Seattle Public Utilities

Procedure

Title: Small Project Standard for On-Site Infiltration—No "Off-Site" Point of Discharge (POD)	Number DWW-202.8	Rev. no. 0
Responsibility: Drainage and Wastewater Division Project Delivery Branch	Supersedes N/A	Pages 3
Division/Deputy Director's Approval: /s/ [Signature on file] Tim Croll (Acting, Drainage & Wastewater) /s/ [Signature on file] Jeff Fowler for Linda De Boldt (Project Delivery)	Effective Date July 15, 2013	

1.   PURPOSE

This procedure clarifies the design standard for on-site infiltration facilities (dry wells) for small projects (less than 5,000 square feet of new plus replaced impervious surface) when there is no available off-site point of discharge.

As noted in Section 4.4 of Volume 3 of the Stormwater Manual: "Because green stormwater infrastructure includes some stormwater management techniques that are relatively new, updates and supplemental information will be posted on SPU green stormwater infrastructure (GSI) website (http://www.seattle.gov/util/greeninfrastructure)." This procedure is considered a supplement to Volume 3.

As permitted in the City Stormwater Code subsection 22.800.040.B, SPU has determined that, based on sound engineering practices, the following procedure provides "substantially equivalent environmental protection" and meets the objectives of "safety, function, environmental protection and facility maintenance" as the facility sizing presented in Sections 4.4 and 4.5 of Volume 3 of the Stormwater Manual.

2.   PROCEDURE

A. Plan Review

On-site infiltration facilities, whether as the solitary point of discharge, or as the overflow from a GSI best management practices (BMP), shall be designed to infiltrate the runoff volume from the area of development for the storm with a four percent annual probability (25-year recurrence interval flow).

B. Dry Well Discrete Sizing Standard

The Discrete Sizing Tables provide the required area for both 4-foot and 6-foot dry wells when constructed downstream from a bioretention cell or a permeable pavement facility, sized to meet the GSI to the Maximum Extent Feasible (MEF) requirement. Contributing areas which fall between these values shall be rounded up to the next nearest 500 square feet increment. The design criteria are provided in section C.

Table 1: Discrete Sizing for Parcel-Based Projects

Contributing Area (sq ft)	Dry Well Area (sq ft)	
Dry Well Sizing Downstream of Bioretention Sized for Non-SFR GSI to MEF Requirement (91% infiltration) or Permeable Pavement Facility		
	Dry Well Depth = 4 ft	Dry Well Depth = 6 ft
500	27	19
1,000	98	67
1,500	164	115
2,000	240	169
2,500	314	222
3,000	390	278
3,500	468	336
4,000	548	396
4,500	630	459
5,000	713	524

Table 2: Discrete Sizing for Single-Family Residential Projects

Contributing Area (sq ft)	Dry Well Area (sq ft)	
Dry Well Sizing Downstream of Bioretention Sized for SFR GSI to MEF Requirement (95% infiltration) or Permeable Pavement Facility		
	Dry Well Depth = 4 ft	Dry Well Depth = 6 ft
500	14	9
1,000	71	49
1,500	130	90
2,000	200	137
2,500	260	184
3,000	326	234
3,500	393	286
4,000	462	341
4,500	532	399
5,000	605	458

Infiltration facilities that do not meet the above design criteria and the assumptions in Section 4 shall be sized to meet the Peak Control Standard per Section 4.5.3.3 of Volume 3 of the Stormwater Manual.

For projects that discharge directly to a dry well (if a bioretention cell or permeable pavement facility are not feasible upstream), the dry well shall be sized to meet the Peak Control Standard per Section 4.5.3.3 of Volume 3 of the Stormwater Manual.

Projects shall include an overflow for all stormwater facilities per Section 4.2.5 of Volume 3 of the Stormwater Manual. This will typically be overtopping of the facility. The Plans shall indicate all flow paths.

C. Assumptions for Dry Well Discrete Sizing Tables

1) General
   - 5-minute computational time-step using the "Seattle 38" 158-year synthetic precipitation series
   - Dry well sized to minimize the 25-year peak flow target to no more than 0.0001 cfs.

2) Bioretention Design/Modeling Representation
   - Ponding = 6 in
   - Native soil infiltration rate = 0.25 in/hr
   - Facility side slopes = 3 (horizontal): 1 (vertical)
   - Bioretention soil thickness = 12 in
   - Porosity = 40%
   - Bioretention soil infiltration rate = 3 in/hr
   - Overflow structure diameter = 12 in

3) Dry well Design/Modeling Representation
   - Depth = 4 ft and 6 ft
   - Porosity = 25%
   - Native soil infiltration rate = 0.25 in/hr
   - Length and width = variable

3. AUTHORITY/REFERENCES

- City Stormwater Manual, Volume 3 (Director's Rule)
- City Stormwater Code, SMC 22.800.040.B, Adjustments