From Charles Zachemsky <charles.zachemsky@bvsd.org>
Subject **BCSIS Roof**
To Kris Stoppenhagen <kris.stoppenhagen@bvsd.org>
Cc Frank Martinez <frank.martinez@bvsd.org>
Date March 14, 2025 11:12:43 AM MDT

Hey Kris.
I found some closeout info (attached here) in eBuilder from the last bond. I just haven't had time to follow up on it. It seems we have an executed warranty though.

Thanks,

Charles Zachemsky

Project Manager

6500 Arapahoe Rd | Boulder, CO 80303

720-561-5954 (office)

303-944-3340 (mobile)

On Thu, Mar 13, 2025 at 3:46 PM Kris Stoppenhagen <kris.stoppenhagen@bvsd.org> wrote:

> Hey Frank -
>
> Are you involved with roof warranty at BCSIS and if so can you give us a status update?
>
> **Kris Stoppenhagen**
> **Executive Director of Bond Planning & Construction**
> **6500 Arapahoe Rd | Boulder, CO 80303**
> **720-561-5045 (office)**
> **(970) 556-2267 (mobile)**
> **bond.bvsd.org**

Attachments:

- 07 5000 Flynn Southwest O&M.pdf
- 07 5000 Flynn Southwest Warranty.pdf
- JM Roof Inspection 09-2018.pdf
- BCSIS-HP Roofing Submittal 2018.pdf

Johns Manville
A Berkshire Hathaway Company

10100 W Ute Ave (80127)
PO Box 625001
Littleton, CO 80162-5001
800-922-5922
877-403-1747 Fax

Dear Building Owner:

Attached to this letter is the Peak Advantage® Roofing Systems Guarantee for the new roof recently installed on your building. We believe your building is now protected by one of the finest commercial roofing systems available on the market today. We appreciate the opportunity to provide you with a level of protection unmatched in the industry.

There are some things you should be aware of before you file this document away in a safe place:

1. This is NOT a maintenance agreement or an insurance policy. Johns Manville liability is strictly governed by the terms of the guarantee. If you have any questions about this Guarantee, contact Johns Manville Guarantee Services at the appropriate number given below.

2. You are required to perform routine maintenance on the roofing system to keep the coverage to the guarantee intact. For your convenience, a list of maintenance items is printed on the back of the guarantee.

We hope that you never experience any difficulty with your roofing system. If you do have a problem, you should contact Johns Manville Guarantee Services at the appropriate numbers provided. Please have the guarantee on hand so that we may more efficiently handle your inquiry.

Our Technical Services Department is staffed by some of the most experienced roofing professionals in the roofing industry. Please call on them for any questions you might have about commercial and industrial roofing and Johns Manville products.

Sincerely,

Eric Olson
Manager, Guarantee Services
Johns Manville Roofing Systems Group
(800) 922-5922
gsu@jm.com
www.jm.com

Johns Manville

Peak Advantage Guarantee

PEAK ADVANTAGE Johns Manville

Building Owner:
Boulder Valley School District
6600 E. Arapahoe
Boulder, CO 80303

Building Name:
BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303

Approved Roofing Contractor:
FLYNN BEC LP
6270 EAST 50TH AVENUE
COMMERCE CITY, CO 80022

Guarantee Number: ANM117359092
Expiration Date: August 16, 2038
Job Name: BCSIS High Peaks Elementary

Date of Completion: August 16, 2018

Terms & Maximum Monetary Obligation to Maintain a Watertight Roofing System.

Years: 20 Year **$** No Dollar Limit

Coverage:
The components of the Roofing System covered by this Guarantee are:
Total Squares: 440

Sec.	Sqs.	Roof Type	Membrane Spec.	Insulation Type Layer 1	Layer 2	Layer 3	Cover Board
1	146	BUR	2FID	ENRGY 3	ENRGY 3	Tapered ENRGY 3	1/2" RetroPlus
2	18	SBS	2FID	ENRGY 3	ENRGY 3	Tapered ENRGY 3	1/2" RetroPlus
3	144	SBS	2FID	ENRGY 3	ENRGY 3	Tapered ENRGY 3	1/2" RetroPlus
5	23	SBS	2FID	ENRGY 3	ENRGY 3	Tapered ENRGY 3	1/2" RetroPlus
4	109	SBS	2FID	ENRGY 3	ENRGY 3	Tapered ENRGY 3	1/2" RetroPlus

Accessories:

Type	Product Name	Quantity
Expand-O-Flash (1) Style:		0 lin. ft.
Expand-O-Flash (2) Style:		0 lin. ft.
Expand-O-Flash (3) Style:		0 lin. ft.
Fascia Style:		0 lin. ft.
Copings Style:		0 lin. ft.
Gravel Stop Style:		0 lin. ft.
Drains (1) Style:		0 ea.
Drains (2) Style:		0 ea.
Vents Style:		0 ea.

These Johns Manville Guaranteed components are referred to above as the "Roofing System" and ALL OTHER COMPONENTS OF THE OWNER'S BUILDING ARE EXCLUDED FROM THE TERMS OF THIS GUARANTEE, including any amendments thereto.

Johns Manville* guarantees to the original Building Owner that during the Term commencing with the Date of Completion (as defined above), JM will pay for the materials and labor reasonably required in Johns Manville's sole and absolute discretion to repair the Roofing System to return it to a watertight condition if leaks occur due to: ordinary wear and tear, or deficiencies in any or all of the Johns Manville component materials of the Roofing System, or workmanship deficiencies only to the extent they arise solely out of the application of the Roofing System. Non-leaking blisters are specifically excluded from coverage. Should any investigation or inspection reveal the cause of a reported leak to be outside the scope of coverage under this Guarantee, then all such investigation and inspection costs shall be borne solely by the Building Owner.

WHAT TO DO IF YOUR ROOF LEAKS

If you should have a roof leak please refer to directions on the reverse side. Failure by the Building Owner to comply with any of the directions on the reverse side of this document will render the coverage provided under this Guarantee, including any applicable amendments and/or riders, null and void.

LIMITATIONS AND EXCLUSIONS

This Guarantee is not a maintenance agreement or an insurance policy; therefore, routine inspections and maintenance are the Building Owner's sole responsibility (see reverse side of this document). Failure to follow the Maintenance Program on the reverse side of this document will void the Guarantee in its entirety. This Guarantee does not obligate JM to repair or replace the Roofing System, or any part of the Roofing System, for leaks or appearance issues resulting, in whole or in part, from one or more of the following (a) natural disasters including but not limited to the direct or indirect effect of lightning, flood, hail storm, earthquake, tornados, hurricanes or other extraordinary natural occurrences and/or wind speeds in excess of 55 miles per hour; (b) misuse, abuse, neglect or negligence; (c) installation or material failures other than those involving the component materials expressly defined above as the Roofing System or exposure of the Roofing System components to damaging substances such as oil, fertilizers, or solvents or to damaging conditions such as vermin; (d) any and all (i) changes, alterations, repairs to the Roofing System, including, but not limited to, structures, penetrations, fixtures or utilities (including vegetative and solar overlays) based upon or through the Roofing System as well as any (ii) changes to the Building's usage that are not pre-approved in writing by JM; (e) failure of the Building substrate (mechanical, structural, or otherwise and whether resulting from Building movement, design defects or other causes) or improper drainage; (f) defects in or faulty/improper design, specification construction or engineering of the Building or any area over which the Roofing System is installed; (g) defects in or faulty/improper architectural, engineering or design flaws of the Roofing System or Building, including, but not limited to, design issues arising out of improper climate or building code compliance; or (h) in instances of a recover project, Johns Manville is not responsible for the performance of pre-existing materials that predated the recover. Instead, Johns Manville's sole responsibility in recover systems where JM materials are adhered to existing materials is limited to the installed recover JM Roofing materials up to the wind speed listed herein. Guarantee coverage is limited to replacing recover JM Roofing materials only (and not the pre-existing materials – which is the Owner's responsibility) as required to return the roofing system to a watertight condition due to a claim covered under the terms and conditions herein. Johns Manville is not responsible for leaks, injuries or damages resulting from any water entry from any portion of the Building structure not a part of the Roofing System, including, but not limited to, deterioration of the roofing substrate, walls, mortar joints, HVAC units and all other non-Johns Manville materials and metal components. Moreover, the Building Owner is solely and absolutely responsible for any removal and/or replacement of any overburdens, super-strata or overlays, in any form whatsoever, as reasonably necessary to expose the Roofing System for inspection and/or repair.

This Guarantee becomes effective when (1) it is delivered to Owner; and (2) all bills for installation, materials, and services have been paid in full to the Approved Roofing contractor and to JM. Until that time, this Guarantee is not in force, has no effect – and JM is under no obligation whatsoever to perform any services/work.

The Parties agree that any controversy or claims relating to this Guarantee shall be first submitted to mediation under the Construction Industry Arbitration and Mediation Rules of the American Arbitration Association (Regular Track Procedures) or to such other mediation arrangement as the parties mutually agree. No court or other tribunal shall have jurisdiction until the mediation is completed. In any action or proceeding brought against the Building Owner to enforce this Guarantee or to collect costs due hereunder, Johns Manville shall be entitled to recover its reasonable costs, expenses and fees (including expert witness' fees) incurred in any such action or proceeding, including, without limitation, attorneys' fees and expenses, and the Building Owner shall pay it.

TO THE FULLEST EXTENT PERMITTED BY LAW, JM DISCLAIMS ANY IMPLIED WARRANTY, INCLUDING THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND LIMITS SUCH WARRANTY TO THE DURATION AND TO THE EXTENT OF THE EXPRESS WARRANTY CONTAINED IN THIS GUARANTEE.

THE EXCLUSIVE RESPONSIBILITY AND LIABILITY OF JM UNDER THIS GUARANTEE IS TO MAKE REPAIRS NECESSARY TO MAINTAIN THE ROOFING SYSTEM IN A WATERTIGHT CONDITION IN ACCORDANCE WITH THE OBLIGATIONS OF JM UNDER THIS GUARANTEE. JM AND ITS AFFILIATES WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES TO THE BUILDING STRUCTURE (UPON WHICH THE ROOFING SYSTEM IS AFFIXED) OR ITS CONTENTS AND OR OCCUPANTS, LOSS OF TIME OR PROFITS OR ANY INCONVENIENCE, INJURY. JM SHALL NOT BE LIABLE FOR ANY CLAIM MADE AGAINST THE BUILDING OWNER BY ANY THIRD PARTY AND THE BUILDING OWNER SHALL INDEMNIFY AND DEFEND JM AGAINST ANY CLAIM BROUGHT BY ANY THIRD PARTY AGAINST JM RELATING TO OR ARISING OUT OF THE ROOFING SYSTEM OR JM'S OBLIGATIONS UNDER THIS GUARANTEE. JM AND ITS AFFILIATES SHALL NOT BE LIABLE FOR ANY DAMAGES WHICH ARE BASED UPON NEGLIGENCE, BREACH OF WARRANTY, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY OTHER THAN THE EXCLUSIVE LIABILITY SET FORTH IN THIS GUARANTEE. THIS GUARANTEE DOES NOT COVER, AND EXPLICITLY EXCLUDES, ANY AND ALL INJURIES, CLAIMS AND/OR DAMAGES RESULTING, IN WHOLE OR IN PART, FROM ANY WATER ENTRY FROM ANY PORTION OF THE BUILDING STRUCTURE INCLUDING, BUT NOT LIMITED TO, THE ROOFING SYSTEM.

No one is authorized to change, alter, or modify the provision of this Guarantee other than the Manager, Guarantee Services or authorized delegate. JM's delay or failure in enforcing the terms and conditions contained in this Guarantee shall not operate as a waiver of such terms and conditions. This Guarantee is solely for the benefit of the Building Owner identified above and Building Owner's rights hereunder are not assignable. Upon sale or other transfer of the Building, Building Owner may request transfer of this Guarantee to the new owner, and JM may transfer this Guarantee, in its sole and absolute discretion only after receiving satisfactory information and payment of a transfer fee, which must be paid no later than 30 days after the date of Building ownership transfer.

In the event JM pays for repairs which are required due to the acts or omissions of others, JM shall be subrogated to all rights of recovery of the Building Owner to the extent of the amount of the repairs.

Because JM does not practice Engineering or Architecture, neither the issuance of this Guarantee nor any review of the Building's construction or inspection of roof plans (or the Building's roof deck) by JM representatives shall constitute any warranty by JM of such plans, specifications, and construction or in any way constitute an extension of the terms and conditions of this Guarantee. Any roof inspections are solely for the benefit of JM.

JM does not supervise nor is it responsible for a roofing contractor's work except to the extent stated herein, and roofing contractors are not agents of JM.

*JOHNS MANVILLE ("JM") is a Delaware corporation with its principal mailing address at P.O. Box 5108, Denver, Colorado 80217-5108.

Joseph Smith

By: Joseph Smith
Title: President Roofing Systems

Addendum(s)

~ None ~

Maintenance Program

In order to continue the coverage of this Guarantee, the following Maintenance Program must be implemented and followed:

1. Building Owner must notify JM Guarantee Services Unit (see below) immediately upon discovery of the leak and in no event later than ten (10) days after initial discovery of the leak, time being of the essence. Failure of the Building Owner to provide timely notice to JM Guarantee Services of any leak is a material ground for termination of the Guarantee.

2. In response to timely notice, JM will arrange to inspect the Roofing System, and
   (i) If, in JM's sole and absolute opinion, the leak(s) is/are the responsibility of JM under this Guarantee (see Limitations and Exclusions), then JM will take prompt appropriate action to return the Roofing system to a watertight condition, or
   (ii) If, in JM's sole and absolute opinion, the leak(s) is/are not the responsibility of JM under this Guarantee, then JM will advise the Building Owner within a reasonable time of the minimum repairs that JM believes are required to return the Roofing System to a watertight condition. If the Building Owner, at his expense, promptly and timely makes such repairs to the Roofing System (time being of the essence) then this Guarantee will remain in effect for the unexpired portion of its Term. Failure to make any of these repairs in a timely and reasonable fashion will void any further obligation of JM under this Guarantee as to the damaged portion of the Roofing System as well as any other areas of the Roofing System impacted by such failure.

3. In the event an emergency condition exists which requires immediate repair to avoid damage to the Building, its contents or occupants, then Building Owner may make reasonable, essential temporary repairs. JM will reimburse Building Owner for those reasonable repair expenses only to the extent such expenses would have been the responsibility of JM under the Guarantee.

There are a number of items not covered by this Guarantee that are the sole, exclusive responsibility of the Building Owner. In order to ensure that your new roof will continue to perform its function and to continue JM's obligations under the Guarantee, you must examine and maintain these items on a regular basis:

- Maintain a file for your records on this Roofing System, including, but not limited to, this Guarantee, invoices, and subsequent logs of all inspections performed and repairs that are made to the Roofing System.
- Inspect your Roofing System at least semi-annually. This is best done in the spring, after the Roofing System has been exposed to the harsh winter conditions, and, in the Fall after a long hot summer. It is also a good idea to examine the Roofing System for damage after severe weather conditions such as hailstorms, heavy rains, high winds, etc.
- Since these types of Roofing Systems typically have a low slope, they are easily examined. However, care must be taken to prevent falling and other accidents. JM expressly disclaims and assumes no liability for any inspections performed on the Roofing System.

When checking the Roofing System:

- Remove any debris such as leaves, small branches, dirt, rocks, etc. that have accumulated.
- Clean gutters, down spouts, drains and the surrounding areas. Make certain they allow water to flow off the Roofing System. Positive drainage is essential.
- Examine all metal flashings and valleys for rust and damage that may have been caused by wind or traffic on the Roofing System, and make certain they are well attached and sealed. Any damaged, loose, or poorly sealed materials must be repaired by a JM Approved Roofing Contractor only.
- Examine the areas that abut the Roofing System. Damaged masonry, poorly mounted counter flashing, loose caulking, bad mortar joints, and any loose stone or tile coping can appear to be a membrane leak. Have these items repaired by a JM Approved Roofing Contractor if found to be defective.
- Examine the edges of the Roofing System. Wind damage often occurs in these areas. Materials that have been lifted by the wind need to be corrected by a JM Approved Roofing Contractor.
- Examine any roof top equipment such as air conditioners, evaporative coolers, antennas, etc. Make certain they do not move excessively or cause a roof problem by leaking materials onto the Roofing System.
- Check the building exterior for settlement or movement. Structural movement can cause cracks and other problems which in turn may lead to leaks in your Roofing System.
- Examine protective coatings; any cracked, flaking, or blistered areas must be recoated.

Protecting your investment:

- Avoid unnecessary roof top traffic.
- If you allow equipment servicemen to go onto the Roofing System, advise them to be careful. Dropped tools, heavy equipment, etc. can damage the membrane. Log all such trips to the Roofing System.
- Do not allow service personnel to make penetrations into the Roofing System; these are to be made only by a JM Approved Roofing Contractor.

All the terms and conditions of this Guarantee shall be construed under the internal law of the state of Colorado without regard to its conflicts of law principles. Invalidity or unenforceability of any provisions herein shall not affect the validity or enforceability of any other provision which shall remain in full force and effect to the extent the main intent of the document is preserved.

This form is not to be copied or reproduced in any manner. This Guarantee is valid only in the United States of America.

Guarantee Services
(800) 922-5922
E-mail: gsu@jm.com
www.jm.com/roofing

Mailing Address:
Johns Manville
Guarantee Services
P.O. Box 625001
Littleton, CO 80162-5001

Shipping Address:
Johns Manville
Guarantee Services
10100 West Ute Avenue
Littleton, CO 80127

Johns Manville

Preventative Maintenance Guidelines

Ongoing and proper maintenance of the roofing system is part of a building owner's responsibility under the terms of the guarantee agreement. Only allow approved JM Peak Advantage® Contractors to maintain or perform repairs on a guaranteed roofing system.



Do's and Don't's of Roof Maintenance

Do...

- Perform inspections at least twice a year or as required by the guarantee. The ideal times to perform inspections are at the end of winter and the end of summer, when roofs have gone through the greatest amount of thermal stress (inspecting your roof for any trouble spots and to unclog drains in the spring and fall is also a good idea).
- Conduct additional inspections immediately after unusual occurrences such as heavy rains, high winds, hail, nearby fires, explosions, etc.
- Keep a file of all records and inspection reports relating to your roof.
- Advise equipment service personnel to be careful handling tools and heavy equipment on the roof. Log all such trips to the roof.
- Keep your roof clean and free of debris and contaminants.
- Establish a rooftop control policy. Keep access doors or hatches locked. Advise equipment service personnel to be careful.
- Keep roof drains free of debris.

Don't...

- Allow unqualified personnel to maintain your roof.
- Allow equipment service personnel to make penetrations into your roof; these are to be made only by an approved roofing contractor.
- Power-wash your roof. You may cause unintended damage!
- Puncture the membrane.
- Move heavy equipment across the roof.

Cause and Effect



Split in water line leaking



Evidence of water ponding



Weeds growing in drain due to excess water

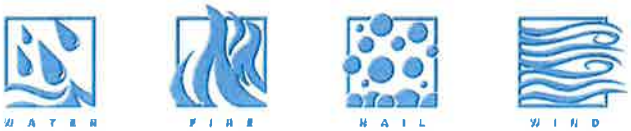
Maintenance Checklist

To ensure the integrity of the roofing system, it is important to contact JM before any alterations are made. We encourage all alterations and repairs to be completed by a JM Peak Advantage Contractor to ensure they meet the high standards of JM and the requirements outlined in the guarantee.

Below is a checklist of things to look for while on your roof. Good roofing practice recommends these areas be inspected twice annually to ensure the roofing system integrity.

Building Exterior	
General Condition	Inspect all areas for signs of leaks and/or deterioration.
Walls	Inspect for deterioration, missing mortar and stains in walls indicating possible leaks.
Roof Edge – Coping Caps or Gravel Stop/Gutter	A coping is a covering for the top of a wall that is exposed to weather. It is usually sloped to shed water to the roof. Check for cracking, splits and mortar integrity. Replace any damaged, loose or cracked areas. Caulk joints if necessary.
Fascia	Inspect all surfaces for signs of leaks and/or deterioration.
Building Interior	
General Condition	Inspect all areas for signs of leaks and/or deterioration.
Walls	Inspect all surfaces for signs of leaks and/or deterioration.
Underside of Deck	Inspect for stains, discoloration, spalled or rusted surfaces.
Ceilings	Inspect for evidence of staining.
Field of Roof	
General Condition	Remove any debris such as leaves, small branches, dirt, rocks, etc. that have accumulated.
Surfacing	Minimize the amount of foot traffic on the roof whenever possible. Place walkway pads at roof entry areas and at rooftop equipment access panels.
Laps	Inspect the condition of membrane laps, if applicable.
Drainage System	
General Condition	Water should flow freely, unobstructed from the roof.
Gutters/Scuppers/Down Spouts/Drains	Remove any debris from inside and the surrounding areas. Make sure strainers and clamping rings are secure.
Perimeter/Flashings	
General Condition	Inspect attachment to make sure it remains watertight. All metal work must be caulked and watertight. Only JM metal is covered by the JM Peak Advantage Guarantee.
Base Flashing	Inspect for adequate fastening at top of the flashing. Check attachment to the substrate. Inspect vertical flashing end laps and horizontal laps at membrane.
Counterflashing	Ensure that the counterflashing is well secured. Periodically remove and replace caulking to ensure watertight conditions. Only use commercial grade caulk suitable for rooftop application.
Roof Top Units	
General Condition	All roof penetrations are prone to leaks. All units should be installed using compatible roof materials and should be properly flashed. Be sure to have a JM Peak Advantage contractor assist in the installation and flashing of new rooftop equipment.
HVAC	Check condensation lines for positive drainage. Ensure they are flowing freely to roof drains. Condensation lines should rest on wood blocks or rubber supports and never directly on the roof surface. Ensure equipment is in good condition and working properly. Install protection/walkpads around perimeter of equipment that requires periodic maintenance.
Equipment Supports: Satellite Dishes, Signs, Antennas, etc.	Properly support all heavy equipment on vertical curbs. All vertical curbs should be properly flashed and covered with a metal cap. Use protection/walkpads below all lightweight horizontal wood equipment supports.
Lightning Protection	Should not penetrate the roof surface. Ensure there are no overly loose or dangling cables.
Equipment Flashing	Ensure equipment base flashings are secure, watertight and counterflashed.
Penetrations	
General Condition	Do not allow exhaust fats, petroleum or other chemicals or contaminants directly onto the roof. Contact JM if any chemicals or service fluids come into contact with the roofing system.
Pipes and Vents	Inspect the lap at membrane and vertical lap. Ensure that the top to the flashing is secured and caulked properly.
Penetration Pan/ Pitch Pocket	An enclosure made of sheet metal, rubber or other material used to flash penetrations through a roof system. Often a source of leaks. Must be topped-off annually with compatible sealer.
Expansion Joints	A structural separation between two building elements that allows free movement between the elements without damage to the building or roofing system. Check for excessive movement or deterioration. Check all end laps and repair or replace lap splice as necessary. JM Expand-O-Flash expansion joints are covered under the terms of the JM Peak Advantage Guarantee.

RS-7395 6-08 (New)



ROOFING CONTRACTOR WORKMANSHIP WARRANTY

1) **Contractor**: Flynn BEC, LP

2) **Roof Owner**: Boulder Valley School District

3) **Type and Name of Building**: BCSIS High Peaks Elementary

Building location: 3995 Aurora Avenue, Boulder, CO

Area of Roof: 44,000 square feet

4) **Roofing Materials Manufacturer**:
(Name and Address) Johns Manville
P.O. Box 625001
Littleton, CO 80162

5) **Warranty begins**: 8/16/2018 (Date) **and expires**: 8/15/2020 (Date)

6) **Warranty**: Contractor warrants to Owner that it applied the roofing materials to the above-described roof in accordance with (a) the written specifications of Roofing Materials Manufacturer and (b) good roofing industry practices, in effect on 05/23/2018, the date application commenced. Subject to the following terms, conditions and limitations, Contractor will, during the term of this Warranty, at its expense, repair or cause to be repaired leaks in said roof which are the result of defects in Contractor's workmanship. Upon expiration of the term of this Warranty, without notice from Owner of some defect, Contractor shall have no further obligation to make repairs at Contractor's expense under any provision of this Warranty and Owner shall not make any further demand or claim against Contractor concerning Contractor's workmanship, or the roofing materials installed, provided that Contractor promptly commences and diligently proceeds with the correction and repair of all such defects covered by this Warranty which are called to Contractor's attention in the manner set forth in paragraph 8 below during the term of this Warranty by Owner.

7) **Terms, Conditions and Limitations**. This warranty does not cover any leaks in the roof caused by: the acts or omissions of other trades or contractors; lightning, winds of peak gust speeds of 55 m.p.h. or higher measured at 10 meters above ground, hail storm, flood, earthquake or other unusual phenomenon of the elements; structural settlement; failure, movement, cracking or excess deflection of the roof deck; defects or failure of materials used as a roof substrate over which the roof system is applied; faulty condition of parapet walls, copings, chimneys, skylights, vents, supports or other parts of the building; vapor condensation beneath the roof; penetrations for pitch boxes; erosion, cracking and porosity of mortar and brick; dry rot; stoppage of roof drains and gutters; penetration of the roof from beneath by rising fasteners of any type; inadequate drainage, slope or other conditions beyond the control of Contractor which cause ponding or standing of water; termites or other insects; rodents or other animals; fire; or harmful chemicals, oils, acids and the like that come in contact with the roofing system and cause a leak or otherwise damage the roof system. If the roof fails to maintain a water-tight condition because of damage by reason of any of the foregoing, this warranty shall immediately become null and void for the balance of its term unless such damage is repaired by Contractor at the expense of Owner.

8) **Notification by Owner**. During the term of this warranty, if the roof leaks, Owner must immediately notify Contractor by telephone of such leaks, and promptly confirm such telephone notice by written notice to Contractor.

9) **Events Which May Void Warranty**. This warranty shall become null and void:
   (a) Unless Contractor receives notice from Owner during the term of this Warranty in accordance with paragraph 8 above of any leaks and is provided an opportunity to inspect, and if required by the terms of this warranty to repair the roof;
   (b) If work is done on such roof, including, but without limitation, work in connection with flues, vents, drains, sign braces, railings, platforms or other equipment fastened to or set on the roof or if repairs or alterations are made to said roof, without first notifying Contractor in writing and giving Contractor the opportunity to make the necessary roofing application recommendations with respect thereto, which recommendations are complied with. Contractor shall be paid for time and materials expended in making recommendations or repairs occasioned by the work of others on the subject roof;
   (c) If any area of the roof is used as a promenade, walkway or work area or is sprayed or flooded, unless such use was originally specified with a defined area and the specification is noted in paragraph 14 below.

10) **Transferability**. This warranty shall accrue only to the benefit of the original owner named above. It is not transferable to any other person, except with the prior written consent of contractor.

11) **No Other Warranties**. NO OTHER EXPRESS WARRANTY IS GIVEN BY CONTRACTOR TO OWNER. THE REPAIR OF THE SUBJECT ROOF IS THE EXCLUSIVE REMEDY. THERE ARE NO WARRANTIES THAT EXTEND BEYOND THE DESCRIPTION ON THE FACE HEREOF. ALL IMPLIED WARRANTIES, AND SPECIFICALLY THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR ANY PARTICULAR PURPOSE ARE EXPRESSLY EXCLUDED AND DISCLAIMED. This warranty is separate and apart from any warranty that may be issued to owner by the roofing materials manufacturer. CONTRACTOR EXPRESSLY EXCLUDES AND DISCLAIMS ANY RESPONSIBILITY TO OWNER IN CONNECTION WITH OR ATTRIBUTABLE TO THE ROOFING MATERIALS AND ANY SUCH ROOFING MATERIALS MANUFACTURER'S WARRANTY.

12) **Incidental or Consequential Damages**. UNDER NO CIRCUMSTANCES SHALL CONTRACTOR BE LIABLE TO OWNER OR ANY OTHER PERSON FOR ANY INCIDENTAL, SPECIAL, CONSEQUENTIAL OR OTHER DAMAGES INCLUDING, BUT NOT LIMITED TO, LOSS OF PROFITS OR DAMAGE TO THE BUILDING OR ITS CONTENTS, WHETHER ARISING OUT OF BREACH OF WARRANTY, BREACH OF CONTRACT OR UNDER ANY OTHER THEORY OF LAW.

13) **Payment to Contractor**. This warranty shall not be or become effective unless and until Contractor has been paid in full for said roof in accordance with the agreement pursuant to which said roof was applied.

14) **Additional conditions or exclusions** ----------None----------

This warranty has been duly executed this 5th day of September, 2018.

Flynn BEC, LP

By: _____
Contractor

Boulder Valley School District

By: _____
Owner

Flynn BEC, LP Workmanship Guarantee

Whereas Flynn BEC, LP of Colorado, herein called "Contractor" has completed application of the following sheet metal:

Owner: Boulder Valley School District
Address of Owner: 6600 E. Arapahoe, Boulder, CO
Type and Name of Building: BCSIS High Peaks Elementary School
Address: 3995 Aurora Avenue, Boulder, CO
Description: Sheet metal and flashing
Date of Completion: 8/16/2018
Date Guarantee Expires: 8/15/2020

Whereas, at the inception of such work, Contractor agreed to guarantee the aforesaid sheet metal for a limited period and subject to the conditions herein set forth;

Now, Therefore, Contractor hereby Guarantees, subject to the conditions herein set forth, that during a period of two (2) years from the date of completion of said sheet metal, it will, at its own cost and expense, make or cause to be made such repairs to said sheet metal resulting solely from faults or workmanship applied by or through Contractor as may be necessary to maintain said sheet metal in watertight condition.

This guarantee made subject to the following conditions:

1. Specifically excluded from this guarantee is any and all damage to said sheet metal, the building or contents caused by the act or omissions of other trades or contractors; lighting, windstorm, hailstorm, flood, earthquake or other unusual phenomena of the elements; foundation settlement; failure or cracking of the roof deck; defects or failure of material used as a roof base over which the roof is applied; faulty construction of parapet walls, coping, chimney, skylight, vents, supports, or other parts of the building; ice dams, vapor condensation beneath the roof; penetrations for pitch boxes; water leakage due to erosion and porosity of mortar and brick; dry rot; stoppage of roof drains and gutters; penetration of the roofing from beneath by rising nails; inadequate drainage, slop, or other conditions beyond the control of Contractor which cause ponding or standing of water; termites or other insects; rodents or other animals; or fire. If the sheet metal is damaged by reason of any of the foregoing, this guarantee shall thereupon become null and void for the balance of the guarantee period unless such damage is repaired by Contractor at the expense of the party requesting such repairs.
2. Contractor is not liable for consequential damages to the building or contents resulting from any defects in said sheet metal, including, but without limitation, any interruption of business experienced by Owner or occupants of the building.
3. This guarantee shall become null and void unless the Contractor is promptly notified in writing of any alleged defect in materials or workmanship and provided an opportunity to inspect and, if required by the terms of the Guarantee, to repair the sheet metal.
4. No work shall be done on said sheet metal, including, but without limitation, work in connection with flues, vents, drains, sign braces, railings, platforms or other equipment fastened to or set on the sheet metal, and no repairs, or alterations shall be made to said roof, unless Contractor shall first be notified in writing, shall be given the opportunity to make the necessary sheet metal application recommendations with respect thereto, and such recommendations are complied with. Failure to observe this condition shall render this guarantee null and void. Contractor shall be paid for time and material expended in making recommendations or repairs occasional by the work of other on said roof.
5. This guarantee shall become null and void if the sheet metal is used as a promenade or work deck or is sprayed or flooded, unless such use was originally specified and the specification is noted in paragraph 9, below.
6. This guarantee shall not be or become effective unless and until Contractor has been paid in full for said sheet metal in accordance with the agreement pursuant to which such sheet metal was applied.
7. This guarantee shall accrue only to the benefit of the original Owner named above. It is not transferable to any other person, except with the prior written consent of Contractor.
8. This guarantee is in lieu of all other guarantees or warranties express or implies. **ALL IMPLIED GUARANTEES AND WARRANTIES, AND SPECIFICALLY THE IMPLIED WARRANTIES OR MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSLY EXCLUDED AND DISCLAIMED.**
9. Additional conditions or exclusions: None

IN WITNESS WHEREOF, this instrument has been duly executed this 5th day of September, 2018.

Flynn BEC, LP

By: 

Joseph Spezia, Branch Manager

FLYNN SOUTHWEST LP
6270 East 50th Avenue
Commerce City, CO 80022
T: 303-287-3043 **F**: 303-287-3391
www.flynncompanies.com

Roofing Submittal

BCIS/High Peaks

Elementary School

January 6, 2017

FLYNN SOUTHWEST LP
6270 EAST 50TH AVENUE
COMMERCE CITY, CO 80022

Phone: 1-303-287-3043
Fax: 1-303-978-2537

To Whom It May Concern:

Please be advised that a Johns Manville Approved Roofing Contractor Agreement (the "Agreement") presently exists between Johns Manville Roofing Systems Group and the above named contractor located at the above address. The Agreement stipulates that Johns Manville will issue Peak Advantage Guarantees for Johns Manville systems listed below.

System	Term
APP;BUR;SBS Asphalt Applied;SBS Heat Welded;SBS Cold Applied;SBS Self Adhered;EPDM;PVC;TPO;Registration - JM Insulation Only	All

These guarantees will be issued to the above-named contractor in accordance with all procedures and requirements of the Johns Manville Peak Advantage Guarantee Program. This Agreement is subject to cancellation by either Johns Manville Roofing Systems Group or the above named contractor upon thirty (30) days written notice to the other party of the Agreement.

Sincerely,

Guarantee Services

For questions related to this communication, please contact:

Guarantee Services
Johns Manville Roofing Systems
10100 W. Ute Avenue | Mailstop R-15 | Littleton, CO 80127
GSU@jm.com | 800.922.5922 | Fax: 877.403.1747

Johns Manville

Peak Advantage Guarantee

PEAK ADVANTAGE Johns Manville

Building Owner:
Name
Address
City, State Zip

Building Name:
Name
Address
City, State Zip

20 Year

Guarantee Number: *Sample - not issued*
Expiration Date:

Approved Roofing Contractor:

Name
Address
City, State Zip

Date of Completion:

Terms & Maximum Monetary Obligation to Maintain a Watertight Roofing System.

Years: **$**

Coverage:

The components of the Roofing System covered by this Guarantee are:

Total Squares:

Section	Sqs.	Roof Type	Membrane Spec.	Insulation Type Layer 1	Layer 2	Layer 3

Accessories:

Type	Product Name	Quantity
Expand-O-Flash (1) Style:		lin. ft.
Expand-O-Flash (2) Style:		lin. ft.
Expand-O-Flash (3) Style:		lin. ft.
Fascia Style:		lin. ft.
Copings Style:		lin. ft.
Gravel Stop Style:		lin. ft.
Drains (1) Style:		ea.
Drains (2) Style:		ea.
Vents Style:		ea.

These Johns Manville Guaranteed components are referred to above as the "Roofing System" and ALL OTHER COMPONENTS OF THE OWNER'S BUILDING ARE EXCLUDED FROM THE TERMS OF THIS GUARANTEE, including any amendments thereto.

Johns Manville* guarantees to the original Building Owner that during the Term commencing with the Date of Completion (as defined above), JM will pay for the materials and labor reasonably required in Johns Manville's sole and absolute discretion to repair the Roofing System to return it to a watertight condition if leaks occur due to: ordinary wear and tear, or deficiencies in any or all of the Johns Manville component materials of the Roofing System, or workmanship deficiencies only to the extent they arise solely out of the application of the Roofing System. Non-leaking blisters are specifically excluded from coverage. Should any investigation or inspection reveal the cause of a reported leak to be outside the scope of coverage under this Guarantee, then all such investigation and inspection costs shall be borne solely by the Building Owner.

SAMPLE

WHAT TO DO IF YOUR ROOF LEAKS

If you should have a roof leak please refer to directions on the reverse side. Failure by the Building Owner to comply with any of the directions on the reverse side of this document will render the coverage provided under this Guarantee, including any applicable amendments and/or riders, null and void.

LIMITATIONS AND EXCLUSIONS

This Guarantee is not a maintenance agreement or an insurance policy; therefore, routine inspections and maintenance are the Building Owner's sole responsibility (see reverse side of this document). Failure to follow the Maintenance Program on the reverse side of this document will void the Guarantee in its entirety. This Guarantee does not obligate JM to repair or replace the Roofing System, or any part of the Roofing System, for leaks or appearance issues resulting, in whole or in part, from one or more of the following (a) natural disasters including but not limited to the direct or indirect effect of lightning, flood, hail storm, earthquake, tornados, hurricanes or other extraordinary natural occurrences and/or wind speeds in excess of 55 miles per hour; (b) misuse, abuse, neglect or negligence; (c) installation or material failures other than those involving the component materials expressly defined above as the Roofing System or exposure of the Roofing System components to damaging substances such as oil, fertilizers, or solvents or to damaging conditions such as vermin; (d) any and all (i) changes, alterations, repairs to the Roofing System, including, but not limited to, structures, penetrations, fixtures or utilities (including vegetative and solar overlays) based upon or through the Roofing System as well as any (ii) changes to the Building's usage that are not pre-approved in writing by JM; (e) failure of the Building substrate (mechanical, structural, or otherwise and whether resulting from Building movement, design defects or other causes) or improper drainage; (f) defects in or faulty/improper design, specification construction or engineering of the Building or any area over which the Roofing System is installed; (g) defects in or faulty/improper architectural, engineering or design flaws of the Roofing System or Building, including, but not limited to, design issues arising out of improper climate or building code compliance; or (h) in instances of a recover project, Johns Manville is not responsible for the performance of pre-existing materials that predated the recover. Instead, Johns Manville's sole responsibility in recover systems where JM materials are adhered to existing materials is limited to the installed recover JM Roofing materials up to the wind speed listed herein. Guarantee coverage is limited to replacing recover JM Roofing materials only (and not the pre-existing materials – which is the Owner's responsibility) as required to return the roofing system to a watertight condition due to a claim covered under the terms and conditions herein. Johns Manville is not responsible for leaks, injuries or damages resulting from any water entry from any portion of the Building structure not a part of the Roofing System, including, but not limited to, deterioration of the roofing substrate, walls, mortar joints, HVAC units and all other non-Johns Manville materials and metal components. Moreover, the Building Owner is solely and absolutely responsible for any removal and/or replacement of any overburdens, super-strata or overlays, in any form whatsoever, as reasonably necessary to expose the Roofing System for inspection and/or repair.

This Guarantee becomes effective when (1) it is delivered to Owner; and (2) all bills for installation, materials, and services have been paid in full to the Approved Roofing contractor and to JM. Until that time, this Guarantee is not in force, has no effect – and JM is under no obligation whatsoever to perform any services/work.

The Parties agree that any controversy or claims relating to this Guarantee shall be first submitted to mediation under the Construction Industry Arbitration and Mediation Rules of the American Arbitration Association (Regular Track Procedures) or to such other mediation arrangement as the parties mutually agree. No court or other tribunal shall have jurisdiction until the mediation is completed. In any action or proceeding brought against the Building Owner to enforce this Guarantee or to collect costs due hereunder, Johns Manville shall be entitled to recover its reasonable costs, expenses and fees (including expert witness' fees) incurred in any such action or proceeding, including, without limitation, attorneys' fees and expenses, and the Building Owner shall pay it.

TO THE FULLEST EXTENT PERMITTED BY LAW, JM DISCLAIMS ANY IMPLIED WARRANTY, INCLUDING THE WARRANTY OF MERCHANTABILITY AND THE WARRANTY OF FITNESS FOR A PARTICULAR PURPOSE, AND LIMITS SUCH WARRANTY TO THE DURATION AND TO THE EXTENT OF THE EXPRESS WARRANTY CONTAINED IN THIS GUARANTEE.

THE EXCLUSIVE RESPONSIBILITY AND LIABILITY OF JM UNDER THIS GUARANTEE IS TO MAKE REPAIRS NECESSARY TO MAINTAIN THE ROOFING SYSTEM IN A WATERTIGHT CONDITION IN ACCORDANCE WITH THE OBLIGATIONS OF JM UNDER THIS GUARANTEE. JM AND ITS AFFILIATES WILL NOT BE LIABLE FOR ANY INCIDENTAL OR CONSEQUENTIAL DAMAGES TO THE BUILDING STRUCTURE (UPON WHICH THE ROOFING SYSTEM IS AFFIXED) OR ITS CONTENTS AND OR OCCUPANTS, LOSS OF TIME OR PROFITS OR ANY INCONVENIENCE, INJURY. JM SHALL NOT BE LIABLE FOR ANY CLAIM MADE AGAINST THE BUILDING OWNER BY ANY THIRD PARTY AND THE BUILDING OWNER SHALL INDEMNIFY AND DEFEND JM AGAINST ANY CLAIM BROUGHT BY ANY THIRD PARTY AGAINST JM RELATING TO OR ARISING OUT OF THE ROOFING SYSTEM OR JM'S OBLIGATIONS UNDER THIS GUARANTEE. JM AND ITS AFFILIATES SHALL NOT BE LIABLE FOR ANY DAMAGES WHICH ARE BASED UPON NEGLIGENCE, BREACH OF WARRANTY, STRICT LIABILITY OR ANY OTHER THEORY OF LIABILITY OTHER THAN THE EXCLUSIVE LIABILITY SET FORTH IN THIS GUARANTEE. THIS GUARANTEE DOES NOT COVER, AND EXPLICITLY EXCLUDES, ANY AND ALL INJURIES, CLAIMS AND/OR DAMAGES RESULTING, IN WHOLE OR IN PART, FROM ANY WATER ENTRY FROM ANY PORTION OF THE BUILDING STRUCTURE INCLUDING, BUT NOT LIMITED TO, THE ROOFING SYSTEM.

No one is authorized to change, alter, or modify the provision of this Guarantee other than the Manager, Guarantee Services or authorized delegate. JM's delay or failure in enforcing the terms and conditions contained in this Guarantee shall not operate as a waiver of such terms and conditions. This Guarantee is solely for the benefit of the Building Owner identified above and Building Owner's rights hereunder are not assignable. Upon sale or other transfer of the Building, Building Owner may request transfer of this Guarantee to the new owner, and JM may transfer this Guarantee, in its sole and absolute discretion only after receiving satisfactory information and payment of a transfer fee, which must be paid no later than 30 days after the date of Building ownership transfer.

In the event JM pays for repairs which are required due to the acts or omissions of others, JM shall be subrogated to all rights of recovery of the Building Owner to the extent of the amount of the repairs.

Because JM does not practice Engineering or Architecture, neither the issuance of this Guarantee nor any review of the Building's construction or inspection of roof plans (or the Building's roof deck) by JM representatives shall constitute any warranty by JM of such plans, specifications, and construction or in any way constitute an extension of the terms and conditions of this Guarantee. Any roof inspections are solely for the benefit of JM.

JM does not supervise nor is it responsible for a roofing contractor's work except to the extent stated herein, and roofing contractors are not agents of JM.

*JOHNS MANVILLE ("JM") is a Delaware corporation with its principal mailing address at P.O. Box 5108, Denver, Colorado 80217-5108.

By: Robert Wamboldt — Attorney-in-Fact
Title: Vice President & General Manager
Roofing Systems Group

SAMPLE

Addendum(s)

Riders Here

SAMPLE

Maintenance Program

In order to continue the coverage of this Guarantee, the following Maintenance Program must be implemented and followed:

1. Building Owner must notify JM Guarantee Services Unit (see below) immediately upon discovery of the leak and in no event later than ten (10) days after initial discovery of the leak, time being of the essence. Failure of the Building Owner to provide timely notice to JM Guarantee Services of any leak is a material ground for termination of the Guarantee.

2. In response to timely notice, JM will arrange to inspect the Roofing System, and
   (i) If, in JM's sole and absolute opinion, the leak(s) is/are the responsibility of JM under this Guarantee (see Limitations and Exclusions), then JM will take prompt appropriate action to return the Roofing system to a watertight condition, or
   (ii) If, in JM's sole and absolute opinion, the leak(s) is/are not the responsibility of JM under this Guarantee, then JM will advise the Building Owner within a reasonable time of the minimum repairs that JM believes are required to return the Roofing System to a watertight condition. If the Building Owner, at his expense, promptly and timely makes such repairs to the Roofing System (time being of the essence) then this Guarantee will remain in effect for the unexpired portion of its Term. Failure to make any of these repairs in a timely and reasonable fashion will void any further obligation of JM under this Guarantee as to the damaged portion of the Roofing System as well as any other areas of the Roofing System impacted by such failure.

3. In the event an emergency condition exists which requires immediate repair to avoid damage to the Building, its contents or occupants, then Building Owner may make reasonable, essential temporary repairs. JM will reimburse Building Owner for those reasonable repair expenses only to the extent such expenses would have been the responsibility of JM under the Guarantee.

There are a number of items not covered by this Guarantee that are the sole, exclusive responsibility of the Building Owner. In order to ensure that your new roof will continue to perform its function and to continue JM's obligations under the Guarantee, you must examine and maintain these items on a regular basis:

- Maintain a file for your records on this Roofing System, including, but not limited to, this Guarantee, invoices, and subsequent logs of all inspections performed and repairs that are made to the Roofing System.
- Inspect your Roofing System at least semi-annually. This is best done in the spring, after the Roofing System has been exposed to the harsh winter conditions, and, in the Fall after a long hot summer. It is also a good idea to examine the Roofing System for damage after severe weather conditions such as hailstorms, heavy rains, high winds, etc.
- Since these types of Roofing Systems typically have a low slope, they are easily examined. However, care must be taken to prevent falling and other accidents. JM expressly disclaims and assumes no liability for any inspections performed on the Roofing System.

When checking the Roofing System:

- Remove any debris such as leaves, small branches, dirt, rocks, etc. that have accumulated.
- Clean gutters, down spouts, drains and the surrounding areas. Make certain they allow water to flow off the Roofing System. Positive drainage is essential.
- Examine all metal flashings and valleys for rust and damage that may have been caused by wind or traffic on the Roofing System, and make certain they are well attached and sealed. Any damaged, loose, or poorly sealed materials must be repaired by a JM Approved Roofing Contractor only.
- Examine the areas that abut the Roofing System. Damaged masonry, poorly mounted counter flashing, loose caulking, bad mortar joints, and any loose stone or tile coping can appear to be a membrane leak. Have these items repaired by a JM Approved Roofing Contractor if found to be defective.
- Examine the edges of the Roofing System. Wind damage often occurs in these areas. Materials that have been lifted by the wind need to be corrected by a JM Approved Roofing Contractor.
- Examine any roof top equipment such as air conditioners, evaporative coolers, antennas, etc. Make certain they do not move excessively or cause a roof problem by leaking materials onto the Roofing System.
- Check the building exterior for settlement or movement. Structural movement can cause cracks and other problems which in turn may lead to leaks in your Roofing System.
- Examine protective coatings; any cracked, flaking, or blistered areas must be recoated.

Protecting your investment:

- Avoid unnecessary roof top traffic.
- If you allow equipment servicemen to go onto the Roofing System, advise them to be careful. Dropped tools, heavy equipment, etc. can damage the membrane. Log all such trips to the Roofing System.
- Do not allow service personnel to make penetrations into the Roofing System; these are to be made only by a JM Approved Roofing Contractor.

All the terms and conditions of this Guarantee shall be construed under the internal law of the state of Colorado without regard to its conflicts of law principles. Invalidity or unenforceability of any provisions herein shall not affect the validity or enforceability of any other provision which shall remain in full force and effect to the extent the main intent of the document is preserved.

This form is not to be copied or reproduced in any manner. This Guarantee is valid only in the United States of America.

Guarantee Services
(800) 922-5922
E-mail: gsu@jm.com
www.jm.com/roofing

Mailing Address:
Johns Manville
Guarantee Services
P.O. Box 625001
Littleton, CO 80162-5001

Shipping Address:
Johns Manville
Guarantee Services
10100 West Ute Avenue
Littleton, CO 80127

SAMPLE

ASSEMBLY LETTER
Roofing Systems

Johns Manville

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

March 21, 2018

Flynn Southwest LP
6270 East 50th Ave
Commerce City, CO 80022

Johns Manville
Jeff Caldwell
Technical Specialist
Roofing Systems Group
10100 W Ute Ave
Littleton, CO 80127
800-922-5922 Option 3
Jeff.caldwell@jm.com

RE: BCSIS/High Peaks Addition/Renovations

The above named contractor is currently a Johns Manville Approved Roofing Contractor in good standing, certified as a Summit Level Contractor. As such, the contractor is eligible to receive Peak Advantage Guarantees for Johns Manville SBS Asphalt Applied 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.

Building Information
ASCE 7 calculations were performed using information supplied to Johns Manville that has not been verified.

ASCE 7 (2010) Criteria		
Building Height, ft	20	
Exposure Category	C	
Wind Speed, V (mph)	171	
Building Risk Category	III/IV	
	Calculated Pressures	FM Equivalent
Field Pressure (psf)	-40.55	90
Perimeter Pressure (psf)	-68.04	150
Corner Pressure (psf)	-102.41	210

Roofing Assembly as proposed to Johns Manville

Deck Type:	Wood Plank	
Insulation:	ENRGY 3, 2 layers 2.6	Field Fastening: 16 fasteners and plates per board; Perimeter Fastening: 24 fasteners and plates per board; Corner Fastening: 32 fasteners and plates per board (4'x8' boards) using UltraFast Fasteners and Plates
Insulation:	Tapered ENRGY 3	Adhered in full coverage hot roofing asphalt (4'x4' board)
Cover Board:	RetroPlus Roof Board , 1/2"	Adhered in full coverage hot roofing asphalt (4'x4' board)
Base Ply:	DynaBase	Adhered in full coverage hot roofing asphalt
Cap Sheet:	DynaGlas FR	Adhered in full coverage hot roofing asphalt
Flashings:	DynaGlas FR over DynaBase	Adhered in full coverage hot roofing asphalt
Penetrations:	PermaFlash Flashing System	

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

- Fastening densities are consistent with -45 psi wind uplift resistance
- This system meets UL Class B up to 2" per foot slopes as tested in accordance with UL 790.

All Johns Manville materials installed as listed above are compatible and made in the USA. The system(s) shall be eligible for a 20 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,



Jeff Caldwell
Technical Specialist
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.

ASSEMBLY LETTER
Roofing Systems

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

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Building Information
ASCE 7 calculations were performed using information supplied to Johns Manville that has not been verified.

ASCE 7 (2010) Criteria		
Building Height, ft	20	
Exposure Category	C	
Wind Speed, V (mph)	171	
Building Risk Category	III/IV	
	Calculated Pressures	FM Equivalent
Field Pressure (psf)	-40.55	90
Perimeter Pressure (psf)	-68.04	150
Corner Pressure (psf)	-102.41	210

Roofing Assembly as proposed to Johns Manville

Deck Type:	Steel, min 22 ga	
Insulation:	ENRGY 3, 2 layers 2.6	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 Plates
Insulation:	Tapered ENRGY 3	Adhered in full coverage hot roofing asphalt (4'x4' board)
Cover Board:	RetroPlus Roof Board , 1/2"	Adhered in full coverage hot roofing asphalt (4'x4' board)
Base Ply:	DynaBase	Adhered in full coverage hot roofing asphalt
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Penetrations:	PermaFlash Flashing System	

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

- Fastening densities are consistent with FM 1-90 wind uplift resistance
- This system meets UL Class B up to 2" per foot slopes as tested in accordance with UL 790.

All Johns Manville materials installed as listed above are compatible and made in the USA. The system(s) shall be eligible for a 20 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,



Jeff Caldwell
Technical Specialist
Johns Manville Roofing Systems

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Johns Manville

COATED CR

COOL ROOF

WHITE

GRAY

TAN

TERRA COTTA

BROWN

BLACK

SBS COLOR CHOICES

WEATHERED WOOD

CHESTNUT

BURNT SIENNA

RED

SLATE

ASK YOUR JM SALES REPRESENTATIVE ABOUT OTHER COLOR CHOICES

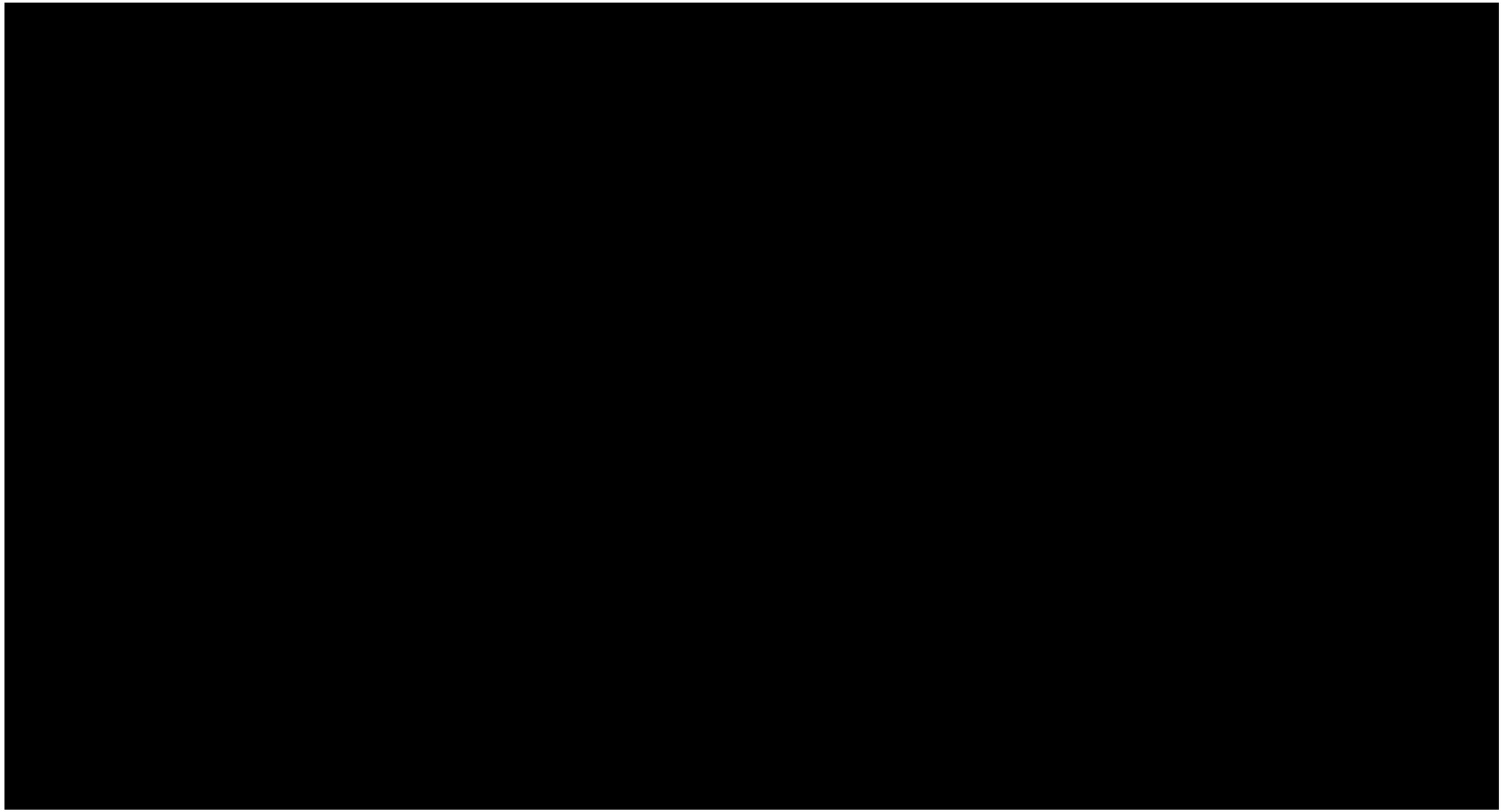
MORE COMPETITIVE MORE COMPLETE

SBS

(800) 922-5922

jm.com/roofing

RS-0000 10-15 (NEW)



TAPERED DESIGN CENTER

The Tapered Design Center does not assume any liability for any claims that may arise from the design shown. The Contractor is responsible to verify the design and dimensions of the project. If actual job site conditions are different from what is shown, project must be re-submitted for a revised shop drawing and quote.

ALLIED
an Oldcastle® company

PHONE: (888)832-7663
(888)TDC-ROOF
FAX: (888)832-3292
(888)TDC-FAX2
e-mail:taper@tdcroof.com

HIGH PEAKS ELEMENTARY SCHOOL
BOULDER, COLORADO
FLYNN SOUTHWEST LP

REVISIONS

REV NO.	DESCRIPTION	REV BY:

DRAWN BY: REDDIN EVANS
DRAWN DATE: 03/01/2018
REVISED DATE: -
SCALE: 1/16" = 1'-0"

SHEET # 1 OF 1
PROJECT # 1701370r2

Tubular Daylighting Device Schedule

TDD NUMBER (#)	SIZE (DIAMETER)	CLG TYPE	ROOM LOCATION	REMARKS
1	21"	GB	302	1
2	21"	GB	302	1
3	14"	EWD	237	2
4	14"	EWD	237	2
5	21"	EWD	236	2
6	21"	EWD	235	2
7	21"	SCS	119	1
8	21"	SCS	119	1

Tubular Daylighting Device Notes

ABBREVIATIONS:
- EWD EXISTING EXPOSED T&G WOOD DECK
- GB EXISTING SUSPENDED GYPSUM BOARD
- SCS SUSPENDED CEILING SYSTEM

GENERAL NOTES
- A. REFER TO SPECIFICATIONS FOR TUBULAR DAYLIGHT DEVICES PROVIDED PER ALTERNATE 2A, 2B AND 2C

REMARKS
1. SEE DETAIL 14/A10.3
2. SEE DETAIL 4/A10.3

Roof Plan Specific Notes

1. TAPERED INSULATION TRANSITION FROM NEW ROOF TO EXISTING ROOF LEVEL AND TIE INTO EXISTING BUR PER DETAIL.
2. SBS MODIFIED BITUMEN ROOFING AND TAPERED INSULATION TRANSITION OVER EXISTING ROOF INSULATION FROM EXISTING ROOF TO TOP OF NEW FASCIA PER DETAIL
3. REMOVE EXISTING METAL FASCIA FLASHINGS. PROVIDE NEW METAL FASCIA AND FLASHINGS INTO NEW GUTTER PER DETAILS.
4. NEW PREFINISHED METAL GUTTER WITH HEAT TAPE
5. REMOVE EXG CONDUCTOR HEAD AND DOWNSPOUT
6. REMOVE AND REPLACE GUTTER WITH NEW PRE-FINISHED GUTTER PER DETAIL. REUSE DOWNSPOUTS. ADD SNOW GUARDS DIRECTLY ABOVE NEW GUTTER.
7. NEW PRE-FINISHED DOWNSPOUT WITH HEAT TAPE. SECURE TO NEW TUBE STEEL POST PER DETAILS. SEE CIVIL DWGS FOR CONTINUATION.
7A. NEW PRE-FINISHED OPEN FACE DOWNSPOUT WITH HEAT TAPE. SEE CIVIL DWGS FOR CONTINUATION.
8. REMOVE EXISTING PITCH POCKETS AT EQUIPMENT SUPPORTS AND REPLACE WITH NEW PITCH POCKETS TO EXTEND ABOVE NEW ROOF LEVEL A MINIMUM OF 4" PER MANUFACTURERS STANDARD DETAIL. EXISTING PVC PIPE SUPPORTS TO REMAIN OR REPLACED IF DAMAGED DURING REMOVAL OF PITCH POCKET.
9. OVERFLOW SCUPPER – MODIFY TAPERED INSULATION BACK TO ROOF DRAIN SUMP EDGE TO BE 2" ABOVE SUMP EDGE – SEE 8/A10.3
10. REMOVE AND REPLACE EXISTING GUTTER AND DOWNSPOUT WITH NEW PREFINISHED GUTTER AND DOWNSPOUT.
11. NOT USED
12. RAISE EXISTING GAS LINE FOR NEW ROOF – SALVAGE SUPPORT PADS FOR REUSE OVER NEW ROOF
13. REMOVE EXG EMPTY ELECTRIC CONDUIT (VERIFY CONDUIT IS EMPTY)
14. INSTALL SNOW GUARDS ALONG EDGE OF ROOF PER DETAIL
15. BID ALTERNATE #7- NEW ROOFTOP CU- SEE MECHANICAL DRAWINGS. SEE 13/A10.3 FOR CURB DETAIL. PATCH EXISTING TPO ROOFS PER MANUFACTURERS RECOMMENDED DETAILS.
16. REMOVE AND REINSTALL EXISTING TUBULAR DAYLIGHTING DOME ASSEMBLY TO INSTALL NEW BASE FLASHING AROUND EXISTING CURB.
17. REMOVE EXISTING CURB MOUNTED EQUIPMENT TO EXTEND ROOF CURB AND BASE FLASHING PER DETAIL 29/A10.3 TO MIN 8" ABOVE NEW ROOF. RE-INSTALL NEW OR EXG ROOFTOP EQUIPMENT PER MECHANICAL. EXTEND DUCT WORK PER MECHANICAL. FOR BIDDING PURPOSES, EXTEND EXISTING ELECTRICAL CONNECTION AT MOTORIZED EQUIPMENT BY PROVIDING NEW JUNCTION BOX IN CEILING PLENUM OR DECK BELOW WITHIN 10 FEET OF THE RELOCATED EQUIPMENT LOCATION. PROVIDE COST FOR THIS WORK AS BASE BID OR ALTERNATE DEPENDING ON LOCATION. IF A JUNCTION BOX OR OTHER EXISTING CONNECTION TO THE EXISTING CIRCUIT CANNOT BE LOCATED WITHIN 10 FEET, ADDITIONAL MATERIAL AND LABOR TO EXTEND TO NEAREST CONNECTION POINT WILL BE COMPENSATED BY CHANGE ORDER.
18. RAISE EXG ROOF HATCH TO PROVIDE MINIMUM 8" HIGH BASE FLASHING. FLASH PER ROOF MFR'S STANDARD DETAIL
19. EXISTING CURB – REMOVE BASE FLASHING AND INSTALL NEW BASE FLASHING AND SLIP FLASHING PER DETAIL 19/A10.3 AND RE-ROOFED AREAS
20. EXISTING PITCH POCKETS REMAIN – INSTALL NEW PITCH PANS AROUND EXISTING PITCH POCKETS AND EXTEND TO 4" MIN ABOVE NEW ROOF MEMBRANE. FILL WITH POURABLE FILLER PER ROOF MANUFACTURER'S RECOMMENDATIONS.
21. REMOVE CURB AND CURB COVER DOWN TO EXG ROOF DECK
22. REMOVE AND REPLACE EXISTING ROOF DRAIN STRAINER AS REQUIRED TO INSTALL NEW ROOF
23. REMOVE EXISTING FLUE AND FLUE CURB (VERIFY ON MECHANICAL DWGS). PROVIDE ADDITIONAL FASTENERS THROUGH NEW SHEATHING AROUND PERIMETER OF EXISTING WOOD DECK PENETRATION AT EACH DECK PLANK.
24. FLASH AROUND EXISTING AND NEW FLUES AND INTAKE HOODS PER ROOF MANUFACTURER'S STANDARD DETAIL. SEE MECHANICAL FOR ADD'L INFORMATION
25. NEW EXHAUST FAN ON EXG TPO ROOF (SEE MECH). REPAIR AND FLASH TPO ROOF AROUND NEW EXHAUST FAN CURB PER ROOFING MFR'S STANDARD DETAILS.

Roof Plan Assembly Notes

R1 REMOVE EXISTING BUILT-UP ROOFING AND INSULATION DOWN TO EXISTING 3" T&G WOOD DECK. REPAIR DAMAGED T&G WOOD DECK AS REQUIRED. PROVIDE ADDITIONAL DECK FASTENERS TO GLU-LAM BEAMS PER STRUCTURAL PRIOR TO RE-ROOFING. INSTALL ⅞" OSB OVER EXISTING DECK – SEE STRUCTURAL FOR FASTENING PATTERN. MECHANICALLY FASTEN NEW R-30 RIGID INSULATION (TWO LAYERS) THRU OSB TO EXISTING WOOD DECK. HOT MOP COVER BOARD OVER RIGID INSULATION. NEW SBS MODIFIED BITUMEN ROOFING SYSTEM OVER COVER BOARD. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

R2 REMOVE EXISTING BUILT-UP ROOFING AND INSULATION DOWN TO EXISTING METAL ROOF DECK. MECHANICALLY FASTEN NEW R-30 RIGID INSULATION (TWO LAYERS) TO EXISTING METAL DECK. HOT MOP COVER BOARD OVER RIGID INSULATION. NEW SBS MODIFIED BITUMEN ROOFING SYSTEM OVER COVER BOARD. SEE SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS.

R3 SBS MODIFIED BITUMEN ROOF SYSTEM OVER HOT MOPPED COVER BOARD OVER MECHANICALLY FASTENED R-30 RIGID INSULATION (TWO LAYERS) OVER METAL ROOF DECK.

Roof Plan General Notes

INDICATES DIRECTION OF SLOPE TO ROOF DRAINS OR GUTTERS & DOWNSPOUTS

INDICATES WALKWAY LOCATIONS

INDICATES TAPERED INSULATION CRICKET LOCATIONS AND SLOPE

INDICATES NEW TUBULAR DAYLIGHT DEVICE (TDD) LOCATION, COORDINATE LOCATION W/JOIST OR BEAMS AND RELOCATE AS NECESSARY (UP TO 2'-0").

NEW OR EXG VTR

1. SEE ROOF ASSEMBLY NOTES FOR ROOF TYPE CONSTRUCTION SYSTEMS.
2. UNLESS NOTED OTHERWISE, CONFIGURE TAPERED INSULATION CRICKETS TO HAVE MINIMUM SLOPE 1/8" PER FOOT IN VALLEY.
3. UNLESS NOTED OTHERWISE, ALL TAPERED CRICKETS SHALL SLOPE MINIMUM 1/4" PER FOOT SLOPE PERPENDICULAR TO VALLEY.
4. PAINT ALL NEW ROOF TOP EQUIPMENT, ACCESSORIES, EXPOSED FLASHING, ETC. THAT ARE NOT PREFINISHED.
5. REFER TO PLUMBING, MECHANICAL & ELECTRICAL DRAWINGS FOR ROOF-MOUNTED EQUIPMENT AND PENETRATIONS. ALL EQUIPMENT/PENETRATIONS MAY NOT BE SHOWN ON ROOF PLAN.
6. PROVIDE FLASHING PER ROOFING MFR'S RECOMMENDED DETAIL AT ALL NEW AND EXISTING PLUMBING VENTS. EXTEND ANY EXISTING PLUMBING VENT TO BE A MINIMUM OF 8" ABOVE NEW ROOF MEMBRANE. SEE MECHANICAL DRAWINGS FOR NEW PLUMBING VENT LOCATIONS.
7. FOR TYPICAL EXPANSION CONTROL JOINT AT PARAPET CAP FLASHING SEE 20/A10.3
8. FOR TYPICAL ROOF TOP MECH UNIT CURBS SEE 10/A10.3.
9. FOR TYPICAL NEW EF (EXHAUST FAN) OR RH (ROOF HOOD) CURB OVER METAL DECK SEE 9/A10.3. FOR TYPICAL NEW EF OR RH CURB OVER EXG WOOD DECK SEE 25/A10.3
10. FOR TYPICAL ROOF PIPING, ROOF VENT CAP AND CONDUIT PENETRATIONS – FLASH PER ROOFING MANUFACTURER'S STANDARD DETAIL.
11. FOR TDD'S INSTALLED IN METAL DECK SEE DETAIL 14/A10.3.
    FOR TDD'S INSTALLED IN EXISTING WOOD DECK SEE DETAIL 4/A10.3
12. REFER TO DETAIL 29/A10.3 FOR TYPICAL OVERFLOW SCUPPER (OS). OVERFLOW SCUPPERS SHALL BE INSTALLED WITH FLOW LINE 2" MAXIMUM ABOVE THE ROOF DRAINS. SEE BUILDING ELEVATIONS.
13. REFER TO DETAIL 15/A10.3 FOR TYPICAL FLUE PENETRATION.
14. REFER TO DETAIL 28/A10.3 FOR TYPICAL ROOF DRAIN.
15. ALL DOWNSPOUTS SHALL BE SIZED PER IBC BASED OF ROOF DRAIN AREA.
    29/A10.1 FOR TYPICAL GUTTER TO DOWNSPOUT DETAIL. REFER
    0.3 FOR TYP. DOWNSPOUT
    TYPICAL DOWNSPOUT DISCHARGE.

[redacted]

L
RAIN

CU	CONDENSING UNIT
EF	EXHAUST FAN
MAU	MAKEUP AIR UNIT
OS	OVERFLOW SCUPPER
RFH	ROOF HATCH
RTU	ROOF TOP UNIT
TDD	TUBULAR DAYLIGHTING DEVICE

INDICATES EXISTING BUILT-UP ROOF AND INSULATION AREAS TO BE REMOVED AND RE-ROOFED. REMOVE ALL FLASHINGS, TERMINATION BARS AND OTHER ACCESSORIES RELATED TO BUR REMOVAL

INDICATES SCOPE OF RE-ROOF PER BASE BID AND ALTERNATE AREAS

Key Notes List

2.1 DRILLED CONC PIER
2.2 BACKFILL
2.3 FREE-DRAINING GRANULAR BACKFILL
2.4 COMPACTED SUBGRADE
2.5 AGGREGATE BASE COURSE
2.6 ASPHALTIC CONC PAVING
2.7 CONCRETE PAVING
2.8 CONC WALK
2.9 BRICK PAVER
2.10 TENNIS COURT SURFACING
2.11 TRACK SURFACING
2.12 BASEBALL FIELD SURFACING
2.13 CONC CURB & GUTTER
2.14 ASPHALT CURB
2.15 LANDSCAPE TIMBER
2.16 CHAIN LINK FENCE
2.17 CHAIN LINK GATE
2.18 BACKSTOP
2.19 MASONRY RETAINING WALL SYSTEM
2.20 TREE GRATE
2.21 FILTER FABRIC
2.22 PERFORATED DRAIN PIPE
2.23 UNPERFORATED DRAIN PIPE
2.24 TRENCH DRAIN
2.25 TRENCH DRAIN
2.26 CONC CHANNEL
2.27 INLET
2.28 MANHOLE
2.29 CONC HEAD WALL
2.30 CONC PIPE FLARED END SECTION

3.1 CONC FOUNDATION
3.2 CONC GRADE BEAM
3.3 CONC SLAB
3.4 UNDERSLAB GRAVEL BED
3.5 UNDERSLAB VAPOR RETARDER
3.6 UNDERSLAB BLOTTER LAYER
3.7 CONC COLUMN
3.8 CONC BEAM
3.9 CONC WALL
3.10 PRECAST CONC COL
3.11 PRECAST CONC BEAM
3.12 PRECAST CONC WALL PANEL
3.13 PRECAST CONC DOUBLE TEE
3.14 CONC SPLASH BLOCK
3.15 LT WEIGHT CONC
3.16 REINFORCING BAR
3.17 WELDED WIRE FABRIC
3.18 PREMOLDED JOINT FILLER
3.19 WATERSTOP

4.1 CMU
4.2 CMU-SOLID UNIT
4.3 CMU-GROUTED SOLID
4.4 CMU-SAND FILLED
4.5 CMU-ACOUSTICAL
4.6 BOND BEAM
4.7 FACE BRICK
4.8 GLASS BLOCK
4.9 GROUT FULL
4.10 HORIZ MASONRY REINFORCING
4.11 MASONRY ANCHOR
4.12 DOVETAIL ANCHOR
4.13 MASONRY VENEER WALL TIES
4.14 MASONRY FLASHING
4.15 WEEP SYSTEM
4.16 SEMI RIGID INSUL
4.17 NON-ASPHALTIC FIBERBOARD
4.18 CONC PAVER
4.19 MORTAR DIVERTER COLLECTION SYSTEM

5.1 STEEL COLUMN
5.2 STEEL BEAM
5.3 STEEL JOIST
5.4 STEEL ANGLE BRACE
5.5 WELD PLATE
5.6 STEEL ROOF DECK
5.7 STEEL ACOUSTICAL ROOF DECK
5.8 CORRUGATED METAL FORMING
5.9 STRUCTURAL STUD/ JOIST
5.10 COLD-FORMED METAL FRAMING
5.11 STEEL LADDER
5.12 CONC FILLED STEEL PAN STAIR TREAD & RISER
5.13 PRE-MANUFACTURED STEEL STAIR SYSTEM
5.14 ABRASIVE STAIR NOSING
5.15 STEEL RAILING
5.16 STEEL RAILING SLEEVE
5.17 SUMP PAN
5.18 GRATING
5.19 CHECKERED PLATE
5.20 STEEL COL COVER
5.21 EXP JOINT COVER
5.22 BOLLARD POST

6.1 WOOD FRAMING
6.2 WOOD STUD/ JOIST
6.3 WOOD BLOCKING
6.4 WOOD FURRING
6.5 WOOD NAILER
6.6 WOOD SHIM
6.7 WOOD TRUSS
6.8 GLUED LAMINATED TIMBER
6.9 LAMINATED VENEER LUMBER
6.10 PLYWOOD SHEATHING
6.11 ORIENTED STRAND BOARD SHEATHING
6.12 PARTICLE BOARD
6.13 TEMPERED HARDBOARD
6.14 PLASTIC LAMINATE
6.15 WOOD CURB
6.16 WOOD FLOORING
6.17 WOOD CEILING
6.18 WOOD HANDRAIL
6.19 WOOD TRIM
6.20 WOOD SHELF

7.1 DAMPROOFING
7.2 SELF-ADHERED SHEET MEMBRANE WATERPROOFING
7.3 FLUID APPLIED WATERPROOFING
7.4 WATER REPELLENT/ GRAFFITI CONTROL COATING
7.5 RIGID INSULATION
7.6 TAPERED INSUL
7.7 BATT INSULATION
7.8 BLANKET INSULATION
7.9 LOOSE FILL INSUL
7.10 FOAMED INSULATION
7.11 BLANKET FIREPROOFING (DUCT WRAP)
7.12 MTL BUILDING PANEL
7.13 PRFN MTL SIDING
7.14 WOOD SIDING
7.15 FIBERGLASS SHINGLES
7.16 PRFN MTL ROOFING
7.17 PRFN MTL SOFFIT
7.18 SINGLE-PLY MEMBRANE ROOFING
7.19 BUILT-UP ROOFING
7.20 UNDERLAYMENT
7.21 SELF-ADHERED UNDERLAYMENT
7.22 'Z' FURRING
7.23 EXT DECK COATING
7.24 ROOF WALKWAY PAVER
7.25 ROOF WALKWAY PADS
7.26 CANT STRIP
7.27 BASE FLASHING
7.28 FLEXIBLE FLASHING
7.29 MTL FLASHING
7.30 MTL REGLET
7.31 MTL SPRING FLG
7.32 MTL COUNTER FLG
7.33 MTL STEP FLASHING
7.34 MTL CRICKET FLG
7.35 MTL GRAVEL STOP
7.36 PAINTED MTL WALL CAP
7.37 PRFN MTL WALL CAP
7.38 MTL CLEAT
7.39 MTL OVERFLOW SCUPPER
7.40 MTL GUTTER
7.41 MTL DOWNSPOUT
7.42 MTL EQUIP CURB
7.43 SKYLIGHT
7.44 ROOF ACCESS HATCH
7.45 SMOKE VENT
7.46 SNOW GUARD
7.47 CEMENTITIOUS FIREPROOFING
7.48 FIRESTOP SYSTEM
7.49 FIRE RATED JOINT SEALANT ASSEMBLY
7.50 MTL EXP JOINT FLG & BELLOWS
7.51 COMPRESSION SEAL
7.52 JOINT SEALANT
7.53 JOINT BACKING MATERIAL
7.54 MTL SCUPPER TO CONDUCTOR HEAD & DS
7.55 WEATHER RESISTIVE BARRIER SYSTEM

8.1 HM FRAME
8.2 HM DOOR
8.3 HM FIXED PANEL
8.4 HM WINDOW
8.5 HM STOP
8.6 HM DEFLECTION CHANNEL
8.7 HM FRAME ANCHOR
8.8 HM SUB-SILL
8.9 WOOD FRAME
8.10 WOOD DOOR
8.11 WOOD FIXED PANEL
8.12 WOOD WINDOW
8.13 WOOD STOP
8.14 ALUM STOREFRONT FRAMING
8.15 ALUM CURTAIN WALL FRAMING
8.16 ALUM FRAME
8.17 ALUM DOOR
8.18 ALUM WINDOW
8.19 ALUM STOP
8.20 ALUM DEFLECTION CHANNEL
8.21 ALUM SUB-SILL
8.22 ALUM SILL FLG
8.23 ALUM THRESHOLD
8.24 WALL ACCESS DR
8.25 FLOOR ACCESS DR
8.26 OVERHEAD COILING DOOR
8.27 OVERHEAD COILING GRILLE
8.28 SLIDING GLASS DR
8.29 SCREEN DOOR
8.30 SHOWER DOOR
8.31 DOOR LOUVER
8.32 GLAZING

9.1 PORTLAND CEMENT PLASTER
9.2 ACOUSTICAL PLASTER
9.3 VENEER PLASTER
9.4 ACRYLIC THIN COAT STUCCO
9.5 PORTLAND CEMENT STUCCO
9.6 DRYWALL STUD
9.7 ACOUSTICAL INSUL
9.8 GYPSUM BOARD
9.9 ABUSE RESISTANT GYPSUM BOARD
9.10 WATER RESISTANT GYPSUM BOARD
9.11 GYPSUM SHEATHING
9.12 SHAFTWALL SYSTEM
9.13 GYPSUM BOARD CEILING
9.14 SUSPENDED CEILING SYSTEM
9.15 ACOUSTICAL TILE
9.16 QUARRY TILE
9.17 QUARRY TILE BASE
9.18 CERAMIC TILE
9.19 CERAMIC TILE BASE
9.20 PORCELAIN TILE
9.21 WOOD FLOOR
9.22 POLYETHELENE VAPOR BARRIER
9.23 WEIGHT ROOM FLOORING
9.24 VINYL COMPOSITION TILE
9.25 SHEET VINYL FLOORING
9.26 SEAMLESS TROWELED FLOORING
9.27 CARPET
9.28 RUBBER BASE
9.29 RUBBER TREADS & RISERS
9.30 RUBBER STAIR SKIRT
9.31 VINYL WALL COVERING
9.32 ACOUSTICAL WALL PANEL
9.33 TACKABLE WALL PANEL
9.34 PAINT

10.1 METAL TOILET PARTITION
10.2 PLASTIC TOILET PARTITION
10.3 URINAL SCREEN
10.4 SHOWER COMPARTMENT
10.5 CUBICLE TRACK & CURTAIN
10.6 METAL WALL LOUVER
10.7 FLAGPOLE
10.8 INTERIOR SIGNAGE
10.9 LOCKER
10.10 FIRE EXTINGUISHER CABINET
10.11 FIRE EXTINGUISHER BRACKET
10.12 WIRE MESH PARTITION
10.13 WIRE MESH DOOR
10.14 FOLDING GATE
10.15 DEMOUNTABLE PARTITION
10.16 FOLDING PANEL PARTITION
10.17 ACCORDION FOLDING PARTITION
10.18 MTL STORAGE SHELVING
10.19 ROLLING STORAGE UNIT
10.20 BACKPACK HOOK

11.1 PLATFORM CURTAIN
11.2 BACKDROP CURTAIN
11.3 PROJECTION SCREEN
11.4 TV/MONITOR/VCR MOUNTING BRACKET
11.5 MAT MOVER
11.6 SCOREBOARD
11.7 BASKETBALL BACKSTOP
11.8 GYM DIVIDER CURTAIN
11.9 GYM WALL PAD
11.10 GYM FLOOR SLEEVE
11.11 CERAMIC KILN
11.12 FLAMMABLE STORAGE CABINET
11.13 VENTED ACID STORAGE CABINET

12.1 PLASTIC LAMINATE COUNTERTOP
12.2 KEYBOARD TRAY
12.3 ARTICULATING KEYBOARD TRAY
12.4 PENCIL DRAWER
12.5 CASEWORK LOCK
12.6 BACKSPLASH
12.7 EPOXY RESIN COUNTERTOP
12.8 EPOXY RESIN SINK
12.9 DISPLAY CASE
12.10 FLOOR MAT
12.11 FLOOR MAT FRAME
12.12 WINDOW BLINDS
12.13 SUN CONTROL SHADE
12.14 AUDITORIUM SEATING
12.15 GYM BLEACHERS
12.16 TELESCOPING GYM BLEACHERS

13.1 PORTABLE GYM BLEACHERS
13.2 EXT BLEACHERS

14.1 ELEVATOR
14.2 WHEELCHAIR LIFT

15.1 PLUMBING PIPING
15.2 GAS PIPING
15.3 FIRE SPRINKLER PIPING
15.4 FIRE SPRINKLER HEAD
15.5 EXH HOOD
15.6 MECH DUCTWORK
15.7 MECH RTU
15.8 ROOF EXH FAN
15.9 ROOF EXH VENT
15.10 ROOF VENTILATOR HOOD
15.11 BOILER STACK & VENT CAP
15.12 FLUE & VENT CAP

16.1 ELEC CONDUIT
16.2 ELEC OUTLET
16.3 LIGHT FIXTURE
16.4 ELEC/ LIGHT SWITCH
16.5 ELEC JUNCTION BOX
16.6 EXIT LIGHT
16.7 HORN
16.8 STROBE
16.9 ALARM STATION
16.10 DOOR ACTUATOR
16.11 MASTER CLOCK
16.12 FIRE ALARM CONTROL PANEL
16.13 FIRE ALARM GRAPHIC & ANNUNCIATION PANEL

17.1 COMMUNICATIONS CONDUIT/ WIRING
17.2 COMMUNICATIONS OUTLET
17.3 COMMUNICATIONS EQUIPMENT
17.4 SECURITY SYSTEM CONDUIT/ WIRING
17.5 SECURITY CAMERA
17.6 SECURITY MONITOR

NOTE: THE KEYNOTE REFERENCE NUMBERS SHOWN ABOVE MAY OR MAY NOT CORRESPOND TO SPECIFICATION SECTIONS IN THE PROJECT MANUAL.

Roof Plan
Scale: 1/16" = 1'-0"

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BCSIS/ High Peaks Elementary School

Addition / Renovation

Boulder Valley School District RE2

3995 Aurora Avenue
Boulder, CO 80303

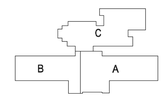
Boulder Valley School District
Excellence and Equity

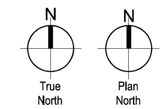
BUILDING FOR STUDENT SUCCESS

Bid Set
Not For Construction

Drawn:	FWK
Checked:	LKA
Issued:	10/16/2017
Revised:	

Area Key Plan





Roof Plan

A4.1

Project No. 16.010
The LKA Partners Incorporated

Johns Manville

To be used as the roofing base sheet

PERMAPLY® 28

Fiber Glass-Reinforced, Asphalt-Coated Lightweight Base Sheet

Material meets the requirements of ASTM D 4601, Type II

Features and Components

PermaPly 28 is designed for use as the first or base sheet in built up roofing or modified bitumen roof assemblies.

Lightweight: Exceptionally pliable, easy to handle and lays flat.

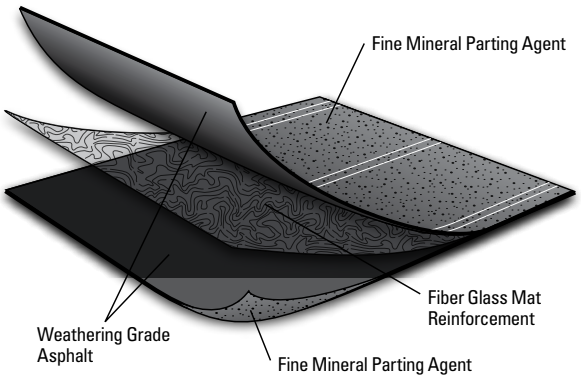
Asphalt Coating: Makes it suitable as an intermediate or ply felt in cold-applied built-up and modified bitumen roof assemblies.

Ideal for Mechanical Attachment: Use where mechanical attachment of the membrane to the roof substrate or deck is desired.

Fiber Glass Reinforcement Mat: Low moisture, excellent dimensional stability and resistance to rot make it an ideal replacement for organic base or ply sheets. Provides a solid dimensionally stable substrate for other roofing membrane components.

Laying Lines: Laying lines are imprinted on the top surface so the roofing mechanic can install the felt with the proper exposure and provide the correct number of plies.

Surfacing: Fine mineral parting agent.



Component
M Membrane
Multi-Ply
Single Ply

Type
BS Base Sheet
PS Ply Sheet



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
	Compatible with the selected Multi-Ply systems above							

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

*Suitable as an intermediate ply in hot asphalt applied hybrid PVC fleece back membrane systems.

Energy and the Environment

Pre-Consumer Recycled Content	0%
Post-Consumer Recycled Content	0%

Peak Advantage® Guarantee Information

Systems	Guarantee Term
Dependent on system	Up to 30 years

*Contact JM Technical Services for specific system requirements or guarantee terms.

Codes and Approvals

CLASSIFIED UL C US

FM APPROVED

MIAMI-DADE COUNTY APPROVED
Miami-Dade County Product Control Approved

Installation/Application



Hot Asphalt | Cold Applied | Mechanically Fastened

Refer to JM BUR application guides and detail drawings for instructions.

Roll Size	36" x 106' (914 mm x 32.31 m)
Roll Coverage *(net)*	300 ft² (27.87 m²)
Roll Coverage *(gross)*	316.5 ft² (29.5 m²)
Roll Weight	67 lb (30.4 kg)

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.

PERMAPLY® 28

Fiber Glass-Reinforced,
Asphalt-Coated Lightweight Base Sheet

Material meets the requirements of ASTM D 4601, Type II

Tested Physical Properties

	Physical Properties	ASTM Test Method	Standard Type II	PermaPly 28
Strength	Breaking Strength @ 73.4° F, *(min)* (lbf/in)			
	Longitudinal (with fiber grain)	D 146	≥ 44	76
	Transverse (across fiber grain)	D 146	≥ 44	45
	Pliability at 77° F (pass/fail) 90° around 1" mandrel @ 77° F, (pass/fail)	D4601	No Failures	Pass
Performance	Net Dry Mass - Coated Sheet, *(min)* (lb/100ft²) Individual Roll	D 228	≥ 14.5	22.4
	Mass per Area of Desaturated Glass Felt (lb/100ft²)	D 228	≥ 1.7	2.0
	Moisture at Point of Manufacture, *(max)* (%)[1]	D 146	≤ 1.0	0.6
	Surfacing and Stabilizer, *(max)* (%)	D 228	≤ 65	65
	Asphalt, *(min)* (lb/100ft²)	D 228	≥ 7.0	7.1
	Ash - glass mat only, (%)	D 228	70 – 88	77
Installation	Unrolling @ 40° F and 140° F, (pass/fail)	D 4601	No Damage	Pass

Note: 1. Moisture (As Received) was utilized in lieu of Moisture at Point of Manufacture

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.

Johns Manville

To be used as the roofing cap sheet

DYNAGLAS® FR

Fire-Retardant, Fiber Glass-Reinforced, SBS Mineral-Surfaced Cap Sheet

Meets the requirements of ASTM D 6163, Type 1, Grade G

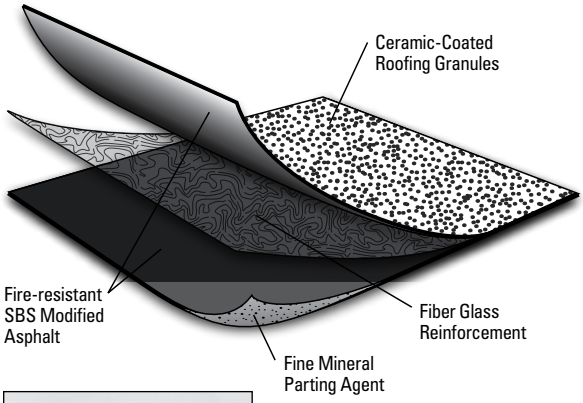
Features and Components

DynaGlas FR is used as a fiber glass-reinforced mineral-surfaced cap sheet in a variety of multi-ply roofing systems.

Ceramic-Coated Roofing Granules: Specifically engineered for optimal embedment in the SBS-blend sheet. The ceramic coating promotes excellent long-term adhesion.

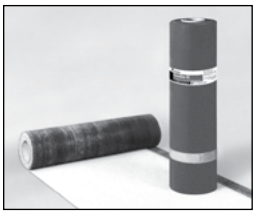
High-Quality SBS Rubber and Asphalt Blend: Lends elasticity and flexibility to the sheet. The elongation and recovery properties allow the product to easily accommodate the continual expansion and contraction experienced on all roofs. The FR blend contains additional fire-retardant additives.

Fiber Glass Reinforcement Mat: Offers excellent dimensional stability and tensile strength and withstands differential movement. Because it has no thermal memory less time is needed to relax the sheet, allowing for ease of installation. The fiber glass mat also has good lay-flat characteristics.



Component: M Membrane — Multi-Ply

Type: CS Cap Sheet



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
	Compatible with the selected Multi-Ply systems above							

Single Ply	TPO		PVC		EPDM		
	MF	FA	MF	FA	MF	FA	BA
	Do not use with Single Ply systems						

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

Test	Initial	3-Year Aged
Reflectivity* (ASTM C 1549)	0.26	0.27
Emissivity* (ASTM C 1371)	0.87	0.84
Solar Reflectance Index* (SRI) - E 1980	25	25
Pre-Consumer Recycled Content	0%	
Post-Consumer Recycled Content	0%	

*Standard White Granule only

Peak Advantage® Guarantee Information

Systems	Guarantee Term
When used in most 2-5 ply JM SBS systems.*	Up to 30 years

*Contact JM Technical Services for specific system requirements or guarantee terms.

Codes and Approvals

CLASSIFIED UL C US

FM APPROVED

MIAMI-DADE COUNTY APPROVED
Miami-Dade County Product Control Approved

Product Application



Hot Asphalt — Cold Applied

- May be installed in Type IV asphalt or in an approved JM adhesive
- Laps may be installed using heat-welding techniques
- Refer to JM SBS modified bitumen specifications and detail drawings for application and slope information

Packaging and Dimensions

Roll Coverage*	95.8 ft² (8.9 m²)
Roll Length	32' 10" (10.01 m)
Roll Width	39 ⅜" (1 m)
Roll Weight	102 lb (46 kg)
Rolls per Pallet	20
Pallet Weight	2,130 lb (966 kg)
Pallets per Truck**	22

*Assumes a 4" side lap **Assumes 48' flatbed truck.

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.

Johns Manville

DYNAGLAS® FR

Fire-Retardant, Fiber Glass-Reinforced, SBS Mineral-Surfaced Cap Sheet

Meets the requirements of ASTM D 6163, Type 1, Grade G

Tested Physical Properties

Physical Properties			ASTM Test Method	Standard for ASTM D 6163, Type 1, Grade G (Min.)	DynaGlas FR	
					MD*	XMD**
Strength	Tensile Tear		D 5147	35 lbf (156 N)	100 lbf (445 N)	90 lbf (400 N)
	Peak Load at 0°F (-18°C)		D 5147	70 lbf/in (12.3 kN/m)	130 lbf/in (22.8 kN/m)	100 lbf/in (17.5 kN/m)
	Peak Load at 73.4°F (23°C)		D 5147	30 lbf/in (5.3 kN/m)	70 lbf/in (12.3 kN/m)	50 lbf/in (8.8 kN/m)
Longevity	Low Temp. Flexibility	Unconditioned	D 5147	0°F (-18°C)	-10°F (-23°C)	
		90-Day Heat Conditioned	D 5147	0°F (-18°C)	-10°F (-23°C)	
	Compound Stability		D 5147	215°F (102°C)	250°F (121°C)	
	Granule Loss		D 4977	2 g (0.07 oz)	0.7 g (0.02 oz)	
	Thickness		D 5147	95 mil (2.4 mm)	157 mil (4.0 mm)	
	Selvage Edge Thickness		D 5147	N/A	122 mil (3.1 mm)	
	Elongation at Peak Load at 0°F (-18°C)		D 5147	1%	5%	5%
	Elongation at Peak Load at 73.4°F (23°C)		D 5147	2%	4%	4%
	Ultimate Elongation at 73.4°F (23°C)		D 5147	3%	50%	55%
Aged Performance	90-Day Heat-Conditioned Peak Load at 0°F (-18°C)		D 5147	70 lbf/in (12.3 kN/m)	135 lbf/in (23.6 kN/m)	100 lbf/in (17.5 kN/m)
	90-Day Heat-Conditioned Elongation at Peak Load at 0°F (-18°C)		D 5147	1%	5%	4%
	90-Day Heat-Conditioned Peak Load at 73.4°F (23°C)		D 5147	30 lbf/in (5.3 kN/m)	100 lbf/in (17.5 kN/m)	75 lbf/in (13.1 kN/m)
	90-Day Heat-Conditioned Elongation at Peak Load at 73.4°F (23°C)		D 5147	2%	4%	4%
	90-Day Heat-Conditioned Ultimate Elongation at 73.4°F (23°C)		D 5147	3%	5%	6%
Installation	Dimensional Stability		D 5147	0.5%	0.1%	0.1%
	Net Mass per Unit Area		D 146	65 lb/100 ft² (30 kg/9.29 m²)	94 lb/100 ft² (43 kg/9.29 m²)	
	Roll Weight		D 146	N/A	102 lb (46 kg)	

*MD = Machine Direction
**XMD = Cross-Machine Direction

Note: All data represents tested values.

Supplemental Testing

Physical Properties		ASTM Test Method	Standard for ASTM D 6163, Type 1, Grade G (Min.)	DynaGlas FR Result
Cyclic Joint Displacement	Initial	D 5849	N/A	Pass at 500 cycles*
	After 90-Day Heat Conditioning per ASTM D 5147	D 5849	N/A	Pass at 200 cycles*
	After 180-Day Heat Conditioning per ASTM D 5147	D 5849	N/A	Pass at 200 cycles*

*When adhered to DynaBase in hot asphalt.

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.

To be used as a wall flashing base sheet

DYNABASE®

Fiber Glass-Reinforced SBS Base or Ply

Meets the requirements of ASTM D 6163, Type I, Grade S

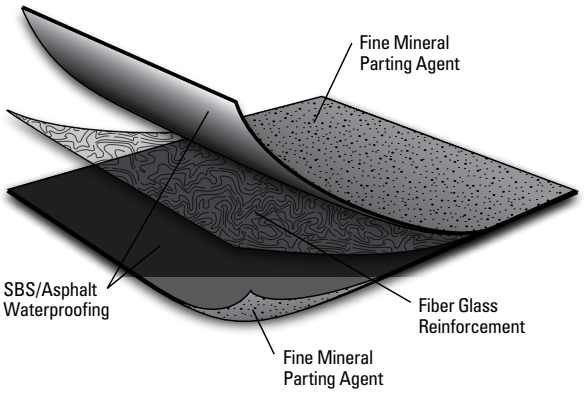
Features and Components

DynaBase is used as a fiber glass-reinforced base or ply sheet in a variety of multi-ply roofing systems.

High-Quality SBS Rubber and Asphalt Blend: Lends elasticity and flexibility to the sheet. The elongation and recovery properties allow the product to easily accommodate the continual expansion and contraction experienced on all roofs.

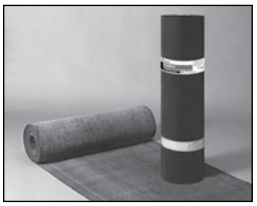
Fiber Glass Reinforcement Mat: Offers excellent dimensional stability and tensile strength and withstands differential movement. Because it has no thermal memory less time is needed to relax the sheet, allowing for ease of installation. The fiber glass mat also has good lay-flat characteristics, contributing to better aesthetics.

Surfacing: Fine mineral parting agent on both sides of the sheet.



Component
M Membrane
Multi-Ply
Single Ply

Type
BS Base Sheet
PS Ply Sheet



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
	Compatible with the selected Multi-Ply systems above							

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

Pre-Consumer Recycled Content	0%
Post-Consumer Recycled Content	0%

Peak Advantage® Guarantee Information

Systems	Guarantee Term
When used in most 2-5 ply JM SBS systems.*	Up to 30 years

*Contact JM Technical Services for specific system requirements or guarantee terms.

Codes and Approvals

CLASSIFIED UL C US

FM APPROVED

MIAMI-DADE COUNTY APPROVED
Miami-Dade County Product Control Approved

Product Application


Hot Asphalt

Cold Applied

- May be used as backer ply in two-ply flashing systems
- May be installed in Type IV asphalt, or in an approved JM adhesive
- Laps may also be installed using heat-welding techniques
- No in-lap fastening
- Refer to JM SBS modified bitumen specifications and detail drawings for application and slope information
- When used as a cap sheet, the use of an approved surfacing is required

Packaging and Dimensions

Roll Coverage*	148.2 ft² (13.8 m²)
Roll Length	49' 2" (14.99 m)
Roll Width	39 ⅜" (1 m)
Rolls per Pallet	20
Pallet Weight	2,050 lb (930 kg)
Pallets per Truck**	22

*Assumes a 4" side lap **Assumes 48' flatbed truck.

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.

Johns Manville

DYNABASE®

Fiber Glass-Reinforced SBS Base or Ply

Meets the requirements of ASTM D 6163, Type I, Grade S

Tested Physical Properties

	Physical Properties		ASTM Test Method	Standard for ASTM D 6163, Type 1, Grade S (Min.)	DynaBase	
					MD*	XMD**
Strength	Tensile Tear		D 5147	35 lbf (156 N)	100 lbf (445 N)	80 lbf (356 N)
	Peak Load at 0°F (-18°C)		D 5147	70 lbf/in (12.3 kN/m)	105 lbf/in (18.4 kN/m)	95 lbf/in (16.6 kN/m)
	Peak Load at 73.4°F (23°C)		D 5147	30 lbf/in (5.3 kN/m)	65 lbf/in (11.4 kN/m)	50 lbf/in (8.8 kN/m)
Longevity	Low Temp. Flexibility	Unconditioned	D 5147	0°F (-18°C)	-30°F (-34°C)	
		90-Day Heat Conditioned	D 5147	0°F (-18°C)	-30°F (-34°C)	
	Compound Stability		D 5147	215°F (102°C)	250°F (121°C)	
	Thickness		D 5147	80 mil (2.0 mm)	91 mil (2.3 mm)	
	Elongation at Peak Load at 0°F (-18°C)		D 5147	1%	5%	5%
	Elongation at Peak Load at 73.4°F (23°C)		D 5147	2%	4%	4%
	Ultimate Elongation at 73.4°F (23°C)		D 5147	3%	30%	35%
Aged Performance	90-Day Heat-Conditioned Peak Load at 0°F (-18°C)		D 5147	70 lbf/in (12.3 kN/m)	120 lbf/in (21.0 kN/m)	105 lbf/in (18.4 kN/m)
	90-Day Heat-Conditioned Elongation at Peak Load at 0°F (-18°C)		D 5147	1%	4%	4%
	90-Day Heat-Conditioned Peak Load at 73.4°F (23°C)		D 5147	30 lbf/in (5.3 kN/m)	90 lbf/in (15.8 kN/m)	80 lbf/in (14.0 kN/m)
	90-Day Heat-Conditioned Elongation at Peak Load at 73.4°F (23°C)		D 5147	2%	3%	3%
	90-Day Heat-Conditioned Ultimate Elongation at 73.4°F (23°C)		D 5147	3%	4%	4%
Installation	Dimensional Stability		D 5147	0.5%	0.1%	0.1%
	Net Mass per Unit Area		D 146	45 lb/100 ft² (20 kg/9.29 m²)	51 lb/100 ft² (23 kg/9.29 m²)	
	Roll Weight		D 146	N/A	83 lb (38 kg)	

*MD = Machine Direction
**XMD = Cross-Machine Direction

Note: All data represents tested values.

Supplemental Testing

Physical Properties		ASTM Test Method	Standard for ASTM D 6163, Type 1, Grade S (Min.)	DynaBase Result
Cyclic Joint Displacement	Initial	D 5849	N/A	Pass at 500 cycles*
	After 90-Day Heat Conditioning per ASTM D 5147	D 5849	N/A	Pass at 200 cycles*
	After 180-Day Heat Conditioning per ASTM D 5147	D 5849	N/A	Pass at 200 cycles*

*When adhered to DynaGlas FR or DynaGlas FR CR in hot asphalt.

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.

Johns Manville

To be used as a cap sheet on vertical flashings

DYNAFLEX®

Fiber Glass/Polyester-Reinforced, SBS Mineral-Surfaced Flashing Sheet

Meets or exceeds the criteria for ASTM D 6221, Type I

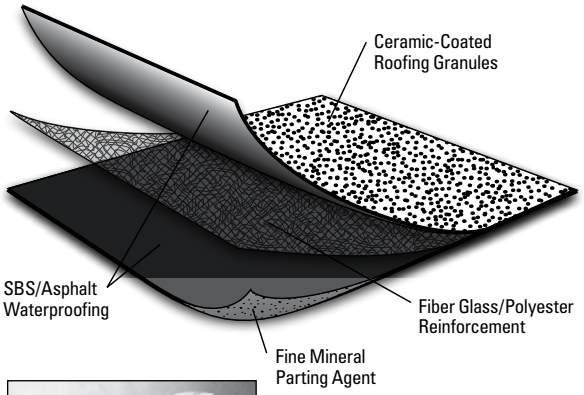
Features and Components

DynaFlex is used as a fiber glass/polyester reinforced cap flashing membrane in a variety of multi-ply roofing systems.

Ceramic-Coated Roofing Granules: Specifically engineered for optimal embedment in the SBS-blend sheet. The ceramic coating promotes excellent long-term adhesion.

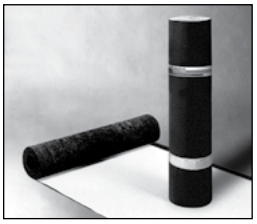
High-Quality SBS Rubber and Asphalt Blend: Lends elasticity and flexibility to the sheet. The elongation and recovery properties allow the product to easily accommodate the continual expansion and contraction experienced on all roofs.

Fiber Glass/Polyester Reinforcement Mat: Combines the excellent tensile strength, toughness and puncture resistance of a polyester mat with the dimensional stability and lay-flat characteristics of fiber glass.



Component: M Membrane — Multi-Ply

Type: FL Flashing



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
	Compatible with the selected Multi-Ply systems above							

Single Ply	TPO		PVC		EPDM		
	MF	FA	MF	FA	MF	FA	BA
	Do not use with Single Ply systems						

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

Test	Initial	3-Year Aged
Reflectivity* (ASTM C 1549)	0.26	0.27
Emissivity* (ASTM C 1371)	0.87	0.84
Solar Reflectance Index* (SRI) - E 1980	25	25
Pre-Consumer Recycled Content	0%	
Post-Consumer Recycled Content	0%	

*Standard White Granule only

Peak Advantage® Guarantee Information

Systems	Guarantee Term
When used in most 2-5 ply JM SBS systems.*	Up to 30 years

*Contact JM Technical Services for specific system requirements or guarantee terms.

Codes and Approvals

CLASSIFIED UL C US

FM APPROVED

Product Application



Hot Asphalt — Cold Applied

- May be installed in Type IV asphalt or in an approved JM adhesive
- Laps may be installed using heat-welding techniques
- Refer to JM SBS modified bitumen specifications and detail drawings for application and slope information

Packaging and Dimensions

Roll Coverage*	75 ft² (6.97 m²)
Roll Length	25' (7.62 m)
Roll Width	36" (0.91 m)
Roll Weight	81 lb (36.7 kg)
Rolls per Pallet	20
Pallet Weight	1,750 lb (794 kg)
Pallets per Truck**	22

*Assumes a 4" side lap **Assumes 48' flatbed truck.

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.

DYNAFLEX®

Fiber Glass/Polyester-Reinforced, SBS Mineral-Surfaced Flashing Sheet

Meets or exceeds the criteria for ASTM D 6221, Type I

Tested Physical Properties

	Physical Properties	ASTM Test Method	Standard for ASTM D 6221, Type I (Min.)	DynaFlex	
				MD*	XMD**
Strength	Peak Tear Resistance	D 5601	1.8 lbf (8 N)	30 lbf (133 N)	46 lbf (205 N)
	Peak Load at 73.4°F (23°C)	D 2523	55 lbf (24.9 kgf)	127 lbf (58 kgf)	132 lbf (60 kgf)
Longevity	Low Temp. Flexibility	D 5683	No Cracks @ 40°F (4.4°C)	No Cracks	
	Thickness	D 751	130 mil. (3.3 mm)	152 mil (3.9 mm)	
Installation	Dimensional Stability	D 5147	N/A	0.2%	0.2%
	Net Mass per Unit Area	D 228	70 lb/100 ft² (32 kg/9.29 m²)	104 lb/100 ft² (47.2 kg/9.29 m²)	
	Roll Weight	D 146	N/A	81 lb (36.7 kg)	

*MD = Machine Direction
**XMD = Cross-Machine Direction

Note: Material tested in accordance with ASTM D 5147 Standard Test Methods for Sampling and Testing Modified Bituminous Sheet Materials.

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.

Johns Manville

2 layers of 2.6in
Mechanically Fastened

Flat & Tapered ENRGY 3®

Polyisocyanurate Roof Insulation

Meets the requirements of ASTM C 1289, Type II, Class 1,

Grade 2 (20 psi)

- **ENRGY 3 / Tapered ENRGY 3**

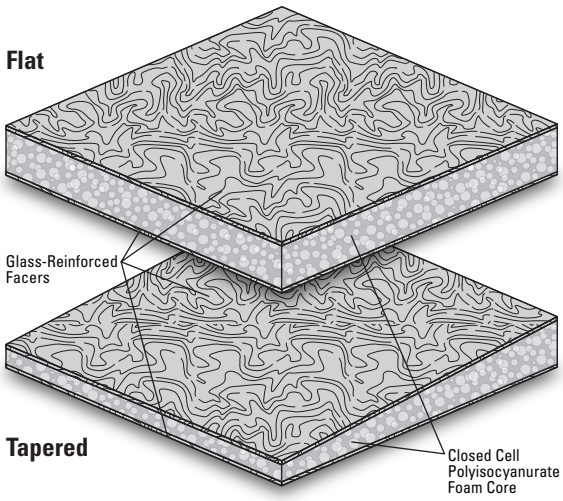
Grade 3 (25 psi)

- **ENRGY 3 25 PSI / Tapered ENRGY 3 25 PSI**

Features and Components

Glass-Reinforced Facers: Provides rigidity and resistance to indentation and crushing, and are compatible with BUR, modified bitumen and single ply membrane systems.

Closed Cell Polyisocyanurate Foam Core: Provides high R-value per inch in built-up, modified bitumen, metal roof and single ply roof systems, and approved for direct application to steel decks.



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
	Compatible with the selected Multi-Ply systems above							

Single Ply	TPO		PVC		EPDM		
	MF	FA	MF	FA	MF	FA	BA
	Compatible with all Single Ply systems						

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

LEED®	Recycled Content	Varies with thickness, see *Product Data and Packaging* table on next page.
Produced with a pentane blowing agent with zero ozone depletion and virtually no global warming potential.		

Peak Advantage® Guarantee Information

Systems
For use in approved JM Peak Advantage Roofing Guarantees

Codes and Approvals

- FM® Standards 4450/4470 Approvals (refer to FM RoofNav℠)
- UL® Standard 790, 263 and 1256 (refer to UL Roofing Materials system directory)
- Meets the requirements of CAN/ULC S704, Type 2 & 3, Class 3
- California Code of Regulations, Title 24, Insulation Quality Standard License #TI-1341
- Third-party certification with the PIMA Quality Mark™ for Long-Term Thermal Resistance (LTTR) values

Refer to the Safe for Use instructions and product label prior to using this product. The Safe for Use instructions are available by calling (800) 922-5922 or on the Web at www.jm.com/roofing.

Note: Technical information on this data sheet is intended to be used as a general guideline only and is subject to change without notice. Contact your JM Sales Representative for further details.

Installation/Application



Refer to the application instructions guidelines for proper utilization of this product.

Flute Span:

Width of Rib Opening:	Up to 2 5/8" (6.67 cm)	Up to 3 3/8" (8.57 cm)	Up to 4 3/8" (11.11 cm)
Insulation Thickness *(min)*:	1.0" (2.54 cm)	1.2" (3.05 cm)	1.3" (3.30 cm)

Packaging and Dimensions

Flat Sizes[1]	4' x 4' (1.22 m x 1.22 m)	4' x 8' (1.22 m x 2.44 m)
Tapered Size[2]	4' x 4' (1.22 m x 1.22 m)	
Producing Locations	Bremen, IN Hazleton, PA	Cornwall, ONT Jacksonville, FL Fernley, NV
Stocking Locations[3]	Grand Prairie, TX	Southgate, CA Tracy, CA

1. For available thicknesses, see *Product Data and Packaging* table on page 2 of this data sheet. Other sizes available by special request, some sizes are not stocked and special order with minimum order quantities. Contact your JM Sales Representative for details.
2. Tapered ENRGY 3 and Tapered ENRGY 3 25 PSI are available in thicknesses of 1/2" to 4". Available profiles are shown on page 3 of this data sheet. In some regions extended panels are also available.
3. Not all sizes, thicknesses, and products are stocked at all locations, please call Customer Service at 1-877-766-3295.

Johns Manville

Flat ENRGY 3®

Polyisocyanurate Roof Insulation

Typical Physical Properties

Test		ASTM	Values
Strength	Tensile Strength	C 209	500 psf (24 kPa) *(min)*, 730 psf (35 kPa) *(nom)*
	Compressive Resistance 10% Consolidation	D 1621	Grade 2: 20 psi (138 kPa), Grade 3: 25 psi (172 kPa) *(min)*
	Dimensional Stability Change, *(length & width)*	D 2126	0.5% *(nom)*, 2% *(max)*
Moisture	Moisture Vapor Permeance	E 96	<+ 1.0% perm, 57.5 ng/(Pa*s*m2), 1.5 perm, 85.8ng/ (Pa*s*m2)
	Water Absorption	C 209	1.0% *(max)*
Insulation	Service Temperature	D 1623	-100°F – 250°F (-73°C – 121°C)
	Flame Spread, *(foam core)*	E 84	20 - 30 *(nom)*, 75 *(max)*
	Smoke Developed, *(foam core)*	E 84	55 - 250 *(nom)*, 450 *(max)*

Product Data and Packaging

Thickness		Long-Term Thermal Resistance (LTTR) Values[1]		Recycled Content[2] 20 PSI / 25 PSI			Boards per Pallet	Square Feet per Pallet		Pallets per Truck[3]	
in.	mm	(hr•ft²•°F)/BTU	m²•°C/W	% Pre-Consumer	% Post-Consumer	% Total	4x4 and 4x8	4x4	4x8	4x4	4x8
1.0	25.4	5.7	1.00	5.3 / 5.2	31.8 / 29.9	37.1 / 35.1	48	768	1536		
1.1	27.9	6.3	1.10	5.2 / 5.2	30.0 / 28.1	35.3 / 33.3	41	656	1312		
1.2	30.5	6.8	1.20	5.2 / 5.2	28.4 / 26.6	33.6 / 31.76	38	608	1216		
1.25	31.8	7.1	1.25	5.2 / 5.2	27.7 / 25.8	32.9 / 31.0	35	560	1120		
1.3	33.0	7.4	1.30	5.3 / 5.3	27.0 / 25.2	32.3 / 30.4	35	560	1120		
1.4	35.6	8.0	1.41	5.3 / 5.2	25.7 / 23.9	31.0 / 29.2	32	512	1024		
1.5	38.1	8.6	1.51	5.2 / 5.2	24.5 / 22.8	29.8 /28.0	32	512	1024		
1.6	40.6	9.1	1.61	5.2 / 5.2	23.4 / 21.7	28.7 / 27.0	28	448	896		
1.7	43.2	9.7	1.71	5.2 / 5.2	22.4 / 20.8	27.7 / 26.0	27	432	864		
1.75	44.5	10.0	1.76	5.2 / 5.2	22.0 / 20.4	27.2 / 25.6	27	432	864		
1.8	45.7	10.3	1.81	5.2 / 5.2	21.5 / 19.9	26.7 / 25.1	25	400	800		
1.9	48.3	10.8	1.91	5.2 / 5.2	20.7 / 19.1	25.9 / 24.3	24	384	768		
2.0	50.8	11.4	2.01	5.2 / 5.2	19.9 / 18.4	25.1 / 23.6	24	384	768		
2.1	53.3	12.0	2.11	5.2 / 5.2	19.2 / 17.7	24.4 / 22.9	21	336	672		
2.2	55.9	12.6	2.22	5.2 / 5.2	18.5 / 17.1	23.7 / 22.3	20	320	640		
2.3	58.4	13.2	2.32	5.2 / 5.2	17.9 / 16.5	23.1 / 21.7	20	320	640		
2.4	61.0	13.8	2.43	5.2 / 5.2	17.3 / 16.0	22.5 / 21.1	19	304	608		
2.5	63.5	14.4	2.53	5.2 / 5.2	16.8 / 15.4	22.0 / 20.6	19	304	608		
2.6	66.0	15.0	2.64	5.2 / 5.1	16.3 / 15.0	21.4 / 20.1	18	288	576		
2.7	68.6	15.6	2.74	5.2 / 5.1	15.8 / 14.5	21.0 / 19.7	17	272	544		
2.8	71.1	16.2	2.85	5.2 / 5.1	15.3 /14.1	20.5 / 19.2	16	256	512		
2.9	73.7	16.8	2.96	5.2 / 5.1	14.9 / 13.7	20.1 / 18.8	16	256	512		
3.0	76.2	17.4	3.06	5.2 / 5.1	14.5 / 13.3	19.7 / 18.4	16	256	512		
3.1	78.7	18.0	3.17	5.1 / 5.1	14.1 / 12.9	19.3 / 18.1	14	224	448		
3.2	81.3	18.6	3.28	5.1 / 5.1	13.8 / 12.6	18.9 / 17.7	14	224	448		
3.25	82.6	18.9	3.33	5.1 / 5.1	13.6 / 12.4	18.7 / 17.6	14	224	448		
3.3	83.8	19.2	3.39	5.1 / 5.1	13.4 / 12.3	18.6 / 17.4	14	224	448		
3.4	86.4	19.9	3.50	5.1 / 5.1	13.1 / 12.0	18.2 / 17.1	13	208	416		
3.5	88.9	20.5	3.61	5.1 / 5.1	12.8 / 11.7	17.9 / 16.8	13	208	416		
3.6	91.4	21.1	3.72	5.1 / 5.1	12.5 / 11.4	17.6 / 16.5	12	192	384		
3.7	94.0	21.7	3.82	5.1 / 5.1	12.2 / 11.1	17.3 / 16.3	12	192	384		
3.75	95.3	22.0	3.88	5.1 / 5.1	12.0 / 11.0	17.2 / 16.1	12	192	384		
3.8	96.5	22.3	3.94	5.1 / 5.1	11.9 / 10.9	17.0 / 16.0	12	192	384		
3.9	99.1	23.0	4.05	5.1 / 5.1	11.7 / 10.7	16.8 / 15.8	12	192	384		
4.0	101.6	23.6	4.16	5.1 / 5.1	11.4 / 10.4	16.5 / 15.5	12	192	384		
4.1	104.0	24.2	4.26	5.1 / 5.1	11.2 / 10.2	16.3 / 15.3	11	176	352		
4.2	107.0	24.9	4.39	5.1 / 5.1	10.9 / 10.0	16.0 / 15.1	11	176	352		
4.3	109.0	25.5	4.49	5.1 / 5.1	10.7 / 9.8	15.8 / 14.9	11	176	352		
4.4	112.0	26.1	4.60	5.1 / 5.1	10.5 / 9.6	15.6 / 14.7	10	160	320		
4.5	114.0	26.8	4.72	5.1 / 5.1	10.3 / 9.4	15.4 / 14.5	10	160	320		

48 | 24

1. The Long-Term Thermal Resistance (LTTR) values were determined in accordance with CAN/ULC S770 at 75°F (24°C). The ultimate R-Value of these products will depend on individual installation circumstances. 2. Value represents average results (Grade 2/Grade 3). 3. Assumes 48' flatbed truck.

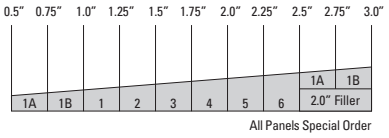
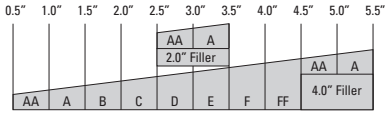
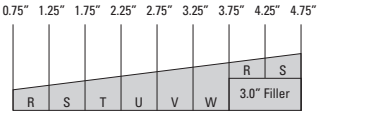
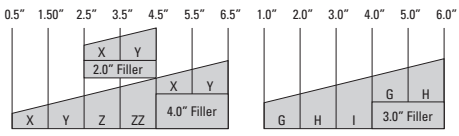
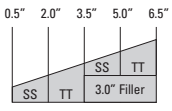
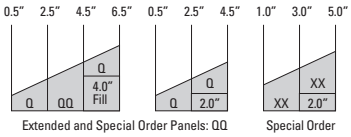
Refer to the Safe for Use instructions and product label prior to using this product. The Safe for Use instructions are available by calling (800) 922-5922 or on the Web at www.jm.com/roofing.

Tapered ENRGY 3®

Polyisocyanurate Roof Insulation

Johns Manville Tapered Polyiso Offerings

Please refer to the previous page for typical physical properties.

Panel Desig.	Slope	Dimension		LTTR* Value Nominal	Pieces per Unit	Square Foot per Unit	Brd Ft per Unit	Slope Profiles
		Thin	Thick					
1/16 in/ft (5.2 mm/m)								
1A	1/16	0.5	0.75	3.6	70	1120	700	 All Panels Special Order
1B	1/16	0.75	1	5.0	50	800	700	
1	1/16	1	1.25	6.4	38	608	684	
2	1/16	1.25	1.5	7.8	32	512	704	
3	1/16	1.5	1.75	9.3	28	416	676	
4	1/16	1.75	2	10.7	22	352	660	
5	1/16	2	2.25	12.1	20	320	680	
6	1/16	2.25	2.5	13.6	18	288	684	
1/8 in/ft (10.4 mm/m)								
AA	1/8	0.5	1	4.3	64	1024	768	 Extended andSpecial Order Panels: D, E, F, FF
A	1/8	1	1.5	7.1	38	608	760	
B	1/8	1.5	2	10.0	26	416	728	
C	1/8	2	2.5	12.9	20	320	720	
D**	1/8	2.5	3	15.9	16	256	704	
E**	1/8	3	3.5	18.9	14	224	728	
F**	1/8	3.5	4	22.1	12	192	720	 All Panels Special Order
FF**	1/8	4	4.5	25.3	10	160	680	
R	1/8	0.75	1.25	5.7	44	704	704	
S	1/8	1.25	1.75	8.6	30	480	720	
T	1/8	1.75	2.25	11.4	22	352	704	
U	1/8	2.25	2.75	14.4	16	256	640	
V	1/8	2.75	3.25	17.4	14	224	672	
W	1/8	3.25	3.75	20.5	12	192	672	
3/16 in/ft (15.6 mm/m)								
J	3/16	1	1.75	7.8	32	512	704	 All Panels Special Order All Panels Special Order
K	3/16	1.75	2.5	12.1	20	320	680	
L**	3/16	2.5	3.25	16.6	16	256	736	
M**	3/16	3.25	4	21.2	12	192	696	
JJ	3/16	0.5	1.25	5.0	52	832	728	
KK	3/16	1.25	2	9.3	28	448	728	
LL**	3/16	2	2.75	13.6	18	288	691	
MM**	3/16	2.75	3.5	18.2	14	224	694	
1/4 in/ft (20.8 mm/m)								
G	1/4	1	2	8.6	30	480	720	 Extended and Special Order Panels: Z, ZZ All Panels Special Order
H	1/4	2	3	14.4	16	256	640	
I**	1/4	3	4	20.5	12	192	672	
X	1/4	0.5	1.5	5.7	48	768	768	
Y	1/4	1.5	2.5	11.4	24	384	768	
Z**	1/4	2.5	3.5	17.4	16	256	768	
ZZ**	1/4	3.5	4.5	23.6	12	192	768	
3/8 in/ft (31.2 mm/m)								
SS	3/8	0.5	2	7.1	36	576	720	 All Panels Special Order
TT**	3/8	2	3.5	15.9	16	256	704	
1/2 in/ft (41.6 mm/m)								
Q	1/2	0.5	2.5	8.6	32	512	768	 Extended and Special Order Panels: QQ Special Order
QQ**	1/2	2.5	4.5	20.5	12	192	672	
XX	1/2	1	3	11.4	22	352	704	

* (hr•ft²•°F/Btu)

** Extended panels require less adhesive and less labor.

Tapered Recycle Content:

Recycled content is dependent upon average thickness. To calculate, match the average thickness of Tapered ENRGY 3 to the thickness of Flat ENRGY 3. Use the number from Flat ENRGY 3 as your recycled content.

Refer to the Safe for Use instructions and product label prior to using this product. The Safe for Use instructions are available by calling (800) 922-5922 or on the Web at www.jm.com/roofing.

RS-5137 10-17 (Replaces 6-17)

RETROPLUS™ ROOF BOARD

High-Density Perlite-Based Cover Board

Meets the requirements of ASTM C 728, Type 3

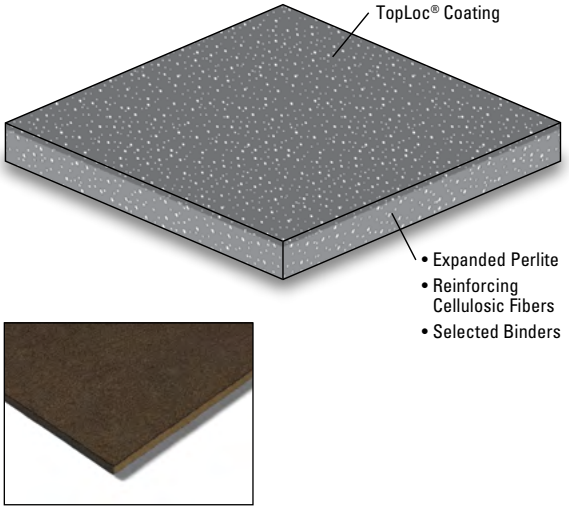
Features

TopLoc® Coating: Top surface is sealed with this special coating to reduce excessive adhesive absorption in hot-asphalt and cold applied roofing systems, and to provide a strong surface for bonding bituminous membranes.

Expanded Perlite: Provides good dimensional stability, excellent insulation value with stable R-value and superior fire resistance.

Reinforcing Cellulosic Fibers: Consists of recycled newsprint to provide strength to the board as well as high recycled content. JM utilizes third party certification by UL environment to certify the recycled content and contributes to the LEED Materials and Resource (MR) credit 4.

High Density: Provides additional strength and durability over 1/2" Retro-Fit Board with low moisture content and water resistance compared to wood fiber board.



Component

B Cover Board

Multi-Ply
Single Ply

Type

PL Perlite

LT Low Thermal

HD High Density

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				Single Ply	TPO		PVC		EPDM		
	HA	CA	CA	HW	HA	CA	HW	SA		MF	FA	MF	FA	MF	FA	BA
	Compatible with the selected Multi-Ply systems above									***Compatible with all Single Ply systems***						

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

LEED®	Recycled Content	40% average For post and pre-consumer recycled content percentages, visit the RetroPlus Roof Board product page on the JM roofing Web site.

ENVIRONMENTAL CLAIMS VALIDATION

✓ RetroPlus™ Roof Board contains an average of 40% recycled content.

Peak Advantage® Guarantee Information

Systems	Guarantee Term*
When used in most 2-5 ply multi-ply and single ply fully adhered and ballasted systems	10,15 or 20 years
When used in single ply, mechanically fastened systems	10 and 15 years

* Contact JM Technical Services for specific systems or terms over 20 years.

Codes and Approvals

CLASSIFIED UL US

FM APPROVED

MIAMI-DADE COUNTY APPROVED
Miami-Dade County
Product Control Approved

Installation/Application



Hot Asphalt | Cold Applied | Urethane Adhesive | Mechanically Fastened

Refer to the Application Guides and Detail Drawings for instructions.

Packaging and Dimensions

Sizes	4' x 4' (1.22 m x 1.22 m)	4' x 8' (1.22 m x 2.44 m)
Thickness, *nom*	½" (1.27 cm)	
Board Weight, *nom*	9 lb (4.08 kg)	18 lb (8.16 kg)
Coverage/Pallet	15.4 squares (143 m²)	30.8 squares (285 m²)
Boards/Pallet	96	96
Pallet Weight (lbs)	846	1,728
Pallets per Truck*	48	24
Producing Location	Rockdale, IL	

* Assumes 48' flatbed truck.

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.

RETROPLUS™ ROOF BOARD

High-Density Perlite-Based Cover Board

Meets the requirements of ASTM C 728, Type 3

Typical Physical Properties

	Test	ASTM	RetroPlus Roof Board
Strength	Board Density, pcf (kg/m³), *nom*	C 209	14.5 (225)
	Compressive Strength 5% Consolidation, psi (kPa), *nom*	C 165	60 (414)
	Laminar Tensile Strength, psi (kPa), *nom*	C 209	16 (110)
	Flexural Strength, psi (kPa), *nom*	C 203	225 (1,551)
	Break Load, lbs (kg), *nom*	C 203	10 (4.54)
Moisture	Moisture Content, wt%, *nom*	N/A	2.0
	Water Absorption, % by vol, *max*	C 209	3.5
Installation	Linear Expansion, % *max*	C 209	0.5
	Weight per ft², lbs, *nom*	NA	0.6

Thermal Performance

Thickness		Nominal R-Value (Resistance)	
in.	mm	(hr•ft²•°F)/BTU	m²•°C/W
½	13	1.30	0.22

Test	ASTM	RetroPlus Board
Flame Spread	E 84	35
Smoke Developed	E 84	10

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.

FESCANT PLUS CANT STRIP
TAPERED FESCO® EDGE STRIP

Perlite-Based Specialty Accessory Product

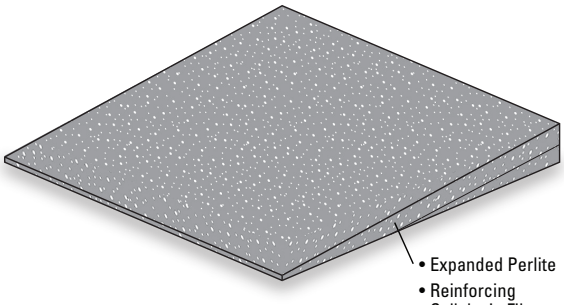
Features and Components

Expanded Perlite: Provides good dimensional stability and excellent insulation value with stable R-value. The high perlite content offers far greater fire resistance than conventional wood fiber materials.

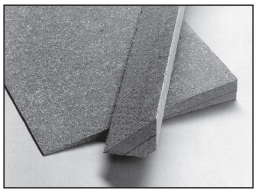
Reinforcing Cellulosic Fibers: Consists of recycled newsprint to provide strength to the board as well as high recycled content. JM utilizes third party certification by UL® Environment to certify the recycled content and contributes to the LEED® Materials and Resource (MR) credit 4.

FesCant Plus Cant Strips: Manufactured from JM Cant Board, a high-density, laminated perlite board that provides excellent transition from the deck to the wall of the roof.

Tapered FESCO Edge Strips: Excellent for transitioning from membrane to nailer, or transitioning from Tapered FESCO®, Tapered ENRGY 3®, or Tapered Fesco Foam® panels to the roof level to help promote positive drainage.



- Expanded Perlite
- Reinforcing Cellulosic Fibers
- Selected Binders



Component

B Cover Board

Multi-Ply

Type

PL Perlite

LT Low Thermal

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
	Compatible with the selected Multi-Ply systems above							

Single Ply	TPO		PVC		EPDM			
	MF	FA	MF	FA	MF	FA	BA	
	Do not use in Single Ply systems							

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

LEED®	Recycled Content	Cant Strip: 37% average Edge Strip: 33% average For post and pre-consumer recycled content percentages, visit the FESCO Board product page on the JM roofing Web site.

ENVIRONMENTAL CLAIMS VALIDATION ✓ FesCant Plus Cant Strip contains an average of 37% recycled content.

ENVIRONMENTAL CLAIMS VALIDATION ✓ Tapered Fesco® Edge Strip contains an average of 33% recycled content.

Peak Advantage® Guarantee Information

Systems	Guarantee Term*
When used in most JM multi-ply or single ply systems.	10,15 or 20 years

* Contact JM Technical Services for specific systems or terms over 20 years.

Codes and Approvals

MIAMI-DADE COUNTY APPROVED
Miami-Dade County Product Control Approved

Installation/Application



Hot Asphalt



Cold Applied



Urethane Adhesive

Refer to the Application Guides and Detail Drawings for instructions.

Packaging and Dimensions

Product	FesCant Plus Cant Strip			
Sizes	1" x 3"	1" x 4"	1.5" x 4"	1.5" x 5"
Strips/Bundle	33	21	30	18
Bundles/Pallet	30	30	20	20
Linear Ft/Bundle	120	84	120	72
Lb/Bundle	20	20	30	30
Pallet Weight (lb)	600			
Pallets/Truck*	48			

Product	Tapered FESCO Edge Strip					
Sizes	0.5" x 6"	0.5" x 12"	1" x 12"	1" x 18"	1.5" x 12"	1.5" x 18"
Strips/Bundle	72	36	28	18	12	12
Bundles/Pallet	14	14	10	10	16	10
Linear Ft/Bundle	288	144	112	72	48	48
BFT/Bundle	36	36	56	54	36	54
Lb/Bundle	60	35	93	50	60	60
Pallet Weight	840	490	933	500	960	600
Pallets/Truck*	48					
Producing Location	Rockdale, IL					

*Assumes 48' flatbed truck.

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.

FESCANT PLUS CANT STRIP
TAPERED FESCO® EDGE STRIP

Perlite-Based Specialty Accessory Product

Typical Physical Properties*

Test		ASTM	FesCant Plus Cant Strip*	Tapered FESCO Edge Strip*
Strength	Product Density, pcf (kg/m^3), *min*	C 209	10 (160)	8 (128)
	Compressive Strength 5% Consolidation, psi (kPa), *nom*	C 165	35 (241)	30 (207)
	Laminar Tensile Strength, psi (kPa), *nom*	C 209	11 (76)	8 (55)
	Flexural Strength, psi (kPa), *min*	C 203	60 (414)	40 (276)
Moisture	Water Absorption, % by vol, *max*	C 209	3.5	1.5
Installation	Linear Expansion, %, *max*	C 209	0.5	0.5

*FesCant Plus Cant Strip meets the requirements of ASTM C 728, Type 2, Tapered FESCO Edge Strip meets the requirements of ASTM C 728, Type 1.

Thermal Performance

Test	ASTM	FesCant Plus Cant Strip	Tapered FESCO Edge Strip
Flame Spread	E 84	35	25
Smoke Developed	E 84	10	10

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.

ASPHALT PRIMER

Meets the requirements of ASTM D 41, Type II

Features and Components

Use: Used to prepare substrates prior to the application of hot asphalt or cold adhesives in BUR, SBS and APP modified bitumen roofing systems. Do not use Asphalt Primer as a finish coat on roofs.

Type: One-part, specification grade, penetrating priming solution.

Substrates: Compatible with concrete; gypsum; masonry; block; brick; and metal surfaces.

Color: Black

Features: Low VOC and sprayable.



Component
PR
Primer

Type
SU
Substrate
Multi-Ply

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
	Used to prime Substrates in all Multi-Ply systems							

Single Ply	TPO		PVC		EPDM		
	MF	FA	MF	FA	MF	FA	BA
	Do not use in Single Ply systems						

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

Maximum VOC	< 350 g/l (calculated)

Physical Properties

Property	Asphalt Primer
Consistency @ 77°F (25°C)	Spray Grade

Codes and Approvals

Precautions

Johns Manville Asphalt Primer is a combustible material and should be shipped and stored away from open flames, heat or sources of ignition. Keep all pails tightly sealed while in storage. It should be used only in well-ventilated areas. It may cause eye, skin and respiratory irritation, and is harmful or fatal if swallowed. Avoid contact with skin. Use impervious clothing and rubber gloves to avoid prolonged or repeated contact with skin. Read the container label and follow all safety instructions.

Installation/Application



Spray Brush

- Apply between 40° and 100° F (4° and 38° C)
- All surfaces must be swept clean and free from oil, grease, rust, scale, loose paint and dirt.
- Stir in the container before applying. Apply using a brush or commercial grade spray equipment. Do Not Thin.

Clean-Up and Disposal

All equipment can be cleaned with mineral spirits. Use care when handling solvents. Clean hands with waterless hand cleaner.

Packaging and Coverage

Container Sizes	4.75 gal (17.9 l) pail
Coverage Rate*	1/2 to 1 gal/100 ft² (0.41 to 0.61 l/m²)

* Coverage, open and dry time rates can vary dramatically depending on the particular substrate and environmental conditions. Coverage rates stated herein are approximate only. If FM Global® or UL® approval is required, consult specific RoofNav℠ or the UL Certifications Directory for specific application rates.

Storage

Shelf Life	24 months from manufacture date
Storage Conditions	Clean, dry, indoor environment in an unopened or tightly sealed container
Temperature Range	60°F to 80°F (16°C to 27°C) - Protect from freezing

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.

MBR® UTILITY CEMENT

Meets the requirements of ASTM D 4586, Type I

Features and Components

Use: As a substitute for asphalt and MBR® Flashing Cement in JM modified bitumen flashing details, and can be used to adhere the JM modified bitumen flashing systems and built-up roofing felts to vertical surfaces, as a general purpose mastic on most built up roofing and modified bitumen flashing details, or to strip in the laps of modified bitumen base flashings.

Type: One-part, asphalt-based, trowel-grade mastic.

Color: Black

Features: Cold process – does not have to be heated.
Cures to form a durable, elastomeric and watertight film.
Ready for use as shipped.



Component: CE Cement

Type: FL Flashing

Multi-Ply

System Compatibility

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

	BUR		APP		SBS			
Multi-Ply	HA	CA	CA	HW*	HA	CA	HW*	SA
	Used to adhere Flashings in all Multi-Ply systems							

	TPO		PVC		EPDM		
Single Ply	MF	FA	MF	FA	MF	FA	BA
	Do not use in Single Ply systems						

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

* Compatible with all modified bitumen and built-up roofing membrane sheets that do not incorporate a polyolefin burn-off film.

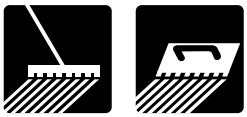
Energy and the Environment

Maximum VOC	<250 g/l

Physical Properties

	Property	ASTM Test Method	MBR Utility Cement
Weight	Solids Content	–	82%
Weight	Weight	D 1875	9.5 lb/gal (1.14 kg/l)
Installation	Viscosity @ 77°F (25°C), (Brookfield RV, Spindle No. 7)		
Installation	Summer Grade	D 2556	100,000 - 250,000 cps
Installation	Winter Grade	D 2556	50,000 - 100,000 cps

Installation/Application



Notched Squeegee

Notched Trowel

- Apply between 40° and 100° F (4° and 38° C). Do Not Thin. When the temperature is below 50°F (10°C), the adhesive must be stored in a warm area, approximately 70°F (21°C)
- Available in either a winter or summer grade. Both formulas contain the same basic ingredients, but the consistency, or viscosity, is adjusted to accommodate the ambient weather conditions in which the adhesive will be applied
- Please refer to detailed installation instructions on next page

Packaging and Coverage

Container Sizes	5 gal (18.9 l) pail
Shipping Weight *(approx.)*	50 lb (22.7 kg)
Coverage Rate*	8 gal per square at 1/8" thick

* Coverage, open and dry time rates can vary dramatically depending on the particular substrate and environmental conditions. Coverage rates stated herein are approximate only. If FM Global® or UL® approval is required, consult specific RoofNav℠ or the UL Certifications Directory for specific application rates.

Storage

Shelf Life	12 months from manufacture date
Storage Conditions	Clean, dry, indoor environment in an unopened container
Temperature Range	60°F to 80°F (16°C to 27°C) - Protect from freezing

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.

MBR® UTILITY CEMENT

Installation/Application Instructions

Apply between 40° and 100° F (4° and 38° C). Do Not Thin. When the temperature is below 50°F (10°C), the adhesive must be stored in a warm area, approximately 70°F (21°C).

Completely unroll the modified bitumen sheets and allow them to relax at least 15 minutes prior to installation; turning light-colored sheets upside down (dark side up) helps accelerate the process.

For best results, make certain the surface to which the cement will be applied is clean, dry and free of loose material. All masonry surfaces which are to receive MBR Utility Cement must be primed with JM Concrete Primer. The primer must be allowed to dry thoroughly before application of the cement.

Use a notched masonry trowel to spread the MBR Utility Cement evenly, about 1⁄8" (3 mm) thick, working down firmly to ensure good adhesion. The modified bitumen flashing product is embedded into the cement and brushed or rubbed in to make contact and to ensure adhesion.

Precautions

MBR Utility Cement is a combustible material and should be shipped and stored away from open flames, heat or sources of ignition. Keep all pails tightly sealed while in storage. It should be used only in well ventilated areas. It may cause eye, skin and respiratory irritation, and is harmful or fatal if swallowed. Avoid contact with skin: use impervious clothing and rubber gloves to avoid prolonged or repeated contact with skin. Read container label and follow all safety and disposal instructions.

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.

MBR® FLASHING CEMENT

Features and Components

Use: For use with JM BUR and SBS membrane products. It is part of the JM PermaFlash® Bituminous Flashing System for penetrations and other details. Ideal for areas where hot asphalt is prohibited, not desirable or not practical.

Type: Two-part, elastomeric, liquid-applied flashing material.

Color: Black

Features: Cures to a durable, elastomeric film and forms exceptional bonds between the modified bitumen and underlying substrate. Resists virtually all factors affecting base flashing performance while providing superior flexibility and durability. UV stable, high solids, low odor, VOC compliant.



Component: CE Cement

Type: FL Flashing

Multi-Ply

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
	Used to adhere Flashings in all Multi-Ply systems							

Single Ply	TPO		PVC		EPDM		
	MF	FA	MF	FA	MF	FA	BA
	Do not use in Single Ply systems						

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

* When used as part of the PermaFlash Flashing System.

Energy and the Environment

Maximum VOC	<121 g/l (base) 0 g/l (activator) <98 g/l (activated base)

Physical Properties

	Property	ASTM Test Method	MBR Flashing Cement
Strength	Tensile Strength	D 412	600 psi (4.1 MPa)
	Elongation	D 412	> 300%
Installation	Working Time[2] @ 77°F (25°C)	–	30 min
	Rainproof After[2] @ 77°F (25°C)	–	4 hrs
Longevity	Hardness @ 77°F (25°C)	D 2240	65 Shore A
	Crack Bridging *(after heat aging)*	–	1⁄8" (3 mm)
	Softening Point, Ring and Ball	D 36	275°F (135°C)
	Elastomeric Waterproofing	C 836 / C 957	Exceeds All Criteria
	Abrasion Resistance	D 4060[3]	1.2 mg loss
	Permeability to Water Vapor	E 96[1]	0.03 perms

1. Method E, 100°F (38°C), 100 mil (3 mm) sheet 2. Working and cure times will vary depending on ambient, surface and material temperatures. 3. 1,000 gr./1,000 rev., CS-17 wheel

Installation/Application



Brush | Notched Squeegee | Notched Trowel

- Apply between 40° and 100° F (4° and 38° C)
- Service temperature is -60° to 220° F (-51° to 104° C)
- Please refer to detailed installation instructions on next page

Packaging and Coverage

Container Sizes	Base: 3.9 gal (16.5 l) pail Activator: 44.1 oz (1.3 l) jug Base & Activator: 28.7 oz (848.8 ml) cartridges
Coverage Rate*	20-25 ft²/gal (0.49 - 0.61 m²/l)

* Nominal 1⁄16" (2 mm) thick layer of adhesive. Coverage, open and dry time rates can vary dramatically depending on the particular substrate and environmental conditions. Coverage rates stated herein are approximate only. If FM Global® or UL® approval is required, consult specific RoofNav℠ or the UL Certifications Directory for specific application rates.

Storage

Shelf Life	Base: 24 months from manufacture date Activator: 2 yrs; Cartridges: 1 yr
Storage Conditions	Clean, dry, indoor environment in an unopened container
Temperature Range	60°F – 90°F (16°C – 32°C) - Protect from freezing

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.

MBR® FLASHING CEMENT

Surface Preparation

When flashing to sheet metal, PermaFlash Primer is required and should be applied as prescribed on the primer label.

MBR Flashing Cement bonds very well to clean, dry, well-cured concrete. However, concrete cured with mineral oils, resins or waxes requires the use of JM Concrete Primer. In addition, clean and coat concrete soiled with oil, grease or release agents with JM Concrete Primer, following the instructions on the pail.

Mixing Instructions

These instructions apply to MBR Flashing Cement in 3.9 gal (14.8 l) pails.

(1) pail MBR Flashing Cement Base Contents: 3.9 gal (14.8 l)

(1) jug MBR Flashing Cement Activator Contents: 44.1 oz (1.3 l)

All two-part products are color-coded products.

Installation/Application Instructions

Apply between 40° and 100° F (4° and 38° C)

On the substrate to be flashed, use a trowel to spread the mixed material to obtain a full coverage coating, without voids, to a minimum thickness of 1/8" (3.2 mm). As the coating process proceeds, lay the flashing membrane into the bed of cement. Check all flashing details to determine if there is a nailing requirement.

Seal side laps in the same manner, at a minimum of 4" (10.2 cm).

For penetrations, use MBR Flashing Cement in conjunction with PermaFlash® Primer and PermaFlash® Scrim.

Clean-Up and Disposal

Clean-Up Information

Use mineral spirits to clean tools immediately after completion of work. Periodically place tools in a pail of mineral spirits to prevent buildup of cement. Wear rubber gloves during all applications and clean up procedures. Follow manufacturer's warnings and cautions about using solvents.

Disposal Information

Please dispose in accordance with applicable regulations.

Empty Containers

MBR Flashing Cement Base containers, when empty, contain combustible and harmful vapors and residue. Do not reuse the container or remove the labels. Follow all of the label warnings even when the container is empty. Dispose of containers in accordance with applicable regulations.

Precautions

MBR Flashing Cement is prepared on the jobsite and requires extra care during preparation. Roofing contractors must advise their crews to precisely follow all safety, storage, handling, preparation and application instructions. JM will not accept responsibility for any use of this product that does not comply with the instructions printed on the containers.

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.

RS-4231 8-17 (Replaces 11-15)

PERMAFLASH® SYSTEM

Elastomeric Liquid Applied Flashing Membrane

Features and Components

The PermaFlash System consists of PermaFlash Primer, MBR Flashing Cement, and PermaFlash Scrim. It is an integrated flashing system specifically formulated for use in bituminous systems.

PermaFlash Primer (Low VOC): One-Part Solvent-Based Primer that improves adhesion of MBR® Flashing Cement to nonporous substrates.

MBR Flashing Cement[1]: Two-part, liquid-applied flashing material that cures to a durable, elastomeric film.

PermaFlash Scrim: Flexible stitchbonded polyester scrim.

Colors: Primer - Clear; Liquid Base - Black; Activator - Brown; Scrim - White

1. Please see the MBR Flashing Cement data sheet for more information.



Component: L Liquid

Type: FL Flashing

Liquid Applied Multi-Ply

Features: Can be used to flash most penetrations, drains, and vertical surfaces.

Resists virtually all factors affecting flashing performance while providing superior flexibility and durability.

High solids, low odor, VOC compliant, and UV stable.

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
	Compatible with all Multi-Ply systems*							

Single Ply	TPO		PVC		EPDM		
	MF	FA	MF	FA	MF	FA	BA
	Do not use in Single Ply systems						

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

*As part of the PermaFlash integrated flashing system

Energy and the Environment

Maximum VOC	0 g/L (primer - low VOC) <121 g/l (base) 0 g/l (activator) <98 g/l (activated base)

Physical Properties

	Property	ASTM Test Method	MBR Flashing Cement
Strength	Tensile Strength	D 412	600 psi (4.1 MPa)
	Elongation	D 412	> 300%
Installation	Working Time[2] @ 77°F (25°C)	–	30 min
	Rainproof After[2] @ 77°F (25°C)	–	4 hrs
Longevity	Hardness @ 77°F (25°C)	D 2240	65 Shore A
	Crack Bridging *(after heat aging)*	–	1/8" (3 mm)
	Softening Point, Ring and Ball	D 36	275°F (135°C)
	Elastomeric Waterproofing	C 836 / C 957	Exceeds All Criteria
	Abrasion Resistance	D 4060[3]	1.2 mg loss
	Permeability to Water Vapor	E 96[1]	0.03 perms
	Service Temperature	NA	-60° to 220°F (-51° to 104°C)

1. Method E, 100°F (38°C), 100 mil (3 mm) sheet 2. Working and cure times will vary depending on ambient, surface and material temperatures. 3. 1,000 gr./1,000 rev., CS-17 wheel

Peak Advantage® Guarantee Information

Systems	Guarantee Term
Any bituminous roofing system.	Up to 20 years*

*Can be included in Peak Advantage Guarantee for new systems.

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.

Installation/Application



Cloth Rag | Light Spray | Brush | Notched Trowel

Packaging and Coverage

Primer Container Size	Box of six 32 oz (946 ml) bottles
Primer Coverage Rate[1]	150 ft² (13.94 m²)
Cement Container Sizes	Base: 3.9 gal (16.5 l) pail Activator: 44.1 oz (1.3 l) jug Base & Activator: 28.7 oz (848.8 ml) cartridges
Cement Coverage Rate[2]	20-25 ft²/gal (0.49 - 0.61 m²/l)
Scrim Roll Size	12" (305 mm) w x 300' (91.4 m)
Scrim Coverage	300 ft² (27.87 m²) or 20 ft² (1.86 m²) - within kit
PermaFlash Kit	4 - 28.7 oz (848.8 ml) cartridges 1 roll - 12" (305 mm) w x 20' (91.4 m) scrim 1 - 32 oz (946 ml) bottle of primer

1. Do not apply material at higher coverages per square foot. Applying too much PermaFlash Primer will result in less adhesion than if the primer had not been used. When applied at the proper coverage, evaporation should occur within a few seconds.
2. Nominal 1⁄16" (2 mm) thick layer of adhesive. Coverage, open and dry time rates can vary dramatically depending on the particular substrate and environmental conditions. Coverage rates stated herein are approximate only. If FM Global® or UL® approval is required, consult specific RoofNav℠ or the UL Certifications Directory for specific application rates.

Storage

Shelf Life	Primer & Scrim: 24 months from manufacture date Base: Indefinite in sealed container; Activator: 24 months; Cartridges: 12 months
Storage Conditions	Clean, dry, indoor environment, unopened container
Temperature Range *(Protect from freezing)*	Primer: 20°F – 90°F (-7°C – 32°C) Cement & Scrim: 60°F – 90°F (16°C – 32°C)

PERMAFLASH® SYSTEM

Elastomeric Liquid Applied Flashing Membrane

Application Instructions

See PermaFlash Bituminous Flashing System Detail Instructions, PermaFlash Bituminous Flashing System Penetration Flashing , and PermaFlash Flashing Details for installation instructions.

Clean-Up and Disposal

Clean-Up Information

Use mineral spirits to clean tools immediately after completion of work. Periodically place tools in a pail of mineral spirits to prevent buildup of cement. Wear rubber gloves during all applications and clean up procedures. Follow manufacturer's warnings and cautions about using solvents.

Disposal Information

For disposal instructions, please refer to the safety data sheet.

Precautions

Handling *Refer to product Safety Data Sheet (SDS) for additional information pertaining to this product and prior to use or handling. Roofing contractors must advise their crews to precisely follow all safety, storage, handling, preparation and application instructions. JM will not accept responsibility for any use of this product that does not comply with the instructions printed on the containers.*

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.

RS-4094 8-17 (Replaces 6-15)

ALL PURPOSE FASTENERS

Roof Membrane and Insulation Fastener

Features and Components

All Purpose Fasteners are #14 case-hardened steel fasteners with a #3 Phillips head. The point is designed for quick installation in new or re-roof applications.

Use: Membranes and Insulation

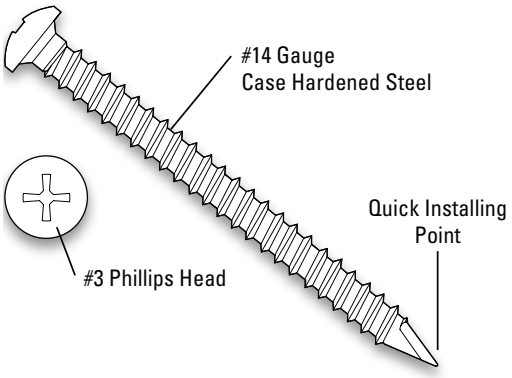
Material: Case-hardened steel

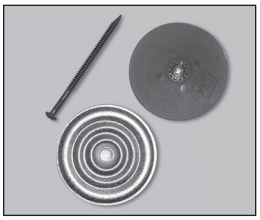
Gauge: #14

Head: #3 Phillips head

Color: Grey

Deck Types: Wood, Concrete, and 18 - 24 gauge (1.25 mm - 0.56 mm) Metal.





Component: F Fastening

Type: I Insulation; M Membrane

Multi-Ply
Single Ply

Plate Compatibility*

- UltraFast® Locking Plastic Plates
- UltraFast® Metal Plates
- High Load Plates (not pictured)
- APB Plates (not pictured)
- RhinoPlate (concrete decks)

* See corresponding data sheets for information regarding UltraFast, High Load, and APB Plates.

System Compatibility

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

	BUR		APP		SBS				
Multi-Ply	HA	CA	CA	HW	HA	CA	HW	CA	MF
	Use to fasten Insulation and select base sheets in Multi-Ply systems								

	TPO		PVC		EPDM		
Single Ply	MF	FA	MF	FA	MF	FA	BA
	Use to fasten Membranes and Insulation in Single Ply systems						

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

Recycled Content	This steel based product contains a minimum of 25% post consumer recycled materials by weight

Peak Advantage® Guarantee Information

Systems
Approved to use with any Peak Advantage Guarantee

Codes and Approvals*

FM APPROVED

MIAMI-DADE COUNTY APPROVED
Miami-Dade County Product Control Approved

*Fastener approvals are based on system approvals

Installation/Application

Steel deck: minimum 3/4" penetration

Wood deck: minimum 1" penetration

Concrete deck: Pilot hole @ 3/16" diameter, 1-1/2" depth, minimum 1" embedment

Packaging and Dimensions

Fastener Sizes	Quantity per Container
1¼" to 4" (3.2 cm to 10.2 cm)	1,000/pail
5" to 11" (12.7 cm to 27.9 cm)	500/pail
12" to 24" (30.5 cm to 61.0 cm)	250/box
Producing Locations*	Agawam, MA & Itasca, IL

* The point of manufacture for fasteners and plates varies depending on the specific part. Call your local JM sales professional for assistance.

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.

RS-7174 2-17 (Replaces 7-14)

ULTRAFAST® PLATES

Galvalume® Metal and Locking Plastic Plates

Features and Components

UltraFast Locking Plastic Plates are 3" (7.62 cm) round, high strength polypropylene plates with a special locking feature.

UltraFast Metal Plates are 3" (7.62 mm) round or square, premium Galvalume®*-coated steel metal plates.

Use: Insulation

Material: Plates - Galvalume-Coated Steel or High Strength Polypropylene

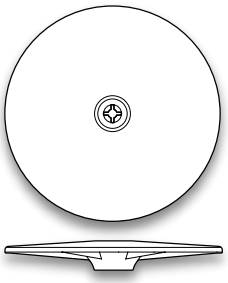
Gauge: 26 Gauge Steel

Plates: 3" (7.62 cm) Round Locking Plastic & Round or Square Metal

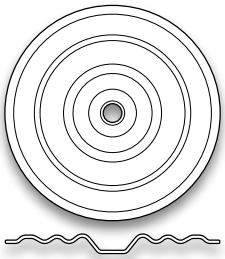
Colors: Grey (metal plates), Blue (plastic plates)

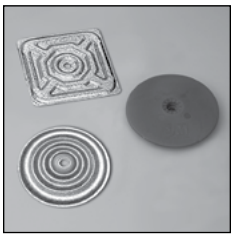
* Galvalume is a registered trademark of BIEC International, Inc. and some of its licensed producers.

UltraFast Locking Plastic Plate

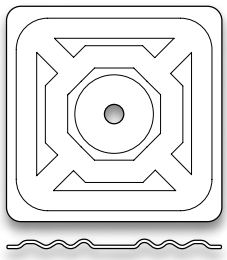


UltraFast Round Metal Plate





UltraFast Square Metal Plate



Component

F Fastening

Type

I Insulation

Multi-Ply
Single Ply

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	CA	MF
	Use to fasten Insulation in all Multi-Ply systems								

Single Ply	TPO		PVC		EPDM		
	MF	FA	MF	FA	MF	FA	BA
	Use to fasten Insulation in 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

Recycled Content	This steel based product contains a minimum of 25% post consumer recycled materials by weight

Peak Advantage® Guarantee Information

Systems
Approved to use with any Peak Advantage Guarantee

Codes and Approvals*

FM APPROVED

MIAMI-DADE COUNTY APPROVED
Miami-Dade County Product Control Approved

*Fastener approvals are based on system approvals

Installation/Application

Refer to the application instructions guidelines for proper utilization of this product.

Packaging and Dimensions

Plate Sizes	Quantity/Container
3" Metal Round or Square, 1,000/pail 3" Plastic Round, 1,000/pail	1,000/pail
Producing Locations*	Agawam, MA and Itasca, IL

* The point of manufacture for fasteners and plates varies depending on the specific part. Call your local JM sales professional for assistance.

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.

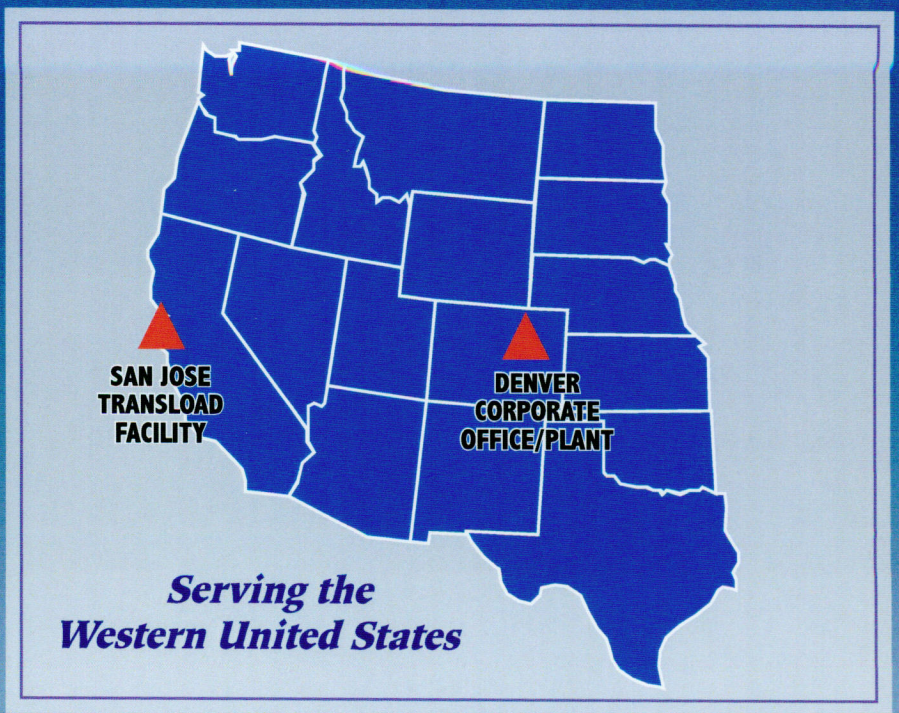
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Product Information

United Asphalts produces four types of built-up roofing asphalt: Types I, II, III and IV. All four types are made from high-grade crude oil and meet or exceed ASTM D312 specifications. All products are tested on a daily basis by our in-house lab and are available either in bulk form or cartons. Each carton provides safety information — the Flash Point, proper EVT and Type. Listed in the following charts are the ASTM D312 specifications for Types I, II, III and IV roofing asphalt, as well as waterproofing asphalt.

Physical Requirements — Roofing Asphalt — ASTM D312

	TYPE I / TYPE I NO SMELL		TYPE II / TYPE II NO SMELL		TYPE III / TYPE III NO SMELL		TYPE IV / TYPE IV NO SMELL	
	Min.	Max.	Min.	Max.	Min.	Max.	Min.	Max.
Softening Point (F)	135	151	158	176	185	205	210	225
Flash Point (F)	500	—	500	—	500	—	500	—
Penetration @ 77 (F)	18	60	18	40	15	35	12	25
Ductility @ 77 (F)	10	—	3.0	—	2.5	—	1.5	—
Solubility in Trichloroethylene %	99	—	99	—	99	—	99	—

Physical Requirements — Waterproofing Asphalt

	TYPE I		TYPE II		TYPE III	
	Min.	Max.	Min.	Max.	Min.	Max.
Softening Point (F)	115	140	145	170	180	200
Flash Point (F)	450	—	450	—	475	—
Penetration @ 77 (F)	50	100	25	50	20	40
Ductility @ 77 (F)	30	—	10	—	2	—
Solubility in Trichloroethylene %	99	—	99	—	99	—

UNITED ASPHALTS

www.UnitedAsphalts.com

Mailing Address:
P.O. Box 1034 · Commerce City, CO 80022

Plant Address:
4306 E. 60th Avenue · Commerce City, CO 80022

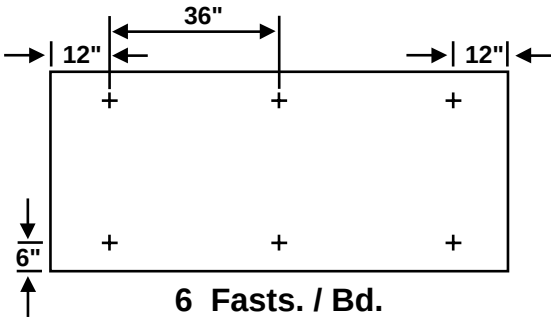
303.287.5431 Office
303.287.8285 Fax
800.466.5431

Johns Manville

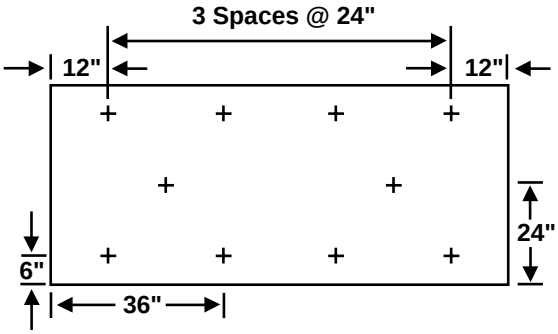
Indicates wood deck fastening pattern

Roof Insulations
Fastener Placement
4' x 8' (1.22 m x 2.44 m) Boards

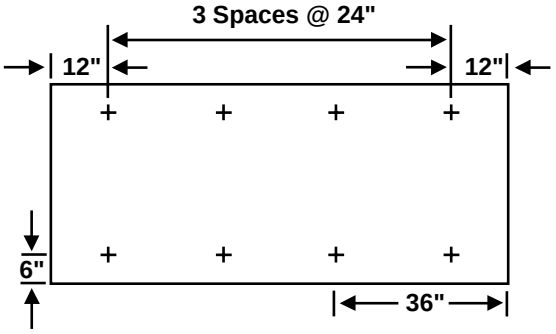
Indicates steel deck fastening pattern



6 Fasts. / Bd.

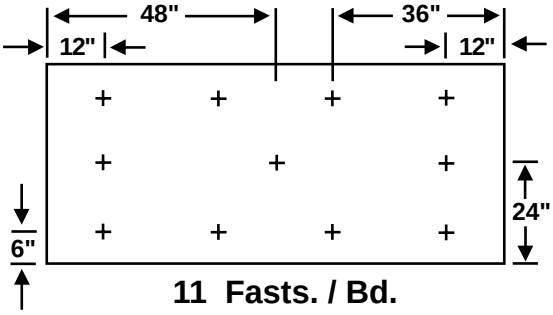


10 Fasts. / Bd.

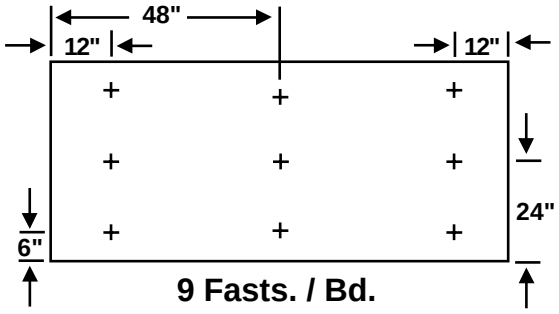


8 Fasts. / Bd.

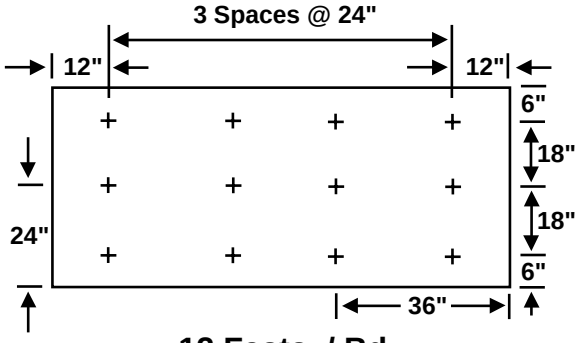
STEEL DECK FIELD FASTENING PATTERN



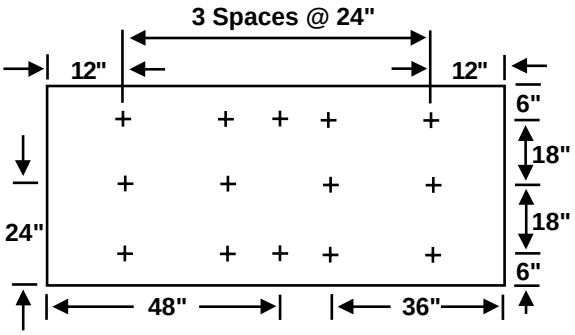
11 Fasts. / Bd.



9 Fasts. / Bd.



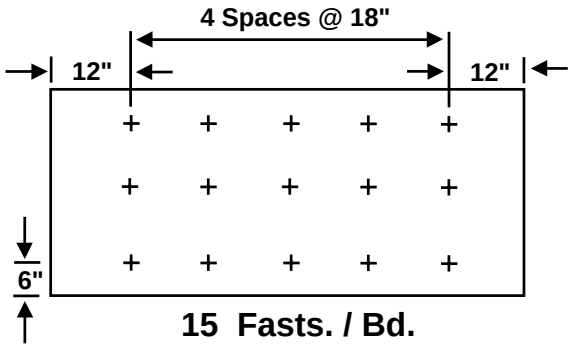
12 Fasts. / Bd.



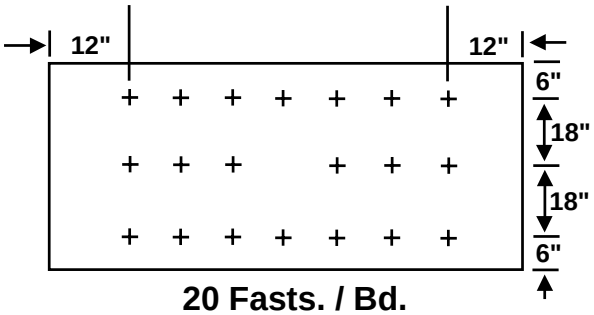
14 Fasts. / Bd.

Johns Manville

Roof Insulations
Fastener Placement
4' x 8' (1.22 m x 2.44 m) Boards

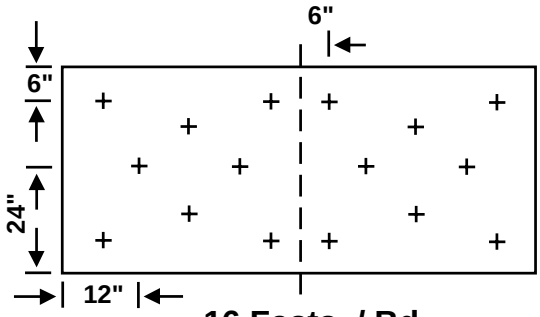


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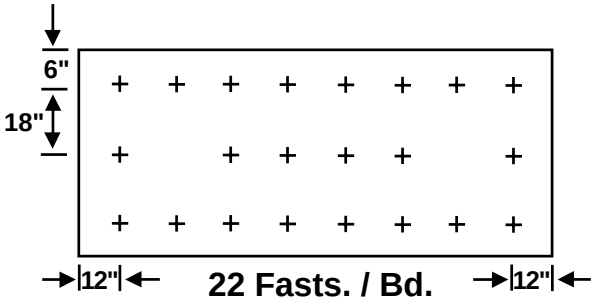
20 Fasts. / Bd.

WOOD DECK FIELD FASTENING PATTERN

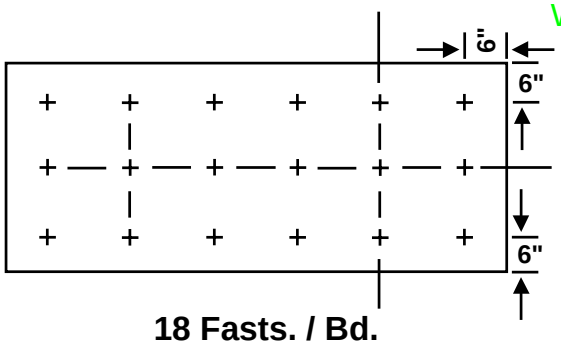


16 Fasts. / Bd.

STEEL DECK PERIMETER FASTENING PATTERN

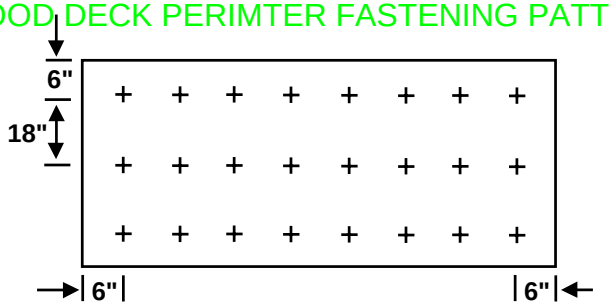


22 Fasts. / Bd.



18 Fasts. / Bd.

WOOD DECK PERIMTER FASTENING PATTERN

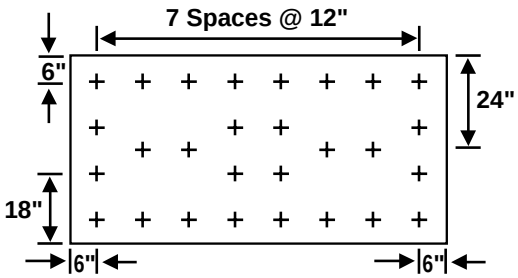


24 Fasts. / Bd.

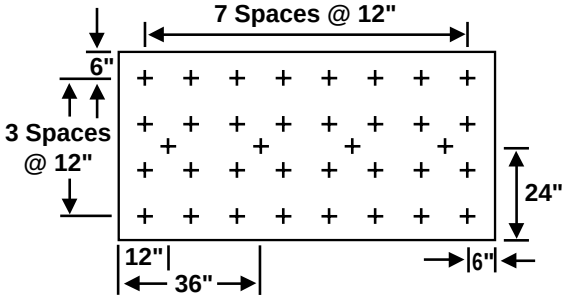
STEEL DECK CORNER FASTENING PATTERN

Johns Manville

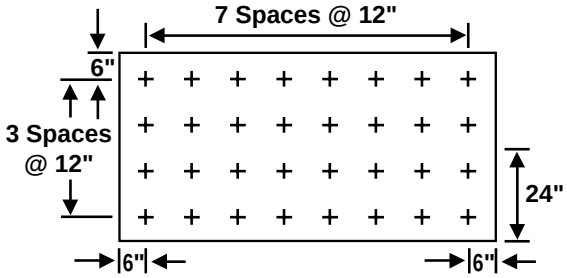
Roof Insulations
Fastener Placement
4' x 8' (1.22 m x 2.44 m) Boards



28 Fasts. / Bd.

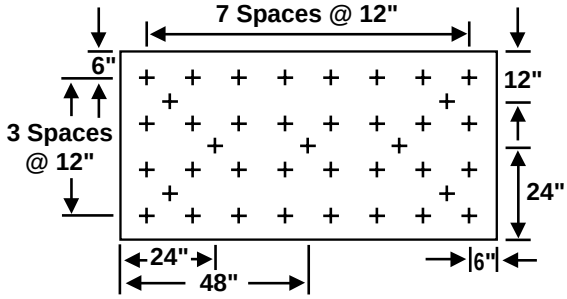


36 Fasts. / Bd.

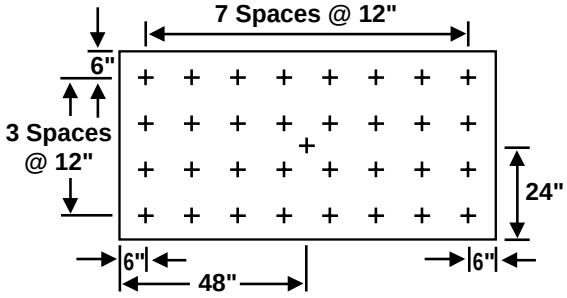


32 Fasts. / Bd.

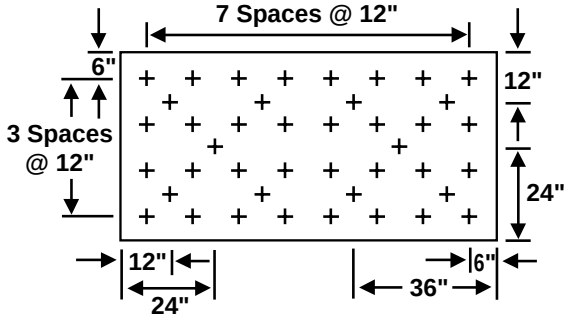
WOOD DECK CORNER FASTENING PATTERN



39 Fasts. / Bd.



33 Fasts. / Bd.



42 Fasts. / Bd.

Site Visit Report - Final Inspection

Tracking Number: 7359092
Inspection Status: Approved pending punch list

Inspection Date:	September 26, 2018
Inspected By:	John Hutson
Job Name:	BCSIS High Peaks Elementary
Guarantee Number:	ANM117359092
Primary Roof Type:	SBS
Squares:	440

Property

BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303
(720) 561-5394

Contractor

FLYNN BEC LP
6270 EAST 50TH AVENUE
COMMERCE CITY, CO 80022
(303) 287-3043

Johns Manville (JM) conducted a site inspection on the above referenced property during a site visit on Wednesday, September 26, 2018. The punchlist items are as follows:

Work to be done by Contractor:

During the inspection, foot traffic was observed in areas of the roof. None of those areas were found to have any damage that would effect the integrity of the roofing system.

1: (Refer to picture 1.32) Fishmouths in drain well seam. Repair fishmouths and Permaflash the seam in the drain well.
2: (Refer to picture 1.33) Loose seams through drain well. Permaflash all seams that run into the drain well.
3: (Refer to picture 1.34) Mole run running into the drain clamp. Install a target patch around drain well as discussed with the contractor.
4: (Refer to picture 1.35) Three coursing damage. Repair three coursing.
5: (Refer to picture 1.37) Missing splash pads. Splash pads needed at the base of all down spouts.
6: (Refer to picture 1.39) Wrinkle in cap sheet. Cut out and repair with additional cap sheet or a permaflash detail.
7: (Refer to picture 1.40) Fishmouth. Fill or cut out and repair.

Owner maintenance items noted:

1: (Refer to picture 1.36) Sharp edge of support digging into the roof. JM recommends the support foot is tilted to be in slope with the roof or thicker protection be put in place to prevent damage to the roof.
2: (Refer to picture 1.38) Debris to be removed from the roof.

Photos taken during the inspection are attached.

To expedite processing, the punchlist can be signed electronically by accessing the Punchlist tab on the JM Peak Portal.

NOTE: There may be items listed that are not the responsibility of the roofing contractor, please forward this report to the appropriate parties as needed.

If you choose not to sign the punchlist on JM Peak Portal, please send a signed copy of this form to the following fax number: +1 877-403-1747.

Date Repairs Completed: _____
Contractor's Signature: _____
Printed Name: _____

For questions related to this site visit report, please contact:

John Hutson
Technical Representative
Johns Manville Roofing Systems
(720) 417-0337
john.hutson@jm.com

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 and 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 any other material not supplied by Johns Manville.

* * * Inspection Photographs * * *

Contractor FLYNN BEC LP

Property BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303

Tracking Numb... 7359092
Guarantee Nu... ANM117359092
Inspection Date: Wednesday, September 26, 2018
Inspected By: John Hutson



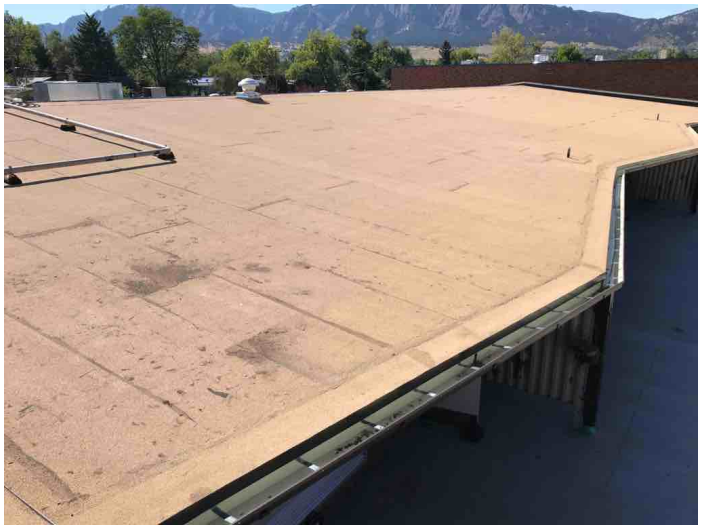
Group: 1.1 -
Category: Building View



Group: 1.2 -
Category: Address Verification



Group: 1.3 -
Category: Roof Access



Group: 1.4 -
Category: Overview

* * * Inspection Photographs * * *

Contractor FLYNN BEC LP

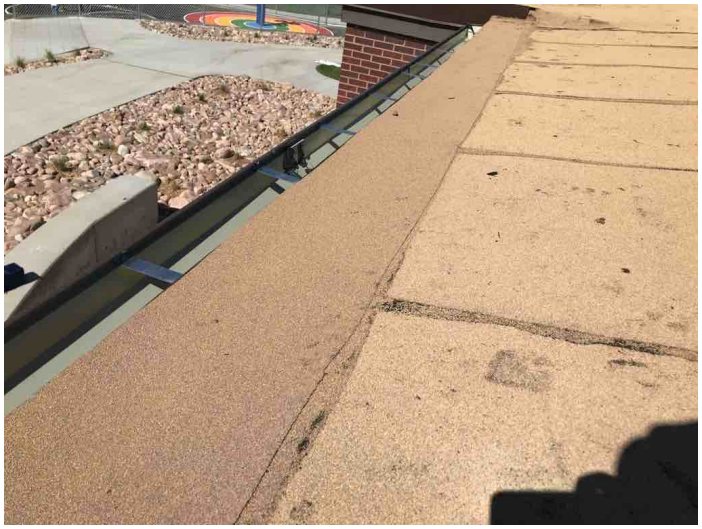
Property BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303

Tracking Numb... 7359092
Guarantee Nu... ANM117359092
Inspection Date: Wednesday, September 26, 2018
Inspected By: John Hutson



Group: 1.5 -
Category: Overview

Comments: Pitch pan detail



Group: 1.6 -
Category: Overview

Comments: Gutter edge detail



Group: 1.7 -
Category: Overview



Group: 1.8 -
Category: Overview

Comments: Permaflash repair detail

Johns Manville

Tracking Numb... 7359092
Guarantee Nu... ANM117359092
Inspection Date: Wednesday, September 26, 2018
Inspected By: John Hutson

* * * Inspection Photographs * * *

Contractor FLYNN BEC LP

Property BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303



Group: 1.9 -
Category: Overview

Comments: Curb flashing detail



Group: 1.10 -
Category: Overview



Group: 1.11 -
Category: Overview

Comments: Termination of guaranteed roof



Group: 1.12 -
Category: Overview

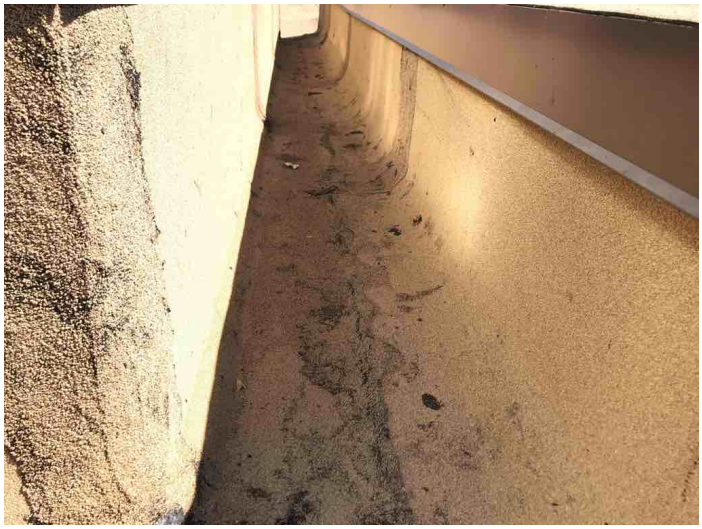
Johns Manville

Tracking Numb... 7359092
Guarantee Nu... ANM117359092
Inspection Date: Wednesday, September 26, 2018
Inspected By: John Hutson

* * * Inspection Photographs * * *

Contractor FLYNN BEC LP

Property BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303



Group: 1.13 -
Category: Overview

Comments: Wall flashing detail



Group: 1.14 -
Category: Overview

Comments: EPDM pitch pan detail



Group: 1.15 -
Category: Overview

Comments: EPDM section on a raised curb



Group: 1.16 -
Category: Overview

Comments: Pipe penetration through curb with permaflash detail

Johns Manville

Tracking Numb... 7359092
Guarantee Nu... ANM117359092
Inspection Date: Wednesday, September 26, 2018
Inspected By: John Hutson

* * * Inspection Photographs * * *

Contractor FLYNN BEC LP

Property BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303



Group: 1.17 -
Category: Overview

Comments: Curb flashing detail



Group: 1.18 -
Category: Overview

Comments: Larger slip sheets recommended under supports



Group: 1.19 -
Category: Overview



Group: 1.20 -
Category: Overview

Johns Manville

Tracking Numb... 7359092
Guarantee Nu... ANM117359092
Inspection Date: Wednesday, September 26, 2018
Inspected By: John Hutson

* * * Inspection Photographs * * *

Contractor FLYNN BEC LP

Property BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303



Group: 1.21 -
Category: Overview

Comments: Termination of guaranteed roof



Group: 1.22 -
Category: Overview

Comments: Wall flashing termination detail



Group: 1.23 -
Category: Overview



Group: 1.24 -
Category: Overview

Johns Manville

Tracking Numb... 7359092
Guarantee Nu... ANM117359092
Inspection Date: Wednesday, September 26, 2018
Inspected By: John Hutson

* * * Inspection Photographs * * *

Contractor FLYNN BEC LP

Property BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303



Group: 1.25 -
Category: Overview

Comments: Pitch pan detail for solar support



Group: 1.26 -
Category: Overview

Comments: Lead pipe flashing detail



Group: 1.27 -
Category: Overview

Comments: EPDM expansion joint and wall flashing



Group: 1.28 -
Category: Overview

Johns Manville

Tracking Numb... 7359092
Guarantee Nu... ANM117359092
Inspection Date: Wednesday, September 26, 2018
Inspected By: John Hutson

* * * Inspection Photographs * * *

Contractor FLYNN BEC LP

Property BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303



Group: 1.29 -
Category: Overview

Comments: Scupper drain detail



Group: 1.30 -
Category: Overview

Comments: Wall flashings that were previously repaired



Group: 1.31 -
Category: Overview



Group: 1.32 -
Category: Item

Issue (Contractor): Fishmouths in drain well seam

Resolution (Contractor): Repair fishmouths and Permaflash the seam in the drain well.

Johns Manville

Tracking Numb... 7359092
Guarantee Nu... ANM117359092
Inspection Date: Wednesday, September 26, 2018
Inspected By: John Hutson

* * * Inspection Photographs * * *

Contractor FLYNN BEC LP

Property BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303



Group: 1.33 -
Category: Item

Issue (Contractor): Loose seams through drain well

Resolution (Contractor): Permaflash all seams that run into the drain well.



Group: 1.34 -
Category: Item

Issue (Contractor): Mole run running into the drain clamp

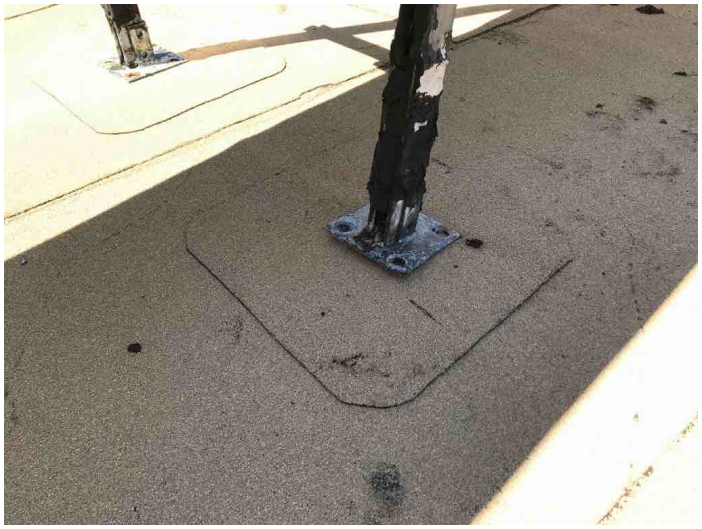
Resolution (Contractor): Install a target patch around drain well as discussed with the contractor.



Group: 1.35 -
Category: Item

Issue (Contractor): Three coursing damage

Resolution (Contractor): Repair three coursing.



Group: 1.36 -
Category: Item

Issue (Owner): Sharp edge of support digging into the roof

Resolution (Owner): JM recommends the support foot is tilted to be in slope with the roof or thicker protection be put in place to prevent damage to the roof.

Johns Manville

Tracking Numb... 7359092
Guarantee Nu... ANM117359092
Inspection Date: Wednesday, September 26, 2018
Inspected By: John Hutson

* * * Inspection Photographs * * *

Contractor FLYNN BEC LP

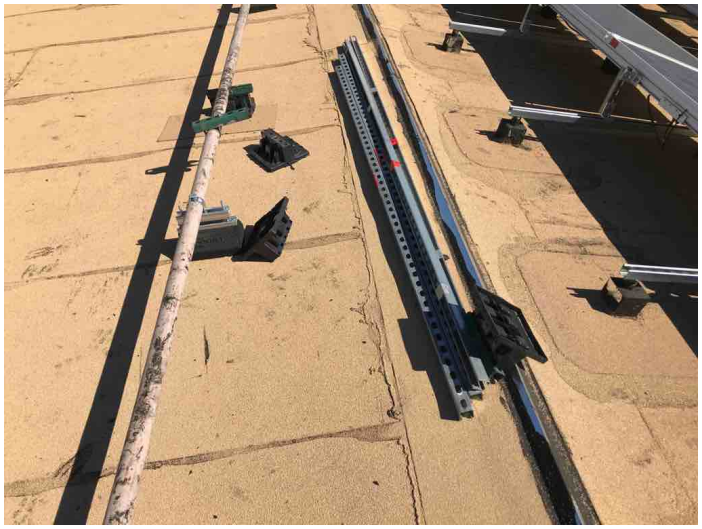
Property BCSIS High Peaks Elementary
3995 Aurora Ave
Boulder, CO 80303



Group: 1.37 -
Category: Item

Issue (Contractor): Missing splash pads

Resolution (Contractor): Splash pads needed at the base of all down spouts.



Group: 1.38 -
Category: Item

Issue (Owner): Debris to be removed from the roof



Group: 1.39 -
Category: Item

Issue (Contractor): Wrinkle in cap sheet

Resolution (Contractor): Cut out and repair with additional cap sheet or a permaflash detail.



Group: 1.40 -
Category: Item

Issue (Contractor): Fishmouth

Resolution (Contractor): Fill or cut out and repair.