ADDENDUM #1

WOODBURY BRACKETT MUNICIPAL GARAGE ROOF REPLACEMENT PROJECT
BID NO. 2020-003

City of Auburn, Maine August 20, 2019

Please include the following changes:

GENERAL ITEMS:

1. Refer to the attached Pre-Bid Meeting Minutes for items discussed, bid questions and clarifications, and individuals present at the mandatory pre-bid meeting.
2. Refer to item 29 on the attached Pre-Bid Meeting Minutes for information on an approved product substitution request.

CHANGES TO THE SPECIFICATIONS:

Not applicable.

CHANGES TO THE DRAWINGS:

Not applicable.

CLARIFICATIONS AND QUESTIONS ASKED BY BIDDERS:

1. Refer to item 29 on the attached Pre-Bid Meeting Minutes for the bid questions and clarifications received to date.

ATTACHMENTS:

1. Pre-Bid Meeting Minutes.
2. Approved substitution product data.

END OF ADDENDUM #1

CORDJIA
CAPITAL PROJECTS GROUP

Pre-Bid Meeting Minutes

Project:	City of Auburn, Maine – Woodbury Brackett Municipal Garage – Roof Replacement Project	**Date:**	August 13, 2019
Project No.	CCPG #1244	**Bid No.**	2020-003
Meeting:	Pre-Bid Meeting	**Time:**	11:00 a.m.
Location:	296 Gracelawn Road, Auburn, ME		

Attendees	**Company**	**E-Mail**
Derek Boulanger	City of Auburn, Facilities Manager/Purchasing Agent	dboulanger@auburnmaine.gov
Mitch Daigle	Cordjia Capital Projects Group, LLC	mdaigle@cordjiacpg.com
Bart Smith	K.W. Smith & Son, Inc.	kevin@kswandson.com
Bob Gladu	Gladu Roofing Company, Inc.	gladuroofing@gmail.com
John Ferland	Hahnel Bros. Co.	jferland@hanhelbrosco.com
Steve LaPointe	G&E Roofing	slapointe@geroofing.com
Greg Nazaroff	Beacon Sales Co.	gnazaroff@beaconsales.com
Brett Bernier	Glidden Roofing Corp.	cashmanb@gliddenroofing.com
Larry Perry	LGR1	larryperry285@gmail.com
Jay Davis	W.H. Demmons	jdavis@whdemmons.com
Steve Facteau	Firestone	sfacteau@easternar.com

Copy of Meeting Minutes sent to: Attendees Names listed above.

1.	Bid opening will be at 2:30 pm on August 27, 2019 at 60 Court Street, Auburn, Maine. Bids must be delivered and stamped received prior to the 2:30 pm deadline. All bid questions and RFI's must be submitted in writing to both Mr. Mitch Daigle of Cordjia Capital Projects Group ("Cordjia") and Mr. Derek Boulanger of the City of Auburn ("COA") prior to 2:30 pm on August 20, 2019. Email is preferred, but it is the responsibility of the contractor to confirm that the email correspondence has been received. Addendums and clarifications will be issued to the contractor's email addresses that were provided on the pre-bid sign in sheet. The contractors should ensure that whoever this email address belongs to knows to distribute the addendums and clarifications to the correct person. Please allow read receipts for emails. An addendum will be issued by no later than 2:30 pm on August 23, 2019. The submitted BID PROPOSAL FORM must acknowledge all addendums issued and have the addendum number(s) and date(s) indicated and must include either the "Fall 2019 Schedule" or the "Spring 2020 Schedule" SCHEDULE OF VALUES FORM. Bids may contain both schedule of values forms should the contractor choose to submit a bid on both project schedules. A bid bond shall be submitted with appropriate bid forms in the amount of 5% of the total contract value.

CORDJIA
CAPITAL PROJECTS GROUP

Pre-Bid Meeting Minutes

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Project No.	CCPG #1244	**Bid No.**	2020-003
Meeting:	Pre-Bid Meeting	**Time:**	11:00 a.m.
Location:	296 Gracelawn Road, Auburn, ME		

ID	Discussion / Remark
2.	Points of contact are as follows: Technical Inquiries: Mr. Mitch Daigle - Cordjia; Office: 207-236-9970; Mobile: 207-333-2226; Email: mdaigle@cordjiacpg.com Bidding Inquiries & Access to the Building: Mr. Derek Boulanger – City of Auburn (COA); Office: 330-6601, ext. 1135; Email: dboulanger@auburnmaine.gov
3.	The selected contractor shall provide 100% performance and payment bonds and a copy of all certificates of insurance with limits pursuant to the City of Auburn's requirements prior to commencing the work.
4.	Permits are the contractor's responsibility for their scope of work and shall be included in the bid. The Authority Having Jurisdiction (AHJ) shall be contacted for verification of any applicable permitting requirements and fees. It is not anticipated that any permits are required if the secondary roof drainage alternate is not selected; however it is the responsibility of the contractor to verify this with the AHJ. All local permit fees (if any) will be waived.
5.	All new work completed under this contract shall be in compliance with MUBEC and any other applicable codes and regulations.
6.	The selected contractor is expected to start the work once a notice of award has been issued or as weather conditions allow. Project substantial completion is to be achieved by no later than October 30, 2019 for the Fall 2019 Schedule and June 30, 2020 for the Spring 2020 Schedule.
7.	This project is subject to compliance with all requirements of the Occupational Safety and Health Administration (OSHA), Volume 36, No. 105 of the Federal Register; U.S. Department of Labor published Saturday, May 29, 1971, as amended.
8.	There is adequate space at the project site and designated parking, storage, and mobilization areas will be further discussed prior to construction with the selected contractor.
10.	The only personnel that is authorized to approve a change to the bid documents is Mr. Derek Boulanger. If a condition arises that warrants a change order it must be pre-approved by Mr. Derek Boulanger and the A/E. No exceptions.

CORDJIA
CAPITAL PROJECTS GROUP

Pre-Bid Meeting Minutes

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ID	Discussion / Remark
11.	The selected contractor shall submit as soon as possible to Cordjia and COA and before any material or equipment is purchased, the manufacturer's data, catalog cuts, samples, or other information as required for the items listed in the contract documents.
12.	The selected contractor will be responsible for direct coordination with the Owner and the Owner's other contractors for work that may be executed under separate contract.
13.	All construction materials shall be new, with the exception of materials designated for reuse, and shall be purchased, stored and installed in accordance with the manufacturer in order to obtain and maintain the specified manufacturer's special warranty.
14.	The contractor shall continuously maintain adequate protection of all work from damage and shall protect the property from injury or loss for the duration of this contract, and shall make good any such damage, injury or loss. Maintain the building water-tight.
15.	The Owner's business operations must continue throughout the entire construction period. It is the contractor's responsibility to coordinate construction activities with the Owner's designated personnel. The selected contractor will be responsible to coordinate in advance with the City of Auburn and the Building Occupants for access to the interior of the building. The access around the exterior of the building must be kept clear at all times for emergency vehicles.
16.	The Owner will remove all equipment and materials from the work area prior to the start of work (if required). The contractor must notify the Owner that the work area needs to be cleared at least 72-hours in advance of the need to move furnishings, equipment, materials, etc. from the work area.
17.	Contractors will have access to the site between 7:00 AM and 6:00 PM (flexible). The Owner may provide special access on late weekdays, weekends, and holidays by special request with a minimum of 48-hours advance notice and approval by the Owner.
18.	The selected contractor will be provided secure access to the work area. This will be discussed in further detail with the selected contractor prior to construction. The selected contractor will be responsible for their own jobsite security.
19.	No power or utility cutoff will be permitted without 3-days advance notice and Owner approval.

CORDJIA
CAPITAL PROJECTS GROUP

Pre-Bid Meeting Minutes

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ID	Discussion / Remark
20.	It will be the contractor's responsibility for the proper legal disposal of all construction waste.
21.	Construction debris not immediately contained in a proper disposal container will not be tolerated at any time during the duration of this project. Do not allow construction debris to enter neighboring properties.
22.	Smoking and tobacco products are allowed on the building grounds provided it occurs at the designated smoking area. Smoking waste must be properly disposed of or taken off-site. Smoking and tobacco products will not be permitted or tolerated on the roof.
23.	The selected contractor is to provide all equipment and materials required for the prosecution of the work whether or not indicated in the contract documents at no additional cost to the Owner.
24.	The selected contractor is not required to provide a jobsite trailer unless they choose to do so. The contractor is required to provide their own bathroom facilities.
25.	The selected contractor will be required to submit a preliminary construction schedule and a schedule of values within 10-days following receipt of the fully executed formal Contract Agreement.
26.	The selected contractor shall request all scheduled inspections including the punch-list inspection in writing (email is acceptable) seven (7) days prior to the desired inspection date. The punch-list inspection is to confirm that all material and equipment is in place and is functioning in accordance with the construction documents and any issues should be cosmetic and minor in nature. It is NOT an additional site visit. If there are multiple page lists of deficiencies found during this inspection, the contractor will be responsible to provide funding for the cost of an additional punch-list inspection.
27.	The contractor shall submit Closeout Documentation to Cordjia for review including all warranties as specified for all materials and labor, as well as all required warranties from manufacturers prior to requesting for final Application for Payment. Closeout procedures will be strictly enforced, and the progress of closeout documentation will be checked at regular intervals during construction.

CORDJIA
CAPITAL PROJECTS GROUP

Pre-Bid Meeting Minutes

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ID	Discussion / Remark
28.	After the project presentation meeting, the contractors were toured through the premises which included all project proximities both interior and exterior. The contractors were informed to call Mr. Derek Boulanger for arrangement of additional site visits if necessary.
29.	Questions and Clarifications: a. *Will the Owner pay for stored materials purchased upon award in 2019 for use in Spring 2020 with proper evidence of insurance and rite of entry?* Materials stored offsite may be requisitioned with appropriate right-of-entry; certificate of insurance naming the City of Auburn, Maine as additionally insured; letter stating date of manufacture and shelf life of stored materials; and physical confirmation of the stored materials tagged for use at this project. *b. Are we supposed to include the cost of debris disposal or is the owner able to waive the fees?* The cost of debris disposal shall be included in the bids. *c. Is the new wood blocking at the perimeter supposed to be pressure treated?* All wood blocking shall be pressure treated as indicated in Section 06 10 00, Part 2.02, C. with fasteners according to Section 06 10 00, Part 3.01, C. and the pressure treated lumber shall be covered according to Section 07 62 00, Part 2.02, E. d. *Is the roofing contractor to carry a plumbing contractor if the secondary roof drainage alternate is selected, or will the Owner contract directly with a plumbing contractor?* The roofing contractor shall carry the plumbing contractor within their bid alternate. The Owner wishes for a seamless, cohesive project. e. *Will the Owner consider a substitution for self-adhered EPDM?* The Owner accepts the Firestone FullForce EPDM membrane with Secure Bond™ Technology substitution as an approved equal to the specified product(s). Any contractor carrying the substitution must be a manufacturer approved installer of the product and must submit proof of manufacturer training and approval.
30.	Attachments: a. Pre-Bid Meeting Sign-In Sheet.

Mitch Daigle, V.P., Cordjia Capital Projects Group, LLC

Pre-Bid Meeting Sign-In **August 13, 2019**

Time: 11:00 am

Client:	**City of Auburn, Maine**
Project:	**Woodbury Brackett Municipal Garage, Roof Replacement Project – Bid # 2020-003**

	Name	Company Name	Email Address	Phone Number
1.	Derek Boulanger	City of Auburn, Facilities Manager	dboulanger@auburnmaine.gov	207-333-6601, ext. 1135
2.	Mitchell Daigle	Cordjia Capital Projects Group	mdaigle@cordjiacpg.com	207-236-9970
3.	Bret Bernier	Glidden Roofing	cashmanbb@gliddenroofing.com	207-883-2608
4.	Greg Nazaroff	Beacon Sales Co.	gnazaroff@beaconsales.com	207-653-7384
5.	John Ferland	Hannel Bros Co	jferland@hannelbrosco.com	207-754-6195
6.	Bart Smith	Kevin W. Smith & Son	kevin@kwsandson.com	207-551 8334
7.	STEVE LaPointe	G & E Roofing	SLaPointe@GERoofing.com	207.557.0494
8.	Larry Perry	2GR1	LarryPerry985@gmail.com	978-332-0451
9.	Jay Davis	W H Dyer	Jdavis@whdyermansa	207.831-0200
10.	Steve Facteau	Firestone	sfacteau@easternar.com	781.572.6631

Pre-Bid Meeting Sign-In **August 13, 2019**

Time: 11:00 am

Client:	**City of Auburn, Maine**
Project:	**Woodbury Brackett Municipal Garage, Roof Replacement Project – Bid # 2020-003**

	Name	Company Name	Email Address	Phone Number
11.	Bob Glass	Glass Roofing	GlassRoofing@gmail.com	782-7061
12.				
13.				
14.				
15.				
16.				
17.				
18.				
19.				
20.				

Firestone Building Products

TECHNICAL INFORMATION SHEET

FullForce™ EPDM

.

Item Description	Item Number
.060" x 10' x 100' (1.5 mm x 3.05 m x 30.5 m)	W56L61010FF

Product Information

Description:

Firestone FullForce EPDM membrane with Secure Bond™ Technology is the next generation of self-adhered roof system application. Secure Bond Adhesive is factory applied which ensures uniform adhesion across the entire membrane, creating a powerful bond with the substrate. This advanced technology not only improves installation speed over traditional fully adhered applications, but also widens the installation window with the ability to be installed down to 20 °F (-6.7 °C). With no VOCs emitted during field membrane application, FullForce EPDM with Secure Bond Technology is an excellent solution for all your fully adhered roofing needs.

Method of Application:

Approved substrates must be clean, dry and free of foreign material such as grease and any debris which could inhibit adhesion. This may require cleaning with a broom or blower. An acceptable Firestone Primer is required for seaming, detailing, sealant work and vertical flashings, but no bonding adhesives are required for field membrane attachment.

1. Prepare substrate and secure insulation per current Firestone technical specifications.
2. Install FullForce EPDM membrane only when membrane, substrate and ambient temperatures exceed 20 °F (-6.7 °C) and rising. Do not install FullForce EPDM membrane below this minimum temperature.
3. Unroll and position the membrane over the substrate to achieve the desired alignment and seam overlaps. Allow the membrane to relax a minimum of 30 minutes before final positioning and adhering.
4. Position adjoining sheets in shingle fashion or so that seams run parallel to the flow of water, and that all side and end laps provide a minimum 3" (76.2 mm) overlap.
5. Apply an acceptable Firestone Primer (QuickPrime™ Plus, QuickPrime Plus LVOC, Single-Ply QuickPrime Primer or Single-Ply LVOC Primer) to all EPDM lap surface areas to receive FullForce EPDM.
6. All membrane and flashing splices require the application of seam edge treatment using FullForce Sealant.
7. An acceptable Firestone Primer (as noted above) is required for vertical surfaces.
8. Refer to the FullForce EPDM Application Guide and associated Technical Information Sheets for additional installation information.

Storage:

- Warehouse membrane in a clean dry location.
- FullForce EPDM membrane stored on jobsite must be kept dry.
- FullForce EPDM membrane must be a minimum of 20 °F (-6.7 °C) prior to installation.
- Store away from sources of punctures and physical damage.
- Make certain the structural decking will support the loads incurred by material when stored on rooftop. The deck load limitations should be specified by the project designer.
- Store away from ignition sources.

Shelf Life:

18 Months when stored between 60 °F (15.6 °C) and 80 °F (26.7 °C) out of direct sunlight.

FullForce™ EPDM

Precautions:

- Take care when moving, transporting and handling to avoid sources of punctures and physical damage.
- Removal of the polymeric release liner from the adhesive backing may create a static electric charge; care should be used when removing and handling the release liner.
- Refer to Safety Data Sheets (SDS) for additional safety information.
- Wood fiberboard is not a suitable substrate for FullForce EPDM membrane.

LEED® Information:

Post-Consumer Recycled Content: 0%
Post Industrial Recycled Content: 3-5%
Manufacturing Location: Tuscumbia, AL
*NOTE: LEED® is a registered trademark of the U.S. Green Building Council.

Typical Properties - Secure Bond Pressure Sensitive Adhesive

Property	Test Method	Units	Performance Min.	Typical Values
Color	---	---	---	Clear
Nominal Thickness	ASTM E 408-71	in (mm)	N/A	0.007 (0.178)
Weight	---	lb/ft² (kg/m²)	---	0.040 (0.002)

FullForce EPDM membrane meets or exceeds all the requirements for ASTM D 4637 for Type I non-reinforced EPDM single-ply roofing membranes.

Typical Properties – RubberGard EPDM Membrane

Property	Test Method	Units	Performance Minimum	Typical Performance 60-mil
Overall Thickness	D 412	in (mm)	0.054 (1.372)	0.059 (1.499)
Tensile Strength	D 412 (Die C)	psi (MPa)	1305 (9.0)	1454 (10.0)
Elongation, Ultimate	D 412 (Die C)	%	300	622
Tensile Set	D 412, Method A (Die C)	%	10	2.18
Tear Resistance	D 624 (Die C)	lb_f/in (kN/m)	159 (26.3)	219 (38.4)
Brittleness Point	D 2137	°F (°C)	-49 (-45)	-49 (-45)
Ozone Resistance, no cracks	D 1149	---	---	Pass
Heat Aging *Tensile Strength* *Elongation, Ultimate* *Tear Resistance* *Linear Dimensional Change*	D 573 D 412 (Die C) D 412 D 624 D 1204	 psi (MPa) % lb_f/in (kN/m) %	 1205 (8.3) 200 125 (21.9) ± 1.0	 1490 (10.3) 322 179 (31.3) -0.32
Water Absorption	D 471	%	+8, -2	+1.51
Weight	---	lb./ft²	---	0.47 lb/ft²
Factory Seam Strength	D 816 Method B (Modified)	lb_f/in (kN/m)	50 (8.8) or Sheet Failure	Sheet Failure
Weather Resistance *Visual Inspection* *PRFSE* *Elongation, Ultimate*	 D 518 D 518 D 412 (Die C)	 --- % %	 Pass 30 200	 Pass 53 255
Air Permeance (Material)	E 2178*	ft³/ft² (L/(s·m²))	<0.004 (0.02)	Pass

* The ASTM 2178 values listed are for the air permeance of the FullForce EPDM membrane component only. For use of the product as a component in an air barrier assembly, please consult your Firestone Technical Advisor, Code Agency or Authority having Jurisdiction (AHJ) for the acceptable air barrier assembly details.

FullForce™ EPDM

Acceptable Substrates

Substrate	Primer Req'd	Acceptable Application Temperatures	Special Application Considerations / NOTE
ISOGARD™ GL / ISO 95+™ GL	No	20 - 120 °F (-6.7 – 48.9 °C)	
ISOGARD HD	No	20 - 120 °F (-6.7 – 48.9 °C)	Broom only, do not roll in place with weighted roller
ISOGARD CG / RESISTA™	No	20 - 120 °F (-6.7 – 48.9 °C)	Broom only, do not roll in place with weighted roller
Poured in Place or plank Gypsum		20 - 120 °F (-6.7 – 48.9 °C)	Primer may be necessary; field testing is recommended
Structural Concrete	No	20 - 120 °F (-6.7 – 48.9 °C)	Must be clean, dry and properly cured prior to application
Lightweight Concrete	No	20 - 120 °F (-6.7 – 48.9 °C)	Use on clean, dry and properly cured cellular lightweight concrete only, not acceptable with lightweight aggregate concrete
DensDeck®*	No	20 - 120 °F (-6.7 – 48.9 °C)	
DensDeck Prime	No	20 - 120 °F (-6.7 – 48.9 °C)	
Securock®**	No	20 - 120 °F (-6.7 – 48.9 °C)	
DEXCell®***	No	20 - 120 °F (-6.7 – 48.9 °C)	
Plywood	No	20 - 120 °F (-6.7 – 48.9 °C)	Check local code for acceptance of direct application
OSB Board	No	20 - 120 °F (-6.7 – 48.9 °C)	Check local code for acceptance of direct application
CMU / Masonry	No	20 - 120 °F (-6.7 – 48.9 °C)	Must be clean & dry prior to application.
Vertical Substrates	Yes	20 - 120 °F (-6.7 – 48.9 °C)	Apply an acceptable Firestone primer to vertical substrates.

*DensDeck is a trademark of the G-P Gypsum Corporation
**Securock is a registered trademark of the USG Corporation
***DexCell is a registered trademark of National Gypsum Properties, LLC

Please contact Firestone Technical Services at 1-800-428-4511 for further information.

Firestone Building Products

TECHNICAL INFORMATION SHEET

FullForce™ Sealant

Item Description	Item Number
10.3 oz (0.31 L) Cartridge (30 Cartridges per Cardboard Carton)	W563587001

Product Information

Description:

Firestone FullForce Sealant is a low volatile organic compound (LVOC) sealant designed to be used with Firestone Primers for seam and flashing edge treatment on Firestone FullForce EPDM roofing systems as indicated by current specifications and details.

Method of Application:

1. Surfaces to receive FullForce Sealant shall be clean, dry, and free from loose or foreign materials, oil, and grease.
2. Wait to apply edge treatment a minimum of four (4) hours after the completion of a seam or flashing.
3. Prior to application of FullForce Sealant, clean and prime the seam edge a minimum of 1" (25.4 mm) on each side of the step-off with an acceptable Firestone primer (QuickPrime™ Plus, QuickPrime Plus LVOC, Single-Ply QuickPrime Primer or Single-Ply LVOC Primer) and allow to flash off or dry according to the primer specification. If the seam edge has been contaminated, clean the edge with Firestone Splice Wash before applying primer.
4. FullForce Sealant has a working time of approximately 35 minutes.
5. Cut the plastic nozzle applicator tip to create an opening of approximately ¼" (6.35 mm) diameter at the dispensing end for sealant application.
6. Using the nozzle applicator, apply a continuous bead of FullForce Sealant approximately ⅜" x ¼" (9.53 mm x 6.35 mm), centered over all seam and flashing edges on Firestone FullForce EPDM roofing systems. Be sure to keep FullForce Sealant nozzle tip centered over the lap step-off. Refer to current Firestone seam details.
7. FullForce Sealant does not require troweling.
8. Do not disturb freshly applied FullForce Sealant. Protect FullForce sealant from foot traffic, equipment carts, hoses, cables, etc., during cure time, which is typically 24 hours after application.

Storage:

- Store in original unopened containers at temperatures between 60 °F and 80 °F (15.6 °C and 26.7 °C).
- When exposed to lower temperatures, restore to room temperature prior to use.
- For optimum results, rotate stock to ensure stored material has not exceeded the shelf life.

Shelf Life:

- Shelf life of one (1) year can be expected when stored in original, sealed containers at temperatures between 60 °F and 80 °F (15.6 °C and 26.7 °C).
- Shelf life will be shortened if exposed to elevated temperatures (temperatures 80 °F, 26.67 °C and above).

Coverage Rate:

10.3 oz (0.31 L) Cartridge: approximately 16' (4.88 m) of ⅜" x ¼" (9.53 mm x 6.35 mm) continuous bead.

FullForce™ Sealant

Clean-Up:

Recommended cleaner is rubbing alcohol followed by soap and water.

Precautions:

- Review Safety Data Sheet (SDS) prior to use.
- Flammable. Keep away from fire and open flame during storage and use. Do not smoke during use.
- Use only in well ventilated areas.
- Do not contaminate with foreign materials.

LEED® Information:

Post-Consumer Recycled Content: 0%
Post Industrial Recycled Content: 0%
Manufacturing Location: Spring Lake, MI
*NOTE: LEED is a registered trademark of the U.S. Green Building Council.

Typical Properties

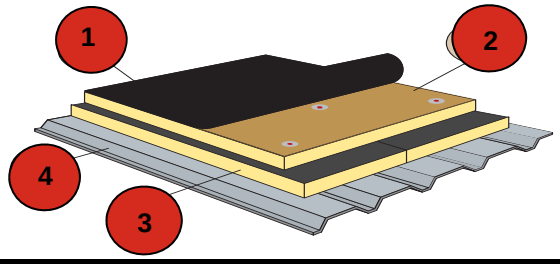
Property	Typical Performance
Base:	STPE
Color:	Black
Solvents:	None
Solids by Volume:	≥ 97%
Press-Flow Viscosity:	20 to 35 seconds to extrude 20 g through 0.104" (2.64 mm) diameter orifice at 72 °F to 74 ºF (22.2 °C to 23.3 ºC).
Specified Gravity:	1.43 ± 0.03
Weight:	11.92 ± 0.25 lb/gal. (1.43 ± 0.03 kg/L.).
Pot Life:	Approximately 35 minutes.
V.O.C. Content:	> 2.1 lb/gal (250 g/L).

Please contact Firestone Technical Services Department at 1-800-428-4511 for further information.

Firestone
Firestone Building Products

FullForce™ EPDM Membrane to Steel Deck

5, 10, 15, 20 Year Red Shield™ Warranty



1. Firestone FullForce EPDM Membrane with Secure Bond™ Technology
2. Mechanically Attached or Adhered Cover Board (Optional)
3. Mechanically Attached or Adhered Insulation
4. Steel Deck

Consult Firestone Technical Specifications, Guides and Details at www.firestonebpco.com

Slope Requirement
Positive slope required for warranty.

Construction Type
New construction, complete tear-off, or recover with any wet or damaged materials removed prior to installation.

Building Height Limitation
Firestone FullForce EPDM Roofing Systems are limited to buildings 250' (76.2 m) or less.

Use of Air Barrier
An air barrier is recommended for projects with large wall openings greater than 10% of the total wall area.

Base Tie-Ins
Must be attached to substrates which provide a minimum of 200 lbf (1 kN) in any direction.

Increased Wind Speed and Codes
Any wind speed coverage exceeding 55 mph (88 km/h) or projects with codes requirements must be reviewed by a Firestone Roof Systems Advisor.

Deck Requirement
❑ Minimum 22 Gauge Steel

Fastener Type
❑ Firestone All Purpose Fastener (max. 15 year warranty)
❑ Firestone Heavy Duty Fastener
❑ Firestone Heavy Duty Plus Fastener
❑ Firestone HailGard™ Fastener (with HailGard Composite Board or OSB only)

Insulation Adhesive*
❑ Firestone I.S.O. Twin Pack™ Insulation Adhesive
❑ Firestone I.S.O.Spray™ R Insulation Adhesive
❑ Firestone I.S.O. Fix™ II Insulation Adhesive
❑ Firestone I.S.O.Stick™ Insulation Adhesive

***NOTE: Max.** 4' x 4' boards must be used when attaching insulation with adhesives. Cleaning of the metal deck may be required to remove processing oils from manufacturing.

Adhesive Attachment
Max. 15 Year Warranty:
❑ Bead Spacing: F: 12", P: 12", C: 12"
20 Year Warranty:
❑ Bead Spacing: F: 12", P: 6", C: 4"
❑ Full Application (I.S.O.Spray R Insulation Adhesive)

Membrane Requirement
❑ FullForce EPDM Membrane with SecureBond Technology

Seaming Requirement
Acceptable primer in side and end laps. QuickSeam™ Joint Covers are required at all T-joint overlaps and at angle changes 1:12 or greater. FullForce Sealant over all seam and flashing edges.

Firestone Membrane Adhesive
FullForce EPDM Membrane with Secure Bond Technology.

Edge Metal System
❑ Firestone EdgeGard™ System
❑ Firestone AnchorGard™ System
❑ Firestone Coping System
❑ Firestone Termination Bar
❑ Firestone Aluminum Drain Bar

Insulation Mechanical Attachment Rates for Standard 55 mph Wind Speed

Insulation (Top Layer) and Optional Coverboard 4' X 8'			
1" to 1.4" Firestone ISOGARD™/ISO 95+™ GL or ISOGARD GC/Resista™ Insulation	16	¼" SECUROCK® Gypsum Fiber Board	10
1.5" to 1.9" Firestone ISOGARD/ISO 95+ GL or ISOGARD GC/Resista Insulation	12	½" SECUROCK Gypsum Fiber Board	8
2" to 4" Firestone ISOGARD/ISO 95+ GL or ISOGARD GC/Resista Insulation	8	⅝" SECUROCK Gypsum Fiber Board	8
1.5" to 1.9" / 2" to 4.0" Firestone ISOGARD HG/HailGard Composite	12/8	¼" DensDeck® Roof Board / DensDeck Prime Roof Board	16/12
Firestone ISOGARD HD Composite Board	8	½" DensDeck Roof Board / DensDeck Prime Roof Board	12/10
Firestone ISOGARD HD Cover Board	12	⅝" DensDeck Roof Board / DensDeck Prime Roof Board	8
½" or 1" Structodek® High Density Wood Fiber Board (max. 15 year warranty)			16

Detail Description

Wall Terminations:	Firestone Termination Bar with AP Sealant applied along the caulk lip. Surface mounted or inserted counter flashing may also be used in accordance with current Firestone details.
Curb & Wall Flashings:	Curbs, walls, and expansion joints must be anchored with appropriate base tie-in detail, using QuickSeam Reinforced Perimeter Fastening Strip (RPF) and Batten Strip or 2" Metal Seam Plates. Curbs and walls must be flashed using one ply FullForce EPDM, minimum 0.045" RubberGard EPDM, QuickSeam Curb Flashing, or 18" QuickSeam SA Flashing.
Corners:	QuickSeam Corner Flashing or 9" QuickSeam FormFlash™ Flashing may be used.
Roof Edges/Parapets:	Firestone AnchorGard or EdgeGard Fascia or Drain Bar systems. ANSI/SPRI ES-1 rated edge metal may also be used.
Penetrations:	Flash with QuickSeam Pipe Flashing, QuickSeam EPDM Penetration Pocket, or field fabricate with EPDM flashing.

NOTE:
1. *Only Firestone brand products are covered in a Red Shield warranty.*
2. *Refer to the Firestone Technical Database at www.firestonebpco.com for additional information regarding RubberGard EPDM Roof Systems.*
3. *DensDeck is a registered trademark of Georgia-Pacific Gypsum LLC.*
4. *It is the installing contractor's responsibility to follow applicable building codes.*
5. *SECUROCK is a registered trademark of USG Corporation.*

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Firestone

Firestone Building Products

FullForce™ EPDM Application Guide

September, 2018

Firestone Building Products
FullForce EPDM Application Guide
Interim Updates at www.firestonebpco.com
September 21, 2018

Contents

1.01 General

This section of Firestone's Technical Database outlines instructions for the installation of Firestone's FullForce EPDM membrane with SecureBond™ Technology. Reference to the EPDM Design and Application Guides, Technical Information Sheets and other sections of Firestone Technical Specifications is necessary to ensure that the involved products and finished roof system are installed in compliance with Firestone requirements and therefore eligible to receive a Firestone Red Shield™ Warranty.

NOTE: If a proposed application falls outside this specification, contact Firestone Technical Services for additional information.

1.02 Preparation

Approved substrates must be clean, dry and free of foreign material such as grease and any debris which could inhibit adhesion. This may require cleaning with a broom or blower. An acceptable Firestone Primer is required for seam and detail work, but no primers or adhesives are necessary for field membrane attachment.

1. Insulation must be secured per current Firestone technical specifications to provide a proper substrate for membrane application.
2. Install FullForce EPDM membrane only when membrane, substrate and ambient temperatures are minimum 20 °F (-7 °C) and rising. Do not install FullForce EPDM membrane below this minimum temperature.
3. Unroll and position the membrane over the substrate to achieve the desired alignment and overlaps. Allow the membrane to relax a minimum of 30 minutes before final positioning and adhering.
4. Position adjoining sheets in a manner that all side and end laps provide a minimum 3" (76 mm) overlap.
5. An acceptable Firestone Primer (QuickPrime™ Plus, QuickPrime Plus LVOC, Single-Ply QuickPrime Primer or Single-Ply LVOC Primer) shall be applied to all EPDM lap surface areas to receive FullForce EPDM.
6. All lap splices require FullForce Sealant along the seam edge.
7. Position adjoining sheets in a manner that the seams shed water or run parallel to the flow of water.

1.03 Membrane Attachment

A. Membrane Preparation

1. FullForce EPDM membrane may be installed on roofs up to 250' (76.2 m) in height. For heights exceeding 250' (76.2 m), contact Firestone Technical Services.
   NOTE: This does not mean these systems are approved by the Factory Mutual Research Corporation. Contact Firestone or consult the Factory Mutual Approval Guide for approved assemblies.
2. Insulation must be fastened per current Firestone technical specifications to provide a proper substrate for application.
3. Install FullForce EPDM membrane when membrane, substrate and ambient temperatures are min. 20 °F (-7 °C) and rising. Do not install FullForce EPDM membrane below this minimum temperature.
5. Unroll and position the membrane over the substrate to achieve the desired alignment and overlaps. Allow the membrane to relax a minimum of 30 minutes before final positioning and adhering.

B. Membrane Positioning and Seam Primer Application

It is important that the seam overlap areas are clean and that no moisture is present on the lap surface.

1. Position adjoining sheets allowing for a minimum 3" (76 mm) side and end lap overlap.
2. Mark the bottom membrane 1" (25 mm) outside the edge of the top membrane with a lumber crayon or similar instrument to note the minimum primer coverage area.
3. Fold the top membrane back along the seam to allow for primer application without disturbing the original position of the membrane.
4. Stir the approved Firestone primer thoroughly before using. **Do not thin.** A minimum of two minutes of vigorous hand mixing is required.
5. Apply the primer along the crayon mark to coat the entire bottom seam area, using the Firestone QuickScrubber™ or QuickScrubber Plus Pad and Handle. **Do not use brushes or rollers to apply priming products to Firestone membranes.** Use back and forth strokes with heavy pressure along the length of the seam area, until the membrane surface becomes uniform in color, with no streaks or puddles.

B. Membrane Positioning and Seam Primer Application Continued

6. Allow the primer to flash-off appropriately.
7. Fold the membrane back into position at the seam locations, check for proper primer coverage, and complete membrane application as described below.

C. Field Membrane Application

1. Carefully fold back the leading edge of the FullForce EPDM membrane at one end to expose the release liner. **Do not fold the length of the roll in half to remove the release liner.**
2. Starting from the center split of the exposed release liner, remove the liner on both sides of the split at a 45° angle toward the membrane edge. Be sure to pull enough of the release liner to extend out beyond the membrane edge.
3. Expose minimum 5' (1.5 m) of the SA adhesive at the end of the sheet and back-roll it onto the substrate. (The removed release liner should extend out at an angle beyond both edges of the membrane.) **Do not remove the 4" (102 mm) strip of release liner along the seam edge at this time.**
4. Keeping the membrane flat and secured and the seam overlap aligned, continue to remove the release liner at a 45° angle, parallel to the roof surface, along the entire length of the sheet. Pulling the release liner at an alternate angle may allow the sheet to move or may trap air. The two halves of the release liner are to be removed simultaneously by two people. Keep the release liner as close to the roof surface as possible during removal. **Removal of the liner and handling of the exposed SA adhesive should be completed by two persons minimum.**
5. To initiate adhesion, use a stiff bristled broom and apply downward pressure to broom in the installed membrane across the width of the sheet working from the center toward the edge. Repeat the process for the other half of the sheet.
6. Next, remove the 4" (102 mm) strip of release liner from the edge overlapping the lower sheet of EPDM. Peel the liner at a 45° angle to the seam edge and parallel with the roof surface.
7. Use a 1½" to 2" (38 mm to 51 mm) wide silicone roller or Firestone QuickRoller™ to roll the entire seam, first at a right angle toward the outer seam edge and then along the length of the seam, making sure there is sufficient contact between the two membrane layers. Special attention is needed at the factory seam step-offs.
   NOTE: Firestone QuickSeam Joint Covers are required at all T seam intersections and head lap overlaps.
8. Roll across the width of the installed membrane with a weighted roller (5 lb/LI) to ensure full contact with the substrate.
   NOTE: Do not roll membrane in place with a weighted roller if installed over ISOGARD™ HD or ISOGARD CG boards.
9. Install Joint Covers as necessary then apply FullForce Sealant to specification along all seam overlaps.

D. Roof Edge Membrane Application

1. Align the FullForce EPDM membrane into position along the roof edge and allow to relax for a minimum of 30 minutes (longer in colder weather). Consult Firestone specifications and details for minimum roof edge overlap.
2. Carefully fold back the leading edge of the membrane minimum 10' (3.05 m) from one end to expose the release liner. **Do not fold the length of the roll in half to remove the release liner.**
3. Starting with the outside edge (roof edge portion) of the release liner, carefully peel the liner from the sheet, pulling it *underneath* the membrane, toward the field of the roof at a 45° angle to expose the SA adhesive. Take care to not disturb the original positioning of the membrane.
4. Next, pull the remaining section of the liner (inside portion) *underneath* the membrane and toward the field of the roof at a 45° angle. Maintain a minimum 12" (305 mm) separation between the two sections of liner. Pull the 4" (102 mm) strip of release liner with the adjacent section of liner.
5. Expose minimum 10' (3.05 m) of the adhesive backing at the end of the sheet and back-roll it onto the substrate. (All three sections of the removed release liner should extend beyond the field side of the membrane edge at a 45° angle.)

D. Roof Edge Membrane Application Continued

6. Keeping the FullForce EPDM membrane flat, secured and in proper alignment, remove the three sections of the release liner simultaneously at a 45° angle, keeping parallel to the roof surface, along the entire length of the sheet. Pulling the release liner at an alternate angle may allow the sheet to move or may trap air. The roof edge side of the release liner should be pulled just in front of the field edge side, maintaining a minimum 12" (305 mm) separation between the three sections. The three sections of release liner are to be removed simultaneously by three people. Keep the release liner as close to the roof surface as possible during removal. **Removal of the liner and handling of the exposed SA adhesive should be completed by three persons minimum.**
7. To initiate adhesion, use a stiff bristled broom and apply downward pressure to broom in the installed membrane across the width of the sheet working from the center toward the edge. Repeat the process for the other half of the sheet
8. Roll across the width of the installed membrane sheet with a weighted roller (5 lb/LI) to ensure full contact with the substrate.
   NOTE: Do not roll membrane in place with a weighted roller if installed over ISOGARD HD or ISOGARD CG/ RESISTA boards.
9. Install subsequent membrane panels and complete seams using the process outlined above for application of primer and field membrane.

1.04 Install Patches at T-Joint Overlaps and Substrate Transitions

1. Wherever three or more layers of FullForce membrane overlap, install a QuickSeam Joint Cover or minimum 5" (127 mm) section of QuickSeam Flashing, set in an acceptable Firestone primer.
2. Also install Joint Covers at all steps or changes in plane in the FullForce membrane (onto crickets, at wall and curb transitions, etc).
3. It is important that areas to receive flashing are clean and that no moisture is present.
4. Stir the approved Firestone primer thoroughly before using. **Do not thin.** A minimum of two minutes of vigorous hand mixing is required.
5. Apply primer to surface of the FullForce membrane using the Firestone QuickScrubber Pad and Handle. **Do not use brushes or rollers to apply priming products to Firestone membranes.** Use back and forth strokes with heavy pressure in an area larger than the flashing membrane, until membrane surfaces become uniform in color, with no streaks or puddles.
6. Allow the primer to flash-off appropriately.
7. After the primer has flashed-off, remove the release paper from the Joint Cover or Flashing material, being careful not to contaminate the tape portion of the flashing.
8. Position the flashing over the center of the t-joint area and mate to the primed FullForce membrane.
9. Roll the flashing with a 1.5" (38 mm) silicone roller, from the center outwards, working the flashing into seam step-offs or irregularities.
10. Apply FullForce Sealant to all flashing edges per specification.

1.05 FullForce Sealant Application

1. All completed FullForce EPDM membrane seam overlaps require FullForce Sealant over the seam edge. Apply an acceptable Firestone primer to the seam edge before installing sealant.
2. Surfaces to which sealant is applied must be clean, dry, and free from loose or foreign materials, oil, and grease.
3. Apply FullForce Sealant to all seam and flashing edges by the end of each working day. If inclement weather is threatening, apply an acceptable Firestone Primer to the edge of the membrane splice before leaving the project.
4. Prior to application of the primer, if the seam edge has been contaminated with dirt or debris, clean the seam edge a minimum of 1" (25.4 mm) on each side of the step-off with Firestone Splice Wash, and allow to dry.
5. Apply a continuous bead of FullForce Sealant approximately ⅜" x ¼" (9.5 mm x 6.3 mm), centered over the seam or flashing edge. Be sure to keep the applicator tip centered over the lap step-off. Refer to current Firestone FullForce EPDM seam details for additional information.

1.06 Base Tie-In, Wall and Curb Flashing

Firestone offers numerous options for base tie-in and flashing on EPDM roofing systems. Consult standard details for additional information.

An acceptable Firestone Primer (QuickPrime Plus, QuickPrime Plus LVOC, Single-Ply QuickPrime Primer or Single-Ply LVOC Primer) is required for vertical applications of FullForce EPDM.

A. Base Tie-In and Vertical Flashing using Firestone QuickSeam Reinforced Perimeter Fastening Strip (QSRPF).

1. Unroll and position the QSRPF strip with the release paper facing up and the tape portion oriented away from the wall or curb.
2. Anchor the side of the QSRFP without tape to the roof deck or to the wall 12" (305 mm) o.c. using Firestone 2" (51 mm) Metal Seam Plates or Firestone batten strip and approved Firestone fasteners, per current base tie-in details. Refer to current published specifications for product selection and attachment requirements.
3. Position membrane, mark the horizontal and vertical overlaps and apply primer to vertical substrates and seam overlaps as noted in the primer application section above.
4. Proceed with installation of FullForce EPDM membrane as described in the field membrane application section of this specification. Remove the release liner from the QSRPF before mating the membrane to the tape side of the QSRPF. No primer is necessary at the splice between FullForce EPDM and QSRPF tape.
4. Tuck the membrane carefully into the angle change then continue to roll the membrane up the wall and broom into place with a stiff push broom. Roll the vertical flashing to ensure permanent adhesion.
5. Roll the membrane over the QSRPF with a 1½" to 2" (38 mm to 51 mm) wide silicone roller or Firestone QuickRoller, first along the backside of the QSRPF near the angle change, then over the tape at a right angle toward the outer tape edge, then along the length of the tape.
6. Remove the 4" (102 mm) section of release liner from the vertical lap and roll the overlap with a 1½" to 2" (38 mm to 51 mm) wide silicone roller, first at a right angle to the seam, then along the length of the seam. NOTE: Firestone QuickSeam Joint Covers are required wherever vertical splices extend through angle changes.
7. Apply FullForce Sealant to specification at all seam and flashing overlaps.

End of Section