



## ENGINEERING AND ENVIRONMENTAL SERVICES

### Stormwater Division

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## GREEN ROOF AREA DESIGN SUMMARY

### Stormwater Management Construction Plan Review:

A complete Stormwater management construction plan submittal includes a design summary for each Stormwater BMP, design calculations, plans and specifications showing BMP, inlet and outlet structure details.

### I. PROJECT INFORMATION

For projects with multiple SCMs, specify which SCM this worksheet applies to:

Project Name: \_\_\_\_\_ Phase: \_\_\_\_\_

PIN: \_\_\_\_\_ Case #: \_\_\_\_\_

Legal Name of Owner: \_\_\_\_\_

Owner Contact: \_\_\_\_\_ Phone: \_\_\_\_\_

Owner Address: \_\_\_\_\_

Design Contact Person: \_\_\_\_\_ Phone: \_\_\_\_\_

|                         |                 |  |
|-------------------------|-----------------|--|
| Drainage area           | ac              | <i>(on-site drainage to the SCM)</i>                 |
| Impervious area         | ac              | <i>(on-site impervious area draining to the SCM)</i> |
| Design runoff           | cfs             |  |
| Design treatment volume | ft <sup>3</sup> |  |

### II. GENERAL MINIMUM DESIGN CRITERIA FOR ALL SCMs *(Revised 1/3/2017)*

#### GENERAL MDC 1: SIZING

|                      |                 |  |
|----------------------|-----------------|--|
| Design storm depth   | ft              | <i>(One year, 24 hour storm event)</i>               |
| Design runoff volume | ft <sup>3</sup> | <i>(Minimum calculation of entire drainage area)</i> |

#### GENERAL MDC 2: CONTAMINATED SOILS

|                                      |       |                               |
|--------------------------------------|-------|-------------------------------|
| Contaminated soils within footprint? | Y / N | <i>(Brownfield location?)</i> |
|--------------------------------------|-------|-------------------------------|

#### GENERAL MDC 3: SIDE SLOPES

|                               |     |                                       |
|-------------------------------|-----|---------------------------------------|
| Maximum vegetated side slopes | : 1 | <i>(Maximum 3:1 vegetated slopes)</i> |
|-------------------------------|-----|---------------------------------------|

**GENERAL MDC 4: EROSION PROTECTION**

|                                |     |                              |
|--------------------------------|-----|------------------------------|
| 10 year storm outlet discharge | cfs | <i>(Must be non-erosive)</i> |
|--------------------------------|-----|------------------------------|

**GENERAL MDC 5: EXCESS FLOW**

|                                |     |
|--------------------------------|-----|
| Emergency outlet elevation     | ft  |
| Emergency spillway width       | ft  |
| Emergency spillway side slopes | : 1 |
| Emergency spillway slope       | %   |

**GENERAL MDC 6: DEWATERING**

|                       |    |                        |
|-----------------------|----|------------------------|
| Dewatering method     |    |                        |
| Drawdown orifice size | in | <i>(If applicable)</i> |

**GENERAL MDC 7: CLEAN OUT AFTER CONSTRUCTION**

|  |
|--|
| Every SCM impacted by sediment and erosion control during the construction phase shall be cleaned out and converted to its approved design state |
| In addition, installed SCM's should be inspected and cleaned after each heavy rainfall   |

**GENERAL MDC 8: MAINTENANCE ACCESS**

|                                       |       |                                   |
|---------------------------------------|-------|-----------------------------------|
| Maintenance access width              | ft    | <i>(Minimum width of 25 feet)</i> |
| Side slopes within maintenance access | : 1   | <i>(Maximum 3:1)</i>              |
| Access extend to public right of way  | Y / N |                                   |

**GENERAL MDC 9: EASEMENTS**

|  |       |  |
|--|-------|--|
| All SCMs and associated maintenance accesses located in permanent recorded easement? (shown and labeled in easement) | Y / N | <i>(Does not include single family residential lots)</i> |
| Maintenance access width around SCM  | ft    | <i>(Minimum width of 10 feet)</i>                        |

**GENERAL MDC 10: SINGLE FAMILY RESIDENTIAL LOTS**

|   |
|---|
| Plats for residential lots that contain an SCM shall include:<br>(a) The specific location of the SCM on the lot<br>(b) A typical detail for the SCM to be used<br>(c) A note that the SCM on the property has been required to meet stormwater regulations and that the property owner may be subject to enforcement actions if the SCM is removed, relocated, or altered without prior approval |
|---|

**GENERAL MDC 11: OPERATION AND MAINTENANCE AGREEMENT**

|   |                          |
|---|--------------------------|
| Acknowledgement that the association shall continuously operate and maintain the stormwater control and management facilities   | <input type="checkbox"/> |
| Establishment of an escrow account which can be spent solely for sediment removal, structural, biological or vegetative replacement, major repair, or construction of the SCM | <input type="checkbox"/> |

*(Check box when completed)*

**GENERAL MDC 12: OPERATION AND MAINTENANCE PLAN**

|   |                          |
|---|--------------------------|
| Specify all operation and maintenance work necessary for the function of all SCM components                 | <input type="checkbox"/> |
| Specify methods to be used to maintain or restore the SCMs to design specifications in the event of failure | <input type="checkbox"/> |
| O&M plan shall be signed by the owner and notarized   | <input type="checkbox"/> |

*(Check box when completed)*

**III. GREEN ROOF MINIMUM DESIGN CRITERIA** *(Revised 3/13/2017)*

**GREEN ROOF MDC 1: MEDIA SPECIFICATION**

|                                  |   |
|----------------------------------|---|
| Percent organic matter by volume | % |
|----------------------------------|---|

*(Must be 5-10% organic matter by volume)*

**GREEN ROOF MDC 2: DESIGN VOLUME**

|                             |                 |
|-----------------------------|-----------------|
| Media depth                 | ft              |
| Plant available water (PAW) | %               |
| Design treatment volume     | ft <sup>3</sup> |
| Required surface area       | ft <sup>2</sup> |

*(either 3 or 4 inches)*

*(typically ranges between 20 to 65 percent)*

*(Equals media depth x PAW)*

*(Required volume divided by media depth)*

**GREEN ROOF MDC 3: MINIMUM MEDIA DEPTH**

|                       |       |
|-----------------------|-------|
| Media depth           | in    |
| Green roof irrigated? | Y / N |

*(4" if roof not irrigated, 3" if irrigated)*

*(If yes, water supply required in plan)*

**GREEN ROOF MDC 4: VEGETATION SPECIFICATION**

|                             |   |
|-----------------------------|---|
| Percent of vegetative cover | % |
|-----------------------------|---|

*(Must be 65% within 2 years)*

**GREEN ROOF MDC 5: SLOPE**

|                                     |       |  |
|-------------------------------------|-------|--|
| Green roof slope/pitch              | %     | <i>(Maximum slope 8 percent)</i>           |
| Slope greater than 8 percent?       | Y / N | <i>(If yes, container system required)</i> |
| IWS and planting surface separation | ft    |  |

**IV. REQUIRED ITEMS CHECKLIST**

The following checklist outlines design requirements. Initial in the space provided to indicate the following design requirements have been met and supporting documentation is attached.

**Applicant's Initials**

- \_\_\_\_\_ a. The maximum organic fraction of the media shall be 10 percent by volume.
- \_\_\_\_\_ b. The design volume for the green roof shall equal the media depth times the plant available water (PAW).
- \_\_\_\_\_ c. The maximum rainfall depth that may be treated by a green roof is 1.5 inches.
- \_\_\_\_\_ d. The media depth is 4 inches and the green roof is not irrigated. Note that if the green roof is irrigated the media depth can be 3 inches. For roofs with 3-inch media depths, an irrigation plan is required in the Operation and Maintenance Plan.
- \_\_\_\_\_ e. The planting plan shall be designed to achieve a 75 percent vegetative cover within two years.
- \_\_\_\_\_ f. The maximum slope of the green roof does not exceed 8 percent. Note that if the slope is greater than 8 percent a container system is required to prevent the loss of media and plants.

**NOTE: Executed Stormwater Facility Operations and Maintenance Permit Agreement and payment of surety are required prior to Stormwater Permit issuance.**