

LIVING ARCHITECTURE MONITOR

BEST PRACTICE

MAINTENANCE MATTERS

FROM HELPING TO GUARANTEE A WARRANTY TO ENSURING THE PLANTS PERFORM AS DESIGNED, MAINTENANCE OF A GREEN ROOF IS CRITICAL TO SUCCESS

By Terry McGlade

The green roof industry has always discussed maintenance as being important but recently, it has become a focal point – and for good reason. Maintenance for green roofs involves scheduled visits during which service professionals typically perform weeding and fertilization, inspection and cleaning of roof drains, looking for signs of the presence of vermin, assessments of plant material for stress or disease and, when applicable, a check of the irrigation system.

Maintenance is especially critical during the establishment period of the green roof; the passage of time until plant material reaches 80 percent coverage of the allotted “green area”— typically two years.

Maintenance visits need to occur more frequently to ensure the success of the green roof during the establishment period.

Maintaining a green roof serves a number of important purposes

including ensuring the desired aesthetic is reached and maintained, for a warranty requirement, and roof and building safety. Green roof plants are living organisms and therefore require water and care. However, unlike plants on the ground they are exposed to higher temperatures and more extreme environmental fluctuations, and therefore are more susceptible to stress. Maintenance on green roofs is also about establishing and analyzing the critical needs of the plants.

Maintaining the aesthetic of the green roof involves ensuring that plants receive appropriate amounts of water, especially during the first three months, ensuring that weeding takes place frequently during the first two years (after about three years, the penetration of weeds will be limited if green roof plant coverage has been established fully) and providing nutrients in the form of organic, non-chemical fertilizers.

Maintenance is considered part of most green roof warranties. Stan-

TOP 3 MAINTENANCE TIPS

1. ACCESS TO ROOF LOCATIONS

Access to green roof sites can prove extremely difficult so designers need to ensure adequate access. Access issues must also be built into maintenance plans and budgeting. Maintenance staff need to ensure appropriate, legally required safety precautions when accessing roof sites.

2. SUFFICIENT WATERING OF PLANT MEDIA DURING ESTABLISHMENT PERIOD

Maintenance visits/irrigation should be scheduled once a week during the first month after installation, once every two

weeks during the second month and once a month during the third month. Adjust this watering recommendation if rainfall has occurred. It is best to physically check the moisture of the growing medium rather than simply relying on a schedule. In colder climates, there is a recommended do not water period which is within one month of the expected average frost date (usually there is plenty of moisture during this time of year, too much water will compromise the plant material’s ability to survive over winter).

3. AIRBORNE SEEDS

Airborne seeds can introduce weeds, tree seeds

and volunteer plant species to a roof. The removal of weeds and tree seeds is critical for the survival of the green roof plants as well as the safety of your roof membrane (trees have invasive root systems and can penetrate root barrier systems that were not designed for that situation). Remove weeds early, and make sure you remove the whole weed including the root. Wet the ground around the weed and your job will be easier. Any weed seeds left and then exposed to the sun will begin to germinate, so make sure not to break open seed pods when removing weeds. If you leave volunteer species on your roof, within a season you will have a vastly different green roof aesthetic.



Courtesy of Flynn Canada Ltd.

BEFORE (TOP) AND AFTER: A 4,000 SQUARE FOOT EXTENSIVE WILD FLOWER MEADOW AT 215 SPADINA AVE. IN TORONTO, CANADA.



Courtesy of Flynn Canada Ltd.

standard express warranty (warranties that are specifically expressed by the seller of goods) cover the green roof for two to three years however the maintenance best-practice standard is increasing to five years, whether warranties will change to reflect this is yet to be seen. The production and submittal of maintenance reports is generally required in order for the warranty to remain valid

Finally, maintenance is crucial to ensure that the green roof is functioning correctly which in turn keeps your building and roof membrane safe from any potential harm. By regularly performing maintenance,

checking roof drains, removing weeds and saplings, ensuring adequate hydration and identifying any dead areas you will protect the roof from flooding and potential damage to the membrane.

To adequately address the maintenance needs of green roof maintenance plans, allocation of maintenance budgets should happen during the planning stages, not as an afterthought. In order to plan adequate maintenance, it is imperative that each specific system's maintenance requirements be considered. Modular systems, mat systems, seeded systems, plug systems and cutting roofs all require different levels of initial maintenance and this must be factored into the maintenance schedule especially during the first three months. These different systems, due to their varying needs, will also affect your maintenance budget, so again this is best taken into consideration at the planning stages. The City of Toronto's new green roof construction standard requires the submission of a maintenance plan as a component of the permitting process.

Most systems have specific maintenance specifications that can be referenced by the designers when putting together the green roof specifications. Maintenance should be outlined clearly prior to the delivery of any warranty or signing of contract. If the green roof is using a plug, cutting or seeding planting system there are various sources designers can consult to outline appropriate maintenance schedules.

With everything maintenance can do, it is no wonder then that its function has become a key cornerstone of any green roof project. Careful planning, budgeting and implementation of maintenance will help to ensure the long-term success of any green roof project. *

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LEARN MORE

Dunnett, N., Kingsbury, N. (2004). *Planting Green Roofs and Living Walls*. USA: Timber Press Inc.

Green Roof for Healthy Cities: www.greenroof.org (coming soon – a new GRHC course on maintenance)

Snodgrass, E., Snodgrass, L. (2006). *Green Roof Plants: A Resource and Planting Guide*. USA: Timber Press Inc.

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