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February 8, 2018

Sarah Alexander
Torti Gallas + Partners
1300 Spring Street
4th Floor
Silver Spring, MD 20910

Re: **Ladybird LEED Gold Request Follow Up – Solar Panel Discussions**

Dear Sarah:

Our office performed a roof loading analysis for the proposed solar panels (size 5.4'x 3.25'-42 pounds) and a 4" green roof (32 psf) for the Ladybird project. Our analysis shows that conventional roof truss spacing of 2'-0" o.c. will not be adequate to support the proposed solar panels and green roof system., A reduced roof truss spacing of 19.2" o.c. along with double trusses will be needed below the solar panel legs (3.2' spacing). Assume the penthouse roof trusses are spanning between the demising bearing walls. Solar panel legs can be ballasted using precast concrete or CMU block to counter wind uplift. The legs in this option will not be positively connected to the roof avoiding any waterproofing issues. Another option is to provide a positive connection of each solar panel leg to the roof truss and design the truss for additional loads (gravity including snow loads or uplift due to wind).

We understand that the District Department of Energy and the Environment (DOEE) has recently issued design guidance for solar panels over green roof that, if designed in accordance with such guidance, DOEE will maintain 100% stormwater credit for the green roof. However, as this is very new guidance, and actual implementation of solar over green roof is still rather new, the placement of solar panels over a green roof over wood trusses could adversely impact green roof performance and thus stormwater compliance. In fact, while there may be a few recently approved examples, we are not aware of any constructed projects in the District that are stick-built with solar over green roof. In fact, we are just now seeing completion of the first stick-built projects containing only a green roof given the waterproofing issues that needed to be addressed. Of course, as stated above there is a possibility to ballast the solar panel legs using precast concrete or CMU block. However, such an approach could either adversely impact green roof performance due to placement of the ballast material on top of green roof, or require the reduction of green roof area to make room for the ballast material. Finally, if the panels are positively attached to the wood trusses there

Zivan Cohen P.E. | Varinder M. Abrol P.E. | Michael Tabassi P.E. | J. Kelley White | Ali R. Tahbaz P.E. | Sanjay Khanna P.E.
Yehuda Nordman P.E., S.E. | Dipak M. Shah P.E. | Xinzhang Li P.E. | Harsha Wijeweera | Peter White P.E.
Jacob Steinbach P.E. | Arif Mahmood P.E. | Ashfaq Ahmed P.E. | Hong Ye P.E. | Palas Sarkar | Eyoel Temesgen P.E.
Sebastian Janik P.E. | Ervin Rogers, Jr., P.E. | Muzaffar Ali Zaki
1109 Spring Street • Fifth Floor • Silver Spring • Maryland • 20910-4082
Phone 301/587-1820 • Fax 301/588-1966

would be substantial waterproofing issues that need to be addressed due to the numerous roof penetrations that would be needed. There would also be a need to install additional blocking, in addition to the need for double trusses, which would further limit/impact building MEP system design.

Please let us know if we can provide you any additional information.

Sincerely,
Tadjer Cohen Edelson Associates, Inc.

Sanjay Khanna, P.E.
Principal

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