

BUD2016-00431

RESUBMITTAL

SEP 12 2016

San Mateo County  
Building Inspection

# STORMWATER CONTROL PLAN

## SERENITY HOUSE

San Mateo, San Mateo County, California

JOB COPY  
TO REMAIN ON  
SITE AT ALL TIMES

September 9, 2016

APPROVED PLAN  
BY SEP 30 2016  
SAN MATEO COUNTY BUILDING  
INSPECTION DIVISION

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## I. PROJECT SETTING

### **Project Description**

The project consists of remodeling of a health facility and reconfiguration of the parking lot at the San Mateo County Hospital located in San Mateo, San Mateo County, California. The 18.7 acre hospital is located between 37<sup>th</sup> Avenue and 39<sup>th</sup> Avenue in the north/south directions and between Edison Street and Hacienda Street in the east/west direction. The project site is located at the northwest corner of the property at 3701 Hacienda Street.

The disturbed area of the site is approximately 35,209 sf and the site is 43% impervious. Existing roofs of the existing two buildings will remain. Parking lot will be reconfigured to provide additional parking stalls for Serenity House. Some new surface parking stalls will be provided at the east side of the site for the hospital. Portion of the existing parking lot at the south side of the site will be re-graded for the ADA parking stall at the Serenity House main entrance. Potential pollutants that may be present at the site after development include oils, fuels, and dust.

The project is designed to comply with the C.3 requirements from the San Francisco Bay Municipal Regional Permit, San Mateo Countywide Water Pollution Prevention Program (SMCWPPP) and the San Mateo County C.3 Stormwater Technical Guidance, Version 4.1.

### **Existing Site Conditions**

Figure 1 shows the existing site plan and project areas. The existing topography of the project site generally slopes from southwest to northeast with an average slope of 8.3% and sheet flows to 37<sup>th</sup> Avenue. No existing underground drainage system within the project limits.

### **Proposed Site Conditions**

Figure 2 shows the proposed site. The proposed site is 51% impervious. Existing two buildings are to remain. Majority of the remodeling work will be inside the buildings. The new courtyard will be sloped toward the east and drain to a bioretention swale and a bioretention pond. New parking lot serving Serenity House will drain to two bioretention ponds at the east side and north east side of the site. New parking stalls at the east side of the site serving the hospital will drain northerly to a bioretention modular structure. Due to existing topography, re-graded parking area at south side of the site and portion of parking lot at east side of the site will follow existing drainage pattern flowing to the northeast and will not be captured and treated by the project.

Figure 3 shows the proposed stormwater treatment areas and the drainage areas tributary to them. There are four proposed treatment areas, which include one bioretention swale, two bioretention ponds, and one bioretention modular structure.

## II. MEASURES TO LIMIT IMPERVIOUSNESS

The following design approaches have been made in the development of the site plan to help reduce impervious areas.

- Limited paved area within the courtyard area.
- Runoff from the new parking lot pavement and concrete sidewalks is directed to bioretention areas.

## III. SELECTION AND DESIGN OF BMPs

Figure 3 shows the proposed stormwater treatment plan for the site and the proposed BMP for each drainage area. All BMP's are designed to comply with the San Mateo County C.3 Stormwater Technical Guidance criteria and sized using combination flow and volume methods.

### Bioretention Areas

Runoff from the concrete walkways and new pavement will be treated by bioretention areas around the buildings. Runoff from the concrete walkways and pavement will sheet flow into the planters. Curb openings are provided in the parking lot to allow runoff to enter. The flows will percolate through vegetation and a permeable planting soil mix before entering a layer of drain rock. Within the drain rock is a subdrain system that will convey the treated water to the underground storm drain system. Each planter will also have an inlet with the grate approximately 6-inches higher than the soil. This will allow runoff from low intensity storms to pond and percolate. Runoff from higher intensity storms will pond and then over top the inlet grate and flow into the storm drain system.

Three of the four bioretention areas are sized to be at least 4% of the surface areas draining to them. One bioretention area that is less than 4% of the corresponding drainage areas is sized using the Flow and Volume method per Chapter 5 of the C.3 Stormwater Technical Guidance. Table A presents the sizing calculations.

Each bioretention is equipped with at least one overflow drain (with inlet a minimum of 6" higher than adjacent soil) to convey flows to the storm drain system when the planter soil has become saturated.

#### IV. SOURCE CONTROL MEASURES

Potential Source	Permanent BMP's	Operational BMP's
Landscape/outdoor pesticide use	<ul style="list-style-type: none"> <li>▪ Landscaping will be designed to minimize required irrigation and runoff and to minimize the use of fertilizers and pesticides that can contribute to stormwater pollution.</li> <li>▪ Plantings for bioretention areas will be selected to anticipate soil and moisture conditions.</li> <li>▪ Where possible, pest-resistant plants will be selected, especially for locations adjacent to hardscaped areas.</li> <li>▪ Plants will be selected appropriate to site soils, air movement, ecological consistency, and plant interactions.</li> </ul>	All landscaping and bioretention areas shall be maintained by the Owner.
Vehicle and Equipment Cleaning	<ul style="list-style-type: none"> <li>▪ All paved areas drain to swales or landscaped areas.</li> </ul>	No onsite vehicle or equipment washing will be provided.
Vehicle Maintenance	<ul style="list-style-type: none"> <li>▪ No vehicle maintenance or repairs will be permitted on-site.</li> </ul>	No vehicle maintenance or repairs will be permitted on-site.

#### V. PERMITTING AND CODE COMPLIANCE ISSUES

There are no other known conflicts between the proposed stormwater control plan and the County ordinances or policies. Any conflicts that are found will be resolved through the design review process or during subsequent permitting.

#### VI. BMP MAINTENANCE REQUIREMENTS

##### Means to Finance and Implement BMP Maintenance

All stormwater treatment facilities in this plan will be maintained by the Owner, County of San Mateo. All stormwater treatment measures shall be adequately maintained for the life of the project.

##### Summary of Maintenance Requirements

Bioretention areas remove pollutants primarily by filtering runoff slowly through an active layer of soil. Routine maintenance is needed to insure that flow is unobstructed, storm drainage inlets are clear, erosion is prevented, and that soils are held together by plant roots and are biologically active. Typical routine maintenance consists of the following:

1. Inspect inlets, curb drains, bioretention soils, or other evidence of erosion. Clear any obstructions and remove any accumulation of sediment. Examine rock or other material used as a splash pad and replenish as necessary.
2. Inspect curb openings for erosion and obstructions.
3. Confirm that channelization within the planters does not occur.
4. Examine the vegetation to insure that it is healthy and dense enough to provide filtering and to protect soils from erosion. Replenish mulch as necessary, remove fallen leaves and debris and prune large shrubs. Confirm that irrigation is adequate and not excessive. Replace dead plants and remove invasive vegetation as needed.
5. Abate any potential vectors by filling in the ground around the swale and by insuring that there are no areas where water stands longer than 48 hours following a storm. If mosquito larvae are present and persistent, contact the County Vector Control District for information and advice. Mosquito larvicides should be applied only when absolutely necessary and then only by a licensed individual or contractor.

### **Inspection/Maintenance Responsibility for Source Control and Treatment Control BMP's**

The following is the maintenance mechanism for all structural source control and treatment control BMP's.

1. Trash enclosure drain shall be inspected and cleaned every 3 months for debris.
2. At a minimum, all storm drainage inlets shall be inspected for debris twice a year, with one inspection yearly on October 1st. Each outlet shall be inspected after every major storm event to ensure it is clear.
3. Planters shall be inspected for plant and landscape health. Check for removable amounts of retained silt. Check for aeration of landscaped and swale soils.

### **Operations and Maintenance**

1. A Stormwater Treatment Measures Maintenance Agreement will be recorded with San Mateo County prior to issuance of a Certificate of Occupancy.

## **VII. CERTIFICATION**

The selection, sizing, and design of treatment BMPs and other control measures in this plan meet the requirements of Regional Water Quality Control Board Order R2-2009-0074.



**FIGURES  
AND  
ATTACHMENTS**

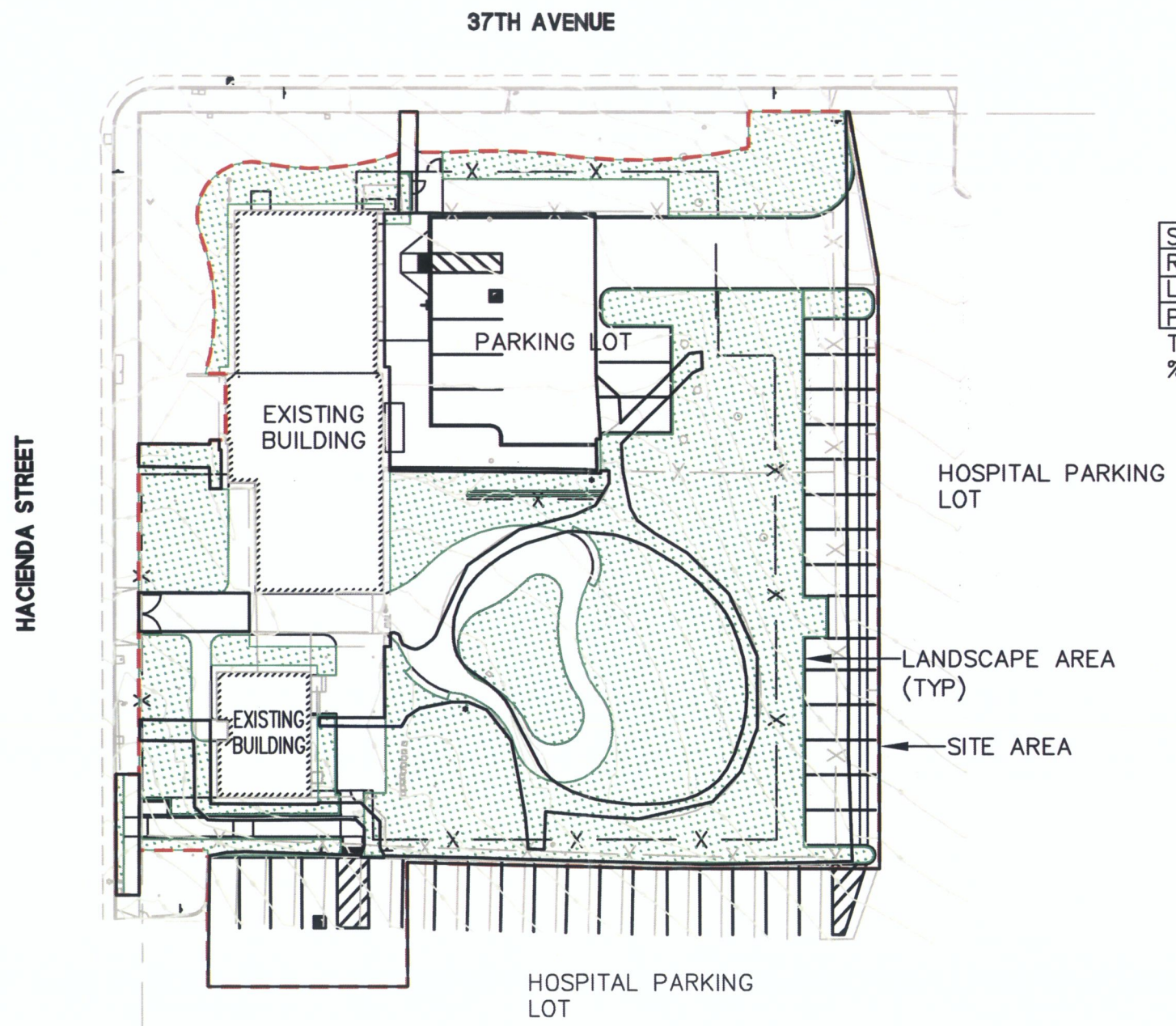




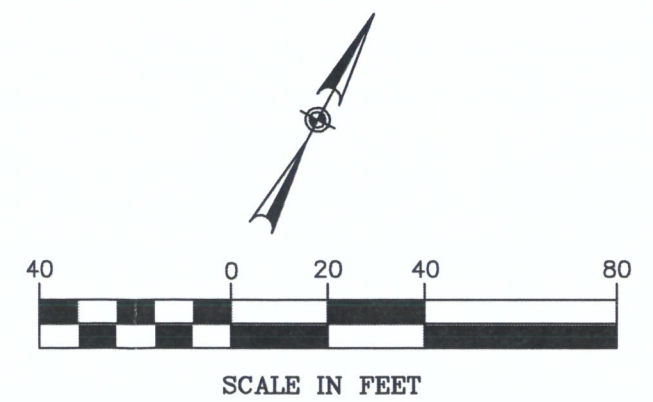


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SURFACE TYPE	AREA (SF)
ROOF	4,499
LANDSCAPE	17,145
PAVEMENT/CONCRETE	13,565
TOTAL	35,209
% IMPERVIOUS	51%



SCALE IN FEET

**STORM WATER CONTROL LEGEND**

- WATERSHED BOUNDARY
- BMP STRUCTURE BOUNDARY
- 6" SUBDRAIN (PERFORATED PVC) WITH CLEANOUT
- PROPOSED FLOW ARROW
- SUBDRAIN CLEANOUT
- BIO-RETENTION AREA
- SELF-TREATING AREA
- BIO-MODULAR AREA
- BMP LOCATION
- SELF-TREATING AREA

**BMP TABLE**

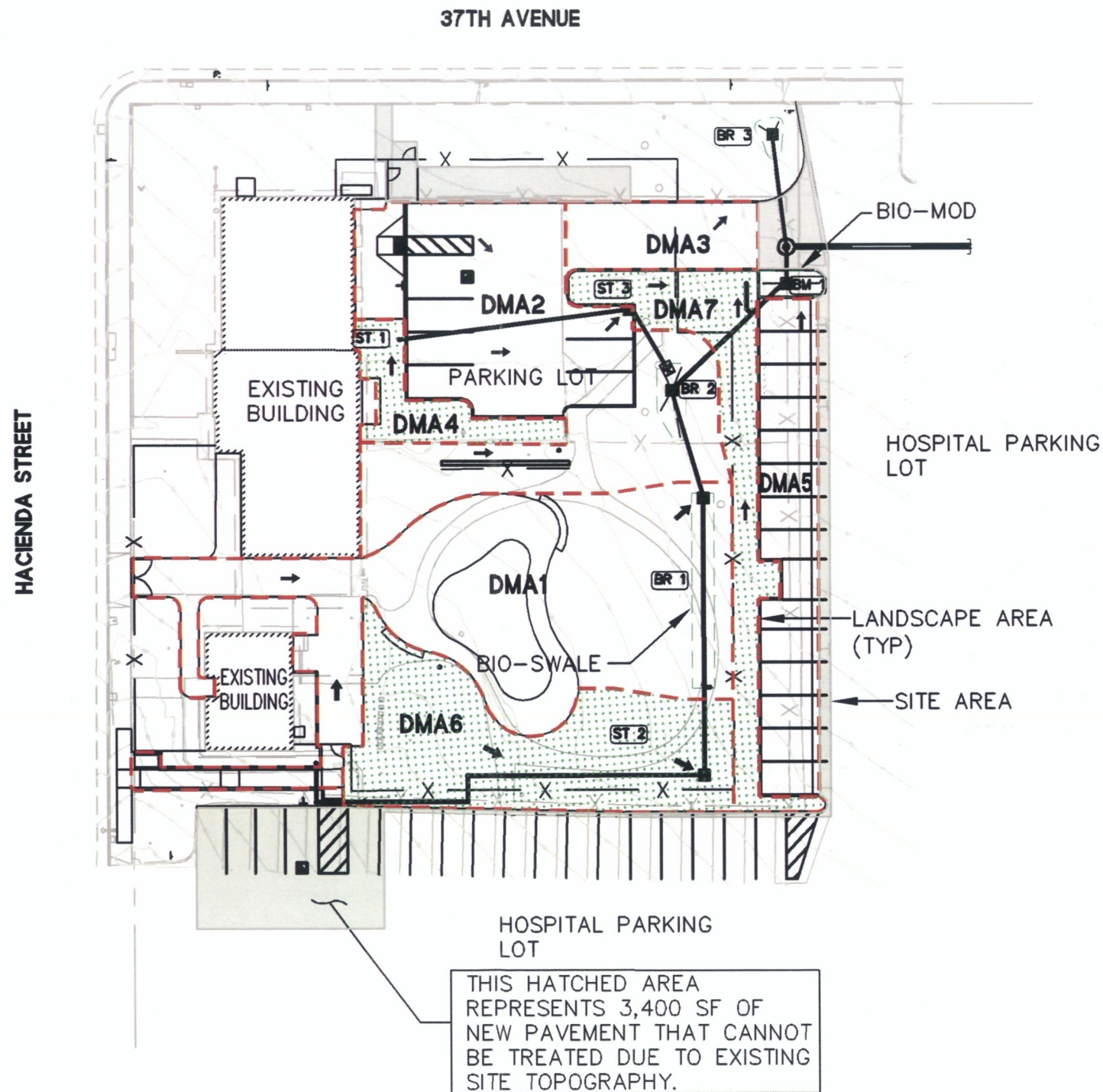
DMA	DMA AREA (SF)	IMPERVIOUS AREA (SF)	PERVIOUS AREA (SF)	BMP	BMP AREA (SF)	%*
DMA1	6,952	4,278	2,674	BR 1	318	7.43
DMA2	5,827	3,405	2,422	BR 2	119**	3.49
DMA3	968	968	0	BR 3	63	6.51
DMA4	752	0	752	ST 1	-	-
DMA5	2,175	2,175	0	BM 1	199	9.15
DMA6	3,453	0	3,453	ST 2	-	-
DMA7	1,920	0	1,920	ST 3	-	-
<b>TOTAL</b>		<b>10,826</b>			<b>699</b>	

**ABBREVIATIONS**

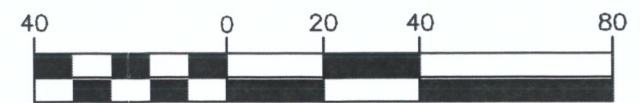
SYMBOL	DESCRIPTION
BIO-MOD	BIO-MODULAR STRUCTURE
BM	BIO-MODULAR AREA
BMP	BEST MANAGEMENT PRACTICE
BR	BIO-RETENTION AREA
DMA	DRAINAGE MANAGEMENT AREA
ST	SELF-TREATING AREA

\* THE REQUIRED TREATMENT AREA IS 4% OF THE IMPERVIOUS AREA DRAINING TO IT.

\*\* THESE BIORETENTION AREA HAS BEEN SIZED USING THE FLOW AND VOLUME SIZING APPROACH PER CHAPTER 5 OF THE SAN MATEO COUNTY C.3 HANDBOOK, VERSION 4.1. REFER TO STORMWATER CONTROL PLAN FOR SIZING CALCULATIONS.



THIS HATCHED AREA REPRESENTS 3,400 SF OF NEW PAVEMENT THAT CANNOT BE TREATED DUE TO EXISTING SITE TOPOGRAPHY.



SCALE IN FEET



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Drawing Number	<b>FIG 3</b>		
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**SERENITY HOUSE, SAN MATEO**  
**TABLE A - BIORETENTION SIZING CALCULATIONS**  
 Combination Flow and Volume Sizing Approach (Refer to Chapter 5, Section 5.1 of SMC C.3 Guidebook, Version 4.1)

**Table 5-2 Unit Basin Storage Volumes (SMC C.3 Guidebook)**

San Mateo falls under Criteria Region 6 per Appendix C			
25%	50%	75%	100%
0.21	0.43	0.64	0.85

**Rainfall Intensity fo Flow Based Sizing Criteria**

Intensity	0.2	in/hr
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**Drainage Areas**

Surface Type	C Factor	DMA2
Roof	0.90	0
Landscape	0.10	2,422
Concrete	0.80	414
Pavers	0.10	0
Asphalt	0.70	2,991
<b>TOTAL</b>		<b>5,827</b>
<b>Cw</b>		<b>0.46</b>

Unit Basin Storage Volume Value	0.69	in
Required Capture Volume	335	ft <sup>3</sup>
Duration of Rain Event	3.5	hr
Prelim Estimate of Surface Area	233	sf
Assumed Bioretention Area	175	sf
Vol of Filtered Runoff	251	ft <sup>3</sup>
Vol Remaining after Infiltration	84	ft <sup>3</sup>
Avg Ponding Depth	5.8	in
<b>Bioretention Area Provided</b>	<b>980</b>	<b>sf</b>
Vol of Filtered Runoff	1,409	ft <sup>3</sup>
Vol Remaining after Infiltration <sup>1</sup>	-1,074	ft <sup>3</sup>
<b>Actual Ponding Depth</b>	<b>0.0</b>	<b>in</b>

1. A negative value indicates the surface area of the bioretention planter is large enough that ponding will not occur.