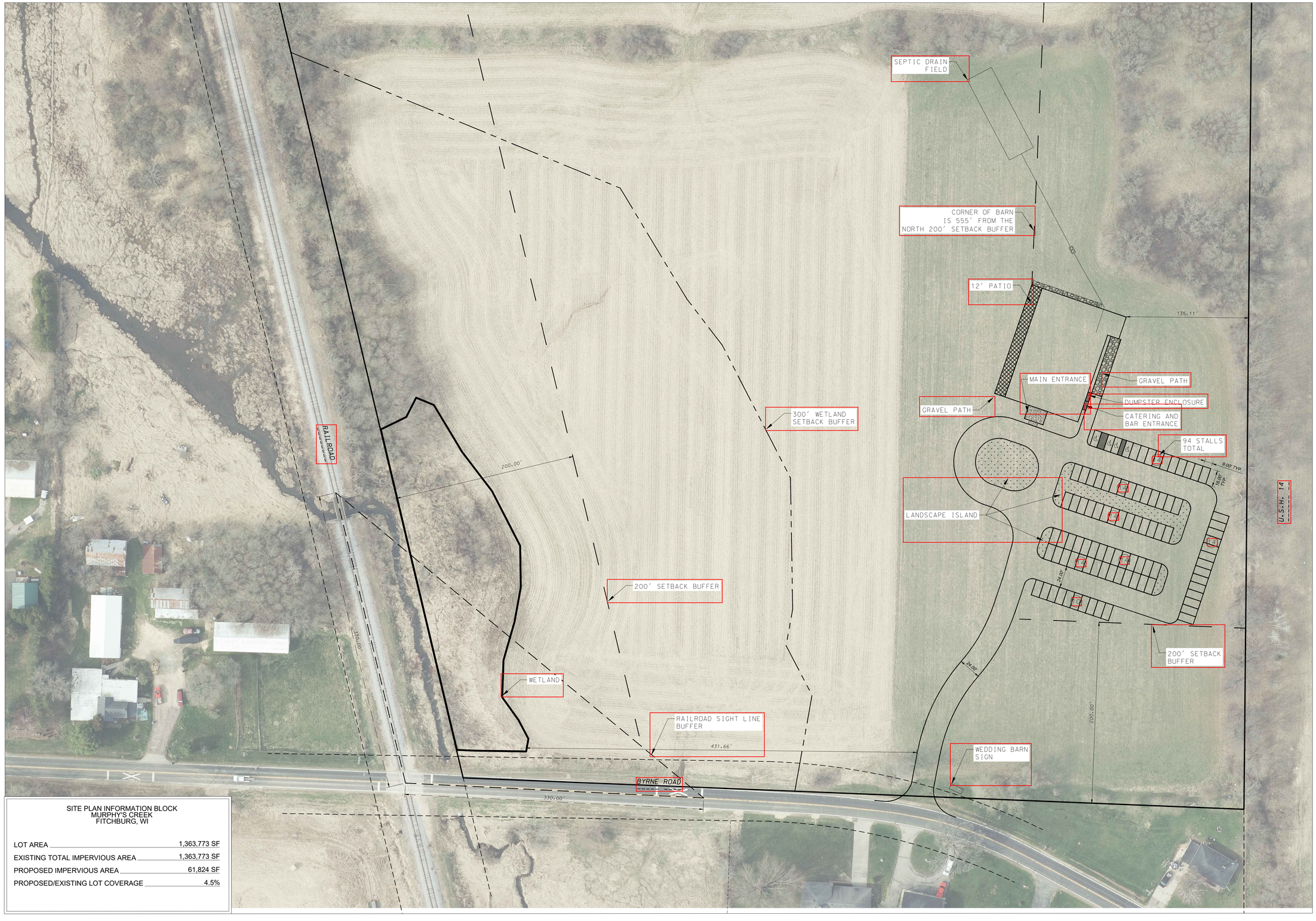

SITE PLAN INFORMATION BLOCK
MURPHY'S CREEK
FITCHBURG, WI

LOT AREA	1,363,773 SF
EXISTING TOTAL IMPERVIOUS AREA	1,363,773 SF
PROPOSED IMPERVIOUS AREA	61,824 SF
PROPOSED/EXISTING LOT COVERAGE	4.5%

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SITE PLAN

MURPHY'S CREEK

CITY OF FITCHBURG, DANE COUNTY, WISCONSIN

GRID NORTH
WISCONSIN COUNTY COORDINATE SYSTEM (DANE ZONE)

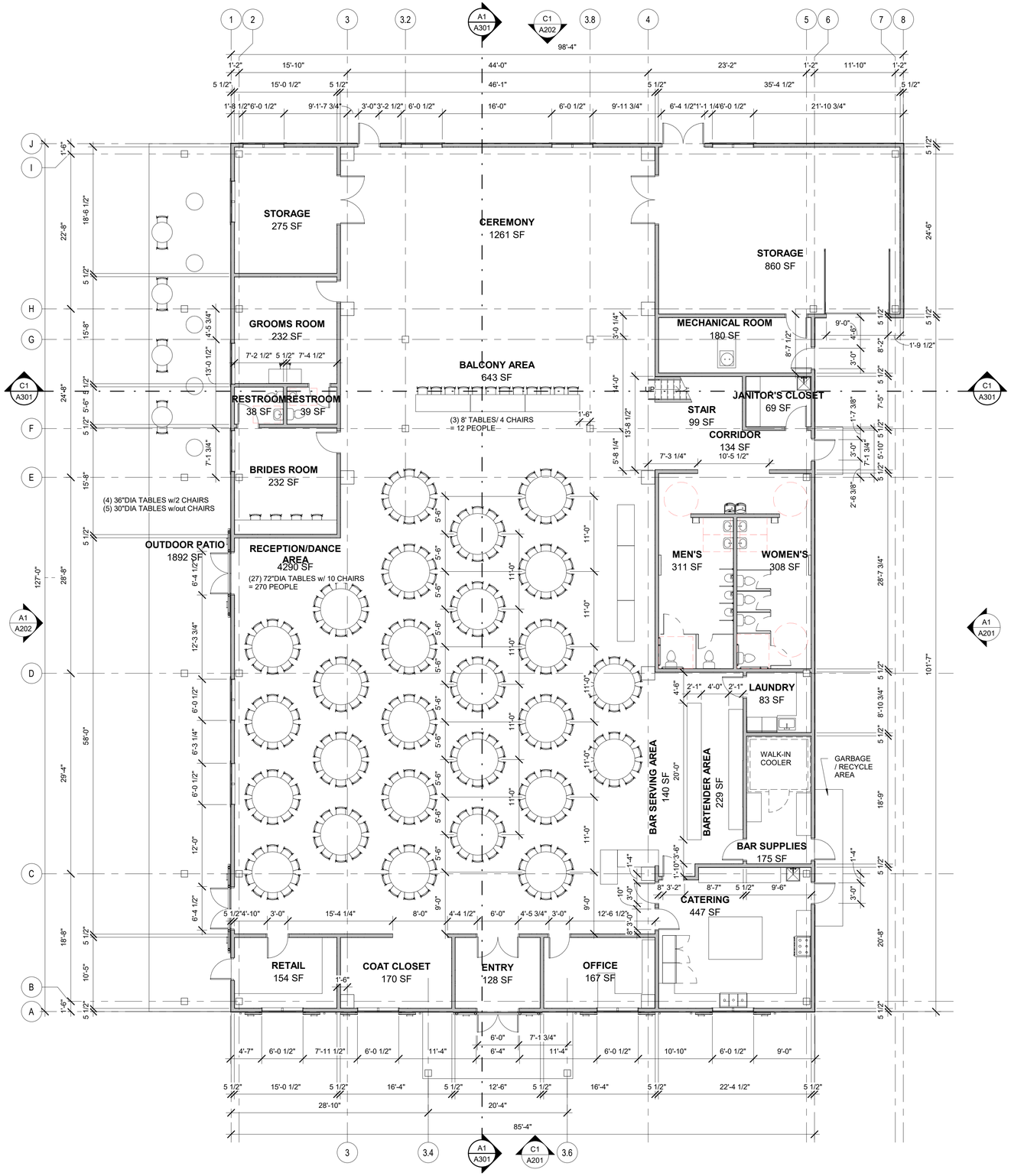
SCALE: 1"= 50'

0 50

DATE: 12-6-21
REVISED:

FN: 21-05-159

Sheet Number:
C-1



A1 FLOOR PLAN
1/8" = 1'-0"

GENERAL PLAN NOTES:

A. MECHANICAL, ELECTRICAL, PLUMBING AND FIRE PROTECTION IMPROVEMENTS TO BE DESIGN BUILD, UNLESS NOTED OTHERWISE. DESIGNED AS REQUIRED BY CURRENT BUILDING CODES. MEP DESIGN BUILD CONTRACTOR(S) RESPONSIBLE FOR ENSURING CODE COMPLIANT CONSTRUCTION OF NEW SYSTEMS IN TENANT SPACES.

B. PROVIDE SOUND INSULATION IN ALL DEMISING WALLS AND INTERIOR WALLS, UNLESS NOTED OTHERWISE.

C. PROVIDE MOISTURE RESISTANT GWB AT ALL PLUMBING WALLS.

D. PROVIDE ACCESSIBLE TOILET ROOM FIXTURES AND ACCESSORIES PER MOUNTING HEIGHTS INDICATED ON SHEET A06.

E. PROVIDE BLOCKING AT ALL GRAB BAR LOCATIONS PER ANSI A117.1 2009

F. PROVIDE ADA APPROVED THRESHOLDS AT ALL NEW FLOOR TRANSITIONS AND DOORWAYS.

G. EXTERIOR DIMENSIONS ARE FROM GRIDLINE TO GRIDLINE, OR TO EDGE OF FOUNDATION WALL UNLESS NOTED OTHERWISE. PLEASE CONTACT ARCHITECT WITH ANY DISCREPANCIES.

H. INTERIOR DIMENSIONS FOR NEW CONSTRUCTION ARE TO FACE OF FRAME OR COLUMN CENTERLINE UNLESS NOTED OTHERWISE. ALL DIMENSIONS FROM EXISTING WALLS ARE FROM FINISH FACE UNLESS NOTED OTHERWISE.

I. ALL DOORS WITH A CLOSE PROXIMITY OF A PERPENDICULAR WALL SHALL HAVE A TYPICAL DIMENSION OF 6" FROM FACE OF FRAME TO DOOR OPENING UNLESS NOTED OTHERWISE.

J. VERIFY ALL EXISTING CONDITIONS AND ADJUST WALL DIMENSIONS ACCORDINGLY. CONTACT ARCHITECT WITH ANY DISCREPANCIES.

K. CONTRACTOR SHALL NOTIFY ARCHITECT, ENGINEER AND OWNER IMMEDIATELY UPON DISCOVERING ANY UNANTICIPATED STRUCTURAL CONDITIONS OR DISCREPANCIES WITH PROPOSED MODIFICATIONS.

L. FIRE EXTINGUISHER CABINETS SHALL BE RATED TO MEET THE ASSOCIATED WALL FIRE RATING.

M. GENERAL CONTRACTOR TO SECURE CONSTRUCTION AREA DURING CONSTRUCTION WORK. SEAL DOORS AS REQUIRED. CONSTRUCT AND MAINTAIN A FLOOR TO CEILING DUST BARRIER, TO PROVIDE SEPARATION FOR DUST, DEBRIS AND SOUND.

N. GENERAL CONTRACTOR TO COORDINATE CONSTRUCTION SCHEDULE TO MINIMIZE IMPACT ON EXISTING BUILDING OPERATIONS AND PLANNED EVENTS. CONSTRUCTION SPACE MUST BE CLEAN AND AVAILABLE FOR USE PERIODICALLY PER OWNERS REQUEST. VERIFY SCHEDULED EVENTS WITH OWNER PRIOR TO CONSTRUCTION START AND ARRANGE CONSTRUCTION SCHEDULE TO MEET OWNER'S NEEDS. COORDINATE SYSTEMS AND UTILITY SHUT DOWNS WITH OWNER PRIOR TO COMMENCEMENT OF WORK.

O. SUBMIT ALL FINISHES TO THE ARCHITECT FOR APPROVAL.

HATCH PATTERN KEY:

NEW CONSTRUCTION

EXISTING CONSTRUCTION

KEYNOTES:

1 ABC

2 DEF

ALTERNATE BIDS:

3 GHI

4 JKL

0' 2' 4' 8' 16'
0' 1/4" 1/2" 1" 2"
SCALE: 1/8" = 1'-0"

PLAN NORTH

PRELIMINARY

Sketchworks architecture llc

1848 CONSTRUCTION

FITCHBURG EVENT BARN

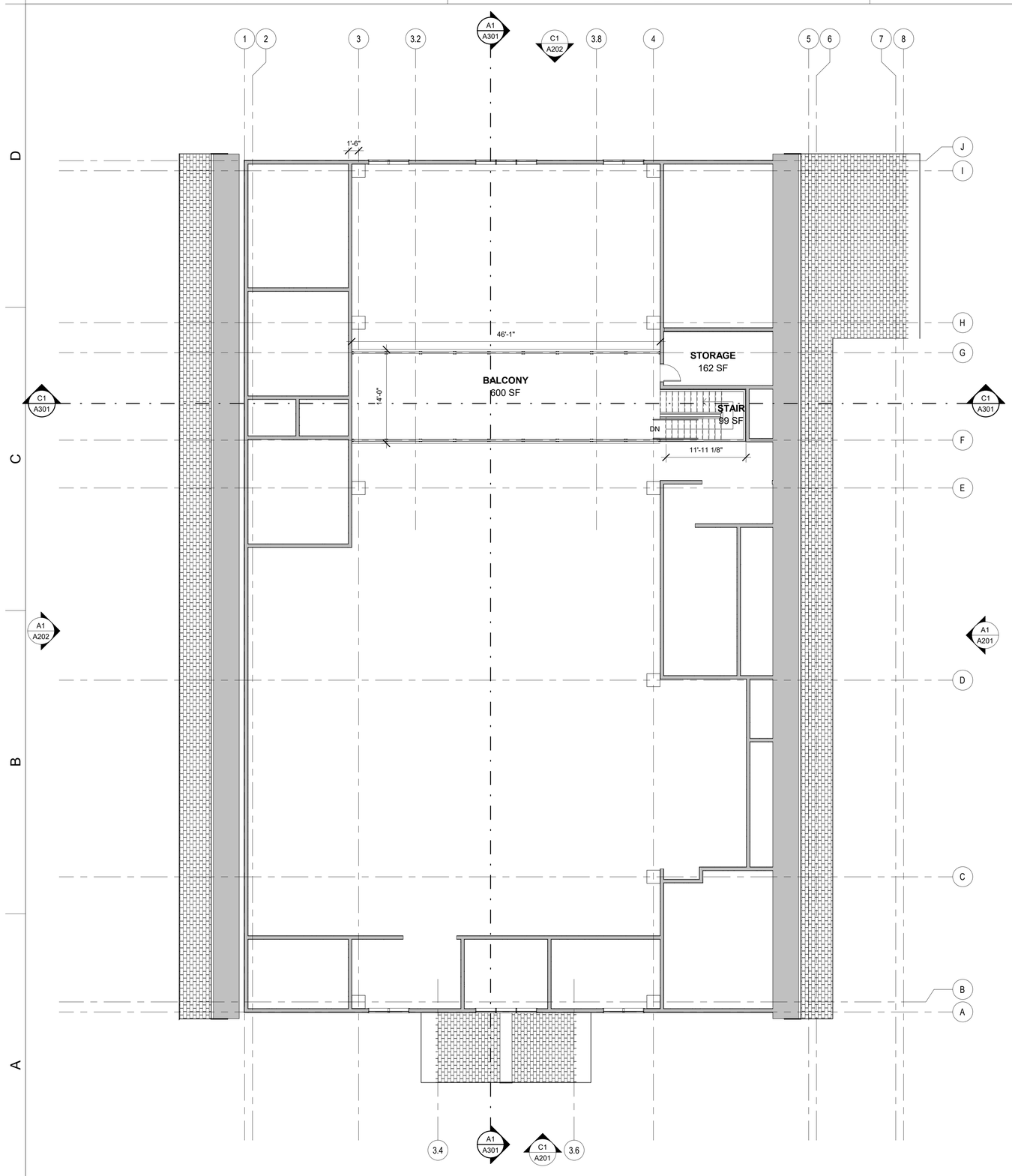
NEW BUILDING
BRYNE ROAD
FITCHBURG, WI

Project Status

PROJ. #:	21209-01

FLOOR PLAN

A100



A1 MEZZANINE LEVEL

1/8" = 1'-0"

PRELIMINARY

Sketchworks architecture llc

1848 CONSTRUCTION

FITCHBURG EVENT BARN

NEW BUILDING

BRYNE ROAD
FITCHBURG, WI

Project Status

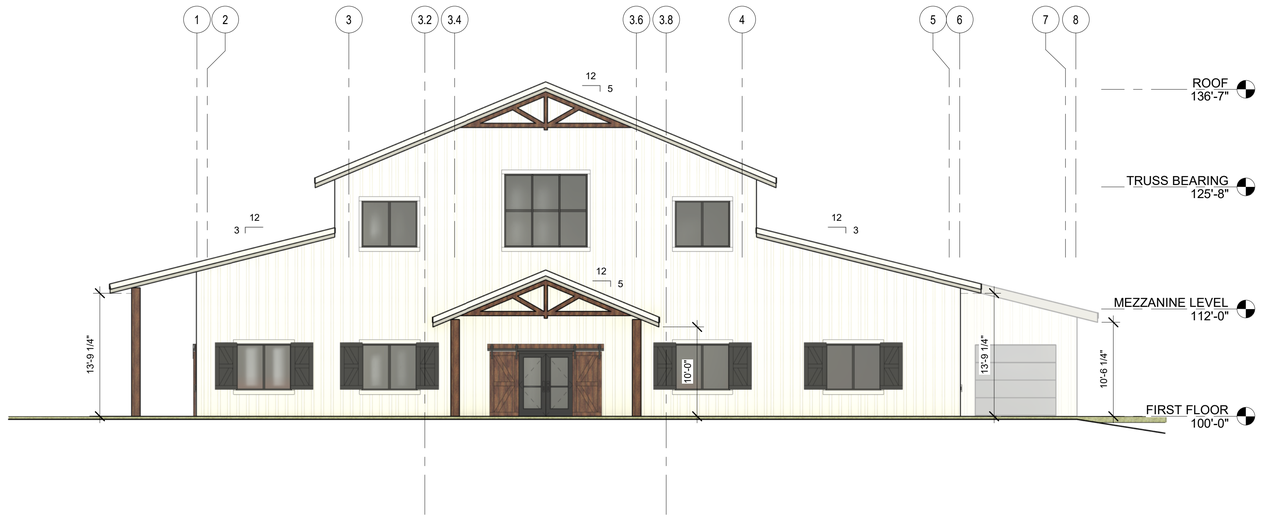
PROJ. #:	21209-01

MEZZANINE PLAN

A101

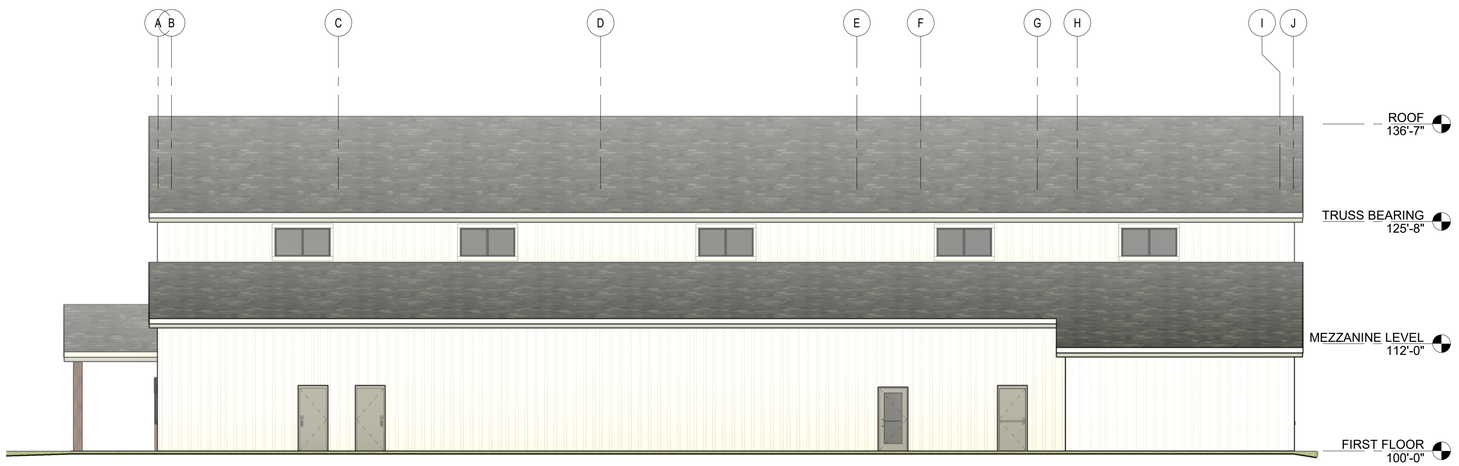
EXTERIOR MATERIAL SCHEDULE

#	DESCRIPTION	MANUFACTURER	TYPE/STYLE	COLOR	HEIGHT	WIDTH	COMMENTS
1							



C1 SOUTH ELEVATION

1/8" = 1'-0"



A1 EAST ELEVATION

1/8" = 1'-0"

PRELIMINARY

Sketchworks architecture llc

1848 CONSTRUCTION

FITCHBURG EVENT BARN

NEW BUILDING

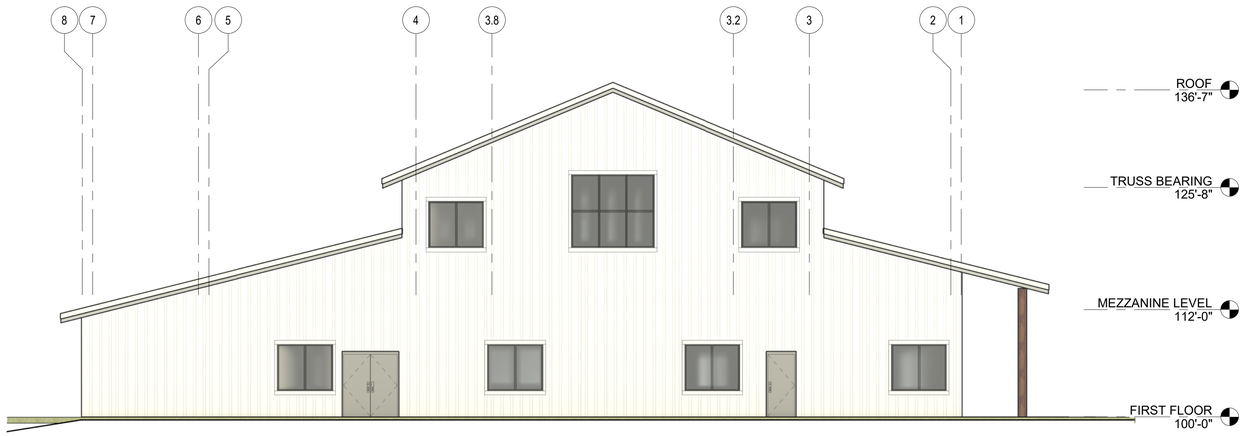
BRYNE ROAD
FITCHBURG, WI

Project Status

PROJ. #:	21209-01

EXTERIOR ELEVATIONS

A201



C1 NORTH ELEVATION

1/8" = 1'-0"

A1 WEST ELEVATION

1/8" = 1'-0"

PRELIMINARY

Sketchworks architecture llc

1848 CONSTRUCTION

FITCHBURG EVENT BARN

NEW BUILDING

BRYNE ROAD
FITCHBURG, WI

Project Status

PROJ. #:	21209-01

EXTERIOR ELEVATIONS

A202

1 2 3 4

C1 SOUTH-WEST

A1 NORTH-EAST

D C B A

Sketchworks architecture LLC

1848 CONSTRUCTION

FITCHBURG EVENT BARN

NEW BUILDING

BRYNE ROAD
FITCHBURG, WI

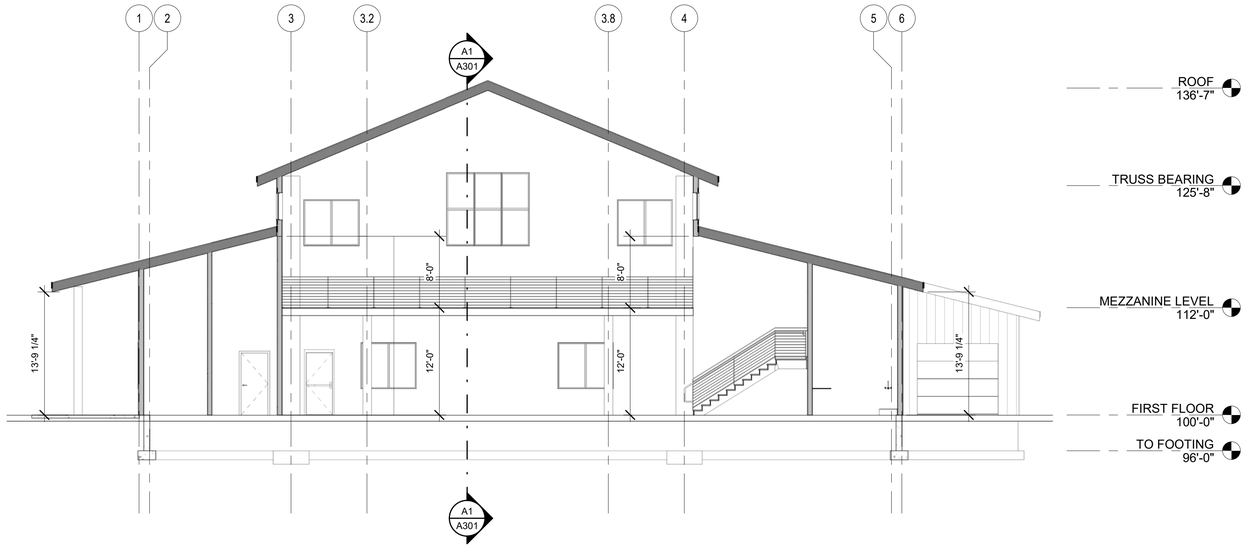
Project Status

PROJ. #:	21209-01

EXTERIOR IMAGES

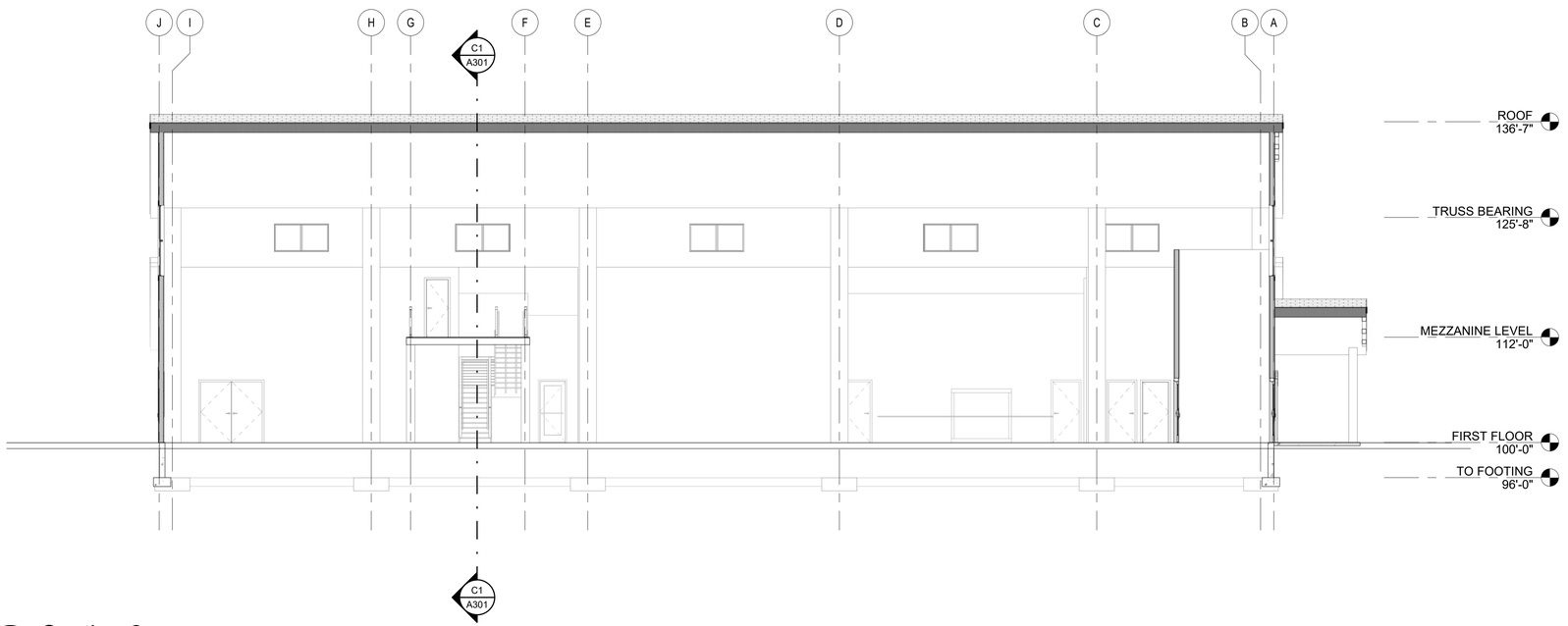
A203

PRELIMINARY



C1 Section 1

1/8" = 1'-0"



A1 Section 2

1/8" = 1'-0"

PRELIMINARY

Sketchworks architecture llc

1848 CONSTRUCTION

FITCHBURG EVENT BARN

NEW BUILDING

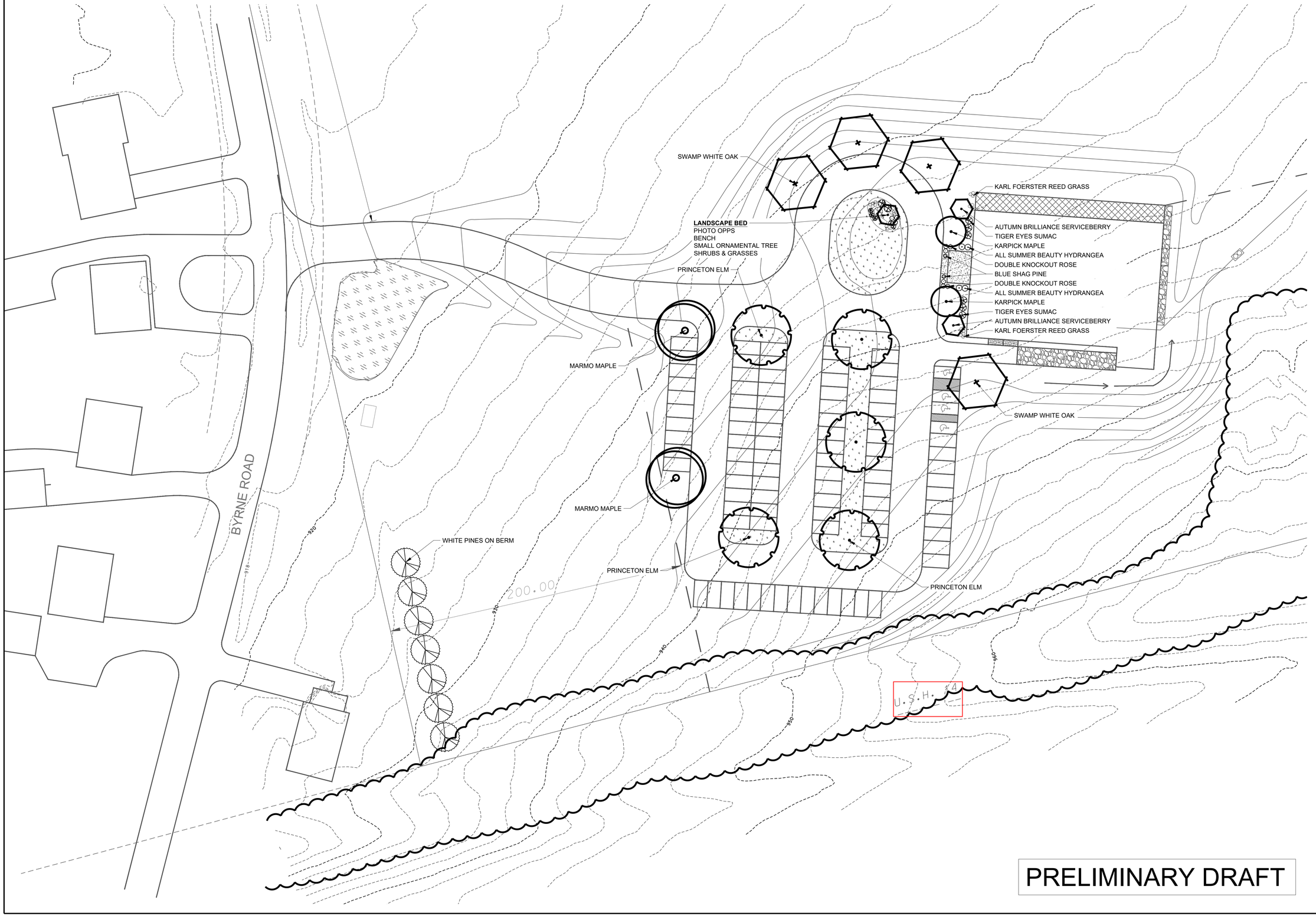
BRYNE ROAD
FITCHBURG, WI

Project Status

PROJ. #:	21209-01

BUILDING SECTIONS

A301



PRELIMINARY DRAFT

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LANDSCAPE PLAN

MURPHY'S CREEK

CITY OF FITCHBURG, DANE COUNTY, WISCONSIN

GRID NORTH
WISCONSIN COUNTY COORDINATE SYSTEM (DANE ZONE)

0 30'

DATE: 11-22-21
REVISED:

FN: 21-05-159

Sheet Number:
C-3

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YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

GRADING AND EROSION CONTROL PLAN

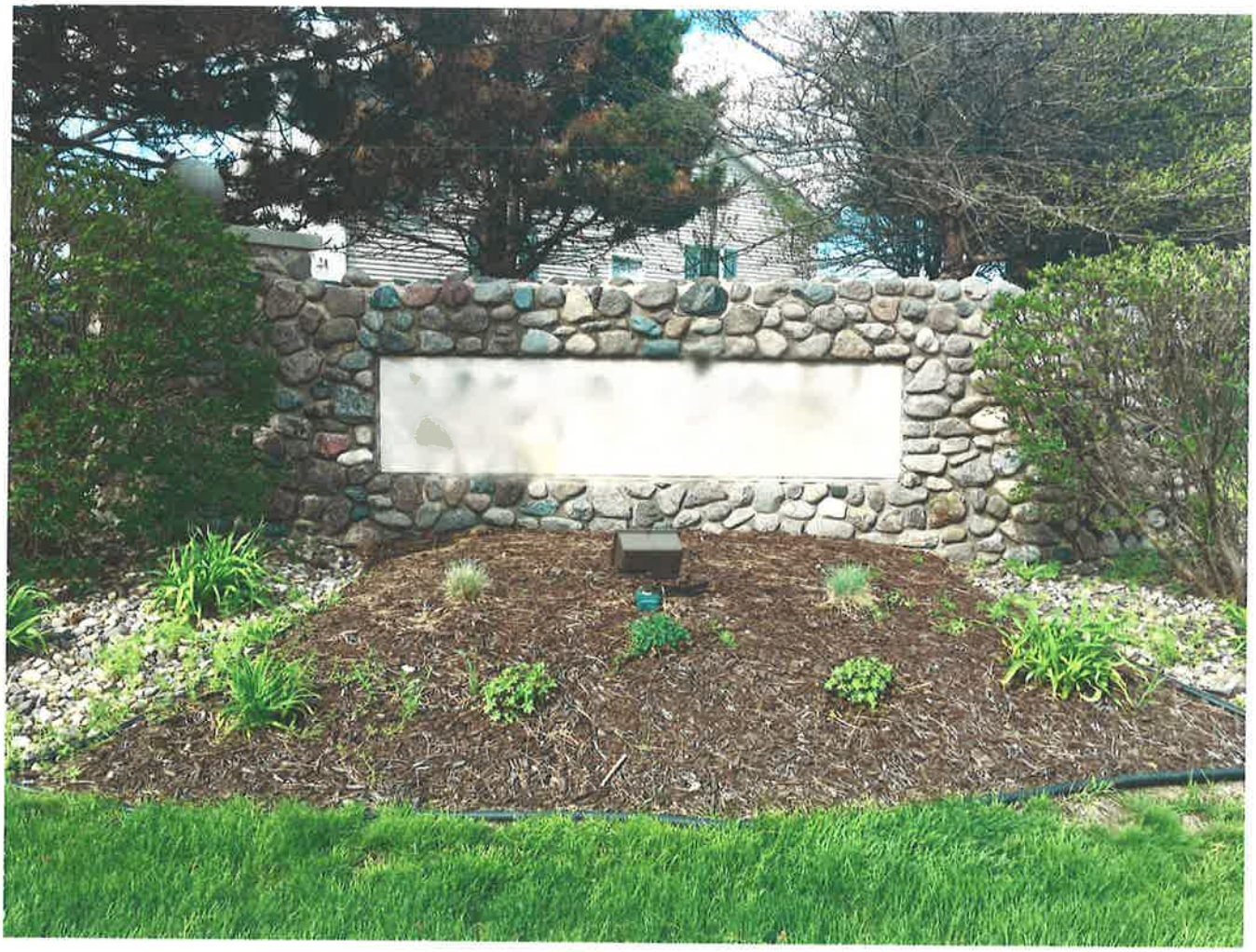
MURPHY'S CREEK

CITY OF FITCHBURG, DANE COUNTY, WISCONSIN

DATE: 11-22-21
REVISED:

FN: 21-05-159

Sheet Number:
C-2



PLANNING MAP

MURPHY'S CREEK

CITY OF FITCHBURG, DANE COUNTY, WISCONSIN

GRID NORTH
WISCONSIN COUNTY COORDINATE SYSTEM (DANE ZONE)

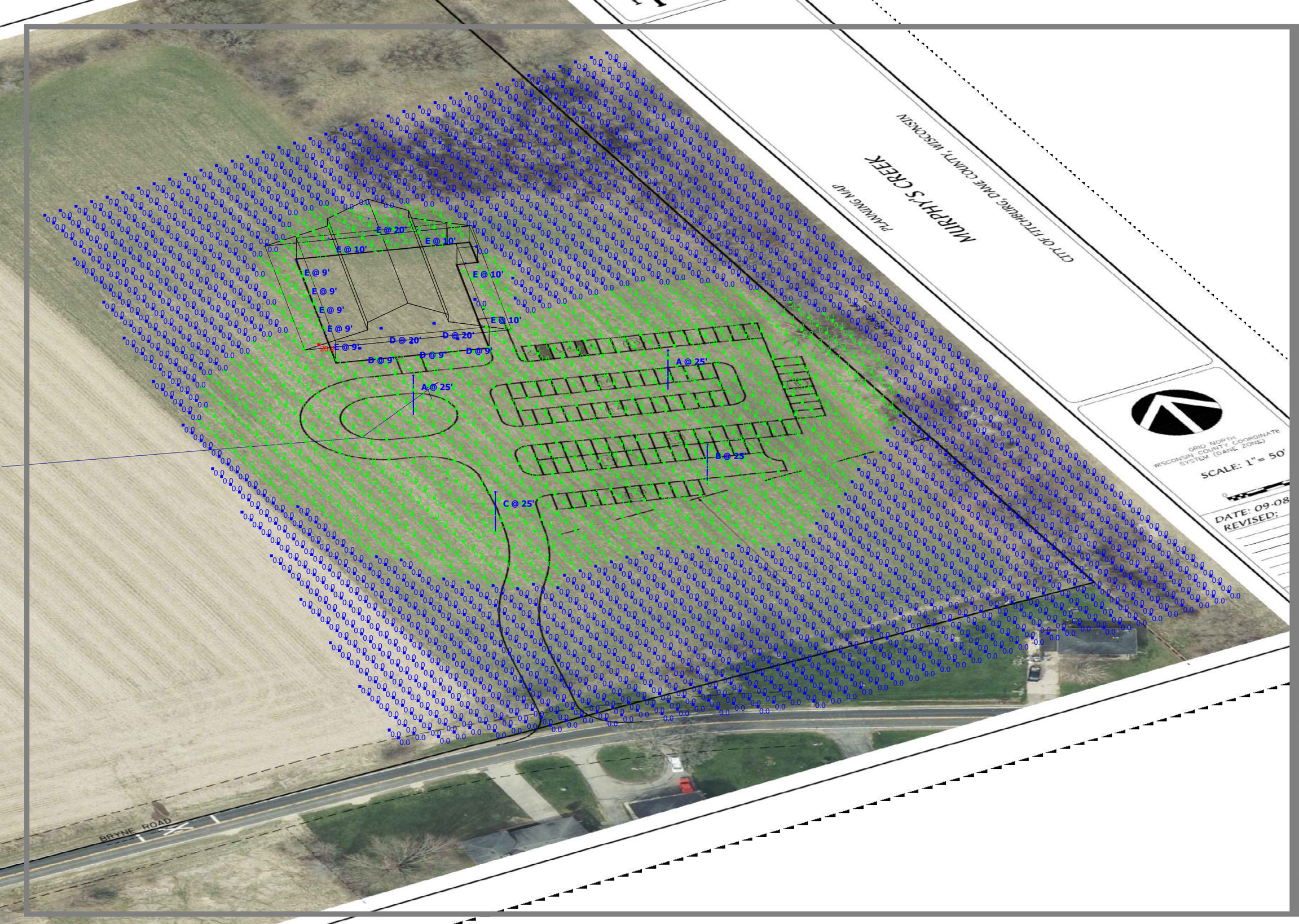
SCALE: 1"= 50'

0 50

BJ electric supply

Murphy's Creek
Fitchburg Event Barn
Fitchburg, WI

Designer
S. SCHOENBERGER
Date
11/17/2021
Scale
Not to Scale
Drawing No.
8:22 AM
Summary



BJ electric supply

Murphy's Creek
Fitchburg Event Barn
Fitchburg, WI

Designer
S. SCHOENBERGER
Date
11/17/2021
Scale
Not to Scale
Drawing No.
8:22 AM
Summary

RSX2 LED
Area Luminaire

Buy American

Catalog Number

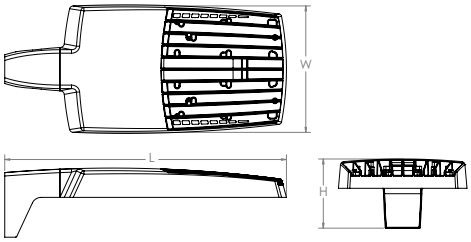
Notes

Type

Hit the Tab key or mouse over the page to see all interactive elements.

Specifications

EPA (ft²@0°):	0.69 ft² (0.06 m²)
Length:	29.3" (74.4 cm) (SPA mount)
Width:	13.4" (34.0 cm)
Height:	3.0" (7.6 cm) Main Body 7.2" (18.3 cm) Arm
Weight: (SPA mount)	30.0 lbs (13.6 kg)



Introduction

The new RSX LED Area family delivers maximum value by providing significant energy savings, long life and outstanding photometric performance at an affordable price. The RSX2 delivers 11,000 to 31,000 lumens allowing it to replace 250W to 1000W HID luminaires.

The RSX features an integral universal mounting mechanism that allows the luminaire to be mounted on most existing drill hole patterns. This "no-drill" solution provides significant labor savings. An easy-access door on the bottom of mounting arm allows for wiring without opening the electrical compartment. A mast arm adaptor, adjustable integral slipfitter and other mounting configurations are available.

Ordering Information

EXAMPLE: RSX2 LED P6 40K R3 MVOLT SPA DDBXD

RSX2 LED

Series	Performance Package	Color Temperature	Distribution	Voltage	Mounting
RSX2 LED	P1 P2 P3 P4 P5 P6	30K 3000K 40K 4000K 50K 5000K	R2 Type 2 Wide R3 Type 3 Wide R3S Type 3 Short R4 Type 4 Wide R4S Type 4 Short R5 Type 5 Wide [1] R5S Type 5 Short [1] AFR Automotive Front Row AFRR90 Automotive Front Row Right Rotated AFRL90 Automotive Front Row Left Rotated	MVOLT (120V-277V) [2] HVOLT (347V-480V) [3] XVOLT (277V-480V) [4] **(use specific voltage for options as noted)** 120 [3] 277 [5] 208 [3] 347 [5] 240 [3] 480 [5]	SPA Square pole mounting (3.0" min. SQ pole for 1 at 90°, 3.5" min. SQ pole for 2, 3, 4 at 90°) RPA Round pole mounting (3.2" min. dia. RND pole for 2, 3, 4 at 90°, 3.0" min. dia. RND pole for 1 at 90°, 2 at 180°, 3 at 120°) MA Mast arm adaptor (fits 2-3/8" OD horizontal tenon) IS Adjustable slipfitter (fits 2-3/8" OD tenon) [6] WBA Wall bracket [1] WBASC Wall bracket with surface conduit box AASP Adjustable tilt arm square pole mounting [6] AARP Adjustable tilt arm round pole mounting [6] AAWB Adjustable tilt arm with wall bracket [6] AAWSC Adjustable tilt arm wall bracket and surface conduit box [6]

Options

Shipped Installed

HS	House-side shield [7]
PE	Photocontrol, button style [8,9]
PEX	Photocontrol external threaded, adjustable [9,10]
PER7	Seven-wire twist-lock receptacle only (no controls) [9,11,12,13]
CE34	Conduit entry 3/4" NPT (Qty 2)
SF	Single fuse (120, 277, 347) [5]
DF	Double fuse (208, 240, 480) [5]
SPD20KV	20KV Surge pack (10KV standard)
FAO	Field adjustable output [9,13]
DMG	0-10V dimming extend out back of housing for external control (control ordered separate) [9,13]
DS	Dual switching [9,14]

Shipped Installed

***Standalone and Networked Sensors/Controls (factory default settings, see table page 9)**

NLTAIR2	nLight AIR generation 2 [13,15,16]
PIRHN	Networked, Bi-Level motion/ambient sensor (for use with NLTAIR2) [13,16,17]
BAA	Buy America(n) Act Compliant

***Note: PIRHN with nLight Air can be used as a standalone dimming sensor with out-of-box settings or as a wireless networked solution. See factory default settings table. Sensor coverage pattern is affected when luminaire is tilted.**

Shipped Separately (requires some field assembly)

EGS	External glare shield [6]
EGFV	External glare full visor (360° around light aperture) [7]
BS	Bird spikes [18]

Finish

DDBXD	Dark Bronze
DBLXD	Black
DNAXD	Natural Aluminum
DWHXD	White
DDBTXD	Textured Dark Bronze
DBLBXD	Textured Black
DNATXD	Textured Natural Aluminum
DWHGXD	Textured White

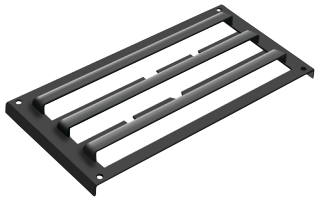
Ordering Information

Accessories
Ordered and shipped separately.

RSX2HS	RSX2 House side shield (includes 2 shields)
RSX2EGS (FINISH) U	External glare shield (specify finish)
RSX2HSAFRR (FINISH) U	RSX2 House side shields for AFR rotated optics (includes 2 shields)
RSX2EGFV (FINISH) U	External glare full visor (specify finish)
RSXRPA (FINISH) U	RSX Universal round pole adaptor plate (specify finish)
RSXWBA (FINISH) U	RSX WBA wall bracket (specify finish) [1]
RSXSCB (FINISH) U DLL127F 1.5 JU	RSX Surface conduit box (specify finish, for use with WBA, WBA not included) Photocell -SSL twist-lock (120-277V) [19]
DLL347F 1.5 CUL JU	Photocell -SSL twist-lock (347V) [19]
DLL480F 1.5 CUL JU	Photocell -SSL twist-lock (480V) [19]
DSHORT SBK U	Shorting cap [19]

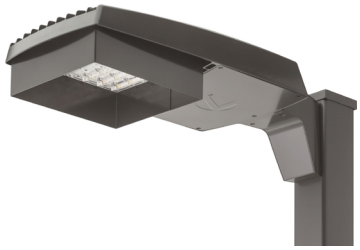
NOTES
1. Any Type 5 distribution, is not available with WBA.
2. MVOLT driver operates on any line voltage from 120-277V (50/60 Hz).
3. HVOLT driver operates on any line voltage from 347-480V (50/60 Hz).
4. XVOLT driver not available with P1. XVOLT driver operates on any line voltage from 277V-480V (50/60 Hz). XVOLT not available with fusing (SF or DF) and not available with PE or PEX.
5. Single fuse (SF) requires 120V, 277V or 347V. Double fuse (DF) requires 208V, 240V or 480V.
6. Maximum tilt is 90° above horizontal.
7. It may be ordered as an accessory.
8. Requires MVOLT or 347V.
9. Not available in combination with other light sensing control options (following options cannot be combined: PE, PEX, PER7, FAO, DMG, DS, PIRHN).
10. Requires 120V, 208V, 240V, or 277V.
11. Twistlock photocell ordered and shipped as a separate line item from Acuity Brands Controls. See accessories. Shorting Cap included. Dimming leads capped for future use.
12. For units with option PER7, the mounting must be restricted to +/- 45° from horizontal aim per ANSI C136.10-2010.
13. Two or more of the following options cannot be combined including DMG, DS, PER7, FAO and PIRHN.
14. DS only available on performance package P5 and P6.
15. Must be ordered with PIRHN.
16. Requires MVOLT or HVOLT.
17. Must be ordered with NLTAIR2. For additional information on PIRHN visit here.
18. Must be ordered with fixture for factory pre-drilling.
19. Requires luminaire to be specified with PER7 option. Ordered and shipped as a separate line item from Acuity Brands Controls.

External Shields



House Side Shield

External Glare Shield

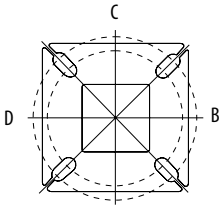


External 360 Full Visor

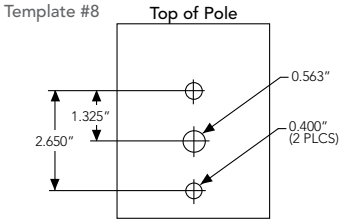
Pole/Mounting Informatiion

Accessories including bullhorns, cross arms and other adpaters are available under the accessories tab at Lithonia's Outdoor Poles and Arms product page. Click here to visit Accessories.

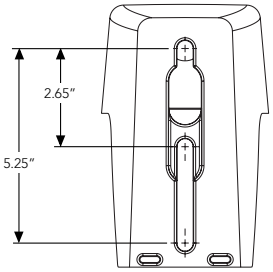
HANDHOLE ORIENTATION



RSX POLE DRILLING



RSX STANDARD ARM & ADJUSTABLE ARM



Round Tenon Mount - Pole Top Slipfitters

Tenon O.D.	RSX Mounting	Single	2 at 180°	2 at 90°	3 at 120°	3 at 90°	4 at 90°
2 - 3/8"	RPA, AARP	AS3-5 190	AS3-5 280	AS3-5 290	AS3-5 320	AS3-5 390	AS3-5 490
2 - 7/8"	RPA, AARP	AST25-190	AST25-280	AST25-290	AST25-320	AST25-390	AST25-490
4"	RPA, AARP	AST35-190	AST35-280	AST35-290	AST35-320	AST35-390	AST35-490

Drill/Side Location by Configuration Type

Drilling Template	Mounting Option	Single	2 @ 180	2 @ 90	3 @ 120	3 @ 90	4 @ 90
	Head Location	Side B	Side B & D	Side B & C	Round Pole Only	Side B, C & D	Side A, B, C & D
#8	**Drill Nomenclature**	DM19AS	DM28AS	DM29AS	DM32AS	DM39AS	DM49AS

RSX2 - Luminaire EPA

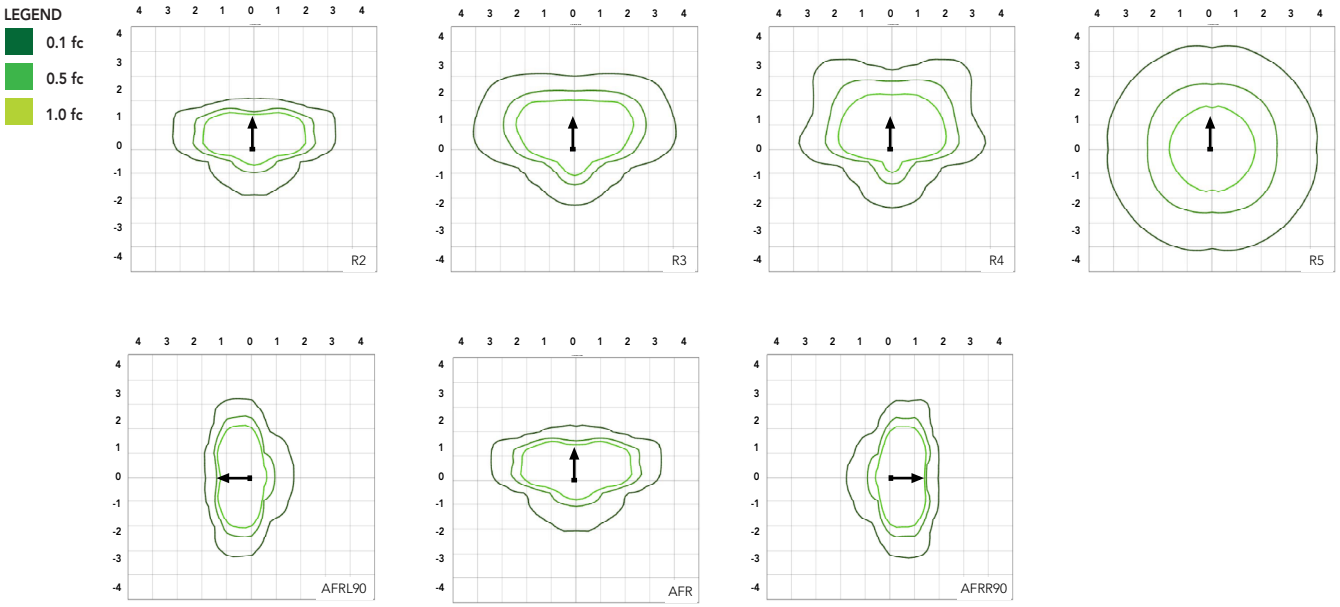
*Includes luminaire and integral mounting arm. Other tenons, arms, brackets or other accessories are not included in this EPA data.

Fixture Quantity & Mounting Configuration		Single	2 @ 90	2 @ 180	3 @ 90	3 @ 120	4 @ 90	2 Side by Side	3 Side by Side	4 Side by Side
Mounting Type	**Tilt**									
SPA - Square Pole Adaptor	0°	0.69	1.22	1.27	1.8	1.61	2.39	1.37	2.06	2.74
RPA - Round Pole Adaptor		0.74	1.27	1.37	1.9	1.71	2.49	1.42	2.16	2.84
MA - Mast Arm Adaptor		0.61	1.14	1.11	1.64	1.45	2.23	1.29	1.9	2.58
IS - Integral Slipfitter AASP/AARP - Adjustable Arm Square/Round Pole	0°	0.69	1.22	1.27	1.8	1.61	2.39	1.37	2.06	2.74
	10°	0.53	1.06	1.05	1.58	1.37	2.08	1.06	1.59	2.12
	20°	0.52	1.02	1.03	1.52	1.33	2.02	1.03	1.55	2.07
	30°	0.64	1.11	1.18	1.63	1.45	2.21	1.27	1.91	2.54
	40°	0.81	1.21	1.35	1.74	1.65	2.39	1.62	2.43	3.23
	45°	0.91	1.25	1.5	1.81	1.75	2.48	1.82	2.73	3.64
	50°	1.34	1.83	2.17	2.61	2.56	3.62	2.68	4.02	5.36
	60°	2.2	2.97	3.57	4.24	4.17	5.89	4.41	6.61	8.82
	70°	2.86	4.13	4.7	5.89	5.71	8.21	5.71	8.57	11.42
	80°	3.4	5.13	5.67	7.34	7.09	10.21	6.79	10.19	13.59
	90°	3.85	5.96	6.55	8.58	8.31	11.88	7.70	11.56	15.41

Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit Lithonia Lighting's RSX Area homepage.

Isofootcandle plots for the RSX2 LED P6 40K. Distances are in units of mounting height (30').



Performance Data

Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-50°C (32-122°F).

Ambient	Ambient	Lumen Multiplier
0°C	32°F	1.05
5°C	41°F	1.04
10°C	50°F	1.03
15°C	59°F	1.02
20°C	68°F	1.01
25°C	77°F	1.00
30°C	86°F	0.99
35°C	95°F	0.98
40°C	104°F	0.97
45°C	113°F	0.96
50°C	122°F	0.95

Electrical Load

		Current (A)					
Performance Package	System Watts (W)	120V	208V	240V	277V	347V	480V
P1	71W	0.59	0.34	0.30	0.26	0.20	0.15
P2	111W	0.93	0.53	0.46	0.40	0.32	0.23
P3	147W	1.23	0.70	0.61	0.53	0.42	0.31
P4	187W	1.55	0.90	0.78	0.68	0.53	0.38
P5	210W	1.75	1.01	0.87	0.76	0.60	0.44
P6	244W	2.03	1.17	1.01	0.88	0.70	0.51

Projected LED Lumen Maintenance

Operating Hours	50,000	75,000	100,000
Lumen Maintenance Factor	>0.97	>0.95	>0.92

Values calculated according to IESNA TM-21-11 methodology and valid up to 40°C.

Performance Data

Lumen Output

Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of the configurations shown, within the tolerances allowed by Lighting Facts. Contact factory for performance data on any configurations not shown here.

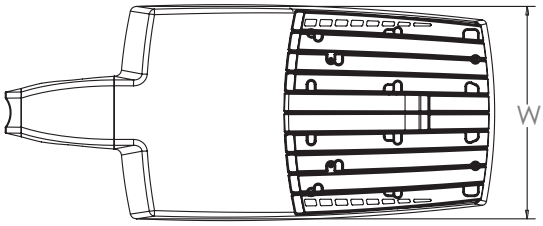
Performance Package	System Watts	Distribution. Type	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P1	71W	R2	10,040	2	0	1	139	11,031	2	0	1	153	11,031	2	0	1	153
		R3	10,005	2	0	2	141	10,992	2	0	2	155	10,992	2	0	2	155
		R3S	10,271	2	0	2	143	11,285	2	0	2	157	11,285	2	0	2	157
		R4	10,136	2	0	2	143	11,136	2	0	2	157	11,136	2	0	2	157
		R4S	9,779	2	0	2	138	10,744	2	0	2	151	10,744	2	0	2	151
		R5	10,271	4	0	2	145	11,285	4	0	2	159	11,285	4	0	2	159
		R5S	10,544	3	0	1	149	11,585	3	0	2	163	11,585	3	0	2	163
		AFR	10,026	2	0	1	141	11,016	2	0	1	155	11,016	2	0	1	155
		AFRR90	10,122	3	0	2	140	11,121	3	0	2	154	11,121	3	0	2	154
		AFRL90	10,164	3	0	2	141	11,167	3	0	2	155	11,167	3	0	2	155
P2	111W	R2	15,712	2	0	2	138	17,263	2	0	2	151	17,263	2	0	2	151
		R3	15,657	2	0	3	141	17,202	3	0	3	155	17,202	3	0	3	155
		R3S	16,075	2	0	2	141	17,661	2	0	2	155	17,661	2	0	2	155
		R4	15,862	2	0	3	143	17,427	2	0	3	157	17,427	2	0	3	157
		R4S	15,304	2	0	2	138	16,815	2	0	2	151	16,815	2	0	2	151
		R5	16,075	4	0	2	145	17,661	5	0	3	159	17,661	5	0	3	159
		R5S	16,502	4	0	2	149	18,130	4	0	2	163	18,130	4	0	2	163
		AFR	15,691	2	0	2	141	17,240	2	0	2	155	17,240	2	0	2	155
		AFRR90	15,841	3	0	3	139	17,404	4	0	3	153	17,404	4	0	3	153
		AFRL90	15,907	3	0	3	139	17,477	4	0	3	153	17,477	4	0	3	153
P3	147W	R2	19,855	3	0	2	132	21,814	3	0	2	145	21,814	3	0	2	145
		R3	19,785	3	0	3	135	21,737	3	0	4	148	21,737	3	0	4	148
		R3S	20,312	3	0	3	135	22,317	3	0	3	149	22,317	3	0	3	149
		R4	20,044	3	0	3	136	22,022	3	0	4	150	22,022	3	0	4	150
		R4S	19,339	3	0	3	132	21,247	3	0	3	145	21,247	3	0	3	145
		R5	20,313	5	0	3	138	22,317	5	0	3	152	22,317	5	0	3	152
		R5S	20,852	4	0	2	142	22,910	4	0	2	156	22,910	4	0	2	156
		AFR	19,828	3	0	2	135	21,785	3	0	2	148	21,785	3	0	2	148
		AFRR90	20,017	4	0	3	133	21,992	4	0	3	147	21,992	4	0	3	147
		AFRL90	20,101	4	0	3	134	22,084	4	0	3	147	22,084	4	0	3	147
P4	187W	R2	22,836	3	0	2	120	25,090	3	0	2	132	25,090	3	0	2	132
		R3	22,756	3	0	4	122	25,002	3	0	4	134	25,002	3	0	4	134
		R3S	23,363	3	0	3	123	25,668	3	0	3	135	25,668	3	0	3	135
		R4	23,054	3	0	4	123	25,329	3	0	4	135	25,329	3	0	4	135
		R4S	22,243	3	0	3	119	25,059	3	0	3	134	25,059	3	0	3	134
		R5	23,363	5	0	3	125	25,669	5	0	4	137	25,669	5	0	4	137
		R5S	23,983	4	0	2	128	26,350	4	0	2	141	26,350	4	0	2	141
		AFR	22,806	3	0	2	122	25,056	3	0	2	134	25,056	3	0	2	134
		AFRR90	23,023	4	0	3	121	25,295	4	0	3	133	25,295	4	0	3	133
		AFRL90	23,120	4	0	3	122	25,401	4	0	3	134	25,401	4	0	3	134
P5	210W	R2	26,141	3	0	2	122	28,721	3	0	2	135	28,721	3	0	2	135
		R3	26,049	3	0	4	124	28,620	3	0	4	136	28,620	3	0	4	136
		R3S	26,744	3	0	3	125	29,383	3	0	4	138	29,383	3	0	4	138
		R4	26,390	3	0	4	126	28,994	3	0	4	138	28,994	3	0	4	138
		R4S	25,462	3	0	3	121	27,974	3	0	3	133	27,974	3	0	3	133
		R5	26,744	5	0	4	127	29,383	5	0	4	140	29,383	5	0	4	140
		R5S	27,454	4	0	2	131	30,163	4	0	2	144	30,163	4	0	2	144
		AFR	26,106	3	0	2	124	28,682	3	0	2	137	28,682	3	0	2	137
		AFRR90	26,354	4	0	3	123	28,955	5	0	3	136	28,955	5	0	3	136
		AFRL90	26,465	4	0	3	124	29,077	5	0	3	136	29,077	5	0	3	136
P6	244W	R2	27,646	3	0	2	112	30,374	3	0	2	123	30,374	3	0	2	123
		R3	27,549	3	0	4	113	30,267	3	0	4	124	30,267	3	0	4	124
		R3S	28,283	3	0	3	115	31,075	3	0	4	126	31,075	3	0	4	126
		R4	27,909	3	0	4	114	30,663	3	0	4	126	30,663	3	0	4	126
		R4S	26,928	3	0	3	110	29,585	3	0	3	121	29,585	3	0	3	121
		R5	28,284	5	0	4	116	31,075	5	0	4	127	31,075	5	0	4	127
		R5S	29,035	4	0	2	119	31,900	5	0	3	131	31,900	5	0	3	131
		AFR	27,608	3	0	2	112	30,332	3	0	2	123	30,332	3	0	2	123
		AFRR90	27,872	4	0	3	113	30,622	5	0	3	124	30,622	5	0	3	124
		AFRL90	27,989	4	0	3	113	30,751	5	0	3	125	30,751	5	0	3	125

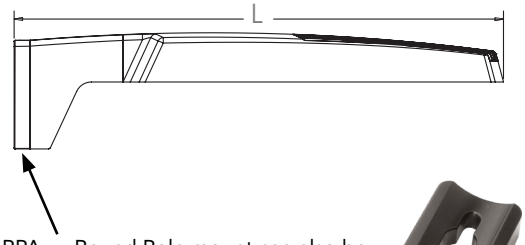
Dimensions & Weights

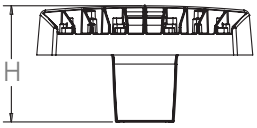
Luminaire Weight by Mounting Type

Mounting Configuration	Total Luminaire Weight
SPA	30 lbs
RPA	32 lbs
MA	30 lbs
WBA	33 lbs
WBASC	36 lbs
IS	33 lbs
AASP	33 lbs
AARP	35 lbs
AAWB	36 lbs
AAWSC	39 lbs

RSX2 with Round Pole Adapter (RPA)



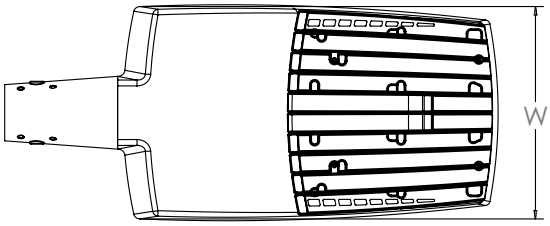


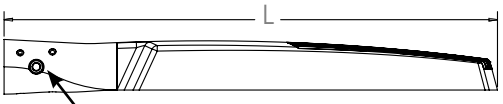


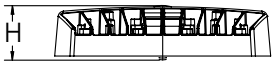
Length: 30.3" (77.0 cm)
Width: 13.4" (34.0 cm)
Height: 3.0" (7.6 cm) Main Body
7.2" (18.3 cm) Arm

Note: RPA — Round Pole mount can also be used to mount on square poles by omitting the round pole adapter plate shown here.

RSX2 with Mast Arm Adapter (MA)

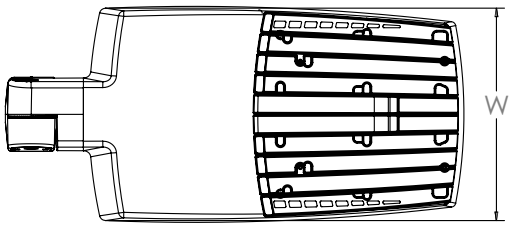


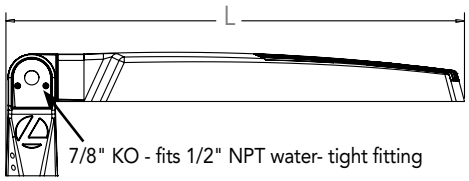


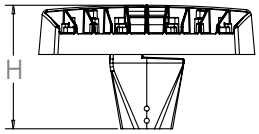


Length: 30.6" (77.7 cm)
Width: 13.4" (34.0 cm)
Height: 3.0" (7.6 cm) Main Body
3.5" (8.9 cm) Arm

RSX2 with Adjustable Slipfitter (IS)



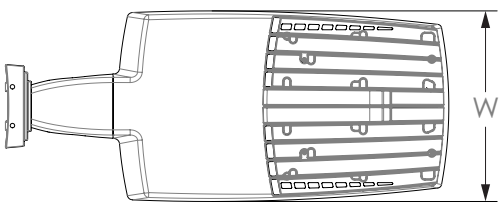


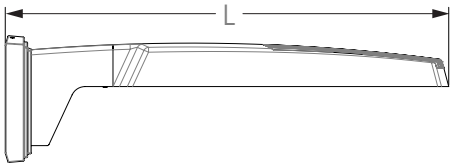


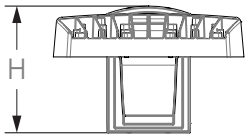
Length: 28.3" (71.9 cm)
Width: 13.4" (34.0 cm)
Height: 3.0" (7.6 cm) Main Body
7.6" (19.3 cm) Arm

Dimensions

RSX2 with Wall Bracket (WBA)

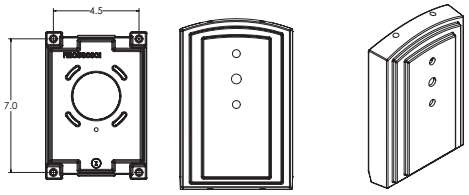




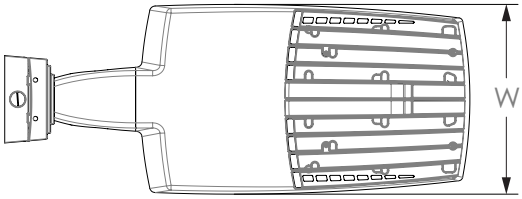


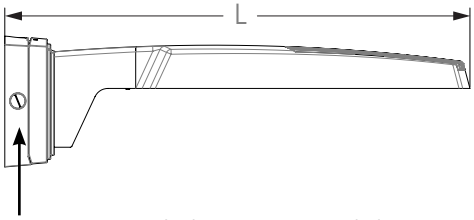
Length: 31.2" (79.2 cm)
Width: 13.4" (41.7 cm)
Height: 3.0" (7.6 cm) Main Body
8.9" (22.6 cm) Arm

Wall Bracket (WBA) Mounting Detail

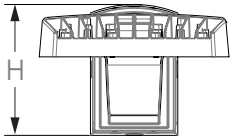


RSX2 with Wall Bracket with Surface Conduit Box (WBASC)



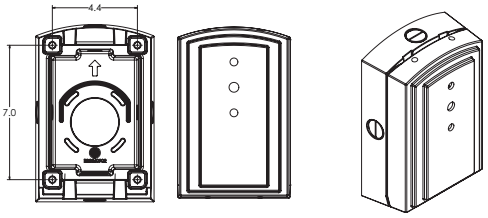


3/4" NPT taps with plugs - Qty (4) provided



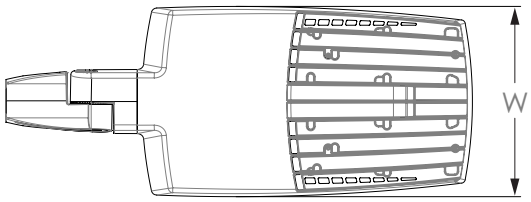
Length: 32.8" (83.3 cm)
Width: 13.4" (41.7 cm)
Height: 3.0" (7.6 cm) Main Body
9.2" (23.4 cm) Arm

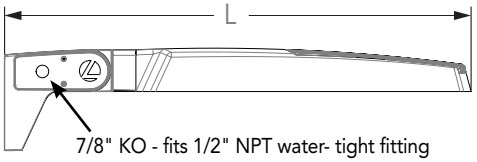
Surface Conduit Box (SCB) Mounting Detail

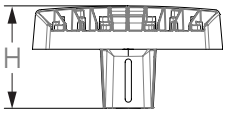


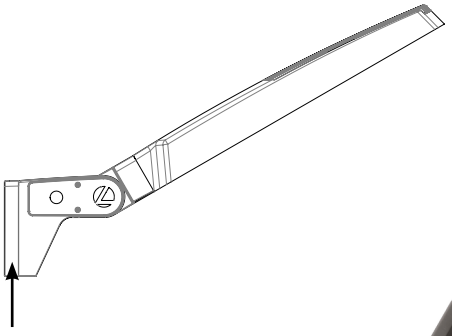
Dimensions

RSX2 with Adjustable Tilt Arm - Square or Round Pole (AASP or AARP)









Length: 32.8" (83.3 cm) **AASP**
33.8" (85.9 cm) **AARP**
Width: 13.4" (34.0 cm)
Height: 3.0" (7.6 cm) Main Body
7.2" (18.2 cm) Arm

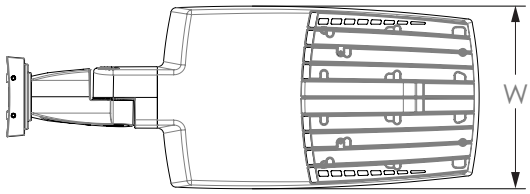
NOTE:
RPA - Round Pole mount can also be used to mount on square poles by omitting the round pole adapter plate shown here.

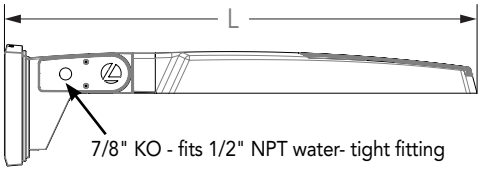
Notes

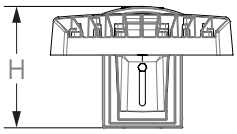
AASP: Requires 3.0" min. square pole for 1 at 90°. Requires 3.5" min. square pole for mounting 2, 3, 4 at 90°.

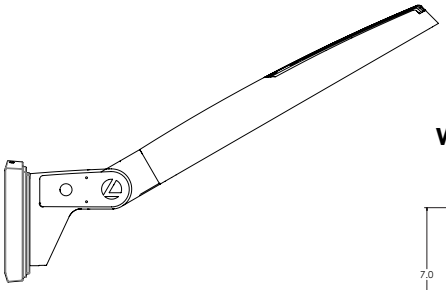
AARP: Requires 3.2" min. dia. round pole for 2, 3, 4 at 90°. Requires 3.0" min. dia. round pole for mounting 1 at 90°, 2 at 180°, 3 at 120°.

RSX2 with Adjustable Tilt Arm with Wall Bracket (AAWB)

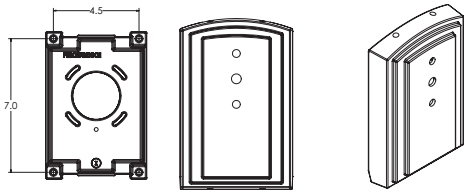








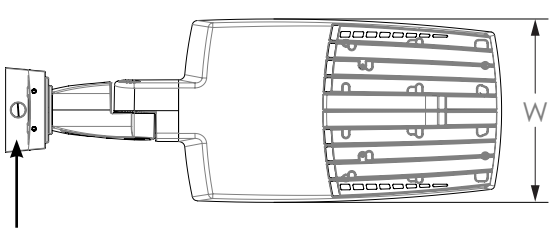
Wall Bracket (WBA) Mounting Detail

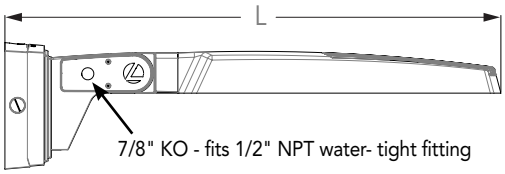


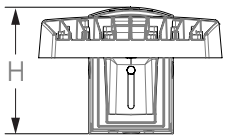
Length: 34.7" (88.0 cm)
Width: 13.4" (34.0 cm)
Height: 3.0" (7.6 cm) Main Body
8.9" (22.6 cm) Arm

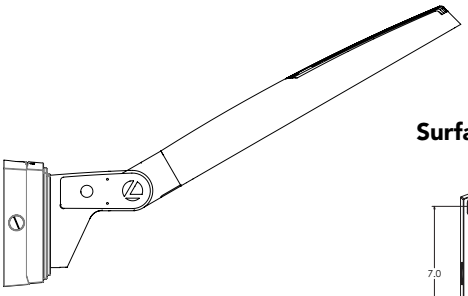
Dimensions

RSX2 with Adjustable Tilt Arm with Wall Bracket and Surface Conduit Box (AAWSC)



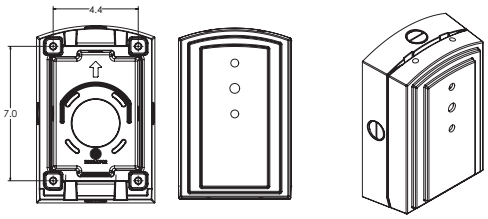




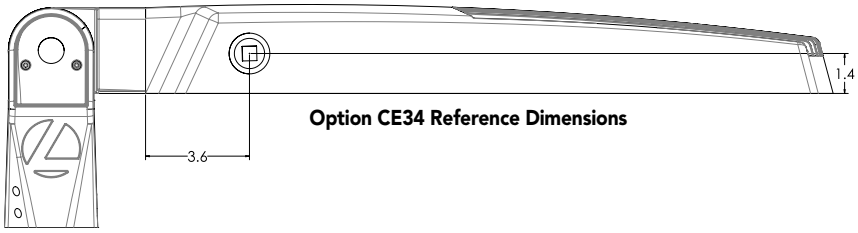


Length: 36.2" (91.9 cm)
Width: 13.4" (40.0 cm)
Height: 3.0" (7.6 cm) Main Body
9.2" (23.4 cm) Arm

Surface Conduit Box (SCB) Mounting Detail

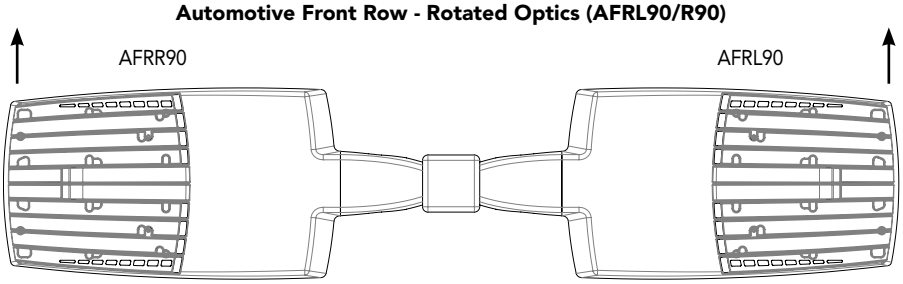


Additional Reference Drawings



Option CE34 Reference Dimensions

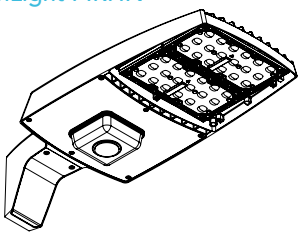
Automotive Front Row - Rotated Optics (AFRL90/R90)

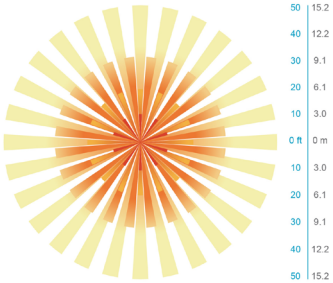


(Example: 2@180 - arrows indicate direction of light exiting the luminaire)

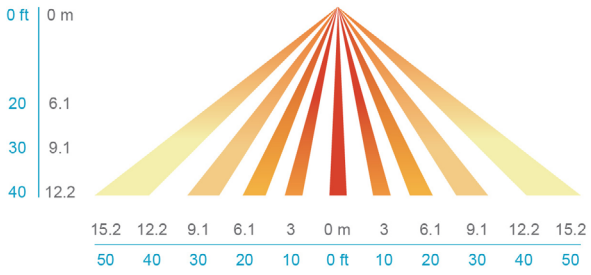
NLTAIR2 PIRHN nLight Sensor Coverage Pattern

nLight PIRHN





Top



Side

Motion Sensor Default Settings - Option PIRHN						
Option	Dimmed State (unoccupied)	High Level (when occupied)	Photocell Operation	Dwell Time (occupancy time delay)	Ramp-up Time (from unoccupied to occupied)	Ramp-down Time (from occupied to unoccupied)
NLTAIR2 PIRHN	Approx. 30% Output	100% Output	Enabled @ 1.5FC	7.5 minutes	3 seconds	5 minutes

*Note: NLTAIR2 PIRHN default settings including photocell set-point, high/low dim rates, and occupancy sensor time delay are all configurable using the Clairity Pro App. Sensor coverage pattern shown with luminaire at 0°. Sensor coverage pattern is affected when luminaire is titled.

FEATURES & SPECIFICATIONS

INTENDED USE
The RSX LED area family is designed to provide a long-lasting, energy-efficient solution for the one-for-one replacement of existing metal halide or high pressure sodium lighting. The RSX2 delivers 11,000 to 31,000 lumens and is ideal for replacing 250W to 1000W HID pole-mounted luminaires in parking lots and other area lighting applications.

CONSTRUCTION AND DESIGN
The RSX LED area luminaire features a rugged die-cast aluminum main body that uses heat-dissipating fins and flow-through venting to provide optimal thermal management that both enhances LED performance and extends component life. Integral "no drill" mounting arm allows the luminaire to be mounted on existing pole drillings, greatly reducing installation labor. The light engines and housing are sealed against moisture and environmental contaminants to IP66. The low-profile design results in a low EPA, allowing pole optimization. Vibration rated per ANSI C136.31: 3G Mountings: Include SPA, RPA, MA, IS, AASP, AARP rated for 3G vibration. 1.5G Mountings: Include WBA, WBASC, AAWB and AAWSC rated for 1.5G vibration.

FINISH
Exterior parts are protected by a zinc-infused Super Durable TGIC thermoset powder coat finish that provides superior resistance to corrosion and weathering. A tightly controlled multi-stage process ensures superior adhesion as well as a minimum finish thickness of 3 mils. The result is a high-quality finish that is warrantied not to crack or peel.

OPTICS
Precision acrylic refractive lenses are engineered for superior application efficiency, distributing the light to where it is needed most. Available in short and wide pattern distributions including Type 2, Type 3, Type 3S, Type 4, Type 4S, Type 5, Type 5S, AFR (Automotive Front Row) and AFR rotated AFRR90 and ARFL90.

ELECTRICAL
Light engine(s) configurations consist of high-efficacy LEDs mounted on metal-core circuit boards and aluminum heat sinks to maximize heat dissipation. Light engines are IP66 rated. LED lumen maintenance is >L92/100,000 hours. CCT's of 3000K, 4000K and 5000K (minimum 70 CRI) are available. Class 1 electronic drivers ensure system power factor >90% and THD <20%. Easily serviceable 10kV surge protection device meets a minimum Category C Low operation (per ANSI/IEEE C62.41.2).

STANDARD CONTROLS
The RSX LED area luminaire has a wide assortment of control options. Dusk to dawn controls include MVOLT and 347V button-type photocells and NEMA twist-lock photocell receptacles.

nLIGHT AIR CONTROLS
The RSX LED area luminaire is also available with nLight® AIR for the ultimate in wireless control. This powerful controls platform provides out-of-the-box basic motion sensing with photocontrol functionality and is suitable for mounting heights up to 40 feet. No commissioning is required when using factory default settings that provide basic stand-alone motion occupancy dimming that is switched on and off with a built-in photocell. See chart above for motion sensor default out-of-box settings. For more advanced wireless functionality, such as group dimming, nLight AIR can be commissioned using a smartphone and the easy-to-use CLAIRITY app. nLight AIR equipped luminaries can be grouped, resulting in motion sensor and photocell group response without the need for additional equipment. Scheduled dimming with motion sensor over-ride can be achieved when used with the nLight Eclypse. Additional information about nLight Air can be found here.

INSTALLATION
Integral "no-drill" mounting arm allows for fast, easy mounting using existing pole drillings. Select the "SPA" option for square poles and the "RPA" option to mount to round poles. Note, the RPA mount can also be used for mounting to square poles by omitting the RPA adapter plate. Select the "MA" option to attach the luminaire to a 2 3/8" horizontal mast arm or the "IS" option for an adjustable slipfitter that mounts on a 2 3/8" OD tenon. The adjustable slipfitter has an integral junction box and offers easy installation. Can be tilted up to 90° above horizontal. Additional mountings are available including a wall bracket, adjustable tilt arm for direct-to-pole and wall and a surface conduit box for wall mount applications.

LISTINGS
CSA Certified to meet U.S. and Canadian standards. Suitable for wet locations. Rated for -40°C minimum ambient. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the DLC Qualified Products List at www.designlights.org/QPL to confirm which versions are qualified.
International Dark-Sky Association (IDA) Fixture Seal of Approval (FSA) is available for all products on this page utilizing 3000K color temperature only.

BUY AMERICAN
Product with the BAA option is assembled in the USA and meets the Buy America(n) government procurement requirements under FAR, DFARS and DOT.
Please refer to www.acuitybrands.com/buy-american for additional information.

WARRANTY
5-year limited warranty. Complete warranty terms located at:
www.acuitybrands.com/support/customer-support/terms-and-conditions

Note: Actual performance may differ as a result of end-user environment and application.
All values are design or typical values, measured under laboratory conditions at 25 °C.
Specifications subject to change without notice.

WPLED26N

Color: Bronze

Weight: 7.1 lbs

Project:	**Type:**
Prepared By:	**Date:**

Driver Info

Type	Constant Current
120V	0.22A
208V	0.13A
240V	0.11A
277V	0.10A
Input Watts	28.9W

LED Info

Watts	26W
Color Temp	4000K (Neutral)
Color Accuracy	70 CRI
L70 Lifespan	100,000 Hours
Lumens	3,738
Efficacy	129.3 lm/W

Technical Specifications

Compliance

UL Listed:

Suitable for wet locations. Suitable for mounting within 1.2m (4ft) of the ground.

DLC Listed:

This product is listed by Design Lights Consortium (DLC) as an ultra-efficient premium product that qualifies for the highest tier of rebates from DLC Member Utilities. Designed to meet DLC 5.1 requirements.
DLC Product Code: P0000175P

Performance

Lifespan:

100,000-Hour LED lifespan based on IES LM-80 results and TM-21 calculations

Construction

IP Rating:

Ingress protection rating of IP66 for dust and water

Finish:

Formulated for high durability and long-lasting color

Ambient Temperature:

Suitable for use in up to 40°C (104°F)

Cold Weather Starting:

Minimum starting temperature is -40°C (-40°F)

Green Technology:

Mercury and UV free. RoHS-compliant components.

Electrical

Driver:

Constant Current, Class 2, 120-277V, 50/60Hz, 120V: 0.22A, 208V: 0.13A, 240V: 0.11A, 277V 0.10A

Dimming Driver:

Driver includes dimming control wiring for 0-10V dimming systems. Requires separate 0-10V DC dimming circuit. Dims down to 10%.

THD:

10.02% at 120V, 10.55% at 277V

Power Factor:

98.3% at 120V, 95.4% at 277V

LED Characteristics

Color Consistency:

3-step MacAdam Ellipse binning to achieve consistent fixture-to-fixture color

Color Stability:

LED color temperature is warrantied to shift no more than 200K in color temperature over a 5-year period

Technical Specifications (continued)

LED Characteristics

Color Uniformity:

RAB's range of Correlated Color Temperature follows the guidelines of the American National Standard for Specifications for the Chromaticity of Solid State Lighting (SSL) Products, ANSI C78.377-2017.

Other

Patents:

The WPLED design is protected by U.S. Pat. D634878, Canada Pat 134878, China Pat. CN301649064S.

Equivalency:

Equivalent to 150W Metal Halide

Buy American Act Compliance:

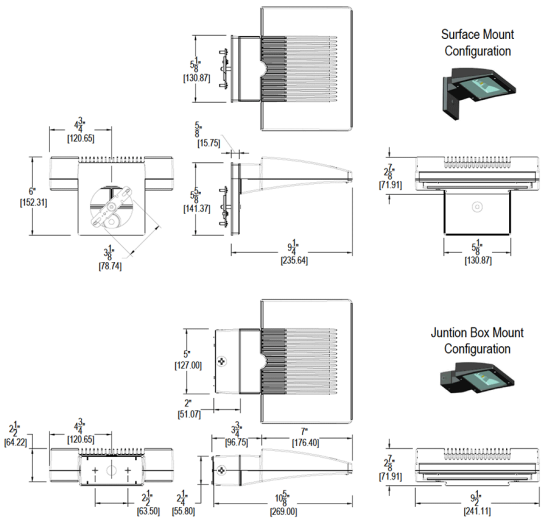
RAB values USA manufacturing! Upon request, RAB may be able to manufacture this product to be compliant with the Buy American Act (BAA). Please contact customer service to request a quote for the product to be made BAA compliant.

Optical

BUG Rating:

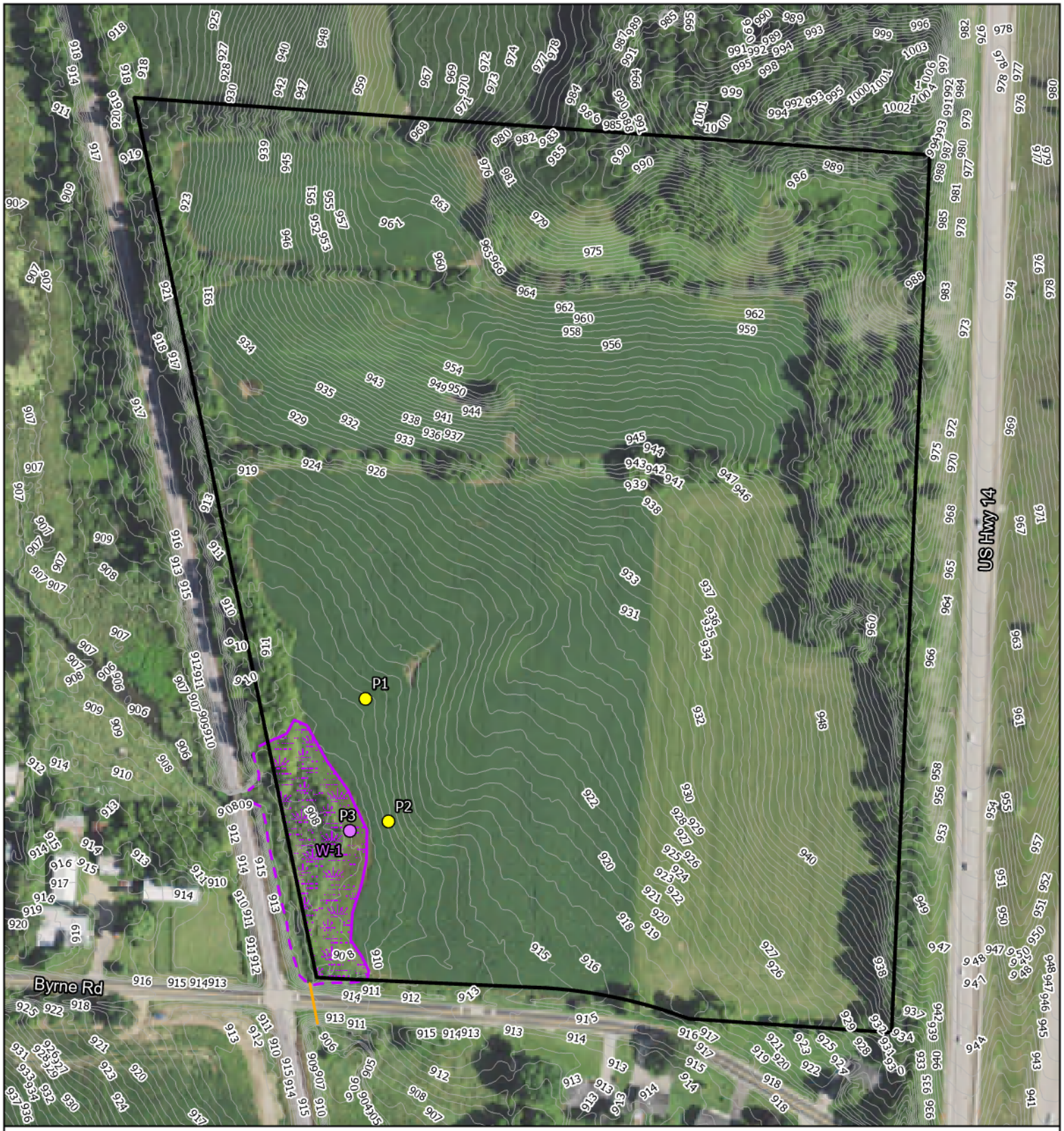
B1 U0 G0

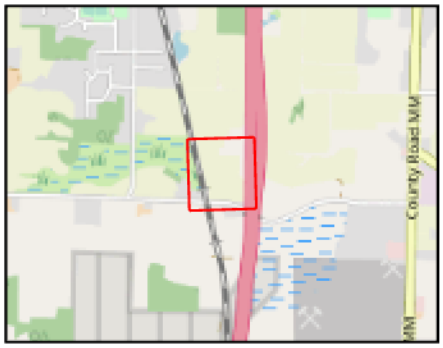
Dimensions



Features

- Maintains 70% of initial lumens at 100,000-hours
- Weatherproof high temperature silicone gaskets
- Superior heat sinking with die cast aluminum housing and external fins
- 100 up to 277 Volts
- 5-Year, No-Compromise Warranty





Study Area (31.44 ac)
Dane Co 1' Contours
Field Delineated Wetlands (0.80 ac)
Offsite Wetland Boundaries

Sample Points

Upland
Wetland

0 200 Ft

Heartland ECOLOGICAL GROUP INC

Figure 6. Field Delineated Wetlands

Schleicher Property
Project #20210631
T6N, R9E, S23
C Fitchburg, Dane Co

2020 NAIP
Dane Co, HEG

828 John Nolen Drive
Madison, WI 53713
800.272.2443
www.m3ins.com

September 29, 2021

City of Fitchburg
Planning and Zoning Department

To whom it may concern:

Jeff Schleicher along with David and Erin Schleicher have contacted us regarding their proposed wedding venue in the City of Fitchburg. We will be happy to work with their real estate holding and operating entities to meet their various insurance needs at the time construction and operations begin.

Sincerely,

Kelly Staerzl
Account Manager
kelly.staerzl@m3ins.com
(608) 288-2868

SOIL EVALUATION REPORT

In accordance with SPS 385, Wis. Adm. Code

Attach complete site plan on paper not less than 8 1/2 x 11 inches in size. Plan must include, but not limited to: vertical and horizontal reference point (BM), direction and percent slope, scale or dimensions, north arrow, and location and distance to nearest road.

Please print all information.

Personal information you provide may be used for secondary purposes (Privacy Law, s. 15.04(1)(m)).

County	Parcel I.D.	Reviewed by	Date
Dane	0609-234-9820-2		

Property Owner	Property Location										
Murphys Creek LLC	Govt. Lot	SE ¼	SE ¼	S 23	T 6	N R 9	◉ E (or) ○ W				
Property Owner's Mailing Address	**Lot #**	**Block #**	**Subd. Name or CSM#**								
3491 LeFlore Court	2		CSM 15004								
City	**State**	**Zip Code**	**Phone Number**	◉ City	○ Village	○ Town	**Nearest Road**				
Verona,	WI	53593	( )	Fitchburg			Byrne Road				

◉ New Construction Use: ○ Residential / Number of bedrooms ____ Code derived design flow rate 1122 GPD
○ Replacement ◉ Public or commercial – Describe: Wedding Banquest Facility
Parent material Loess Over Glacial Till Flood Plan elevation if applicable ____ ft.
General comments and recommendations:
Suitable For Shallow In-Ground Absorption System

1 Boring # ○ Boring ◉ Pit Ground surface elev. 83.5 ft. Depth to limiting factor 64 in.

Horizon	Depth In.	Dominant Color Munsell	Redox Description Qu. Az. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/Ft² *Eff#1	Soil Application Rate GPD/Ft² *Eff#2
A	0-10	10YR3/2	None	sil	2msbk	mvfr	cs	1vf-f	0.6	0.8
B1	10-28	10YR4/4	None	sicl	2msbk	mfr	gs	1vf	0.4	0.6
B2	28-64	10YR4/3	None	sicl	1msbk	mfi	gs		0.2	0.3
B3	64-66	10YR4/3	c2f10YR5/6,6/2	sicl	1csbk	mfi			0.2	0.3

2 Boring # ○ Boring ◉ Pit Ground surface elev. 83.5 ft. Depth to limiting factor 54 in.

Horizon	Depth In.	Dominant Color Munsell	Redox Description Qu. Az. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/Ft² *Eff#1	Soil Application Rate GPD/Ft² *Eff#2
A	0-12	10YR3/2	None	sil	2msbk	mvfr	cs	1vf-f	0.6	0.8
B1	12-30	10YR4/4	None	sicl	2msbk	mfr	gs	1vf	0.4	0.6
B2	30-54	10YR4/3	None	sicl	1msbk	mfi	gs		0.2	0.3
B3	54-67	10YR4/3	c2f10YR5/6,6/2	sicl	1csbk	mfi			0.2	0.3

* Effluent #1 = BOD, > 30 ≤ 220 mg/L and TSS > 30 ≤ 150 mg/L * Effluent #2 = BOD, > 30 ≤ 220 mg/L and TSS > 30 ≤ 150 mg/L

CST Name (Please Print)	Signature	CST Number
Paul A. Hardy		225394
Address	**Date Evaluation Conducted**	**Telephone Number**
7226 Timberwood Drive, Madison, WI 53719	11/22/2021	608-848-4869

3 Boring #

○ Boring
◉ Pit

Ground surface elev. 79.0 ft. Depth to limiting factor >70 in.

Horizon	Depth In.	Dominant Color Munsell	Redox Description Qu. Az. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/Ft²	
									*Eff#1	*Eff#2
A	0-10	10YR3/2	None	sil	2msbk	mvfr	cs	1vf-f	0.6	0.8
B1	10-33	10YR4/4	None	sicl	2msbk	mfr	gs	1vf	0.4	0.6
B2	33-44	10YR4/4	None	sicl	1msbk	mfi	gs		0.2	0.3
IIB3	44-59	10YR5/6	None	scl	1csbk	mfr	cs		0.2	0.3
IIC	59-70	10YR5/4	None	sl	1msbk	mfr			0.4	0.7

4 Boring #

○ Boring
◉ Pit

Ground surface elev. 80.0 ft. Depth to limiting factor >60 in.

Horizon	Depth In.	Dominant Color Munsell	Redox Description Qu. Az. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/Ft²	
									*Eff#1	*Eff#2
A	0-16	10YR3/2	None	sil	2msbk	mvfr	cs	1vf-f	0.6	0.8
B1	16-26	10YR4/4	None	sicl	2msbk	mfr	gs	1vf	0.4	0.6
B2	26-60	10YR4/4	None	sicl	1msbk	mfi			0.2	0.3

Boring #

○ Boring
○ Pit

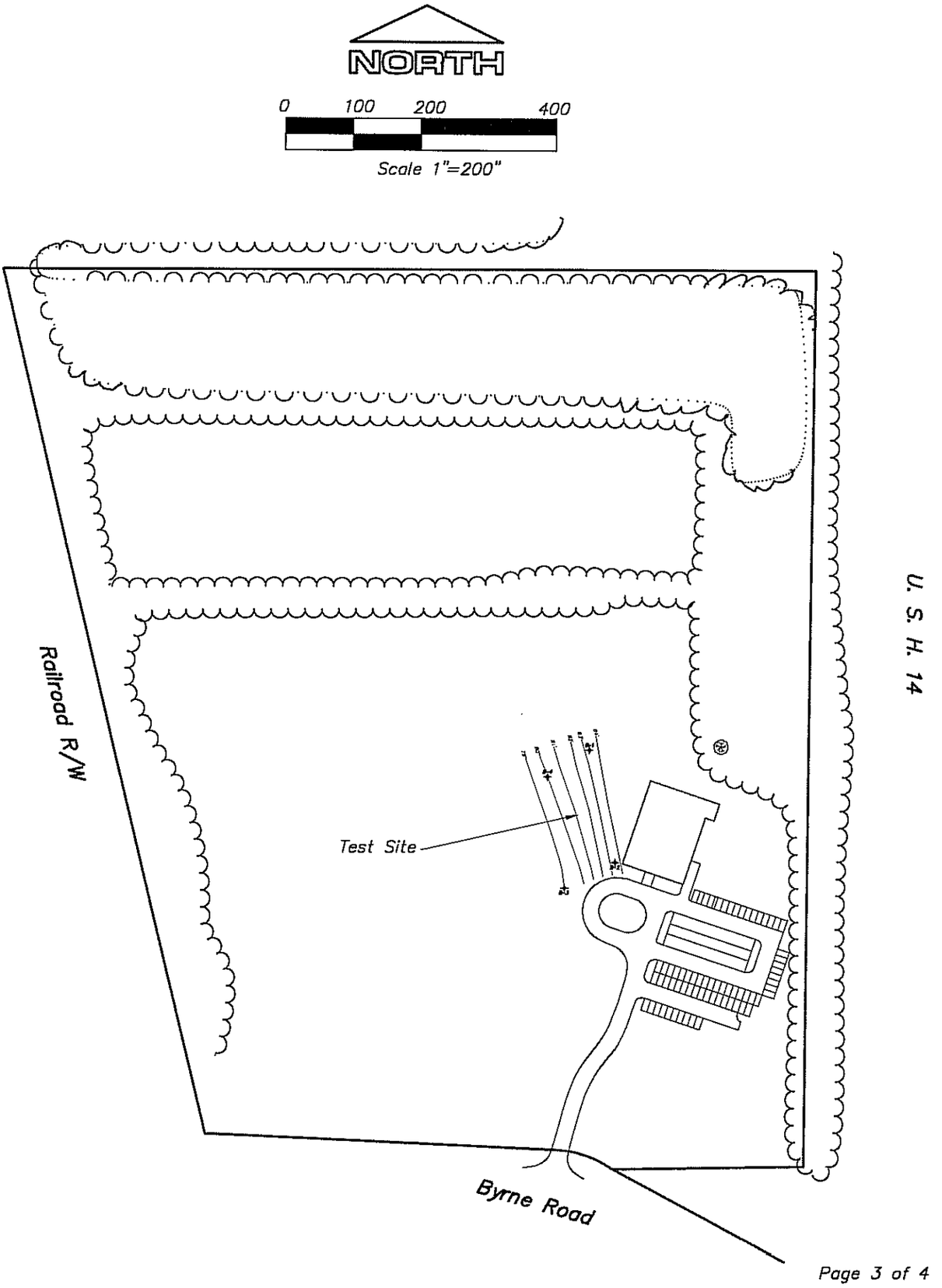
Ground surface elev. _____ ft. Depth to limiting factor _____ in.

Horizon	Depth In.	Dominant Color Munsell	Redox Description Qu. Az. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	Roots	Soil Application Rate GPD/Ft²	
									*Eff#1	*Eff#2

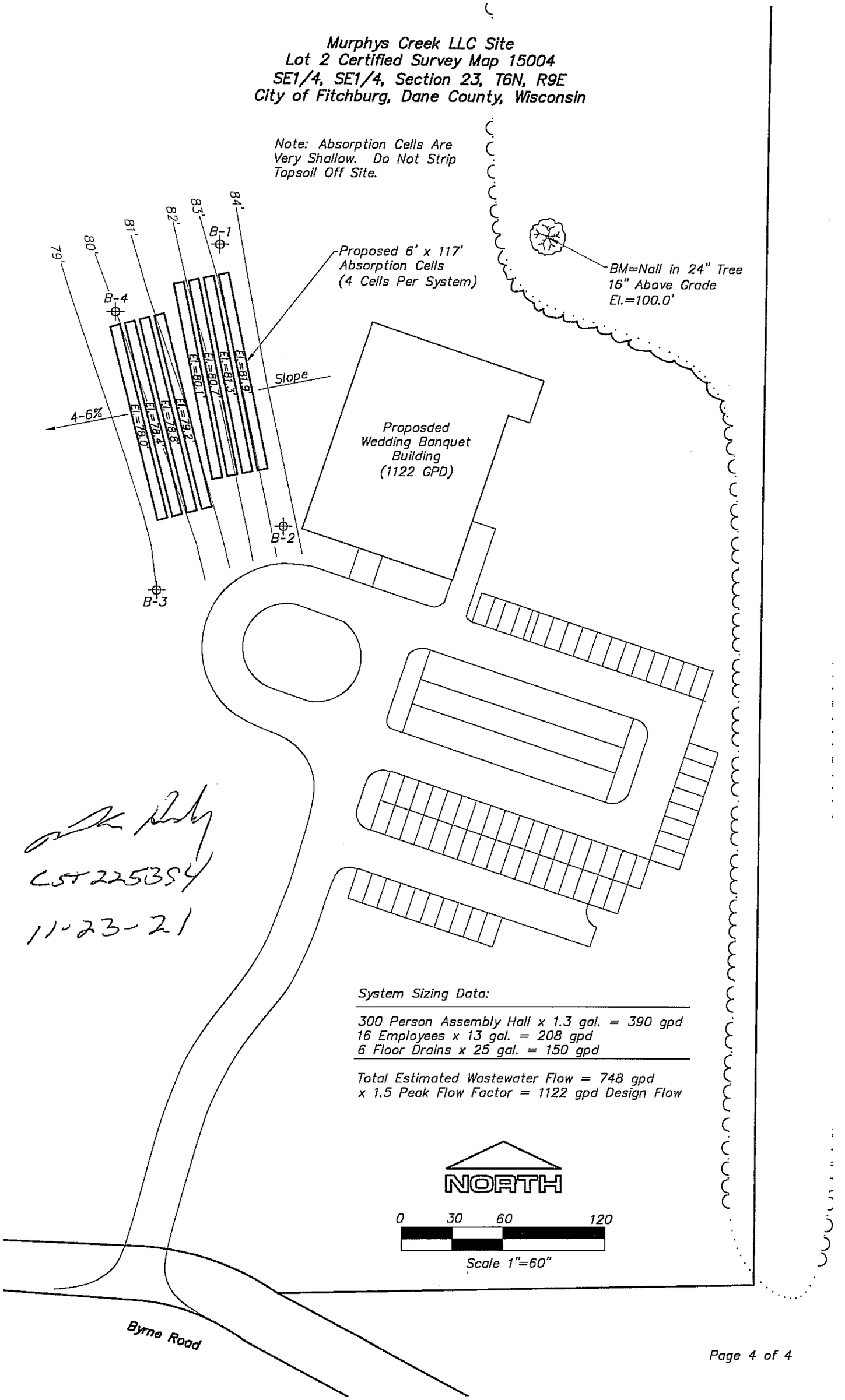
* Effluent #1 = BOD, > 30 ≤ 220 mg/L and TSS > 30 ≤ 150 mg/L

* Effluent #2 = BOD, > 30 ≤ 220 mg/L and TSS > 30 ≤ 150 mg/L

Location Map
Murphys Creek LLC Site
Lot 2 Certified Survey Map 15004



Murphys Creek LLC Site
Lot 2 Certified Survey Map 15004
SE1/4, SE1/4, Section 23, T6N, R9E
City of Fitchburg, Dane County, Wisconsin



D'ONOFRIO KOTTKE AND ASSOCIATES, INC.
7530 Westward Way, Madison, WI 53717 • Phone: 608.833.7530 • www.donofrio.cc

MURPHY'S CREEK
WEDDING BARN

CITY OF FITCHBURG
BYRNE ROAD & USH 14
DANE COUNTY, WISCONSIN

STORM WATER MANAGEMENT REPORT

November 19, 2021

PREPARED BY
D'Onofrio, Kottke & Associates, Inc.
7530 Westward Way
Madison, Wisconsin 53717
608.833.7530

FN: 21-05-159

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EXHIBITS

1. Site Location Map
2. Site Soils Map
3. Existing Drainage Plan
4. Proposed Drainage Plan & Basin Layout
5. Wetland Indicator Map

APPENDICES

A. Detention Pond Detail
B. WinSLAMM Infiltration and Sediment Reduction Calculations
C. Hydrocad Output

SITE SUMMARY

The Murphy Creek Development project consists of the construction of a Wedding Barn and Parking Facilities on Lot 2 of Certified Survey Map No. 15004 located in the City of Fitchburg. The site 31.0 acres and is bounded by Bryne Road on the south, Wisconsin River Rail Transit on the west, unplatted Lands on the north, USH 14 on the east. The site will be accessed from Byrne Road only.

Approximately 2.3 acres of the site will be developed. The overall drainage pattern will not be affected. The site currently drains to Murphy's Creek via overland swales along Byrne Road and the railroad.

Soils: A soils map is included as Exhibit 2. The developed portion of the site includes McHenry Silt Loam and Batavia Silt Loam.

Wetlands: There are no wetlands located in the proposed developed area. A Wisconsin Wetland Inventory Map is included as Exhibit 5, which shows there may be wetlands along the west property line.

Thermal Impacts: This site is located in the Yahara River and Lake Monona watershed. This is not a thermally sensitive area.

STANDARDS & RESULTS

The proposed development requires the following storm water management performance standards.

Sediment Control

Standard: Reduce total suspended solids load leaving the site by 80 percent, based on the average annual rainfall, as compared to no runoff management controls.

Design Results: Sediment from the developed portion of the site will be reduced by 80% by routing the site runoff through a bioretention basin system prior to leaving the site. WinSLAMM was used to model the sediment load reduction. See appendix B for sediment reduction calculations.

Oil and Grease Control

Standard: For commercial or industrial developments and all other uses where the potential for pollution by oil or grease, or both, exists, the first 0.5 inches of runoff will be treated using the best oil and grease removal technology available.

Design Results: Runoff will be treated in the proposed bioretention pond.

Runoff Rate Control

Standard: For new developments, storm water management practices shall be designed and implemented to maintain post-development peak runoff discharge rates at predevelopment rates for the 1, 2, 10 and 100 year - 24 hour design storm events, while safely passing storm events in excess of the 100 year – 24 hour storm event. In addition to these requirements, Dane County now requires maintaining the peak runoff discharge rate for the 200 year – 24 hour storm event. Therefore, this requirement was included in the study.

Design Results: The proposed detention basin system was designed to maintain the development's existing peak runoff rates for the 1, 2, 10, 100 and 200 year- 24 hour storm events. The peak flow comparison chart for this site can be found in the Storm Water Management Measurs section and the HydroCAD output can be found within Appendix C.

Infiltration:

Standard: For both residential and non-residential developments, design practices to infiltrate sufficient runoff volume so that post-development infiltration volume shall be at least 90 percent of the pre-development infiltration volume, based upon average annual rainfall.

Design Results: The proposed development meets the infiltration requirements without any proposed infiltration facilities. Infiltration was analyzed using WinSLAMM modeling software. The infiltration design calculations can be found in Appendix B.

STORM WATER MANAGEMENT MEASURES

The proposed project was modeled as two drainage areas in developed conditions and as one drainage area in pre-developed conditions. The drainage areas in the developed condition were linked to a Point of Analysis to allow comparison with the existing condition.

The stormwater from the site will be treated by routing runoff to a bioretention pond located at the south end of the developed area. The peak flow results from the stormwater modeling and detention basin design are shown in the chart below.

Murphy's Creek Wedding Barn Peak Flow Comparison Chart

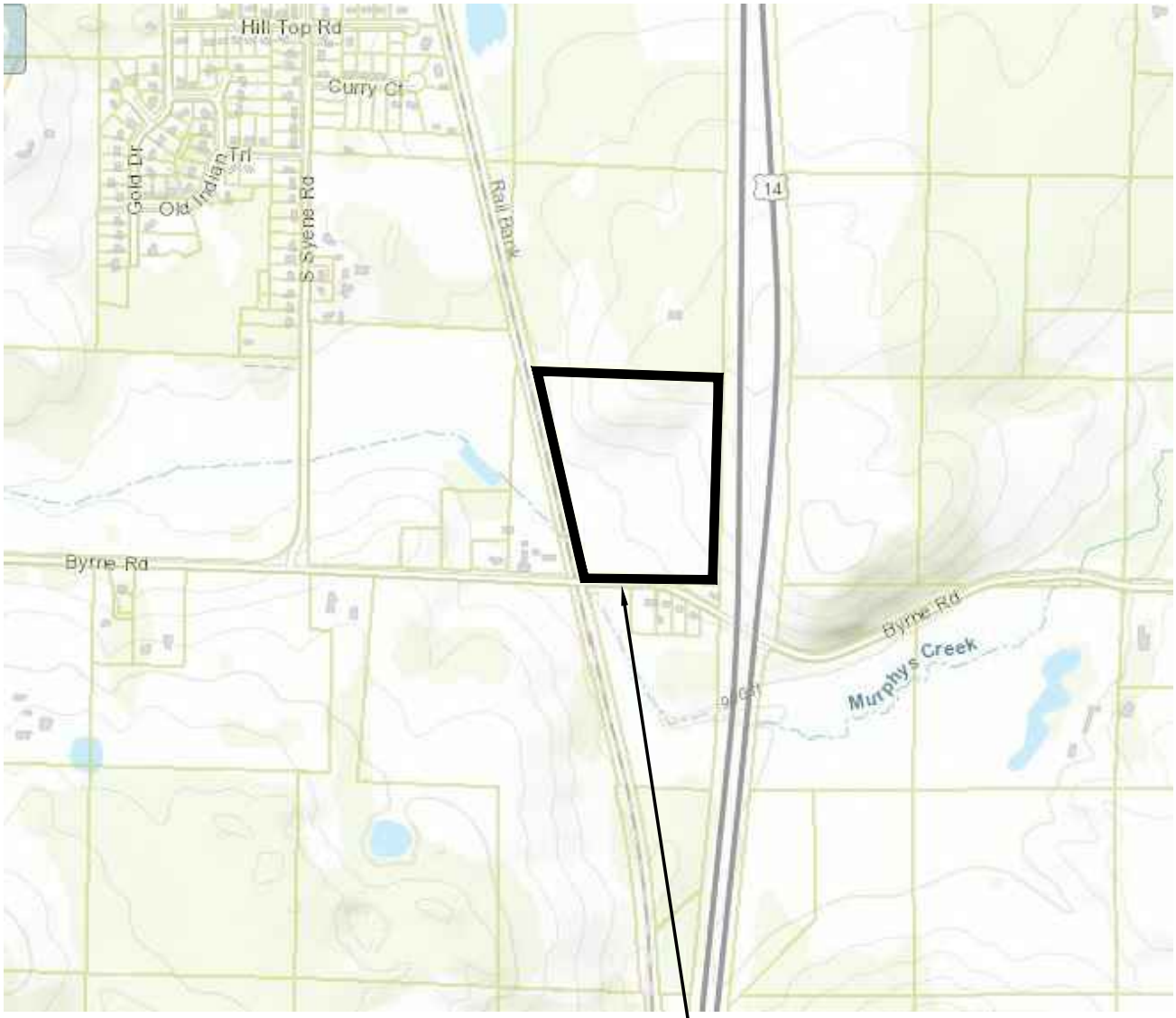
	24-HR STORM EVENT				
	1YR	**2YR**	**10YR**	**100YR**	**200YR**
Existing (cfs)	8.1	12.9	34.6	91	112
Developed (cfs)	8.7	13.5	35.3	91	112
Developed w/ Facilities (cfs)	7.8	12.3	33.6	89	109

Infiltration modeling for the site was calculated using WinSLAMM software. The calculations show

that no infiltration facilities were required due to the added impervious area of the project.

WinSLAMM was also used to perform the sediment reduction calculations for the proposed basin. The calculations show that the bioretention facility achieves 80% sediment reduction for the new impervious areas.

EXHIBITS



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7530 Westward Way, Madison, WI 53717
Phone: 608.833.7530 • Fax: 608.833.1089
YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

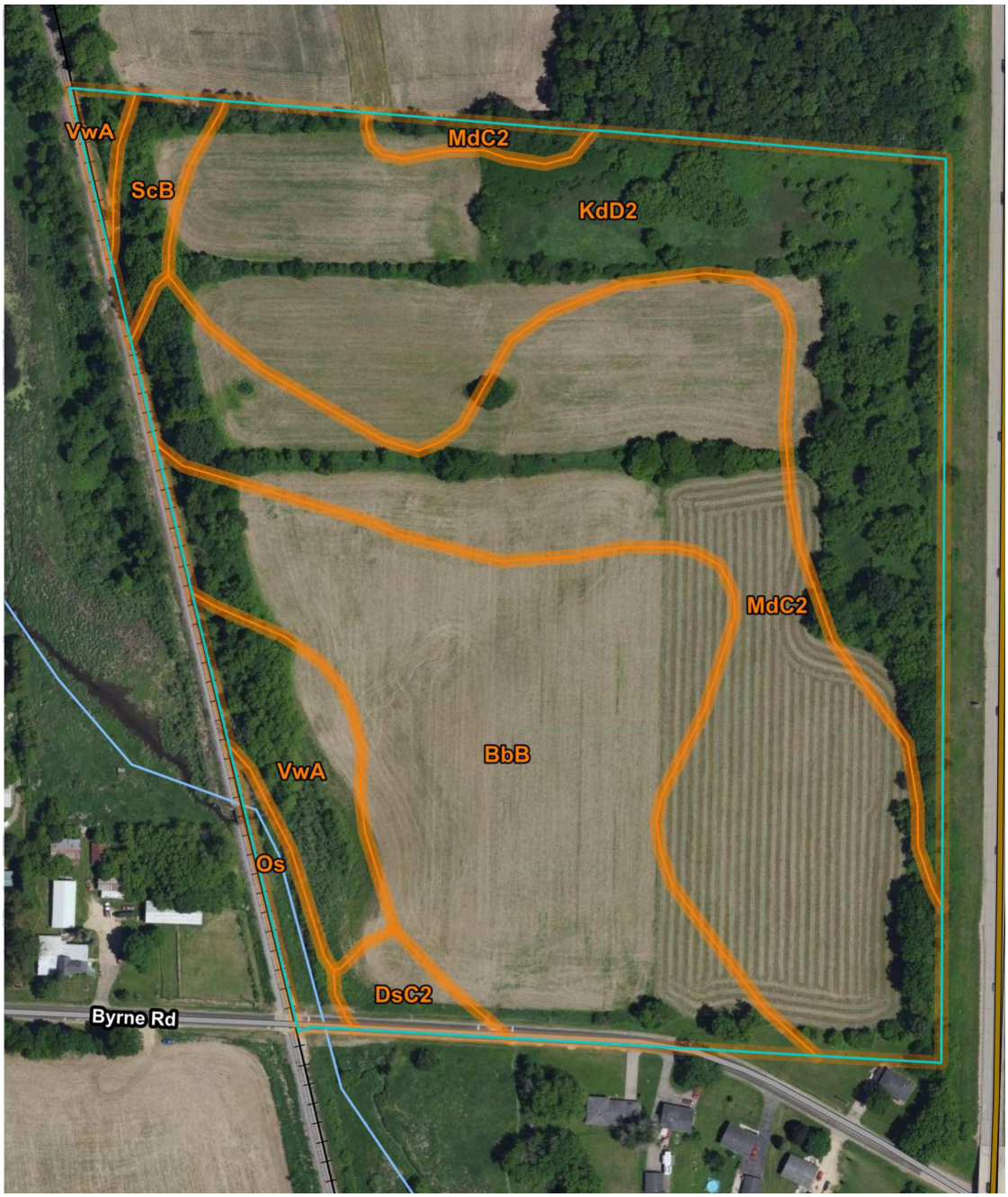
LOCATION MAP

MURPHY'S CREEK

CITY OF FITCHBURG, WISCONSIN

DRAWN BY: KJP *EXHIBIT 1*

U:\USER\2105159\ENGINEERING\SWMP\2105159 DRAINAGE MAPS.DWG



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SOILS MAP

MURPHY'S CREEK

CITY OF FITCHBURG, WISCONSIN

DRAWN BY: KJP

EXHIBIT 2

U:\USER\2105159\ENGINEERING\SWMP\2105159 DRAINAGE MAPS.DWG

EXISTING DRAINAGE BASIN INFORMATION

EXISTING DRAINAGE AREA = 31.0 AC
31.0 AC - EXISTING TYPE B SOILS= CN 68

EXISTING SITE DRAINAGE AREA = 31.0 AC

Tc PATH

RAILROAD

U.S.H. 14

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7530 Westward Way, Madison, WI 53717
Phone: 608.833.7530 • Fax: 608.833.1089
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EXISTING DRAINAGE MAP

MURPHY'S CREEK

CITY OF FITCHBURG, DANE COUNTY, WISCONSIN

GRID NORTH
WISCONSIN COUNTY COORDINATE SYSTEM (DANE ZONE)

SCALE: 1"= 120'
(11 X 17)

0 120

DATE: 11-19-21
REVISED:

FN: 21-05-159

Sheet Number:
EXHIBIT 3

PROPOSED DRAINAGE BASIN INFORMATION

UNDEVELOPED DRAINAGE AREA = 28.7 AC

28.44 AC - Agriculture	CN 68
0.30 AC - Unconnected Impervious	CN 98

PROPOSED DRAINAGE AREA = 2.3 AC

1.2 AC - Proposed Impervious	CN 98
1.1 AC - 75% Grass Cover	CN 61

UNDEVELOPED
SITE DRAINAGE
AREA =28.7 AC

PROPOSED
SITE DRAINAGE
AREA =2.3 AC

12" RCP CULVERT
12" RCP ENDWALL W/ GATE
IE = 917.0

36" STANDPIPE W/ HAALA TOP MOUNT
CONE GRATE OR EQUAL

RIM = 920.00
4" ORIFICE = 918.00
8" ORIFICE = 919.00
12" RCP OUTLET PIPE = 918.00

PROPOSED BIORETENTION

2,680 SQFT @ 918.00
12,180 SQFT TOP OF BERM @ 922.00

6" PVC UNDERDRAIN
@ 916.0
DAYLIGHT IN ROADSIDE
DITCH

RAIL ROAD

BROOK ROAD

U.S.H. 14

D'ONOFRIO KOTTKE AND ASSOCIATES, INC.
7530 Westward Way, Madison, WI 53717
Phone: 608.833.7530 • Fax: 608.833.1089
YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

PROPOSED DRAINAGE MAP AND BASIN LAYOUT

MURPHY'S CREEK

CITY OF FITCHBURG, DANE COUNTY, WISCONSIN

GRID NORTH
WISCONSIN COUNTY COORDINATE SYSTEM (DANE ZONE)

SCALE: 1"= 120'
(11 X 17)

0 120

DATE: 11-19-21
REVISED:

FN: 21-05-159

Sheet Number:
EXHIBIT 4

D'ONOFRIO KOTTKE AND ASSOCIATES, INC.

7530 Westward Way, Madison, WI 53717
Phone: 608.833.7530 • Fax: 608.833.1089
YOUR NATURAL RESOURCE FOR LAND DEVELOPMENT

WETLAND INDICATOR MAP

MURPHY'S CREEK

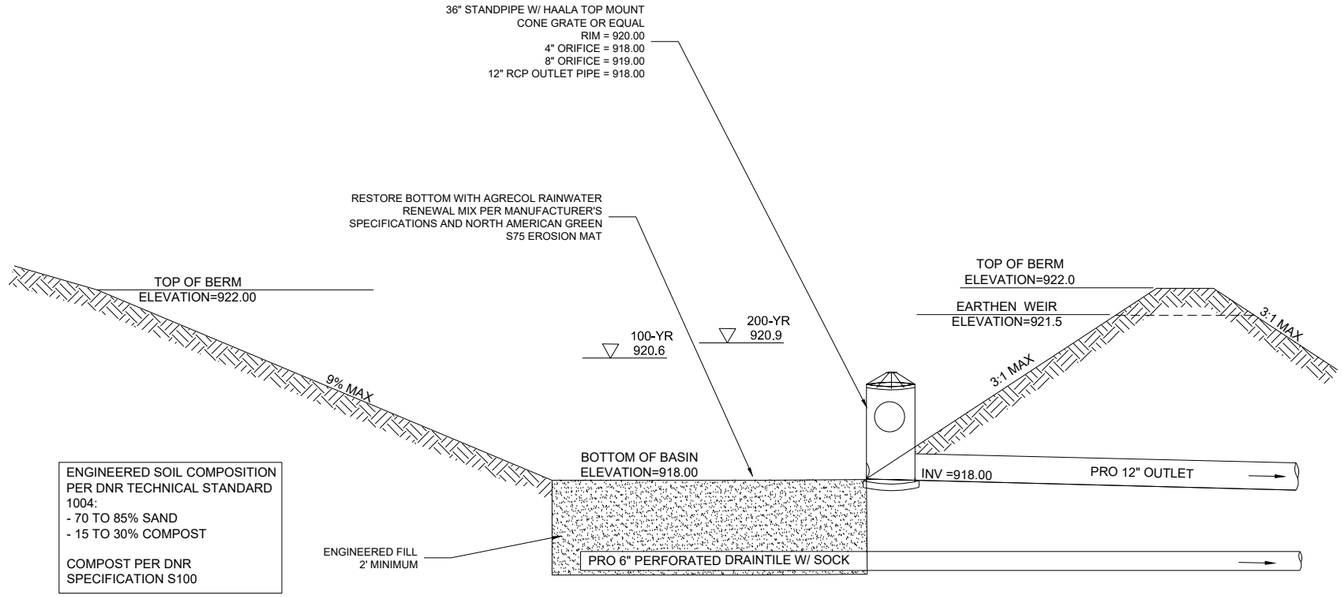
CITY OF FITCHBURG, WISCONSIN

DRAWN BY: KJP *EXHIBIT 5*

U:\USER\2105159\ENGINEERING\SWMP\2105159 DRAINAGE MAPS.DWG

APPENDIX A

BIORETENTION BASIN DETAIL



PROFILE VIEW

PROPOSED BIORETENTION BASIN DETAIL

NOT TO SCALE

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DETENTION BASIN DETAIL

MURPHY'S CREEK

CITY OF FITCHBURG, DANE COUNTY, WISCONSIN

DATE: 11-19-21
REVISED:

FN: 21-05-159

Sheet Number:
APPENDIX A

APPENDIX B

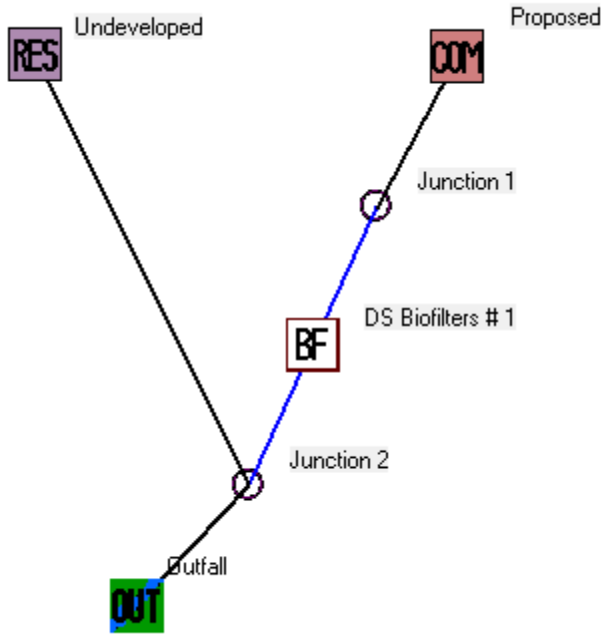
WinnSLAMM Calculations

DETENTION BASIN
SEDIMENTATION REDUCTION AND
INFILTRATIONCALCULATIONS (WINSLAMM)

WinSlamm Design

The following Slamm design shows that 80% of sediment is being removed from the proposed site

Model Schematic:



Model Input Information:

Data file name: U:\User\2105159\Engineering\SWMP\WinSLAMM\Murphy Creek Proposed.mdb
WinSLAMM Version 10.4.0
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Madison WI 1981.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_Res and Other Urban 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_Res and Other Urban Dec06.std
Freeway Street Delivery file name: C:\WinSLAMM Files\Freeway 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:
If Other Device Pollutant Load Reduction Values = 1, Off-site Pollutant Loads are Removed from Pollutant Load % Reduction calculations
Seed for random number generator: -42
Study period starting date: 01/01/81 Study period ending date: 12/31/81
Start of Winter Season: 12/02 End of Winter Season: 03/12
Date: 11-22-2021 Time: 15:17:34
Site information:

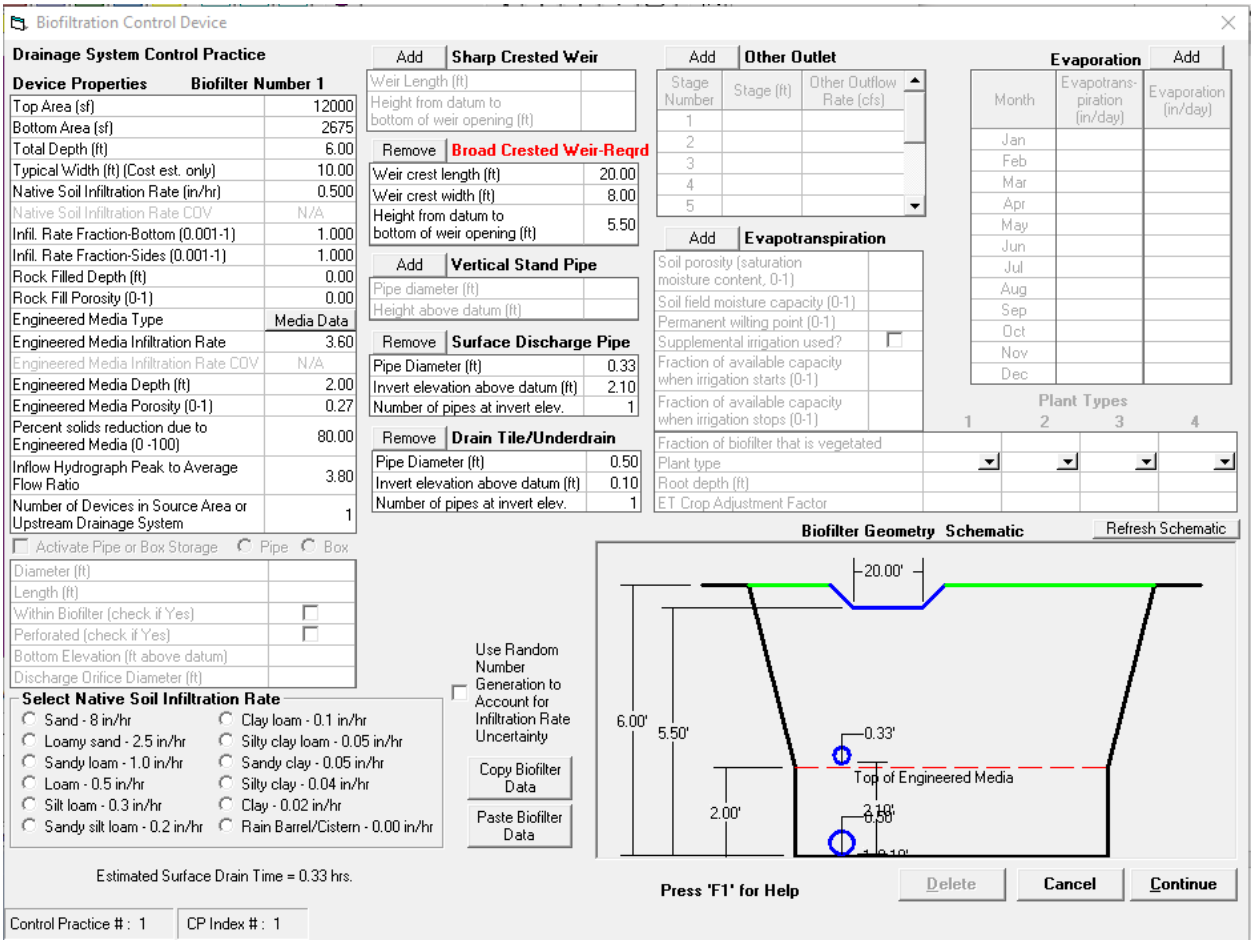
LU# 1 - Commercial: Proposed Total area (ac): 2.260
1 - Roofs 1: 0.040 ac. Pitched Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 0.770 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

25 - Driveways 1: 0.345 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
31 - Sidewalks 1: 0.050 ac. Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 1.055 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Residential: Undeveloped Total area (ac): 28.740
1 - Roofs 1: 0.230 ac. Pitched Disconnected Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
57 - Undeveloped Areas 1: 28.510 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Biofilter CP# 1 (DS) - DS Biofilters # 1
1. Top area (square feet) = 12000
2. Bottom aea (square feet) = 2675
3. Depth (ft): 6
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 0.5
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 1
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 3.6
12. Engineered soil depth (ft) = 2
13. Engineered soil porosity = 0.27
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0
Soil Data Soil Type Fraction in Eng. Soil
User-Defined Soil Type 1.000
Biofilter Outlet/Discharge Characteristics:
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 20
2. Weir crest width (ft): 8
3. Height of datum to bottom of weir opening: 5.5
Outlet type: Surface Discharge Pipe
1. Surface discharge pipe outlet diameter (ft): 0.33
2. Pipe invert elevation above datum (ft): 2.1
3. Number of surface pipe outlets: 1
Outlet type: Drain Tile/Underdrain
1. Underdrain outlet diameter (ft): 0.5
2. Invert elevation above datum (ft): 0.1
3. Number of underdrain outlets: 1

Bioretention Pond Design:



Output Sediment Reduction:

Data File: U:\User\2105159\EnCreek Proposed.mdb
Rain File: WisReg - Madison WI
Date: 11-22-21 Time: 3:26:46 PM
Site Description:

Col. #:	2	4	5	6	7	8	9
Control Practice No.	Control Practice Type	Total Inflow Volume (cf)	Total Outflow Volume (cf)	Percent Volume Reduction	Total Influent Load (lbs)	Total Effluent Load (lbs)	Percent Load Reduction
1	Biofilter	95405	54639	42.73	829.3	165.9	80.00

Total site sediment reduction in developed conditions = <u>80.00%</u>

Output Infiltration Calculations:

Data File: U:\User\2105159\Engineering\SWMP\WinSLAMM\Murphy Creek Proposed.mdb
Rain File: WisReg - Madison WI 1981.RAN
Date: 11-22-21 Time: 3:26:47 PM
Site Description:

Runoff Volume Total (cf) at the Outfall

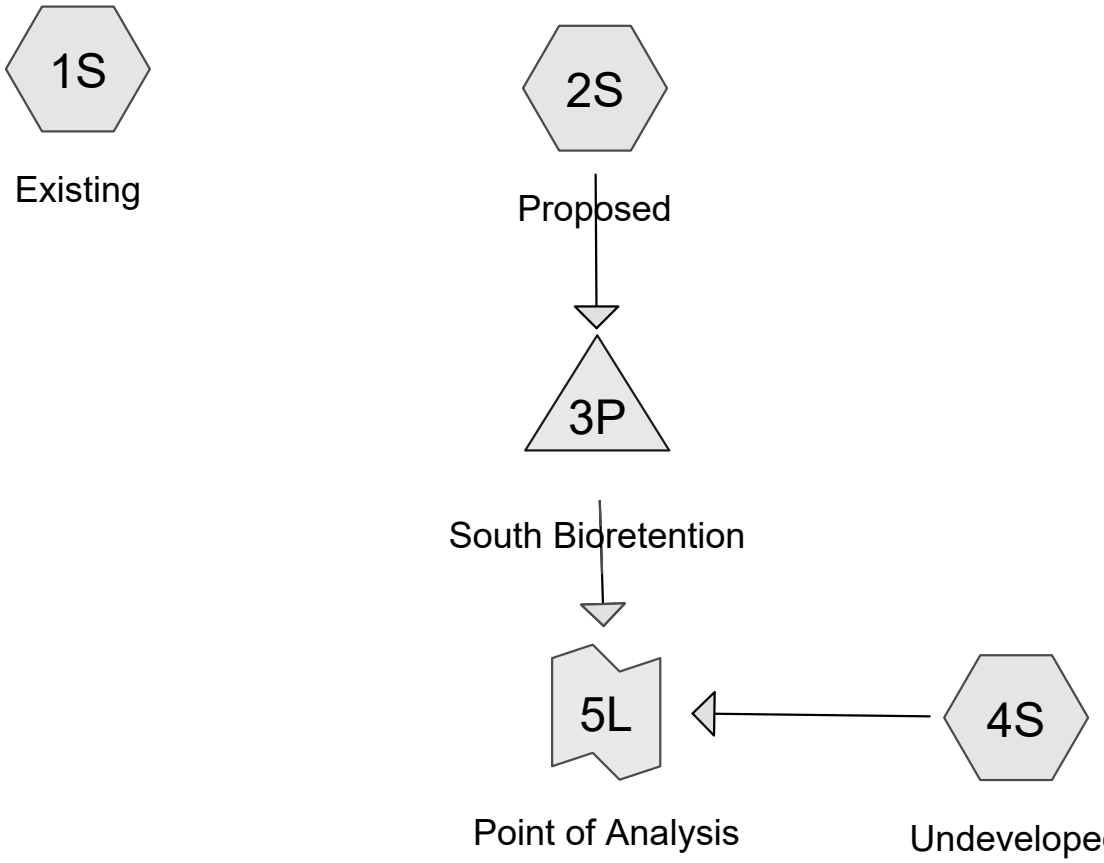
Rain Number	Start Date	Rain Total (in)	Outfall Total (cf)	Rv	Total Losses (in.)	Calculated CN*	Event Peak Flow (cfs)
86	10/04/81	0.15	0.01917	0.000	0.15	93.0	0.000
87	10/05/81	0.04	0	0.000	0.04	n/a	0.000
88	10/05/81	0.02	0	0.000	0.02	n/a	0.000
89	10/09/81	0.14	0	0.000	0.14	n/a	0.000
90	10/13/81	1.20	9165	0.068	1.12	75.6	0.632
91	10/15/81	0.02	0	0.000	0.02	n/a	0.000
92	10/17/81	0.95	6436	0.060	0.89	79.0	0.666
93	10/18/81	0.06	0	0.000	0.06	n/a	0.000
94	10/21/81	0.06	0	0.000	0.06	n/a	0.000
95	10/21/81	0.01	0	0.000	0.01	n/a	0.000
96	10/24/81	0.01	0	0.000	0.01	n/a	0.000
97	10/31/81	0.01	0	0.000	0.01	n/a	0.000
98	11/05/81	0.04	0	0.000	0.04	n/a	0.000
99	11/15/81	0.07	0	0.000	0.07	n/a	0.000
100	11/18/81	0.05	0	0.000	0.05	n/a	0.000
101	11/19/81	0.26	182.7	0.006	0.26	90.2	0.006
102	11/23/81	0.18	0	0.000	0.18	n/a	0.000
103	11/25/81	0.89	4921	0.049	0.85	79.1	0.256
104	11/30/81	0.37	713.0	0.017	0.36	88.0	0.027
105	12/03/81	-	-	-	-	-	-
106	12/14/81	-	-	-	-	-	-
107	12/20/81	-	-	-	-	-	-
108	12/26/81	-	-	-	-	-	-
109	12/31/81	-	-	-	-	-	-
Minimum:		0.00	0	0.000	0.01	71.3	0.000
Maximum:		2.59	64540	0.221	2.02	94.6	5.473
Average:		0.26	2156	0.016	0.25	76.2	2.596
Total:		28.81	235039		26.73		

* Note: NRCS does not recommend using CN method for rains < 0.5 in.
See 'PreDevelopment Areas and CN' Help for more info.

66.73 inches of stay-on attained on the site in proposed conditions with no facilities. This exceeds 24.38 inches required in developed conditions.

APPENDIX C

HYDROCAD OUTPUT



Subcat Reach Pond Link

Routing Diagram for Murphys Creek
Prepared by HP Inc., Printed 11/22/2021

Rainfall Events Listing (selected events)

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1yr 24hr	MSE 24-hr	4	Default	24.00	1	2.49	2
2	2yr 24hr	MSE 24-hr	4	Default	24.00	1	2.84	2
3	10yr 24hr	MSE 24-hr	4	Default	24.00	1	4.09	2
4	100yr 24hr	MSE 24-hr	4	Default	24.00	1	6.66	2
5	200yr 24hr	MSE 24-hr	4	Default	24.00	1	7.53	2

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Existing Runoff Area=31.000 ac 0.00% Impervious Runoff Depth>0.34"
Flow Length=560' Tc=22.3 min CN=68 Runoff=8.08 cfs 0.891 af

Subcatchment2S: Proposed Runoff Area=2.260 ac 53.10% Impervious Runoff Depth>0.88"
Tc=10.0 min CN=81 Runoff=2.79 cfs 0.165 af

Subcatchment4S: Undeveloped Runoff Area=28.740 ac 1.04% Impervious Runoff Depth>0.34"
Flow Length=560' Tc=22.3 min CN=68 Runoff=7.49 cfs 0.826 af

Pond 3P: South Bioretention Peak Elev=918.95' Storage=3,352 cf Inflow=2.79 cfs 0.165 af
Primary=0.37 cfs 0.151 af Secondary=0.00 cfs 0.000 af Outflow=0.37 cfs 0.151 af

Link 5L: Point of Analysis Inflow=7.84 cfs 0.976 af
Primary=7.84 cfs 0.976 af

Total Runoff Area = 62.000 ac Runoff Volume = 1.881 af Average Runoff Depth = 0.36"
97.58% Pervious = 60.500 ac 2.42% Impervious = 1.500 ac

Summary for Subcatchment 1S: Existing

Runoff = 8.08 cfs @ 12.40 hrs, Volume= 0.891 af, Depth> 0.34"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

	Area (ac)	CN	Description
*	31.000	68	Ag
	31.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	300	0.0900	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.84"
2.3	260	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.3	560	Total			

Summary for Subcatchment 2S: Proposed

Runoff = 2.79 cfs @ 12.18 hrs, Volume= 0.165 af, Depth> 0.88"
Routed to Pond 3P : South Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

	Area (ac)	CN	Description
	1.060	61	>75% Grass cover, Good, HSG B
*	1.200	98	Impervious, HSG C
	2.260	81	Weighted Average
	1.060		46.90% Pervious Area
	1.200		53.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Summary for Subcatchment 4S: Undeveloped

Runoff = 7.49 cfs @ 12.40 hrs, Volume= 0.826 af, Depth> 0.34"
Routed to Link 5L : Point of Analysis

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 1yr 24hr Rainfall=2.49"

	Area (ac)	CN	Description
*	28.440	68	Ag
*	0.300	98	Unconnected Impervious
	28.740	68	Weighted Average
	28.440		98.96% Pervious Area
	0.300		1.04% Impervious Area
	0.300		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	300	0.0900	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.84"
2.3	260	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.3	560	Total			

Summary for Pond 3P: South Bioretention

Inflow Area = 2.260 ac, 53.10% Impervious, Inflow Depth > 0.88" for 1yr 24hr event
Inflow = 2.79 cfs @ 12.18 hrs, Volume= 0.165 af
Outflow = 0.37 cfs @ 12.96 hrs, Volume= 0.151 af, Atten= 87%, Lag= 46.5 min
Primary = 0.37 cfs @ 12.96 hrs, Volume= 0.151 af
Routed to Link 5L : Point of Analysis
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link 5L : Point of Analysis

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 918.95' @ 12.96 hrs Surf.Area= 4,366 sf Storage= 3,352 cf

Plug-Flow detention time= 120.8 min calculated for 0.150 af (91% of inflow)
Center-of-Mass det. time= 92.3 min (899.5 - 807.2)

Volume	Invert	Avail.Storage	Storage Description
#1	918.00'	27,310 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
918.00	2,680	0	0
920.00	6,225	8,905	8,905
922.00	12,180	18,405	27,310

Device	Routing	Invert	Outlet Devices
#1	Primary	918.00'	**12.0" Round Culvert** L= 45.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 918.00' / 918.00' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	918.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	920.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	921.50'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5 Device 1 919.00' **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.37 cfs @ 12.96 hrs HW=918.95' (Free Discharge)
└─**1=Culvert** (Passes 0.37 cfs of 1.50 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.37 cfs @ 4.26 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**5=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=918.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Link 5L: Point of Analysis

Inflow Area = 31.000 ac, 4.84% Impervious, Inflow Depth > 0.38" for 1yr 24hr event
Inflow = 7.84 cfs @ 12.40 hrs, Volume= 0.976 af
Primary = 7.84 cfs @ 12.40 hrs, Volume= 0.976 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Existing Runoff Area=31.000 ac 0.00% Impervious Runoff Depth>0.50"
Flow Length=560' Tc=22.3 min CN=68 Runoff=12.86 cfs 1.280 af

Subcatchment2S: Proposed Runoff Area=2.260 ac 53.10% Impervious Runoff Depth>1.12"
Tc=10.0 min CN=81 Runoff=3.58 cfs 0.211 af

Subcatchment4S: Undeveloped Runoff Area=28.740 ac 1.04% Impervious Runoff Depth>0.50"
Flow Length=560' Tc=22.3 min CN=68 Runoff=11.92 cfs 1.187 af

Pond 3P: South Bioretention Peak Elev=919.17' Storage=4,368 cf Inflow=3.58 cfs 0.211 af
Primary=0.53 cfs 0.195 af Secondary=0.00 cfs 0.000 af Outflow=0.53 cfs 0.195 af

Link 5L: Point of Analysis Inflow=12.33 cfs 1.382 af
Primary=12.33 cfs 1.382 af

Total Runoff Area = 62.000 ac Runoff Volume = 2.678 af Average Runoff Depth = 0.52"
97.58% Pervious = 60.500 ac 2.42% Impervious = 1.500 ac

Summary for Subcatchment 1S: Existing

Runoff = 12.86 cfs @ 12.38 hrs, Volume= 1.280 af, Depth> 0.50"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

	Area (ac)	CN	Description
*	31.000	68	Ag
	31.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	300	0.0900	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.84"
2.3	260	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.3	560	Total			

Summary for Subcatchment 2S: Proposed

Runoff = 3.58 cfs @ 12.18 hrs, Volume= 0.211 af, Depth> 1.12"
Routed to Pond 3P : South Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

	Area (ac)	CN	Description
	1.060	61	>75% Grass cover, Good, HSG B
*	1.200	98	Impervious, HSG C
	2.260	81	Weighted Average
	1.060		46.90% Pervious Area
	1.200		53.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Summary for Subcatchment 4S: Undeveloped

Runoff = 11.92 cfs @ 12.38 hrs, Volume= 1.187 af, Depth> 0.50"
Routed to Link 5L : Point of Analysis

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 2yr 24hr Rainfall=2.84"

	Area (ac)	CN	Description
*	28.440	68	Ag
*	0.300	98	Unconnected Impervious
	28.740	68	Weighted Average
	28.440		98.96% Pervious Area
	0.300		1.04% Impervious Area
	0.300		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	300	0.0900	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.84"
2.3	260	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.3	560	Total			

Summary for Pond 3P: South Bioretention

Inflow Area = 2.260 ac, 53.10% Impervious, Inflow Depth > 1.12" for 2yr 24hr event
Inflow = 3.58 cfs @ 12.18 hrs, Volume= 0.211 af
Outflow = 0.53 cfs @ 12.77 hrs, Volume= 0.195 af, Atten= 85%, Lag= 35.4 min
Primary = 0.53 cfs @ 12.77 hrs, Volume= 0.195 af
Routed to Link 5L : Point of Analysis
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link 5L : Point of Analysis

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 919.17' @ 12.77 hrs Surf.Area= 4,761 sf Storage= 4,368 cf

Plug-Flow detention time= 126.4 min calculated for 0.194 af (92% of inflow)
Center-of-Mass det. time= 100.8 min (903.3 - 802.5)

Volume	Invert	Avail.Storage	Storage Description
#1	918.00'	27,310 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
918.00	2,680	0	0
920.00	6,225	8,905	8,905
922.00	12,180	18,405	27,310

Device	Routing	Invert	Outlet Devices
#1	Primary	918.00'	**12.0" Round Culvert** L= 45.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 918.00' / 918.00' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	918.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	920.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	921.50'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5 Device 1 919.00' **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=0.52 cfs @ 12.77 hrs HW=919.17' (Free Discharge)
└**1=Culvert** (Passes 0.52 cfs of 2.04 cfs potential flow)
├**2=Orifice/Grate** (Orifice Controls 0.42 cfs @ 4.83 fps)
├**3=Orifice/Grate** (Controls 0.00 cfs)
└**5=Orifice/Grate** (Orifice Controls 0.10 cfs @ 1.42 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=918.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Link 5L: Point of Analysis

Inflow Area = 31.000 ac, 4.84% Impervious, Inflow Depth > 0.53" for 2yr 24hr event
Inflow = 12.33 cfs @ 12.38 hrs, Volume= 1.382 af
Primary = 12.33 cfs @ 12.38 hrs, Volume= 1.382 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Existing Runoff Area=31.000 ac 0.00% Impervious Runoff Depth>1.17"
Flow Length=560' Tc=22.3 min CN=68 Runoff=34.63 cfs 3.016 af

Subcatchment2S: Proposed Runoff Area=2.260 ac 53.10% Impervious Runoff Depth>2.08"
Tc=10.0 min CN=81 Runoff=6.63 cfs 0.392 af

Subcatchment4S: Undeveloped Runoff Area=28.740 ac 1.04% Impervious Runoff Depth>1.17"
Flow Length=560' Tc=22.3 min CN=68 Runoff=32.11 cfs 2.796 af

Pond 3P: South Bioretention Peak Elev=919.76' Storage=7,483 cf Inflow=6.63 cfs 0.392 af
Primary=1.63 cfs 0.367 af Secondary=0.00 cfs 0.000 af Outflow=1.63 cfs 0.367 af

Link 5L: Point of Analysis Inflow=33.64 cfs 3.163 af
Primary=33.64 cfs 3.163 af

Total Runoff Area = 62.000 ac Runoff Volume = 6.204 af Average Runoff Depth = 1.20"
97.58% Pervious = 60.500 ac 2.42% Impervious = 1.500 ac

Summary for Subcatchment 1S: Existing

Runoff = 34.63 cfs @ 12.35 hrs, Volume= 3.016 af, Depth> 1.17"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

	Area (ac)	CN	Description
*	31.000	68	Ag
	31.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	300	0.0900	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.84"
2.3	260	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.3	560	Total			

Summary for Subcatchment 2S: Proposed

Runoff = 6.63 cfs @ 12.18 hrs, Volume= 0.392 af, Depth> 2.08"
Routed to Pond 3P : South Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

	Area (ac)	CN	Description
	1.060	61	>75% Grass cover, Good, HSG B
*	1.200	98	Impervious, HSG C
	2.260	81	Weighted Average
	1.060		46.90% Pervious Area
	1.200		53.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Summary for Subcatchment 4S: Undeveloped

Runoff = 32.11 cfs @ 12.35 hrs, Volume= 2.796 af, Depth> 1.17"
Routed to Link 5L : Point of Analysis

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 10yr 24hr Rainfall=4.09"

	Area (ac)	CN	Description
*	28.440	68	Ag
*	0.300	98	Unconnected Impervious
	28.740	68	Weighted Average
	28.440		98.96% Pervious Area
	0.300		1.04% Impervious Area
	0.300		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	300	0.0900	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.84"
2.3	260	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.3	560	Total			

Summary for Pond 3P: South Bioretention

Inflow Area = 2.260 ac, 53.10% Impervious, Inflow Depth > 2.08" for 10yr 24hr event
Inflow = 6.63 cfs @ 12.18 hrs, Volume= 0.392 af
Outflow = 1.63 cfs @ 12.52 hrs, Volume= 0.367 af, Atten= 75%, Lag= 20.8 min
Primary = 1.63 cfs @ 12.52 hrs, Volume= 0.367 af
Routed to Link 5L : Point of Analysis
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link 5L : Point of Analysis

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 919.76' @ 12.52 hrs Surf.Area= 5,806 sf Storage= 7,483 cf

Plug-Flow detention time= 103.5 min calculated for 0.367 af (94% of inflow)
Center-of-Mass det. time= 81.0 min (871.9 - 790.8)

Volume	Invert	Avail.Storage	Storage Description
#1	918.00'	27,310 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
918.00	2,680	0	0
920.00	6,225	8,905	8,905
922.00	12,180	18,405	27,310

Device	Routing	Invert	Outlet Devices
#1	Primary	918.00'	**12.0" Round Culvert** L= 45.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 918.00' / 918.00' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	918.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	920.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	921.50'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5 Device 1 919.00' **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=1.63 cfs @ 12.52 hrs HW=919.76' (Free Discharge)
└─**1=Culvert** (Passes 1.63 cfs of 3.35 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.53 cfs @ 6.08 fps)
  ├─**3=Orifice/Grate** (Controls 0.00 cfs)
  └─**5=Orifice/Grate** (Orifice Controls 1.10 cfs @ 3.15 fps)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=918.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Summary for Link 5L: Point of Analysis

Inflow Area = 31.000 ac, 4.84% Impervious, Inflow Depth > 1.22" for 10yr 24hr event
Inflow = 33.64 cfs @ 12.35 hrs, Volume= 3.163 af
Primary = 33.64 cfs @ 12.35 hrs, Volume= 3.163 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Existing Runoff Area=31.000 ac 0.00% Impervious Runoff Depth>2.94"
Flow Length=560' Tc=22.3 min CN=68 Runoff=90.93 cfs 7.607 af

Subcatchment2S: Proposed Runoff Area=2.260 ac 53.10% Impervious Runoff Depth>4.28"
Tc=10.0 min CN=81 Runoff=13.32 cfs 0.806 af

Subcatchment4S: Undeveloped Runoff Area=28.740 ac 1.04% Impervious Runoff Depth>2.94"
Flow Length=560' Tc=22.3 min CN=68 Runoff=84.30 cfs 7.052 af

Pond 3P: South Bioretention Peak Elev=920.64' Storage=13,530 cf Inflow=13.32 cfs 0.806 af
Primary=4.91 cfs 0.755 af Secondary=0.00 cfs 0.000 af Outflow=4.91 cfs 0.755 af

Link 5L: Point of Analysis Inflow=89.19 cfs 7.807 af
Primary=89.19 cfs 7.807 af

Total Runoff Area = 62.000 ac Runoff Volume = 15.465 af Average Runoff Depth = 2.99"
97.58% Pervious = 60.500 ac 2.42% Impervious = 1.500 ac

Summary for Subcatchment 1S: Existing

Runoff = 90.93 cfs @ 12.33 hrs, Volume= 7.607 af, Depth> 2.94"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

	Area (ac)	CN	Description
*	31.000	68	Ag
	31.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	300	0.0900	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.84"
2.3	260	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.3	560	Total			

Summary for Subcatchment 2S: Proposed

Runoff = 13.32 cfs @ 12.17 hrs, Volume= 0.806 af, Depth> 4.28"
Routed to Pond 3P : South Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

	Area (ac)	CN	Description
	1.060	61	>75% Grass cover, Good, HSG B
*	1.200	98	Impervious, HSG C
	2.260	81	Weighted Average
	1.060		46.90% Pervious Area
	1.200		53.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Summary for Subcatchment 4S: Undeveloped

Runoff = 84.30 cfs @ 12.33 hrs, Volume= 7.052 af, Depth> 2.94"
Routed to Link 5L : Point of Analysis

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 100yr 24hr Rainfall=6.66"

	Area (ac)	CN	Description
*	28.440	68	Ag
*	0.300	98	Unconnected Impervious
	28.740	68	Weighted Average
	28.440		98.96% Pervious Area
	0.300		1.04% Impervious Area
	0.300		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	300	0.0900	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.84"
2.3	260	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.3	560	Total			

Summary for Pond 3P: South Bioretention

Inflow Area = 2.260 ac, 53.10% Impervious, Inflow Depth > 4.28" for 100yr 24hr event
Inflow = 13.32 cfs @ 12.17 hrs, Volume= 0.806 af
Outflow = 4.91 cfs @ 12.40 hrs, Volume= 0.755 af, Atten= 63%, Lag= 13.3 min
Primary = 4.91 cfs @ 12.40 hrs, Volume= 0.755 af
Routed to Link 5L : Point of Analysis
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link 5L : Point of Analysis

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 920.64' @ 12.40 hrs Surf.Area= 8,142 sf Storage= 13,530 cf

Plug-Flow detention time= 76.7 min calculated for 0.752 af (93% of inflow)
Center-of-Mass det. time= 54.4 min (831.1 - 776.7)

Volume	Invert	Avail.Storage	Storage Description
#1	918.00'	27,310 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
918.00	2,680	0	0
920.00	6,225	8,905	8,905
922.00	12,180	18,405	27,310

Device	Routing	Invert	Outlet Devices
#1	Primary	918.00'	**12.0" Round Culvert** L= 45.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 918.00' / 918.00' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	918.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	920.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	921.50'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5 Device 1 919.00' **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=4.91 cfs @ 12.40 hrs HW=920.64' (Free Discharge)
└─**1=Culvert** (Barrel Controls 4.91 cfs @ 6.26 fps)
  ├─**2=Orifice/Grate** (Passes < 0.66 cfs potential flow)
  ├─**3=Orifice/Grate** (Passes < 15.89 cfs potential flow)
  └─**5=Orifice/Grate** (Passes < 1.92 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=918.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 5L: Point of Analysis

Inflow Area = 31.000 ac, 4.84% Impervious, Inflow Depth > 3.02" for 100yr 24hr event
Inflow = 89.19 cfs @ 12.33 hrs, Volume= 7.807 af
Primary = 89.19 cfs @ 12.33 hrs, Volume= 7.807 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs

Time span=5.00-20.00 hrs, dt=0.05 hrs, 301 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

Subcatchment1S: Existing Runoff Area=31.000 ac 0.00% Impervious Runoff Depth>3.62"
Flow Length=560' Tc=22.3 min CN=68 Runoff=111.82 cfs 9.345 af

Subcatchment2S: Proposed Runoff Area=2.260 ac 53.10% Impervious Runoff Depth>5.06"
Tc=10.0 min CN=81 Runoff=15.62 cfs 0.953 af

Subcatchment4S: Undeveloped Runoff Area=28.740 ac 1.04% Impervious Runoff Depth>3.62"
Flow Length=560' Tc=22.3 min CN=68 Runoff=103.67 cfs 8.664 af

Pond 3P: South Bioretention Peak Elev=920.94' Storage=16,077 cf Inflow=15.62 cfs 0.953 af
Primary=5.34 cfs 0.893 af Secondary=0.00 cfs 0.000 af Outflow=5.34 cfs 0.893 af

Link 5L: Point of Analysis Inflow=108.96 cfs 9.557 af
Primary=108.96 cfs 9.557 af

Total Runoff Area = 62.000 ac Runoff Volume = 18.961 af Average Runoff Depth = 3.67"
97.58% Pervious = 60.500 ac 2.42% Impervious = 1.500 ac

Summary for Subcatchment 1S: Existing

Runoff = 111.82 cfs @ 12.33 hrs, Volume= 9.345 af, Depth> 3.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 200yr 24hr Rainfall=7.53"

	Area (ac)	CN	Description
*	31.000	68	Ag
	31.000		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	300	0.0900	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.84"
2.3	260	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.3	560	Total			

Summary for Subcatchment 2S: Proposed

Runoff = 15.62 cfs @ 12.17 hrs, Volume= 0.953 af, Depth> 5.06"
Routed to Pond 3P : South Bioretention

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 200yr 24hr Rainfall=7.53"

	Area (ac)	CN	Description
	1.060	61	>75% Grass cover, Good, HSG B
*	1.200	98	Impervious, HSG C
	2.260	81	Weighted Average
	1.060		46.90% Pervious Area
	1.200		53.10% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
10.0					**Direct Entry,**

Summary for Subcatchment 4S: Undeveloped

Runoff = 103.67 cfs @ 12.33 hrs, Volume= 8.664 af, Depth> 3.62"
Routed to Link 5L : Point of Analysis

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
MSE 24-hr 4 200yr 24hr Rainfall=7.53"

	Area (ac)	CN	Description
*	28.440	68	Ag
*	0.300	98	Unconnected Impervious
	28.740	68	Weighted Average
	28.440		98.96% Pervious Area
	0.300		1.04% Impervious Area
	0.300		100.00% Unconnected

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.0	300	0.0900	0.25		**Sheet Flow,** Grass: Dense n= 0.240 P2= 2.84"
2.3	260	0.0700	1.85		**Shallow Concentrated Flow,** Short Grass Pasture Kv= 7.0 fps
22.3	560	Total			

Summary for Pond 3P: South Bioretention

Inflow Area = 2.260 ac, 53.10% Impervious, Inflow Depth > 5.06" for 200yr 24hr event
Inflow = 15.62 cfs @ 12.17 hrs, Volume= 0.953 af
Outflow = 5.34 cfs @ 12.41 hrs, Volume= 0.893 af, Atten= 66%, Lag= 14.3 min
Primary = 5.34 cfs @ 12.41 hrs, Volume= 0.893 af
Routed to Link 5L : Point of Analysis
Secondary = 0.00 cfs @ 5.00 hrs, Volume= 0.000 af
Routed to Link 5L : Point of Analysis

Routing by Stor-Ind method, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs
Peak Elev= 920.94' @ 12.41 hrs Surf.Area= 9,026 sf Storage= 16,077 cf

Plug-Flow detention time= 73.0 min calculated for 0.890 af (93% of inflow)
Center-of-Mass det. time= 51.0 min (824.4 - 773.3)

Volume	Invert	Avail.Storage	Storage Description
#1	918.00'	27,310 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
918.00	2,680	0	0
920.00	6,225	8,905	8,905
922.00	12,180	18,405	27,310

Device	Routing	Invert	Outlet Devices
#1	Primary	918.00'	**12.0" Round Culvert** L= 45.0' CMP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 918.00' / 918.00' S= 0.0000 '/' Cc= 0.900 n= 0.012, Flow Area= 0.79 sf
#2	Device 1	918.00'	**4.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#3	Device 1	920.00'	**36.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	921.50'	**15.0' long x 8.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00

2.50 3.00 3.50 4.00 4.50 5.00 5.50
Coef. (English) 2.43 2.54 2.70 2.69 2.68 2.68 2.66 2.64 2.64
2.64 2.65 2.65 2.66 2.66 2.68 2.70 2.74
#5 Device 1 919.00' **8.0" Vert. Orifice/Grate** C= 0.600 Limited to weir flow at low heads

Primary OutFlow Max=5.34 cfs @ 12.41 hrs HW=920.94' (Free Discharge)
└**1=Culvert** (Barrel Controls 5.34 cfs @ 6.80 fps)
├**2=Orifice/Grate** (Passes < 0.70 cfs potential flow)
├**3=Orifice/Grate** (Passes < 28.02 cfs potential flow)
└**5=Orifice/Grate** (Passes < 2.13 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 5.00 hrs HW=918.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Summary for Link 5L: Point of Analysis

Inflow Area = 31.000 ac, 4.84% Impervious, Inflow Depth > 3.70" for 200yr 24hr event
Inflow = 108.96 cfs @ 12.33 hrs, Volume= 9.557 af
Primary = 108.96 cfs @ 12.33 hrs, Volume= 9.557 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 5.00-20.00 hrs, dt= 0.05 hrs