

ROOF GARDEN

Roofing Systems



Vegetated Roofing Systems

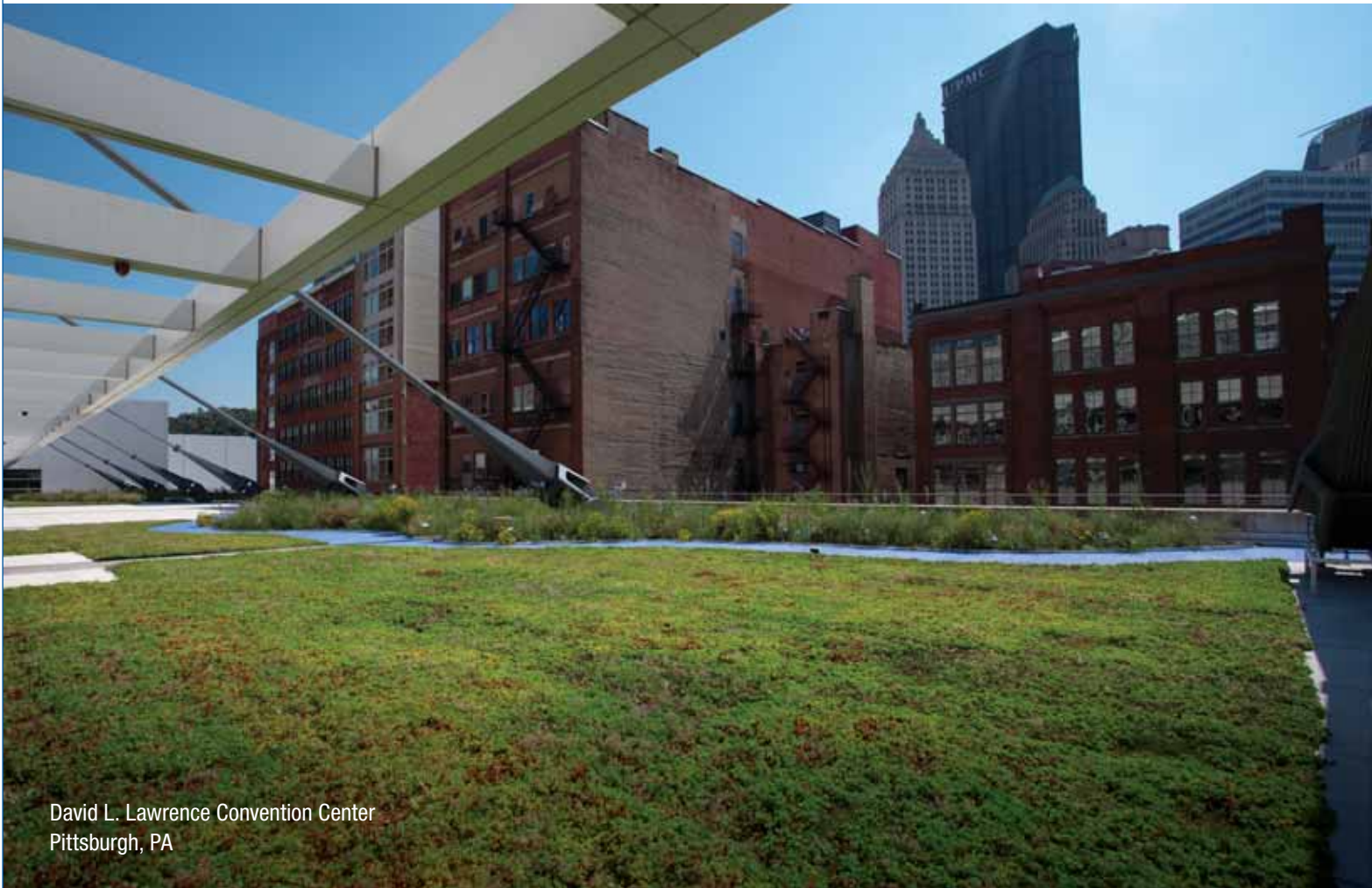
Experience the **Carlisle Difference**

In the 1960s, Carlisle SynTec Systems pioneered the single-ply roofing industry with the introduction of its Sure-Seal® EPDM membrane. Since that time, Carlisle has been recognized as the trusted provider of the most dependable and longest-lasting single-ply roof systems on the market.

Today, Carlisle's product offering has expanded to include Sure-Weld® TPO, Sure-Flex™ PVC, and FleeceBACK® membranes, as well as a full line of complementing accessories. And while the company's primary focus is on producing innovative and leading-edge, commercial, low-slope roofing membranes and accessories, Carlisle also provides insulation, metal roofing, coatings, skylights, pavers, and edge metal. Carlisle also makes its own adhesives, primers, and membrane cleaners and is a leader in vegetative, or Roof Garden systems.

Carlisle's signature products have been installed on a wide range of buildings around the world, including schools, hospitals, warehouses, and cold-storage facilities. With more than 15 billion square feet of roofing materials sold and installed, Carlisle continues to lead the industry by providing its valued customers with innovative products, services, and warranty options. Whatever your roofing needs, Carlisle has a system – and an answer – for you.

Since the earliest recorded Roof Gardens in Mesopotamia around 600 B.C., vegetated roofs have been an architectural staple of civilization. While they have changed in appearance and function, Roof Gardens have served to enhance the aesthetic appeal of your building and its surrounding area along with a variety of other benefits.



David L. Lawrence Convention Center
Pittsburgh, PA



Ogden Elementary School Rooftop Playground
Chicago, IL

WHY ROOF GARDENS?

Carlisle's Roof Gardens provide the following benefits:

- » Improved stormwater management
 - Filter and reduce stormwater, helping to minimize the stress placed on sewer systems and prevent flooding.
- » Enhanced amenity space
 - Add aesthetically appealing real estate to your building, giving your tenants much-needed green space.
- » Reduced urban heat island effect
 - Reduce the urban heat island effect as the sunlight is absorbed into the vegetation and used for growth instead of being converted into heat energy.
- » Extended roof lifecycle
 - Protect your rooftop membrane and substrate from weathering, extending the service life of your roof system.
- » Increased air and water purification
 - Capture airborne pollutants and atmospheric deposition while also filtering noxious gases.
- » Habitat for wildlife
 - Provide extra wildlife environments for the bee population and migrating birds, especially in towns and cities where natural habitats are so scarce.



WHY CARLISLE SYNTEC SYSTEMS?

50 Years of Experience

Carlisle SynTec Systems has more than 50 years of experience manufacturing single-ply roofing membranes and accessories. This experience ensures that Carlisle has a high-performance membrane that will fit your project – whether EPDM, TPO, or PVC. Carlisle understands roofing and provides top-quality products for your Roof Garden plus the expertise to guide you through your project from start to finish.

Design Flexibility

Carlisle's technical and design services staff will assist you with your vegetated roof design, product selection and jobsite application. Because Carlisle manufactures a wide variety of roofing membranes, our systems provide the utmost flexibility for your rooftop, and our experts can assist you through the process of designing a Roof Garden system that will enable your building to perform to its optimal capacity.

Technical Services

With decades of combined experience, Carlisle's technical services staff can provide the expertise you need, assisting with jobsite application and inspecting the rooftop to ensure that it is installed to the highest quality standards.

Extensive Applicator Network

Carlisle has a nationwide network of approved applicators who have completed rigorous technical and hands-on training and have the product knowledge and real-world experience to install your Roof Garden so that it thrives for years to come.

Industry-leading Warranty Coverage

As a division of Carlisle Construction Materials, Carlisle SynTec has a large warranty reserve, ensuring that your investment is backed by proven financial stability. Carlisle offers industry-leading warranty coverage on all of our roof systems, giving you the peace of mind of knowing that your rooftop will perform for the long haul.

Enhanced Aesthetics & Amenity Space

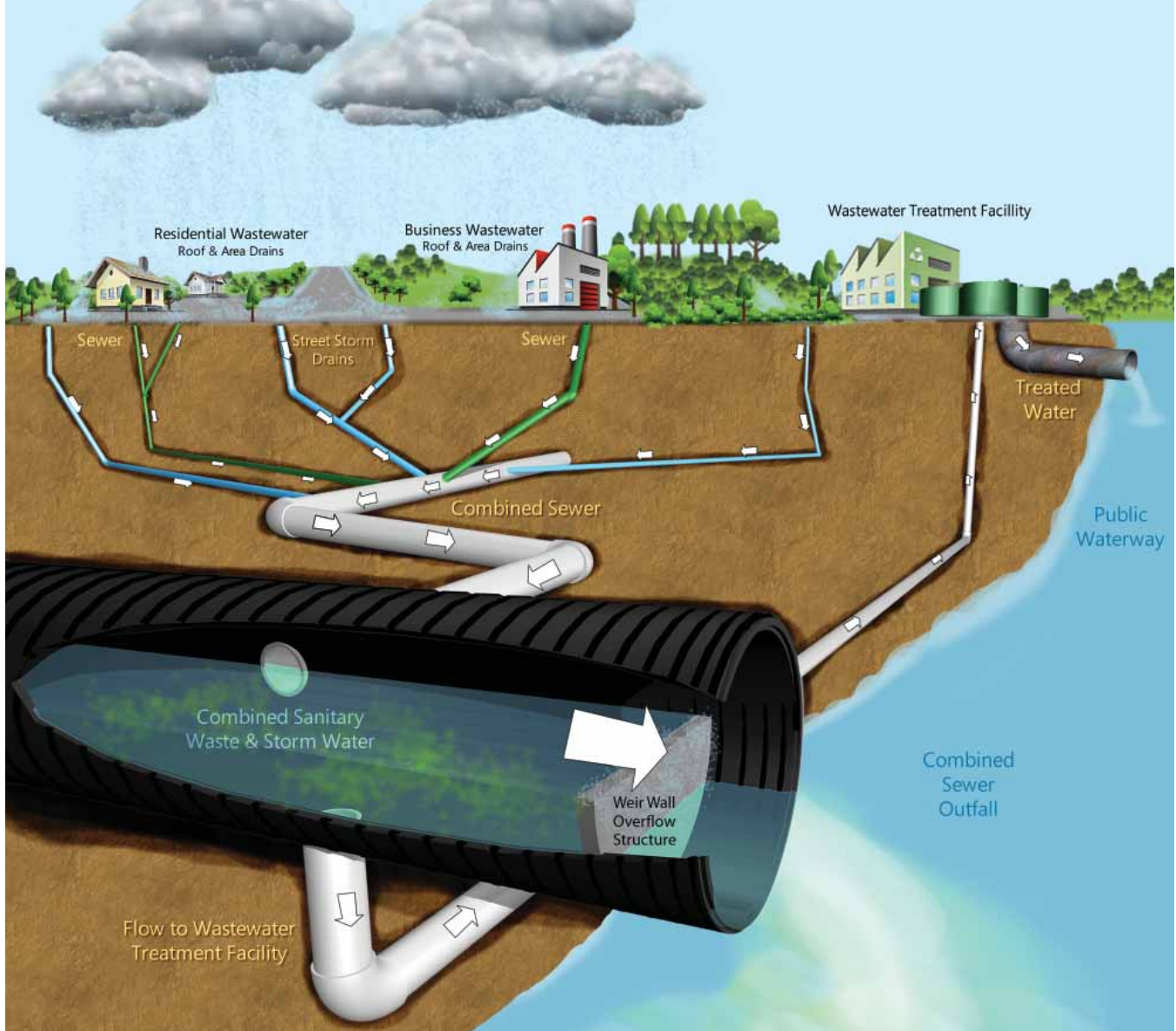
Adding a Roof Garden to your rooftop, a space that is often overlooked and under-utilized, provides natural green space for tenants to enjoy while adding value to your building. These designed green spaces can vary from simple sedum roofs with plaza areas to more intricate designs that emulate traditional parks.

Vegetated roofs not only add real estate space and aesthetic appeal to your building, they have also been proven to increase employee satisfaction, productivity, creativity and health. Both visual and physical access to a green space helps to restore the mind's ability to focus, improving job and school performance and helping to alleviate mental stress and illness.

Stormwater Management

Roof Gardens not only detain and retain rainwater, they also moderate its temperature and filter any stormwater runoff. By filtering and reducing stormwater runoff, Roof Gardens help to decrease the stress placed on sewer systems at peak flow periods.

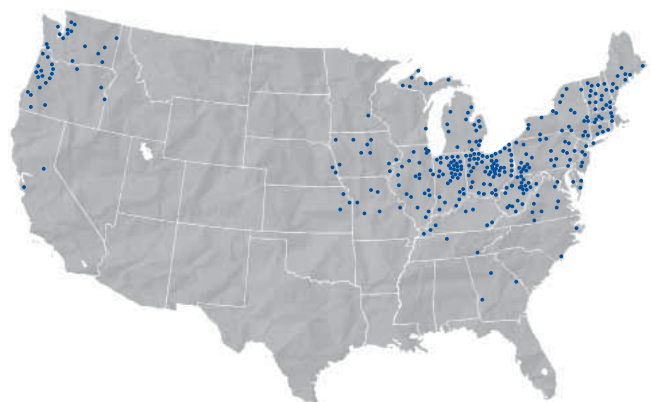




According to the Environmental Protection Agency, there are 772 communities in the U.S. with combined sewer systems, meaning that rainwater runoff, domestic sewage, and industrial wastewater are collected in the same pipes. While modern communities have separate systems that collect and divert stormwater and sewage, many older American cities were built on the combined sewer system model.

During heavy periods of rainfall or snowmelt, the input volumes experienced by the combined sewer systems can exceed the capacity of the wastewater treatment facility. When this occurs, the systems are designed to overflow and discharge excess wastewater directly to nearby streams, rivers, and other bodies of water. This practice results in what is called a Combined Sewer Overflow Event.

One of the primary benefits of a properly designed Roof Garden is that it captures a large percentage of rainfall and delays runoff from the roof. This provides the existing wastewater treatment facility the additional capacity to process other wastewater inputs. Studies have shown a 4" extensive sedum roof is able to capture 60-75% of annual rainfall in temperate climates.



**COMBINED SEWER OVERFLOW
EVENTS IN THE U.S**



GREEN ROOF: THE RURAL SOLUTION TO STORM WATER RUNOFF

Since 1913, Rice Fruit Company in Gardners, Pennsylvania has distributed fresh fruit throughout the United States. As the largest apple-packing facility in the eastern half of the United States, Rice has developed a reputation based on quality and high standards. In need of expanding their operations, Rice decided to construct a new cold-storage facility. Located in the Pennsylvania countryside, Rice wanted to make the building as environmentally friendly and non-invasive as possible and chose to use a Carlisle Roof Garden system. A vegetated roof was perfect for this project, as it allowed the structure to blend into the surrounding area.

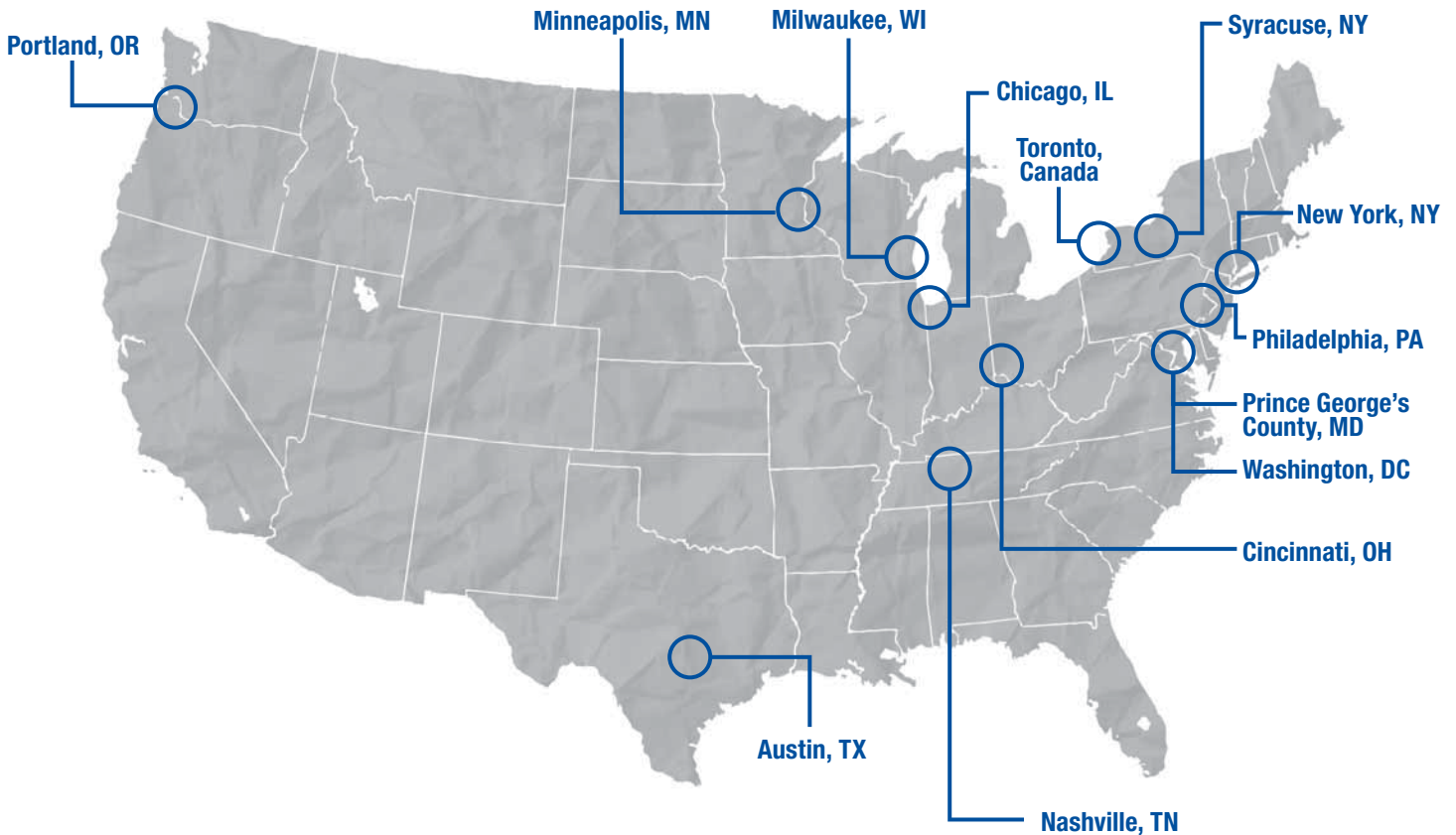
While the natural aesthetics of the roof was important, Rice saw another valuable benefit of the Roof Garden system. Pennsylvania building codes require the installation of a retaining pond with most commercial building construction in order to manage stormwater runoff and prevent flooding. With the installation of Rice's new cold-storage facility, however, there was no room to install a retaining pond on the property. However, by installing the Roof Garden system, Rice was able to meet the building codes without the additional retaining pond, as the vegetated roof could provide sufficient stormwater management for the property.

INCENTIVE PROGRAMS TO PROMOTE ROOF GARDENS

The map below indicates cities in the U.S. that are promoting the use of Roof Gardens through mandates, tax abatements and utility rebates. Note that these programs geographically align with the CSO map on page 5.



Scan here to view examples of Green Roof incentive policies in your city or state.



ROOF GARDEN WARRANTIES

Carlisle Roof Garden Overburden Warranty

Carlisle's overburden warranty provides building owners with a single point of contact in the event of a leak and covers overburden removal, roof repair, and overburden replacement and remediation. Carlisle's industry-leading warranties are backed by a significant warranty reserve fund and a strong commitment to provide the labor and material to quickly resolve any issue.

Carlisle Roof Garden Vegetation Warranty

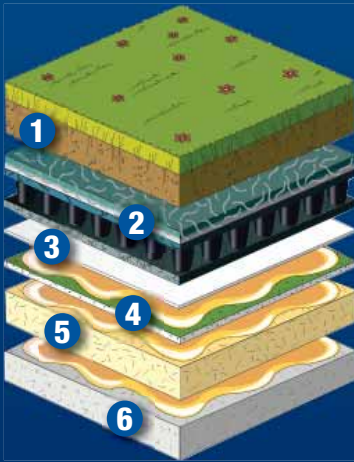
Carlisle offers a 2-year vegetation warranty to ensure the proper establishment of plants and a minimum 50% coverage of vegetation within year one and 80% coverage by year two.



EXPERIENCE THE CARLISLE DIFFERENCE

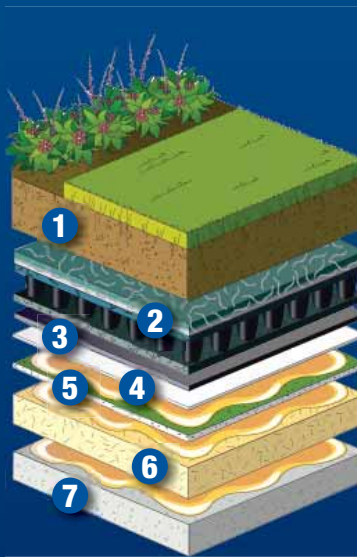
Carlisle's Traditional Roof Garden Assemblies

Carlisle offers a broad array of traditional Roof Garden systems that incorporate a variety of waterproofing options with a full line of accessories to provide a high-performance system. This includes a range of membranes that carry up to a 20-year warranty, engineered growth media and, vegetation options.



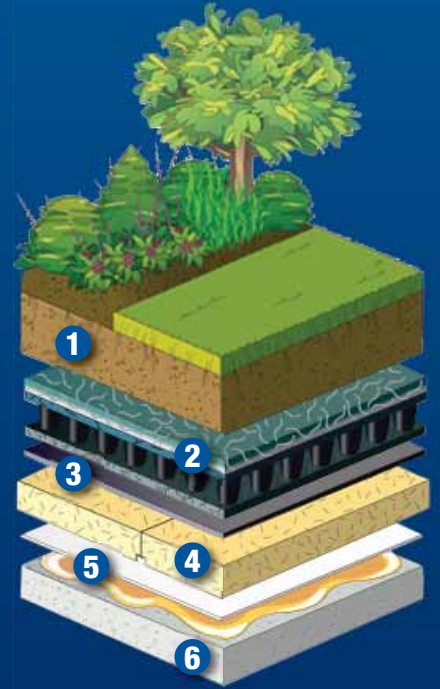
EXTENSIVE – SHALLOW ASSEMBLY

1. Growth Media – up to 5"
2. MiraDRAIN® G4
3. Sure-Seal EPDM, Sure-Weld TPO, or Sure-Flex PVC Adhered Membrane, 500R
4. ½" DensDeck™ Prime
5. Approved Insulation
6. Substrate



INTENSIVE – MEDIUM ASSEMBLY

1. Growth Media – over 5"
2. MiraDRAIN G4
3. 40-mil Root Barrier
4. Sure-Seal EPDM, Sure-Weld TPO, or Sure-Flex PVC Adhered Membrane, 500R
5. ½" DensDeck Prime
6. Approved Insulation
7. Substrate



INTENSIVE IRMA – DEEP ASSEMBLY

1. Growth Media – over 5"
2. MiraDRAIN G4
3. 40-mil Root Barrier
4. Expanded Polystyrene Insulation with drainage channels
5. Sure-Seal EPDM, Sure-Weld TPO, or Sure-Flex PVC KEE FleeceBACK Adhered Membrane, 500R
6. Substrate



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