CONSTRUCTION MATERIALS

TECHNOLOGIES

DYNAMIC UPLIFT RESISTANCE (DUR) EVALUATION OF JOHNS MANVILLE ROOF SYSTEMS

(PROJECT NO. JMC-297-02-01)

For

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Evaluation Scope: The following roof systems evaluated herein have demonstrated compliance with the CSA A123.21-14 *Standard Test Method for the Dynamic Uplift Resistance of Membrane-Roof Systems* for their stated dynamic uplift resistance (DUR).

Quality Assurance: All products listed herein shall be manufactured under a Quality Assurance program audited by an ISO/IEC 17020 accredited third-party.

Product Descriptions:

Multi-Ply Systems:

Products	Description
JM BaseGrip SD/SA	Self-adhering, asphalt impregnated and coated glass fiber base sheet.
JM BaseGrip P/SA	Self-adhering, asphalt impregnated and coated glass fiber base sheet.
DynaBase HW	A glass reinforced SBS modified bitumen base sheet for heat welded applications.
DynaBase PR	A polyester reinforced SBS modified bitumen base sheet.
DynaBase HP	A polyester reinforced SBS modified bitumen base sheet.
DynaBase XT	A glass reinforced SBS modified bitumen base or inner ply sheet.
DynaFast 180 HW	A polyester reinforced SBS modified bitumen base or inner ply sheet for use in heat weld applications.
DynaFast HP HW	A polyester reinforced SBS modified bitumen base or inner ply sheet for use in heat weld applications.
DynaFast 180 S	A polyester reinforced SBS modified bitumen base or inner ply sheet.
DynaFast 250 HW	A polyester reinforced SBS modified bitumen base or inner ply sheet for use in heat weld applications.
DynaGlas	A glass reinforced SBS modified bitumen membrane surfaced with granules.
DynaGlas 30 FR	A fire resistant, glass reinforced SBS modified bitumen membrane surfaced with granules.
DynaGlas FR	A fire resistant, glass reinforced SBS modified bitumen membrane surfaced with granules.
DynaGlas FR CR	A fire resistant, glass reinforced SBS modified bitumen membrane surfaced with granules and a reflective white coating.
DynaGlas FR GR G	A fire resistant, glass reinforced SBS modified bitumen membrane surfaced with reflective roofing granules.
DynaGlas FR XT	A fire resistant, glass reinforced SBS modified bitumen membrane surfaced with granules.
DynaGrip Base SD/SA	Self-adhering, asphalt impregnated and coated glass fiber base sheet.
DynaGrip Base P/SA	Self-adhering, asphalt impregnated and coated glass fiber base sheet.
DynaKap FR T1	A fire resistant, composite reinforced SBS modified bitumen membrane surfaced with granules.
DynaKap FR T1 CR G	A fire resistant, composite reinforced SBS modified bitumen membrane surfaced with reflective roofing granules.
DynaKap FR T1 HW CR G	A fire resistant, composite reinforced SBS modified bitumen membrane surfaced with reflective roofing granules for use in heat weld applications.
DynaKap T1	A composite reinforced SBS modified bitumen membrane surfaced with granules.
DynaLastic 180	A polyester reinforced SBS modified bitumen membrane surfaced with granules.
DynaLastic HP Cap	A polyester reinforced SBS modified bitumen membrane surfaced with granules.
DynaLastic 180 FR	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with granules.
DynaLastic HP FR Cap	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with granules.
DynaLastic 180 FR CR	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with granules and a reflective white coating.
DynaLastic 180 FR CR G	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with reflective roofing granules.
DynaLastic HP FR CR G Cap	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with reflective roofing granules.
DynaLastic 180 S	A polyester reinforced SBS modified bitumen base or inner ply sheet.
DynaLastic HP	A polyester reinforced SBS modified bitumen base or inner ply sheet.
DynaLastic 250 FR	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with granules.
DynaLastic 250 FR CR	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with granules and a reflective white coating.
DynaLastic 250 FR CR G	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with reflective roofing granules.
DynaLastic 250 S	A polyester reinforced SBS modified bitumen base or inner ply sheet.
DynaMax FR	A fire resistant, composite reinforced SBS modified bitumen membrane surfaced with granules.
DynaMax FR CR	A fire resistant, composite reinforced SBS modified bitumen membrane surfaced with granules and a reflective white coating.

Products	Description
DynaMax FR HW	A fire resistant, composite reinforced SBS modified bitumen membrane surfaced with granules for use in heat weld applications.
DynaMax FR HW CR	A fire resistant, composite reinforced SBS modified bitumen membrane surfaced with granules and a reflective white coating for use in heat weld applications.
DynaMax FR Plus	A fire resistant, composite reinforced SBS modified bitumen membrane surfaced with granules.
DynaMax S	A composite reinforced SBS modified bitumen base or inner ply sheet.
DynaPly T1	A composite reinforced SBS modified bitumen base or inner ply sheet.
DynaWeld 180 S	A polyester reinforced SBS modified bitumen base or inner ply sheet for use in heat weld applications.
DynaWeld HP	A polyester reinforced SBS modified bitumen base or inner ply sheet for use in heat weld applications.
DynaWeld 250 S	A polyester reinforced SBS modified bitumen base or inner ply sheet for use in heat weld applications.
DynaWeld Base	A glass reinforced SBS modified bitumen base sheet for heat welded applications.
DynaWeld Cap 180 FR	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with granules for use in heat weld applications.
DynaWeld HP FR Cap	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with granules for use in heat weld applications.
DynaWeld Cap 180 FR CR	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with granules and a reflective white coating for use in heat weld applications.
DynaWeld Cap 180 FR CR G	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with reflective roofing granules for use in heat weld applications
DynaWeld HP FR CR G Cap	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with reflective roofing granules for use in heat weld applications
DynaWeld Cap 250	A polyester reinforced SBS modified bitumen membrane surfaced with granules for use in heat weld applications.
DynaWeld Cap 250 FR	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with granules for use in heat weld applications.
DynaWeld Cap 250 FR CR	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with granules and a reflective white coating for use in heat weld applications.
DynaWeld Cap 250 FR CR G	A fire resistant, polyester reinforced SBS modified bitumen membrane surfaced with reflective roofing granules for use in heat weld applications.
DynaWeld Cap FR	A fire resistant, glass reinforced SBS modified bitumen membrane surfaced with granules for use in heat weld applications.
DynaWeld Cap FR CR	A fire resistant, glass reinforced SBS modified bitumen membrane surfaced with granules and a reflective white coating for use in heat weld applications.
DynaWeld Cap FR CR G	A fire resistant, glass reinforced SBS modified bitumen membrane surfaced with granules and a reflective white coating for use in heat weld applications.
DynaWeld Cap FR XT	A fire resistant, glass reinforced SBS modified bitumen membrane surfaced with granules for use in heat weld applications.
GlasBase Plus	Type II asphalt impregnated and coated glass fiber base sheet for use in conventional and modified bitumen built-up roofing.
GlasKap	A mineral surfaced, asphalt coated, fiberglass cap sheet.
GlasKap CR	A white mineral surfaced, white acrylic coated, fiberglass cap sheet.
GlasPly IV	Type IV asphalt impregnated glass felt for use in conventional and modified bitumen built-up roofing.
GlasPly Premier	Type VI asphalt impregnated glass felt for use in conventional and modified bitumen built-up roofing.
PermaPly 28	Type II asphalt impregnated and coated glass fiber base sheet for use in conventional and modified bitumen built-up roofing.
Ventsulation Felt	Heavy duty fiber glass base sheet impregnated and coated on both sides with asphalt with or without fine mineral stabilizer. Surfaced on the bottom side with coarse mineral granules embedded in asphaltic coating.

Single-Ply Membranes:

Products	Description
JM EPDM NR 45 mil	Nominal 45-mil thick non-reinforced, cured EPDM single-ply roof membrane
JM EPDM NR 60 mil	Nominal 60-mil thick non-reinforced, cured EPDM single-ply roof membrane
JM EPDM NR 90 mil	Nominal 90-mil thick non-reinforced, cured EPDM single-ply roof membrane
JM EPDM NR 45 mil - FIT	Nominal 45-mil thick non-reinforced, cured EPDM single-ply roof membrane with factory inseam tape
JM EPDM NR 60 mil - FIT	Nominal 60-mil thick non-reinforced, cured EPDM single-ply roof membrane with factory inseam tape
JM EPDM NR 90 mil - FIT	Nominal 90-mil thick non-reinforced, cured EPDM single-ply roof membrane with factory inseam tape
JM EPDM R 45 mil	Nominal 45-mil thick cured EPDM single-ply roof membrane with polyester scrim reinforcement
JM EPDM R 60 mil	Nominal 60-mil thick cured EPDM single-ply roof membrane with polyester scrim reinforcement
JM EPDM R 75 mil	Nominal 75-mil thick cured EPDM single-ply roof membrane with polyester scrim reinforcement
JM EPDM R 45 mil - FIT	Nominal 45-mil thick cured EPDM single-ply roof membrane with polyester scrim reinforcement with factory inseam tape
JM EPDM R 60 mil - FIT	Nominal 60-mil thick cured EPDM single-ply roof membrane with polyester scrim reinforcement with factory inseam tape
JM EPDM R 75 mil - FIT	Nominal 75-mil thick cured EPDM single-ply roof membrane with polyester scrim reinforcement with factory inseam tape
JM PVC – 50 mil	Nominal 50-mil thick thermoplastic membrane composed of polyvinyl chloride and Elvaloy® KEE with polyester scrim reinforcement
JM PVC SD Plus - 50 mil	Nominal 50-mil thick thermoplastic membrane composed of polyvinyl chloride and polyester scrim reinforcement
JM PVC 50 Fleece Backed	Nominal 50-mil thick thermoplastic membrane composed of polyvinyl chloride and Elvaloy® KEE with polyester scrim reinforcement and polyester fleece backing
JM PVC - 60 mil	Nominal 60-mil thick thermoplastic membrane composed of polyvinyl chloride and Elvaloy® KEE with polyester scrim reinforcement
JM PVC SD Plus - 60 mil	Nominal 60-mil thick thermoplastic membrane composed of polyvinyl chloride and polyester scrim reinforcement
JM PVC 60 Fleece Backed	Nominal 60-mil thick thermoplastic membrane composed of polyvinyl chloride and Elvaloy® KEE with polyester scrim reinforcement and polyester fleece backing
JM PVC – 72 mil	Nominal 72-mil thick thermoplastic membrane composed of polyvinyl chloride and Elvaloy® KEE with polyester scrim reinforcement
JM PVC 72 Fleece Backed	Nominal 72-mil thick thermoplastic membrane composed of polyvinyl chloride and Elvaloy® KEE with polyester scrim reinforcement and polyester fleece backing
JM PVC – 80 mil	Nominal 80-mil thick thermoplastic membrane composed of polyvinyl chloride and Elvaloy® KEE with polyester scrim reinforcement
JM PVC SD Plus - 80 mil	Nominal 80-mil thick thermoplastic membrane composed of polyvinyl chloride and polyester scrim reinforcement
JM PVC 80 Fleece Backed	Nominal 80-mil thick thermoplastic membrane composed of polyvinyl chloride and Elvaloy® KEE with polyester scrim reinforcement and polyester fleece backing
JM TPO-45 mil	Nominal 45-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester scrim reinforcement
JM TPO-60 mil	Nominal 60-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester scrim reinforcement
JM TPO-72 mil	Nominal 72-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester scrim reinforcement
JM TPO-80 mil	Nominal 80-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester scrim reinforcement
JM TPO FB 115	Nominal 60-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester scrim reinforcement and polyester fleece backing
JM TPO FB 135	Nominal 80-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester scrim reinforcement and polyester fleece backing
JM TPO SA – 60 MIL	Nominal 60-mil thick thermoplastic polyolefin, heat-weldable, single-ply roof membrane with polyester scrim reinforcement

Thermal Barriers:

Products	Description
DensDeck	Gypsum coverboard with fiberglass facers on both sides; Manufactured by Georgia Pacific Gypsum
DensDeck Prime	Gypsum coverboard with coated fiberglass facer on the top surface and a fiberglass facer on the bottom surface; Manufactured by Georgia Pacific Gypsum
DEXcell FA Glass Mat Roof Board	Gypsum coverboard with fiberglass facers on both sides; Manufactured by National Gypsum Company
DEXcell Glass Mat Roof Board	Gypsum coverboard with coated fiberglass facer on the top surface and a fiberglass facer on the bottom surface; Manufactured by National Gypsum Company
SECUROCK Gypsum-Fiber Roof Board	Fiber-reinforced gypsum coverboard; Manufactured by US Gypsum.
SECUROCK Glass-Mat Roof Board	Fiberglass faced gypsum coverboard; Manufactured by US Gypsum

Vapor Retarders:

Products	Description
JM DynaGrip Base SD/SA	Self-adhering, modified asphalt based vapor retarder
JM Vapor Barrier SAR	Self-adhering, modified asphalt based vapor retarder.
JM Vapor Barrier SA	Self-adhering, modified asphalt based vapor retarder
Polyethylene plastic sheet	As required by building code
Asphalt-coated kraft paper	As required by building code

Insulations and Cover Boards:

Products	Description
DensDeck	Fiberglass faced gypsum coverboard; Manufactured by G-P Gypsum, LLC
DensDeck Prime	Coated-fiberglass faced gypsum coverboard; Manufactured by G-P Gypsum, LLC
JM ENRGY 3 and tapered	Polyisocyanurate foam insulation board with fiberglass reinforced organic facer
JM ValuTherm and tapered	Polyisocyanurate foam insulation board with fiberglass reinforced organic facer
JM ENRGY 3 AGF and tapered	Polyisocyanurate foam insulation board with fiberglass facer
JM ValuTherm AGF and tapered	Polyisocyanurate foam insulation board with fiberglass facer
JM ENRGY 3 CGF and tapered	Polyisocyanurate foam insulation board with coated-fiberglass facer
JM ValuTherm CGF and tapered	Polyisocyanurate foam insulation board with coated-fiberglass facer
JM ENRGY 3 FR and tapered	Polyisocyanurate foam insulation board with coated-fiberglass facer
JM ENRGY 3 C1 CGF and tapered	Polyisocyanurate foam core with inorganic coated glass facer
JM Invinsa Roof Board	High-density polyisocyanurate foam cover board with coated-fiberglass facer
JM Invinsa FR Roof Board	High-density polyisocyanurate foam cover board with coated-fiberglass facer
JM DuraBoard	High-density perlite insulation board
JM Retro-Fit Board	High-density perlite insulation board
JM RetoPlus Roof Board	High-density perlite insulation board
JM Fesco Board	Perlite insulation board
JM Fesco Board HD	High-density perlite insulation board

Products	Description
JM SECUROCK Gypsum-Fiber Roof Board	Fiber-reinforced gypsum coverboard; Manufactured by US Gypsum.
JM SECUROCK Glass-Mat Roof Board	Fiberglass faced gypsum coverboard; Manufactured by US Gypsum
JM DuraFoam	High-density perlite insulation laminated to polyisocyanurate foam insulation board
JM FescoFoam	Perlite insulation laminated to polyisocyanurate foam insulation board
ProtectoR HD	High density, polyisocyanurate cover board with coated glass facers
SeparatoR CGF	Inorganic polyisocyanurate roof recovery board with coated glass facers

Membrane Adhesives for Multi-Ply Systems:

Products	Description
MBR Bonding Adhesive	Two component urethane cold application adhesive
MBR Cold Application Adhesive	One part, elastomeric cold application adhesive

Membrane Adhesives for Single-Ply Systems:

Products	Description
JM EPDM Membrane Adhesive (Low VOC)	Applied in full coverage to both membrane and substrate at a combined rate of 50 to 90 ft^2/gal.
JM EPDM Membrane Adhesive (Water Based)	Applied in full coverage to both membrane and substrate at a combined rate of 90 to 130 ft^2/gal.
JM LVOC Membrane Adhesive (TPO & EPDM)	Applied in full coverage to both membrane and substrate at a combined rate of 50 to 90 ft^2/gal.
JM Membrane Bonding Adhesive (TPO & EPDM)	Applied in full coverage to both membrane and substrate at a combined rate of 50 to 90 ft^2/gal.
JM PVC Membrane Adhesive (Low VOC)	Applied in full coverage to both membrane and substrate at a combined rate of 50 to 90 ft^2/gal.
JM PVC Membrane Adhesive (Water Based)	Applied in full coverage to both membrane and substrate at a combined rate of 90 to 130 ft^2/gal.
JM TPO Membrane Adhesive (Low VOC)	Applied in full coverage to both membrane and substrate at a combined rate of 50 to 90 ft^2/gal.
JM TPO Low VOC Bonding Adhesive	Applied in full coverage to both membrane and substrate at a combined rate of 50 to 90 ft^2/gal.
JM TPO Water Based Membrane Adhesive	Applied in full coverage to both membrane and substrate at a combined rate of 90 to 130 ft^2/gal.
RSUA (Roofing System Urethane Adhesive)	Two component urethane ribbon adhesive
JM All Season Sprayable Bonding Adhesive	Applied in full coverage to both membrane and substrate at a combined rate of 1,000 ft^2/canister
JM Two Part Urethane Insulation Adhesive Canister	spatter pattern applied; 2400 ft^2

Insulation Adhesives:

Products	Description
JM One Step Foamable Adhesive	Two component urethane foam adhesive

Products	Description
JM Two-Part Urethane Insulation Adhesive	Two component urethane foam adhesive
RSUA (Roofing System Urethane Adhesive)	Two component urethane ribbon adhesive

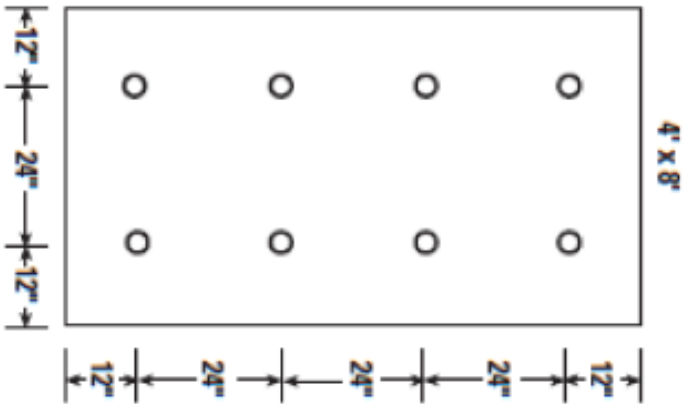
Fastening Components:

Products	Description
JM All Purpose Fastener	#14 fastener for wood, steel, and concrete decks
JM APB Plates	2-inch diameter galvalume steel plate with reinforcing ribs
JM Extra High Load Fasteners	#21 fastener for steel or wood decks
JM Extra High Load Plates	3-inch diameter galvalume steel plate with eyehooks
JM High Load Plates	2 3/8-inch diameter galvalume steel plate with eyehooks
JM High Load Fastener	#15 fastener for steel or wood decks
JM High Load LH Fastener	Large Head #15 fastener for steel or wood decks
JM Lightweight Concrete (LWC) CR Base Fastener	Min. 1.7-inch shank; Pre-Assembled with 2.7-inch galvalume coated steel plate.
JM PVC RhinoPlate	3-inch diameter plate for induction welding JM PVC membranes
JM TPO RhinoPlate	3-inch diameter plate for induction welding JM TPO membranes
JM UltraFast Fastener	#12 fastener for steel or wood decks
JM UltraFast 3” Round Metal Plate	3-inch diameter round galvalume steel plate
JM UltraFast Square Metal Plate	3-inch square galvalume steel plate
JM UltraLok	1.8-inch shank with 2.7-inch diameter integrated plate
OMG Super XHD Barbed Stress Plate (JM High Load Plus Plate)	2 3/4-inch diameter, 0.038-inch-thick, galvalume coated seam plate with fourteen (14) barbs

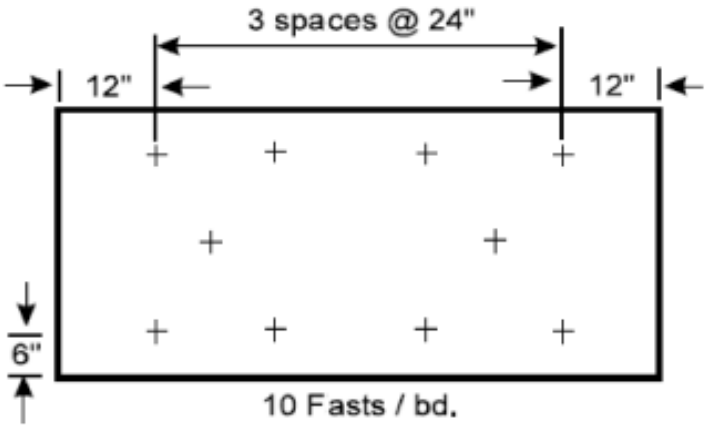
Installation: The roof shall have a minimum slope of ¼:12.

Insulation and Cover Board Fastening:
For roof systems with adhered roof cover, the insulation and cover boards shall be fastened using JM UltraFast Fasteners or JM All Purpose Fasteners in steel or wood roof decks and JM All Purpose Fasteners in concrete roof decks with either the JM UltraFast 3” Round Metal Plate or the JM UltraFast Square Metal Plate.

For induction welded systems, the insulation shall be fastened with JM TPO RhinoPlates for JM TPO single-ply roof covers or JM PVC RhinoPlates for JM PVC single-ply roof covers. The RhinoPlates shall be used with High Load Fasteners in steel deck and All Purpose Fasteners in concrete deck.



8 Fasts / bd.



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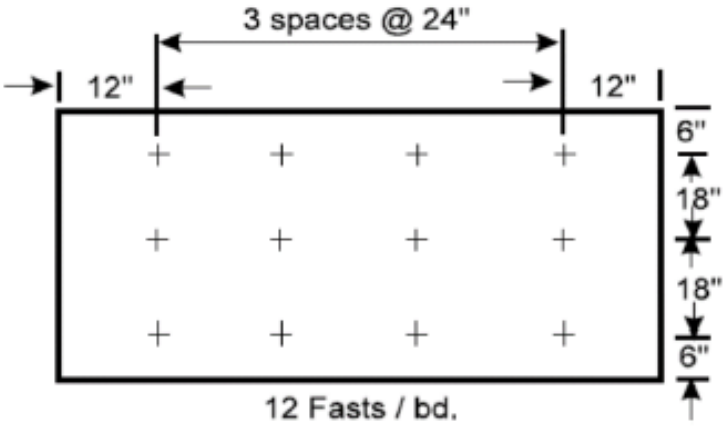

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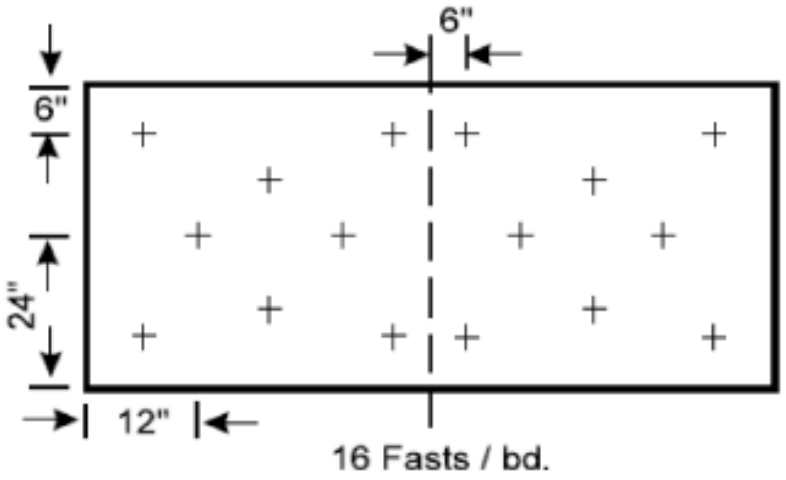

Insulation and Cover Board Attachment with Adhesives:
4-ft x 4-ft shall be the maximum allowable board size when board is adhered.

JM Two-Part Urethane Adhesive shall be applied in 0.75-1.0 inch wide, continuous beads.

JM Roofing System Urethane Adhesive (RSUA), a two-component urethane ribbon adhesive, shall be applied in 0.5–0.75 inch-wide continuous beads spaced 12-inch o.c.

Ply and Base Sheet Attachment:
Hot asphalt shall be applied at a rate of 25-30 gal/sq. MBR Bonding adhesive and MBR Cold Application Adhesive shall be applied at a rate of 1.5-2.0 gal/sq.

Products	Mechanically Fastened	Hot Asphalt	MBR Bonding Adhesive	MBR Cold Application Adhesive	Torch Adhered
DynaBase	Y	Y	Y	Y	N
DynaBase HW	Y	N	N	N	Y
DynaBase PR	Y	Y	Y	Y	N
DynaBase HP	Y	Y	Y	Y	N
DynaBase XT	Y	Y	Y	Y	N
DynaFast 180 HW	Y	N	N	N	Y
DynaFast HP HW	Y	N	N	N	Y
DynaFast 180 S	Y	Y	Y	Y	N
DynaFast 250 HW	Y	N	N	N	Y
DynaLastic 180 S	Y	Y	Y	Y	N
DynaLastic HP	Y	Y	Y	Y	N
DynaLastic 250 S	Y	Y	Y	Y	N
DynaMax S	Y	Y	Y	Y	N
DynaPly T1	Y	Y	Y	Y	N
DynaWeld 180 S	Y	N	N	N	Y
DynaWeld HP	Y	N	N	N	Y
DynaWeld 250 S	Y	N	N	N	Y
DynaWeld Base	Y	N	N	N	Y

Products	Mechanically Fastened	Hot Asphalt	MBR Bonding Adhesive	MBR Cold Application Adhesive	Torch Adhered
GlasBase Plus	Y	Y	Y	Y	N
GlasPly IV	N	Y	N	N	N
GlasPly Premier	N	Y	N	N	N

Products	Mechanically Fastened	Hot Asphalt	MBR Bonding Adhesive	MBR Cold Application Adhesive	Torch Adhered
PermaPly 28	Y	Y	Y	Y	N
Ventsulation Felt	Y	Y	N	N	N

Cap Sheet Attachment:
Hot asphalt shall be applied at a rate of 25-30 gal/sq. MBR Bonding adhesive and MBR Cold Application Adhesive shall be applied at a rate of 1.5-2.0 gal/sq.

Products	Hot Asphalt	MBR Bonding Adhesive	MBR Cold Application Adhesive	Torch Adhered
DynaGlas	Y	Y	Y	N
DynaGlas 30 FR	Y	Y	Y	N
DynaGlas FR	Y	Y	Y	N
DynaGlas FR CR	Y	Y	Y	N
DynaGlas FR CR G	Y	Y	Y	N
DynaGlas FR XT	Y	Y	Y	N
DynaKap FR T1	Y	Y	Y	N
DynaKap FR T1 CR G	Y	Y	Y	N
DynaKap FR T1 HW CR G	N	N	N	Y
DynaKap T1	Y	Y	Y	N
DynaLastic 180	Y	Y	Y	N
DynaLastic HP Cap	Y	Y	Y	N
DynaLastic 180 FR	Y	Y	Y	N
DynaLastic HP FR Cap	Y	Y	Y	N
DynaLastic 180 FR CR	Y	Y	Y	N
DynaLastic 180 FR CR G	Y	Y	Y	N
DynaLastic HP FR CR G Cap	Y	Y	Y	N
DynaLastic 250 FR	Y	Y	Y	N
DynaLastic 250 FR CR	Y	Y	Y	N
DynaLastic 250 FR CR G	Y	Y	Y	N
DynaMax FR	Y	Y	Y	N
DynaMax FR CR	Y	Y	Y	N
DynaMax FR HW	N	N	N	Y
DynaMax FR HW CR	N	N	N	Y
DynaMax FR Plus	Y	Y	Y	N
DynaPly T1	Y	Y	Y	N
DynaWeld Cap 180 FR	N	N	N	Y
DynaWeld HP FR Cap	N	N	N	Y
DynaWeld Cap 180 FR CR	N	N	N	Y
DynaWeld Cap 180 FR CR G	N	N	N	Y
DynaWeld HP FR CR G Cap	N	N	N	Y
DynaWeld Cap 250	N	N	N	Y
DynaWeld Cap 250 FR	N	N	N	Y

Products	Hot Asphalt	MBR Bonding Adhesive	MBR Cold Application Adhesive	Torch Adhered
DynaWeld Cap 250 FR CR	N	N	N	Y
DynaWeld Cap 250 FR CR G	N	N	N	Y
DynaWeld Cap FR	N	N	N	Y
DynaWeld Cap FR CR	N	N	N	Y
DynaWeld Cap FR CR G	N	N	N	Y
DynaWeld Cap FR XT	N	N	N	Y
GlasKap	Y	Y	Y	N
GlasKap CR	Y	Y	Y	N

Membrane Adhesives:
Unless otherwise noted, membrane adhesives are applied in full coverage to membrane and substrate at the combined rate list in the product description tables for each adhesive. Follow manufacturer's recommendations for proper flashing of the adhesive prior to engaging the membrane to the substrate.

Roof Deck:
Concrete - Minimum f'c = 2,500 psi at 28 days.
Steel - Minimum 22 ga., Grade 33, Type B steel deck. The flutes shall be 0.5% vented when used with cellular lightweight concrete.
Wood - Minimum 15/32-inch thick APA approved plywood or wood plank.

Limitations of Use: Johns Manville roofing systems used and installed herein are subject to following limitations of use:

1) Fire resistance of the components and assembly are not within the scope of this report
2) Installation of the evaluated assembly shall comply with this report and manufacturer's published application instructions.
3) Extrapolation of mechanically fastened roof systems to meet design requirements for the perimeter and corner roof zones shall be permitted at the discretion of the Authority Having Jurisdiction.
4) The deck and deck attachment shall be designed by others to meet the required design loads.

Evidence Submitted: CSA A123.21-14 and other testing conducted at ISO/IEC 17025 accredited laboratories was provided by the named manufacturer.

Entity	Report No.	Date
Exp	PUB-DRU-292373	04/22/2015
Exp	PUB-DRU-292360	04/22/2015
Exp	PUB-DRU-292367	04/22/2015
Exp	PUB-DRU-292249	04/22/2015
Exp	PUB-DRU-292353	04/22/2016
Exp	JMVE-239816-02-5100	09/13/2017
Exp	JMVE-239816-03-5100	09/18/2017
Exp	JMVE-239816-01-5100	09/20/2017
Exova	15-06-P0212-S3TC, R1	07/09/2016
Exova	15-06P0212-S4TC	05/10/2016
Exova	15-06P0212-S2TC	03/07/2016
PRI Construction Materials Technologies	JMC-276-02-01	07/21/2016
PRI Construction Materials Technologies	JMC-335-02-01	10/26/2018
PRI Construction Materials Technologies	507T0013	09/04/2019
PRI Construction Materials Technologies	JMC-088-02-01	09/05/2019

Entity	Report No.	Date
PRI Construction Materials Technologies	507T0014	09/10/2019
PRI Construction Materials Technologies	507T0022	10/31/2019
PRI Construction Materials Technologies	507T0035	12/31/2019
Trinity|ERD	JM-CTL9880.01.16-1	01/21/2016

Report Issue History:

Issue #	Date	Pages	Revision Description (if applicable)
Original	03/17/2017	14	NA
Rev 1	04/03/2017	14	Updated evaluated roof systems
Rev 2	05/22/2018	15	Added evaluated roof systems
Rev 3	07/26/2018	15	Added ValuTherm insulation boards
Rev 4	11/06/2018	16	Added evaluated roof systems
Rev 5	10/25/2019	17	Added JM Vapor Barrier SAR
Rev 6	12/31/2019	18	Added evaluated roof systems
Rev 7	04/03/2020	17	Revised evaluated roof systems
Rev 8	07/31/2020	19	Revised evaluated roof systems
Rev 9	08/04/2020	20	Revised evaluated roof systems and added additional products

Evaluated Roof Systems: The following notes shall be observed when using the assembly tables below.

1. Dynamic Uplift Resistance (DUR) are based on testing conducted in accordance with CSA A123.21-14 and incorporate a 1.5 Factor of Safety into the result.
2. The on-center (o.c.) spacing given is the maximum allowable attachment spacing for the rated system.
3. ValuTherm may be substituted wherever ENRGY 3 is listed, ValuTherm AGF may be substituted wherever ENRGY 3 AGF is listed, and ValuTherm CGF may be substituted wherever ENRGY 3 CGF is listed.

Multi-Ply Roof Systems (New or Existing)									
System No.	Deck	Thermal Barrier/ Vapor Barrier	Base Insulation	Middle Insulation	Top Insulation or Cover Board	Base Sheet	Ply Sheet	Cap Sheet or Surfacing	*DUR*
MP-1	Min. 22 ga., Grade 33, Type B steel deck or concrete deck	Min. 0.25" DensDeck Prime secured at a rate of 1 fastener per 3.2-ft^2 primed with JM SA primer; JM Vapor Barrier SA or JM Vapor Barrier SAR adhered	Min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in RSUA with ribbons spaced 12" o.c.	Optional one or more layers of min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in RSUA with ribbons spaced 12" o.c.	Invinsa adhered in RSUA with ribbons spaced 12" o.c.	JM DynaGrip Base P/SA self-adhered	Optional - Any torch adhered ply listed in the installation section	Any torch adhered cap listed in the installation section	**-1.8 kPa -37 psf**
MP-2	Min. 22 ga., Grade 40 ASTM A 653, Type B steel deck or concrete deck	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered (optional with concrete deck)	Optional one or more layers of min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF	-	Min. 1.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 2.67-ft^2	JM DynaGrip Base P/SA or SD/SA self-adhered	Optional - Any torch adhered ply listed in the installation section	Any torch adhered cap listed in the installation section	**-1.8 kPa -37 psf**
MP-3	Min. 22 ga., Grade 40 ASTM A 653, Type B steel deck or concrete deck	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered (optional with concrete deck)	Optional one or more layers of min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF	-	Min. 0.5" DensDeck Prime secured at a rate of 1 fastener per 2.67-ft^2	Any torch adhered ply listed in the installation section	Optional - Any torch adhered ply listed in the installation section	Any torch adhered cap listed in the installation section	**-1.8 kPa -37 psf**
MP-4	Min. 22 ga., Grade 40 ASTM A 653, Type B steel deck or concrete deck	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered (optional with concrete deck)	Optional one or more layers of min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF	Min. 1.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 3.2-ft^2	Min. 0.5" DensDeck Prime adhered in RSUA with ribbons spaced 12" o.c.	Any torch adhered ply listed in the installation section	Optional - Any torch adhered ply listed in the installation section	Any torch adhered cap listed in the installation section	**-1.8 kPa -37 psf**
MP-5	Min. 22 ga., Grade 40 ASTM A 653, Type B steel deck or concrete deck	Optional thermal barrier; Any loose laid or adhered vapor barrier (optional with concrete deck)	Optional one or more layers of min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF	-	Min. 2" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 6.4-ft^2	DynaFast 180 HW or DynaFast 250 HW secured with High Load Fasteners and Plates 18" o.c. within the min. 5" torch adhered side laps	Optional - Any torch adhered DynaFast or DynaWeld 180 or 250 ply sheet listed in the installation section	Any DynaWeld Cap 180 or 250 series cap sheet listed in the installation section applied by torch	**-1.8 kPa -38 psf**

Multi-Ply Roof Systems (New or Existing)									
System No.	Deck	Thermal Barrier/ Vapor Barrier	Base Insulation	Middle Insulation	Top Insulation or Cover Board	Base Sheet	Ply Sheet	Cap Sheet or Surfacing	*DUR*
MP-6	Min. 22 ga., Grade 40 ASTM A 653, Type B steel deck or concrete deck	Optional thermal barrier; Any loose laid or adhered vapor barrier (optional with concrete deck)	Min. 2.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 2.67-ft^2	-	RetroPlus applied in RSUA with ribbons spaced 12" o.c.	Any torch adhered ply listed in the installation section	Optional - Any torch adhered ply listed in the installation section	Any torch adhered cap listed in the installation section	**-1.8 kPa -38 psf**
MP-7	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck	Min. 0.25" DensDeck Prime adhered to the top flange of each deck rib in RSUA with ribbons spaced 6" o.c.; Board primed with JM SA Primer Low VOC and JM DynaGrip SD/SA fully adhered	Min. 2" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in RSUA with ribbons spaced 12" o.c.	Optional one or more layers of min. 2" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in RSUA with ribbons spaced 12" o.c.	RetroPlus applied in RSUA with ribbons spaced 12" o.c.	Any SBS ply listed in the installation sectionadhered in MBR Cold Application	Optional - Any SBS ply listed in the installation section adhered in MBR Cold Application	Any SBS cap adhered in MBR Cold Application listed in the installation section	**-1.9 kPa 40 psf**
MP-8	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck	Deck primed with JM SA Primer and JM DynaGrip SD/SA fully adhered	Min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in hot asphalt	Optional one or more layers of min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in hot asphalt	JM Retro-Fit adhered in hot asphalt	GlasPly IV, GlasPly Premier, or SBS ply listed in the installation section applied in hot asphalt	Three plies of GlasPly IV or GlasPly Premier applied in hot asphalt	Hot asphalt and gravel or SBS cap sheet listed in the installation section in hot asphalt or torch adhered	**-2.0 kPa -42 psf**
MP-9	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck	Deck primed with JM SA Primer and JM DynaGrip SD/SA fully adhered	Min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in hot asphalt	Optional one or more layers of min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in hot asphalt	JM Retro-Fit adhered in hot asphalt	Any SBS ply listed in the installation section applied in hot asphalt	Optional - Any SBS ply listed in the installation section in hot asphalt	Any SBS cap sheet listed in the installation section in hot asphalt or torch adhered	**-2.0 kPa -42 psf**
MP-10	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or concrete deck	Optional thermal barrier; Any loose laid or adhered vapor barrier (optional with concrete deck)	Min. 2" ENRGY 3 or ENRGY CGF secured at a rate of 1 fastener per 2.67-ft^2	-	RetroPlus applied in hot asphalt	SBS ply sheet listed in the installation section applied in hot asphalt	One or more plies of GlasPly IV or GlasPly Premier applied in hot asphalt	Hot asphalt with optional gravel or SBS cap sheet listed in the installation section in hot asphalt	**-2.3 kPa -47 psf**
MP-11	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or concrete deck	Optional thermal barrier; Any loose laid or adhered vapor barrier (optional with concrete deck)	Min. 2" ENRGY 3 or ENRGY CGF secured at a rate of 1 fastener per 2.67-ft^2	-	RetroPlus applied in hot asphalt	SBS ply sheet listed in the installation section applied in hot asphalt	Optional - Any SBS ply listed in the installation section in hot asphalt	Any SBS cap sheet listed in the installation section in hot asphalt or torch adhered	**-2.3 kPa -47 psf**

Multi-Ply Roof Systems (New or Existing)									
System No.	Deck	Thermal Barrier/ Vapor Barrier	Base Insulation	Middle Insulation	Top Insulation or Cover Board	Base Sheet	Ply Sheet	Cap Sheet or Surfacing	*DUR*
MP-12	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or concrete deck	Optional thermal barrier; Any loose laid or adhered vapor barrier (optional with concrete deck)	Min. 1.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR loose laid	-	Optional Any approved insulation or cover board	DynaFast 180 S, DynaFast 180 HW, or DynaFast 250 HW secured 12" o.c. within the 4" wide, heat welded side laps with High Load Plates and High Load Fasteners (steel deck only) or All Purpose Fasteners (concrete deck only)	Optional – DynaFast 180 HW or DynaFast 250 HW applied by torch	Any DynaWeld Cap 180 or 250 series cap sheet listed in the installation section applied by torch	**-2.3 kPa -47 psf**
MP-13	Min. 22 ga., Grade 33, Type B steel deck or concrete deck	Min. 0.25" DensDeck Prime secured at a rate of 1 fastener per 3.2-ft^2 primed with JM SA primer; JM Vapor Barrier SA or JM Vapor Barrier SAR adhered	Min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in RSUA with ribbons spaced 12" o.c.	Optional one or more layers of min. 1.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in RSUA with ribbons spaced 12" o.c.	JM Retro-Fit adhered in RSUA with ribbons spaced 12" o.c.	Any SBS ply adhered in MBR Cold Application listed in the installation	Optional - Any SBS ply adhered in MBR Cold Application listed in the installation	Any SBS cap adhered in MBR Cold Application listed in the installation	**-2.3 kPa -49 psf**
MP-14	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or concrete deck	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered (optional with concrete deck)	Min. 1.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 4-ft^2	One or more layers of min. 1" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	RetroPlus applied in hot asphalt	ASTM D 226, Type I (#15), GlasPly IV, GlasPly Premier, or SBS ply listed in the installation section in hot asphalt	One or more plies of GlasPly IV or GlasPly Premier applied in hot asphalt	Hot asphalt and gravel or SBS cap sheet in hot asphalt; or torch adhered SBS cap sheet listed in the installation section	**-2.4 kPa -50 psf**
MP-15	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or concrete deck	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered (optional with concrete deck)	Min. 1.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 4-ft^2	One or more layers of min. 1" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	RetroPlus applied in hot asphalt	SBS ply sheet listed in the installation section applied in hot asphalt	Optional - Any SBS ply listed in the installation section in hot asphalt	Any SBS cap sheet listed in the installation section in hot asphalt or torch adhered	**-2.4 kPa -50 psf**
MP-16	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or concrete deck	Optional thermal barrier; Any loose laid or adhered vapor barrier (optional with concrete deck)	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 2.5" ENRGY 3, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 2.67-ft^2	JM DynaGrip Base SD/SA or P/SA self-adhered	Optional - Any torch adhered ply listed in the installation section	Any torch adhered cap listed in the installation section	**-2.9 kPa -60 psf**
MP-17	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or concrete deck	Optional thermal barrier; Any loose laid or adhered vapor barrier (optional with concrete deck)	Min. 2.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 2.67-ft^2	Optional One or more layers of min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	RetroPlus applied in hot asphalt	ASTM D 226, Type I (#15), GlasPly IV, GlasPly Premier, or SBS ply listed in the installation section in hot asphalt	Two or more plies of GlasPly IV or GlasPly Premier applied in hot asphalt	Hot asphalt and gravel or SBS cap sheet in hot asphalt; or torch adhered SBS cap sheet listed in the installation section	**-3.0 kPa -63 psf**

Multi-Ply Roof Systems (New or Existing)									
System No.	Deck	Thermal Barrier/ Vapor Barrier	Base Insulation	Middle Insulation	Top Insulation or Cover Board	Base Sheet	Ply Sheet	Cap Sheet or Surfacing	*DUR*
MP-18	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or concrete deck	Optional thermal barrier; Any loose laid or adhered vapor barrier (optional with concrete deck)	Min. 2.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 2.67-ft^2	Optional One or more layers of min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	RetroPlus applied in hot asphalt	SBS ply sheet listed in the installation section applied in hot asphalt	Optional - Any SBS ply listed in the installation section in hot asphalt	Any SBS cap sheet listed in the installation section in hot asphalt or torch adhered	**-3.0 kPa -63 psf**
MP-19	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck	Min. 0.25" DensDeck Prime adhered to the top flange of each deck rib in RSUA with ribbons spaced 6" o.c.; Board primed with JM SA Primer Low VOC and JM DynaGrip SD/SA fully adhered	Min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	Optional One or more layers of min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	RetroPlus applied in hot asphalt	ASTM D 226, Type I (#15), GlasPly IV, GlasPly Premier, or SBS ply listed in the installation section applied in hot asphalt	Two or more plies of GlasPly IV or GlasPly Premier applied in hot asphalt	Hot asphalt and gravel or SBS cap sheet in hot asphalt; or torch adhered SBS cap sheet listed in the installation section	**-3.6 kPa -75 psf**
MP-20	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck	Min. 0.25" DensDeck Prime adhered to the top flange of each deck rib in RSUA with ribbons spaced 6" o.c.; Board primed with JM SA Primer Low VOC and JM DynaGrip SD/SA fully adhered	Min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	Optional One or more layers of min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	RetroPlus applied in hot asphalt	SBS ply sheet listed in the installation section applied in hot asphalt	Optional - Any SBS ply listed in the installation section in hot asphalt	Any SBS cap sheet listed in the installation section in hot asphalt or torch adhered	**-3.6 kPa -75 psf**
MP-21	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck	Deck primed with JM SA Primer Low VOC and JM DynaGrip SD/SA adhered to top flange of deck ribs	Min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	Optional One or more layers of min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	RetroPlus applied in hot asphalt	ASTM D 226, Type I (#15), GlasPly IV, GlasPly Premier, or SBS ply listed in the installation section applied in hot asphalt	Two or more plies of GlasPly IV or GlasPly Premier applied in hot asphalt	Hot asphalt and gravel or SBS cap sheet in hot asphalt; or torch adhered SBS cap sheet listed in the installation section	**-3.6 kPa -75 psf**
MP-22	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck	Deck primed with JM SA Primer Low VOC and JM DynaGrip SD/SA adhered to top flange of deck ribs	Min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	Optional One or more layers of min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	RetroPlus applied in hot asphalt	SBS ply sheet listed in the installation section applied in hot asphalt	Optional - Any SBS ply listed in the installation section in hot asphalt	Any SBS cap sheet listed in the installation section in hot asphalt or torch adhered	**-3.6 kPa -75 psf**

Multi-Ply Roof Systems (New or Existing)									
System No.	Deck	Thermal Barrier/ Vapor Barrier	Base Insulation	Middle Insulation	Top Insulation or Cover Board	Base Sheet	Ply Sheet	Cap Sheet or Surfacing	*DUR*
MP-23	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck	Min. 0.25" DensDeck Prime adhered to the top flange of each deck rib in RSUA with ribbons spaced 6" o.c.; Board primed with JM SA Primer Low VOC and JM DynaGrip SD/SA fully adhered	Min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	Optional One or more layers of min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	RetroPlus applied in hot asphalt	GlasPly IV, GlasPly Premier, or SBS ply listed in the installation section applied in hot asphalt	Two or more plies of GlasPly IV or GlasPly Premier applied in hot asphalt	Hot asphalt and gravel or SBS cap sheet in hot asphalt; or torch adhered SBS cap sheet listed in the installation section	**-4.4 kPa -92 psf**
MP-24	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck	Min. 0.25" DensDeck Prime adhered to the top flange of each deck rib in RSUA with ribbons spaced 6" o.c.; Board primed with JM SA Primer Low VOC and JM DynaGrip SD/SA fully adhered	Min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	Optional One or more layers of min. 2.5" ENRGY 3, ENRGY 3.E, ENRGY 3 AGF, or ENRGY 3 CGF applied in hot asphalt	RetroPlus applied in hot asphalt	SBS ply sheet listed in the installation section applied in hot asphalt	Optional - Any SBS ply listed in the installation section in hot asphalt	Any SBS cap sheet listed in the installation section in hot asphalt or torch adhered	**-4.4 kPa -92 psf**

Single-Ply Roof Systems (New or Existing)							
System No.	Deck	Thermal Barrier/ Vapor Barrier	Base Insulation	Middle Insulation	Top Insulation or Cover Board	Membrane	*DUR*
SP-1	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck	Optional thermal barrier; Any loose laid or adhered vapor barrier (optional with concrete deck)	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 1.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 6.4-ft^2	10ft wide, Min. JM EPDM R 60 mil - FIT secured 6" o.c. within the 3" wide side laps, with Polymer Membrane Batten and High Load Fasteners	**-1.4 kPa -30 psf**
SP-2	Min. 22 ga., Grade 33 Type B steel deck or structural concrete	Optional – any loose laid or adhered thermal barrier or vapor barrier	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 1.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 2.13-ft^2	Min. 45 mil JM EPDM NR or EPDM R adhered in any EPDM membrane adhesive listed in this report	**-1.6 kPa -33 psf**
SP-3	Min. 22 ga., Grade 33 Type B steel deck or structural concrete	Optional – any loose laid or adhered thermal barrier or vapor barrier	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 1.5" ENRGY 3, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 2-ft^2	Min. 50 mil JM PVC SD Plus adhered in any PVC membrane adhesive listed in this report	**-1.7 kPa -36 psf**
SP-4	Min. 22 ga., Grade 40 ASTM A 653, Type B steel deck or structural concrete	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered (optional with concrete deck)	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 1.5" ENRGY 3, ENRGY CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 2-ft^2	Min. 45 mil JM TPO adhered in any TPO membrane adhesive listed in this report	**-2.4 kPa -50 psf**
SP-5	Min. 22 ga., Grade 40 ASTM A 653, Type B steel deck or structural concrete	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered (optional with concrete deck)	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 0.5" DensDeck Prime or 7/16" APA rated OSB secured at a rate of 1 fastener per 2-ft^2	Min. 45 mil JM TPO adhered in any TPO membrane adhesive listed in this report	**-2.4 kPA -50 psf**
SP-6	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or structural concrete	Optional thermal barrier; Any loose laid or adhered vapor barrier (optional with concrete deck)	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 2.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, ENRGY 3 FR, or ENRGY 3 Foil Faced secured at a rate of 1 fastener per 4-ft^2 with JM RhinoPlates and High Load Fasteners (Steel Deck) or JM All Purpose Fasteners (Concrete Deck)	Min. 60 mil JM TPO induction welded to the JM TPO RhinoPlates	**-2.9 kPa -60 psf**
SP-7	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or structural concrete	Optional – any loose laid or adhered thermal barrier or vapor barrier	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 2.5" ENRGY 3, ENRGY 3 CGF, or ENRGY 3 FR secured at a rate of 1 fastener per 2.67-ft^2. Boards staggered 6" from preceding course. Boards laid perpendicular to flutes.	Min. 45 mil. JM EPDM NR or JM EPDM R adhered in JM Membrane Bonding Adhesive (TPO & EPDM), JM EPDM Membrane Adhesive (LVOC), or JM LVOC Membrane Adhesive (TPO & EPDM)	**-2.9 kPa -60 psf**
SP-8	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or structural concrete	Optional thermal barrier; Any loose laid or adhered vapor barrier (optional with concrete deck)	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 2.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, ENRGY 3 FR, or ENRGY 3 Foil Faced secured at a rate of 1 fastener per 4-ft^2	Min. 60 mil JM TPO secured 12" o.c. within the 6" wide laps, spaced a maximum 114" o.c. with High Load Plates and High Load Fasteners (steel deck only) or All Purpose Fasteners (concrete deck only)	**-2.9 kPa -60 psf**

Single-Ply Roof Systems (New or Existing)							
System No.	Deck	Thermal Barrier/ Vapor Barrier	Base Insulation	Middle Insulation	Top Insulation or Cover Board	Membrane	*DUR*
SP-9	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or structural concrete	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered	Min. 2.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in JM One-Step Foamable Adhesive (JM Vapor Barrier SA only) or RSUA with ribbons spaced 12" o.c.	-	SeparatoR CGF, ENRGY 3 CGF, ENRGY 3 C1 CGF, or ProtectoR HD, adhered in JM One-Step Foamable Adhesive or RSUA with ribbons spaced 12" o.c.	Min. 45 mil. JM TPO Adhered in JM All Season Sprayable Bonding Adhesive, JM LVOC Membrane Adhesive (TPO & EPDM), or JM Membrane Bonding Adhesive (TPO & EPDM)	**-3.4 kPa -70 psf**
SP-10	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or structural concrete	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered	Min. 2.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in JM One-Step Foamable Adhesive (JM Vapor Barrier SA only) or RSUA with ribbons spaced 12" o.c.	-	SeparatoR CGF, ENRGY 3 CGF, ENRGY 3 C1 CGF, or ProtectoR HD, adhered in JM One-Step Foamable Adhesive or RSUA with ribbons spaced 12" o.c.	JM TPO FB 115 or 135 adhered in JM Two-Part UIA Canister, splatter applied	**-3.4 kPa -70 psf**
SP-11	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or structural concrete	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered	Min. 2.5" ENRGY 3, ENRGY 3 AGF, or ENRGY 3 CGF adhered in JM One-Step Foamable Adhesive (JM Vapor Barrier SA only) or RSUA with ribbons spaced 12" o.c.	-	SeparatoR CGF, ENRGY 3 CGF, ENRGY 3 C1 CGF, or ProtectoR HD, adhered in JM One-Step Foamable Adhesive or RSUA with ribbons spaced 12" o.c.	JM TPO SA self-adhered	**-3.4 kPa -70 psf**
SP-12	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or structural concrete	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered (optional with concrete deck)	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 1.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR, ENRGY 3 Foil Faced secured at a rate of 1 fastener per 4-ft^2	Min. 45 mil JM TPO secured 12" o.c. within the 6" wide laps, spaced a maximum 114" o.c. with High Load Plates and High Load Fasteners (steel deck only) or All Purpose Fasteners (concrete deck only)	**-3.6 kPa -75 psf**
SP-13	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or structural concrete	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered (optional with concrete deck)	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 1.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR, ENRGY 3 Foil Faced secured at a rate of 1 fastener per 4-ft^2	Min. 45 mil JM PVC secured 12" o.c. within the 6" wide laps, spaced a maximum 114" o.c. with High Load Plates and High Load Fasteners (steel deck only) or All Purpose Fasteners (concrete deck only)	**-3.6 kPa -75 psf**
SP-14	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or structural concrete	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered (optional with concrete deck)	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 1.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR, ENRGY 3 Foil Faced secured at a rate of 1 fastener per 4-ft^2 with JM RhinoPlates and High Load Fasteners (Steel Deck) or JM All Purpose Fasteners (Concrete Deck)	Min. 60 mil JM PVC or JM PVC SD Plus induction welded to the JM PVC RhinoPlates	**-3.6 kPa -75 psf**

Single-Ply Roof Systems (New or Existing)							
System No.	Deck	Thermal Barrier/ Vapor Barrier	Base Insulation	Middle Insulation	Top Insulation or Cover Board	Membrane	*DUR*
SP-15	Min. 22 ga., Grade 33 ASTM A 653, Type B steel deck or structural concrete	JM Vapor Barrier SA or JM Vapor Barrier SAR fully adhered (optional with concrete deck)	OPTIONAL one or more layers of ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR	-	Min. 1.5" ENRGY 3, ENRGY 3 AGF, ENRGY CGF, or ENRGY 3 FR, ENRGY 3 Foil Faced secured at a rate of 1 fastener per 4-ft^2 with JM RhinoPlates and High Load Fasteners (Steel Deck) or JM All Purpose Fasteners (Concrete Deck)	Min. 60 mil JM TPO induction welded to the JM TPO RhinoPlates	**-5 kPa -105 psf**