WARRANTY NO.:
BUILDING OWNER:
NAME OF BUILDING:
BUILDING ADDRESS:
DATE OF COMPLETION OF THE CARLISLE ROOF GARDEN SYSTEM:
DATE OF ISSUE:

Subject to all of the project information, promises, terms, conditions, limitations, and disclaimers contained in the Carlisle Golden Seal Total Roofing System Warranty, Serial No (--), and in this warranty, Carlisle Roofing Systems, Inc., warrants the performance of the Carlisle Roof Garden System in the following manner:

TRADITIONAL ROOF GARDEN OVERBURDEN WARRANTY

For a period of -- years from the Date of Completion, upon the report by the Owner of a warranty covered leak in the Carlisle Total Roofing System, Carlisle shall be responsible, at its cost, for the removal and replacement of those portions of the Carlisle Traditional Roof Garden System required to investigate and respond to the warranty service request. Should Carlisle's investigation reveal the cause of the leak to be outside the scope of the Carlisle Golden Seal Total Roofing System Warranty, overburden removal and reinstallation costs and the subsequent investigation and repair costs shall be paid to Carlisle by the Owner.

TERMS, CONDITIONS AND LIMITATIONS

1. The value of the remedies stated above shall not exceed, singly or in the aggregate, over the life of this warranty, the original installed cost of the Carlisle Roof Garden System.
2. The Carlisle Roof Garden System Warranty is contingent upon the exclusive utilization of Carlisle supplied products in this installation. Those products include, but are not limited to: vegetation, growth media, protection fabric, drainage mat, moisture retention mat, root barrier, and, where specified, Carlisle roof garden trays.
3. This warranty shall be null and void:
(a) If, after installation of the Carlisle Total Roofing System by a Carlisle Authorized Roof Garden Applicator there are any alterations or repairs made on or through the roof, roof garden or objects such as, but not limited to, structures, fixtures, or utilities are placed upon or attached to the roof without first obtaining written authorization from Carlisle.
4. Carlisle does not warrant products utilized in this installation which it has not furnished; and specifically disclaims liability, under any theory of law, arising out of the installation and performance of, or damages sustained by or caused by, products not furnished by Carlisle.
5. The remedies stated herein are the sole and exclusive remedies for failure of the Carlisle Total Roofing System or its components. There are no warranties either expressed or implied, including the implied warranties of fitness for a particular purpose and merchantability, which extend beyond the face hereof. Carlisle shall not be liable for any direct, incidental, consequential or other damages including, but not limited to, loss of profits or damage to the building or its contents under any theory of law.

By:

AUTHORIZED SIGNATURE
TITLE: Sr. Manager, Technical and Warranty Services

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Roof Garden Care & Maintenance Recommendations

Introduction

Carlisle Roof Gardens can be a low maintenance feature of a building. Budget and time allowances for Roof Gardens vary dependent on design, e.g., growth media and plant selection. As with any biological system, Carlisle Roof Gardens require proper care and maintenance to thrive and perform as designed.

This attachment outlines Carlisle's requirements for maintenance on Roof Garden systems in American Horticultural Society (AHS) Plant Heat-Zones 3-8. Roof Garden systems installed outside of Zones 3-8 may require additional care and maintenance to ensure success. Failure to perform the maintenance outlined in this attachment can and may hinder the performance of the Roof Garden system.

Care and maintenance requirements of non-standard Carlisle planting options are project specific and will be addressed on case-by-case basis.

Immediately After Planting

1. Fully saturate the entire Roof Garden system to the point of runoff by soaking with conventional overhead sprinklers that are supplied by a ¾" hose.
2. Inspect drains for any foreign debris that may hinder their performance and clear the drains of any such debris.

Irrigation Recommendations

1. Permanent irrigation may not be required dependent upon the Roof Garden design, geographic region and microclimate where the Roof Garden is to be installed. However, access to water via hose bibs at the roof level is required.
2. Recommended water pressure is 35 psi at a volume flow of 9 gpm. Duration of irrigation events should be 30-45 minutes. Actual water pressure and volume flow will determine irrigation duration during the establishment period. Once runoff is observed, the Roof Garden system is considered to be thoroughly saturated.
3. Commercial overhead sprinklers such as spider stands (PICTURE 1) should be used to provide temporary overhead irrigation.

Picture 1

4. Irrigation should be performed early to mid-morning or late afternoon. Never irrigate during evening hours.
5. Temporary overhead irrigation of Carlisle Sedum Tiles or Sedum Mats during the establishment period to follow recommendations listed in TABLE 1.

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TABLE 1. Frequency of temporary irrigation for Sedum Tiles and Mats*

	Spring Install	Early Summer Install	Late Summer Install	Fall Install	Winter Install
Number of Weeks after installation	April-May	June-July 15th	July 15th-Sept 15th	Sept 15th-Oct	Nov-Dec
	Number of 30-45 minute irrigation events per week				
1-2	1-2	2	1-2	1	1
3-4	1	1	1	1	1
5-6	0-1	0-1	0-1	0-1	0-1

*Frequency and duration of irrigation events should be adjusted to account for precipitation

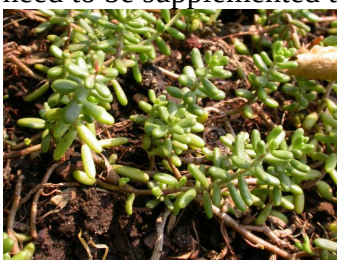
6. Temporary overhead irrigation of Carlisle Sedum Plugs during the establishment period to follow recommendations listed in TABLE 2.
7. Sedum Plugs are not recommended for planting during the winter months.

TABLE 2. Frequency of temporary irrigation for Sedum Plugs*

	Spring Install	Early Summer Install	Late Summer Install	Fall Install	Winter Install
Number of Weeks after installation	April-May	June-July 15th	July 15th-Sept 15th	Sept 15th-Oct	Nov-Dec
	Number of 30-45 minute irrigation events per week				
1-2	1-2	2	1-2	1	Plugs not recommended
3-4	1	1	1	1	
5-6	0-1	0-1	0-1	0-1	

*Frequency and duration of irrigation events should be adjusted to account for precipitation

8. It is imperative to closely monitor your Roof Garden system for signs of stress during drought conditions. Drought is defined as prolonged periods of extreme ambient temperatures (>90° F) with no precipitation (2-3 weeks). Sedum album (PICTURE 2) is a great indicator plant. If it shows signs of shrinkage, die back, or red/brown discoloration, you must irrigate the system to the point of runoff. Frequency of irrigation will depend on the depth of growth media. Extensive systems (with less than 4" of growth media) will most likely need to be supplemented twice (2X's) as much during drought conditions.



Picture 2

9. For Extensive Roof Garden systems installed in climates receiving less than 35 inches of annual rainfall, permanent irrigation is strongly required. This decision will be heavily influenced by the Roof Garden design and microclimate conditions.
10. The decision of whether to install a permanent irrigation system is highly dependent upon the geographic region, microclimate, growth media depth, water retention layer and plant selection. All Roof Gardens will require temporary irrigation during the establishment period and during drought conditions. If the project

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budget allows, a permanent irrigation system can be set to easily facilitate watering during these periods through the use of timers and rain/soil moisture sensors.

a. If a permanent irrigation system is installed, the system must be flushed prior to the first freeze to prevent the lines from bursting.

b. Prior to re-commissioning the irrigation system in the spring, check the system for leaks and perform any repairs as needed. This is also the appropriate time to verify the functionality of timers and soil moisture sensors.

Sedum Remediation and Propagation

It is natural for bare spots to develop in a Roof Garden because plants have evolved to compete for space and resources. Should a bare spot develop and the Owner feels that action is required; remediation of these areas can be easily facilitated by harvesting your own cuttings. Cuttings are the top growth of a sedum plant and may be harvested one month after the spring growth flush. Cuttings should not be taken from plants under stress and should never be more than 50% of the existing growth.

1. Cut 35-50% off the top of the existing sedum growth (PICTURES 3 & 4)
2. Generously broadcast the cuttings across bare spots (PICTURE 5)
3. Cuttings must remain moist, water cuttings thoroughly for one month

Picture 3/4/5

1st Year Maintenance

1. One month after planting, all weeds and non-specified plant material must be pulled from the growth media and removed from the rooftop before weeds flower and develop seed heads.
2. Carlisle does not allow the use of herbicides on its Roof Garden systems. Potential interactions between roofing membranes and herbicides, organic or nonorganic, have not been determined. The use of herbicides on a Roof Garden may void your warranty. Weed removal and prevention is to be accomplished through hand weeding only.
3. If the Roof Garden was planted with sedum plugs or custom plants, a minimum of one weeding event should be performed every month after installation.
4. If the Roof Garden was planted with sedum mats or sedum tiles, a minimum of one weeding event should be performed every two months after installation.
5. During weeding events roof drains must be inspected and cleared of any debris.
6. After the growing season and prior to the winter months, spent vegetation may be trimmed down. Cuttings and trimmings should not be removed from the roof as they will act as mulch and return nutrients to the system in preparation for the next growing season.
7. If the Roof Garden is accessed during the winter months, de-icing products must not be used in the vicinity of the vegetation. Salts or de-icing chemicals will harm the vegetation.
8. Any snow removed from pavers or walkways should be distributed evenly across the Roof Garden to prevent potentially damaging the vegetation.
9. Should it be necessary to remove snow from the Roof Garden, care will need to be exercised to ensure that the vegetation layer is not damaged or inadvertently removed.

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2nd Year and Onward Maintenance

1. The spring growth flush is the period during which plants wake up from their winter dormancy. The occurrence of this period varies by geographic location and seasonal weather conditions, but typically coincides with the appearance of bulbs such as Daffodils and Tulips. After the 12 month anniversary date of the Roof Garden installation, and annually thereafter, a soil test should be performed approximately 2-3 weeks prior to the spring growth flush. For example; if the Roof Garden was installed in October of 2020, the first annual soil test would need to be performed 2-3 weeks prior the spring growth flush of 2022. Small individual samples should be collected from across the Roof Garden to provide a broad spectrum of the media condition. 1-2 cup samples should be collected from 5-15 separate locations, depending on the area of the Roof Garden. These individual samples should be labeled and sealed in plastic bags or test kits. Carlisle recommends that the samples be sent to Pennsylvania State University's Agricultural Analytical Services Laboratory for the following tests:

    - Saturated paste pH
    - Salts
    - Nutrients
    - Percent Solids
    - Organic content

Growth media testing information can be viewed at the link: http://agsci.psu.edu/aasl/green-roof-media-testing

Contact information and mailing address:

Agricultural Analytical Services Laboratory
Penn State University
University Park, PA 16802
814.863.0841
www.aasi.psu.edu
http://www.aasl.psu.edu/Greenroof.html

2. Sedums thrive in poor soils with low nutrient levels and do not require excessive fertilization. However, should the soil test indicate that the Roof Garden's growth media requires amendment; Carlisle recommends the use of granular slow release organic fertilizer. Fertilizer should be applied as necessary to return the growth media to original organic content. A single fertilization event should occur in the spring depending on the results of the annual soil test.
3. If the Roof Garden was planted with sedum plugs or custom plants a minimum of one weeding event should be performed every 2 months.
4. If the Roof Garden was planted with sedum mats or sedum tiles, a minimum of one weeding event should be performed every three months.
5. During weeding events roof drains must be inspected and cleared of any debris.
6. After the local trees have dropped their leaves, a final weeding event and general inspection must be performed. All debris must be removed from the Roof Garden and drains must be given a final inspection for the season.
7. If the Roof Garden is accessed during the winter months, de-icing products must not be used in the vicinity of the vegetation. Salts or de-icing chemicals will harm the vegetation.
8. Any snow removed from pavers or walkways should be distributed evenly across the Roof Garden to prevent excessive point loading on the building and potentially damaging the vegetation.
9. Should it be necessary to remove snow from the Roof Garden, care will need to be exercised to ensure that the vegetation layer is not damaged or inadvertently removed.