



2011 MAY 13 PM 3: 53

**MEMORANDUM**

**TO:** District of Columbia Zoning Commission

**FROM:** Travis Parker, Zoning Review Project Manager *TP*

**DATE:** May 13, 2011

**SUBJECT:** Second Supplemental Report for ZC #08-06 – Zoning Regulations Review  
▪ Subtitle J: Production, Distribution and Repair

At the public hearing on February 24, 2011, questions were raised about the disproportionate cost of applying Green Area Ratio (GAR) requirements to PDR uses, specifically warehouses. A March 10, 2011 submission by Chris Collins of Holland & Knight further detailed the cost implications of GAR on these types of buildings. The submission described the one story nature of many PDR buildings and the resulting cost per square foot of GAR on the price of warehouses and other associated uses versus a multi-story structure.

At the proposed action meeting on March 28, 2011, the Commission requested that OP reexamine this issue and provide further research on roof load requirements for warehouses. In response, the Office of Planning has compiled research using both local and national examples shown on the next page as Table 1. Though weight requirements vary depending on the type and engineering of particular green roofs, we have found that extensive green roofs can generally weigh about 6.75 pounds per square foot for each inch of depth. Thus, the saturated weight of a 4-inch deep system is about 27 pounds per square foot, including a mature plant cover. This is almost exactly the same as Mr. Collins example of 28 pounds per square foot.

Accurate cost information has been much harder to locate. We have been told that costs can vary widely on a project by project basis depending on conditions. Regardless of the actual cost, OP accepts the proposition that warehouses are necessarily designed to be one-story buildings due to truck access and efficiency requirements and that one-story buildings have a proportionally higher cost per square foot for roof improvements than multi-story buildings.

Thus OP continues to believe that a 0.1 GAR requirement remains appropriate for single level warehouses. However, the proportional application of GAR offered in OP's March 17<sup>th</sup> report could have the unintended consequence of incentivized low buildings for other PDR uses. Therefore, OP has further revised the language of Subtitle J GAR requirements to require 0.3 GAR as the general standard in all PDR zones, while providing a specific exemption to 0.1 GAR for buildings designed and used only as single story warehouses.

ZONING COMMISSION  
District of ColumbiaCASE NO. 0806EXHIBIT NO. 146ZONING COMMISSION  
District of Columbia  
CASE NO.08-06  
EXHIBIT NO.146

**Table 1: Green Roof Weight Loads**

<b>Green Roof Product</b>	<b>Company</b>	<b>Location</b>	<b>Specifications of Weight Requirement (lb/square foot)*</b>
Commercial or Multi-Residential retrofits or new buildings	DC Greenworks	Washington, DC	At least 25
Roofmeadow Flower carpet – typical thickness 2.5-4”	Roofscapes Inc.	Philadelphia, PA	20-34
Roofmeadow Aromatic Garden – typical thickness 3.5-5”	Roofscapes Inc.	Philadelphia, PA	20-27
Roofmeadow Savannah - typical thickness 4-8”	Roofscapes Inc.	Philadelphia, PA	27-40
Roofmeadow Heath - typical thickness 8-16”	Roofscapes Inc.	Philadelphia, PA	36-54
Extensive module I – typical thickness 3.5”	MGV GroRoof	Dix Hills, NY	18-26
Extensive module II – typical thickness 4.5”	MGV GroRoof	Dix Hills, NY	26-32
Extensive module III – typical thickness 5.5”	MGV GroRoof	Dix Hills, NY	35+
Ultra Extensive – typical thickness 2.5”	Green Grid	Vernon Hills, IL	11-13
Extensive System – typical thickness 4”	Green Grid	Vernon Hills, IL	18-22
Intensive System – typical thickness 8”	Green Grid	Vernon Hills, IL	35+
Extensive – typical thickness 4”	Capitol Greenroofs	Alexandria, VA	12-25
Semi-Intensive – typical thickness 4-12”	Capitol Greenroofs	Alexandria, VA	25-60
Intensive – typical thickness 12”+	Capitol Greenroofs	Alexandria, VA	60-200
Federal Green Construction Guide for Specifiers – example case thickness 2.5-4”	Whole Building Design Guide	Washington DC	74

*\*lb/square foot at maximum saturated weight*