

Sure-Seal® EPDM
Roofing Systems

CASE STUDY

**Withstanding the Test of Time:
EPDM Sustainability – 30 Years Old and Counting**



JOB PROFILE

PROJECT LOCATIONS:

- » Livermore Falls, ME
- » Augusta, ME

CARLISLE APPLICATOR:
G&E Roofing Company, Inc.

BUILDING OWNERS:
» Livermore Falls Building
» Cives Steel Paint Shop

ROOFING SYSTEM:
Carlisle Sure-Seal® EPDM

With more than 14 billion square feet of membrane installed across the globe, EPDM has an impressive history of performance in the commercial roofing industry. EPDM has been utilized in the roofing industry since the 1960s, and continues to grow in popularity with today's emphasis on long-term performance and sustainability. Numerous EPDM roofs installed in the '80s are still performing today—a fact that positions EPDM as one of the strongest and most durable single-ply membranes on the market.

Carlisle SynTec Systems is one of the leading manufacturers of EPDM single-ply membranes and has been a pioneer in the development of EPDM technology over the last five decades. While EPDM has exhibited strong physical characteristics since its inception, it has also undergone many technological advances, and Carlisle has been at the forefront of these advances. In the 2000s Carlisle pioneered EPDM membranes with factory-applied seam tape, providing improved seam quality and a quicker application. In the following years, Carlisle added 90-mil membranes to their standard membrane offering, along with a variety of pressure-sensitive, prefabricated accessories. All of these advances have improved the lifecycle performance, energy savings, and installation efficiency of EPDM membranes.



Longevity is one of EPDM's most distinguishing characteristics. A recent long-term weathering study cited by the EPDM Roofing Association (ERA) examined five roofing systems, all with 28 to 32 years of in-field service, and concluded that the systems were not only performing up to industry standards but in some cases performing with physical properties that exceeded those of newly produced EPDM membranes.

In addition to testing 30-year-old EPDM membranes, the ERA study heat-aged the 30-year-old samples to simulate another 10 years of rooftop exposure; then, the heat-aged EPDM samples were re-tested for tensile strength, thickness, and factory seam strength. The testing found that in all categories, the majority of the samples exceeded the minimum property characteristics of aged EPDM and in some cases exceeded the minimum properties for new EPDM membrane.

There have been many studies conducted on the performance and physical properties of EPDM membranes, but nothing proves quality and longevity like time-tested performance in the real world. Carlisle's Sure-Seal® EPDM is monolithic by nature and boasts more than three decades of proven field experience on the projects highlighted below.



“EPDM remains repairable throughout its long life, another important attribute that speaks to the **sustainability of this roofing system.**”

34 years old and still performing - In December 1980, the Livermore Falls Building in Livermore Falls, Maine was in desperate need of a new roof. The existing built-up roofing system was nearly 30 years old and failing rapidly. At the time, built-up roofs were one of the most popular commercial roofing systems, and EPDM was just coming to the forefront of the industry. Though EPDM was a newer product, testing had already shown that it would be an extremely durable membrane, and G&E Roofing Company, Inc. decided to re-roof the 8,000-square-foot building with Carlisle's Sure-Seal EPDM membrane. G&E had been installing Carlisle membranes since 1978 and was already familiar with the quality and longevity of Carlisle products.

G&E's team began by tearing off the existing built-up roof down to the metal deck. Their next step was to install two layers of one-inch perlite insulation board before rolling out the 45' x 100' sheets of EPDM membrane and spreading an inch and a half of stone ballast. The rectangular rooftop featured numerous obstructions, including a chimney and three HVAC units, which the team detailed using field-fabricated EPDM accessories (pressure-sensitive and pre-fabricated accessories had not yet been invented). The entire installation was completed during the winter months and was awarded a 10-year Carlisle Golden Seal Total System Warranty as well as a 15-year material-only warranty.

31 years old and still performing - In October 1981, G&E was awarded another re-roofing project at the Cives Steel Paint Shop in Augusta, Maine. Having successfully installed Carlisle's Sure-Seal EPDM months earlier on the Livermore Falls Building, G&E decided to use the same membrane on this 9,600-square-foot rooftop. Carlisle's EPDM had proven to be flexible and easy to install on the previous project, and G&E knew it would enable them to finish this project quickly while providing Cives with a high-quality roofing system. The G&E team began by completely tearing off the existing smooth-surface built-up roofing system. Once the existing system was removed, G&E loose-laid five



inches of expanded polystyrene (EPS) insulation directly to the metal deck, and then installed the EPDM membrane in 20' x 100' and 45' x 50' sheets. Field-fabricated accessories were used to complete the roof details, and the ballasted system was finished with inch and a half stone loose-laid on top of the membrane.

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EPDM SUSTAINABILITY – 30 YEARS OLD AND COUNTING

This roof was completed in a record time of three days, which G&E attributed to the ease of installation provided by the EPDM membrane's flexibility and convenient roll sizes. This roof has stood the test of time, requiring only minor repairs, the most recent of which occurred in May 2014, when edge metal and drain details were upgraded with pressure-sensitive flashings. EPDM remains repairable throughout its long life, another important attribute that speaks to the sustainability of this roofing system.

These two projects provide an unparalleled and undeniable exhibit of the strength and long-term durability of EPDM membranes. However, longevity is not the only benefit of this membrane—EPDM also has extremely low lifecycle costs, excellent hail and puncture resistance, and, according to EPA's TRACI model, the lowest global warming potential and acid rain and smog impact among the popular roofing membranes available today. Considering the overwhelming evidence from physical property testing and real-world performance of 30-year-old membrane, it would seem that EPDM, one of commercial roofing's oldest technologies, is still one of the most sustainable systems, providing unmatched value to the building owner and the environment.