

Franklin School District – SAU #18
119 Central Street
Franklin, New Hampshire 03235

(603) 934-3108 Ext. 4412
abergquist@sau18.org

Request for Proposal – Roofing Removal and Replacement

RFP Dated: February 14, 2018

Location: Franklin Middle School, 200 Sanborn Street, Franklin, NH 03235

Contact: Amanda Bergquist, Business Administrator, for the Franklin School District
Telephone – (603) 934-3108, ext. 4412.

Subject: The Franklin School District is seeking proposals from qualified individuals and Companies to provide the following services:

Removal and disposal of roofing on the Franklin Middle School Roof and replacement of necessary materials.

Scope: Please see attached specifications.

Warranties: The contractor will provide the district with their proposal, the specific warranties for the materials and workmanship.

Compliance: All bidders shall observe and comply with all regulations, laws, ordinances, etc., of local, state, and federal governments, as applicable. All bidders shall provide proof of license/certifications in the field.

Insurance: The contractor will provide the district with an insurance certificate naming the Franklin School District additionally insured prior to the start of the job. The contractor must also provide evidence of workers compensation prior to the start of the job.

References: The contractor will provide a minimum of two local references that include the name, address, and telephone number of their references and the scope of the project.

Due Date: The contractor will respond with a letter on their company stationary along with the cost of the project, references and insurance policy numbers. The outside of the envelope must be clearly marked with the project name, e.g. Roofing Removal and Replacement at the Franklin Middle School. The proposals are due back to the SAU Office address no later than **March 16, 2018** By **3:00 PM**. At this

time the proposal will be opened and read. The proposals will be reviewed and awarded by no later than **March 30, 2018**. The Franklin School District has the right to reject any proposal.

Mailing: Proposal request will be advertised in local papers in the form of a block ad. A number of proposal requests will also be mailed to local contractors and posted on the District website www.sau18.org.

Payment: The District, after inspection and acceptance of workmanship, and in consideration of the faithful performance by the Bidder of all and singular his covenants, promises, and agreements contained herein, agrees to pay the Bidder for the full completion of the work embraced in his Contract, within (30) Thirty days of the receipt of the final invoice. When subcontractors or suppliers are utilized, the successful Bidder for this project shall be required to submit a Mechanics Lien Waiver, acceptable to the District, with each progress payment and/or at time of final payment prior to any payment being made.

Questions: For questions regarding the proposal, please feel free to contact Ralph Downes at (603) 934-3108, ext. 4417 or Amanda Bergquist at (603) 934-3108, ext. 4412.

SECTION 07530
PRE-SCHOOL & KITCHEN ROOFS
FULLY ADHERED EPDM ROOFING SYSTEM

PART 1 GENERAL

GENERAL NOTES

- A. Preceding job start up, contractor shall decide to his satisfaction that all specifications contained herein are workable.
- B. Contractor will perform all work by competent, trained, and properly equipped personnel in strict accordance with good roofing practices and applicable industry standards.
- C. Contractor will observe all published safety prevention policies and practices relating to application of roofing system and related work. All federal, state, and local codes shall be followed.
- D. Contractor will follow application, safety, etc. information as published in the most current edition of the Firestone RubberGard EPDM Roofing System Technical Specifications.
- E. Remove & dispose existing ballast.
- F. Remove & dispose existing EPDM.
- G. Inspect existing insulation for wetness or damage. Replace as needed. Provide a square foot price for replacement of existing insulation.
- H. Install new retrofit drains
- I. Install Firestone walkpads around any roof top units to prevent damage by HVAC maintenance. (follow same pattern as existing walkway layout.)
- J. install new expansion joints where existing

1.01 SECTION INCLUDES

- A. Substrate preparation.
- B. Wood nailer installation.
- C. Membrane installation.
- D. Membrane flashing installation.

1.02 RELATED SECTIONS

- A. Section 07220 - Roof Insulation.
- B. Work under this section covers the installation of a new Fully Adhered EPDM roofing system on the PRE-SCHOOL & KITCHEN ROOFS . In addition, contractor shall include all related items of work as noted herein or indicated on the drawings or otherwise required to complete the specified elements of work and provide the necessary warranties for this work.
- C. Contractor will dispose of all materials properly. Any material removal shall comply with state and local codes and requirements and shall be disposed of in a legal manner.

1.03 DEFINITIONS

- A. Roofing Terminology: Refer to ASTM D1079 for definition of terms related to roofing work not otherwise defined in the section
- B. Firestone: Firestone Building Products Co., Headquarters, 525 Congressional Blvd., Carmel, IN 46032-5607
- C. American Society for Testing and Materials (ASTM): 1916 Race Street, Philadelphia, PA 19103

1.04 SYSTEM DESCRIPTION

- A. Non-reinforced elastomeric sheet roofing, fully adhered .060 EPDM to ½" ISOGARD polyisocyanurate insulation. Using Firestone H.D fasteners attache ISOGARD at a rate of 12 fasteners per 4'x8' with system manufacturer's bonding adhesive.

1.05 SUBMITTALS

- A. Product Data:
 - 1. Submit copies of Technical Information Sheets (TIS) for primary products used including roof membrane, splice tape, and adhesives.
- B. Samples:
 - 1. Submit samples of roof membrane.
- C. Application Information:
 - 1. Submit copy of job related details including flashings, base tie-ins, roof edges, terminations, penetrations, drains, and any other relevant details.

1.06 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Company specializing in manufacturing the roofing membrane specified in this Section with ten years of manufacturing experience.
 - 2. System supplier must have ISO 9002 certification.
 - 3. Manufacturer must be able to provide the project with the membrane and Isocyanurate insulation that is produced in their facilities.
- B. Applicator:
 - 1. Shall be approved, licensed, or authorized applicator of the manufacturer.
 - 2. Shall have a fully staffed office within 100 miles of the job site.
 - 3. Shall have at least five years experience in installing specified system.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable local building code requirements.

1.08 QUALITY INSPECTION/OBSERVATION

- A. Inspection by Manufacturer: Provide a final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer.
 - 1. Technical Representative shall not perform any sales functions.

2. Contractor shall complete any necessary repairs required for issuance of warranty.

1.09 PRE-INSTALLATION CONFERENCE

- A. Before start of roofing work, attend a conference to discuss the proper installation of materials. Attendees shall include all parties directly affecting work of this Section.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in manufacturer's original containers dry, undamaged, seals and labels intact and legible.
- B. Store all materials clear of ground and moisture with weather protective covering.
- C. Keep all combustible materials away from ALL ignition sources.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Install roofing membrane only when surfaces are clean, dry, smooth and free of snow or ice.
- B. Do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application. Consult Firestone Technical Specifications on cold weather application.

1.12 WARRANTY

- A. Type/Term:
 1. Provide 25 year Red Shield Medallion System Warranty.. Warranty shall include membrane, roof insulation, and all other products supplied by roof system manufacturer.
- B. Coverage:
 1. Red Shield Warranty:
 - a. Limit of liability: No Dollar Limitation
 - b. Scope of coverage:

Repair any leak in the EPDM Roofing System caused by the ordinary wear and tear of the elements, manufacturing defect in brand materials, and the workmanship used to install these materials.

PART 2 PRODUCTS

2.01 NAILERS FOR FLANGES AND ROOF ACCESSORIES

- A. Description: Structural Grade No. 2 or better Southern Pine, Douglas Fir, or Exterior Grade plywood.
 1. Nailer width: Minimum 3 1/2 in. (nominal) wide or as wide as the nailing flange of each roof accessory.

2. Nailer thickness: Thickness of roof insulation.
- B. Reference Standards:
1. Southern Pines: PS 20; SPIB Grading Rules.
 2. Western Woods: PS 20; WWPA Grading Rules.
 3. Plywood: PS 1; APA Grade Stamps.

2.02 ELASTOMERIC SHEET ROOFING AND FLASHING MEMBRANE

- A. Description: Non-reinforced, cured, synthetic single-ply membrane composed of Ethylene Propylene Diene Terpolymer (EPDM) conforming to the following physical properties:

1. Membrane Type: .060 LSFR

Property:	Specification:
Specific Gravity	1.15 +/- 0.05
Tensile Strength, Minimum, psi (MPa)	1305 (9)
Elongation, Minimum, %	300
Tear Resistance, lbf / in (kN / M)	150 (26.3)
Ozone Resistance, 166 hours @ 100 pphm @ 104°F with 50% extension	No Cracks
Heat Aging, 28 days @ 240°F	
Tensile Strength, Minimum psi (MPa)	1205 (8.3)
Elongation, Minimum %	200
Brittleness Point, max., °F, °C	-49 (-45)
Water Absorption, change in weight after immersion in water for 166 hours @ 158°F, %	+8, -2
Tolerance On Nominal Thickness, %	+/- 10
Water Vapor Permeability, Perm-Mils	2.0

- B. Reference Standards:
1. ASTM D4637-96: Standard Specification for EPDM Sheet used in single-ply roof membrane
 2. ASTM D297: Methods for Rubber Products, Chemical Analysis.
 3. ASTM D412, Die C: Test Methods for Rubber Properties in Tension.
 4. ASTM D471: Test Methods for Rubber Property, Effect of Liquids.
 5. ASTM D573: Test Method for Rubber, Deterioration in an Air Oven.
 6. ASTM D624, Die C: Test Method for rubber property-Tear Resistance

SECTION 07530
GYM & CAFÉ/MUSIC ROOM
FULLY ADHERED EPDM ROOFING SYSTEM

PART 1 GENERAL

GENERAL NOTES

- A. Preceding job start up, contractor shall decide to his satisfaction that all specifications contained herein are workable.
- B. Contractor will perform all work by competent, trained, and properly equipped personnel in strict accordance with good roofing practices and applicable industry standards.
- C. Contractor will observe all published safety prevention policies and practices relating to application of roofing system and related work. All federal, state, and local codes shall be followed.
- D. Contractor will follow application, safety, etc. information as published in the most current edition of the Firestone RubberGard EPDM Roofing System Technical Specifications.
- E. Remove all membrane & insulation down to Tectum deck & dispose of legally.
- F. remove existing flashing, edge metal etc & dispose of legally.
- G. Re-use existing blocking that is in good condition. Add additional blocking as needed to accommodate new insulation.
- H. Using low rise foam-attach 2 layers 2.5" Firestone Iso 95+ (R28..8) to Tectum
- H. Install new retrofit drains
- I. install 4'x'4' sumps at all drain locations

1.01 SECTION INCLUDES

- A. Substrate preparation.
- B. Wood nailer installation.
- C. Membrane installation.
- D. Membrane flashing installation.

1.02 RELATED SECTIONS

- A. Section 07220 - Roof Insulation.
- B. Work under this section covers the installation of a new Fully Adhered EPDM roofing system on the PRE-SCHOOL & KITCHEN ROOFS . In addition, contractor shall include all related items of work as noted herein or indicated on the drawings or otherwise required to complete the specified elements of work and provide the necessary warranties for this work.
- C. Contractor will dispose of all materials properly. Any material removal shall comply with state and local codes and requirements and shall be disposed of in a legal manner.

1.03 DEFINITIONS

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- B. Firestone: Firestone Building Products Co., Headquarters, 525 Congressional Blvd., Carmel, IN 46032-5607
- C. American Society for Testing and Materials (ASTM): 1916 Race Street, Philadelphia, PA 19103

1.04 SYSTEM DESCRIPTION

- A. Non-reinforced elastomeric sheet roofing, fully adhered .060 EPDM to 5" of Firestone Iso 95 + insulation with system manufacturer's bonding adhesive.
- B. Low rise foam to be attached 12" oc for 2 layers of 2.5" iso

1.05 SUBMITTALS

- A. Product Data:
 - 1. Submit copies of Technical Information Sheets (TIS) for primary products used including roof membrane, splice tape, and adhesives.
- B. Samples:
 - 1. Submit samples of roof membrane.
- C. Application Information:
 - 1. Submit copy of job related details including flashings, base tie-ins, roof edges, terminations, penetrations, drains, and any other relevant details.

1.06 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Company specializing in manufacturing the roofing membrane specified in this Section with ten years of manufacturing experience.
 - 2. System supplier must have ISO 9002 certification.
 - 3. Manufacturer must be able to provide the project with the membrane and Isocyanurate insulation that is produced in their facilities.
- B. Applicator:
 - 1. Shall be approved, licensed, or authorized applicator of the manufacturer.
 - 2. Shall have a fully staffed office within 100 miles of the job site.
 - 3. Shall have at least five years experience in installing specified system.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable local building code requirements.

1.08 QUALITY INSPECTION/OBSERVATION

- A. Inspection by Manufacturer: Provide a final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer.
 - 1. Technical Representative shall not perform any sales functions.
 - 2. Contractor shall complete any necessary repairs required for issuance of warranty.

1.09 PRE-INSTALLATION CONFERENCE

- A. Before start of roofing work, attend a conference to discuss the proper installation of materials. Attendees shall include all parties directly affecting work of this Section.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in manufacturer's original containers dry, undamaged, seals and labels intact and legible.
- B. Store all materials clear of ground and moisture with weather protective covering.
- C. Keep all combustible materials away from **ALL** ignition sources.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Install roofing membrane only when surfaces are clean, dry, smooth and free of snow or ice.
- B. Do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application. Consult Firestone Technical Specifications on cold weather application.

1.12 WARRANTY

- A. Type/Term:
 - 1. Provide 25 year Red Shield Medallion System Warranty.. Warranty shall include membrane, roof insulation, and all other products supplied by roof system manufacturer.
- B. Coverage:
 - 1. Red Shield Warranty:
 - a. Limit of liability: No Dollar Limitation
 - b. Scope of coverage:
Repair any leak in the EPDM Roofing System caused by the ordinary wear and tear of the elements, manufacturing defect in brand materials, and the workmanship used to install these materials.

PART 2 PRODUCTS

2.01 NAILERS FOR FLANGES AND ROOF ACCESSORIES

- A. Description: Structural Grade No. 2 or better Southern Pine, Douglas Fir, or Exterior Grade plywood.
 - 1. Nailer width: Minimum 3 1/2 in. (nominal) wide or as wide as the nailing flange of each roof accessory.
 - 2. Nailer thickness: Thickness of roof insulation.
- B. Reference Standards:
 - 1. Southern Pines: PS 20; SPIB Grading Rules.

2. Western Woods: PS 20; WWPA Grading Rules.
3. Plywood: PS 1; APA Grade Stamps.

2.02 ELASTOMERIC SHEET ROOFING AND FLASHING MEMBRANE

A. Description: Non-reinforced, cured, synthetic single-ply membrane composed of Ethylene Propylene Diene Terpolymer (EPDM) conforming to the following physical properties:

1. Membrane Type: .060 LSFR

Property:	Specification:
Specific Gravity	1.15 +/- 0.05
Tensile Strength, Minimum, psi (MPa)	1305 (9)
Elongation, Minimum, %	300
Tear Resistance, lbf / in (kN / M)	150 (26.3)
Ozone Resistance, 166 hours @ 100 pphm @ 104°F with 50% extension	No Cracks
Heat Aging, 28 days @ 240°F Tensile Strength, Minimum psi (MPa) Elongation, Minimum %	1205 (8.3) 200
Brittleness Point, max., °F, °C	-49 (-45)
Water Absorption, change in weight after immersion in water for 166 hours @ 158°F, %	+8, -2
Tolerance On Nominal Thickness, %	+/- 10
Water Vapor Permeability, Perm-Mils	2.0

B. Reference Standards:

1. ASTM D4637-96: Standard Specification for EPDM Sheet used in single-ply roof membrane
2. ASTM D297: Methods for Rubber Products, Chemical Analysis.
3. ASTM D412, Die C: Test Methods for Rubber Properties in Tension.
4. ASTM D471: Test Methods for Rubber Property, Effect of Liquids.
5. ASTM D573: Test Method for Rubber, Deterioration in an Air Oven.
6. ASTM D624, Die C: Test Method for rubber property-Tear Resistance
7. ASTM D746: Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
8. ASTM D751: (Grab Method) Method of Testing Coated Fabrics.
9. ASTM D816: (Modified) Methods of Testing Rubber Cements.

10. ASTM D1149: Test Method for Rubber Deterioration, Surface Ozone Cracking in a Chamber.
11. ASTM D2240: Test Method for Rubber Property - Durometer Hardness.

2.03 ELASTOMERIC SHEET ROOFING SYSTEM COMPONENTS

- A. Roof Flashing (Gravel Stops):
 1. Description: Semi-cured 45 mil EPDM membrane laminated to 35 mil EPDM tape adhesive
- B. Elastomeric Uncured Flashing
 1. Description: Non-reinforced, self curing, synthetic, single-ply flashing composed of Ethylene Propylene Diene Terpolymer (EPDM) conforming to the following physical properties as indicated by ASTM D4811-90 standard specification for Non-vulcanized rubber sheet used as roof flashing.
 - a. Nominal Thickness: .060 inch
- C. Lap Splice Tape:
 1. Description: 6" seam tape- 35 mil EPDM-based, formulated for compatibility with EPDM membrane and high-solids primer.
- D. Adhesive Primer:
 1. Description: High-solids, butyl based primer formulated for compatibility with EPDM membrane & tape adhesive.
- E. Batten Covers:
 1. Description: Cured 60 mil EPDM membrane laminated to 35 mil EPDM tape adhesive.
- F. Splice Adhesive:
 1. Description: Butyl-based, formulated for compatibility with EPDM membrane.
- G. Bonding Adhesive:
 1. Description: Neoprene-based, formulated for compatibility with EPDM membrane & a wide variety of substrate materials, including masonry, wood, and insulation facings.
- H. Pourable Sealer:
 1. Description: 2-Part urethane , 2-color for reliable mixing.
- I. Seam Plates, Batten Strips and Insulation Plates:
 1. Description: Steel with a Galvalume coating.
 2. Reference Standard: Corrosion-resistant to meet FM-4470 criteria.
- J. Termination Bar:
 1. Description: 1.3" X 0.10" thick aluminum bar with integral caulk ledge.

2.04 METAL FLASHING

- A. Edge Metal:
 1. Provide .040 aluminum edge metal. Size as determined at pre-bid conference. Color to be selected by owner from Firestone's standard colors.

PART 3 EXECUTION

3.01 EXAMINATION

- A. For re-roofing applications only: remove existing roof system components as specified.
- B. The surface must be clean, dry, smooth, free of sharp edges, fins, loose or foreign materials, oil, grease and other materials which may damage the membrane. All roughened surfaces which could cause damage shall be properly repaired before proceeding.
- C. All surface voids of the immediate substrate greater than 1/4" wide must be properly filled with an acceptable insulation or suitable fill material.

3.02 PROTECTION OF OTHER WORK

- A. Protect metal, glass, plastic, and painted surfaces from adhesives and sealants.
- B. Protect neighboring work, property, cars, and persons from spills and overspray from adhesives, sealants and coatings.
- C. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trades.

3.03 MATERIAL STORAGE AND HANDLING

- A. Keep all adhesives, sealants, primers and cleaning materials away from all sources of ignition.
- B. Consult container labels and Material Safety Data Sheets (MSDS) for specific safety instructions.

3.04 WOOD NAILER LOCATION AND INSTALLATION

- A. Total wood nailer height shall match the total thickness of insulation being used and shall be installed with a 1/8" gap between each length and at each change of direction.
- B. Wood nailers shall be firmly fastened to the deck. Mechanically fasten wood nailers to resist a force of 200 lbs. per lineal foot.

3.05 MEMBRANE PLACEMENT AND ATTACHMENT

- A. Beginning at the low point of the roof, place the Firestone RubberGard membrane without stretching over the acceptable substrate and allow to relax a minimum of 30 minutes before attachment or splicing.
- B. After making sure the sheet is placed in its final position, fold it back evenly onto itself so as to expose the underside.
- C. Sweep the mating surface of the membrane with a stiff broom to remove excess dusting agent (if any) or other contaminants from the mating surface.
- D. Apply Bonding Adhesive at about the same time to both the exposed underside of the sheet and the substrate to which it will be adhered so as to allow approximately the same drying time. Apply Bonding Adhesive so to provide an even and uniform film thickness. Do not apply bonding adhesive to areas that will be subsequently spliced.

- E. Allow Bonding Adhesive to flash off until tacky. Touch the Bonding Adhesive surface with a clean, dry finger to be certain that the adhesive does not stick or string. As you are touching the adhesive, pushing straight down to check for stringing, also push forward on the adhesive at an angle to ensure that the adhesive is ready throughout its thickness. If either motion exposes wet or stringy adhesive when the finger is lifted, then it is not ready for mating.
- F. Starting at the fold, roll the previously coated portion of the sheet into the coated substrate slowly and evenly so as to minimize wrinkles.
- G. Compress the bonded half of the sheet to the substrate with a stiff push broom.

3.06 MEMBRANE LAP SPLICING

A. General

1. Position the sheet at the splice area by overlapping membrane 5 inches. Once the membrane is in place, mark the bottom sheet 1/2" to 3/4" from the edge of the top sheet every 4 to 6 feet. Tack the sheet back with Firestone QuickPrime at 5' centers and at factory splices or as necessary to hold back the membrane at the splicing area.
2. Remove excess amounts of dusting agent on the sheet and at factory splices using a stiff push broom. Stir Firestone QuickPrime thoroughly before and during use. Dip the QuickScrubber into the bucket of QuickPrime, keeping the QuickScrubber flat. Apply the QuickPrime using long back and forth type strokes with pressure along the length of the splicing area until surfaces become a dark gray in color. Apply QuickPrime to both surfaces at the same time to allow the same flash off time. Change the scrub pad each 200 feet of 3 inch field splice, or when the pad will no longer hold the proper amount of QuickPrime. Additional scrubbing is required at areas that may have become contaminated or have excess amounts of dusting agent, and at all factory splices.
3. Position the 6" QuickSeam Splice Tape on the bottom sheet, aligning the edge of the release paper with the markings. Immediately roll the splice tape with a 3"-4" wide silicone or silicone sleeved steel hand roller or a short nap 3" paint roller.
4. When the QuickSeam Splice Tape has been installed for the entire splice length allow the top sheet to rest on top of the tape's paper backing. Trim the top sheet as necessary to assure that 1/8"-1/2" of the QuickSeam Splice Tape will be exposed on the finished splice.
5. To remove the paper backing from the tape, first roll back the RubberGard membrane sheet, then peel the paper backing off the QuickSeam Splice Tape by pulling against the weight of the bottom sheet at approximately a 45 degree angle to the tape and parallel with the roof surface. Allow the top sheet to fall freely onto the exposed QuickSeam Splice Tape. Broom the entire length of the splice as the release paper is being removed.
6. Roll the splice using a 1-1/2"-2" wide silicone or silicone sleeved steel hand roller, first across the splice, and then along the entire length of the splice.

3.07 MEMBRANE SECUREMENT

- A. Secure membrane at all locations where the membrane terminates or goes through an angle change greater than 2" in 12" except for round pipe penetrations less than 18" in diameter and square penetrations less than 4" square.
- A. Mechanically fasten Reinforced Perimeter Fastening Strips per Firestone requirements.

3.08 FLASHING - PENETRATIONS

- A. General:
 - 1. If project is a tear-off or re-roof, remove all existing flashings (i.e. lead, asphalt, mastic, etc.).
 - 2. Flash all penetrations passing through the membrane.
 - 3. The flashing seal must be made directly to the penetration.
- B. Pipes, Round Supports, etc.
 - 1. Flash with Firestone Pre-Molded EPDM Pipe Flashings where practical.
 - 2. Flash using FormFlash when Pre-Molded EPDM Pipe Flashing is not practical.
- C. Roof Drains
 - 1. If project is a tear-off, remove all existing flashings, drain leads, roofing materials and cement from the existing drain in preparation for membrane and Water Block Seal.
 - 2. Provide a clean even finish on the mating surfaces between the clamping ring and the drain bowl.
 - 3. Taper insulation around the drain to provide a sump area from the roof surface to the drain. Use pre-manufactured tapered insulation with facer or suitable bonding surface to achieve slope. Slope shall not exceed Firestone recommendations.
 - 4. Position the RubberGard membrane, then cut a hole for the roof drain to allow 1/2" -3/4" of membrane extending inside the clamping ring past the drain bolts.
 - 5. Make round holes in the RubberGard membrane to align with clamping bolts. Do not cut the membrane back to the bolt holes.
 - 6. Place Water Block Seal on top of drain bowl where the clamping ring seats below the membrane
 - 7. Install the roof drain clamping ring and clamping bolts. Tighten the clamping bolts to achieve constant compression.

Note: Provide new drain assembly and install new drain leader thru brick wall at location determined at pre-bid conference.

3.09 FLASHING - GRAVEL STOPS OR ROOF EDGE METALS

- A. Apply QuickPrime to the metal edging and membrane as described in Firestone Specifications.
- B. Place the roll of QuickSeam Flashing on the roof a few feet ahead of the application starting point, positioned so that it unrolls from the top of the roll. Remove approximately 2'-3' of release paper and apply to the metal flange and RubberGard membrane. Lap adjacent rolls of QuickSeam Flashing a minimum of one inch.

- C. With a 2"-3" wide silicone or silicone sleeved steel hand roller, roll the QuickSeam Flashing ensure proper adhesion. Additional attention must be given to factory splice intersections and to any change in plane.
- D. Apply 6" length of QuickSeam Flashing, a QuickSeam Joint Cover, or 6"x6" FormFlash to the inside edge of the QuickSeam Flashing at all overlaps.
- E. Apply 6" length of QuickSeam Flashing, a QuickSeam Joint Cover, or 6"x6" FormFlash at all intersections between the QuickSeam Flashing and field fabricated splices.
- F. Where QuickSeam Flashing will not completely cover the metal flange, an additional piece of QuickSeam Flashing must be applied to the metal edge laps. Apply Seam Edge Treatment at the intersections of the flashing sections.

3.10 TEMPORARY CLOSURE

- A. Temporary closures which ensure that moisture does not damage any completed section of the new roofing system are the responsibility of the applicator. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition.

3.11 SHEET METAL WORK

- A. Follow current industry guidelines for installation or Firestone requirements, whichever is more stringent.

3.12 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed as required by the manufacturer.
- B. Correct identified defects or irregularities.

3.13 CLEAN-UP

- A. Clean all contaminants from building and surrounding areas.
- B. Remove trash, debris, equipment from project site and surrounding areas.
- C. Repair or replace damaged building components or surrounding areas to the satisfaction of the building owner.

END OF SECTION

SECTION 07530
CLASSROOM ROOFS
FULLY ADHERED EPDM ROOFING SYSTEM

PART 1 GENERAL

GENERAL NOTES

- A. Preceding job start up, contractor shall decide to his satisfaction that all specifications contained herein are workable.
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- E. Remove & dispose existing ballast.
- F. Remove & dispose existing EPDM.
- G. Inspect existing insulation for wetness or damage. Replace as needed. Provide a square foot price for replacement of existing insulation.
- H. Install new retrofit drains
- I. Install Firestone walkpads around any roof top units to prevent damage by HVAC maintenance. (follow same pattern as existing walkway layout.)
- J. install new expansion joints where existing
- K. Add wood blocking as needed

1.01 SECTION INCLUDES

- A. Substrate preparation.
- B. Wood nailer installation.
- C. Membrane installation.
- D. Membrane flashing installation.

1.02 RELATED SECTIONS

- A. Section 07220 - Roof Insulation.
- B. Work under this section covers the installation of a new Fully Adhered EPDM roofing system on the PRE-SCHOOL & KITCHEN ROOFS . In addition, contractor shall include all related items of work as noted herein or indicated on the drawings or otherwise required to complete the specified elements of work and provide the necessary warranties for this work.
- C. Contractor will dispose of all materials properly. Any material removal shall comply with state and local codes and requirements and shall be disposed of in a legal manner.

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- A. Roofing Terminology: Refer to ASTM D1079 for definition of terms related to roofing work not otherwise defined in the section
- B. Firestone: Firestone Building Products Co., Headquarters, 525 Congressional Blvd., Carmel, IN 46032-5607
- C. American Society for Testing and Materials (ASTM): 1916 Race Street, Philadelphia, PA 19103

1.04 SYSTEM DESCRIPTION

- A. Non-reinforced elastomeric sheet roofing, fully adhered .060 EPDM to ½" ISOGARD polyisocyanurate insulation. Using Firestone H.D fasteners attach ISOGARD at a rate of 12 fasteners per 4'x8' with system manufacturer's bonding adhesive.

1.05 SUBMITTALS

- A. Product Data:
 - 1. Submit copies of Technical Information Sheets (TIS) for primary products used including roof membrane, splice tape, and adhesives.
- B. Samples:
 - 1. Submit samples of roof membrane.
- C. Application Information:
 - 1. Submit copy of job related details including flashings, base tie-ins, roof edges, terminations, penetrations, drains, and any other relevant details.

1.06 QUALITY ASSURANCE

- A. Manufacturer:
 - 1. Company specializing in manufacturing the roofing membrane specified in this Section with ten years of manufacturing experience.
 - 2. System supplier must have ISO 9002 certification.
 - 3. Manufacturer must be able to provide the project with the membrane and Isocyanurate insulation that is produced in their facilities.
- B. Applicator:
 - 1. Shall be approved, licensed, or authorized applicator of the manufacturer.
 - 2. Shall have a fully staffed office within 100 miles of the job site.
 - 3. Shall have at least five years experience in installing specified system.

1.07 REGULATORY REQUIREMENTS

- A. Conform to applicable local building code requirements.

1.08 QUALITY INSPECTION/OBSERVATION

- A. Inspection by Manufacturer: Provide a final inspection of the roofing system by a Technical Representative employed by roofing system manufacturer.
 - 1. Technical Representative shall not perform any sales functions.

2. Contractor shall complete any necessary repairs required for issuance of warranty.

1.09 PRE-INSTALLATION CONFERENCE

- A. Before start of roofing work, attend a conference to discuss the proper installation of materials. Attendees shall include all parties directly affecting work of this Section.

1.10 DELIVERY, STORAGE AND HANDLING

- A. Deliver products in manufacturer's original containers dry, undamaged, seals and labels intact and legible.
- B. Store all materials clear of ground and moisture with weather protective covering.
- C. Keep all combustible materials away from ALL ignition sources.

1.11 ENVIRONMENTAL REQUIREMENTS

- A. Install roofing membrane only when surfaces are clean, dry, smooth and free of snow or ice.
- B. Do not apply roofing membrane during inclement weather or when ambient conditions will not allow proper application. Consult Firestone Technical Specifications on cold weather application.

1.12 WARRANTY

- A. Type/Term:
 1. Provide 25 year Red Shield Medallion System Warranty.. Warranty shall include membrane, roof insulation, and all other products supplied by roof system manufacturer.
- B. Coverage:
 1. Red Shield Warranty:
 - a. Limit of liability: No Dollar Limitation
 - b. Scope of coverage:

Repair any leak in the EPDM Roofing System caused by the ordinary wear and tear of the elements, manufacturing defect in brand materials, and the workmanship used to install these materials.

PART 2 PRODUCTS

2.01 NAILERS FOR FLANGES AND ROOF ACCESSORIES

- A. Description: Structural Grade No. 2 or better Southern Pine, Douglas Fir, or Exterior Grade plywood.
 1. Nailer width: Minimum 3 1/2 in. (nominal) wide or as wide as the nailing flange of each roof accessory.

2. Nailer thickness: Thickness of roof insulation.
- B. Reference Standards:
1. Southern Pines: PS 20; SPIB Grading Rules.
 2. Western Woods: PS 20; WWPA Grading Rules.
 3. Plywood: PS 1; APA Grade Stamps.

2.02 ELASTOMERIC SHEET ROOFING AND FLASHING MEMBRANE

- A. Description: Non-reinforced, cured, synthetic single-ply membrane composed of Ethylene Propylene Diene Terpolymer (EPDM) conforming to the following physical properties:

1. Membrane Type: .060 LSFR

Property:	Specification:
Specific Gravity	1.15 +/- 0.05
Tensile Strength, Minimum, psi (MPa)	1305 (9)
Elongation, Minimum, %	300
Tear Resistance, lbf / in (kN / M)	150 (26.3)
Ozone Resistance, 166 hours @ 100 pphm @ 104°F with 50% extension	No Cracks
Heat Aging, 28 days @ 240°F Tensile Strength, Minimum psi (MPa) Elongation, Minimum %	1205 (8.3) 200
Brittleness Point, max., °F, °C	-49 (-45)
Water Absorption, change in weight after immersion in water for 166 hours @ 158°F, %	+8, -2
Tolerance On Nominal Thickness, %	+/- 10
Water Vapor Permeability, Perm-Mils	2.0

- B. Reference Standards:
1. ASTM D4637-96: Standard Specification for EPDM Sheet used in single-ply roof membrane
 2. ASTM D297: Methods for Rubber Products, Chemical Analysis.
 3. ASTM D412, Die C: Test Methods for Rubber Properties in Tension.
 4. ASTM D471: Test Methods for Rubber Property, Effect of Liquids.
 5. ASTM D573: Test Method for Rubber, Deterioration in an Air Oven.
 6. ASTM D624, Die C: Test Method for rubber property-Tear Resistance

7. ASTM D746: Test Method for Brittleness Temperature of Plastics and Elastomers by Impact.
8. ASTM D751: (Grab Method) Method of Testing Coated Fabrics.
9. ASTM D816: (Modified) Methods of Testing Rubber Cements.
10. ASTM D1149: Test Method for Rubber Deterioration, Surface Ozone Cracking in a Chamber.
11. ASTM D2240: Test Method for Rubber Property - Durometer Hardness.

2.03 ELASTOMERIC SHEET ROOFING SYSTEM COMPONENTS

- A. Roof Flashing (Gravel Stops):
 1. Description: Semi-cured 45 mil EPDM membrane laminated to 35 mil EPDM tape adhesive
- B. Elastomeric Uncured Flashing
 1. Description: Non-reinforced, self curing, synthetic, single-ply flashing composed of Ethylene Propylene Diene Terpolymer (EPDM) conforming to the following physical properties as indicated by ASTM D4811-90 standard specification for Non-vulcanized rubber sheet used as roof flashing.
 - a. Nominal Thickness: .060 inch
- C. Lap Splice Tape:
 1. Description: 6" seam tape- 35 mil EPDM-based, formulated for compatibility with EPDM membrane and high-solids primer.
- D. Adhesive Primer:
 1. Description: High-solids, butyl based primer formulated for compatibility with EPDM membrane & tape adhesive.
- E. Batten Covers:
 1. Description: Cured 60 mil EPDM membrane laminated to 35 mil EPDM tape adhesive.
- F. Splice Adhesive:
 1. Description: Butyl-based, formulated for compatibility with EPDM membrane.
- G. Bonding Adhesive:
 1. Description: Neoprene-based, formulated for compatibility with EPDM membrane & a wide variety of substrate materials, including masonry, wood, and insulation facings.
- H. Pourable Sealer:
 1. Description: 2-Part urethane , 2-color for reliable mixing.
- I. Seam Plates, Batten Strips and Insulation Plates:
 1. Description: Steel with a Galvalume coating.
 2. Reference Standard: Corrosion-resistant to meet FM-4470 criteria.
- J. Termination Bar:
 1. Description: 1.3" X 0.10" thick aluminum bar with integral caulk ledge.

2.04 METAL FLASHING

- A. Edge Metal:
 1. Provide .040 aluminum edge metal. Size as determined at pre-bid conference. Color to be selected by owner from Firestone's standard colors.

PART 3 EXECUTION

3.01 EXAMINATION

- A. For re-roofing applications only: remove existing roof system components as specified.
- B. The surface must be clean, dry, smooth, free of sharp edges, fins, loose or foreign materials, oil, grease and other materials which may damage the membrane. All roughened surfaces which could cause damage shall be properly repaired before proceeding.
- C. All surface voids of the immediate substrate greater than 1/4" wide must be properly filled with an acceptable insulation or suitable fill material.

3.02 PROTECTION OF OTHER WORK

- A. Protect metal, glass, plastic, and painted surfaces from adhesives and sealants.
- B. Protect neighboring work, property, cars, and persons from spills and overspray from adhesives, sealants and coatings.
- C. Protect finished areas of the roofing system from roofing related work traffic and traffic by other trades.

3.03 MATERIAL STORAGE AND HANDLING

- A. Keep all adhesives, sealants, primers and cleaning materials away from all sources of ignition.
- B. Consult container labels and Material Safety Data Sheets (MSDS) for specific safety instructions.

3.04 WOOD NAILER LOCATION AND INSTALLATION

- A. Total wood nailer height shall match the total thickness of insulation being used and shall be installed with a 1/8" gap between each length and at each change of direction.
- B. Wood nailers shall be firmly fastened to the deck. Mechanically fasten wood nailers to resist a force of 200 lbs. per lineal foot.

3.05 MEMBRANE PLACEMENT AND ATTACHMENT

- A. Beginning at the low point of the roof, place the Firestone RubberGard membrane without stretching over the acceptable substrate and allow to relax a minimum of 30 minutes before attachment or splicing.
- B. After making sure the sheet is placed in its final position, fold it back evenly onto itself so as to expose the underside.
- C. Sweep the mating surface of the membrane with a stiff broom to remove excess dusting agent (if any) or other contaminants from the mating surface.

- D. Apply Bonding Adhesive at about the same time to both the exposed underside of the sheet and the substrate to which it will be adhered so as to allow approximately the same drying time. Apply Bonding Adhesive so to provide an even and uniform film thickness. Do not apply bonding adhesive to areas that will be subsequently spliced.
- E. Allow Bonding Adhesive to flash off until tacky. Touch the Bonding Adhesive surface with a clean, dry finger to be certain that the adhesive does not stick or string. As you are touching the adhesive, pushing straight down to check for stringing, also push forward on the adhesive at an angle to ensure that the adhesive is ready throughout its thickness. If either motion exposes wet or stringy adhesive when the finger is lifted, then it is not ready for mating.
- F. Starting at the fold, roll the previously coated portion of the sheet into the coated substrate slowly and evenly so as to minimize wrinkles.
- G. Compress the bonded half of the sheet to the substrate with a stiff push broom.

3.06 MEMBRANE LAP SPLICING

A. General

1. Position the sheet at the splice area by overlapping membrane 5 inches. Once the membrane is in place, mark the bottom sheet 1/2" to 3/4" from the edge of the top sheet every 4 to 6 feet. Tack the sheet back with Firestone QuickPrime at 5' centers and at factory splices or as necessary to hold back the membrane at the splicing area.
2. Remove excess amounts of dusting agent on the sheet and at factory splices using a stiff push broom. Stir Firestone QuickPrime thoroughly before and during use. Dip the QuickScrubber into the bucket of QuickPrime, keeping the QuickScrubber flat. Apply the QuickPrime using long back and forth type strokes with pressure along the length of the splicing area until surfaces become a dark gray in color. Apply QuickPrime to both surfaces at the same time to allow the same flash off time. Change the scrub pad each 200 feet of 3 inch field splice, or when the pad will no longer hold the proper amount of QuickPrime. Additional scrubbing is required at areas that may have become contaminated or have excess amounts of dusting agent, and at all factory splices.
3. Position the 6" QuickSeam Splice Tape on the bottom sheet, aligning the edge of the release paper with the markings. Immediately roll the splice tape with a 3"-4" wide silicone or silicone sleeved steel hand roller or a short nap 3" paint roller.
4. When the QuickSeam Splice Tape has been installed for the entire splice length allow the top sheet to rest on top of the tape's paper backing. Trim the top sheet as necessary to assure that 1/8"-1/2" of the QuickSeam Splice Tape will be exposed on the finished splice.
5. To remove the paper backing from the tape, first roll back the RubberGard membrane sheet, then peel the paper backing off the QuickSeam Splice Tape by pulling against the weight of the bottom sheet at approximately a 45 degree angle to the tape and parallel with the roof surface. Allow the top sheet to fall freely onto the exposed QuickSeam Splice Tape. Broom the entire length of the splice as the release paper is being removed.

6. Roll the splice using a 1-1/2"-2" wide silicone or silicone sleeved steel hand roller, first across the splice, and then along the entire length of the splice.

3.07 MEMBRANE SECUREMENT

- A. Secure membrane at all locations where the membrane terminates or goes through an angle change greater than 2" in 12" except for round pipe penetrations less than 18" in diameter and square penetrations less than 4" square.
- A. Mechanically fasten Reinforced Perimeter Fastening Strips per Firestone requirements.

3.08 FLASHING - PENETRATIONS

- A. General:
 1. If project is a tear-off or re-roof, remove all existing flashings (i.e. lead, asphalt, mastic, etc.).
 2. Flash all penetrations passing through the membrane.
 3. The flashing seal must be made directly to the penetration.
- B. Pipes, Round Supports, etc.
 1. Flash with Firestone Pre-Molded EPDM Pipe Flashings where practical.
 2. Flash using FormFlash when Pre-Molded EPDM Pipe Flashing is not practical.
- C. Roof Drains
 1. If project is a tear-off, remove all existing flashings, drain leads, roofing materials and cement from the existing drain in preparation for membrane and Water Block Seal.
 2. Provide a clean even finish on the mating surfaces between the clamping ring and the drain bowl.
 3. Taper insulation around the drain to provide a sump area from the roof surface to the drain. Use pre-manufactured tapered insulation with facer or suitable bonding surface to achieve slope. Slope shall not exceed Firestone recommendations.
 4. Position the RubberGard membrane, then cut a hole for the roof drain to allow 1/2" -3/4" of membrane extending inside the clamping ring past the drain bolts.
 5. Make round holes in the RubberGard membrane to align with clamping bolts. Do not cut the membrane back to the bolt holes.
 6. Place Water Block Seal on top of drain bowl where the clamping ring seats below the membrane
 7. Install the roof drain clamping ring and clamping bolts. Tighten the clamping bolts to achieve constant compression.

Note: Provide new drain assembly and install new drain leader thru brick wall at location determined at pre-bid conference.

3.09 FLASHING - GRAVEL STOPS OR ROOF EDGE METALS

- A. Apply QuickPrime to the metal edging and membrane as described in Firestone Specifications.

- B. Place the roll of QuickSeam Flashing on the roof a few feet ahead of the application starting point, positioned so that it unrolls from the top of the roll. Remove approximately 2'-3' of release paper and apply to the metal flange and RubberGard membrane. Lap adjacent rolls of QuickSeam Flashing a minimum of one inch.
- C. With a 2"-3" wide silicone or silicone sleeved steel hand roller, roll the QuickSeam Flashing ensure proper adhesion. Additional attention must be given to factory splice intersections and to any change in plane.
- D. Apply 6" length of QuickSeam Flashing, a QuickSeam Joint Cover, or 6"x6" FormFlash to the inside edge of the QuickSeam Flashing at all overlaps.
- E. Apply 6" length of QuickSeam Flashing, a QuickSeam Joint Cover, or 6"x6" FormFlash at all intersections between the QuickSeam Flashing and field fabricated splices.
- F. Where QuickSeam Flashing will not completely cover the metal flange, an additional piece of QuickSeam Flashing must be applied to the metal edge laps. Apply Seam Edge Treatment at the intersections of the flashing sections.

3.10 TEMPORARY CLOSURE

- A. Temporary closures which ensure that moisture does not damage any completed section of the new roofing system are the responsibility of the applicator. Completion of flashings, terminations, and temporary closures shall be completed as required to provide a watertight condition.

3.11 SHEET METAL WORK

- A. Follow current industry guidelines for installation or Firestone requirements, whichever is more stringent.

3.12 FIELD QUALITY CONTROL

- A. Field inspection and testing will be performed as required by the manufacturer.
- B. Correct identified defects or irregularities.

3.13 CLEAN-UP

- A. Clean all contaminants from building and surrounding areas.
- B. Remove trash, debris, equipment from project site and surrounding areas.
- C. Repair or replace damaged building components or surrounding areas to the satisfaction of the building owner.

END OF SECTION

1 2 3 4 5 6 7 8 9 10 11 12 13 14

S R Q P O N M L K J I H G F E D C B A

- A AC CURB
- B AC RAISED
- C BREATHER
- D CHIMNEY
- E ACT CORE
- F DRY CORE
- G WET CORE
- H DAMP CORE
- I TRACE CORE
- J CAPPED CURB
- K ELEVATED CURB
- L DRAIN
- M DUCTWORK
- N HATCH COVER
- O LADDER
- P MECH UNIT
- Q PIPE
- R PITCH PAN
- S POWER UNIT
- T POWER VENT
- U DAMP PROBE
- V DRY PROBE
- W WET PROBE
- X SKYLIGHT
- Y SOIL STACK
- Z WATER TOWER





