Calculation for Pervious Concrete Storage Capacity

Project Name:_____
Date Submitted:_____
Property Address:_____

MSD Reviewer:_____
WM No._____

Development/Property Name:_____
GMP Number:_____
Design Firm:_____
Design Engineer:_____Telephone:_____Email:_____
KY PE No.:_____

Step A. Site Planning Recommendation

Define goals and primary function of pervious concrete based on the Pervious Concrete Step by Step Design Procedures beginning on page 18.5.10-8 as well as Table 18.5.10-A and Table 18.5.10-B. Refer to these sections as needed throughout the remainder of this calculation sheet.

Step B. Determine the Required Water Quality Volume Rain Event, RE_{WQV} in inches (Refer to Chapter 18.3; A minimum depth of 0.6 inches must be used):

_____ inches

Step C. Calculate the Required Water Quality Volume (WQ_V Required) of water to be removed by pervious concrete:

1. A = Contributing drainage area to pervious concrete: _____ ft^2
2. RE_{WQV} = Required WQ_V Rain Event in inches: _____ inches
3. I = Impervious cover of the contribution drainage area in percent: _____ %
   a. $R_V = 0.05 + 0.009\ (I)$ = _____
4. WQ_V Required = $(A/12)(RE_{WQV})(R_V)$ = _____ ft^3

Step D. Calculate the Provided Water Quality Volume (WQ_V Provided), or storage capacity of pervious concrete:

1. A = Area of pervious concrete: _____ ft^2
2. p1 = porosity of base layer 1 (% void): 40 %
3. d1 = depth of base layer 1: _____ ft
4. WQ_V Provided* = $(A)[(p1/100)(d1)]$ = _____ ft^3

* Note: This formula only applies if the paver surface and sub soil have a 0% slope.

Step E. Determine the Managed Water Quality Volume (MWQ_V)

1. Determine the GMP Management Capacity of the pervious concrete in percent (Refer to Table 18.3-C for percent): _____ %
2. MWQ_V = (1/100)(GMP Management Capacity in percent)(WQV Provided) = _____ ft^3
3. Is all of the WQ_V Required managed or treated (i.e. is MWQ_V greater than or equal to WQ_V Required)? _____

   If No, adjust WQ_V Provided parameters to allow for greater storage capacity and/or proceed to Step F.

   If Yes, proceed to step H.

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Step F. Calculate the Required Remaining Water Quality Volume (RWQ_V)

1. Required $RWQ_V = 2(WQ_V \text{ Required} - MWQ_V) =$ _____ ft^3

Step G. Select Alternate GMPs to Treat RWQ_V. Examples may include:

Check all that apply. Include additional calculation sheets as necessary.

□ Green Wet Basin
□ Green Dry Basin
□ Catch Basin Inserts
□ Proprietary Water Quality Units
□ Other

1. How much additional WQ_V is removed by the Alternate GMPs? _____ ft^3
2. Does the Alternate GMP remove all the Required RWQV? _____
3. If Yes, proceed to step H.
   If No, alter existing GMPs or add new ones to provide adequate storage.

Step H. Complete O&M documentation.

Additional Calculations and Explanation (Required if design deviates from calculation sheet):

_____
_____
_____
_____