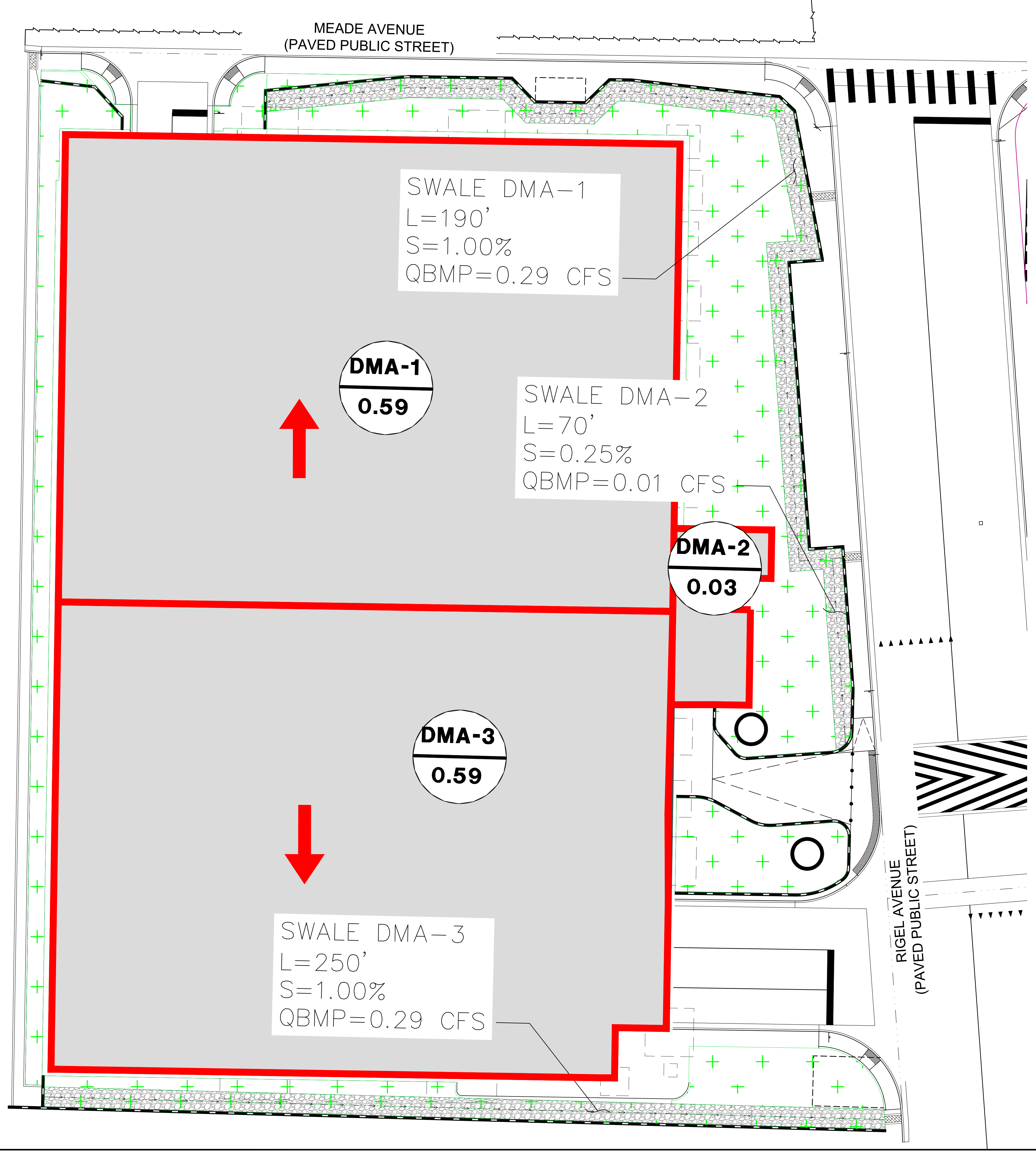


Appendix C – Parking Lot LID Calculations

- LID Parking Lot Map & Calculations

Plotted By: Edinboro, Juliana - Sheet: KHA - Layout: KHA - August 13, 2024 - 05:02:16pm - K:\AV-Civil\092865012 - Area 15 District 2 (Fisher Brothers)\Reports\DRAINAGE\06_UP2_01_TDS\Figures\CAD\LID_UP2.dwg
 This document, together with the concepts and designs presented herein, is intended only for the specific purpose and client for which it was prepared. Reuse of and improper reliance on this document without written authorization and adaptation by Kimley-Horn and Associates, Inc. shall be without liability to Kimley-Horn and Associates, Inc.



LEGEND

- DRAINAGE MANAGEMENT AREA
- ON-SITE FLOW ARROW
- TREATED IMPERVIOUS AREA
- LANDSCAPE AREA
- BUILDING AREA

PARKING LOT DATA CALCULATIONS
 Note: Stormwater Quality Design Volume calculated using steps from Section 1500 Figures 1501-1503 of the CCRFCD HCDMM, Revised 2013

GIVEN:		Area 15 District 2	
Project Description:		Acreage	
Parking Lot Data		=	1.79
Property Size (PS)		=	0.00
Building Area (BA)		=	0.50
Total Hardscape/ Landscape Area (TPA)		=	1.29
Parking Lot Area (PLA) = (PLA = PS-BA-TPA)		=	0.97
Minimum PLA to be treated = (PLA * 0.75)		=	
Area to be treated by the proposed LID BMPs			
Drainage Area DMA-1		=	0.59
Drainage Area DMA-2		=	0.03
Drainage Area DMA-3		=	0.59
Total		=	1.21
Since 1.21 ac >= 0.97 ac then site satisfies Parking Lot LID criteria			

LID	AREA 15 DISTRICT 2	LID BASIN MAP	PREPARED FOR NEW VEGAS HOLDING COMPANY, LLC	NEVADA	DATE	BY
					REVISIONS	No.
			© 2024 KIMLEY-HORN AND ASSOCIATES, INC. 6671 LAS VEGAS BOULEVARD S., SUITE 300, LAS VEGAS, NV 89119 PHONE: 702-862-3600 WWW.KIMLEY-HORN.COM			
KHA PROJECT: 092865011 DATE: 05/17/2023 SCALE: AS SHOWN DESIGNED BY: TEA DRAWN BY: SS CHECKED BY: RD		05/17/2023				

PROJECT NAME: Area 15 District 2
 CALC'D BY: SS CHECKED BY: RRD
 DATE: 8/13/24 KH No. 91965012

PARKING LOT DATA CALCULATIONS

Note: Stormwater Quality Design Volume calculated using steps from Section 1500 Figures 1501-1503 of the CCRFCD HCDDM, Revised 2013

GIVEN:

Project Description:	Area 15 District 2		
Parking Lot Data			Acreage
Property Size (PS)	=	1.79	
Building Area (BA)	=	0.00	
Total Hardscape/ Landscape Area (TPA)	=	0.50	
Parking Lot Area (PLA) = (PS-BA-TPA)	=	1.29	
Minimum PLA to be treated = (PLA * 0.75)	=	0.97	acres
Area to be treated by the proposed LID BMPs			
Drainage Area DMA-1	=	0.59	
Drainage Area DMA-2	=	0.03	
Drainage Area DMA-3	=	0.59	
Total	=	<u>1.21</u>	acres

Since 1.21 ac >= 0.97 ac then site satisfies Parking Lot LID criteria

PROJECT NAME: Area 15 District 2
 CALC'D BY: SS CHECKED BY: RRD
 DATE: 8/13/24 KH No. 91965012

PARKING LOT LID CALCULATIONS - Peak QBMP FOR DRAINAGE AREA "1"

Note: Stormwater Quality Design Volume calculated using steps from Section 1502.3 of the CCRFCD HCDDM, Revised 2013

GIVEN:

Project Description: Area Event Parking Lot
 Drainage Area = 0.59 acres
 Avg % Impervious = 98 %
 0.7794

Determine BMP Design Precipitation - 85th Percentile Rainfall Depth 1.11485537

Is site located within McCarran Airport Rainfall Area? (Yes/No?) **YES**

If yes, use Table 505 to obtain 2-year 6-hour rainfall depth; this is your **D2**

If no, use Figure 501 to obtain 2-year 6-hour rainfall depth; this is your **D2**

D2 = 0.72

Compute ratio of D2 of site to D2 for the McCarran Area

D2_{site}/D2_{McCarran} = 1.00

Compute 85th Percentile Rainfall depth **D₈₅** using following equation

0.32

Calculate BMP Design Peak Discharge, **QBMP**

Page 1 of 2 Use the following regression equation to calculate the unit discharge (**Qp/A**) for the 90 percent average percent impervious area condition based on **D₈₅** value

$$Y = 1.5042X - 0.0066$$

where, **Y** = Average **Qp/A** in cfs/ac

X = **D₈₅** in inches

Qp/A = 0.47 cfs/ac

Adjust the **Qp/A** for site based on actual percent impervious using the following regression equation

$$Y = 0.0059X + 0.4688$$

where, **Y** = Ratio **Qp/A** to 90% Impervious Value (unitless)

X = Percent Impervious

Y = 1.05

Qp/A (adjusted) = 0.50 cfs/ac

QBMP = **Qp/A (adjusted) * Area**

= **0.29 cfs**

PROJECT NAME: Area 15 District 2
 CALC'D BY: SS CHECKED BY: RRD
 DATE: 8/13/24 KH No. 91965012

PARKING LOT LID CALCULATIONS - Peak QBMP FOR DRAINAGE AREA "2"

Note: Stormwater Quality Design Volume calculated using steps from Section 1502.3 of the CCRFCD HCDDM, Revised 2013

GIVEN:

Project Description: Area Event Parking Lot
 Drainage Area = 0.03 acres
 Avg % Impervious = 98 %
 0.7794

Determine BMP Design Precipitation - 85th Percentile Rainfall Depth 1.11485537

Is site located within McCarran Airport Rainfall Area? (Yes/No?) **YES**

If yes, use Table 505 to obtain 2-year 6-hour rainfall depth; this is your **D2**

If no, use Figure 501 to obtain 2-year 6-hour rainfall depth; this is your **D2**

D2 = 0.72

Compute ratio of D2 of site to D2 for the McCarran Area

D2_{site}/D2_{McCarran} = 1.00

Compute 85th Percentile Rainfall depth **D₈₅** using following equation

0.32

Calculate BMP Design Peak Discharge, **QBMP**

Page 1 of 2 Use the following regression equation to calculate the unit discharge (**Qp/A**) for the 90 percent average percent impervious area condition based on **D₈₅** value

$$Y = 1.5042X - 0.0066$$

where, **Y** = Average **Qp/A** in cfs/ac

X = **D₈₅** in inches

$$\mathbf{Qp/A} = 0.47 \text{ cfs/ac}$$

Adjust the **Qp/A** for site based on actual percent impervious using the following regression equation

$$Y = 0.0059X + 0.4688$$

where, **Y** = Ratio **Qp/A** to 90% Impervious Value (unitless)

X = Percent Impervious

$$Y = 1.05$$

Qp/A (adjusted) = 0.50 cfs/ac

QBMP = **Qp/A (adjusted) * Area**

$$= 0.01 \text{ cfs}$$

PROJECT NAME: Area 15 District 2
 CALC'D BY: SS CHECKED BY: RRD
 DATE: 8/13/24 KH No. 91965012

PARKING LOT LID CALCULATIONS - Peak QBMP FOR DRAINAGE AREA "3"

Note: Stormwater Quality Design Volume calculated using steps from Section 1502.3 of the CCRFCD HCDDM, Revised 2013

GIVEN:

Project Description: Area Event Parking Lot
 Drainage Area = 0.59 acres
 Avg % Impervious = 98 %
 0.7794

Determine BMP Design Precipitation - 85th Percentile Rainfall Depth 1.11485537

Is site located within McCarran Airport Rainfall Area? (Yes/No?) **YES**

If yes, use Table 505 to obtain 2-year 6-hour rainfall depth; this is your **D2**

If no, use Figure 501 to obtain 2-year 6-hour rainfall depth; this is your **D2**

D2 = 0.72

Compute ratio of D2 of site to D2 for the McCarran Area

D2_{site}/D2_{McCarran} = 1.00

Compute 85th Percentile Rainfall depth **D₈₅** using following equation

0.32

Calculate BMP Design Peak Discharge, **QBMP**

Page 1 of 2 Use the following regression equation to calculate the unit discharge (**Qp/A**) for the 90 percent average percent impervious area condition based on **D₈₅** value

$$Y = 1.5042X - 0.0066$$

where, **Y** = Average **Qp/A** in cfs/ac

X = **D₈₅** in inches

Qp/A = 0.47 cfs/ac

Adjust the **Qp/A** for site based on actual percent impervious using the following regression equation

$$Y = 0.0059X + 0.4688$$

where, **Y** = Ratio **Qp/A** to 90% Impervious Value (unitless)

X = Percent Impervious

Y = 1.05

Qp/A (adjusted) = 0.50 cfs/ac

QBMP = **Qp/A (adjusted) * Area**

= **0.29 cfs**