Exhibit E

Excerpt of DOEE Study Regarding Installation of Solar Panels over Green Roofs

[*attached behind*]

GOVERNMENT OF THE DISTRICT OF COLUMBIA
Department of Energy and Environment

MEMORANDUM

TO: District of Columbia Stakeholders

FROM: Hamid Karimi
Deputy Director, Natural Resources Administration

DATE: November 28, 2017

SUBJECT: Updated Errata for the 2013 Stormwater Management Guidebook

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Attached are clarifications of issues that stakeholders or the Department of Energy and Environment (DOEE) have noted in the 2013 Stormwater Management Guidebook (2013 SWMG). The 2013 SWMG provides technical guidance on compliance with the 2013 Rule on Stormwater Management and Soil Erosion and Sediment Control (2013 SW Rule), which was published as final in the *D.C. Register* on July 19, 2013.

This document is an update to the errata published on December 23, 2014. Page 1 briefly identifies the new entries. The full list of errata begins on page 2. Entries are organized by the page number where the original test is located in the 2013 SWMG and include an explanation of the reason for the change and the date of publication to this document. Each entry is designated as an omission or an edit. An omission (denoted as O) publishes clarifying information that was inadvertently excluded from the original document. An edit (denoted as E) is a substitution or deletion to clarify original intent or improve consistency.

DOEE will continue to update these errata as issues surface that require clarification and post the updated version at doee.dc.gov/swregs. DOEE will also send notifications about updates to its stormwater management email list. To be added to this list, please email Matt Johnson at matt.johnson2@dc.gov (and mention stormwater management listserv).

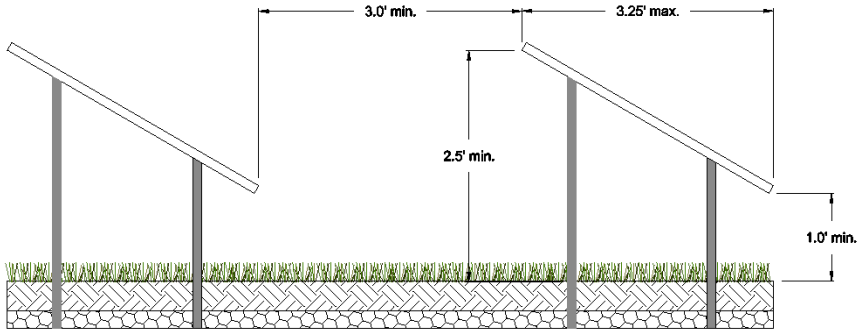
DOEE anticipates republishing the entire SWMG in 2018 and will include posted omissions and edits as well as any additional revisions. When republishing the entire SWMG, DOEE will notify the public through the stormwater management email list and the *D.C. Register*, and DOEE will provide an opportunity for public comment.

Errata for the 2013 Stormwater Management Guidebook

Department of Energy and Environment

November 17, 2017

<table>
<tr><th>Description of Change</th><th>Page</th><th>Date Published</th><th>Type</th></tr>
<tr><td colspan="4">Chapter 3 (continued)</td></tr>
<tr><td>Section 3.2.4 Green Roof Design Criteria
Update the second-to-last row of Table 3.1.
<table><tr><td>Growth Media</td><td>70% to 80% lightweight inorganic materials and a maximum of 30% organic matter (e.g., well-aged compost). Media typically has a maximum water retention of approximately 30%. Material makeup and proof of maximum water retention of the growing media must be provided. Media must provide sufficient nutrients and water holding capacity to support the proposed plant materials. Determine acceptable saturated water permeability using ASTM E2396-05. <u>An acceptable emerging industry practice combines the drainage layer with the growing media layer.</u></td></tr></table>The sentence regarding combining the drainage layer with the growing media layer is added to clarify that green roofs are not required to have both a drainage layer and a growing media layer.</td><td>34</td><td>11/17/17</td><td>E</td></tr>
<tr><td>Section 3.2.4 Green Roof Design Criteria
Add the subsection “Solar Panels and Other Structures” immediately before the “Green Roof Sizing” subsection.
<u>Solar Panels and Other Structures</u>
<u>Occasionally, structures such as solar panels or HVAC systems must be installed above a green roof. These structures can be incorporated into a green roof design with no adverse effects to the retention value assigned to the green roof if specific design requirements for runoff disbursement, maintenance access, and sun/wind exposure are incorporated, including the following:</u>
▪ <u>Structures above the green roof must be no more than 3.25 feet wide.</u>
▪ <u>Structures must have a minimum 3-foot separation between them.</u>
▪ <u>The lower edge of the structure must be at least 1 foot above the top of the green roof, and the upper edge must be at least 2.5 feet above the top of the green roof.</u></td><td>35</td><td>11/17/17</td><td>E</td></tr>
</table>

Description of Change	Page	Date Published	Type
These design requirements are illustrated in Figure 3.2.  **Figure 3.2: Design Requirements for structures constructed above green roofs.** The "Solar Panels and Other Structures" subsection is added to describe how shaded green roofs will be accommodated in the Guidebook. DOEE determined that, while it is possible that shading may reduce evapotranspiration in green roofs, there is not enough available research to justify a reduction in green roof retention value for shaded roofs at this time. As more research becomes available, the retention value for shaded green roofs will be re-examined.			