



ENGINEERING AND ENVIRONMENTAL SERVICES

Stormwater Division

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PERMEABLE PAVEMENT 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: _____

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 ³	<i>(Minimum calculation of entire drainage area)</i>

GENERAL MDC 2: CONTAMINATED SOILS

Contaminated soils within footprint?	Y / N	<i>(Brownfield location?)</i>
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GENERAL MDC 3: SIDE SLOPES

Maximum vegetated side slopes	: 1	<i>(Maximum 3:1 vegetated slopes)</i>
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GENERAL MDC 4: EROSION PROTECTION

10 year storm outlet discharge	cfs	<i>(Must be non-erosive)</i>
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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:
(a) The specific location of the SCM on the lot
(b) A typical detail for the SCM to be used
(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. PERMEABLE PAVEMENT MINIMUM DESIGN CRITERIA *(Revised 4/6/2017)*

PERMEABLE PAVEMENT MDC 1: SOIL INVESTIGATION

Infiltration system elevation	ft
Infiltration surface area	SF

(Site-specific soil investigation performed to establish hydraulic properties and soil characteristics within proposed footprint)

PERMEABLE PAVEMENT MDC 2: SHWT REQUIREMENTS

SHWT elevation	ft
Elevation of subgrade surface	ft

*(Determined through soil tests)
(Minimum 2 feet for pavement above SHWT)*

PERMEABLE PAVEMENT MDC 3: SITING

Permeable pavement shall not be installed in areas where toxic pollutants are stored or handled.

PERMEABLE PAVEMENT MDC 4: SOIL SUBGRADE SLOPE

Slope of surface of soil subgrade?	%
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(Slope must be less than or equal to 2%)

PERMEABLE PAVEMENT MDC 5: STONE BASE

Washed aggregate base materials shall be used and have 2% or less passing the ASTM No 200 sieve.

(Must be onsite when delivered to ensure aggregate has been washed)

PERMEABLE PAVEMENT MDC 6: PAVEMENT SURFACE

Infiltration rate	in/hr
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(Minimum of 50 in/hr with head less than or equal to 4 inches)

PERMEABLE PAVEMENT MDC 7: RUNOFF FROM ADJACENT AREAS

Runoff to the permeable pavement from adjacent areas shall meet these requirements:

- (a) The maximum ratio of additional built-upon area that may drain to permeable pavement is 1:1. Screened rooftop runoff shall not be subject to the 1:1 loading limitation.
- (b) Runoff from adjacent pervious areas shall be prevented from reaching the permeable pavement except for incidental, unavoidable runoff from stable vegetated areas

PERMEABLE PAVEMENT MDC 8: DRAWDOWN TIME

Drawdown time of design volume	hrs
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(72 hours/3 days or less required)

PERMEABLE PAVEMENT MDC 9: OBSERVATION WELL

Minimum of one observation well placed at the low point of the system is required. If subgrade is terraced, there will be one observation well for each terrace. Wells shall be capped.

(4-6 inch perforated PVC pipe)

PERMEABLE PAVEMENT MDC 10: DETENTION SYSTEMS

Designed stormwater detainment period	days
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(2-5 days required)

PERMEABLE PAVEMENT MDC 11: EDGE RESTRAINTS

Edge restraints shall be installed around the perimeter of permeable interlocking concrete pavers (PICP) and grid pavers.

PERMEABLE PAVEMENT MDC 12: GRADE WHEN DRY

Soil subgrade for infiltrating permeable pavement shall be graded when there is no precipitation.

PERMEABLE PAVEMENT MDC 13: INSPECTION AND CERTIFICATIONS

After installation, permeable pavement shall be protected from sediment deposition until site is complete and stable.

In-situ infiltration permeability test shall be conducted and certified on pavement after site stabilization.

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. Site-specific soil investigation has been completed as specified.
- _____ b. The bottom elevation of infiltration subgrade surface is a minimum of 2 feet above the SHWT. Separation may be reduced to no less than one foot if applicant provides hydrogeologic evaluation showing the water table will subside to its pre-storm elevation within 5 days or less.
- _____ c. Permeable pavement shall not be where toxic pollutants are stored or handled.
- _____ d. The soil subgrade surface shall have a slope of less than or equal to two percent.
- _____ e. A washed aggregate base material shall be used and have 2 percent or less passing the ASTM No. 200 sieve. **The only way to be certain the aggregate has been washed is to be present on the site when it is delivered.**
- _____ f. The proposed pavement surface shall have a demonstrated infiltration rate of at least 50 inches per hour using a head less than or equal to 4 inches.
- _____ g. Runoff from adjacent pervious areas shall be prevented from reaching the permeable pavement except for incidental, unavoidable runoff from stable vegetated areas.
- _____ h. The maximum ratio of additional built-upon area that may drain to permeable pavement is 1:1. Screened rooftop runoff shall not be subject to the 1:1 loading limitation.
- _____ i. Infiltrating permeable pavement systems shall be designed to dewater the design volume to the bottom of the subgrade surface within 72 hours.
- _____ j. Permeable pavement shall have a minimum of one observation well placed at a low point in the system. Wells shall be capped.
- _____ k. Pavement systems may be designed to detain stormwater for a period of 2 to 5 days.

- _____ l. Edge restraints shall be installed around perimeter of permeable interlocking concrete pavers (PICP) and grid pavers.
- _____ m. Soil subgrade for infiltrating permeable pavement shall be graded when there is no precipitation.
- _____ n. After installation, permeable pavement shall be protected from sediment deposition until the site is completed and stabilized. In-situ permeability test should be completed and certified after site stabilization.
- _____ o. A plan view of the permeable pavement system is provided with dimensions and spot elevations shown.

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