

September 29, 2009

Mr. Gary Andriotis
All Area Property Management
99 Tulip Avenue, Suite 109
Floral Park, NY 11101

Re: Benefits of Green Roofs

Dear Mr. Gary Andriotis:

I would like to take a moment to discuss with you the benefits of green roofing and the impact that green roofs can have on your property. As you are aware there has been a recent surge in the number of green roofs being installed in the United States. This is partly a result of conscientious building owners doing their part to preserve the environment and partly due to recent technological developments that have improved green roof systems and decreased installation costs. Additionally recent tax incentives help further mitigate the construction costs involved.

To date many green roof benefits have been observed and documented. These benefits can be classified in two categories, *private* and *public*. Private benefits have a positive impact on the building owner and occupants directly, while public benefits are those that impact the public at large, more so than the building owner. The following is a summary of some of these benefits:

PRIVATE:

Energy efficiency – by helping to maintain a more consistent and moderate ambient roof temperature throughout the year; green roofs will reduce the amount of heat loss in the winter and reduce the heat gain in the winter thus reducing heating and cooling demand.

Increased membrane durability – due to the lack of exposure to UV rays, reduction in thermal shock due to temperature variations and protection from impacts resulting from foot traffic, protected membranes can be expected to have an increased lifespan if properly designed.

Noise reduction – green roofs can reduce sound pollution by 30 – 50 decibels, for sounds exiting or entering a structure. This noise reduction benefit has been extremely useful for buildings in dense urban environments or near airport runways.

Reduced electromagnetic radiation – a study by the University of Kasseil in Germany found that green roofs are capable of reducing electromagnetic radiation penetration by 99.4%. This is particularly beneficial to buildings with telecommunications equipment mounted on the roof.

New amenity spaces – an adequately designed green roof can be utilized in various manners to increase the amount of amenities available. Green roofs have been transformed into community gardens, recreational spaces, discreet sunbathing sites, dog parks, urban farms for local growers, and restaurant terraces, to name a few.

Increased property value – as more and more consumers become environmentally conscious green roofs will likely result in increased property value. A recent study performed by the University of California, Berkeley found that Energy Star rated buildings attracted higher rental premiums and purchase values than those without.

PUBLIC:

Storm water mitigation – The absorptive nature of vegetative roofs decreases the quantity of storm water runoff as well as the rate at which the storm water enters the sewer system when compared to the previously impervious surface. Decreasing the quantity and rate of storm water runoff helps reduce the impacts of localized flooding and the need for costly storm sewer upgrades. New York City, like many urban areas has a combined sanitary and storm sewer system; during rainfalls as little as 1/10 of an inch, the sewer system may become overloaded resulting in a discharge of sewage into outfall areas (i.e. rivers, streams, etc.)

Improved water quality – The vegetation and growing medium associated with green roofs act as natural filtration systems to remove contaminants from runoff prior to discharging water into the storm sewer system. Furthermore under typical conditions dust and debris from a roof surface are washed into the storm sewer system by rainfall further contaminating the receiving streams.

Improved air quality – plants associated with a green roof can help to improve air quality by capturing airborne pollutants, filtering noxious gases and reducing the ambient temperature.

Reducing the UHI effect – green roofs have been proven to be just as effective as white or “cool roofs” at reducing the ambient air temperature at the roof surface; thus reducing the Urban Heat Island Effect. According to a study performed by the EPA during summer months the ambient temperature on a black roof can reach 158°F while the temperature of a white roof exposed to the same conditions would be 101°F and a green roof 90°F. This is particularly important to the public at large in congested urban environments, but particularly children and the elderly who are more prone to respiratory difficulties, heat cramps, exhaustion, non-fatal heat stroke, and heat-related mortality.

Improved aesthetic surroundings – the presence of vegetative coverings on roof surfaces can be pleasing and stimulating to those fortunate enough to enjoy the view. Vegetation has been proven to reduce stress, increase patient recovery time in hospitals, increase civic participation, and reduce crime rates and vandalism.

DESIGN:

A green roof system must be properly designed with the Owner's intended use and expectations in mind in order to realize the benefits described above. Additionally if the roof system and drainage below the vegetation are not properly designed the green roof may in fact do more harm than good.

Depending on several factors including: roof deck load capacity, intended use of the roof system and budget, a vast array of vegetative systems are available. There are three categories of green roofs:

Extensive green roofs - are typically the least expensive, require the least maintenance and are relatively light weight (10–50 lbs./ft.² saturated weight). Extensive green roofs are typically used on inaccessible roofs and offer minimal plant diversity. In this region of the country sedums are popular for extensive green roofs.

Intensive green roofs - are typically the most expensive, require more maintenance and range considerably in weight (80–300 lbs./ft.² saturated weight). Extensive green roofs are typically used on accessible surfaces and can incorporate a large array of vegetation, including trees, shrubs, etc.

Semi-Intensive green roofs – fall between the above categories.

The selection of and effectiveness of a green roof is dependent on the integrity of the waterproofing installed, the structural capacity of the roof deck and the environmental benefits desired. With a long history of successful roof and structural consulting complimented by our staff of knowledgeable LEED Accredited Professionals and Green Roof Professionals, MERRITT ENGINEERING CONSULTANTS, P.C. is uniquely positioned to assist you with any questions that you may have regarding green roofing and the applicability to your facility.

Should you have any questions or wish to discuss this further please feel free to contact me at 718-767-0923 ext. 142 or via email at bsullivan@merrittengineering.com.

Very truly yours,

Brian P. Sullivan

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