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To: Firestone Sales Representatives
Firestone Red Shield Licensed Contractors
Firestone Distributors

Re: SUSTAINABLE ROOFING SOLUTIONS

For the past 25 years Firestone Building Products has manufactured and designed roofing systems to meet the many needs of building owners, specifiers and roofing contractors. Millions of square feet of Firestone Roofing Systems are in place protecting buildings from the elements.

Firestone has consistently demonstrated a commitment to providing long-term solutions that save money by extending the life of the roof and reducing the demand for energy and other natural resources. Many factors go into creating a sustainable roofing system, including proper design, quality materials and professional installation in order to achieve outstanding results.

In recent years, government agencies and non-profit organizations have created programs and incentives to encourage the use of products that promote energy conservation and support environmental needs. The purpose of this Technical Bulletin is to help identify Firestone's products and systems that address the positive environmental intent and the requirements of these programs.

Long Lasting Performance

Roofing systems that offer long-lasting performance reduce the demand on our natural resources because they:

- Require less materials and labor over the life of the roof system.
- Keep insulation dry so that it can be thermally effective.
- Reduce the demand on landfills because of long-term performance.

Firestone Building Products offers EPDM, TPO and asphalt systems that can provide warranties for 10, 15, 20, or even up to 30 years with the Firestone Platinum RubberGard System. No other manufacturer offers a better or longer warranty than the Platinum RubberGard Roofing System, which covers incidental punctures, hail up to 2" in diameter and winds up to 100 mph.

To help building owners and designers meet their goals for long-term performance, Firestone provides a complete set of design and application specifications, high quality products with proven performance and experienced contractors, including those who have achieved the highest level of excellence, Firestone Master Contractors.

Leadership in Energy and Environmental Design (LEED)

The U.S. Green Buildings Council is a national non-profit organization that promotes the design and construction of buildings that are environmentally responsible, profitable and healthy places to work. They have developed the LEED (Leadership in Energy and Environmental Design) program to help building owners and designers certify the environmental benefits of their facilities.

The whole-building approach encourages and guides a collaborative, integrated design and construction process that optimizes environmental and economic factors. The five LEED credit categories are: 1) Sustainable Sites, 2) Water Efficiency, 3) Energy and Atmosphere, 4) Material & Resources and 5) Indoor Environmental Quality. For new construction projects, up to 69 points can be earned to meet these LEED levels of conformance:

- Certified Level 26 – 32 points
- Silver Level 33 – 38 points
- Gold Level 39 – 51 points
- Platinum Level 52+ points

The LEED program does not assign points to specific products, however Firestone has products and systems that will help you earn points in many different ways. See individual Firestone Technical Information Sheets (TIS) for LEED information, including:

- 1. Post-consumer recycled content**
- 2. Post-industrial recycled content**
- 3. Manufacturing locations**
- 4. Energy Star compliance**

Insulation

Selecting the proper type and amount of roofing insulation can be one of the greatest factors in determining the energy efficiency of any roofing system. The American Society of Heating, Refrigeration, and Air Conditioning Engineers (ASHRAE), and local code agencies have established minimum recommended levels of insulation for all areas in the United States.

Firestone ISO 95+, ISO 300 and all Firestone polyiso composite insulations have third-party certified Long-Term Thermal Resistance (LTTR) values that meet the requirements of the PIMA Quality Mark program in addition to these important physical properties:

- Highest thermal performance per inch of any roof insulation
- Excellent fire test performance (thermal barrier is not required over steel decks)
- Compatible with most roofing systems (coverboards are not required for most systems)
- Dimensional stability
- Moisture resistance
- Compressive strength
- Zero Ozone Depletion Potential
- Recycled content
- Cost effective

Firestone Building Products is the largest manufacturer of polyiso roofing insulation. With eight plants, more than any other manufacturer that are strategically located throughout the United States, less fuel is used for transportation, saving precious natural resources and freight expenses. Select flat and tapered Firestone ISO 95+ or any of the other fine Firestone polyiso products to meet the thermal and substrate needs of your roofing system.

Reflectivity

In certain southern climates, highly reflective roof surfaces have proven to reduce energy consumption for air conditioning. However, it should be noted that this may have the reverse effect in northern climates. In appropriate geographical areas, some products offer a reflective surface that contributes to the long-term performance of the roofing system and may reduce the consumption of energy as well as the urban heat island effect. Combining the benefits of a properly insulated roof system and one of these reflective surfaces will result in an energy efficient roofing solution.

The U.S. EPA's Energy Star program has set guidelines to identify energy saving products. Roofing products for low-slope roofing systems that have an initial solar reflectance greater than or equal to 0.65 and 0.50 after three years under normal conditions meet the Energy Star criteria and may be labeled with the Energy Star logo. Firestone products that meet this criteria and are listed on the Energy Star website (www.energystar.gov) are:

Firestone AcryliTop PC-100 (white) Coating
 Firestone Aluminum Fibered Roof Coating
 Firestone SBS Metal Flash AL (modified bitumen membrane)
 Firestone UltraPly TPO (white) membrane

For a list of solar reflectance values for various Firestone products by the Cool Roof Rating Council, please go to www.coolroofs.org.

Ballasted roofing systems also play a role similar to reflective roof surfaces. Pavers and stone ballast do not have as high reflectivity ratings as white coatings, but on-going tests by Oak Ridge National Laboratories and SPRI indicate that there is a positive impact on energy usage in a building with ballasted roofs. The ballast absorbs the heat during the day while “shading” the roof membrane and then releases the heat during the evening hours. We will keep you up-to-date as information regarding energy research produces a more complete understanding of this effect.

Garden Roofing

A more complex look at sustainable roofing involves the use of vegetative or garden-roofing systems. Buildings across the country are using garden roof designs to:

- Integrate storm water management systems
- Reduce the heat island effect
- Increase energy efficiency

With this Technical Bulletin, Firestone Building Products announces the introduction of the Firestone Garden Roofing Systems. Three types of garden roofing systems are offered:

1. Intensive Greening (Deep) Garden Roofing Systems

A planting system of greater depth (soil depth greater than 8”) that requires regular maintenance, such as watering, fertilizing and mowing/weeding. A variety of plants are available including sod grass, annual or perennial flowers, shrubs and even small trees. This system typically requires a structural concrete roof deck to support the larger dead load. An irrigation system may be utilized in these assemblies, as required. The anticipated weight above the membrane assembly is generally greater than 25 pounds per square foot.

2. Simple Intensive Greening (Medium Depth) Garden Roofing Systems

A medium depth planting system (soil depth of 4” to 8”) where recommended plants include sedums, herbs, grasses and other vegetation which can grow in this depth of media. In temperate climates, un-irrigated systems can be provided without difficulty; however drip, mist or spray irrigation systems may be required to support more diverse plant types or for installations in semi-arid climates. The anticipated weight above the membrane assembly is generally between 15 and 25 pounds per square foot.

3. Extensive Greening (Shallow) Garden Roofing Systems

A shallow planting system (less than 4” in depth) ideally suited for areas that will receive little maintenance. Recommended plants include sedums, herbs and grasses. The anticipated weight above the membrane assembly is generally less than 15 pounds per square foot.

Please visit our website, www.firestonebpco.com, to see a complete set of specifications.

Thank you for choosing Firestone Building Products for your sustainable roofing solutions.