 United States of America

OVERVIEW OF WORK

Building Name/Number: Interdisciplinary Science Building **Area of Roof:** Field
Roof Area: Metal Deck Roof Area **Index Number (Optional):**
Created In RoofNav: Sep 13, 2016 **Assembly #:** 392147-0-0
Type of Work: New Roof **Min 3ft (1 m) Continuous Parapet:** N

ROOF AREA CLASSIFICATIONS

Roof Area Properties	Site Properties	Fire / Hail	Wind Uplift Ratings
Dimensions: 120 x 220 ft (36.58 x 67.06 m)	Surface: B	Internal Fire: 1	Field: 60 psf
Height: 40 ft (12.19 m)	Roughness:	Exterior Fire: A	Perimeter: 60 psf 90 psf
Slope: 2.0000 in 12 (9.5°)	Wind Speed: 90 mph	Hail: SH	Corner: 90 psf 135 psf
	Wind Borne Debris Risk:		

per spec. section 2.2, C.

RATINGS FOR FM APPROVED ASSEMBLY#: 392147-0-0

Internal/Exterior Fire: 1/A **Max Slope:** 1.0000 in 12 (4.8°) **Hail:** SH ***Wind Uplift Rating:** 90 psf

For Use With Non-Combustible Walls:

No

* FM Approved roofs must also have corner and perimeter enhancements and FM Approved perimeter flashing. For details, see FM Global Property Loss Prevention Data Sheets 1-29 and 1-49. For Standing/Lap Seam roofs, see Property Loss Prevention Data Sheet 1-31.



ROOFING SYSTEM CONTRACTOR PACKAGE

ASSEMBLY DETAIL COMMENTS

Thermal Barrier is to be fastened 8 fasteners and plates per board; Perimeter Fastening: 16 fasteners and plates per board; Corner Fastening: 32 fasteners and plates per board (4'x8' boards). **Fasten insulation per specification**

~~Insulation and~~ cover board are to be foam adhered as follows: Field bead spacing: 12" o.c.; Perimeter bead spacing: 6" o.c.; Corner bead spacing: 4" o.c. (4'x4' maximum board size) using JM Two-Part Urethane Insulation Adhesive (2UIA) 3/4" bead.

full adhere cover board

Perimeter width is 12'.

SIGNATURES

Signature of Installing Contractor: _____

Title: PROJECT MANAGER

Date: 9/13/16

Signature of Designer/Observer: _____

Title: _____

Date: _____

Signature of Client/Property Owner: _____

Title: _____

Date: _____

ROOFING SYSTEM CONTRACTOR PACKAGE

1. Cover (Single-ply)

Comments: none

Cover (Single-ply)

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: JM EPDM NR
Max Width: 0.0000 in
Material: EPDM (ethylene propylene diene monomer)
Min Thickness: ~~0.0450 in~~ 60 mil parapets and 90 mil field
Backing: (none)
Max Thickness: 0.0900 in
Reinforcement: (none)
Comments: none

Securement (Sheet Lap)

Comments: Laps primed and sealed per manufacturer's specifications.

Seam Tape System

System: SSST26359

Company

TradeName

Johns Manville Corp, Roofing Systems Group JM Single Ply Membrane Primer (Low VOC)

Johns Manville Corp, Roofing Systems Group JM EPDM Seam Tape Plus

System Comments none

Comments: none



ROOFING SYSTEM CONTRACTOR PACKAGE

Member of the FM Global Group

2. Securement (Cover) from 1. Cover (Single-ply) to 3. Cover Board

Comments: none

Adhesive (Full Application)

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: JM EPDM Membrane Adhesive (Low VOC)
Material: solvent-based
Substrate Primer Rate Wet: 0.0000 gal/square
Type: liquid/semi-solid
Over Substrate Rate Wet: 0.5550 gal/square
Underside Rate Wet: 0.5550 gal/square
Substrate Primer Rate Dry: 0.0000 lb/square
Over Substrate Rate Dry: 0.0000 lb/square
Underside Rate Dry: 0.0000 lb/square
Comments: The adhesive is ~~roller or~~ spray applied

3. Cover Board

Comments: none

Cover Board

Company: United States Gypsum Company
Trade Name: SECUROCK Gypsum-Fiber Roof Board
Material: gypsum
Min Board Size: 48.00 x 48.00 in
Board Profile: flat
Min Thickness: ~~0.2500~~ in .5
Max Thickness: 0.6250 in
Min Density: 0.0000 lb/ft³
Comments: none

ROOFING SYSTEM CONTRACTOR PACKAGE

4. Securement (Board Stock) from 3. Cover Board to 5. Insulation (Board Stock)

Comments: none

Adhesive (Ribbons)

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: JM Two Part Urethane Insulation Adhesive
Material: polyurethane
Row Spacing: 12.0000 in
Type: foam **perimeter and corners per specifications**
Ribbon Width: 0.7500 in
Tape Width: 0.0000 in
Application Method: Linear
Comments: Adhesive applied in continuous 0.75 to 1 in. (19 to 25 mm) wide ribbons spaced 12 in. (305 mm) o.c.)

5. Insulation (Board Stock)

Comments: none

Insulation (Board Stock)

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: ENRGY 3
Material: polyisocyanurate/polyurethane
Min Board Size: 48.00 x 48.00 in
Board Profile: flat
Min Thickness: 1.5000 in
Max Thickness: 36.0000 in
Min Density: 0.0000 lb/ft3 **insulation joints must be staggered**
Comments: Maximum single layer of insulation thickness is ~~4 in.~~ **2 3/4" in**. Additional layers can be adhered to a maximum of 36 in.

Self-Securement

Comments: none

Adhesive (Ribbons)

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: JM Two Part Urethane Insulation Adhesive
Material: polyurethane
Row Spacing: 12.0000 in
Type: foam
Ribbon Width: 0.7500 in
Tape Width: 0.0000 in **Mechanically fasten insulation with thermal barrier**
Application Method: Linear
Comments: Adhesive applied in continuous 0.75 to 1 in. (19 to 25 mm) wide ribbons spaced 12 in. (305 mm) o.c.)

6. Securement (Board Stock) from 5. Insulation (Board Stock) to 7. Thermal Barrier

Comments: none

Adhesive (Ribbons)

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: JM Two Part Urethane Insulation Adhesive
Material: polyurethane
Row Spacing: 12.0000 in
Type: foam
Ribbon Width: 0.7500 in
Tape Width: 0.0000 in
Application Method: Linear
Comments: Adhesive applied in continuous 0.75 to 1 in. (19 to 25 mm) wide ribbons spaced 12 in. (305 mm) o.c.)

7. Thermal Barrier

Comments: none

Thermal Barrier

Company: United States Gypsum Company
Trade Name: SECUROCK Gypsum-Fiber Roof Board
Material: gypsum
Min Board Size: 48.00 x 48.00 in
Board Profile: flat
Min Thickness: 0.6250 in
Max Thickness: 0.6250 in
Min Density: 0.0000 lb/ft³
Comments: none



ROOFING SYSTEM CONTRACTOR PACKAGE

Member of the FM Global Group

8. Securement (Board Stock) from 7. Thermal Barrier to 9. (Deck) Steel

Comments: none

Fastening System (Stress Plate)

System: SSSP14973

Company

OMG

OMG

TradeName

OMG #12 Standard

OMG 3 in. Galvalume Steel Plate

System Comments

none

Row Spacing:

0.0000 in

On Center:

0.0000 in

Fasteners per Plate/Clip:

1

Field Rows:

No

Field Row on Center:

0.0000 in

Number of Field Rows:

0

Application Method:

n/a

Contributory Area:

4.0000 ft²

Embedment:

0.0000 in

Comments:

none

install with insulation

9. (Deck) Steel

Comments: none

Deck (Steel)

Company: See Separate Steel Deck Manufacturer Listing

Trade Name: steel deck, 22 to 16 ga., (<=90 psf)

Acoustical: No

Design Thickness: 0.0295 in

Rib Type: (see approved steel deck listing)

Max Span: 72.0000 in

Min Depth: 1.5000 in

Min Grade: 33.0000 ksi

Max Depth: 4.5000 in

Min Thickness: 0.0281 in

Min Width: 24.0000 in

Max Width: 36.0000 in

Comments: none



Member of the FM Global Group

ROOFING SYSTEM CONTRACTOR PACKAGE

10. Structure

Structure Type:	steel
Max Spacing:	0.0000 in
Min Thickness:	0.0000 in
Min Strength:	0.0000 ksi
Comments:	none

Fastener Placement

Now that the configuration is complete for the field of the roof, you must select the required fastener placement from the Fastener Placement Figures 3–6 in FM Global Property Loss Prevention Data Sheet 1-29.

Corner/Perimeter Enhancements

Now that you have selected a fastener placement, you must select enhancements for the corners and perimeters. Refer to FM Global Property Loss Prevention Data Sheet 1-29.

If you have sufficient detail about the roof assembly, you can select enhancements that have been approved for roofs with your specifications from Table 1A: Recommended Rating of Field, Perimeter and Corner Areas (Zones 1, 2 and 3) for Enclosed Buildings.

Otherwise, you can select the appropriate prescriptive enhancements from section 2.2.1.5.1.

Also, the deck must be secured per the requirements in Data Sheet 1-29. For a steel deck, see section 2.2.1.5.6. For installation instructions, see section 2.2.13.2.

Perimeter Flashing

Now that you have selected enhancements for the corners and perimeters, you must select an FM Approved perimeter flashing that meets a Class X rating, where X is the Wind Uplift rating for your roof. For more information, see FM Global Property Loss Prevention Data Sheet 1-49.

You can find FM Approved perimeter flashings in RoofNav. To do so, click Products. On the Product Search page, select Other for the Category and Perimeter Flashing for the Subcategory. Specify any other criteria as needed and then click Search.

Assembly Properties

Date printed: Sep 13, 2016

Assembly #: 392147-0-0	Slope: 1.0000
Roof System: Single-Ply System	Wind Uplift*: 90
Application: New Roof	Internal Fire: 1
Cover Securement: Adhered	Exterior Fire: A
Deck Type: Steel	Hail: SH
For Use With Non-Combustible Walls: No	

* FM Approved roofs must also have corner and perimeter enhancements and FM Approved perimeter flashing. For details, see FM Global Property Loss Prevention Data Sheets 1-29 and 1-49. For Standing/Lap Seam roofs, see Property Loss Prevention Data Sheet 1 - 31.

Scenario Name: Metal Deck Areas

Project: Webster University - Interdisciplinary Science Building

Roof Area: Metal Deck Roof Area

Area of Roof: Field

Comments: Thermal Barrier is to be fastened 8 fasteners and plates per board; Perimeter Fastening: 16 fasteners and plates per board; Corner Fastening: 32 fasteners and plates per board (4'x8' boards). Insulation and cover board are to be foam adhered as follows: Field bead spacing: 12" o.c.; Perimeter bead spacing: 6" o.c.; Corner bead spacing: 4" o.c. (4'x4' maximum board size) using JM Two-Part Urethane Insulation Adhesive (2UIA) 3/4" bead. Perimeter width is 12'.

Scenario Details

1. Cover (Single-ply)	
Johns Manville Corp, Roofing Systems Group	JM EPDM NR
Securement (Sheet Lap)	
Comments: Laps primed and sealed per manufacturer's specifications.	
SSST26359	
Johns Manville Corp, Roofing Systems Group	JM EPDM Seam Tape Plus
Johns Manville Corp, Roofing Systems Group	JM Single Ply Membrane Primer (Low VOC)
2. Securement (Cover) from 1. Cover (Single-ply) to 3. Cover Board	
Johns Manville Corp, Roofing Systems Group	JM EPDM Membrane Adhesive (Low VOC)
3. Cover Board	
United States Gypsum Company	SECUROCK Gypsum-Fiber Roof Board
4. Securement (Board Stock) from 3. Cover Board to 5. Insulation (Board Stock)	
Johns Manville Corp, Roofing Systems Group	JM Two Part Urethane Insulation Adhesive
5. Insulation (Board Stock)	
Johns Manville Corp, Roofing Systems Group	ENRGY 3
Self-Securement	
Johns Manville Corp, Roofing Systems Group	JM Two Part Urethane Insulation Adhesive
6. Securement (Board Stock) from 5. Insulation (Board Stock) to 7. Thermal Barrier	
Johns Manville Corp, Roofing Systems Group	JM Two Part Urethane Mechanically Fasten
7. Thermal Barrier	
United States Gypsum Company	SECUROCK Gypsum-Fiber Roof Board
8. Securement (Board Stock) from 7. Thermal Barrier to 9. (Deck) Steel	
SSSP14973	
OMG	OMG 3 in. Galvalume Steel Plate
OMG	OMG #12 Standard
9. (Deck) Steel	
See Separate Steel Deck Manufacturer Listing	steel deck, 22 to 16 ga., (<=90 psf)

10. Structure

APPLICATION FOR ACCEPTANCE OF ROOFING SYSTEM

CONTACT INFORMATION:

INDEX NUMBER:



ROOFING CONTRACTOR (NAME & ADDRESS) Kirberg Company 1400 South Third Street St. Louis, MO 63104	TELEPHONE NO.: 314-333-4710 E-MAIL ADDRESS: aaron.hammerstone@kirberg.com	FAX: 314-534-2626 CONTACT: Aaron Hammerstone
CLIENT (NAME & ADDRESS) Webster University 470 East Lockwood Avenue St. Louis, MO 63119	TELEPHONE NO.: 800.981.9801 E-MAIL ADDRESS:	FAX: CONTACT:

OVERVIEW OF WORK: (Submit 1 form per roof area)

Building Name & Number: Webster University - Interdisciplinary Science Building			
Building Dimensions: Length: 30'	ft/m;	Width: 63'	ft/m.;
Roof Slope: 1/4"		Height 40'	
Parapet Height ,max (in./m): 6'		Parapet Height ,min (in./m): 12"	
Type of Work: ☒ New Construction ☐ Recover (New roof over existing Roofing System) ☐ Reroof (New cover/remove existing roofing system to deck) ☐ Other			
FM Approved RoofNav Assembly Numbers: 374588-0-0			

ROOF SURFACING:

☒ None			
☐ Coating		(Trade Name/Application Rate)	
☐ Granules		(Application Rate)	
☐ Gravel/Slag		(Application Rate)	
☐ Ballast:	☐ Stone Size	☐ Pavers	(Beveled or square edge); ☐ Other:
Ballast Weight (psf):	Field:	Perimeter:	Corners:

ROOF COVER/MEMBRANE:

(Please provide ALL applicable details including trade name, type, number of plies, thickness, reinforced, adhesive)

☐ Panel:	☐ Through Fastened Metal
	☐ Standing Seam metal
	☐ Fiber Reinforced Plastic (FRP)
	☐ Other:
☐ Built Up Roofing (BUR)	
☐ Modified Bitumen	
☒ Single Ply:	☒ Adhered 90 MIL EPDM ☐ Fastened ☐ Ballasted
☐ Spray Applied	
☐ Other:	

BASE SHEET:

(Please include Trade Name, Type, and Width)

☒ None	
Trade Name:	Width: ☐ 36 In. ☐ 1 meter (39 In.)
☐ Fastened	☐ Adhered
☐ Secured per RoofNav	☐ Per FM Global Loss Prevention Data Sheet 1-29
Comments:	
☐ Air Retarder	
☒ Vapor Retarder JM SA Vapor Barrier with SA Primer On Concrete Deck	

INSULATION

Layer	Trade Name	Thickness (In.)	Fastened	Adhered	Tapered
1. Top	Cover Board - Securock - 4'x4' FA 12"/6"/4" OC Ribbons	5/8"	☐	☒	☐
2. Next	POLYISO - 4'x4' FA 12"/6"/4" OC Ribbons	2 1/2"	☐	☒	☐
3. Next	POLYISO - 4'x4' FA 12"/6"/4" OC Ribbons	2 1/2"	☐	☒	☐
4. Next			☐	☐	☐

☐ Glass Fiber/Mineral Wool/Batt	☐ Facer Type/Vapor Barrier
☐ Thermal Barrier	
☐ Other:	
☒ None	

APPLICATION FOR ACCEPTANCE OF ROOFING SYSTEM



DECK:

(Please include manufacturer, type, yield strength, thickness/gage, etc.)

☐ Steel:	
☐ LWIC (Form Deck):	☐ Cementitious Wood Fiber:
☒ Concrete: ☐ Pre-cast panels or ☒ Cast in Place	
☐ Wood	
☐ Fiber Reinforced Cement	☐ Fiber Reinforced Plastic
☐ Gypsum: ☐ Plank	☐ Poured
☐ Other:	
Comments:	

ROOF STRUCTURE (Include Size, Gage, Etc.):

☐ Purlins ☐ "C" OR ☐ "Z"		
☐ Joists ☐ Wood OR ☐ Steel		
☒ Beams ☐ Wood OR ☒ Steel		
☐ Other:		
Spacing: Field:	Perimeter:	Corners:
Comments:		

FASTENERS USED IN ROOF ASSEMBLY:

Roof Cover Fasteners: Trade Name:		Length:	Diameter:
Stress Plate/Batten:			
Spacing: Field: X	Perimeter: X	Corners: X	
Insulation Fasteners: Trade Name:		Type:	
Size:		Stress Plate:	
Spacing: Field:	Perimeter:	Corners:	
Deck Or Roof Panels Fasteners:		Type:	
Trade Name:		Size Washer:	
Length:		Washer:	
If Weld: Size:	Weld:	Washer:	
Deck Side Lap Fasteners: Field: X	Perimeter: X	Corners: X	
Spacing: Field: X	Perimeter: X	Corners: X	
Base Sheet Fasteners		Type:	
Trade Name:		Length:	
Head Diameter:		Length:	
Spacing: (Attached Sketches as necessary)		Perimeter:	
Spacing Along Laps: Field:	Perimeter:	Corners:	
No. Intermediate Rows: Field:	Perimeter:	Corners:	
Spacing Along Intermediate Rows: Field:	Perimeter:	Corners:	

PERIMETER FLASHING:

(Attach a detailed sketch of metal fascia, gravel stop, nailer, coping, etc.)

☒ FM Approved Flashing	☐ Per FM Global Loss Prevention Data Sheet 1-49
☐ Other:	Comments:

DRAINAGE:

For new construction: Has roof drainage been designed by a Qualified Engineer per FM Global Loss Prevention Data Sheet 1-54 and the local building code? ☐ Yes ☐ No (Attach details)
For re-roofing and recovering: will the roof drainage be changed from the original design (for example: drain inserts, drains covered or removed, new expansion joints, blocked or reduced scupper size? ☐ Yes ☐ No
If yes, were the changes reviewed by a Qualified Engineer? ☐ Yes ☒ No (Attach details)
Is secondary (emergency) roof drainage provided per FM Global Data Sheet 1-54? ☐ Yes ☐ No (Attach details)

Signature of Property Owner: _____

Title: _____ Date: _____

Signature of Installing Contractor:  _____

Title: PROJECT MANAGER Date: 9/13/16

APPLICATION FOR ACCEPTANCE OF ROOFING SYSTEM



FM Global OFFICE REVIEW

(Please leave blank for FM Global Office Review)

WIND:

Design Wind Speed: _____ (mph)	Ground Terrain: ☐ B ☐ C ☐ D
Uplift Pressure in field: _____ (psf)	Uplift Rating Required:
Adequate Uplift Rating Provided:	Adequate? ☐ Yes ☐ No

FIRE:

Internal Assembly Rating: ☐ Class 1 ☐ Class 2 ☐ Non-Combustible	
External Fire Rating: ☐ Class A ☐ Class B ☐ Class C ☐ None	
Concealed Spaces? ☐ Yes ☐ No	Sprinklers below Roof? ☐ Yes ☐ No
Adequate? ☐ Yes ☐ No	

HAIL:

Hail Rating Needed? ☐ SH ☐ MH ☐ None	Hail Rating Provided? ☐ SH ☐ MH ☐ None
Adequate? ☐ Yes ☐ No	

COLLAPSE:

If standing seam, has collapse been reviewed? ☐ Yes ☐ No
--

COMMENTS:

Reviewed By: _____

Date: _____

FM Global Field Review:

(Leave blank for on-site review by FM Global Loss prevention Consultant):

System installed per reviewed/accepted plans? ☐ Yes ☐ No

If no, explain:

Installation witnessed by FM Global? ☐ Yes ☐ No

Uplift test needed? ☐ Yes ☐ No

(Uplift testing is REQUIRED for applicable new and recover roofs in hurricane, typhoon or tropical cyclone prone regions (see DS 1-29 and 1-52 for more information))

Uplift testing satisfactorily completed ☐ Yes ☐ No ☐ DNA

If yes, note pressures held for the: Field _____ Perimeter _____ Corners _____

If no, explain and provide required and obtained uplift pressures and other details and attach to this form.

Reviewed By: _____

Date: _____



ROOFING SYSTEM CONTRACTOR PACKAGE

CONTACT INFORMATION

Roofing Contractor: Aaron Hammerstone, Kirberg Roofing **Email:** aaron.hammerstone@kirberg.com
Telephone: 3143334710 **Fax:** 3145342626
Address: 1400 S. Third Street
St. Louis, Missouri, 63104
United States of America

Roofing Designer/Observer: **Email:**
Telephone: **Fax:**
Address:

Client/Property Owner: Jason Szachnieski, Paric Corporation **Email:** jrszachnieski@paric.com
Telephone: 6365619608 **Fax:** 6365619500
Address: 77 Westport Plaza
St. Louis, Missouri, 63146
United States of America

OVERVIEW OF WORK

Building Name/Number: Interdisciplinary Science Building **Area of Roof:** Field
Roof Area: Concrete Deck Area **Index Number (Optional):**
Created In RoofNav: Sep 13, 2016 **Assembly #:** 374588-0-0
Type of Work: New Roof **Min 3ft (1 m) Continuous Parapet:** N

ROOF AREA CLASSIFICATIONS

Roof Area Properties	Site Properties	Fire / Hail	Wind Uplift Ratings
Dimensions: 30 x 63 ft (9.14 x 19.20 m)	Surface Roughness: B	Internal Fire: NC	Field: 60 psf
Height: 40 ft (12.19 m)	Wind Speed: 90 mph	Exterior Fire: A	Perimeter: 75 psf 90 psf
Slope: 0.2500 in 12 (1.2°)	Wind Borne Debris Risk: No	Hail: SH	Corner: 105 psf 135 psf

per spec. section 2.2, C.

RATINGS FOR FM APPROVED ASSEMBLY#: 374588-0-0

Internal/Exterior Fire: NC/A **Max Slope:** 1.0000 in 12 (4.8°) **Hail:** SH ***Wind Uplift Rating:** 270 psf

For Use With Non-Combustible Walls:

No

* FM Approved roofs must also have corner and perimeter enhancements and FM Approved perimeter flashing. For details, see FM Global Property Loss Prevention Data Sheets 1-29 and 1-49. For Standing/Lap Seam roofs, see Property Loss Prevention Data Sheet 1-31.



ROOFING SYSTEM CONTRACTOR PACKAGE

ASSEMBLY DETAIL COMMENTS

Field bead spacing: 12" o.c.; Perimeter bead spacing: 6" o.c.; Corner bead spacing: 4" o.c. (4'x4' maximum board size) using JM Two-Part Urethane Insulation Adhesive (2UIA) 3/4" bead.

Perimeter width is to be 4'.

SIGNATURES

Signature of Installing Contractor: _____

Title: PROJECT MANAGER

Date: 9/13/16

Signature of Designer/Observer: _____

Title: _____

Date: _____

Signature of Client/Property Owner: _____

Title: _____

Date: _____

ROOFING SYSTEM CONTRACTOR PACKAGE

1. Cover (Single-ply)

Comments: none

Cover (Single-ply)

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: JM EPDM NR
Max Width: 0.0000 in
Material: EPDM (ethylene propylene diene monomer)
Min Thickness: ~~0.0450 in~~
Backing: (none) 60 mill parapets only
Max Thickness: 0.0900 in
Reinforcement: (none)
Comments: none

Securement (Sheet Lap)

Comments: none

Seam Tape System

System: SSST26359

Company	TradeName
Johns Manville Corp, Roofing Systems Group	JM Single Ply Membrane Primer (Low VOC)
Johns Manville Corp, Roofing Systems Group	JM EPDM Seam Tape Plus

System Comments none

Comments: none



ROOFING SYSTEM CONTRACTOR PACKAGE

Member of the FM Global Group

2. Securement (Cover) from 1. Cover (Single-ply) to 3. Cover Board

Comments: none

Adhesive (Full Application)

Company:	Johns Manville Corp, Roofing Systems Group
Trade Name:	JM EPDM Membrane Adhesive (Low VOC)
Material:	solvent-based
Substrate Primer Rate Wet:	0.0000 gal/square
Type:	liquid/semi-solid
Over Substrate Rate Wet:	0.5500 gal/square
Underside Rate Wet:	0.5500 gal/square
Substrate Primer Rate Dry:	0.0000 lb/square
Over Substrate Rate Dry:	0.0000 lb/square
Underside Rate Dry:	0.0000 lb/square
Comments:	1.1 gal/sq (0.45 L/m ²)

3. Cover Board

Comments: none

Cover Board

Company:	United States Gypsum Company
Trade Name:	SECUROCK Gypsum-Fiber Roof Board
Material:	gypsum
Min Board Size:	48.00 x 48.00 in
Board Profile:	flat
Min Thickness:	0.2500 in .5"
Max Thickness:	0.6250 in
Min Density:	0.0000 lb/ft ³
Comments:	none



ROOFING SYSTEM CONTRACTOR PACKAGE

Member of the FM Global Group

4. Securement (Board Stock) from 3. Cover Board to 5. Insulation (Board Stock)

Comments: none

Adhesive (Ribbons)

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: JM Two Part Urethane Insulation Adhesive
Material: polyurethane
Row Spacing: 12.0000 in
Type: foam
Ribbon Width: 0.7500 in
Tape Width: 0.0000 in
Application Method: Linear
Comments: none

5. Insulation (Board Stock)

Comments: none

Insulation (Board Stock)

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: ENRGY 3
Material: polyisocyanurate/polyurethane
Min Board Size: 48.00 x 48.00 in
Board Profile: flat
Min Thickness: 1.5000 in
Max Thickness: 36.0000 in
Min Density: 0.0000 lb/ft³
Comments: Insulation placed in ~~single~~ or multiple layers

Self-Securement

Comments: none

Adhesive (Ribbons)

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: JM Two Part Urethane Insulation Adhesive
Material: polyurethane
Row Spacing: 12.0000 in
Type: foam
Ribbon Width: 0.7500 in
Tape Width: 0.0000 in
Application Method: Linear
Comments: none

ROOFING SYSTEM CONTRACTOR PACKAGE

6. Securement (Board Stock) from 5. Insulation (Board Stock) to 7. Vapor Retarder

Comments: none

Adhesive (Ribbons)

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: JM Two Part Urethane Insulation Adhesive
Material: polyurethane
Row Spacing: 12.0000 in
Type: foam
Ribbon Width: 0.5000 in
Tape Width: 0.0000 in
Application Method: Linear
Comments: none

Provide Perimeter and
Corner per specifications

7. Vapor Retarder

Comments: none

Vapor Retarder

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: JM Vapor Barrier SA
Material: rubberized sheet w/ release paper
Number of Plies: 1
Comments: none

8. Securement from 7. Vapor Retarder to 10. (Deck) Structural Concrete

Comments: none

Adhesive (Full Application)

Company: Generic
Trade Name: self adhered
Material: self adhered
Substrate Primer Rate Wet: 0.0000 gal/square
Type: self adhered
Over Substrate Rate Wet: 0.0000 gal/square
Underside Rate Wet: 0.0000 gal/square
Substrate Primer Rate Dry: 0.0000 lb/square
Over Substrate Rate Dry: 0.0000 lb/square
Underside Rate Dry: 0.0000 lb/square
Comments: none

9. Substrate Primer

Comments: none

Substrate Primer

Company: Johns Manville Corp, Roofing Systems Group
Trade Name: JM SA Primer Low VOC
Application Rate Wet: 0.5000 gal/square
Application Rate Dry: 0.0000 lb/square
Comments: applied at a rate of 0.5 gal/sq (0.2 L/m²)

10. (Deck) Structural Concrete

Note: Structural Concrete deck must have a minimum compressive strength of 2500 psi (17.24 Mpa) and a minimum thickness of 2 inches (50 mm).

Comments: none

11. Structure

Structure Type: concrete
Max Spacing: 0.0000 in
Min Thickness: 0.0000 in
Min Strength: 0.0000 ksi
Comments: none



ROOFING SYSTEM CONTRACTOR PACKAGE

Fastener Placement

Now that the configuration is complete for the field of the roof, you must select the required fastener placement from the Fastener Placement Figures 3–6 in FM Global Property Loss Prevention Data Sheet 1-29.

Corner/Perimeter Enhancements

Now that you have selected a fastener placement, you must select enhancements for the corners and perimeters. Refer to FM Global Property Loss Prevention Data Sheet 1-29.

If you have sufficient detail about the roof assembly, you can select enhancements that have been approved for roofs with your specifications from Table 1A: Recommended Rating of Field, Perimeter and Corner Areas (Zones 1, 2 and 3) for Enclosed Buildings.

Otherwise, you can select the appropriate prescriptive enhancements from section 2.2.1.5.1.

Also, the deck must be secured per the requirements in Data Sheet 1-29. For a steel deck, see section 2.2.1.5.6. For installation instructions, see section 2.2.13.2.

Perimeter Flashing

Now that you have selected enhancements for the corners and perimeters, you must select an FM Approved perimeter flashing that meets a Class X rating, where X is the Wind Uplift rating for your roof. For more information, see FM Global Property Loss Prevention Data Sheet 1-49.

You can find FM Approved perimeter flashings in RoofNav. To do so, click Products. On the Product Search page, select Other for the Category and Perimeter Flashing for the Subcategory. Specify any other criteria as needed and then click Search.

Assembly Properties

Date printed: Sep 13, 2016

Assembly #: 374588-0-0	Slope: 1.0000
Roof System: Single-Ply System	Wind Uplift*: 270
Application: New Roof	Internal Fire: NC
Cover Securement: Adhered	Exterior Fire: A
Deck Type: Structural Concrete	Hail: SH
For Use With Non-Combustible Walls: No	

* FM Approved roofs must also have corner and perimeter enhancements and FM Approved perimeter flashing. For details, see FM Global Property Loss Prevention Data Sheets 1-29 and 1-49. For Standing/Lap Seam roofs, see Property Loss Prevention Data Sheet 1 - 31.

Scenario Name: Concrete Deck Area

Project: Webster University - Interdisciplinary Science Building

Roof Area: Concrete Deck Area

Area of Roof: Field

Comments: Field bead spacing: 12" o.c.; Perimeter bead spacing: 6" o.c.; Corner bead spacing: 4" o.c. (4'x4' maximum board size) using JM Two-Part Urethane Insulation Adhesive (2UIA) 3/4" bead. Perimeter width is to be 4'.

Scenario Details

1. Cover (Single-ply)	
Johns Manville Corp, Roofing Systems Group	JM EPDM NR
Securement (Sheet Lap)	
SSST26359	
Johns Manville Corp, Roofing Systems Group	JM EPDM Seam Tape Plus
Johns Manville Corp, Roofing Systems Group	JM Single Ply Membrane Primer (Low VOC)
2. Securement (Cover) from 1. Cover (Single-ply) to 3. Cover Board	
Johns Manville Corp, Roofing Systems Group	JM EPDM Membrane Adhesive (Low VOC)
3. Cover Board	
United States Gypsum Company	SECUROCK Gypsum-Fiber Roof Board
4. Securement (Board Stock) from 3. Cover Board to 5. Insulation (Board Stock)	
Johns Manville Corp, Roofing Systems Group	JM Two Part Urethane Insulation Adhesive
5. Insulation (Board Stock)	
Johns Manville Corp, Roofing Systems Group	ENRGY 3
Self-Securement	
Johns Manville Corp, Roofing Systems Group	JM Two Part Urethane Insulation Adhesive
6. Securement (Board Stock) from 5. Insulation (Board Stock) to 7. Vapor Retarder	
Johns Manville Corp, Roofing Systems Group	JM Two Part Urethane Insulation Adhesive
7. Vapor Retarder	
Johns Manville Corp, Roofing Systems Group	JM Vapor Barrier SA
8. Securement from 7. Vapor Retarder to 10. (Deck) Structural Concrete	
Generic	self adhered
9. Substrate Primer	
Johns Manville Corp, Roofing Systems Group	JM SA Primer Low VOC
10. (Deck) Structural Concrete	
11. Structure	

SUBMITTAL IDENTIFICATION SHEET

To be completed by Contractor/CM

WEBSTER UNIVERSITY ISB	
PROJECT NAME	
8274 BIG BEND BLVD	
ADDRESS	
NUMBER	
WEBSTER UNIVERSITY	
OWNER	
CANNON DESIGN	
ARCHITECT / ENGINEER	
DEVIN D GATES	
SUBMITTED BY	
075323-001	
CONTRACTOR / CM SUBMITTAL NO.	CANNON DESIGN SUBMITTAL NO.
	075323
DRAWING / DETAIL REFERENCE	SPECIFICATION SECTION / PARAGRAPH
MANUFACTURER / SUPPLIER	ITEM / PRODUCT ID
REQUIRED DATE	PRIORITY
	CRITICAL

ITEM BEING SUBMITTED (check only one)

- | | | |
|---|--|--|
| ☐ Shop Drawings | ☐ Certification / Qualifications | ☐ Coordination Drawing |
| ☐ Samples (____ copies) | ☐ Record Documents | ☐ Calculations |
| ☐ LEED Submittal | ☐ Product Data | ☐ Schedules |
| ☐ Other _____ | ☐ O&M Manuals | |

ITEM BEING SUBMITTED FOR (check only one)

- ☐ Action ☐ Information Only ☐ Record

REMARKS OR DEVIATIONS

Email correspondence with KWA provided clarifications for requested information and warranty letter attached.

CONTRACTOR / CM CERTIFICATION (SUBMITTALS NOT CERTIFIED WILL BE RETURNED WITHOUT REVIEW)



PARIC CORPORATION
SUBMITTAL STAMP

THIS SHOP DRAWING HAS BEEN REVIEWED BY PARIC CORPORATION

Subcontractor remains responsible for dimensions, quantities, coordination with other trades and compliance with contract documents.

By:

Devin D. Gates

To be completed by Reviewer

07 5323-001 REV002
CANNON DESIGN SUBMITTAL NUMBER
10/11/16
RECEIVED DATE

- ☐ A. No Exceptions Taken
No further review of submittal is required.
- ☒ B. Make Corrections Noted
Incorporate corrections in work; resubmission is not required.
- ☐ C. Revise and Resubmit
Revise as noted, and resubmit for review.
- ☐ D. Rejected
Submittal is not in compliance with Contract Documents; provide new submittal.
- ☐ E. For Record / Information Only
Submittal was reviewed for Record / Information purposes only.
- ☐ F. Not Required for Review
Submittal is not required by Contract Documents and has not been reviewed.

Review is for conformance with the design concept of this project and for general compliance with contract documents. Contractor is responsible for quantities, dimensions and compliance with contract documents and for information that pertains to fabrication processes, construction techniques and coordination of this work with all trades which will be af This review is null and void if submittal deviates from contra and does not indicate or note deviations.

A/E COMMENTS

☐ See attached sheet(s) for additional comments

Final warranty must meet specification section 1.10. 2. requirements: wind speed coverage of that indicated on structural drawings (90 mph minimum), hail coverage for up to 2 inch diameter, and accidental puncture coverage of 16 man hours per year of warranty.
see comments below

DEVIN D GATES	10/11/16
REVIEWED BY	DATE

Kathy Williams	10/11/16
REVIEWED BY	DATE

Gates, Devin

From: Scott Klingsick <scott@kwastl.com>
Sent: Friday, October 07, 2016 7:00 AM
To: Gates, Devin
Cc: kpatel@cannondesign.com
Subject: RE: Clarifications on returned EPDM shop drawings

Follow Up Flag: Follow up
Flag Status: Flagged

Yes this will be acceptable. We need the rest of the information revised and it to be resubmitted so we can approve submittal 075323-001. Thanks

Scott Klingsick, LEED Green Associate

Project Manager
9721 Litzsinger Rd.
St. Louis, MO 63124
(p) 314.962.2560 (f) 314.962.4057
scott@kwastl.com



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From: Gates, Devin [mailto:ddgates@paric.com]
Sent: Thursday, October 06, 2016 4:59 PM
To: Scott Klingsick
Cc: kpatel@cannondesign.com
Subject: RE: Clarifications on returned EPDM shop drawings

Kelvin/Scott,

Were you able to take a look at this and does this resolve the impact resistance needs? I can resubmit formally as needed but with the back and forth I wanted to ensure we are all on the same page.

Thanks,

DEVIN GATES
SENIOR PROJECT ENGINEER

Cell: 314-348-8828
Main: 636-561-9500

- - - - -
77 Westport Plaza, Suite 250
St. Louis, MO 63146



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From: Aaron Hammerstone [<mailto:aaron.hammerstone@kirberg.com>]
Sent: Tuesday, October 04, 2016 7:10 AM
To: Gates, Devin; scott@kwastl.com
Cc: kpatel@cannondesign.com
Subject: FW: Clarifications on returned EPDM shop drawings

All,

Please see the two attachments, as well as the information in the below email in regards to the ASTM testing on JM EPDM membrane.

Thanks

Aaron Hammerstone | Project Manager

314.333.4710 Direct | aaron.hammerstone@kirberg.com

314.792.3777 Mobile

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From: Mark Tucker [<mailto:Mark@D7Reps.com>]
Sent: Monday, October 03, 2016 4:12 PM
To: Aaron Hammerstone

Cc: James Nunns; zac.stallings@jm.com; Jim Schriefer
Subject: RE: Clarifications on returned EPDM shop drawings

Aaron,

This JM EPDM 90NR data sheet shows we meet ASTM 4637 for EPDM. It's the same testing All EPDM is to meet, requiring minimum test results for numerous categories. There are three major manufacturers of EPDM: Johns Manville, Firestone, and Carlisle. NOTE: of the three, the latter two, have private label products, targeting a different market segment of contractors. The 3 major manufacturers are also, the only three members of the EPDM Roofing Association (ERA): <http://www.epdmroofs.org/about-era/members> . The goal of this organization is collectively establish current and accurate data documenting of EPDM.
<http://www.epdmroofs.org/about-era/who-we-are> .

Inside of **ASTM D 4637**, are individual tests for certain criteria. As a whole, make up ASTM D 4637.
Of which include the following:

ASTM D 5635 – Dynamic Puncture Resistance, 5J, Type 1 – Passes

ASTM D 5602 Static Puncture Resistance, 44.1 lbf, Type 1 – Passes

There are only two hail tests for the Single Ply Membranes (according to Jim D. Koontz- Crenshaw and Koontz).
Of which, the one most recognized, is FM's test, for approved Roof Nav assemblies per FM 4470.
For this project, we supplied the following two FM Nav #'s:

Assembly Properties

Assembly #:	392147-0-0	Slope:	1.0000
Roof System:	Single-Ply System	Wind Uplift*:	90
Application:	New Roof	Internal Fire:	1
Cover		Exterior Fire:	A
Securement:	Adhered		
Deck Type:	Steel	Hail:	SH
	For Use With Non-Combustible Walls:		No

AND

Assembly #:	374588-0-0	Slope:	1.0000
Roof System:	Single-Ply System	Wind Uplift*:	270
Application:	New Roof	Internal Fire:	NC
Cover		Exterior Fire:	A
Securement:	Adhered		
Deck Type:	Structural Concrete	Hail:	SH
	For Use With Non-Combustible Walls:		No

The roofing specification for this project, states in Part 1, paragraph 1.5, line 3, That the manufacturer must meet "Tested and listed by FM for class specified in "Performance Requirements" Article in Part 2 of this Section". In Part 2, **we met** Part 2, paragraph 2.2, A1. As noted, A2 criteria is for Modified Roofing. As such, A2 should be eliminated from requirements of the submittal, as **Part 2, 2.2, D.2** requires a Hail Resistance: SH. Of which, is met with both of the approved JOHNS MANVILLE Roof Nav Assembly numbers provided.

As for UL 2818, again is not a test used in the Single Ply industry. It is used primarily in the residential steep slope roofing market (shingles, tile, slate, metal roofs). The test requirement for this, is to test roof slopes at 6" in 12" or greater. This test was realized in 1996, by Major Property Insurers, the Institute of

Business and Home Safety (IBHS), and with United Laboratory. They developed ASMT 2218, to set a national standard, for roof impact resistance, for the residential steep slope market.

-
- A scope/ description, for the use of ASTM 2218, from the UL ASTM 2218 web page: <http://www.comm-2000.com/ProductDetail.aspx?UniqueKey=20884> click on "scope".
- 1 Scope

1.1 This test method provides impact resistance data for the evaluation of prepared roof covering materials. For purposes of this Standard prepared roof covering materials are considered to be small units, sheets or panels designed for installation with multiple layers of such materials installed in **overlapping rows normally on inclines exceeding 25 percent**.

We did a quick research of other manufacturers web sites, and on hand manufacturers data. Not one in the Single Ply manufacturing business, list or utilize the UL 2218 test. In fact, all manufacturers use the same testing, as it relates to the ASTM (see above for Static and Dynamic Puncturing) for that membrane. In this project instance, is EPDM (ASTM D 4637).

It appears to us, that there seems to be a mix of an EPDM specification, and a Modified/ Residential specification.

If this information does not satisfy the needs of the BID Documents, please let me know.

Mark

From: Aaron Hammerstone [<mailto:aaron.hammerstone@kirberg.com>]
Sent: Friday, September 30, 2016 2:25 PM
To: Mark Tucker <Mark@D7Reps.com>
Subject: Fwd: Clarifications on returned EPDM shop drawings

Thanks,

Aaron Hammerstone

Project Manager
Kirberg Company
(314)792-3777

Begin forwarded message:

From: Scott Klingsick <scott@kwastl.com>
Date: September 30, 2016 at 2:24:29 PM CDT
To: Aaron Hammerstone <aaron.hammerstone@kirberg.com>, "Gates, Devin" <ddgates@paric.com>
Cc: "Szachnieski, Jason" <JRSzachnieski@paric.com>, Kathy Williams <kathy@kwastl.com>
Subject: RE: Clarifications on returned EPDM shop drawings

Aaron,

Sorry for the confusion. The wrong ASTM number listed in the specification. It should have been ASTM D 4637-08 "Specification for EPDM Sheet Used in Single-ply Roof Membrane" and/or UL 2218 Standard for Impact Resistance of Prepared Roof Covering Materials. We need testing and product data to show compliance with the requirements impact resistance for the hail requirements on this project.

Scott Klingsick, LEED Green Associate

Project Manager
9721 Litzsinger Rd.
St. Louis, MO 63124
(p) 314.962.2560 (f) 314.962.4057
scott@kwastl.com



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From: Aaron Hammerstone [<mailto:aaron.hammerstone@kirberg.com>]

Sent: Friday, September 30, 2016 12:13 PM

To: Gates, Devin; Scott Klingsick

Cc: Szachnieski, Jason

Subject: Re: Clarifications on returned EPDM shop drawings

ASTM D 3746 is for bituminous roofing. ASTM D 4272 is for plastic films.

This is an EPDM roof system. I think I'm missing something here.

Thanks,

Aaron Hammerstone

Project Manager
Kirberg Company
(314)792-3777

On Sep 30, 2016, at 11:26 AM, Gates, Devin <ddgates@paric.com> wrote:

Aaron,

See convo below regarding the shop drawing markups.

DEVIN GATES
SENIOR PROJECT ENGINEER

Direct: [636-561-9592](tel:636-561-9592)

Main: [636-561-9500](tel:636-561-9500)

Cell: [314-348-8828](tel:314-348-8828)

[77 Westport Plaza, Suite 250](#)
[St. Louis, MO 63146](#)

Sent from my iPhone

Begin forwarded message:

From: "Patel, Kelvin" <kpatel@CANNONDESIGN.COM>
Date: September 30, 2016 at 11:21:32 AM CDT
To: "Gates, Devin" <ddgates@paric.com>, "Szachnieski, Jason" <JRSzachnieski@paric.com>
Cc: "Grossman, Lynn" <lgrossman@CANNONDESIGN.COM>
Subject: FW: Clarifications on returned EPDM shop drawings

Devin,

See clarification from KWA below.

Thanks,

Kelvin Patel, CDT, LEED AP BD+C
Associate



T 314.425.8756

From: Scott Klingsick [<mailto:scott@kwastl.com>]
Sent: Friday, September 30, 2016 11:13 AM
To: Patel, Kelvin <kpatel@CANNONDESIGN.COM>; Kathy Williams <kathy@kwastl.com>
Cc: Grossman, Lynn <lgrossman@CANNONDESIGN.COM>
Subject: RE: Clarifications on returned EPDM shop drawings

Kelvin,

It is fine to show the building taller than 60' information.
We do need submittal for the 2.2 A.2. Impact
Resistance: Test reports and product data showing
compliance with ASTM D 3746 or ASTM D 4272. Thanks

Scott Klingsick, LEED Green Associate
Project Manager
9721 Litzsinger Rd.
St. Louis, MO 63124
(p) 314.962.2560 (f) 314.962.4057
scott@kwastl.com



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From: Patel, Kelvin [<mailto:kpatel@CANNONDESIGN.COM>]
Sent: Thursday, September 29, 2016 1:14 PM
To: Scott Klingsick; Kathy Williams
Cc: Grossman, Lynn
Subject: FW: Clarifications on returned EPDM shop drawings

Kathy / Scott,

Please review Paric's questions and provide comments.

Thanks,

Kelvin Patel, CDT, LEED AP BD+C

Associate



T 314.425.8756

From: Gates, Devin [<mailto:ddgates@paric.com>]
Sent: Thursday, September 29, 2016 1:04 PM
To: Patel, Kelvin <kpatel@CANNONDESIGN.COM>
Cc: Szachnieski, Jason <JRSzachnieski@paric.com>
Subject: Clarifications on returned EPDM shop drawings

Kelvin,

I have a couple of clarifications on two items from the attached rejected submittal.

1. On page 3 the perimeter and corner dimensions are crossed out for buildings taller than 60' however this building is higher than 60' in locations, is this note correct?
2. Can you please be more specific on what is being requested in the note "submit information for A2"? Johns Mansville did not feel like any of this section applies to the EPDM roof.

Thank you,

DEVIN GATES
SENIOR PROJECT ENGINEER

Cell: 314-348-8828
Main: 636-561-9500

77 Westport Plaza, Suite 250
St. Louis, MO 63146

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