STORM WATER POLLUTION PREVENTION AND MANAGEMENT PLAN FOR SUBARU BUILDING DAHL AUTOMOTIVE

LA CROSSE, WISCONSIN

SEPTEMBER 2016

*** THIS REPORT IS A PART OF THE CONSTRUCTION DOCUMENTS ***
TEMPORARY CONSTRUCTION PRACTICES AND FINAL SOIL STABILIZATION ARE PROVIDED IN THE SPECIFICATIONS AND SHALL BE IMPLEMENTED AND A COPY KEPT ON-SITE DURING ALL LAND-DISTURBING CONSTRUCTION ACTIVITIES.

DAVY ENGINEERING CO.
CONSULTING ENGINEERS
LA CROSSE, WISCONSIN
PROJECT NO. 8214-003.020
SEPTEMBER 21, 2016

STORM WATER POLLUTION PREVENTION AND MANAGEMENT PLAN
FOR
SUBARU BUILDING
DAHL AUTOMOTIVE

LA CROSSE, WISCONSIN

SEPTEMBER 2016

OWNER:
DAHL AUTOMOTIVE
230 FRONT STREET NORTH, SUITE 401
LA CROSSE, WISCONSIN 54601

SWPPP CONSTRUCTION PHASE CONTACT(S)
[Below shall to be filled out by the Contractors once selected. Provide Name, address, phone, and email]

	Prime Contractor:	Grading Contractor:	Restoration Contractor:
Name: Phone: Email: Address:	Pat Ries, Wieser Brothers 507-895-8903 patr@wieserbrothers.com 20 Twilite Street La Crescent, MN 55967		

TABLE OF CONTENTS
STORM WATER POLLUTION PREVENTION AND MANAGEMENT PLAN
SUBARU BUILDING DAHL AUTOMOTIVE
LA CROSSE, WISCONSIN

FIGURE

APPENDIX

Figures and Appendix documents are available upon request.

STORM WATER POLLUTION PREVENTION PLAN AND MANAGEMENT PLAN
SUBARU BUILDING DAHL AUTOMOTIVE
LA CROSSE, WISCONSIN

1.0 INTRODUCTION

The purpose of this plan is to aid the Owners in understanding, operating and maintaining the on-site storm water management facilities and to aid the Contractor with preventing water pollution during construction. In addition, it provides information for the City of La Crosse and Wisconsin Department of Natural Resources (DNR) to review the permit concerning post-construction storm water practices and erosion control practices.

Schedule: The work is scheduled for late 2016 and 2017. Foundation and utilities will be built in November and December of 2016. The storm sewer can be connected to various inlets and also to the proposed 60 inch storm sewer by the City. The City proposes the installation of this storm sewer in late or early March 2017. Connection will be done by the City during this installation. The project is planned to be completed in July of 2017.

Location: Block 12 of Stoddard & Levi Addition in Section 6, Township 15 North, Range 7 West, City of La Crosse, La Crosse County, Wisconsin.

2.0 MAINTENANCE PLAN DURING CONSTRUCTION

See Section 2.8, Erosion and Sedimentation Control, and Section 10.2.1, Special Provisions, of the specifications. Also refer to the erosion control notes in said Section 10.2.1.2.

3.0 PURPOSE AND GENERAL DESCRIPTION OF THE FACILITIES

The proposed development is a replacement of the existing Subaru Dealership with a new larger separate building. The development is considered a redevelopment for storm water regulations. The purpose of the proposed storm water management facilities is to improve non-point water quality by reducing suspended solids discharges from the site. The redevelopment will also reduce peak discharge for the 1-year and 2-year runoff and where possible infiltrate storm water into the ground. This site is a redevelopment so peak discharge requirements and infiltration requirements are not required by the regulatory agencies, City of La Crosse and DNR.

The site is to be disturbed to demolish an existing building, remove a parking lot, and to construct a separate Subaru building with associated parking for customers and for vehicle display. See the Storm Water Management Plan section of this document for more information.

4.0 DESCRIPTION, OPERATION, AND MAINTENANCE SCHEDULE OF FACILITY COMPONENTS

The Storm Water Maintenance Agreement will have the information for this section. The maintenance agreement will be finalized before a certificate of occupancy is issued by the City.

5.0 STORM WATER MANAGEMENT PLAN POST-CONSTRUCTION

5.1 INTRODUCTION

This section of the report contains the hydrologic and hydraulic analyses performed for the commercial development of approximately 133,000 square feet (3.1 acres) disturbed area. This site is subject to DNR Chapter NR 151.121 and Section 115-555 of the La Crosse City Code of Ordinance concerning storm water runoff and treatment. Said section 115-555 refers to Chapter 29 of the La Crosse Code.

The objectives of this plan is to provide the following.

1. Analyze the 100-year critical duration and design the overflow to safely pass this discharge.
2. Analyze and design the storm water quality measures for removing at least 60% of Total Suspended Solids (TSS) from the post-development site for the parking compared to no controls. This is more restrictive than NR 151.122 that requires 40% of the load from parking areas and road.

Infiltrate is not required for this redevelopment. Redevelopments are exempt from infiltration (151.124 (3)3.(b) Exemptions that states, "3. Except as provided under s. NR 151.121 (5), redevelopment post–construction sites." The City exemption is in 26.06(5)(d)2 of the La Crosse County Code. Peak runoff control is not required for the redevelopment per NR 151.12 (2)(c) and 151.12 (5)(b)2.b. and according to 29.06(2)(b) of the La Crosse County Code.

The rainfall distribution used is from Wisconsin DNR and used for floodplain modeling. It is accepted by Federal Emergency Management Administration (FEMA). The rainfall intensity is from the Point Precipitation Frequency Estimates with 90% confidence intervals and supplementary information, NOAA Atlas 14, Volume 8, Version 2 (http://hdsc.nws.noaa.gov/hdsc/pfds/pfds_map_cont.html?bkmrk=wi). The rational method was also used to size storm sewer along with the runoff rate required in the Wisconsin Department of Safety and Professional Services (DSPS).

5.2 EXISTING PRE-DEVELOPMENT CONDITIONS

The site is on the east side of the Mississippi River and is drained by municipal storm sewer. The site is flat with less than three feet of elevation drop from the northeast corner to the southwest corner and generally drains to the southwest. There is storm sewer on the north side and west side of the site. The City has storm sewer inlets at all intersections.

No wetlands or designated waters were found with search of the DNR data viewer. The soils in the area are classified by the Natural Resources Conservation Service (NRCS). The NRCS soil map is in Appendix A. The site contains one soil called "urban land, valleys trains". This soil does not have a hydrologic soil group classification. However, excavations in the area show that the subsoils are sandy to fine sand.

A topographic survey shows the existing conditions. Existing conditions are shown on the demolition sheet and grading sheet. Figure 1 shows the pre-developed drainage conditions.

The site land cover is a commercial building, graveled areas where buildings have been demolished over the past few years, pavement, and five landscaped islands. The existing area is used for display of cars. No existing, pre-development, hydrologic modeling were required or necessary because this site is a redevelopment.

5.3 PROPOSED DEVELOPED CONDITIONS

The proposed site will drain southerly to match existing conditions. The proposed elevations are shown on the grading sheet and the proposed storm sewer on the utility sheet of the construction plans.

Two models were created, one for hydrology and one storm water quality. See Appendix B for the post-construction hydrologic analyses. The drainage attributes of the develop area is show on Figure 2. The rational method was also used to size storm sewer along with the runoff rate required in the Wisconsin Department of Safety and Professional Services (DSPS)

The storm water quality is modeled using WinSLAMM and Appendix C contains the detailed calculations. PaveDrain® blocks provide permeable pavement and reduces over 60% of the total suspended solids. In addition the landscape areas will remain sandy after construction to propose infiltration and reduce runoff.

The owners are discussing the quantity of PaveDrain® they want to use considering the cost of the installation related to the monthly storm water utility fee. Therefore the surface area of this material may change as construction proceeds and costs are evaluated.

5.4 CONCLUSION

The storm water design for this project achieves all the design criteria. The permeable pavement provides post-development conditions that will reduce the 1-year and 2-year reoccurrence intervals during the 24 hour duration are less than the pre-development discharge rates. The post-development peak discharge for the 100-year discharges in a non-erosive manner without causing flooding. The storm water quality as exceeded.

t:\AutoCad Drawings\2016\D\Misc. D\8214-003 Dahl - La Crosse Campus\CAD Drawings\Civil\DELIVERABLES\Subaru\8214-003 PROPOSED STORM WATER FIGURES.dwg, 9/23/2016 11:52:09 AM

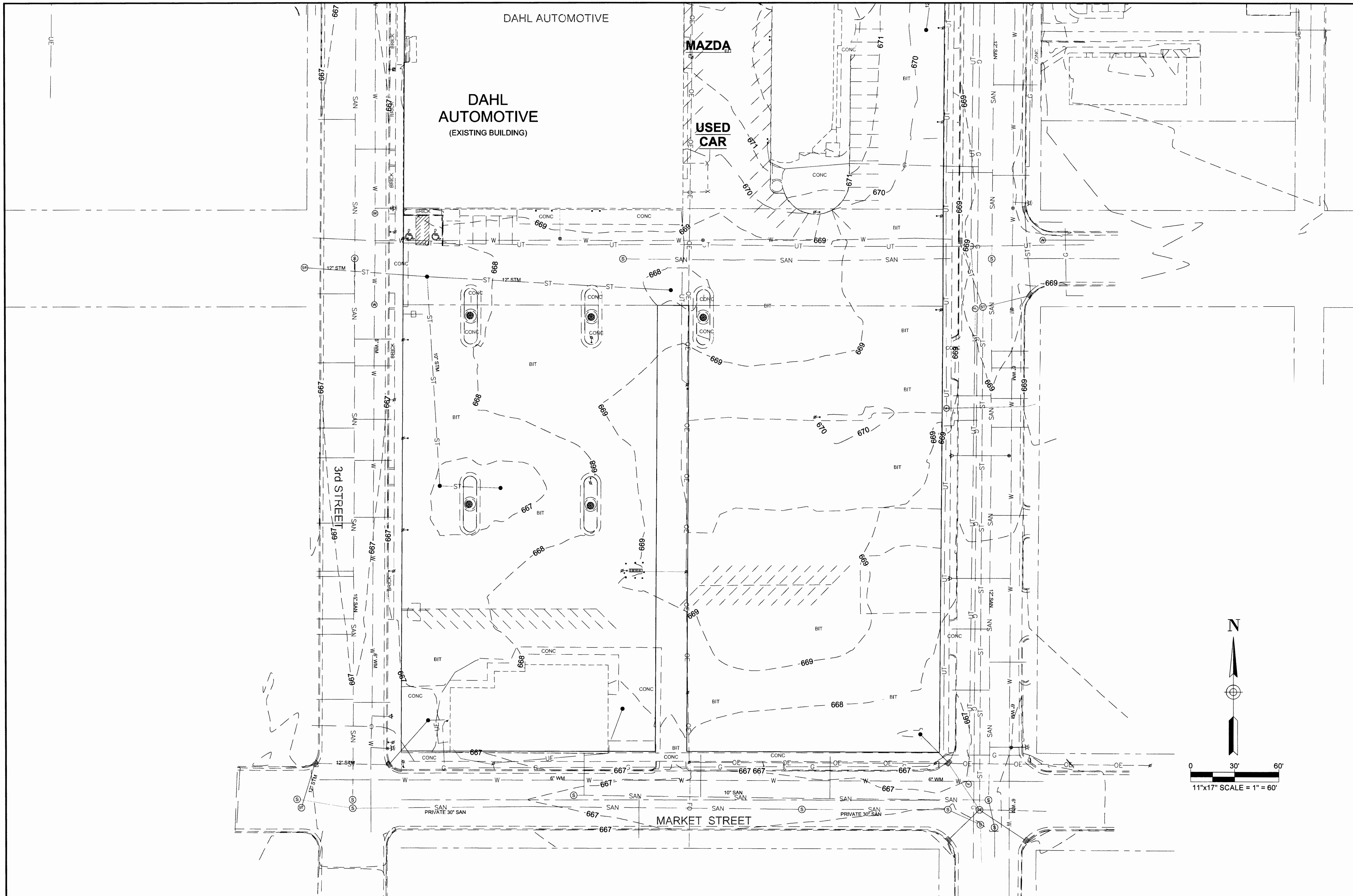


FIGURE 1

REMARKS	REVISION DATE

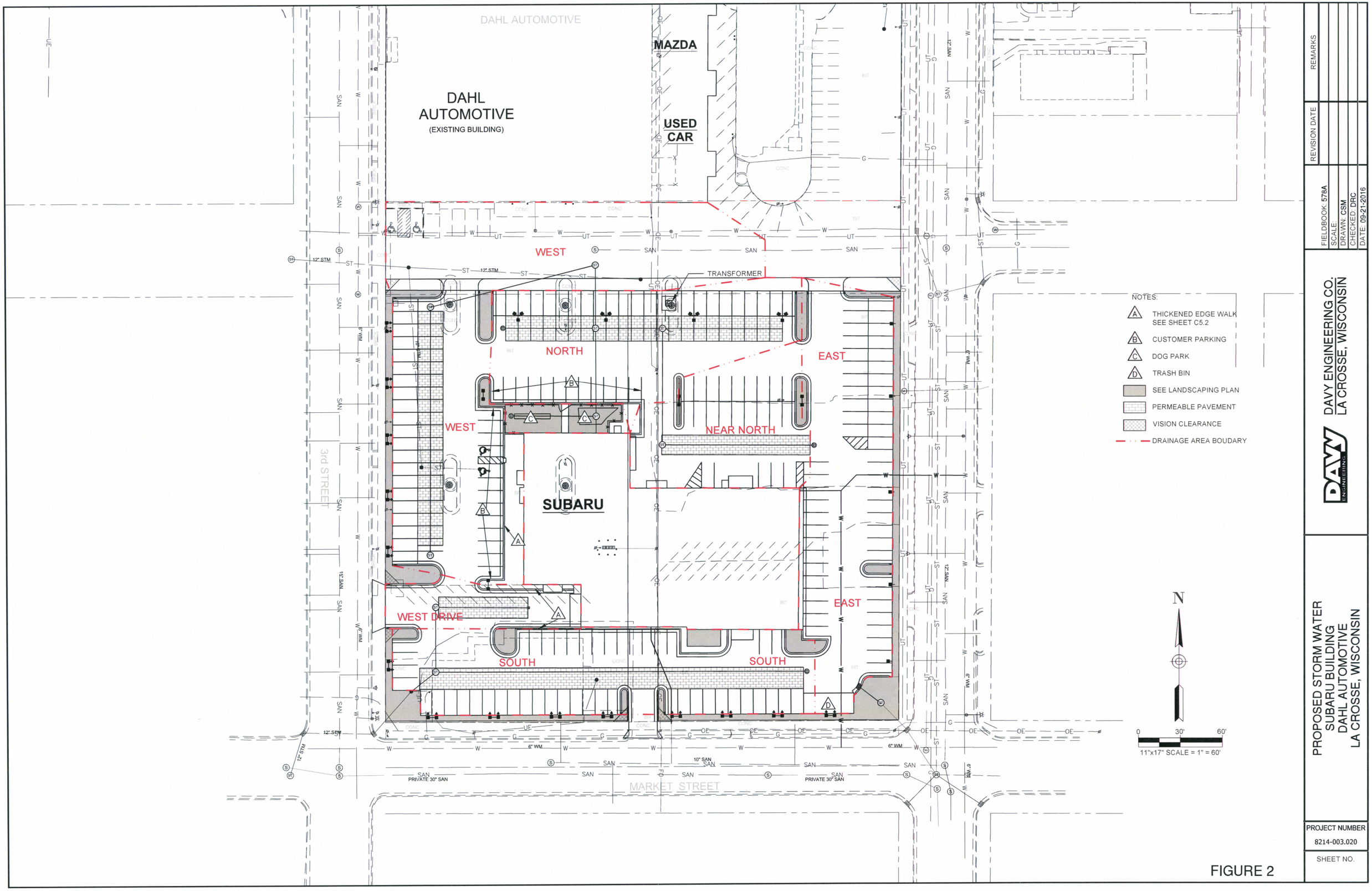
FIELDBOOK: 578A
SCALE:
DRAWN: CSM
CHECKED: DRC
DATE: 09-21-2016

DAVY ENGINEERING CO.
LA CROSSE, WISCONSIN

EXISTING STORM WATER
SUBARU BUILDING
DAHL AUTOMOTIVE
LA CROSSE, WISCONSIN

PROJECT NUMBER
8214-003.020

SHEET NO.



REMARKS	REVISION DATE

FIELDBOOK: 578A
SCALE:
DRAWN: CSM
CHECKED: DRC
DATE: 09-21-2016

DAVY ENGINEERING CO.
LA CROSSE, WISCONSIN

PROPOSED STORM WATER
SUBARU BUILDING
DAHL AUTOMOTIVE
LA CROSSE, WISCONSIN

PROJECT NUMBER
8214-003.020

SHEET NO.

FIGURE 2

H:\AutoCad Drawings\2016\D\Misc. D\8214-003 Dahl - La Crosse Campus\CAD Drawings\Civil\DELIVERABLES\Subaru\8214-003 PROPOSED STORM WATER FIGURES.dwg, 9/23/2016 11:38:12 AM

Soil Map—La Crosse County, Wisconsin

Map Scale: 1:1,500 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 20 40 80 120

Feet: 0 50 100 200 300

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

Appendix A

Appendix A

USDA Natural Resources Conservation Service

Web Soil Survey
National Cooperative Soil Survey

MAP LEGEND

Area of Interest (AOI)
- Area of Interest (AOI)

Soils
- Soil Map Unit Polygons
- Soil Map Unit Lines
- Soil Map Unit Points

Special Point Features
- Blowout
- Borrow Pit
- Clay Spot
- Closed Depression
- Gravel Pit
- Gravelly Spot
- Landfill
- Lava Flow
- Marsh or swamp
- Mine or Quarry
- Miscellaneous Water
- Perennial Water
- Rock Outcrop
- Saline Spot
- Sandy Spot
- Severely Eroded Spot
- Sinkhole
- Slide or Slip
- Sodic Spot
- Spoil Area
- Stony Spot
- Very Stony Spot
- Wet Spot
- Other
- Special Line Features

Water Features
- Streams and Canals

Transportation
- Rails
- Interstate Highways
- US Routes
- Major Roads
- Local Roads

Background
- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

Warning: Soil Map may not be valid at this scale.

Enlargement of maps beyond the scale of mapping can cause misunderstanding of the detail of mapping and accuracy of soil line placement. The maps do not show the small areas of contrasting soils that could have been shown at a more detailed scale.

Please rely on the bar scale on each map sheet for map measurements.

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL: http://websoilsurvey.nrcs.usda.gov
Coordinate System: Web Mercator (EPSG:3857)

Maps from the Web Soil Survey are based on the Web Mercator projection, which preserves direction and shape but distorts distance and area. A projection that preserves area, such as the Albers equal-area conic projection, should be used if more accurate calculations of distance or area are required.

This product is generated from the USDA-NRCS certified data as of the version date(s) listed below.

Soil Survey Area: La Crosse County, Wisconsin
Survey Area Data: Version 14, Sep 17, 2015

Soil map units are labeled (as space allows) for map scales 1:50,000 or larger.

Date(s) aerial images were photographed: Nov 1, 2010—Sep 11, 2011

The orthophoto or other base map on which the soil lines were compiled and digitized probably differs from the background imagery displayed on these maps. As a result, some minor shifting of map unit boundaries may be evident.

Map Unit Legend

La Crosse County, Wisconsin (WI063)			
Map Unit Symbol	**Map Unit Name**	**Acres in AOI**	**Percent of AOI**
2020	Urban land, valley trains	3.6	100.0%
Totals for Area of Interest		**3.6**	**100.0%**

Davy Engineering Company

La Crosse, Wisconsin

DATE: September 22, 2016

STORM SEWER DESIGN COMPUTATION SHEET

(Based on Department of Safety and Professional Services, Chapter SPS 382, Tables 382.36-1 to 382.36-3)

PROJECT TITLE: Dahl Subaru, La Crosse Wisconsin

PROJECT NO. 8214-003.020

Manning's n: 0.013

LOCATION OF SEWER			Drainage Area							Total Area			Total Runoff			DESIGN COMPUTATIONS						
			a_1	q_1	a_2	q_2	a_3	q_3	q_4	A	A	A	Q	Q	Q							
IN	FROM	TO	Roof Area	Roof Runoff	Paved and Sidewalk Area	Paved Runoff	Lawn Area	Lawn Runoff	Sump Pumps	Indiv. Area	Accum. Area	Accum. Area	Indiv. Runoff	Accum. Runoff	Accum. Runoff	Sewer Length	Sewer Diameter	Parts Full - Design	Required Slope	Actual Slope	Parts Full - Actual	Velocity - Actual
			SF	GPM	SF	GPM	SF	GPM	GPM	SF	SF	Acres	GPM	GPM	CFS	Feet	In.	d/D	Ft./Ft.	Ft./Ft.	d/D	Ft./Sec.
Roof	Building	MH 26	21,400	823						21,400	21,400	0.49	823	823	1.83	12	12	0.80	0.0027	0.0150	0.45	5.29
Dog Park	MH 26	MH 21			237	7	1,563	15		1,800	23,200	0.53	22	845	1.88	62.7	12	0.80	0.0029	0.0100	0.52	4.67
Near North	CO 24	MH 23			10,292	317	238	2		10,530	10,530	0.24	319	319	0.71	108.4	6	0.80	0.0166	0.0170	0.79	4.33
	MH 23	MH 22									10,530	0.24		319	0.71	82.9	8	0.80	0.0036	0.0050	0.69	2.79
Northeast	CO 25	MH 22			5,942	183	238	2		6,180	6,180	0.14	185	185	0.41	85	6	0.80	0.0056	0.0250	0.47	4.41
Parking	MH 22	MH 21			4,091	126				4,091	20,801	0.48	126	630	1.40	48	12	0.80	0.0016	0.0100	0.43	4.21
North	CO 27	MH 21			6,344	195	136	1		6,480	6,480	0.15	197	197	0.44	66.5	6	0.80	0.0063	0.0250	0.50	4.58
Parking	MH 21	MH 20									50,481	1.16		1,672	3.73	45.1	18	0.80	0.0013	0.0040	0.53	3.90
West	MH 11	MH 10			32,710	1,006	420	4		33,130	33,130	0.76	1,011	1,011	2.25	176	12	0.80	0.0041	0.0041	0.80	3.38
Parking	MH 10	MH 20									33,130	0.76		1,011	2.25	121.7	12	0.80	0.0041	0.0050	0.73	3.69
Southwest driveway	Cap 5	MH 4			4,350	134				4,350	4,350	0.10	134	134	0.30	67.9	6	0.80	0.0029	0.0340	0.36	4.36
	MH 4	MH 3									4,350	0.10		2,125	4.73	46.1	12	0.80	0.0183	0.0200	0.76	7.41
South	CO 6	MH 3			17,710	545	624	6		18,334	18,334	0.42	551	551	1.23	266	10	0.80	0.0033	0.0100	0.53	4.16
	MH 3	INLET 2									22,684	0.52		2,676	5.96	23.3	15	0.80	0.0088	0.0090	0.79	5.80
East to SE	INLET 30	MH 31			18,700	575	129	1		18,829	18,829	0.43	577	577	1.28	19.3	15	0.80	0.0004	0.0100	0.30	3.85
	MH 31										18,829	0.43		577	1.28							

Data file name: H:\D\Misc. D\Dahl Automotive\2016\8214-003 Dahl - La Crosse Campus\020 Subaru Design\Permits\City\WinSLAMM\Dahl Subaru Block 12 of Stoddard&Levy La Crosse.mdb
WinSLAMM Version 10.2.1
Rain file name: C:\WinSLAMM Files\Rain Files\WI_Multi_rain\Minneapolis MN\WisReg - Minneapolis MN Twenty 1953-1972.ran
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/01/53 Study period ending date: 12/31/72
Start of Winter Season: 11/04 End of Winter Season: 03/13
Date: 09-23-2016 Time: 15:57:37
Site information:
800 Block 3rd Street South, La Crosse, Wisconsin. West side of the street over to 4th Street South
Block 12 of Stoddard & Levy Addition
Dahl Subaru Building
LU# 1 - Commercial: Commercial 1: south of building Total area (ac): 0.481
13 - Paved Parking 1: 0.332 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.123 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.006 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.020 ac. Moderately Compacted Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 2 - Commercial: Commercial 3: West Driveway Total area (ac): 0.106
25 - Driveways 1: 0.095 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
26 - Driveways 2: 0.011 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 3 - Commercial: Commercial 4: west side Total area (ac): 0.346
13 - Paved Parking 1: 0.224 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.112 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.010 ac. Moderately Compacted Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 4 - Commercial: Commercial 5: roof and east parking Total area (ac): 0.918
1 - Roofs 1: 0.489 ac. Flat Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 0.160 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
14 - Paved Parking 2: 0.102 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

25 - Driveways 1: 0.095 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
26 - Driveways 2: 0.069 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.001 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.002 ac. Moderately Compacted Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 5 - Commercial: Commercial 6: North Parking Total area (ac): 0.364
13 - Paved Parking 1: 0.219 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
25 - Driveways 1: 0.145 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 6 - Commercial: Commercial 7: Near North Total area (ac): 0.238
13 - Paved Parking 1: 0.230 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.005 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
51 - Small Landscaped Areas 1: 0.003 ac. Moderately Compacted Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
LU# 7 - Commercial: Commercial 8: Dog Park Total area (ac): 0.041
31 - Sidewalks 1: 0.005 ac. Disconnected Moderately Compacted Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
71 - Other Pervious Areas 1: 0.036 ac. Moderately Compacted Sandy Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Porous Pavement CP# 1 (DS) - DS Porous Pavement 1: south
Porous pavement area (ac): 0.09
Inflow hydrograph peak to average flow ratio: 3.8
Porous pavement thickness (in): 5.6
Porous pavement porosity: 0.3
Aggregate bedding thickness (in): 5
Aggregate bedding porosity: 0.23
Aggregate base reservoir thickness (in): 12
Aggregate base reservoir porosity: 0.33
Porous pavement surface area to aggregate base area ratio: 1
Underdrain diameter (in): 10
Underdrain outlet invert elevation (ft above datum): 1
Number of underdrains: 1
Subgrade seepage rate (in/hr): 3
Use random number generation to account for uncertainty in seepage rate: 1
Subgrade seepage rate COV: 0
Surface pavement initial infiltration rate (in/hr): 100
Surface Pavement Percent Solids Removal Upon Cleaning: 50
Porous pavement surface clogging load (lbs/sf): 0.06
Porous pavement restorative cleaning frequency: Semi-annually
TSS concentration reduction percentage through underdrain: 65
Porous pavement particle size distribution file name: Not needed - calculated by program

Control Practice 2: Porous Pavement CP# 2 (DS) - DS Porous Pavement 2: SW driveway
Porous pavement area (ac): 0.022
Inflow hydrograph peak to average flow ratio: 3.8
Porous pavement thickness (in): 5.6
Porous pavement porosity: 0.3
Aggregate bedding thickness (in): 5
Aggregate bedding porosity: 0.23
Aggregate base reservoir thickness (in): 12
Aggregate base reservoir porosity: 0.33
Porous pavement surface area to aggregate base area ratio: 1
Underdrain diameter (in): 4
Underdrain outlet invert elevation (ft above datum): 6
Number of underdrains: 1
Subgrade seepage rate (in/hr): 3
Use random number generation to account for uncertainty in seepage rate: 1
Subgrade seepage rate COV: 0
Surface pavement initial infiltration rate (in/hr): 100
Surface Pavement Percent Solids Removal Upon Cleaning: 50
Porous pavement surface clogging load (lbs/sf): 0.06
Porous pavement restorative cleaning frequency: Semi-annually
TSS concentration reduction percentage through underdrain: 65
Porous pavement particle size distribution file name: Not needed - calculated by program

Control Practice 3: Porous Pavement CP# 3 (DS) - DS Porous Pavement 3: West side
Porous pavement area (ac): 0.069
Inflow hydrograph peak to average flow ratio: 3.8
Porous pavement thickness (in): 5.6
Porous pavement porosity: 0.3
Aggregate bedding thickness (in): 5
Aggregate bedding porosity: 0.23
Aggregate base reservoir thickness (in): 14
Aggregate base reservoir porosity: 0.33
Porous pavement surface area to aggregate base area ratio: 1
Underdrain diameter (in): 12
Underdrain outlet invert elevation (ft above datum): 1
Number of underdrains: 1
Subgrade seepage rate (in/hr): 3
Use random number generation to account for uncertainty in seepage rate: 1
Subgrade seepage rate COV: 0
Surface pavement initial infiltration rate (in/hr): 100
Surface Pavement Percent Solids Removal Upon Cleaning: 50
Porous pavement surface clogging load (lbs/sf): 0.06
Porous pavement restorative cleaning frequency: Semi-annually
TSS concentration reduction percentage through underdrain: 65
Porous pavement particle size distribution file name: Not needed - calculated by program

Control Practice 4: Porous Pavement CP# 4 (DS) - DS Porous Pavement # 4
Porous pavement area (ac): 0.081
Inflow hydrograph peak to average flow ratio: 3.8
Porous pavement thickness (in): 5.6
Porous pavement porosity: 0.3
Aggregate bedding thickness (in): 5
Aggregate bedding porosity: 0.23
Aggregate base reservoir thickness (in): 12
Aggregate base reservoir porosity: 0.33
Porous pavement surface area to aggregate base area ratio: 1
Underdrain diameter (in): 8
Underdrain outlet invert elevation (ft above datum): 1
Number of underdrains: 1
Subgrade seepage rate (in/hr): 3
Use random number generation to account for uncertainty in seepage rate: 1
Subgrade seepage rate COV: 0
Surface pavement initial infiltration rate (in/hr): 100
Surface Pavement Percent Solids Removal Upon Cleaning: 50
Porous pavement surface clogging load (lbs/sf): 0.06
Porous pavement restorative cleaning frequency: Semi-annually
TSS concentration reduction percentage through underdrain: 0
Porous pavement particle size distribution file name: Not needed - calculated by program

Control Practice 5: Porous Pavement CP# 5 (DS) - DS Porous Pavement 5: near north
Porous pavement area (ac): 0.041
Inflow hydrograph peak to average flow ratio: 3.8
Porous pavement thickness (in): 5.6
Porous pavement porosity: 0.3
Aggregate bedding thickness (in): 5
Aggregate bedding porosity: 0.23
Aggregate base reservoir thickness (in): 12
Aggregate base reservoir porosity: 0.33
Porous pavement surface area to aggregate base area ratio: 1
Underdrain diameter (in): 6
Underdrain outlet invert elevation (ft above datum): 3
Number of underdrains: 1
Subgrade seepage rate (in/hr): 3
Use random number generation to account for uncertainty in seepage rate: 1
Subgrade seepage rate COV: 0
Surface pavement initial infiltration rate (in/hr): 100
Surface Pavement Percent Solids Removal Upon Cleaning: 50
Porous pavement surface clogging load (lbs/sf): 0.06
Porous pavement restorative cleaning frequency: Semi-annually
TSS concentration reduction percentage through underdrain: 0
Porous pavement particle size distribution file name: Not needed - calculated by program

SLAMM for Windows Version 10.2.1

Data file name: H:\D\Misc. D\Dahl Automotive\2016\8214-003 Dahl - La Crosse Campus\020 Subaru Design\Permits\City\WinSLAMM\Dahl Subaru Block 12 of Stoddard&Levy La Crosse.mdb
Data file description: 800 Block 3rd Street South, La Crosse, Wisconsin. West side of the street over to 4th Street South
Block 12 of Stoddard & Levy Addition
Dahl Subaru Building
Rain file name: C:\WinSLAMM Files\Rain Files\WI_Multi_rain\Minneapolis MN\WisReg - Minneapolis MN Twenty 1953-1972.ran
Particulate Solids Concentration file name: C:\WinSLAMM Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: C:\WinSLAMM Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Institutional Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\WI_Com Inst Indust Dec06.std
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
Start of Winter Season: 11/04 End of Winter Season: 03/13
Model Run Start Date: 01/01/53 Model Run End Date: 12/31/72
Date of run: 09-23-2016 Time of run: 15:55:43
Total Area Modeled (acres): 2.494
Years in Model Run: 20.01

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	2.831E+06	-	117.5	20772	-
Outfall Total with Controls:	1.331E+06	52.98%	74.79	6213	70.09%
Annualized Total After Outfall Controls:	66504			310.5	

Data File: H:\D\Misc. D\Dahl Automotive\2016\8214-003 Dahl - La Crosse Campus\020 Subaru Design\Permits\City\WinSLAMM\Dahl Sul
Rain File: WisReg - Minneapolis MN Twenty 1953-1972.RAN
Date: 09-23-16 Time: 3:54:58 PM
Site Description: 800 Block 3rd Street South, La Crosse, Wisconsin. West side of the street over to 4th Street South Block 12 of Stoddarc

Col. #:	2	3	4	5	6	7	8	9	10	11
Control Practice No.	Control Practice Type	Control Practice Name or Location	Total Inflow Volume (cf)	Total Outflow Volume (cf)	Percent Volume Reduction	Total Influent Load (lbs)	Total Effluent Load (lbs)	Percent Load Reduction	Flow Weighted Influent Conc (mg/L)	Flow Weighted Effluent Conc (mg/L)
1	Porous Pavement	DS Porous Pavement 1: south	536548	91174	83.01	4636	251	94.59	138.4	44.1
2	Porous Pavement	DS Porous Pavement 2: SW driveway	119715	6552	94.53	1151	20.12	98.25	154	49.18
3	Porous Pavement	DS Porous Pavement 3: West side	387424	59381	84.67	3382	165.3	95.11	139.8	44.58
4	Porous Pavement	DS Porous Pavement # 4	478430	97709	79.58	4116	346.9	91.57	137.8	56.87
5	Porous Pavement	DS Porous Pavement 5: near north	267791	34740	87.03	2168	110.2	94.92	129.7	50.82

Data File: H:\D\Misc. D\Dahl Automotive\2016\baru Block 12 of Stoddard&Levy La Crosse.mdb
Rain File: WisReg - Minneapolis MN Twenty 1
Date: 09-23-16 Time: 3:54:58 PM
Site Description: 800 Block 3rd Street South, L & Levy Addition Dahl Subaru Building

Col. #:	2	3	12	13	14	15	16	17	18	19
Control Practice No.	Control Practice Type	Control Practice Name or Location	Percent Conc. Reduction	Influent Median Part. Size (microns)	Effluent Median Part. Size (microns)	Notes	Maximum Flushing Ratio	Maximum Peak Reduction Factor	Maximum Stage (ft)	Hydraulic Volume Out (cf)
1	Porous Pavement	DS Porous Pavement 1: south	68.137	7.8	2.85					
2	Porous Pavement	DS Porous Pavement 2: SW driveway	68.063	7.8	2.73					
3	Porous Pavement	DS Porous Pavement 3: West side	68.114	7.8	2.85					
4	Porous Pavement	DS Porous Pavement # 4	58.734	7.52	3.01					
5	Porous Pavement	DS Porous Pavement 5: near north	60.817	7.8	2.9					

Data File: H:\D\Misc. D\Dahl Automotive\2016\
Rain File: WisReg - Minneapolis MN Twenty 1
Date: 09-23-16 Time: 3:54:58 PM
Site Description: 800 Block 3rd Street South, L

Col. #:	2	3	20	21	22	23	24	25	26	27
Control Practice No.	Control Practice Type	Control Practice Name or Location	Minimum Volume (cf)	% Device Volume Full	Bypass Volume (cf)	Treated Volume (cf)	Number of Cartridges	Days Dry (days)	Percent of Clogging Factor	Maximum Surface Ponding Time (hrs)
1	Porous Pavement	DS Porous Pavement 1: south							86.22	
2	Porous Pavement	DS Porous Pavement 2: SW driveway							87.57	
3	Porous Pavement	DS Porous Pavement 3: West side							82.04	
4	Porous Pavement	DS Porous Pavement # 4							82.79	
5	Porous Pavement	DS Porous Pavement 5: near north							88.52	

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Col. #:	2	3	28	29	30	31	32	33	34	35
Control Practice No.	Control Practice Type	Control Practice Name or Location	Maximum Subsurface Ponding Time (hrs)	Volume Infiltrated (cf)	Underdrain Discharge Vol. (cf)	Evapo-Transpir. Vol. (cf)	Minimum Soil Moist. (frac)	Surface Discharge Bypass Vol. (cf)	Evap. Vol. (cf)	Volume Supplemtl. Irrig.(cf)
1	Porous Pavement	DS Porous Pavement 1: south	21.45	446112.6	91173.81					
2	Porous Pavement	DS Porous Pavement 2: SW driveway	35.2	113330.3	6552.37					
3	Porous Pavement	DS Porous Pavement 3: West side	34.9	328577	59381.34					
4	Porous Pavement	DS Porous Pavement # 4	24.45	381363.5	97709.48					
5	Porous Pavement	DS Porous Pavement 5: near north	18.75	233422.1	34710.06					

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Rain File: WisReg - Minneapolis MN Twenty 1
Date: 09-23-16 Time: 3:54:58 PM
Site Description: 800 Block 3rd Street South, L

Col. #:	2	3	36	37	38	39	40	41	42	43
Control Practice No.	Control Practice Type	Control Practice Name or Location	Final Surface Infiltration Rate (in/hr)	Final Loading (lb/sf)	Maximum Velocity (ft/s)	Surface Ponding Events >72 hrs (Count)	Number of Tank Overflows (Count)	Number of Tank Height Exceedances	Bypass Volume (cf)	Bypass Conc. (mg/L)
1	Porous Pavement	DS Porous Pavement 1: south	13.78							
2	Porous Pavement	DS Porous Pavement 2: SW driveway	12.43							
3	Porous Pavement	DS Porous Pavement 3: West side	17.96							
4	Porous Pavement	DS Porous Pavement # 4	17.21							
5	Porous Pavement	DS Porous Pavement 5: near north	11.48							

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Site Description: 800 Block 3rd Street South, L

Col. #:	2	3	44	45	46	47	48	49	50	51
Control Practice No.	Control Practice Type	Control Practice Name or Location	Bypass Mass (lbs)	Overflow Volume (cf)	Overflow Conc. (mg/L)	Overflow Mass (lbs)	Cartridge Flow Volume (cf)	Cartridge Effluent Conc. (mg/L)	Cartridge Effluent Mass (lbs)	Final Sump Sediment Depth (ft)
1	Porous Pavement	DS Porous Pavement 1: south								
2	Porous Pavement	DS Porous Pavement 2: SW driveway								
3	Porous Pavement	DS Porous Pavement 3: West side								
4	Porous Pavement	DS Porous Pavement # 4								
5	Porous Pavement	DS Porous Pavement 5: near north								

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Rain File: WisReg - Minneapolis MN Twenty 1
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Site Description: 800 Block 3rd Street South, L

Col. #:	2	3	52	53	54	55	56	57	58	59
Control Practice No.	Control Practice Type	Control Practice Name or Location	Average Cleaning Frequency (yrs)	Cartridge Particulate Removal Efficiency-%	Residence Time in Media (hrs)	Max. Filter Number	Max. Filter Treatment Goal mg/L or %			
1	Porous Pavement	DS Porous Pavement 1: south								
2	Porous Pavement	DS Porous Pavement 2: SW driveway								
3	Porous Pavement	DS Porous Pavement 3: West side								
4	Porous Pavement	DS Porous Pavement # 4								
5	Porous Pavement	DS Porous Pavement 5: near north								

Data File: H:\D\Misc. D\Dahl Automotive\2016\
Rain File: WisReg - Minneapolis MN Twenty 1
Date: 09-23-16 Time: 3:54:58 PM
Site Description: 800 Block 3rd Street South, L
Col. #: 2 3 60 61

Control Practice No.	Control Practice Type	Control Practice Name or Location	Runoff Producing Events/ Ttl. Rains
1	Porous Pavement	DS Porous Pavement 1: south	214/1473
2	Porous Pavement	DS Porous Pavement 2: SW driveway	46/1473
3	Porous Pavement	DS Porous Pavement 3: West side	194/1473
4	Porous Pavement	DS Porous Pavement # 4	191/1473
5	Porous Pavement	DS Porous Pavement 5: near north	124/1473