Village of
Germantown
...Willkommen

Fee must accompany application
- ☐ $700 Minor Addition
- ☐ $1,240 Construction <10,000 SF
- ☐ $2,095 Construction 10,000 SF to 50,000
- ☐ $3,460 Industrial Construction >50,000 SF
- ☐ $3,460 Commercial Construction >50,000
- ☐ $200 Plan Commission Consultation
- ☐ $125 Fire Department Plan Review

PAID _____ DATE 7-12-21

SITE PLAN REVIEW APPLICATION

Pursuant to Section 17.43 of the Municipal Code

Please read and complete this application carefully. All applications must be signed and dated.

1 APPLICANT OR AGENT

CAPSTONE DEVELOPMENT COMPANY
N17W24222 RIVERWOOD DRIVE
SUITE 160
WAUKESHA WI 53188-1134

Phone (262) 523-1122
E-Mail mike@capstonequadrangle.com

PROPERTY OWNER

MLG/RMS Ltd. Partnership
19000 W. BLUEMOUND ROAD
BROOKFIELD, WI 53045

Phone (262) 938-4448
E-Mail phinkfuss@gmail.com

2 PROPERTY ADDRESS

N128 W20943 HOLY HILL ROAD, GERMANTOWN WI 53076

3 NEIGHBORING USES - Specify name and type of use, e.g. Enviro Tech - Industrial, Smith - Residential, etc.

North	South	East	West
INDUSTRIAL (Gateway Corporate Park)	VACANT (MMSD)	AGRICULTURAL (WETTERAU)	VACANT (MMSD)

4 READ AND INITIAL THE FOLLOWING:

MW I am aware of the Village of Germantown ordinance requiring fire sprinklers in most new construction.

MW I understand that all new development is subject to Impact and/or Connection Fees that must be paid before building permits will be issued.

MW I understand that an incomplete application will be withdrawn from the Plan Commission agenda and that all resubmissions to the Plan Commission are subject to a new application fee.

5 SIGNATURES - ALL APPLICATION MUST BE SIGNED BY OWNER

Applicant its: Principal Date 7/2/21

MLG/RMS Limited Partnership
By: _____ 7/8/2021
Owner Date

Village of Germantown
...Willkommen

FEES MUST BE PAID AT TIME OF APPLICATION
$200 Plan Commission Consultation
$1,085 Rezoning
$1,240 PDD < 5 acres
$2,095 PDD 5-20 acre site
$3,460 PDD > 20 acre site

Date Paid: _____ Received by: _____

REZONING & PDD APPLICATION

Pursuant to Section 17.51 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

1 APPLICANT OR AGENT

CAPSTONE DEVELOPMENT COMPANY
N17W24222 RIVERWOOD DRIVE
SUITE 160
WAUKESHA WI 53188-1134
Phone (262) 523-1122
E-Mail mike@capstonequadrangle.com

PROPERTY OWNER

MLG/RMS Ltd. Partnership
19000 W. Bluemound Road
BROOKFIELD, WI 53045
Phone (262) 938-4448
E-Mail phinkfuss@gmail.com

2 PROPERTY ADDRESS OR GENERAL LOCATION | TAX KEY NUMBER

N128W20943 HOLY HILL ROAD GERMANTOWN 53076 | GTVN 181987

3 REZONING REQUEST

FROM: A-1 Partial Highway Interchange Overlay
TO: M-1

4 METES AND BOUNDS LEGAL DESCRIPTION OF PROPERTY – REQUIRED

Attach pages as necessary

SEE ATTACHED LEGAL DESCRIP

5 PURPOSE OF REZONING REQUEST

Briefly describe why the applicant is rezoning the property. Include a description of the proposed use, including any new construction and number of employees, if applicable.

SEE ATTACHED LETTER DESCRIBING PURPOSE.

6 SUPPORTING DOCUMENTATION:

☑ Plat of Survey (1:100)

☑ Site Plan and elevations for new construction (can be conceptual)

7 READ AND INITIAL THE FOLLOWING:

MAS I understand that the Village is under no obligation to rezone property and that density and lot coverages provided in the Zoning Code are maximums. Actual build out will depend on myriad factors including topography and other natural conditions, surrounding neighborhood context and the detailed design of a project.

MAS I understand that Village Staff, Plan Commission and/or Village Board may request additional information to properly evaluate this request and failure to provide such information may in itself by sufficient cause to deny the petition.

MAS I am aware that this rezoning shall go into effect immediately upon the final approval of the Village Board and its execution of the rezoning ordinance

MAS I understand that Village Staff is required to post one or more signs along the street frontage of and/or on the property subject of this application that indicate to nearby property owners and the general public that a public hearing of my application will be held before the Village Plan Commission and/or Village Board prior to action taken on this application; I hereby grant Village Staff permission to enter onto the property for the expressed purpose of installing said sign(s) provided Village Staff is responsible for installing, maintaining and removing said signs in a reasonable manner and time frame.

8 SIGNATURES – ALL APPLICATIONS MUST BE SIGNED BY OWNER!

Applicant 7/8/21 Date

MLG/RMS Limited Partnership

By: Owner 7/12/2021 Date

CAPSTONE QUADRANGLE

July 8, 2021

Mr. Jeffrey W. Retzlaff, AICP
Zoning Administrator
Village of Germantown
N112W17001 Mequon Road
Germantown, Wisconsin 53022-0337

RE: Capstone 41 Rezoning Request: GTVN 181987
N128W20943 Holy Hill Road, Germantown Wisconsin
Item 5: **Purpose for Rezoning**

Dear Jeff,

In conjunction with our rezoning application, please consider this letter as Item 5 of the application to describe the purpose of the rezoning request.

It is our intent to develop this 52.4697 acre parcel as a Class A business park with industrial uses generally as described in the M-1 Limited Industrial District zoning category of your zoning ordinance. This request is consistent with the Tax Increment Financing recently approved by the Village Board and is also consistent with the Germantown Comprehensive Plan.

Please let me know if you have any questions.

Regards,

Michael Faber
Principal

CAPSTONE QUADRANGLE

July 8, 2021

Mr. Jeffrey W. Retzlaff, AICP
Zoning Administrator
Village of Germantown
N112W17001 Mequon Road
Germantown, Wisconsin 53022-0337

RE: Capstone 41 Rezoning Request
Item 5: **Legal Description of Property for Rezoning**

Legal Description

All of Lot 3 of Certified Survey Map No. 6506, as recorded in the Register of Deeds office for Washington County as Document No. 1335168, located in the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 and the Northeast 1/4 of the Northwest 1/4 of Section 18, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin, bounded and described as follows:

Commencing at the northwest corner of the Northeast 1/4 of said Section 18; Thence South 89°41'38" East along the north line of said Northeast 1/4, 1321.344 feet; Thence South 01°08'40" East, 60.02 feet to the south right of way line of Holy Hill Road and the Point of Beginning;

Thence continuing South 01°08'40" East along the west line of Lot 1 of Certified Survey Map No. 6385 and then along the west line of Lot 1 of Certified Survey Map No. 6825, 1774.61 feet to a northerly line of Lot 2 of Certified Survey Map No. 6506; Thence the following courses along said northerly line: North 77°21'35" West, 417.31 feet; North 00°54'00" West, 423.24 feet; North 89°51'42" West, 918.79 feet; North 30°31'13" West, 1094.82 feet; North 05°44'25" West, 299.89 feet to the aforesaid south right of way line of Holy Hill Road; Thence the following courses along said south right of way line: South 89°48'14" East, 167.22 feet; North 00°11'42" East, 25.00 feet; South 89°48'14" East, 393.09 feet; South 89°41'38" East, 1322.81 feet to the Point of Beginning.

Capstone Quadrangle
Chicago Milwaukee Kansas City San Francisco
N17 W24222 Riverwood Drive, Suite 160, Waukesha WI 53188-1134
(262) 523-1122 www.capstonequadrangle.com

CAPSTONE QUADRANGLE

July 9, 2021

Mr. Jeffrey W. Retzlaff, AICP
Community Development Director
Village of Germantown
N112W17001 Mequon Road
Germantown, Wisconsin 53022-0337

RE: **Capstone 41** Site Plan Request: GTVN 181987
N128W20943 Holy Hill Road, Germantown Wisconsin
Overall Development Description

Dear Jeff,

In conjunction with our Site Plan application and a preliminary consultation with the Plan Commission, this letter is a description summarizing the overall 52.5 acre site that you and your Plan Commissioners may find helpful.

We are commercial developers focused on industrial, office, and healthcare projects and have developed business parks and buildings with a total value of about about $800 million in our careers. However, we are a small firm, because as partners we prefer to develop projects rather than manage people. This gives us more personal satisfaction and we like to think it results in better buildings in the long run. More information is available at www.capstonequadrangle.com.

Our plan is to develop this parcel as a Class A business park, to be known as "Capstone 41", with industrial uses generally as described in the M-1 Limited Industrial District zoning category of your zoning ordinance. This vision is consistent with the Tax Increment Financing recently approved by the Village Board and is also consistent with the Germantown Comprehensive Plan.

In addition to constructing the park infrastructure such as the main entrance drive coming off Holy Hill Road and two stormwater ponds, we are gearing up to develop a speculative building as Phase I, beginning late this summer and being complete by late next spring (June 2022). See our attached Master Plan for the site. The initial speculative building will be on the west end of the site, and will be about 203,000 square feet in size, with 32 foot clear height inside. This size and features is aimed at being "state of the art", and we hope to appeal to what seems to be robust activity in the market.

For the Phase I building, although some prospects have expressed interest even though we have not yet begun marketing, due to the speculative nature it is difficult to know which kinds of users we will end up with. The typical categories would be light manufacturing, assembly, warehouse, distribution, or e-commerce. Each of those uses has different priorities and characteristics of course. The building is designed to be flexible regarding the size of tenants. We hope to have one or two tenants fill the building, but due to multiple drive-in (grade) doors, we can go as low as 50,000 SF tenant size if necessary. As you may know, most industrial tenants want very rectangular space, so jogs in the walls tend to cause problems or wasted space. The sophisticated national credit tenants are very much about efficiency and they are focused on the docks and loading.

A particular challenge we face right now is economic feasibility. Construction costs, especially steel and precast concrete, have risen incredibly rapidly in the past 6 to 9 months. Our Phase I building has seen structural steel costs alone rise about $1.2 million in that time frame, and other costs such as roofing, paving, doors, windows, and HVAC equipment have risen over $600,000 in the past 3 months. We are aware of market rents that we must compete with, so it is a struggle to balance costs against that market rent.

Despite those challenges, we believe we have crafted an attractive and thoughtful Class A building, consistent with those in the vicinity, that we and Germantown can be proud of, and we look forward to our time next week with you and the Plan Commission.

Regards,



Michael Faber
Principal

Village of Germantown ...Willkommen

Fee must accompany application

☐ $1460 Paid _____ Date_____

CONDITIONAL USE PERMIT APPLICATION

Pursuant to Section 17.42 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

1 APPLICANT OR AGENT

CAPSTONE DEVELOPMENT COMPANY
N17 W24222 RIVERWOOD DRIVE
SUITE 160
WAUKESHA, WI 53188-1134

Phone (262) 523-1122
Fax ( )
E-Mail mike@capstonequadrangle.com

PROPERTY OWNER

MLG/RMS Ltd. Partnership
19000 W. Bluemound Road
BROOKFIELD, WI 53045

Phone (262) 938-4448
phinkfuss@gmail.com

2 TO WHOM SHOULD THE PERMIT BE ISSUED?

CQ WI 2021, LLC

3 PROPERTY ADDRESS | **TAX KEY NUMBER**

N128 W20943 HOLY HILL ROAD, GERMANTOWN WI 53076 | GTVN 181987

4 DESCRIPTION OF EXISTING OPERATION

Briefly describe the use as it exists today, including use, size, number of employees, hours of operation, etc. If this permit involves new construction, describe the current status of the property, e.g. "vacant." Use additional pages as necessary.

Agricultural, old farm compound of buildings no longer in use.

5 DESCRIPTION OF PROPOSED OPERATION

Write the name of the proposed conditional use exactly as it appears in the Municipal Code.

24.04(3)(c)(5) Development within the minimum required wetland and navigable water setback areas

Describe the proposed use, including size, number of employees, hours of operation and extent of any new construction/alterations.

Per submitted Site and Civil plans, request CUP for minor intrusions of grading and paving into 25' setback from wetlands. Mitigations proposed per landscape plan and details.

6 METES AND BOUNDS LEGAL DESCRIPTION OF PROPERTY – REQUIRED

Attach pages as necessary

Please see attached legal description.

7 SUPPORTING DOCUMENTATION:

- [x] Site Plan and elevations for new construction (can be conceptual)
- [ ] Photos of existing use and/or proposed use operating elsewhere
- [ ] _____
- [ ] _____

8 READ AND INITIAL THE FOLLOWING:

MJ I understand that the Village is under no obligation to issue a Conditional Use Permit and will do so only if the applicant successfully demonstrates that the proposed use is harmonious with the neighborhood and the long range goals of the Village.

MJ I will notify the Village if <u>any</u> aspects of the conditional use changes. I understand that failure to do so may result in the revocation of the CUP.

MJ I understand that a Conditional Use Permit is valid only if the conditions and restrictions of the permit are met. I understand that failure to comply with any aspect of the permit may result in revocation.

MJ I understand that Village Staff is required to post one or more signs along the street frontage of and/or on the property subject of this application that indicate to nearby property owners and the general public that a public hearing of my application will be held before the Village Plan Commission and/or Village Board prior to action being taken on this application; I hereby grant Village Staff permission to enter onto the property for the expressed purpose of installing said sign(s) provided Village Staff is responsible for installing, maintaining and removing said signs in a reasonable manner and timeframe.

9 SIGNATURES – ALL APPLICATIONS MUST BE SIGNED BY OWNER!

Michael Jann 7/23/2021
Applicant Date

MLG/RMS Ltd. Partnership
By: _____ 7/29/2021
Owner Date

CAPSTONE QUADRANGLE

July 23, 2021

Mr. Jeffrey W. Retzlaff, AICP
Zoning Administrator
Village of Germantown
N112W17001 Mequon Road
Germantown, Wisconsin 53022-0337

RE: Capstone 41 CUP Request
Item 5: **Legal Description of Property for Conditional Use Permit**

Legal Description

All of Lot 3 of Certified Survey Map No. 6506, as recorded in the Register of Deeds office for Washington County as Document No. 1335168, located in the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 and the Northeast 1/4 of the Northwest 1/4 of Section 18, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin, bounded and described as follows:

Commencing at the northwest corner of the Northeast 1/4 of said Section 18; Thence South 89°41'38" East along the north line of said Northeast 1/4, 1321.344 feet; Thence South 01°08'40" East, 60.02 feet to the south right of way line of Holy Hill Road and the Point of Beginning;

Thence continuing South 01°08'40" East along the west line of Lot 1 of Certified Survey Map No. 6385 and then along the west line of Lot 1 of Certified Survey Map No. 6825, 1774.61 feet to a northerly line of Lot 2 of Certified Survey Map No. 6506; Thence the following courses along said northerly line: North 77°21'35" West, 417.31 feet; North 00°54'00" West, 423.24 feet; North 89°51'42" West, 918.79 feet; North 30°31'13" West, 1094.82 feet; North 05°44'25" West, 299.89 feet to the aforesaid south right of way line of Holy Hill Road; Thence the following courses along said south right of way line: South 89°48'14" East, 167.22 feet; North 00°11'42" East, 25.00 feet; South 89°48'14" East, 393.09 feet; South 89°41'38" East, 1322.81 feet to the Point of Beginning.

Capstone Quadrangle
Chicago Milwaukee Kansas City San Francisco
N17 W24222 Riverwood Drive, Suite 160, Waukesha WI 53188-1134
(262) 523-1122 www.capstonequadrangle.com

Village of Germantown ...Willkommen

Fee must accompany application
- $2,900 with public improvements
- X $1,960 no public improvements

Paid_____ Date_____

CERTIFIED SURVEY MAP APPLICATION

Pursuant to Section 18.06 of the Municipal Code

Please read and complete this application carefully. **All applications must be signed and dated.**

1 **APPLICANT OR AGENT**

CAPSTONE DEVELOPMENT COMPANY
N17 W24222 RIVERWOOD DRIVE
SUITE 160
WAUKESHA, WI 53188-1134
Phone (262) 523-1122
Fax ( )
E-Mail mike@capstonequadrangle.com

PROPERTY OWNER

MLG/RMS Ltd. Partnership
19000 W. Bluemound Road
Brookfield, WI 53045
Phone (262) 938-4448
phinkfuss@gmail.com

2

PROPERTY ADDRESS OR GENERAL LOCATION	TAX KEY NUMBER
N128 W20943 Holy Hill Road, Germantown WI 53076	GTVN 181987

3 **PURPOSE OF LAND SPLIT**

SUBDIVIDE TO CREATE BUSINESS PARK FOR INDUSTRIAL DEVELOPMENT INCLUDING OUTLOTS

Will the land split require rezoning? NOT DUE TO LAND SPLIT BUT WE ARE REQUESTING IT.
From AGRICULT A-1 To INDUSTR M-1

4 **READ AND INITIAL THE FOLLOWING:**

MJ I understand that the Certified Survey Map is not valid until recorded at the Washington County Register of Deeds. The Village will record the document and charge the applicant all applicable recording fees.

MJ I understand that the Map will not be placed on the Village Board agenda until all the technical corrections to the CSM are made, the payment of any outstanding impact fees are paid to the Village Clerk's Department, and the original signed and stamped copy of the Map is submitted on the proper paper.

MJ I understand that parcels created outside the Sewer Service Area will require a soil test. I also understand that all properties abutting a State Highway will require DOT approval and I will be responsible for securing such approval prior to recording.

MJ I understand all delinquent property taxes on any of the properties involved shall be paid prior to recording.

5 **SIGNATURES -- ALL APPLICATIONS MUST BE SIGNED BY OWNER!**

Applicant its: Principal Date 7/23/2021

MLG/RMS Limited Partnership.
By: Owner Date 7/27/2021

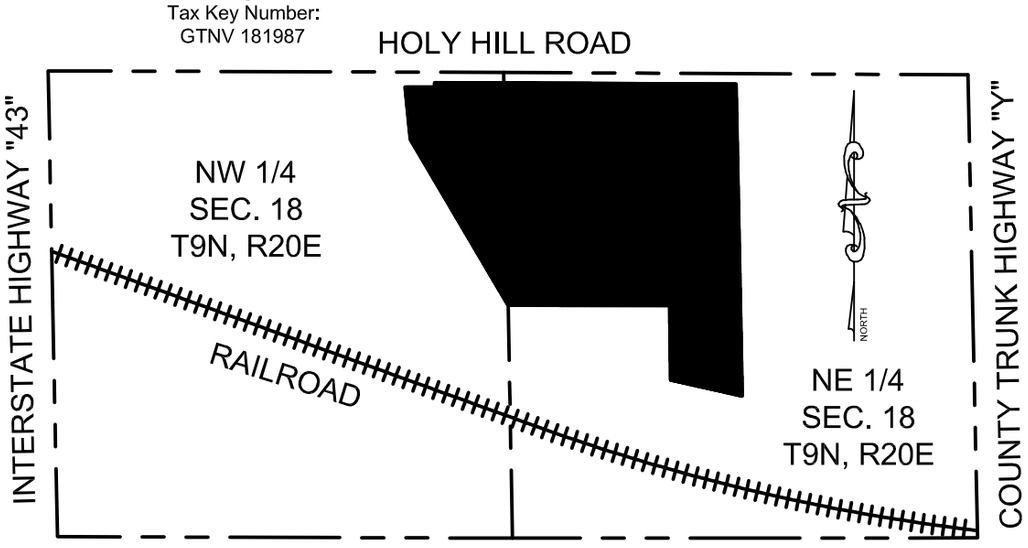
CERTIFIED SURVEY MAP NO. _____

Being all of Lot 3 of Certified Survey Map No. 6506, located in the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 and the Northeast 1/4 of the Northwest 1/4 of Section 18, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin

VICINITY MAP

SCALE 1":1000'

Subject Property
Zoning: A-1
Tax Key Number:
GTNV 181987



NOTES:

- All measurements have been made to the nearest one-hundredth of a foot.
- All angular measurements have been made to the nearest one second.
- All existing buildings on this Certified Survey Map to be razed.
- 40' Wide Public Utility Easement and 25' Wide Access Easement per Certified Survey Map No. 6506 to be released prior to the recording of this Certified Survey Map.
- Flood Zone Classification: The property lies with in Zone "X" of the Flood Insurance Rate Map Community Panel No. 55131C0268D with an effective date of NOVEMBER 20, 2013 AND 55131C0356E with an effective date of OCTOBER 16, 2015. Zone "X" areas are determined to be outside the 0.2% annual chance floodplain.
- This survey is based on the Wisconsin State Plane Coordinate System, South Zone, based on the North American Datum 1983/2011 adjustment, with north line of the NW 1/4 of Section 18, T9N, R20E bearing S89°48'14"E.
- Wetlands delineated by Heartland Ecological Group, Inc. in MAY, 2021

WISCONSIN
JOHN P. KONOPACKI
S-2461
PEWAUKEE, WI
LAND SURVEYOR

JULY 8, 2021

Prepared for:
CQ WI 2021, LLC
N17 W24222 Riverwood - Suite 160
Waukesha, WI 53188

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

PEG JOB#1262.00A

CERTIFIED SURVEY MAP NO. _____

Being all of Lot 3 of Certified Survey Map No. 6506, located in the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 and the Northeast 1/4 of the Northwest 1/4 of Section 18, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin



JULY 8, 2021

LEGEND:
- ● - Denotes Found 3/4" Iron Rod
- □ - Denotes Set 3/4" X 18" Iron Rebar, 1.5 LBS./FT.
- (R) - Denotes "Recorded As"

NORTH

GATEWAY CROSSING

(PUBLIC R.O.W.)
HOLY HILL ROAD

NW CORNER, NW 1/4
SEC. 18, T9N, R20E
(FOUND CONC. MON. W/ BRASS CAP)
N=461,128.60; E=2,452,771.16
(NAD1983/2011)

NW CORNER, NE 1/4
SEC. 18, T9N, R20E
(NE CORNER, NW 1/4)
(FOUND CONC. MON. W/ BRASS CAP)
N=461,119.72; E=2,455,363.90
(NAD1983/2011)

NE CORNER, NE 1/4
SEC. 18, T9N, R20E
(FOUND CONC. MON. W/ BRASS CAP)
N=461,105.60; E=2,458,006.55
(NAD1983/2011)

NORTH LINE OF THE NW 1/4
SEC. 18, T9N, R20E
S89°48'14"E 2592.76'
((R) S89°48'15"E 394.50')

S89°41'38"E 2642.69'
NORTH LINE OF THE NE 1/4
SEC. 18, T9N, R20E

60'

393.09'
S89°48'14"E
S89°41'38"E 1321.344'
((R) S01°08'25"E)
S01°08'40"E 60.02'
1321.344'

N00°11'42"E 25.00'
((R) N00°11'41"E)
S89°41'38"E 1322.81'
((R) S89°41'29"E 1321.39')
P.O.B.

S89°48'14"E
167.22'
((R) S89°48'15"E)

LOT 1

N05°44'25"W
299.89'
((R) N05°44'26"W)

OUTLOT 2
57,163 SQ. FT.
1.3123 ACRES

OUT LOT 1

EAST LINE OF THE NW 1/4 SEC. 18, T9N, R20E
S01°05'45"E 2649.67'

WEST LINE OF THE NE 1/4 SEC. 18, T9N, R20E
1324.835'

EAST LINE OF THE WEST 1/2 OF THE NE 1/4 SEC. 18, T9N, R20E
((R) S01°08'25"E)
S01°08'40"E 1774.61'

LOT 1
C.S.M. NO. 6385

LOT 2
1,471,138 SQ. FT.
33.7727 ACRES

N30°31'13"W
((R) N30°29'42"W 1094.62')
1094.82'

LOT 2
C.S.M. NO. 6506

NORTH LINE OF THE
SOUTHWEST 1/4 OF THE NE 1/4
SEC. 18, T9N, R20E

NW CORNER
SW 1/4, NW 1/4
SEC. 18, T9N, R20E

N89°51'42"W 918.79'
((R) N89°51'40"W 919.20')

((R) N00°53'51"W 423.05')
N00°54'00"W
423.24'

N77°21'35"W
417.31'
((R) N77°21'26"W)

LOT 1
C.S.M. NO. 6825

LOT 2
C.S.M. NO. 6506

GRAPHICAL SCALE (FEET)

0 1" = 300' 600'

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

CERTIFIED SURVEY MAP NO. _____

Being all of Lot 3 of Certified Survey Map No. 6506, located in the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 and the Northeast 1/4 of the Northwest 1/4 of Section 18, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin

WISCONSIN
JOHN P. KONOPACKI
S-2461
PEWAUKEE, WI
LAND SURVEYOR

JULY 8, 2021

NORTH

LEGEND:
- ● - Denotes Found 3/4" Iron Rod
- □ - Denotes Set 3/4" X 18" Iron Rebar, 1.5 LBS./FT.

OUTLOT 1
168,185 SQ. FT.
3.8610 ACRES

LOT 1
589,092 SQ. FT.
13.5237 ACRES

GATEWAY CROSSING

(PUBLIC R.O.W.)
HOLY HILL ROAD

393.09'
S89°48'14"E
60'
85'
60'
60'
60'
S89°41'38"E 1322.81'
N00°11'42"E 25.00'
S89°48'14"E 167.22'
75' OHWM SETBACK
N05°44'25"W 299.89'
LOT 1
OUTLOT 2
57,163 SQ. FT.
1.3123 ACRES
LOT 2
1,471,138 SQ. FT.
33.7727 ACRES
OUT LOT 1
APPROXIMATE ORDINARY HIGH WATER MARK (OHWM)
N30°31'13"W 1094.82'
25' WETLAND SETBACK
WETLAND
OWNER: MILWAUKEE METROPOLITAN SEWERAGE DISTRICT
NW CORNER SW 1/4, NW 1/4 SEC. 18, T9N, R20E
N89°51'42"W 918.79'
N00°54'00"W 423.24'
S01°08'40"E 1774.61'
OWNER: WILLIAM H WETTERAU REVOCABLE TRUST
75' OHWM SETBACK
APPROXIMATE ORDINARY HIGH WATER MARK (OHWM)
25' WETLAND SETBACK
WETLAND
N77°21'35"W 417.31'
OWNER: WILLIAM H WETTERAU REVOCABLE TRUST

GRAPHICAL SCALE (FEET)
0 1" = 300' 600'

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

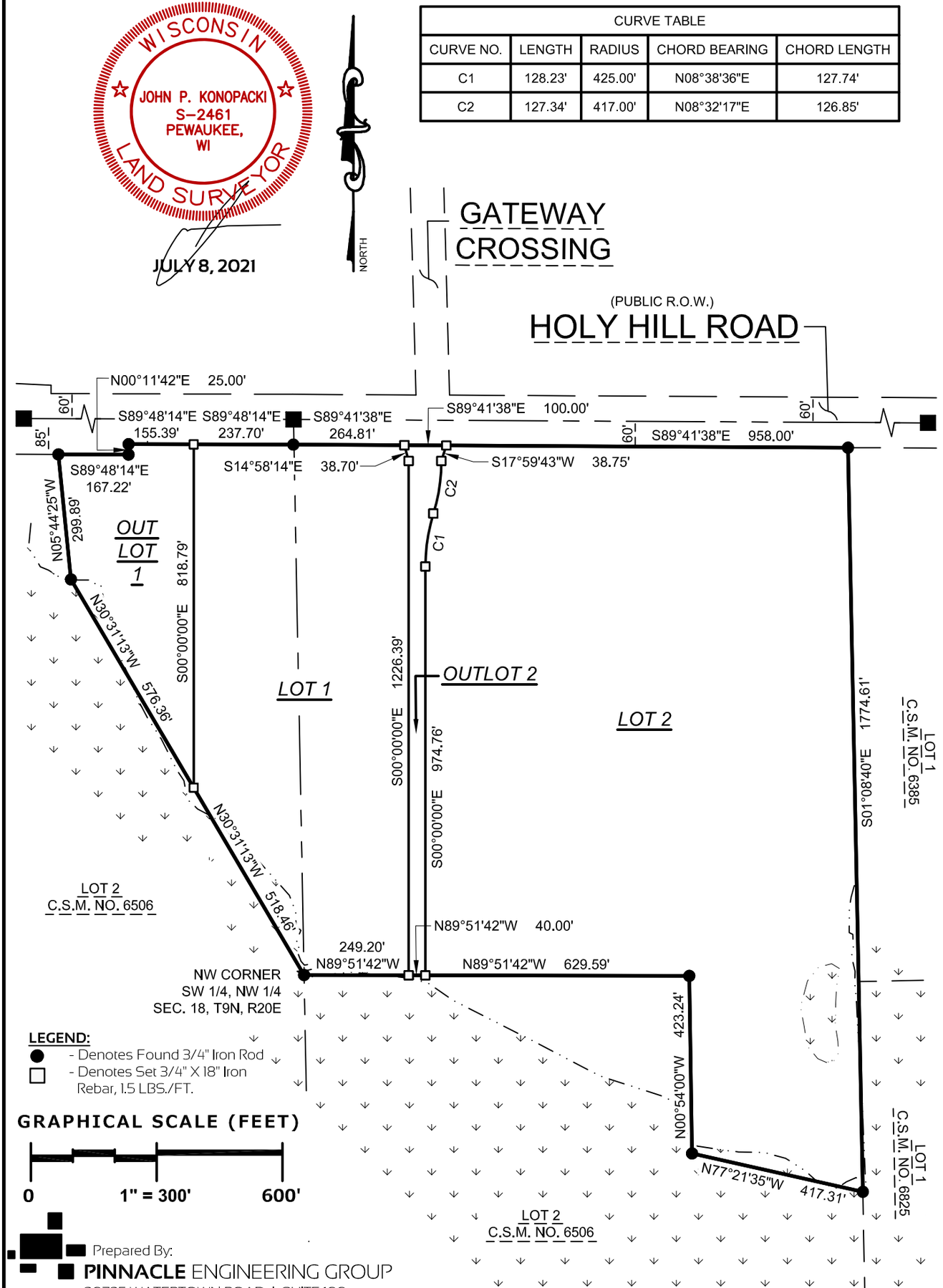
CERTIFIED SURVEY MAP NO. _____

Being all of Lot 3 of Certified Survey Map No. 6506, located in the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 and the Northeast 1/4 of the Northwest 1/4 of Section 18, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin

WISCONSIN
JOHN P. KONOPACKI
S-2461
PEWAUKEE, WI
LAND SURVEYOR

JULY 8, 2021

CURVE TABLE				
CURVE NO.	LENGTH	RADIUS	CHORD BEARING	CHORD LENGTH
C1	128.23'	425.00'	N08°38'36"E	127.74'
C2	127.34'	417.00'	N08°32'17"E	126.85'



LEGEND:
- ● - Denotes Found 3/4" Iron Rod
- □ - Denotes Set 3/4" X 18" Iron Rebar, 1.5 LBS./FT.

GRAPHICAL SCALE (FEET)

0 1" = 300' 600'

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

PEG JOB#1262.00A

CERTIFIED SURVEY MAP NO. _____

Being all of Lot 3 of Certified Survey Map No. 6506, located in the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 and the Northeast 1/4 of the Northwest 1/4 of Section 18, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin

SURVEYOR'S CERTIFICATE

STATE OF WISCONSIN)
WAUKESHA COUNTY) SS

I, John P. Konopacki, Professional Land Surveyor, do hereby certify:

That I have surveyed, mapped and divided all of Lot 3 of Certified Survey Map No. 6506, as recorded in the Register of Deeds office for Washington County as Document No. 1335168, located in the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 and the Northeast 1/4 of the Northwest 1/4 of Section 18, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin, bounded and described as follows:

Commencing at the northwest corner of the Northeast 1/4 of said Section 18;
Thence South 89°41'38" East along the north line of said Northeast 1/4, 1321.344 feet;
Thence South 01°08'40" East, 60.02 feet to the south right of way line of Holy Hill Road and the Point of Beginning;

Thence continuing South 01°08'40" East along the west line of Lot 1 of Certified Survey Map No. 6385 and then along the west line of Lot 1 of Certified Survey Map No. 6825, 1774.61 feet to a northerly line of Lot 2 of Certified Survey Map No. 6506;
Thence the following courses along said northerly line:

North 77°21'35" West, 417.31 feet; North 00°54'00" West, 423.24 feet; North 89°51'42" West, 918.79 feet; North 30°31'13" West, 1094.82 feet; North 05°44'25" West, 299.89 feet to the aforesaid south right of way line of Holy Hill Road;

Thence the following courses along said south right of way line:

South 89°48'14" East, 167.22 feet; North 00°11'42" East, 25.00 feet; South 89°48'14" East, 393.09 feet; South 89°41'38" East, 1322.81 feet to the Point of Beginning.

Containing 2,285,578 square feet (52.4697 acres) of land, more or less.

That I have made such survey, land division and map by the direction of CQ WI 2021, LLC, owner of said land.

That such map is a correct representation of all the exterior boundaries of the land surveyed and the land division thereof made.

That I have fully complied with the requirements of Chapter 236 of the Wisconsin State Statutes and the Village of Germantown Land Division Ordinance in surveying, mapping and dividing the land with in this certified survey map.

Date: JULY 8, 2021



John P. Konopacki
Professional Land Surveyor S-2461

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

CERTIFIED SURVEY MAP NO. _____

Being all of Lot 3 of Certified Survey Map No. 6506, located in the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 and the Northeast 1/4 of the Northwest 1/4 of Section 18, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin

OWNER'S CERTIFICATE

CQ WI 2021, LLC, a limited liability company duly organized and existing under and by virtue of the laws of the State of Delaware, as owner, does hereby certify that said limited liability company caused the land described on this certified survey map to be surveyed, divided and mapped as represented on this certified survey map.

CQ WI 2021, LLC, as owner, does further certify that this certified survey map is required by Chapter 236 of the Wisconsin State Statutes to be submitted to the following for approval or objection:

1. Village of Germantown

IN WITNESS WHEREOF, the said CQ WI 2021, LLC, has caused these presents to be signed by Michael Faber, Manager, at (city)_____, _____ County, State of _____, on this _____ day of _____ , 2021.

In the presence of: Capstone Development Company

_____
Michael Faber, Manager (signature)

STATE OF _____)
_____ COUNTY) SS

Personally came before me this _____ day of _____ , 2021, Michael Faber, Manager, of the above named limited liability company, to me known to be the person who executed the foregoing instrument, and to me known to be such Manager of said limited liability company and acknowledged that they executed the foregoing instrument as such officer as the deed of said limited liability company, by its authority.

_____
Notary Public
Name:_____
State of _____
My Commission Expires: _____

CONSENT OF CORPORATE MORTGAGEE

_____ , a corporation duly organized and existing under and by virtue of the laws of the State of Wisconsin, mortgagee of the above described land, does hereby consent to the surveying, dividing and mapping of the land described in the forgoing affidavit of John P. Konopacki, surveyor, and does hereby consent to the above certification of owners.

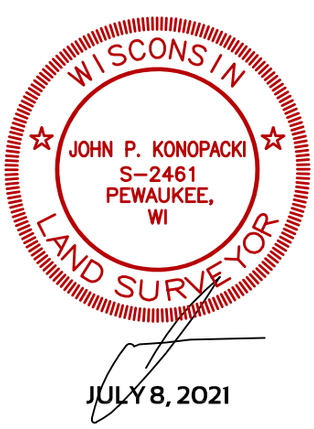
IN WITNESS WHEREOF, the said _____ , has caused these presents to be signed by _____ , its President, and its corporate seal to be hereunto affixed this _____ day of _____ , 2021.

_____ _____
Date President

STATE OF WISCONSIN)
_____ COUNTY) SS

Personally came before me this _____ day of _____ , 2021, _____ , to me known to be the person who executed the foregoing instrument and to me known to be such officer of said corporation and acknowledged the same.

_____
Notary Public
Name:_____
State of _____
My Commission Expires: _____



JULY 8, 2021

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

This instrument drafted by John P. Konopacki, PLS-License No. S-2461

CERTIFIED SURVEY MAP NO. _____

Being all of Lot 3 of Certified Survey Map No. 6506, located in the Northwest 1/4 and Southwest 1/4 of the Northeast 1/4 and the Northeast 1/4 of the Northwest 1/4 of Section 18, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin

PLAN COMMISSION APPROVAL

This Certified Survey Map is hereby approved by the Plan Commission of the, Village of Germantown, on this _____ day of _____ , 2021.

_____ _____
Date

_____
Dean Wolter, Chairman

_____ _____
Date

_____
Laura A. Johnson, Secretary

STATE OF WISCONSIN)
MILWAUKEE COUNTY) SS

Personally came before me this _____ day of _____ , 2021,
(names)_____, to me known to be the persons who executed the foregoing instrument and acknowledged the same.

_____
Notary Public
Name:_____
State of Wisconsin
My Commission Expires: _____

VILLAGE OF GERMANTOWN BOARD APPROVAL

This Certified Survey Map, being a part of the Southwest 1/4 of the Southeast 1/4 and the Southeast 1/4 of the Southwest 1/4 of Section 7, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin, having been approved by the Planning Commission being the same, is hereby approved and accepted by the Village Board of Trustees of the Village of Germantown on this _____ day of _____ , 2021.

_____ _____
Date

_____
Dean Wolter, Village President

_____ _____
Date

_____
Deanna Braunschweig, Village Clerk

STATE OF WISCONSIN)
MILWAUKEE COUNTY) SS

Personally came before me this _____ day of _____ , 2021,
(names)_____, to me known to be the persons who executed the foregoing instrument and acknowledged the same.

_____
Notary Public
Name:_____
State of Wisconsin
My Commission Expires: _____



JULY 8, 2021

Prepared By:
PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD I SUITE 100
BROOKFIELD, WI 53186
OFFICE: (262) 754-8888

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PEG JOB#1262.00A

SITE PLAN REVIEW CHECKLIST

Pursuant to Section 17.43 of the Municipal Code

This checklist provides a summary of requirements found in the Municipal Code. It is intended purely as a guide for developers and should not substitute for a full review of the Code and applicable regulations. (Revised 3/07)

GENERAL INFORMATION

- ☑ Provide Completed Checklist with submittal
- ☑ Names and Contact Information for Agent/Applicant, Property Owner, Developer (if different), and all engineers, architects, planners, or other individuals responsible for preparing one or more plans included in application submittal
- ☑ Legal Description of the Property (electronic Microsoft WORD format; metes and bounds description preferred)
- ☑ Graphic scale and North Arrow
- ☑ General Location Map (within village)
- ☑ Size of site (gross and net acreage)
- ☑ Existing zoning
- ☑ Adjacent zoning and land uses
- ☑ Current date(s) each plan sheet prepared or revised

EXISTING SITE INFORMATION

- ☑ Dimensions of site and lot lines (pipes found, pipes set, monuments)
- ☑ Existing grades (2' contours minimum)
- ☑ Adjacent property grades (within 10' minimum of property lines)
- ☑ Adjacent structures (within 20' minimum of property lines)
- ☑ Drainage systems and structures
- ☑ Natural features (wooded areas, streams, lakes, ponds, rock outcroppings)
- ☑ Wetland boundaries (provide date of delineation; include report and DNR concurrence letter)
- ☑ Floodplain elevation and boundaries
- ☑ Environmental concerns (underground tanks, etc) Not Applicable
- ☑ Primary Environmental Corridor boundary
- ☑ Roads, curbs, parking lots, pavement areas
- ☑ Structures (location, size) Not Applicable
- ☑ Rights-of-Way (existing/ultimate)
- ☑ Easements (drainage, utility)
- ☑ Existing utilities (sanitary, water, electric, gas, telephone)
- ☑ Benchmark locations and elevations
- ☑ Location of fences, wells, borings, etc.
- ☑ Lot coverage (Existing)
    - Total parcel area by square footage and acreage
    - Impervious area (sqft) and percentage of total by type (e.g. building, parking, etc.)
    - Open space area (sqft) and percentage of total by type (landscaped, wetland, floodplain, etc.)
    - Comparison of maximum impervious area allowed under zoning district(s) vs. existing and proposed

ARCHITECTURAL PLANS

- ☑ Existing building location
- ☐ Existing building elevations materials (photos can be provided) Not Applicable, Existing to be Demolished
- ☑ Proposed use(s) of building
- ☑ Statement of design intent (narrative)
- ☑ Proposed floor plans (with area and dimensions)
- ☑ Square footage (total and individual rooms/stores)
- ☑ Proposed exterior elevations (with heights and dimensions)
- ☑ Colored Rendering (3-D preferred) or Colored elevations
- ☑ Proposed materials and colors
  - ☑ narrative description
  - ☑ material sample board (required for new construction)
- ☐ Details of any special features, e.g. clock towers, cupolas, overhangs, canopies, drive-through windows, etc. Not Applicable

PROPOSED SITE PLAN

- ☑ Grading and spot elevations
- ☑ Erosion control measures (silt fencing, hay bales, rip-rap, tracking mat, stockpile locations)
- ☑ Stormwater management
  - stormwater management design report
  - general drainage pattern
  - swales w/ arrows for direction of flow
  - pond design with outfalls
  - culverts (location/size)
- ☑ Utilities (size, invert elevations, length, slope, etc.)
  - sanitary
  - water
  - stormsewer
- ☑ Building location (dimension)
- ☑ Building elevation (finished grade)
- ☑ Location of proposed signage
- ☑ Details of outside storage (including trash receptacles) Trash management at docks
- ☑ Setbacks (clearly marked and dimensioned)
  - building setbacks as set in PDD Resolution
  - wetland, floodplain and shoreland setbacks
- ☑ Vehicular entrances (dimension to centerline of nearest intersection)
- ☑ Streets (dimension and direction for one-ways)
- ☑ Curve radii
- ☑ Sidewalks (dimension)
- ☑ Parking areas (show striping/spot elevations)
- ☑ Parking setback from property line
- ☑ Loading areas (dimension)
- ☐ Intersection Improvements (if any; consistent with Traffic Study Recommendations) Not applicable
- ☑ Lot coverage (Proposed)
- ☑ Total parcel area by Square footage and acreage
  - Impervious area total sqft. by type and percentage of total by type (e.g. building, pavement, etc.)
  - Open space area total sqft. by type and percentage of total by type (landscaped, wetland, floodplain, etc.)
  - Comparison of impervious area permitted under zoning district(s) vs. proposed

- ☑ Municipal utility connections & locations
  - Sanitary sewer (pipe size/elevations)
  - Water (size, valve location, elevations)
  - Location of hydrants
  - Easements for public water mains

LIGHTING PLAN

- ☑ Show major features and proposed improvements for context (use proposed site plan as base)
- ☑ Location and type of existing lighting features and fixtures (No existing fixtures)
- ☑ Location and type of all proposed lighting features and fixtures, including: access driveways or intersections, internal roads, driveways and parking areas, building-mounted and entryways
- ☑ Photometric statistical analysis and graphic report (shown to scale on proposed site plan)
- ☑ Provide manufacturer specification "cut-sheets" for all proposed poles and/or fixtures
- ☑ Lighting schedule
  - keyed to plan
  - number and type of fixtures and lamp
  - lamp output (lumens and wattage)
  - Installation details as appropriate (include detail for light poles and pedestals)

LANDSCAPE PLAN

- ☑ Major improvements for context (property lines, building, drives, walks)
- ☑ Proposed outdoor amenities (benches, paths, landscaping beds, etc)
- ☑ Existing vegetation
  - Species
  - Size
- ☑ Approximate canopy in plan
- ☐ Vegetation to be destroyed
  - list and show location Not applicable, existing fallow farm field.
- ☑ Proposed method of saving existing vegetation during construction
- ☑ Proposed landscape features (berms, fountains)
- ☐ Existing and proposed landscape lighting Not applicable
- ☐ Irrigation/watering systems (locate outlets) Hose bibs shown.
- ☑ Plant lists or schedules
  - Keyed to plan
  - Number of each species
  - Size when planted (caliper)
- ☑ Installation details/staking
- ☑ Street Trees

SIGNAGE PLAN

- ❑ Proposed signage (elevations, color, square footage, height, construction material, lighting)
- ❑ This is a speculative building development, so no tenant signage known at this time. Proposed park monument sign location shown. Sign to meet Village ordinances and be comparable to neighboring industrial developments.

MODEL SUBMITTAL INCLUDES THE FOLLOWING PLANS:

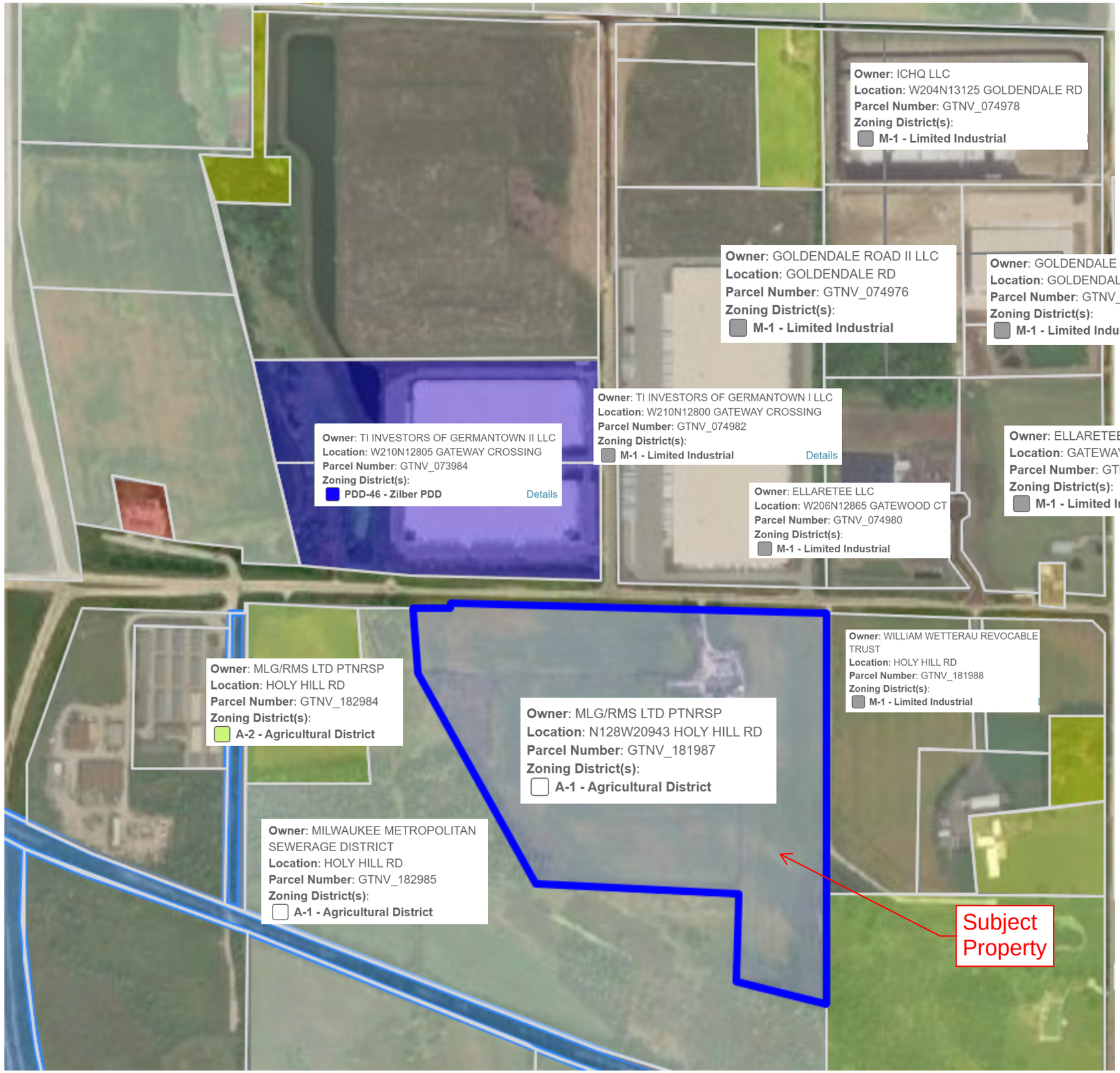
- ☑ Cover / Title Page
- ☑ Existing Site Information Plan
- ☑ Proposed Site Plan
- ☑ Grading, Paving & Erosion Control Plan
- ☑ Utility Plan
- ☑ Landscape Plan
- ☑ Lighting Plan
- ☑ Archtectural Plans
- ❑ Signage Plans Proposed park monument sign location shown. Sign to meet Village ordinances and be comparable to neighboring industrial developments.

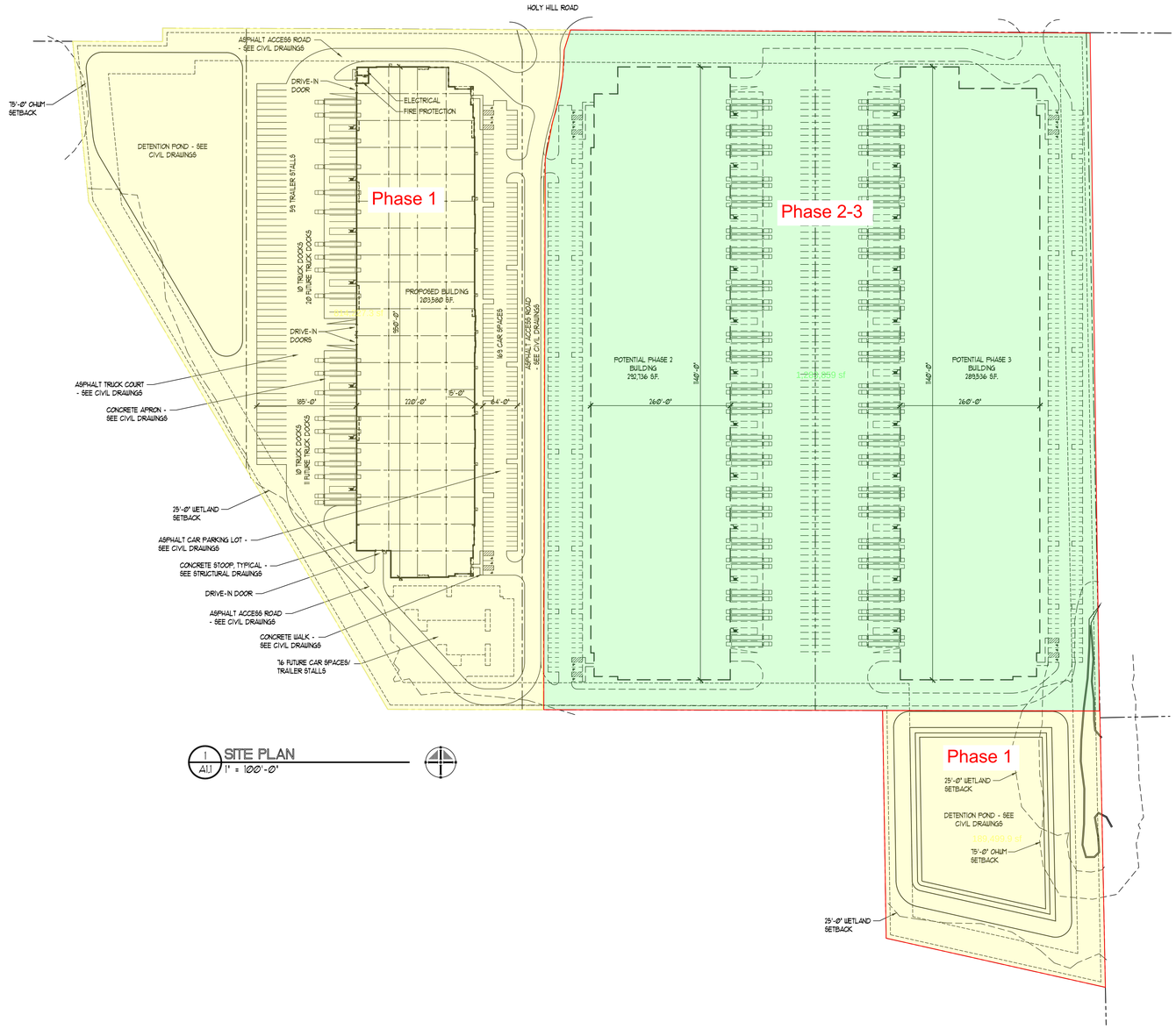
In addition to the items on this list, Village staff and/or the Plan Commission may require additional drawings and data to be submitted for approval. If any public improvements or work is to be done in the Public Right-of-Way the Village will require that a **Developer's Agreement** be submitted and approved by the Village Board.

Zoning Map

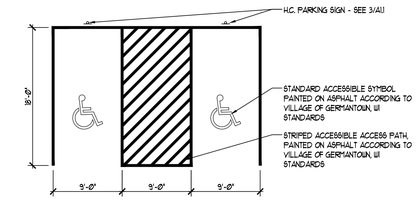
7/16/21

BERGHAMMER
Construction Corporation

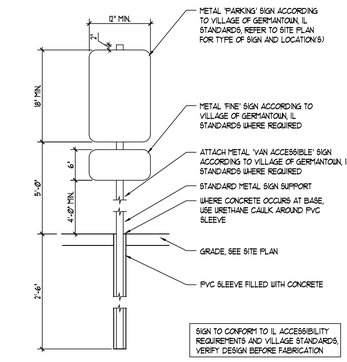




1 A1.1 SITE PLAN
1" = 100'-0"



2 A1.1 TYP. H.C. PARKING STALL
1/8" = 1'-0"



3 A1.1 SIGN MOUNTING DETAIL
1" = 1'-0"

PROPOSED USE/DESIGN INTENT/MATERIAL DESCRIPTION:

THE PROPOSED USE IS A MULTI-TENANT INDUSTRIAL BUILDING WITH A QUALITY OF ARCHITECTURE CONSISTENT WITH BUILDINGS OF THIS USE AND IN KEEPING WITH THE NEIGHBORING INDUSTRIAL BUILDINGS. THE MASS AND SCALE OF THE BUILDING HAS BEEN ARTICULATED BY PROVIDING CORNER + CENTER ENTRY ELEMENTS, ADDING REVEAL PATTERNS AND COLORS, VARYING THE TOP OF THE PRECAST WALLS AND PROVIDING FENESTRATION.

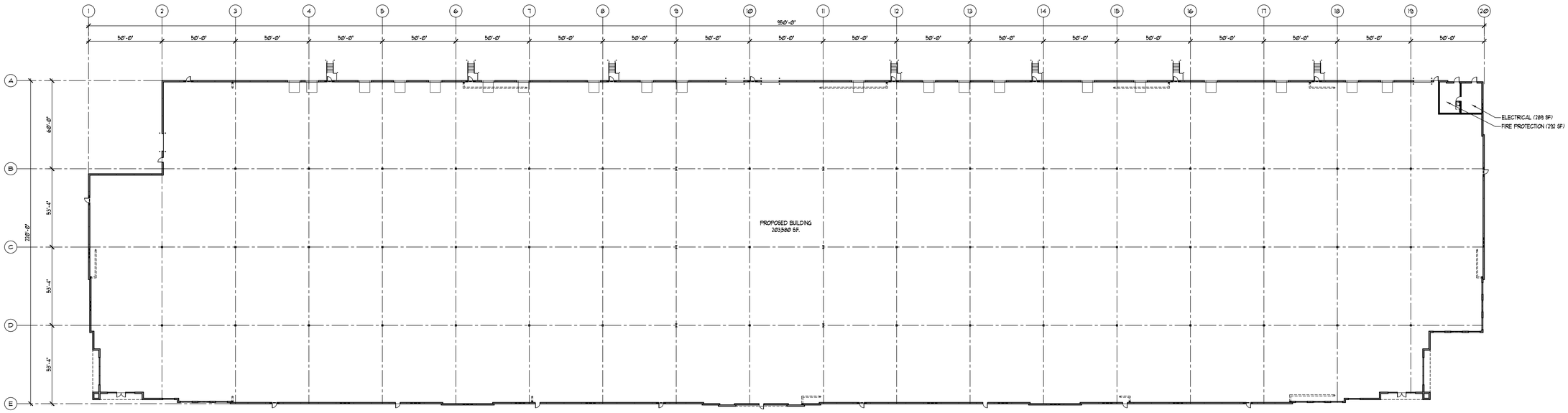
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Partners in Design ARCHITECTS
2610 Lake Cook Road
Suite 280
Riverwoods, IL 60015
Ph.: (847) 940-0300
www.pdarchitects.com

CAPSTONE 41
N128 W20943 Holy Hill Road, Germantown, WI

SITE PLAN AND DETAILS

PROJECT NO.: 0719.21064
DRAWN BY: CTS
CHECKED BY: WHB
DATE: 07.14.21
SHEET NO.: A1.1



1 A3.1 OVERALL BUILDING PLAN
1" = 30'-0"

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REVISIONS

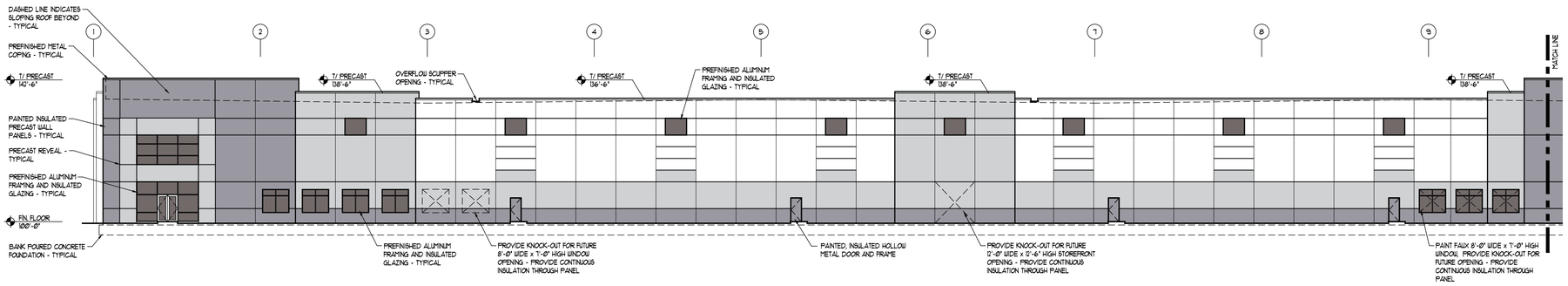
CAPSTONE 41
N128 W20943 Holy Hill Road, Germantown, WI

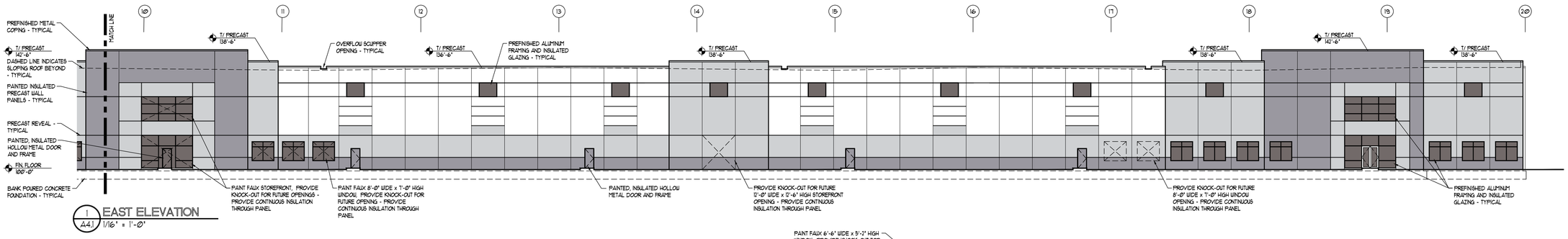
OVERALL BUILDING PLAN

2610 Lake Cook Road
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www.pdparchitects.com

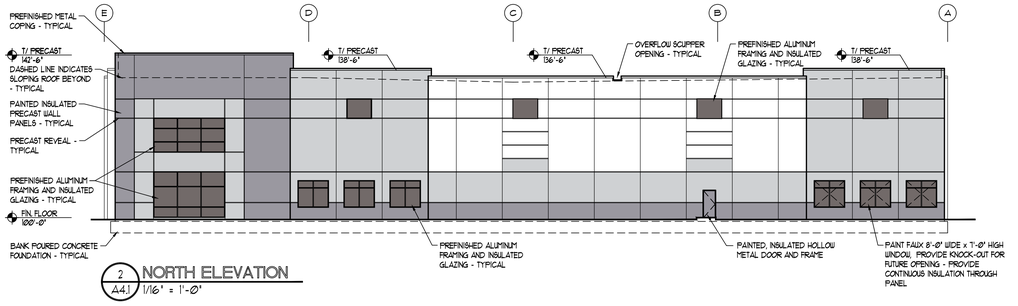
PartnersinDesign
ARCHITECTS

PROJECT NO.: 019.21064
DRAWN BY: CTS
CHECKED BY: WHB
DATE: 07.14.21
SHEET NO.: A3.1

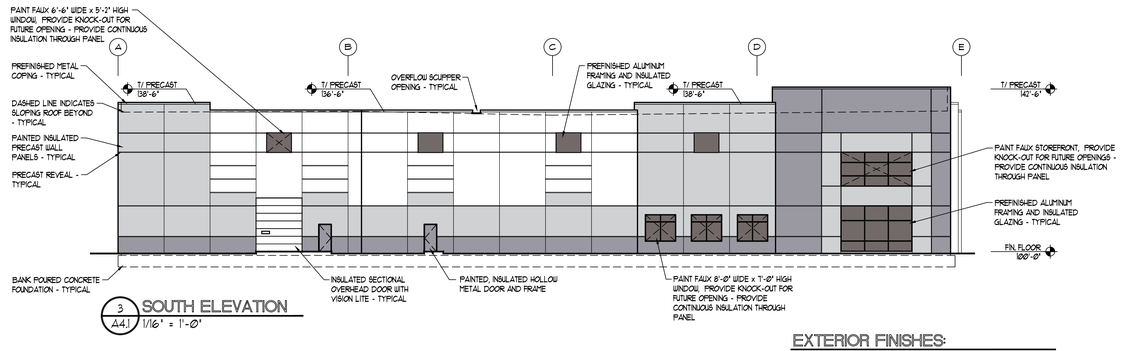




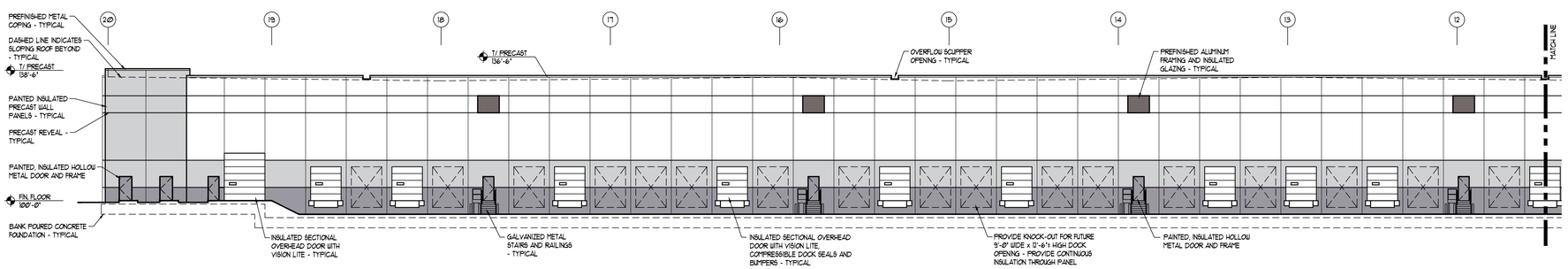
1 A4.1 EAST ELEVATION
1/16" = 1'-0"



2 A4.1 NORTH ELEVATION
1/16" = 1'-0"



3 A4.1 SOUTH ELEVATION
1/16" = 1'-0"



EXTERIOR FINISHES:

PAINT COLORS:

COLOR 1 (LIGHT FIELD COLOR)
SHERWIN-WILLIAMS
COLOR: SW 7006 RESERVED WHITE

COLOR 2 (MEDIUM ACCENT COLOR)
SHERWIN-WILLIAMS
COLOR: SW 7071 DORIAN GRAY

COLOR 3 (DARK ACCENT COLOR)
SHERWIN-WILLIAMS
COLOR: SW 7019 GAUNTLET GRAY

INSULATED GLASS: GRAY TINTED

ROOF COPING TO MATCH ADJACENT WALL COLOR

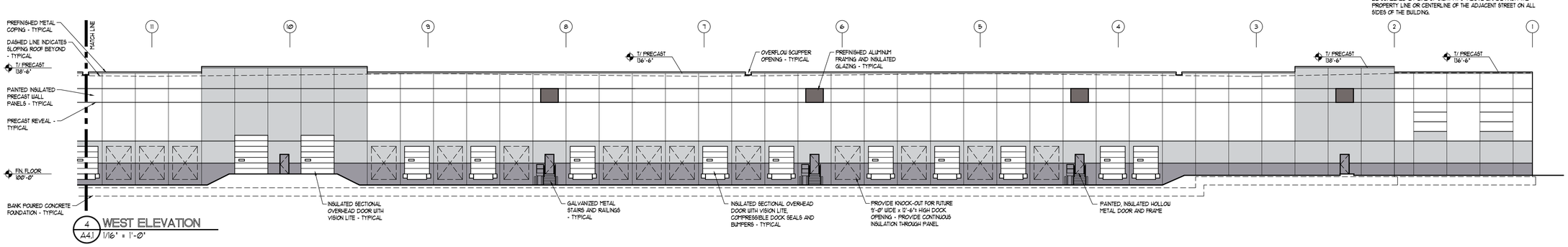
WINDOW FRAMES: CLEAR ANODIZED ALUMINUM

OVERHEAD DOORS: PREFINISHED ALUMINUM, WHITE

EXTERIOR STAIRS: GALVANIZED STAIRS & RAILINGS

GENERAL NOTES:

1. NO ROOF TOP UNITS WILL BE INSTALLED FOR THE CONSTRUCTION OF THE SHELL BUILDING. THE FUTURE TENANT BUILD-OUTS UNDER A SEPARATE PERMIT SUBMITTAL WILL PROVIDE ROOF TOP LOCATIONS AND SIGHTLINE DIAGRAMS TO SHOW SCREENING COMPLIANCE. ROOF TOP UNITS SHALL BE SCREENED BY LINE OF SIGHT AT 5' ABOVE GRADE FROM THE PROPERTY LINE OR CENTERLINE OF THE ADJACENT STREET ON ALL SIDES OF THE BUILDING.



4 A4.1 WEST ELEVATION
1/16" = 1'-0"

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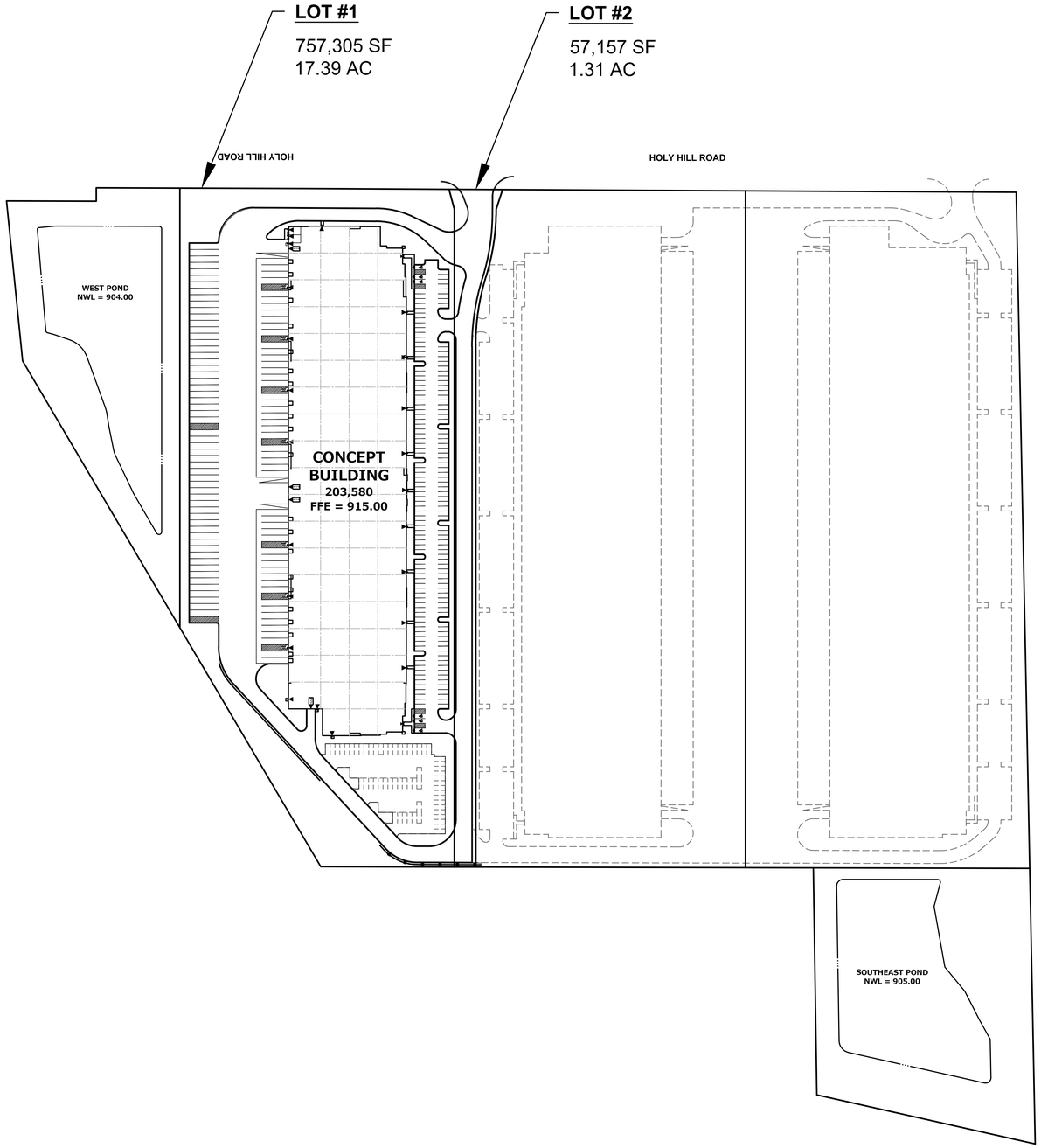
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CAPSTONE 41
N128 W20943 Holy Hill Road, Germantown, WI

EXTERIOR ELEVATIONS

PROJECT NO.: 0719.21064
DRAWN BY: CTS
CHECKED BY: WHB
DATE: 07.14.21
SHEET NO.: A4.1

THESE PLANS AND DESIGNS ARE COPYRIGHT PROTECTED AND MAY NOT BE USED IN WHOLE OR IN PART WITHOUT THE WRITTEN CONSENT OF PINNACLE ENGINEERING GROUP, LLC



NORTH

GRAPHICAL SCALE (FEET)

0 1" = 100' 200'

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LOT #1				
TOTAL LOT SIZE			757,305 SF	17.39 AC
GREEN SPACE	246,133 SF			
	1,306 SF			
	7,168 SF			
	1,331 SF			
	1,146 SF			
	1,431 SF			
	1,146 SF			
	1,030 SF			
	854 SF			
	1,299 SF			
	1,278 SF			
	1,299 SF			
	1,496 SF			
	5,163 SF			
	39,002 SF			
	8,261 SF			
TOTAL GREEN SPACE	319,342 SF		319,342 SF	7.33 AC
TOTAL IMPERVIOUS			437,962 SF	10.05 AC
% GREEN SPACE			42.17 %	
FUTURE IMPERVIOUS	26557.41		464,520 SF	10.66 AC
% FUTURE GREEN SPACE			38.66 %	

LOT #2				
TOTAL LOT SIZE			57,157 SF	1.31 AC
GREEN SPACE	1,291 SF			
	1,777 SF			
	397 SF			
	8,492 SF			
TOTAL GREEN SPACE	11,956 SF		11,956 SF	0.27 AC
TOTAL IMPERVIOUS			45,201 SF	1.04 AC
% GREEN SPACE			20.92	

FOR REVIEW

GREEN SPACE CALCS

REVIEWED: SRB

DESIGNED: SRB

DRAWN: SRB

PLAN | DESIGN | DELIVER
www.pinnacle-engr.com

PINNACLE ENGINEERING GROUP
ENGINEERING | NATURAL RESOURCES | SURVEYING

WISCONSIN OFFICE:
20725 WATERTOWN ROAD, SUITE 100
BROOKFIELD, WI 53186
(262) 754-8888
CHICAGO | MILWAUKEE | NATIONWIDE

CAPSTONE - GERMANTOWN

GERMANTOWN, WI

GREEN SPACE CALCS

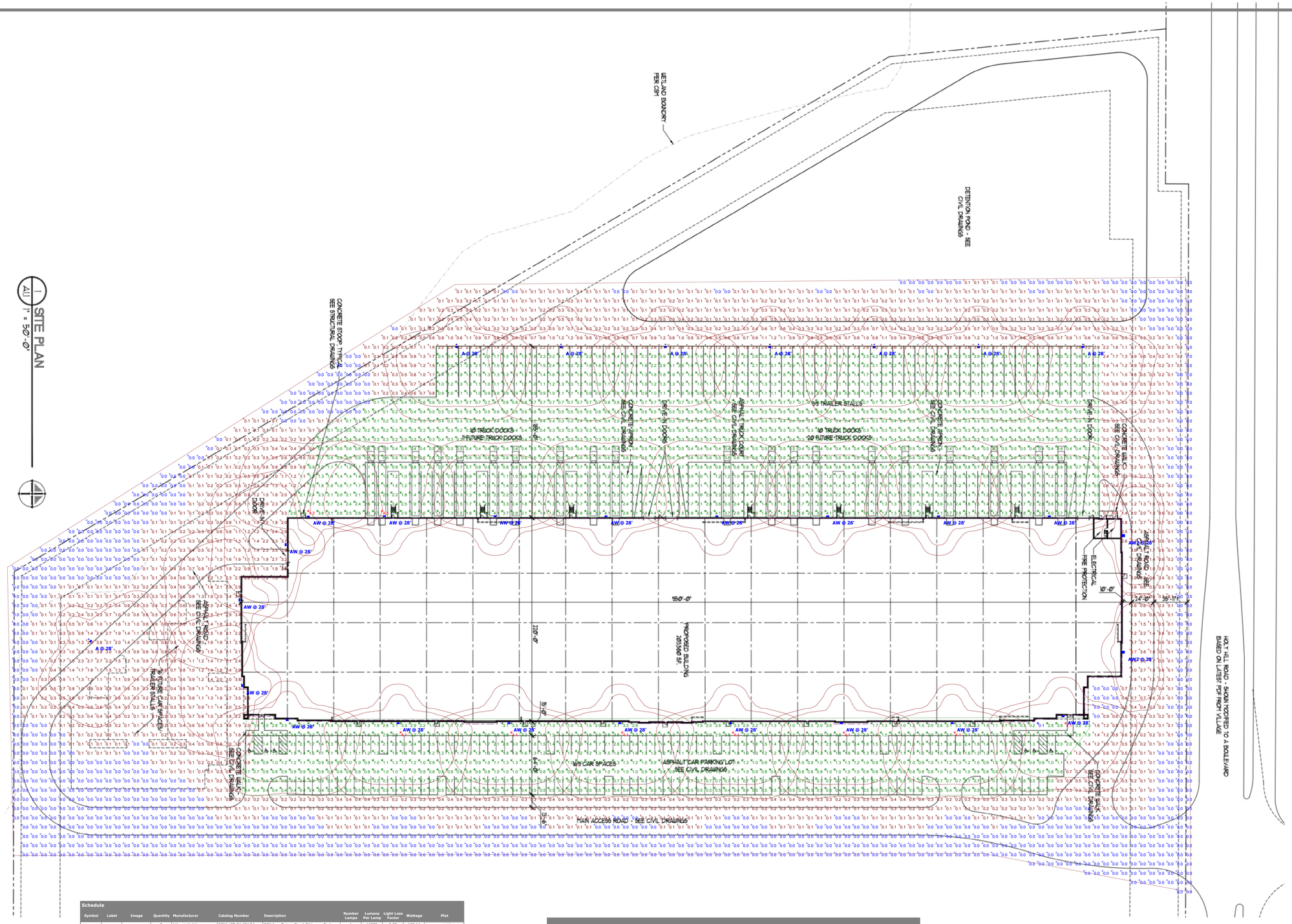
REVISIONS

PEG JOB # 1262.00A-WI
PEG PM ASS
START DATE 06/01/21
SCALE 1"=100'

SHEET
C-1
OF
C-1

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Z:\PROJECTS\2018\1262.00A-WI\CAD\EXHIBITS\1262.00A-WI GREEN SPACE CALCS ED.DWG


WETLAND BOUNDARY PER ORI
DETENTION POND - SEE CIVIL DRAWINGS
CONCRETE PADS - SEE STRUCTURAL DRAWINGS
10 TRUCK DOCKS
FUTURE TRUCK DOCKS
95 TRAILER STALLS
20 FUTURE TRUCK DOCKS
DRIVE-IN DOORS
ASPHALT TRUCK COURT - SEE CIVIL DRAWINGS
CONCRETE SLAB - SEE CIVIL DRAWINGS
A @ 28'
AW @ 28'
AW2 @ 28'
950'-0"
270'-0"
PROPOSED BUILDING 205,580 SF
ELECTRICAL FIRE PROTECTION
10'-0"
ASPHALT ROAD - SEE CIVIL DRAWINGS
SEE CIVIL DRAWINGS FOR ROAD WIDTH
165 CAR SPACES
ASPHALT CAR PARKING LOT - SEE CIVIL DRAWINGS
MAIN ACCESS ROAD - SEE CIVIL DRAWINGS
SEE CIVIL DRAWINGS FOR ROAD WIDTH
SEE CIVIL DRAWINGS FOR ROAD WIDTH
SEE CIVIL DRAWINGS FOR ROAD WIDTH



RSX1 LED
Area Luminaire

Catalog Number

Notes

Type

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

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 RSX1 delivers 7,000 to 17,000 lumens allowing it to replace 70W to 400W 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.

Specifications

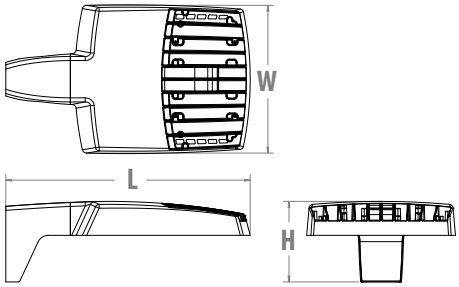
EPA (ft²@0°): 0.57 ft² (0.05 m²)

Length: 21.8" (55.4 cm) (SPA mount)

Width: 13.3" (33.8 cm)

Height: 3.0" (7.6 cm) Main Body 7.2" (18.4 cm) Arm

Weight (SPA mount): 22.0 lbs (10.0 kg)



Ordering Information

EXAMPLE: RSX1 LED P4 40K R3 MVOLT SPA DDBXD

RSX1 LED

Series	Performance Package	Color Temperature	Distribution	Voltage	Mounting
RSX1 LED	P1 P2 P3 P4	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]

Shipped Installed

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

NLTAIR2	nLight AIR generation 2 [13,14,15]
PIRHN	Networked, Bi-Level motion/ambient sensor (for use with NLTAIR2) [13,15,16]

***Note: PIRHN with nLight Air can be used as a standalone or networked solution. Sensor coverage pattern is affected when luminaire is tilted.**

Shipped Separately (requires some field assembly)

EGS	External glare shield [7]
EGFV	External glare full visor (360° around light aperture) [7]
BS	Bird spikes [17]

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

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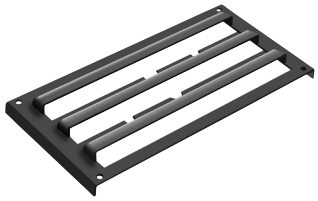
Ordering Information

Accessories
Ordered and shipped separately.

RSX1HS	RSX1 House side shield (includes 1 shield)
RSX1HSAFRR U	RSX1 House side shield for AFR rotated optics (includes 1 shield)
RSX1EGS (FINISH) U	External glares hield (specify finish)
RSX1EGFV (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	RSX Surface conduit box (specify finish, for use with WBA, WBA not included)
DLL127F 1.5 JU	Photocell -SSL twist-lock (120-277V) [18]
DLL347F 1.5 CUL JU	Photocell -SSL twist-lock (347V) [18]
DLL480F 1.5 CUL JU	Photocell -SSL twist-lock (480V) [18]
DSHORT SBK U	Shorting cap [18]

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 or P2. 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, 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, PER7, FAO and PIRHN.
14 Must be ordered with PIRHN.
15 Requires MVOLT or HVOLT.
16 Must be ordered with NLTAIR2. For additional information on PIRHN visit here.
17 Must be ordered with fixture for factory pre-drilling.
18 Requires luminaire to be specified with PER7 option. Ordered and shipped as a separate line item from Acuity Brands Controls.

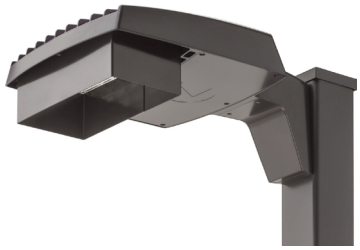
External Shields



House Side Shield



External Glare Shield

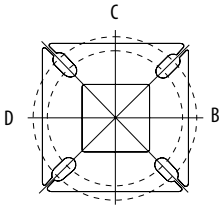


External 360 Full Visor

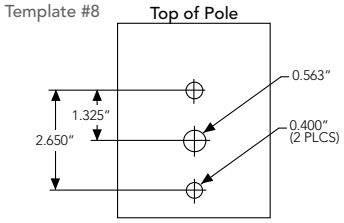
Pole/Mounting Informatiion

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.

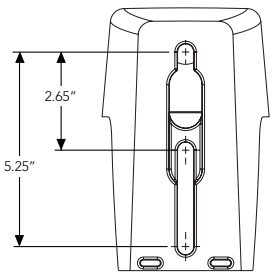
HANDHOLE ORIENTATION



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

RSX1 - Luminaire EPA

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

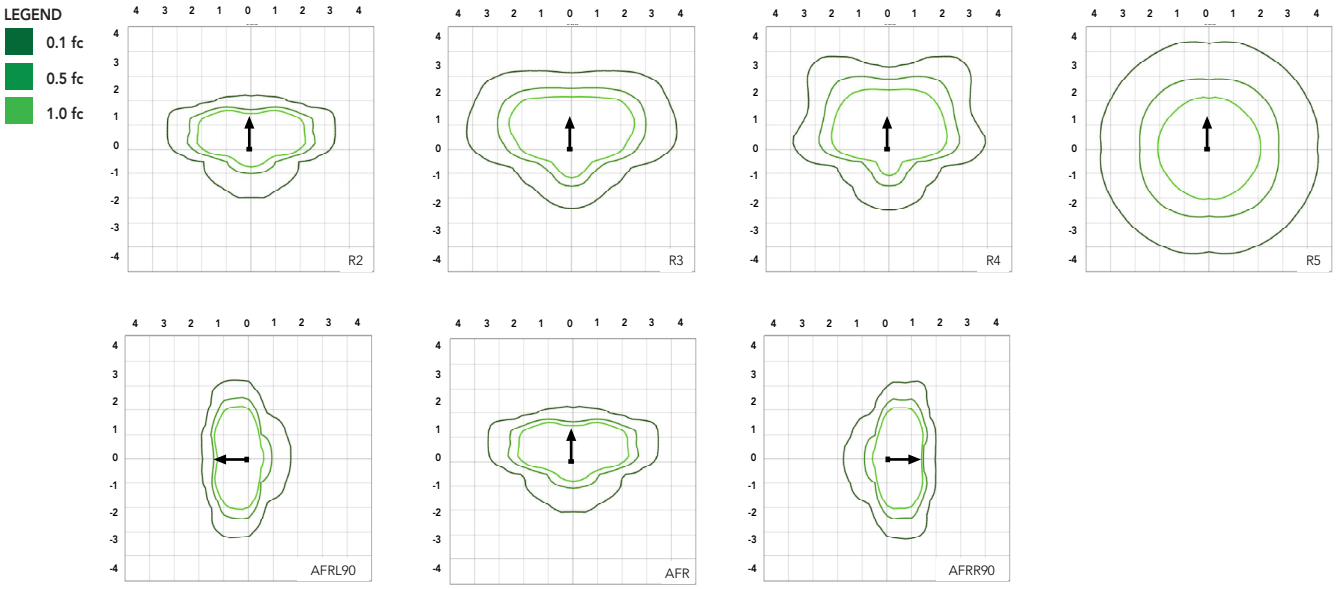
Fixture Quantity & Mounting Configuration		Single	2 @ 90	2 @ 180	3 @ 90	3 @ 120	4 @ 90	2 Side by Side	3 Side by Side	4 Side by Side
Mounting Type	**Tilt**									
SPA - Square Pole Adaptor	0°	0.57	1.03	1.05	1.52	1.36	2.03	1.31	1.7	2.26
RPA - Round Pole Adaptor		0.62	1.08	1.15	1.62	1.46	2.13	1.36	1.8	2.36
MA - Mast Arm Adaptor		0.49	0.95	0.89	1.36	1.2	1.87	1.23	1.54	2.1
IS - Integral Slipfitter AASP/AARP - Adjustable Arm Square/Round Pole	0°	0.57	1.03	1.05	1.52	1.36	2.03	1.31	1.7	2.26
	10°	0.68	1.34	1.33	2	1.74	2.64	1.35	2.03	2.71
	20°	0.87	1.71	1.73	2.56	2.26	3.42	1.75	2.62	3.49
	30°	1.24	2.19	2.3	3.21	2.87	4.36	2.49	3.73	4.97
	40°	1.81	2.68	2.98	3.85	3.68	5.30	3.62	5.43	7.24
	45°	2.11	2.92	3.44	4.2	4.08	5.77	4.22	6.33	8.44
	50°	2.31	3.17	3.72	4.52	4.44	6.26	4.62	6.94	9.25
	60°	2.71	3.66	4.38	5.21	5.15	7.24	5.43	8.14	10.86
	70°	2.78	3.98	4.54	5.67	5.47	7.91	5.52	8.27	11.03
	80°	2.76	4.18	4.62	5.97	5.76	8.31	5.51	8.27	11.03
	90°	2.73	4.25	4.64	6.11	5.91	8.47	5.45	8.18	10.97

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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 RSX1 LED P4 40K. Distances are in units of mounting height (20').



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	51W	0.42	0.25	0.21	0.19	0.14	0.11
P2	72W	0.60	0.35	0.30	0.26	0.21	0.15
P3	109W	0.91	0.52	0.45	0.39	0.31	0.23
P4	133W	1.11	0.64	0.55	0.48	0.38	0.27

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.

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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.

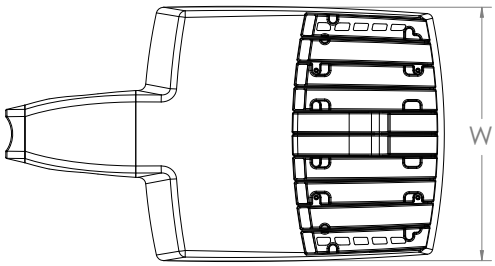
Performance Package	System Watts	Distribution. Type	30K (3000K, 70 CRI)					40K (4000K, 70 CRI)					50K (5000K, 70 CRI)				
			Lumens	B	U	G	LPW	Lumens	B	U	G	LPW	Lumens	B	U	G	LPW
P1	51W	R2	6,482	1	0	1	126	7,121	1	0	1	139	7,121	1	0	1	139
		R3	6,459	1	0	2	127	7,096	1	0	2	139	7,096	1	0	2	139
		R3S	6,631	1	0	1	129	7,286	1	0	2	142	7,286	1	0	2	142
		R4	6,543	1	0	2	128	7,189	1	0	2	141	7,189	1	0	2	141
		R4S	6,313	1	0	1	124	6,936	1	0	1	136	6,936	1	0	1	136
		R5	6,631	3	0	2	130	7,286	3	0	2	143	7,286	3	0	2	143
		R5S	6,807	3	0	1	133	7,479	3	0	1	147	7,479	3	0	1	147
		AFR	6,473	1	0	1	127	7,112	1	0	1	139	7,112	1	0	1	139
		AFRR90	6,535	2	0	2	127	7,179	2	0	2	140	7,179	2	0	2	140
		AFRL90	6,562	2	0	1	128	7,210	2	0	2	140	7,210	2	0	2	140
P2	72W	R2	8,991	2	0	1	123	9,878	2	0	1	135	9,878	2	0	1	135
		R3	8,959	2	0	2	124	9,843	2	0	2	137	9,843	2	0	2	137
		R3S	9,198	2	0	2	126	10,106	2	0	2	139	10,106	2	0	2	139
		R4	9,077	2	0	2	126	9,972	2	0	2	139	9,972	2	0	2	139
		R4S	8,757	1	0	2	122	9,622	2	0	2	134	9,622	2	0	2	134
		R5	9,198	4	0	2	128	10,106	4	0	2	140	10,106	4	0	2	140
		R5S	9,443	3	0	1	131	10,374	3	0	1	144	10,374	3	0	1	144
		AFR	8,979	2	0	1	125	9,865	2	0	1	137	9,865	2	0	1	137
		AFRR90	9,064	3	0	2	124	9,959	3	0	2	137	9,959	3	0	2	137
		AFRL90	9,102	3	0	2	125	10,001	3	0	2	137	10,001	3	0	2	137
P3	109W	R2	12,808	2	0	1	117	14,072	2	0	2	129	14,072	2	0	2	129
		R3	12,763	2	0	2	117	14,023	2	0	2	129	14,023	2	0	2	129
		R3S	13,104	2	0	2	120	14,397	2	0	2	132	14,397	2	0	2	132
		R4	12,930	2	0	2	119	14,206	2	0	2	130	14,206	2	0	2	130
		R4S	12,475	2	0	2	114	13,707	2	0	2	126	13,707	2	0	2	126
		R5	13,104	4	0	2	120	14,397	4	0	2	132	14,397	4	0	2	132
		R5S	13,452	3	0	2	123	14,779	3	0	2	136	14,779	3	0	2	136
		AFR	12,791	2	0	1	117	14,053	2	0	2	129	14,053	2	0	2	129
		AFRR90	12,913	3	0	3	118	14,187	3	0	3	130	14,187	3	0	3	130
		AFRL90	12,967	3	0	2	118	14,247	3	0	3	130	14,247	3	0	3	130
P4	133W	R2	14,943	2	0	2	112	16,417	2	0	2	123	16,417	2	0	2	123
		R3	14,890	2	0	3	112	16,360	2	0	3	123	16,360	2	0	3	123
		R3S	15,287	2	0	2	115	16,796	2	0	2	126	16,796	2	0	2	126
		R4	15,085	2	0	3	113	16,574	2	0	3	125	16,574	2	0	3	125
		R4S	14,554	2	0	2	109	15,991	2	0	2	120	15,991	2	0	2	120
		R5	15,287	4	0	2	115	16,796	4	0	2	126	16,796	4	0	2	126
		R5S	15,693	4	0	2	118	17,242	4	0	2	130	17,242	4	0	2	130
		AFR	14,923	2	0	2	112	16,395	2	0	2	123	16,395	2	0	2	123
		AFRR90	15,065	3	0	3	113	16,551	3	0	3	124	16,551	3	0	3	124
		AFRL90	15,128	3	0	3	114	16,621	3	0	3	125	16,621	3	0	3	125

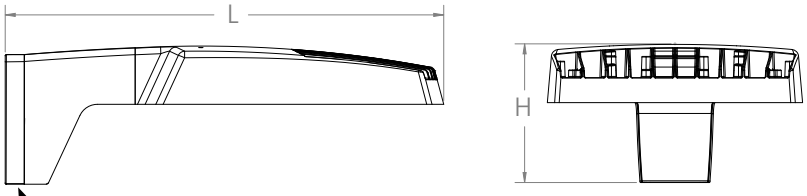
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Luminaire Weight by Mounting Type

Mounting Configuration	Total Luminaire Weight
SPA	22 lbs
RPA	24 lbs
MA	22 lbs
WBA	25 lbs
WBASC	28 lbs
IS	25 lbs
AASP	25 lbs
AARP	27 lbs
AAWB	28 lbs
AAWSC	31 lbs

RSX1 with Round Pole Adapter (RPA)



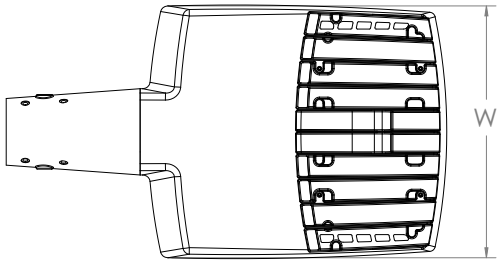


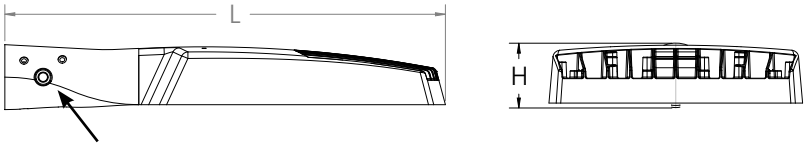
Note: RPA — Round Pole mount can also be used to mount on square poles by omitting the round pole adapter plate shown here.



Length: 22.8" (57.9 cm)
Width: 13.3" (33.8 cm)
Height: 3.0" (7.6 cm) Main Body
7.2" (18.4 cm) Arm

RSX1 with Mast Arm Adapter (MA)

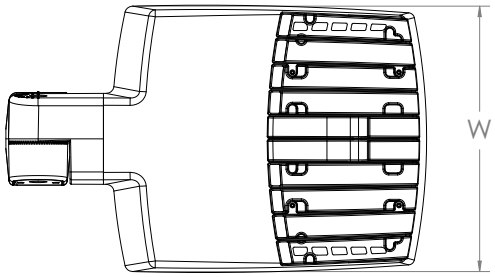


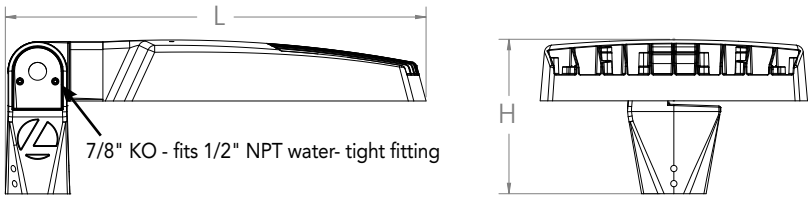


7/16" locking thru bolt/nut provided

Length: 23.2" (59.1 cm)
Width: 13.3" (33.8 cm)
Height: 3.0" (7.6 cm) Main Body
3.5" (8.9 cm) Arm

RSX1 with Adjustable Slipfitter (IS)





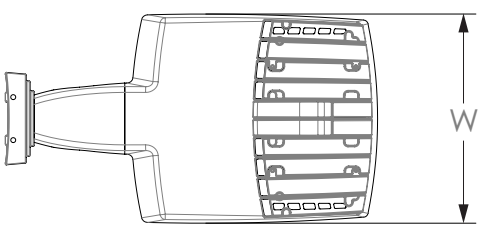
7/8" KO - fits 1/2" NPT water- tight fitting

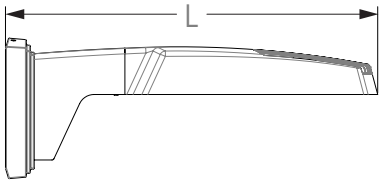
Length: 20.7" (52.7 cm)
Width: 13.3" (33.8 cm)
Height: 3.0" (7.6 cm) Main Body
7.6" (19.3 cm) Arm

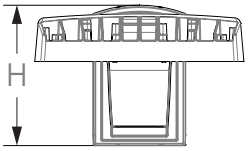
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Dimensions

RSX1 with Wall Bracket (WBA)

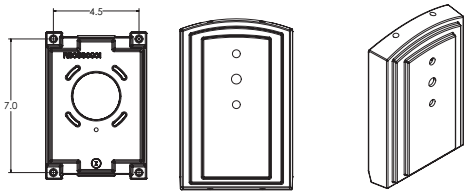




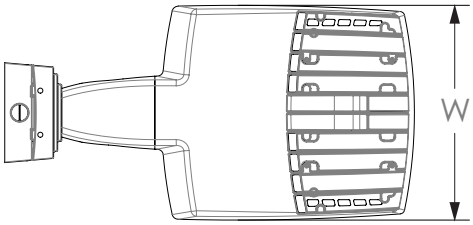


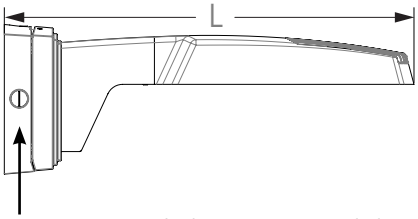
Length: 23.6" (59.9 cm)
Width: 13.3" (33.8 cm)
Height: 3.0" (7.6 cm) Main Body
8.9" (22.6 cm) Arm

Wall Bracket (WBA) Mounting Detail

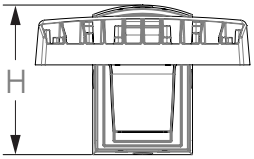


RSX1 with Wall Bracket with Surface Conduit Box (WBASC)



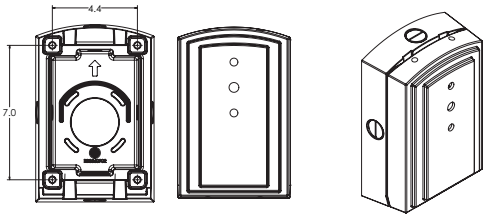


3/4" NPT taps with plugs - Qty (4) provided



Length: 25.3" (64.3 cm)
Width: 13.3" (33.8 cm)
Height: 3.0" (7.6 cm) Main Body
9.2" (23.4 cm) Arm

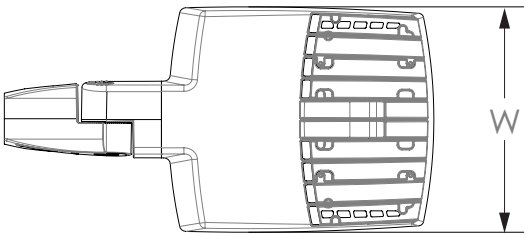
Surface Conduit Box (SCB) Mounting Detail

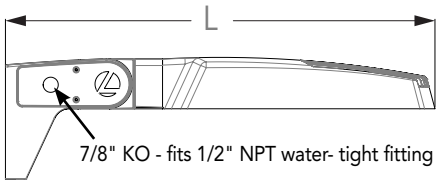


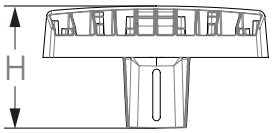
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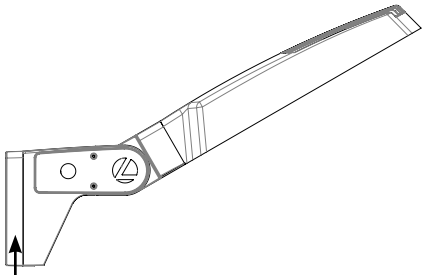
Dimensions

RSX1 with Adjustable Tilt Arm - Square or Round Pole (AASP or AARP)









Length: 25.3" (65.3 cm) **AASP**
26.3" (66.8 cm) **AARP**
Width: 13.3" (33.8 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.

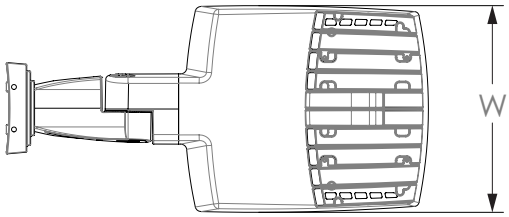


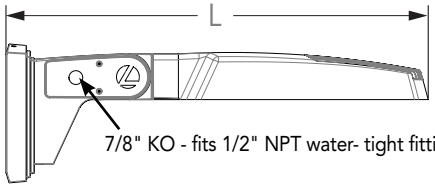
Notes

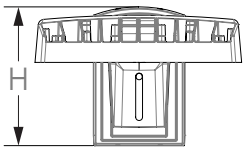
AASP: Requires 3.0" min. square pole for 1 at 90°. Requires 3.5" min. square pole for mounting 2, 3, 4 at 90°.

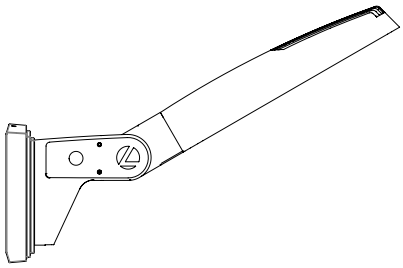
AARP: Requires 3.2" min. dia. round pole for 2, 3, 4 at 90°. Requires 3.0" min. dia. round pole for mounting 1 at 90°, 2 at 180°, 3 at 120°.

RSX1 with Adjustable Tilt Arm with Wall Bracket (AAWB)



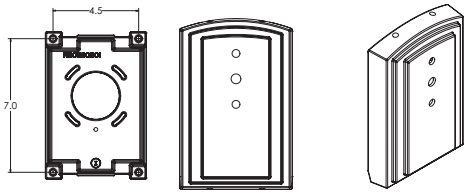






Length: 27.1" (68.8 cm)
Width: 13.3" (33.8 cm)
Height: 3.0" (7.6 cm) Main Body
8.9" (22.6 cm) Arm

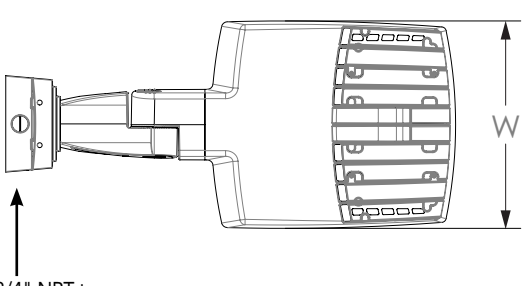
Wall Bracket (WBA) Mounting Detail



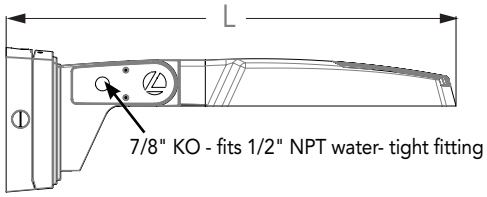
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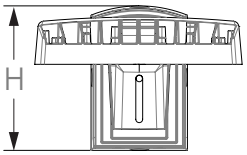
Dimensions

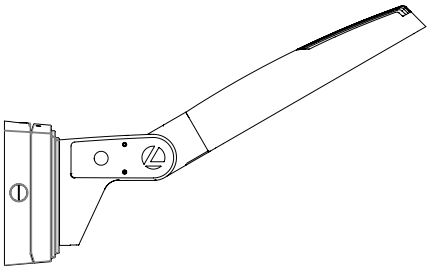
RSX1 with Adjustable Tilt Arm with Wall Bracket and Surface Conduit Box (AAWSC)



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

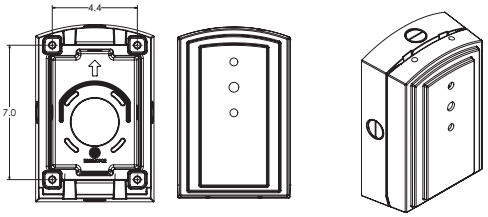




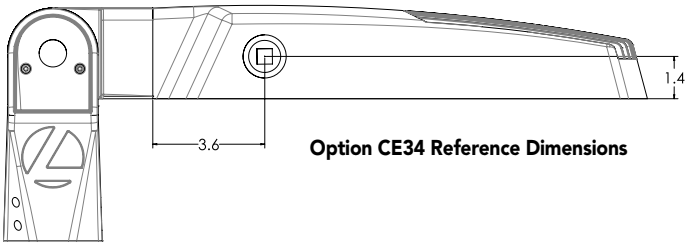


Length: 28.8" (73.2 cm)
Width: 13.3" (33.8 cm)
Height: 3.0" (7.6 cm) Main Body
9.2" (23.4 cm) Arm

Surface Conduit Box (SCB) Mounting Detail

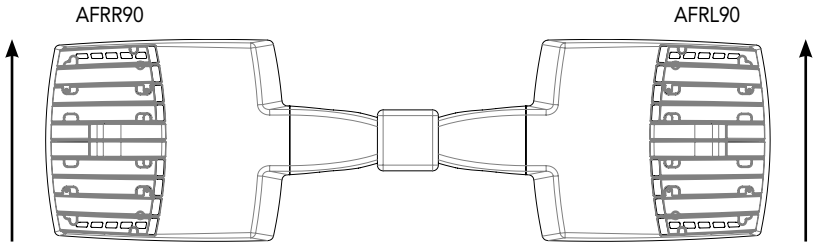


Additional Reference Drawings



Option CE34 Reference Dimensions

Automotive Front Row - Rotated Optics (AFRL90/R90)

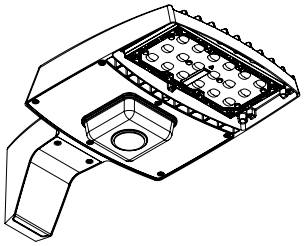


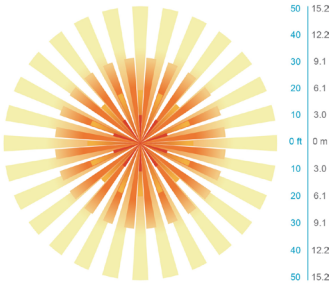
(Example: 2@180 - arrows indicate direction of light exiting the luminaire)

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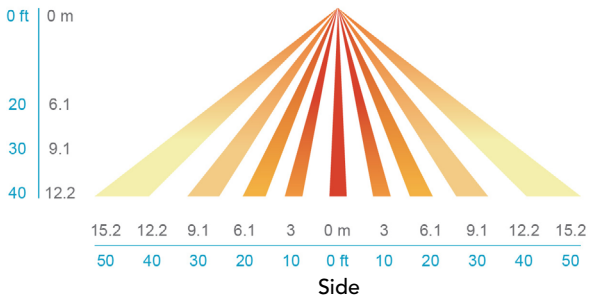
nLight Sensor Coverage Pattern

NLTAIR2 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 RSX1 delivers 7,000 to 17,000 lumens and is ideal for replacing 70W to 400W HID pole-mounted luminaires in parking lots and other area lighting applications.

CONSTRUCTION
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. All mountings are rated for minimum 1.5 G vibration load per ANSI C136.31. 3G Mountings: Include SPA, RPA, MA, IS, AASP, and 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.

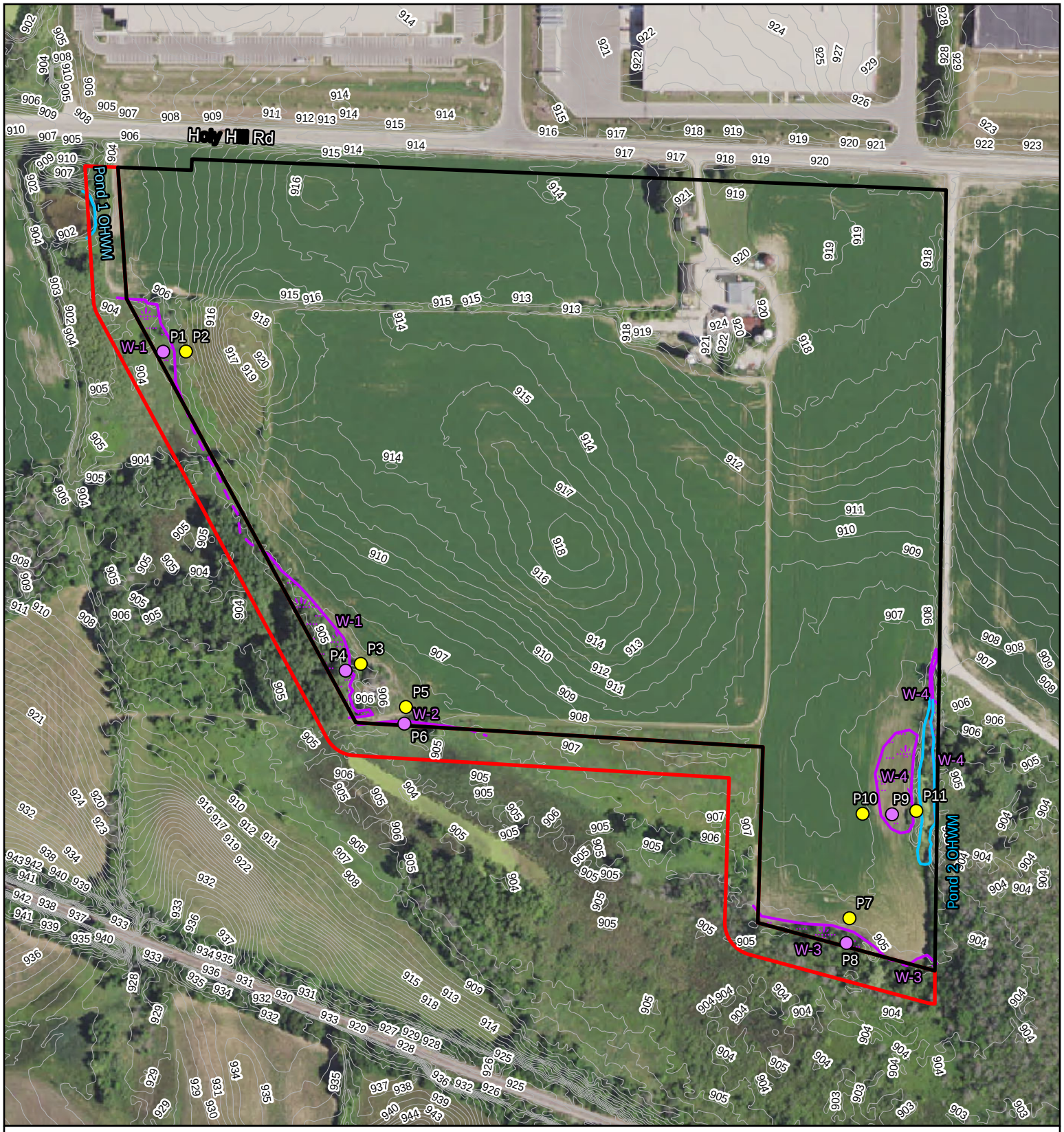
INSTALLATION
Integral "no-drill" mounting arm allows for fast, easy mounting using existing pole drillings. Select the "SPA" option for square poles and the "RPA" option to mount to round poles. Note, the RPA mount can also be used for mounting to square poles by omitting the RPA adapter plate. Select 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.

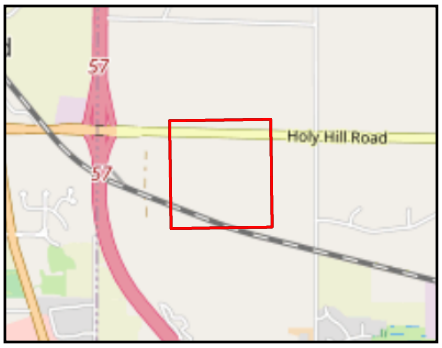
LISTINGS
CSA Certified to meet U.S. and Canadian standards. Suitable for wet locations. Rated for -40°C minimum ambient. DesignLights Consortium® (DLC) Premium qualified product and DLC qualified product. Not all versions of this product may be DLC Premium qualified or DLC qualified. Please check the 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.

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.

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- Study Area (52.67 ac)
- 75-Foot Study Area Buffer
- Washington Co 1' Contours
- Pond OHWM
- Field Delineated Wetlands (1.25 ac)
- Offsite Wetland Boundaries

Sample Points

- Upland
- Wetland

0 150 300 F

Heartland ECOLOGICAL GROUP INC

Figure 6. Field Delineated Wetlands

Holy Hill Road
Project #20210497
T9N, R20E, S18
V Germantown,
Washington Co

2020 NAIP
County Co, HEG

Wetland Setback Mitigation Plan Narrative

Capstone Quadrangle Development Company

Capstone 41 Development

July 16th, 2021

Capstone is proposing the development of parcel #181987 located on the South side of Holy Hill Road directly across from Gateway Crossing. Phase 1 of the development will include an industrial use building which is 203,019 sf along with two stormwater basins. Every effort has been taken to avoid wetland impacts resulting from this proposed development, but there are areas where disturbances are needed within the 25' wetland setback. These disturbances are primarily due to grading associated with the stormwater basins; with some disturbance resulting from a needed access drive. These disturbances are shown on Exhibit A. Restoration of the wetland setback areas are proposed, along with native plantings around the stormwater basins. Native vegetated connections are proposed between the stormwater basins and the existing wetlands to create more opportunities for wildlife. Restoration areas are shown on Exhibit B.

Wetland Setback Disturbance

Disturbance within the 25' wetland setback will be considered wetland setback disturbance. The total wetland setback disturbance is 0.676 acres. Refer to Exhibit A for detailed locations of impact.

Navigable Water Setback Disturbance

Disturbance within the 75' navigable water setback will be considered navigable water setback disturbance. The total navigable water setback disturbance is 0.215 acres. Refer to Exhibit A for detailed locations of impact.

Wetland Disturbance

Disturbance of delineated wetland is considered wetland disturbance. Existing wetlands on site shall not be impacted through the development process.

Wetland Mitigation Plan

Exhibit B identifies post-construction areas of wetland setback disturbance mitigation. Disturbed wetland setback areas will be restored to create a new wetland buffer. These buffers will consist of native plantings, trees and shrubs, and mown turf dependent on specific locations. Refer to Exhibit B for more detailed information. The primary reason for disturbance of existing wetland buffers is due to grading operations related to the two stormwater management ponds. In an effort to create/restore wildlife habitat, native plantings will be utilized surrounding the pond locations. Native plantings are also being proposed to connect the stormwater ponds to the existing wetlands and native plantings are being proposed to enhance certain wetland buffer areas through overseeding existing vegetation.

Summary

25' Wetland Setback / 75' navigable water setback disturbance: -0.891 AC (1:2 Mitigation required)

Restored wetland buffer –turf with a mix of landscaping: +0.253 AC

Restored wetland buffer – Native plantings: +0.964 AC

Created pond edge/buffer – Native plantings: +1.015 AC

Required Mitigation: 1.782 AC

Provided Mitigation: 2.232 AC

Mitigation Ratio: 2.5

MANAGEMENT OF NATIVE PLANTINGS

The following methods shall be used to maintain and ensure high quality native plantings and wetland buffers. These methods shall be performed in accordance with the following schedule.

	Task	Year 1 Quarter	Year 2 Quarter	Year 3 Quarter	Year 4 Quarter	Year 5 Quarter	
1.	**Mowing:** Conducted twice in the first and second years, and once annually thereafter if needed to control invasive species. June and August are ideal mowing dates.						
		1 [2][3]4	1 [2][3]4	1 2 3 4	1 2 3 4	1 2 3 4	
2.	**Herbicide Application:** Conducted at least twice annually for weed control, or as supplement to mowing and brushing.						
		1 [2][3] 4	1 [2][3] 4	1 [2][3] 4	1 [2] [3] 4	1 [2] [3] 4	
3.	**Supplemental Seeding/Planting:** Only if required to meet guarantees for native vegetation cover.						
		1 [2] [3] 4	1 [2] [3] 4	1 [2] [3] 4	1 2 3 4	1 2 3 4	
4.	**Woody Species Removal:** Conducted as needed to meet performance standards, preferably during winter months.						
		[1] 2 3 [4]	[1] 2 3 [4]	[1] 2 3 [4]	1 2 3 4	1 2 3 4	
5.	**Prescribed Burn:** Conduct burn in early spring or late fall at least every three years.						
		1 2 3 4	1 2 3 4	1 2 3 4	1 [2] 3 4	1 2 3 4	

MOWING

Native plant communities shall be mown to a height of 6-10" after vegetation in said areas reaches a height of 24" and before non-native species go to seed. Mowing should be performed at least two times during the first growing season. Mowing shall be performed to a height of 12" two times during the second growing season (approximately mid-June and mid-August) and one time during the third growing season (approximately mid-June) unless the owner's consulting ecologist determines that mowing is not needed. Mowing should be done with a rotary bush hog style mower to ensure clippings are dispersed rather than deposited in dense mats, which smother vegetation, or the clippings/branches should be removed from the mowed area.

HERBICIDE APPLICATION

Weeds and other herbaceous invasive species shall be treated with an appropriate herbicide based on the specific locations on Site. Application of herbicide shall be wick or spot treatment with rodeo, or other approved herbicide. Reed canary grass, teasel, buckthorn, thistles, sweet clover, purple loosestrife, and any other non-native or invasive species present in the project vicinity should be treated directly with a 2% solution of rodeo. The best application period is just before or during the very earliest stages of flowering. Where large patches of target weeds are present, it may be necessary to use a larger wick unit that can be attached to an all-terrain-vehicle or tractor. Several back-to-back treatments may be useful in greatly reducing these plants.

SUPPLEMENTAL SEEDING/PLANTING

Areas of planting failure will need to be replanted. Areas of failure and a determination for the reason for failure shall be identified to ensure viability of reseeded areas.

PRESCRIBED BURNING

Prescribed burning shall be the primary method for long-term ecological management and weed control on the site. Burning shall be conducted in the fall (November or December) of the third year following initial planting or spring (mid-March or April) of the fourth year following planting. Burning should be conducted by an entity experienced in burn planning and permit application as well as prescribed burn management. Prior to the commencement of prescribed burning, the owner or contractor shall compile a burn plan that outlines a plan of action, identifies contingencies, and lists the names and phone numbers of emergency agencies (fire department, police department, etc.). Proper notice of intent to burn shall be given. The owner shall apply for and receive all required permits prior to the commencement of prescribed burning. Burning shall be repeated every three to four years.

If prescribed burning is not possible, vegetation shall be cut/mowed as close to the ground as possible during the time that the burning was to occur. All cut vegetation shall be removed and disposed of offsite. This type of mowing shall occur every three to four years in place of regular burning.

MONITORING

- Twice annual monitoring of all plant communities shall be conducted for three full growing seasons following initial implementation.
- The annual site visits each year shall be conducted between May 1 and September 30.
- Each visit shall be conducted by a qualified professional with adequate plant identification skills and who is also able to make recommendations regarding management of native plant

communities and associated maintenance. The site inspector shall collaborate over the needed maintenance requirements for a given year with the owner and/or maintenance contractor.

- The vegetation monitoring shall be conducted using the "meander search" method to:
    - 1) Identify dominant vegetation (native vs. Non-native) within each plant community.
    - 2) Identify the approximate percent vegetative coverage by native and non-native species within each plant community.
    - 3) Identify a species list for each plant community that can be compared to installed plant lists.
    - 4) Make recommendations related to site management to meet performance standards.
- Representative photographs of the restored native plant communities shall be taken to document the site conditions through time.

REPORTING

- A brief memo report shall be prepared and submitted to the owner after each inspection.
- The second report of the year shall identify management recommendations and services that have been conducted throughout the growing season and outline future management recommendations.

(FORMERLY KNOWN AS DHEINVILLE ROAD)
(FORMERLY KNOWN AS COUNTY TRUNK HIGHWAY "P")

60'

60'

HOLY HILL ROAD (VARIABLE PUBLIC R.O.W.)

-WAY LINE

75' NAVIGABLE WATER SETBACK

0.037 AC OF NAVIGABLE WATER SETBACK IMPACT

WEST POND
NWL = 904.00

25' WETLAND BUFFER

0.20 AC OF WETLAND BUFFER IMPACT

CONCEPT
BUILDING
203,580
FFE = 915.00

LOT 2
C.S.M. NO. 6506
OWNER: MILWAUKEE METROPOLITAN SEWERAGE DISTRICT

WETLAND PER CSM 5606 (GRAPHIC PLOTTING ONLY)

25' WETLAND BUFFER

0.186 AC OF WETLAND BUFFER IMPACT

25' WETLAND BUFFER

0.096 AC OF WETLAND BUFFER IMPACT

WETLAND PER CSM 5606 (GRAPHIC PLOTTING ONLY)

LOT 2
C.S.M. NO. 6506
OWNER: MILWAUKEE METROPOLITAN SEWERAGE DISTRICT

SOUTHEAST POND
NWL = 905.00

WATER

75' NAVIGABLE WATER SETBACK

0.047 AC OF NAVIGABLE WATER SETBACK IMPACT

25' WETLAND BUFFER

0.161 AC OF WETLAND BUFFER IMPACT

0.131 AC OF NAVIGABLE WATER SETBACK IMPACT

75' NAVIGABLE WATER SETBACK

0.033 AC OF WETLAND BUFFER IMPACT

25' WETLAND BUFFER

C.S
OWN
REVI

LEGEND

WETLAND BUFFER IMPACT
0.676 ACRES

NAVIGABLE WATER SETBACK IMPACT
0.215 ACRES

*** TOTAL BUFFER/SETBACK IMPACT**
0.891 ACRES

1:2 MITIGATION REQUIRED (1.782 ACRES)

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 100' 200'

Z:\PROJECTS\2018\1262.00A-WI\CAD\EXHIBITS\1262.00A-WI WETLAND SETBACK EXHIBIT.DWG 7/16/2021 3:10 PM

CAPSTONE 41 | WETLAND BUFFER IMPACT EXHIBIT (EXHIBIT A)

7.16.21

PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD | SUITE 100 | BROOKFIELD, WI 53186 | WWW.PINNACLE-ENGR.COM |

PLAN | DESIGN | DELIVER

PEGJOB# 1262.00A

(FORMERLY KNOWN AS DHEINVILLE ROAD)
(FORMERLY KNOWN AS COUNTY TRUNK HIGHWAY "P")

HOLY HILL ROAD (VARIABLE PUBLIC R.O.W.)

60'

60'

0.036 AC OF SETBACK MITIGATION

WEST POND
NWL = 904.00

0.87 AC OF WETLAND BUFFER MITIGATION

CONCEPT
BUILDING
203,580
FFE = 915.00

LOT 2
C.S.M. NO. 6506
OWNER: MILWAUKEE METROPOLITAN SEWERAGE DISTRICT

0.051 AC OF WETLAND BUFFER MITIGATION

WETLAND PER CSM 5606 (GRAPHIC PLOTTING ONLY)

0.04 AC OF WETLAND BUFFER MITIGATION

0.041 AC OF WETLAND BUFFER MITIGATION

0.167 AC OF WETLAND BUFFER MITIGATION

0.029 AC OF WETLAND BUFFER MITIGATION

WETLAND PER CSM 5606 (GRAPHIC PLOTTING ONLY)

LOT 2
C.S.M. NO. 6506
OWNER: MILWAUKEE METROPOLITAN SEWERAGE DISTRICT

0.071 AC OF SETBACK MITIGATION

SOUTHEAST POND
NWL = 905.00

WATER

0.025 AC OF SETBACK MITIGATION

0.902 AC OF WETLAND BUFFER MITIGATION

LEGEND

BUFFER IMPACT MITIGATION - TURF AND LANDSCAPE
0.253 ACRES

BUFFER IMPACT MITIGATION - NATIVE PLANTINGS
1.979 ACRES

*** TOTAL MITIGATION PLANTINGS**
2.232 ACRES

MITIGATION RATIO (2.5)

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 100' 200'

Z:\PROJECTS\2018\1262.00A-WI\CAD\EXHIBITS\1262.00A-WI WETLAND SETBACK EXHIBIT.DWG 7/16/2021 3:10 PM

CAPSTONE 41 | WETLAND BUFFER MITIGATION EXHIBIT (EXHIBIT B)

7.16.21

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20725 WATERTOWN ROAD | SUITE 100 | BROOKFIELD, WI 53186 | WWW.PINNACLE-ENGR.COM |

PLAN | DESIGN | DELIVER

PEGJOB# 1262.00A









STORMWATER MANAGEMENT PLAN

CAPSTONE 41

Germantown, Wisconsin

PEG Project Number: 1262.00A-WI

July 16, 2021

PINNACLE ENGINEERING GROUP
20725 Watertown Road | Suite 100 | Brookfield, WI 53186
www.pinnacle-engr.com

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Questions and comments can be directed to:

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Associate Project Manager
Phone: 262.754.8888 | Fax: 262.754.8850
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INTRODUCTION

The proposed project consists of a 52-acre development which is new development north of Holy Hill Road just east of Interstate 41. A new building, mass grading, and a main public roadway are proposed. The Village of Germantown, MMSD, and WI DNR have jurisdiction over the stormwater on this site. PEG has prepared a plan to meet the requirements of the agencies.

DESIGN CRITERIA

Village of Germantown .....*Chapter 27*

Wisconsin Department of Natural Resources:.....NR 216 & NR 151

MMSD .....Chapter 13

The site is actively farmed and contains some wooded areas and thus by DNR and MMSD definitions is considered new development.

Water Quantity: Runoff reductions per Village of Germantown Design, Drafting& Construction Standards & Specifications Section 7.0: Stormwater Management Requirements can be acquired either through a unit release rate or by the volumetric method. In this case, the volumetric method is employed due the fringe areas that cannot be readily captured. Village of Germantown Section 7 states that the SCS Type II rainfall distribution with the rainfall depths found in NOAA Atlas 14. However, MMSD requires a MSE3 rainfall distribution. The MSE3 rainfall distribution has a higher intensity, therefore the MSE3 rainfall distribution was used.

Water Quality: The minimum Village and DNR requirements are to remove 80% of the total suspended solids (TSS) load on an average annual basis.

Infiltration: The site is exempt from infiltration per NR 151.124(4)(c)(1). Per the attached geotech report, the soils on site are not suitable for stormwater infiltration.

Protective Areas: Wetlands are present to the west of the site. No impervious runoff will be directed towards the wetlands directly, therefore the protective areas do not apply.

EXISTING CONDITIONS

Currently the approximately 52-acre site is mostly vacant other than the existing farmstead and associated buildings utilized for agricultural purposes; the site is split into three existing basins draining to the East, West, and South. The drainage across the site ultimately enters an unnamed tributary to Little Cedar Creek. All existing drainage basins drain to the existing wetlands surrounding the site. Soils on site are classified as primarily Mayville, Kendall, and Pella Silt Loam. Geotechnical boring investigation identified Silty Clay, Clay, Sandy Loam, Coarse Sand, Sand, and Loamy Sand on site which are classified primarily as a mixture of type B and C soils.

POST-DEVELOPMENT CONDITIONS

It is proposed to construct an industrial building and associated parking, a park road, and provide separate ponds for the proposed and future phase. Grading operations for the future development will occur at the time of its proposed construction, however the pond will be

installed as a part of the current phase. Currently proposed is a 203,000 square foot building located to the west of the development. A centrally located private roadway will be graded in to service the proposed building and accommodate the future building; the future building will consist of an additional industrial facility and associated parking. All future development has been factored into the stormwater modeling.

The site has been separated into three separate drainage basins. Two of the basins, East and West, will have runoff conveyed to wet detention basins located to the west and southeast of the site. These are independent ponds that function separately for each development area, with overland flow able to enter the ponds during the 100-year storm event, any area that cannot be drained with overland flow will be piped to the pond. The third drainage basin is an undetained grass fringe area that will flow directly into the existing wetlands on the periphery of the site.

ANALYSIS METHODS

HydroCAD® (Version 10.00) software has been used to analyze stormwater characteristics for this stormwater management plan. HydroCAD uses the accepted TR-55 methodology for determining peak discharge runoff rates. Rainfall depths for the 1-year, 2-year, and 100-year storm events are 2.37, 2.68 and 6.39 inches in accordance with ATLAS 14 rainfall depths. The volumetric method is selected for this design because the undetained fringe areas would take up a substantial portion of the allowable release rate if the unit rate release method were used. The Milwaukee River has a critical time period of 12 hours which will be used in the HydroCAD model.

TSS reduction characteristics for the proposed water quality facilities were determined using WinSLAMM® (Version 10.2) Source Loading and Management Model.

SUMMARY OF RESULTS

Existing Drainage Data

Area	Area (ac)	CN	Tc (min)	Peak Flows 1-year (cfs)	Peak Flows 2-year (cfs)	Volume 2-year (ac-ft)	Peak Flows 100-year (cfs)	Volume 100-year (ac-ft)
WEST EX	16.52	76	42.8	2.37	8.91	--	44.47	--
SOUTH EX	2.11	76	40.5	2.37	1.18	--	5.87	--
EAST EX	33.84	76	67.4	9.96	13.47	--	67.58	--
SITE	52.47	76	--	15.79	21.39	3.489	108.08	15.768

Proposed Drainage Data

Area	Area (ac)	CN	Tc (min)	Peak Flows 1-year (cfs)	Peak Flows 2-year (cfs)	Volume 2-year (ac-ft)	Peak Flows 100-year (cfs)	Volume 100-year (ac-ft)
WEST	24.69	94	6.0*	73.35	84.97	-	221.43	-
EAST	25.12	94	6.0*	74.63	86.45	-	225.29	-
OFFSITE - EAST	2.66	74	6.0*	2.39	3.27	-	16.67	-
SITE	52.47	--	--	3.21	4.19	1.493	37.63	14.859

* Assumed value based on min Tc per TR 55

Pond Data

Pond	Normal Water	Peak W.S. Elev. 2-year	Peak W.S. Elev. 100-year	Spillway	Top of Berm
West Pond	904.0	905.83	908.06	908.60	909.00
Southeast Pond	905.0	906.99	908.95	909.60	910.0

The modeling indicates that the ponds will detain the flows so that the 1 year and 2 year storms do not have an increase in peak flows from existing conditions. The system will also control the volume so the there is a reduction over the critical time period.

Overall Water Quality Summary

Pounds of TSS Generated (No Controls)	Pounds of TSS Remaining (w/ Controls)	Percent Removal
39,393	5,396	**86. 3%**

The two wet ponds will remove 86.37% of TSS which is in excess of the minimum TSS of 80% TSS required to achieve the TSS removal goals.

Infiltration

The site is exempt from infiltration requirements.

Protective Areas

Wetlands are present to the west and south of the site. No impervious runoff will be directed towards the wetlands directly, therefore the protective areas do not apply.

CONCLUSION

This project is subject to Village of Germantown, MMSD, and DNR regulations. Runoff will be attenuated and treated through the installation of ponds to meet the pertinent regulations and ordinances. Maintenance is expected to occur on a regular basis. An agreement with the Village of Germantown will be executed to ensure this occurs.

APPENDIX 1
MAPS

Washington County, Wisconsin



7/16/2021, 2:10:36 PM

1:5,398

0 0.045 0.09 0.18 mi

0 0.05 0.1 0.2 km

- Current Parcel
- Railroad Centerlines

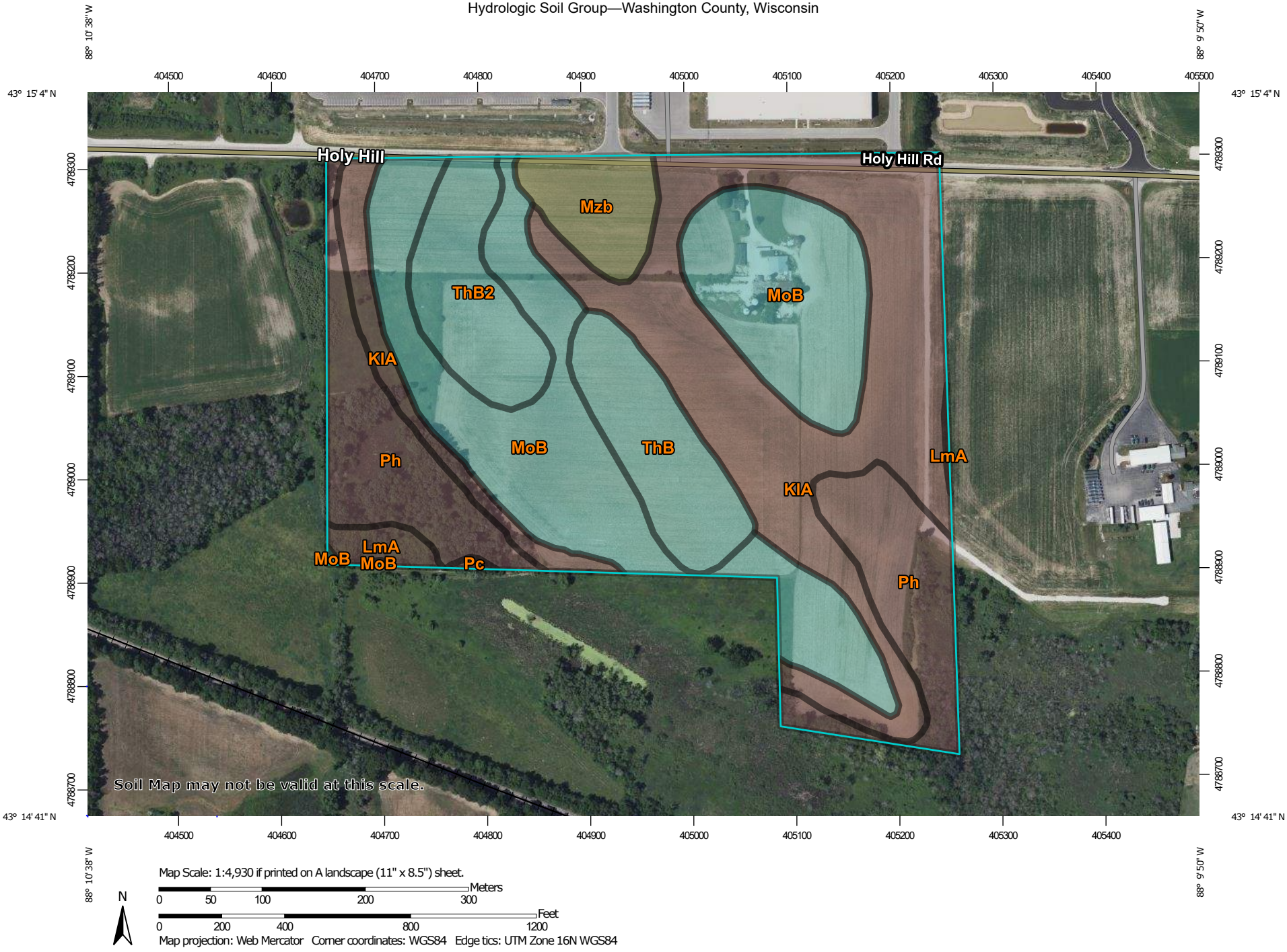
Road Centerline I, USH

- Interstate Highway, I-41
- US Highway, FOND DU LAC AV; US Highway, HY 45

Road Centerline STH, CTH

- On/Off Ramp
- State Highway
- County Highway
- Parcel Taxkey & Acreage
- Subdivision Name
- PLSS Monument

Washington County GIS
Washington County | Southeast Wisconsin Regional Planning Commission | Washington County, US Census Bureau |



Map Scale: 1:4,930 if printed on A landscape (11" x 8.5") sheet.

N

Meters: 0 50 100 200 300

Feet: 0 200 400 800 1200

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 16N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Lines

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Soil Rating Points

- A
- A/D
- B
- B/D
- C
- C/D
- D
- Not rated or not available

Water Features

- Streams and Canals

Transportation

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

Background

- Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:15,800.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
Coordinate System: Web Mercator (EPSG:3857)

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

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

Soil Survey Area: Washington County, Wisconsin
Survey Area Data: Version 20, Jun 8, 2020

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

Date(s) aerial images were photographed: May 20, 2020—Aug 20, 2020

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
KlA	Kendall silt loam, 1 to 3 percent slopes	B/D	20.9	31.3%
LmA	Lamartine silt loam, 0 to 3 percent slopes	B/D	1.0	1.4%
MoB	Mayville silt loam, 2 to 6 percent slopes	C	21.0	31.4%
Mzb	Montgomery silty clay loam	C/D	3.0	4.4%
Pc	Palms mucky peat, 0 to 2 percent slopes	B/D	0.1	0.1%
Ph	Pella silt loam, 0 to 2 percent slopes	B/D	11.0	16.4%
ThB	Theresa silt loam, 2 to 6 percent slopes	C	5.2	7.7%
ThB2	Theresa silt loam, 2 to 6 percent slopes, eroded	C	4.8	7.2%
Totals for Area of Interest			**67.0**	**100.0%**

Description

Hydrologic soil groups are based on estimates of runoff potential. Soils are assigned to one of four groups according to the rate of water infiltration when the soils are not protected by vegetation, are thoroughly wet, and receive precipitation from long-duration storms.

The soils in the United States are assigned to four groups (A, B, C, and D) and three dual classes (A/D, B/D, and C/D). The groups are defined as follows:

Group A. Soils having a high infiltration rate (low runoff potential) when thoroughly wet. These consist mainly of deep, well drained to excessively drained sands or gravelly sands. These soils have a high rate of water transmission.

Group B. Soils having a moderate infiltration rate when thoroughly wet. These consist chiefly of moderately deep or deep, moderately well drained or well drained soils that have moderately fine texture to moderately coarse texture. These soils have a moderate rate of water transmission.

Group C. Soils having a slow infiltration rate when thoroughly wet. These consist chiefly of soils having a layer that impedes the downward movement of water or soils of moderately fine texture or fine texture. These soils have a slow rate of water transmission.

Group D. Soils having a very slow infiltration rate (high runoff potential) when thoroughly wet. These consist chiefly of clays that have a high shrink-swell potential, soils that have a high water table, soils that have a claypan or clay layer at or near the surface, and soils that are shallow over nearly impervious material. These soils have a very slow rate of water transmission.

If a soil is assigned to a dual hydrologic group (A/D, B/D, or C/D), the first letter is for drained areas and the second is for undrained areas. Only the soils that in their natural condition are in group D are assigned to dual classes.

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

NOAA Atlas 14, Volume 8, Version 2
Location name: Richfield, Wisconsin, USA*
Latitude: 43.2524°, Longitude: -88.1704°
Elevation: 921.55 ft**
* source: ESRI Maps
** source: USGS

POINT PRECIPITATION FREQUENCY ESTIMATES

Sanja Perica, Deborah Martin, Sandra Pavlovic, Ishani Roy, Michael St. Laurent, Carl Trypaluk, Dale Unruh, Michael Yekta, Geoffery Bonnin

NOAA, National Weather Service, Silver Spring, Maryland

PF_tabular | PF_graphical | Maps_&_aerials

PF tabular

PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)[1]

Duration	Average recurrence interval (years)									
	1	2	5	10	25	50	100	200	500	1000
5-min	**0.336** (0.264-0.415)	**0.406** (0.319-0.502)	**0.517** (0.406-0.640)	**0.606** (0.474-0.752)	**0.724** (0.548-0.910)	**0.812** (0.604-1.03)	**0.896** (0.649-1.15)	**0.978** (0.686-1.28)	**1.08** (0.737-1.44)	**1.16** (0.775-1.56)
10-min	**0.491** (0.387-0.607)	**0.594** (0.467-0.734)	**0.757** (0.594-0.937)	**0.887** (0.694-1.10)	**1.06** (0.802-1.33)	**1.19** (0.884-1.51)	**1.31** (0.951-1.69)	**1.43** (1.00-1.88)	**1.58** (1.08-2.11)	**1.69** (1.13-2.29)
15-min	**0.599** (0.472-0.741)	**0.724** (0.570-0.896)	**0.923** (0.725-1.14)	**1.08** (0.846-1.34)	**1.29** (0.978-1.63)	**1.45** (1.08-1.84)	**1.60** (1.16-2.06)	**1.75** (1.23-2.29)	**1.93** (1.32-2.58)	**2.07** (1.38-2.79)
30-min	**0.814** (0.641-1.01)	**0.989** (0.778-1.22)	**1.27** (0.995-1.57)	**1.49** (1.17-1.85)	**1.79** (1.35-2.25)	**2.01** (1.49-2.55)	**2.22** (1.61-2.86)	**2.42** (1.70-3.17)	**2.68** (1.83-3.58)	**2.87** (1.92-3.88)
60-min	**1.05** (0.824-1.29)	**1.26** (0.995-1.56)	**1.62** (1.27-2.01)	**1.93** (1.50-2.39)	**2.34** (1.78-2.97)	**2.67** (2.00-3.41)	**3.00** (2.19-3.89)	**3.34** (2.35-4.40)	**3.79** (2.59-5.08)	**4.14** (2.77-5.60)
2-hr	**1.28** (1.02-1.57)	**1.54** (1.23-1.89)	**1.98** (1.57-2.43)	**2.36** (1.86-2.90)	**2.90** (2.24-3.66)	**3.34** (2.53-4.24)	**3.79** (2.79-4.88)	**4.26** (3.03-5.58)	**4.90** (3.39-6.54)	**5.41** (3.65-7.26)
3-hr	**1.44** (1.15-1.75)	**1.71** (1.37-2.09)	**2.19** (1.75-2.67)	**2.62** (2.09-3.21)	**3.26** (2.54-4.12)	**3.78** (2.89-4.80)	**4.34** (3.23-5.60)	**4.94** (3.55-6.47)	**5.78** (4.02-7.70)	**6.45** (4.38-8.62)
6-hr	**1.74** (1.41-2.10)	**2.02** (1.64-2.43)	**2.54** (2.05-3.06)	**3.02** (2.43-3.66)	**3.78** (3.00-4.77)	**4.43** (3.44-5.61)	**5.14** (3.87-6.61)	**5.93** (4.31-7.74)	**7.05** (4.96-9.36)	**7.98** (5.45-10.6)
12-hr	**2.07** (1.70-2.47)	**2.34** (1.92-2.79)	**2.86** (2.34-3.42)	**3.37** (2.75-4.05)	**4.19** (3.38-5.26)	**4.91** (3.86-6.18)	**5.71** (4.35-7.29)	**6.60** (4.85-8.56)	**7.89** (5.61-10.4)	**8.97** (6.18-11.8)
24-hr	**2.37** (1.97-2.80)	**2.68** (2.22-3.16)	**3.27** (2.70-3.87)	**3.84** (3.16-4.56)	**4.74** (3.85-5.88)	**5.52** (4.38-6.88)	**6.39** (4.92-8.08)	**7.36** (5.45-9.45)	**8.76** (6.27-11.4)	**9.91** (6.88-12.9)
2-day	**2.65** (2.22-3.09)	**3.05** (2.56-3.57)	**3.79** (3.17-4.44)	**4.47** (3.73-5.26)	**5.52** (4.52-6.75)	**6.41** (5.12-7.87)	**7.37** (5.71-9.20)	**8.42** (6.28-10.7)	**9.92** (7.15-12.8)	**11.1** (7.80-14.4)
3-day	**2.91** (2.46-3.38)	**3.32** (2.81-3.87)	**4.09** (3.45-4.76)	**4.79** (4.02-5.60)	**5.87** (4.84-7.13)	**6.79** (5.46-8.29)	**7.78** (6.06-9.66)	**8.86** (6.65-11.2)	**10.4** (7.54-13.4)	**11.7** (8.22-15.1)
4-day	**3.14** (2.67-3.63)	**3.56** (3.03-4.13)	**4.34** (3.68-5.03)	**5.05** (4.26-5.88)	**6.15** (5.09-7.44)	**7.08** (5.72-8.61)	**8.09** (6.33-10.0)	**9.19** (6.93-11.6)	**10.8** (7.83-13.8)	**12.1** (8.51-15.5)
7-day	**3.68** (3.17-4.23)	**4.18** (3.59-4.80)	**5.06** (4.33-5.82)	**5.85** (4.98-6.75)	**7.02** (5.85-8.39)	**8.00** (6.51-9.62)	**9.05** (7.12-11.1)	**10.2** (7.71-12.7)	**11.7** (8.59-14.9)	**13.0** (9.25-16.6)
10-day	**4.17** (3.61-4.76)	**4.73** (4.09-5.41)	**5.70** (4.92-6.53)	**6.55** (5.62-7.53)	**7.79** (6.51-9.22)	**8.81** (7.19-10.5)	**9.86** (7.80-12.0)	**11.0** (8.36-13.6)	**12.5** (9.20-15.8)	**13.8** (9.84-17.5)
20-day	**5.69** (4.99-6.43)	**6.38** (5.59-7.22)	**7.53** (6.57-8.53)	**8.50** (7.38-9.66)	**9.85** (8.29-11.5)	**10.9** (8.98-12.8)	**12.0** (9.55-14.3)	**13.1** (10.0-16.0)	**14.6** (10.8-18.2)	**15.7** (11.3-19.8)
30-day	**7.03** (6.21-7.90)	**7.84** (6.92-8.82)	**9.15** (8.05-10.3)	**10.2** (8.95-11.6)	**11.7** (9.87-13.5)	**12.8** (10.6-14.9)	**13.9** (11.1-16.5)	**14.9** (11.5-18.1)	**16.4** (12.1-20.2)	**17.4** (12.6-21.8)
45-day	**8.78** (7.82-9.81)	**9.79** (8.70-10.9)	**11.4** (10.1-12.7)	**12.6** (11.1-14.2)	**14.2** (12.1-16.2)	**15.4** (12.8-17.8)	**16.5** (13.3-19.4)	**17.6** (13.6-21.1)	**18.9** (14.0-23.1)	**19.8** (14.4-24.7)
60-day	**10.3** (9.23-11.5)	**11.5** (10.3-12.8)	**13.4** (11.9-14.9)	**14.8** (13.1-16.5)	**16.6** (14.1-18.7)	**17.8** (14.9-20.4)	**19.0** (15.3-22.1)	**20.0** (15.5-23.9)	**21.2** (15.8-25.9)	**22.0** (16.0-27.4)

[1] Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS).

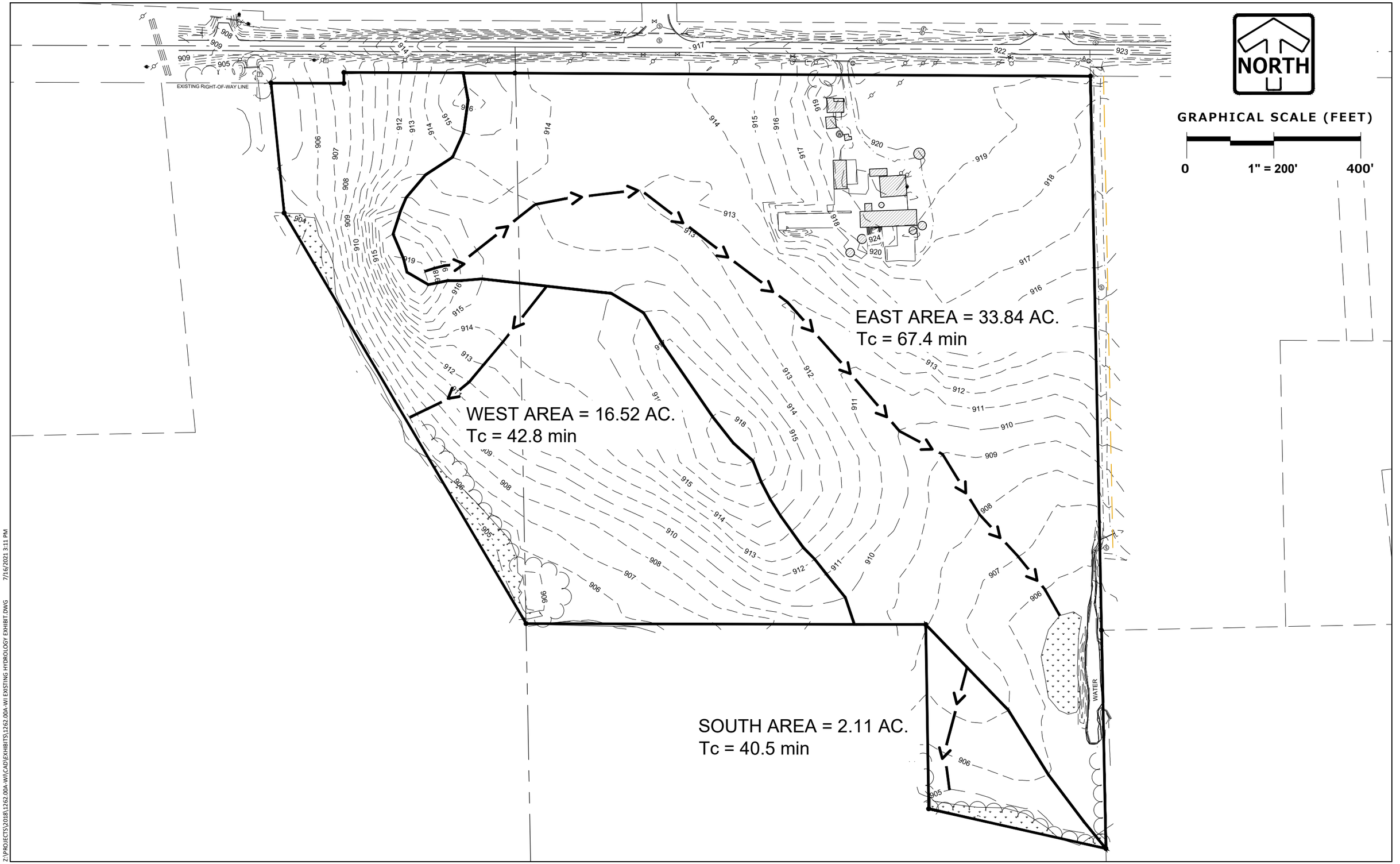
Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration and average recurrence interval) will be greater than the upper bound (or less than the lower bound) is 5%. Estimates at upper bounds are not checked against probable maximum precipitation (PMP) estimates and may be higher than currently valid PMP values.

Please refer to NOAA Atlas 14 document for more information.

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PF graphical

APPENDIX 2
PRE DEVELOPMENT CONDITIONS



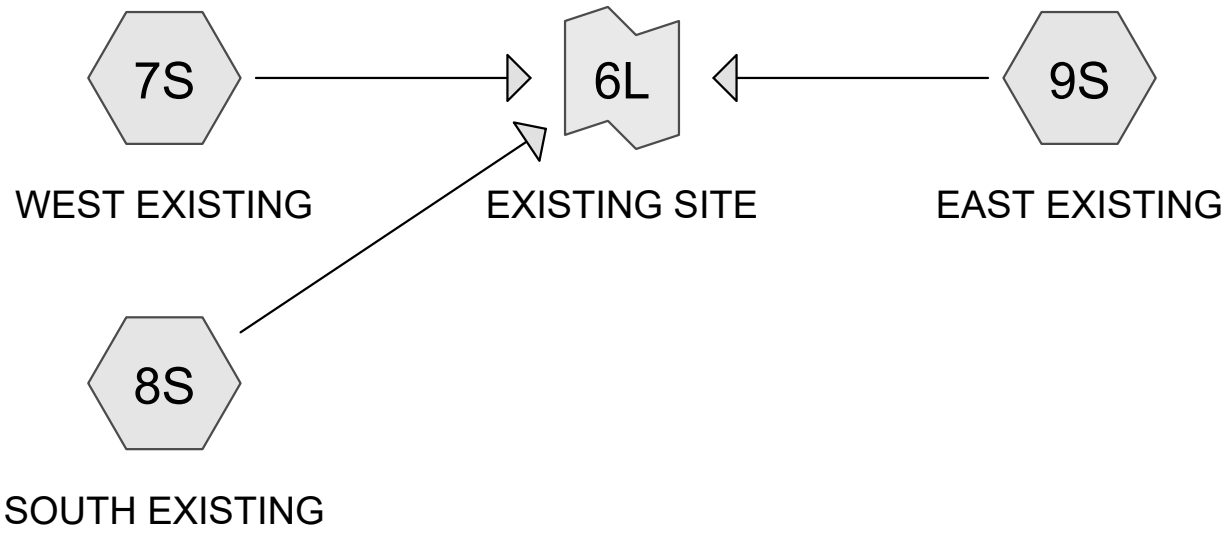
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CAPSTONE 41 - EXISTING HYDROLOGY

7/16/21

PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD | SUITE 100 | BROOKFIELD, WI 53186 | WWW.PINNACLE-ENGR.COM |

PLAN | DESIGN | DELIVER **PEG JOB#** 1262.00A



Subcat Reach Pond Link

Routing Diagram for 2021-07-14 Holly Hill
Prepared by PINNACLE ENGINEERING GROUP, Printed 7/16/2021
HydroCAD® 10.00-22 s/n 07894 © 2018 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
52.470	76	Row crops, C&T + CR, Good, HSG C (7S, 8S, 9S)
52.470	**76**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
52.470	HSG C	7S, 8S, 9S
0.000	HSG D	
0.000	Other	
52.470		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	52.470	0.000	0.000	52.470	Row crops, C&T + CR, Good	7S, 8S, 9S
0.000	**0.000**	**52.470**	**0.000**	**0.000**	**52.470**	**TOTAL AREA**	

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment7S: WEST EXISTING Runoff Area=16.520 ac 0.00% Impervious Runoff Depth=0.62"
Flow Length=447' Tc=42.8 min CN=76 Runoff=6.59 cfs 0.850 af

Subcatchment8S: SOUTH EXISTING Runoff Area=2.110 ac 0.00% Impervious Runoff Depth=0.62"
Flow Length=289' Slope=0.0090 '/' Tc=40.5 min CN=76 Runoff=0.87 cfs 0.109 af

Subcatchment9S: EAST EXISTING Runoff Area=33.840 ac 0.00% Impervious Runoff Depth=0.62"
Flow Length=1,937' Tc=67.4 min CN=76 Runoff=9.96 cfs 1.741 af

Link 6L: EXISTING SITE Inflow=15.79 cfs 2.699 af
Primary=15.79 cfs 2.699 af

Total Runoff Area = 52.470 ac Runoff Volume = 2.699 af Average Runoff Depth = 0.62"
100.00% Pervious = 52.470 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 7S: WEST EXISTING

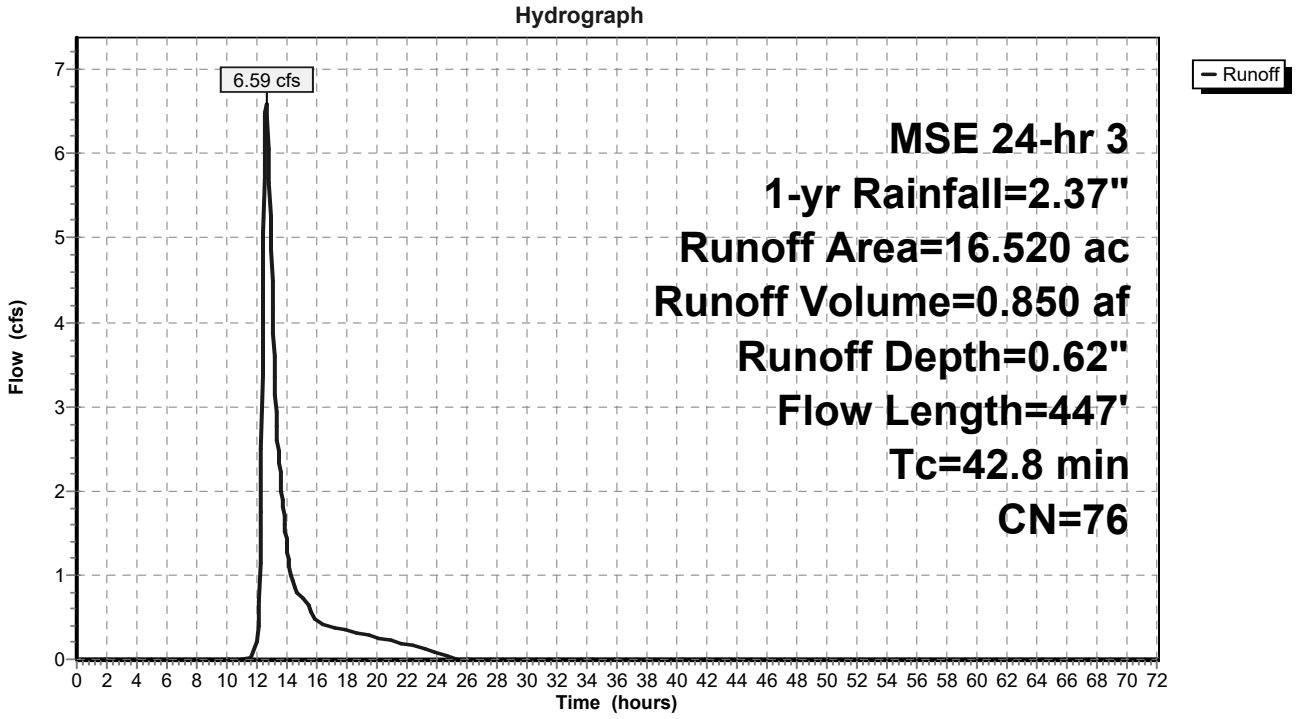
Runoff = 6.59 cfs @ 12.66 hrs, Volume= 0.850 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-yr Rainfall=2.37"

	Area (ac)	CN	Description
*	16.520	76	Row crops, C&T + CR, Good, HSG C
	16.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	236	0.0060	0.10		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.37"
2.3	211	0.0300	1.56		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
42.8	447	Total			

Subcatchment 7S: WEST EXISTING



Summary for Subcatchment 8S: SOUTH EXISTING

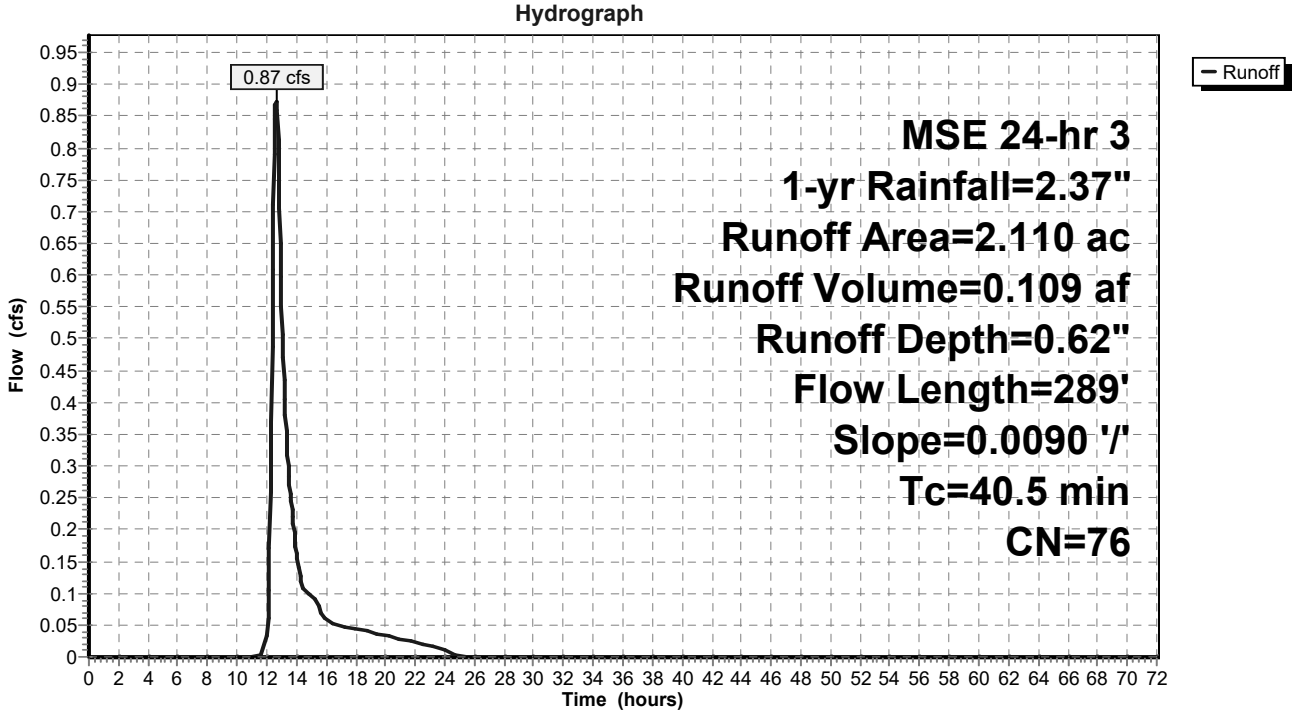
Runoff = 0.87 cfs @ 12.63 hrs, Volume= 0.109 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-yr Rainfall=2.37"

	Area (ac)	CN	Description
*	2.110	76	Row crops, C&T + CR, Good, HSG C
	2.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	289	0.0090	0.12		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.37"

Subcatchment 8S: SOUTH EXISTING



Summary for Subcatchment 9S: EAST EXISTING

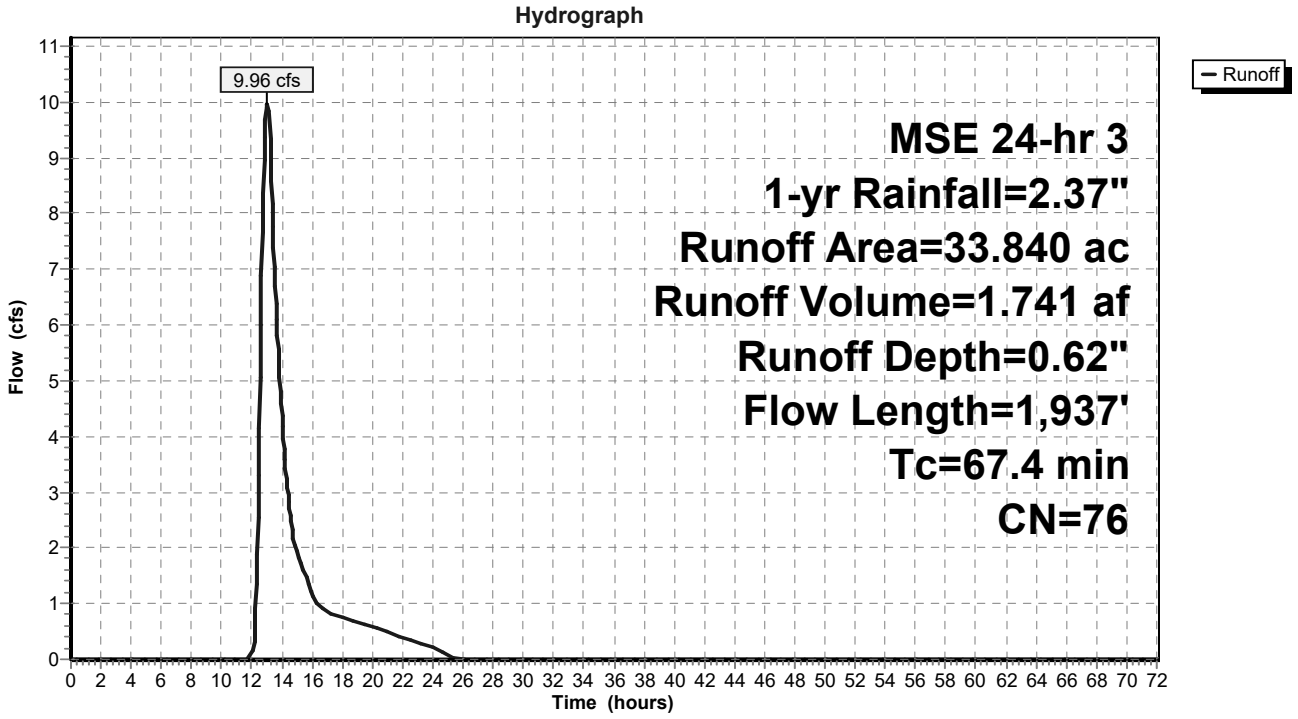
Runoff = 9.96 cfs @ 13.00 hrs, Volume= 1.741 af, Depth= 0.62"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-yr Rainfall=2.37"

	Area (ac)	CN	Description
*	33.840	76	Row crops, C&T + CR, Good, HSG C
	33.840		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.8	300	0.0300	0.19		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.37"
41.6	1,637	0.0053	0.66		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
67.4	1,937	Total			

Subcatchment 9S: EAST EXISTING

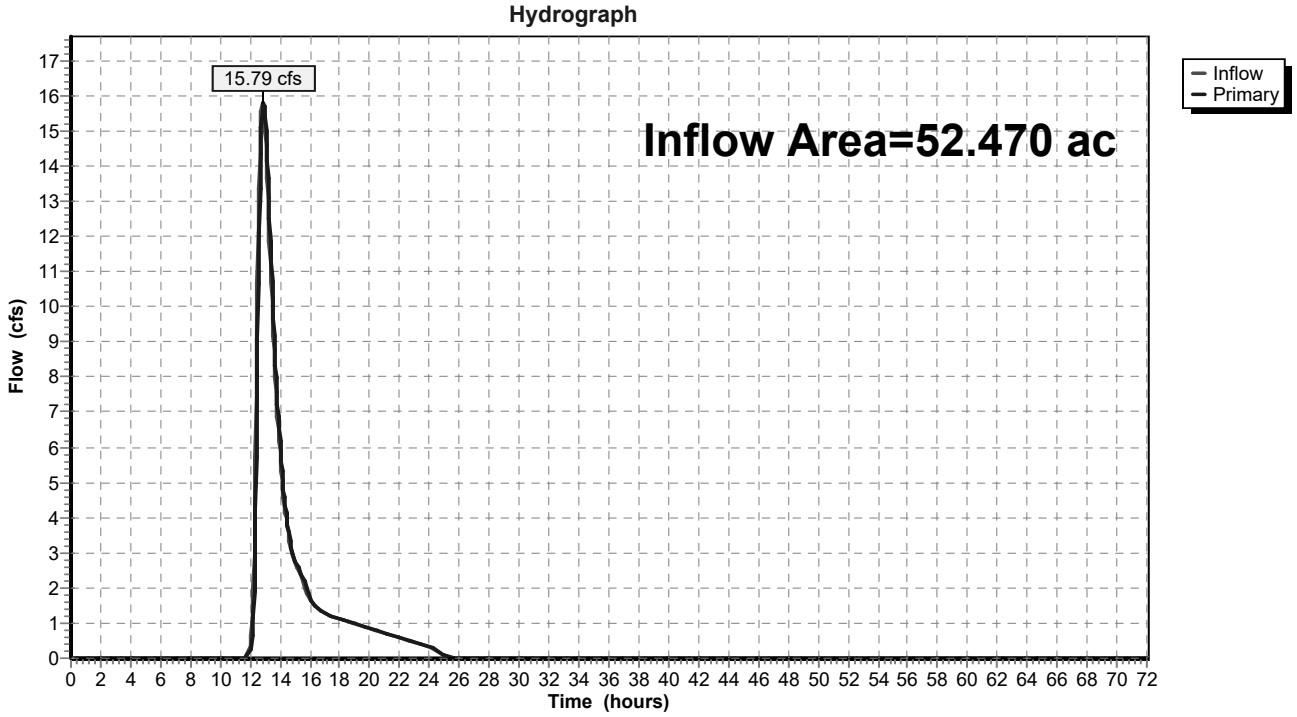


Summary for Link 6L: EXISTING SITE

Inflow Area = 52.470 ac, 0.00% Impervious, Inflow Depth = 0.62" for 1-yr event
Inflow = 15.79 cfs @ 12.82 hrs, Volume= 2.699 af
Primary = 15.79 cfs @ 12.87 hrs, Volume= 2.699 af, Atten= 0%, Lag= 3.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 6L: EXISTING SITE



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment7S: WEST EXISTING Runoff Area=16.520 ac 0.00% Impervious Runoff Depth=0.81"
Flow Length=447' Tc=42.8 min CN=76 Runoff=8.91 cfs 1.110 af

Subcatchment8S: SOUTH EXISTING Runoff Area=2.110 ac 0.00% Impervious Runoff Depth=0.81"
Flow Length=289' Slope=0.0090 '/' Tc=40.5 min CN=76 Runoff=1.18 cfs 0.142 af

Subcatchment9S: EAST EXISTING Runoff Area=33.840 ac 0.00% Impervious Runoff Depth=0.81"
Flow Length=1,937' Tc=67.4 min CN=76 Runoff=13.47 cfs 2.273 af

Link 6L: EXISTING SITE Inflow=21.39 cfs 3.524 af
Primary=21.39 cfs 3.524 af

Total Runoff Area = 52.470 ac Runoff Volume = 3.524 af Average Runoff Depth = 0.81"
100.00% Pervious = 52.470 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 7S: WEST EXISTING

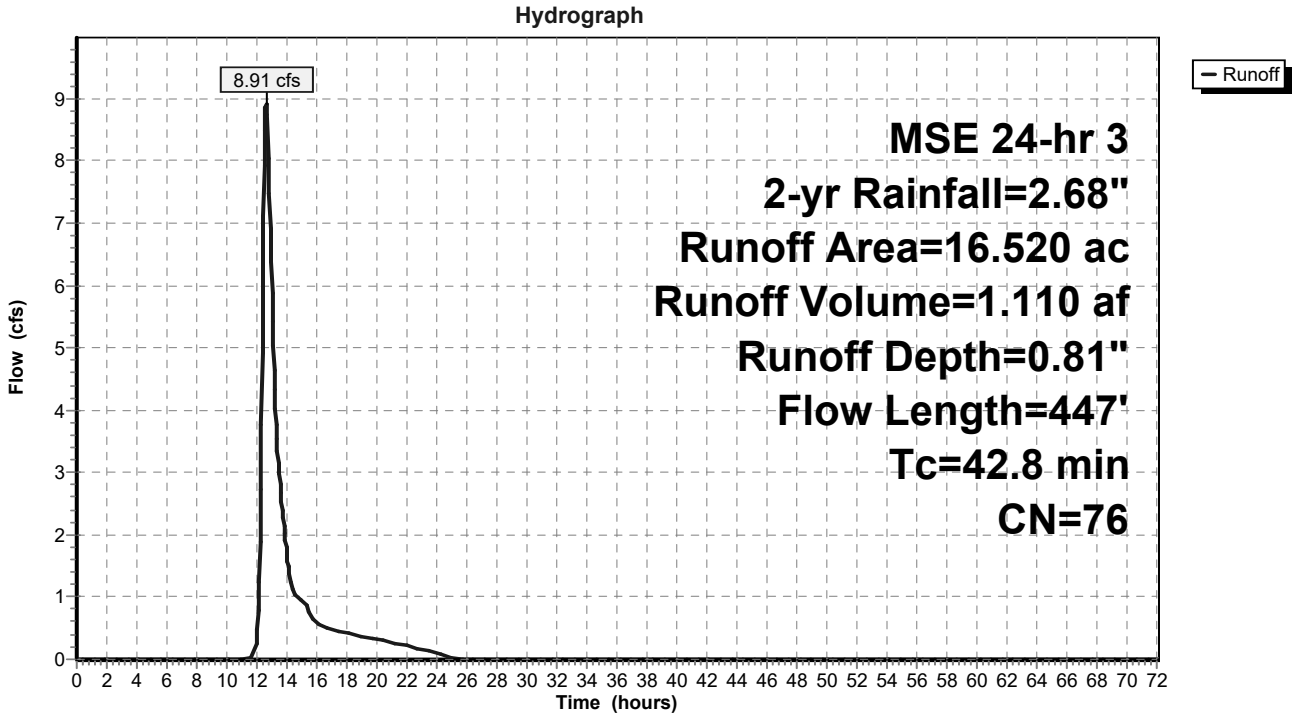
Runoff = 8.91 cfs @ 12.64 hrs, Volume= 1.110 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-yr Rainfall=2.68"

	Area (ac)	CN	Description
*	16.520	76	Row crops, C&T + CR, Good, HSG C
	16.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	236	0.0060	0.10		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.37"
2.3	211	0.0300	1.56		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
42.8	447	Total			

Subcatchment 7S: WEST EXISTING



Summary for Subcatchment 8S: SOUTH EXISTING

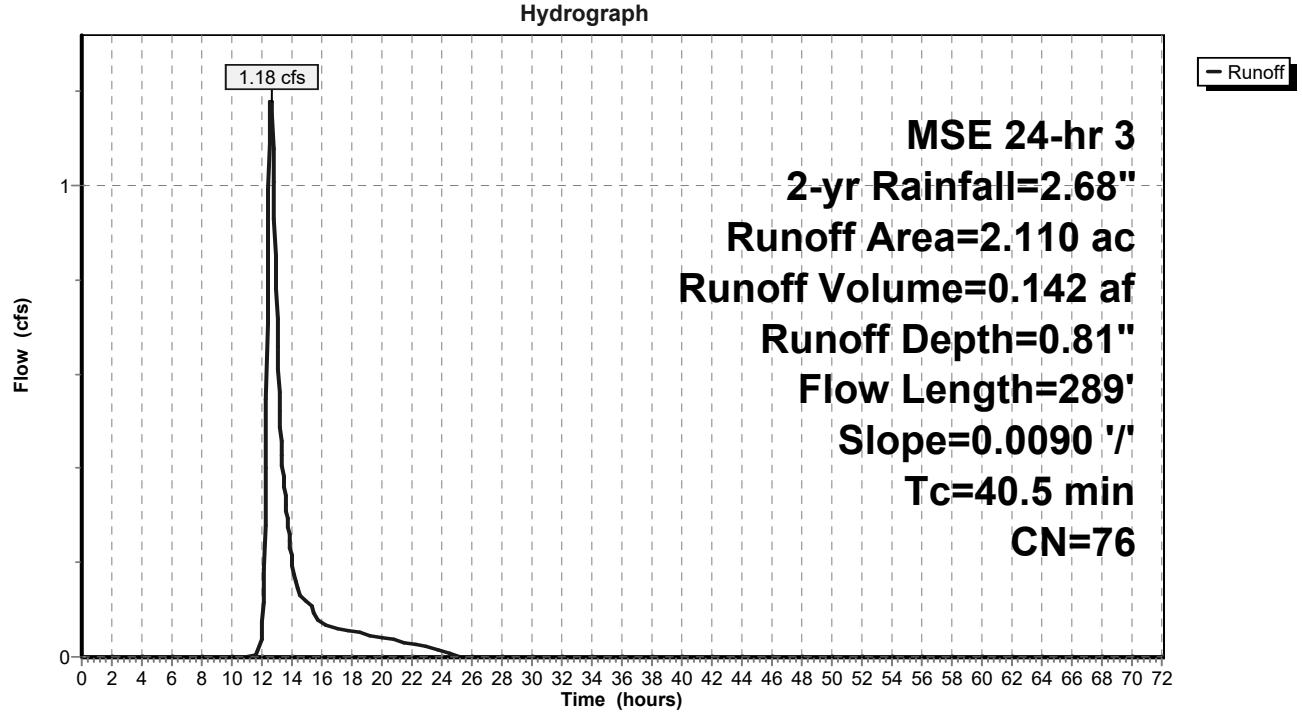
Runoff = 1.18 cfs @ 12.62 hrs, Volume= 0.142 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-yr Rainfall=2.68"

	Area (ac)	CN	Description
*	2.110	76	Row crops, C&T + CR, Good, HSG C
	2.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	289	0.0090	0.12		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.37"

Subcatchment 8S: SOUTH EXISTING



Summary for Subcatchment 9S: EAST EXISTING

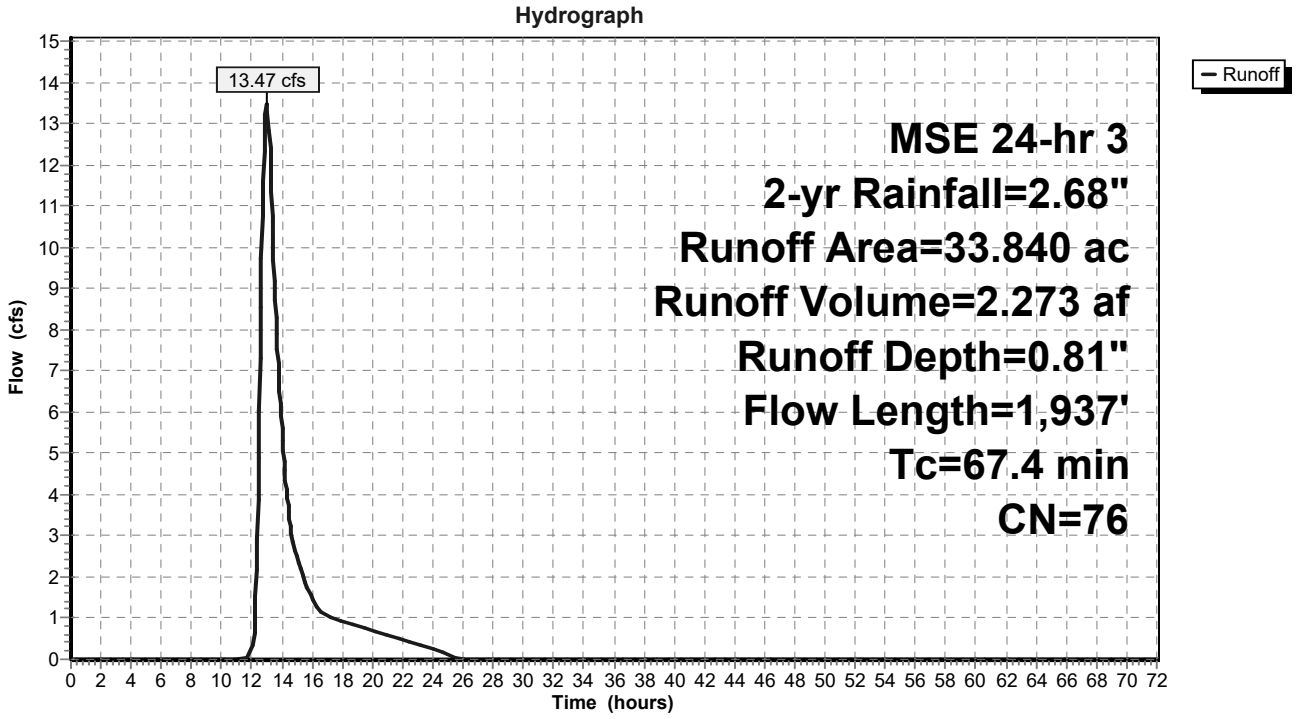
Runoff = 13.47 cfs @ 12.98 hrs, Volume= 2.273 af, Depth= 0.81"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-yr Rainfall=2.68"

	Area (ac)	CN	Description
*	33.840	76	Row crops, C&T + CR, Good, HSG C
	33.840		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.8	300	0.0300	0.19		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.37"
41.6	1,637	0.0053	0.66		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
67.4	1,937	Total			

Subcatchment 9S: EAST EXISTING

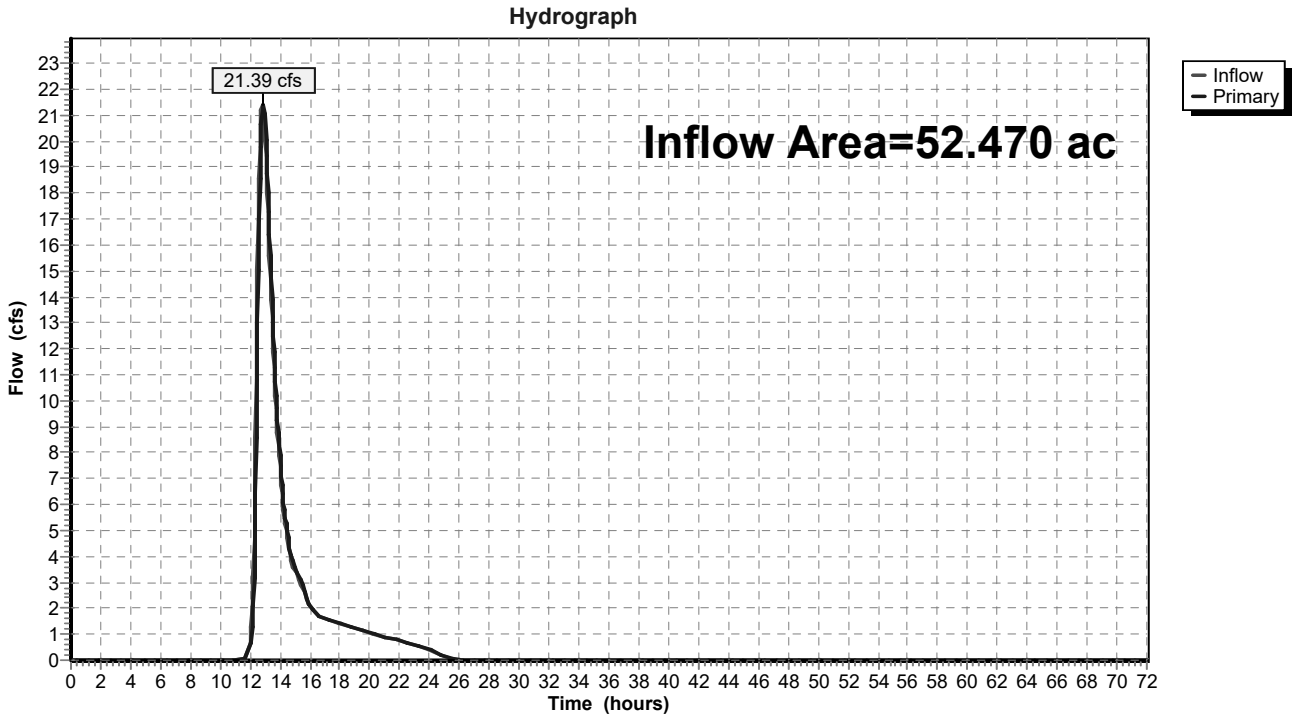


Summary for Link 6L: EXISTING SITE

Inflow Area = 52.470 ac, 0.00% Impervious, Inflow Depth = 0.81" for 2-yr event
Inflow = 21.39 cfs @ 12.80 hrs, Volume= 3.524 af
Primary = 21.39 cfs @ 12.85 hrs, Volume= 3.524 af, Atten= 0%, Lag= 3.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 6L: EXISTING SITE



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment7S: WEST EXISTING Runoff Area=16.520 ac 0.00% Impervious Runoff Depth=3.72"
Flow Length=447' Tc=42.8 min CN=76 Runoff=44.47 cfs 5.120 af

Subcatchment8S: SOUTH EXISTING Runoff Area=2.110 ac 0.00% Impervious Runoff Depth=3.72"
Flow Length=289' Slope=0.0090 '/' Tc=40.5 min CN=76 Runoff=5.87 cfs 0.654 af

Subcatchment9S: EAST EXISTING Runoff Area=33.840 ac 0.00% Impervious Runoff Depth=3.72"
Flow Length=1,937' Tc=67.4 min CN=76 Runoff=67.58 cfs 10.487 af

Link 6L: EXISTING SITE Inflow=108.08 cfs 16.261 af
Primary=108.08 cfs 16.261 af

Total Runoff Area = 52.470 ac Runoff Volume = 16.261 af Average Runoff Depth = 3.72"
100.00% Pervious = 52.470 ac 0.00% Impervious = 0.000 ac

Summary for Subcatchment 7S: WEST EXISTING

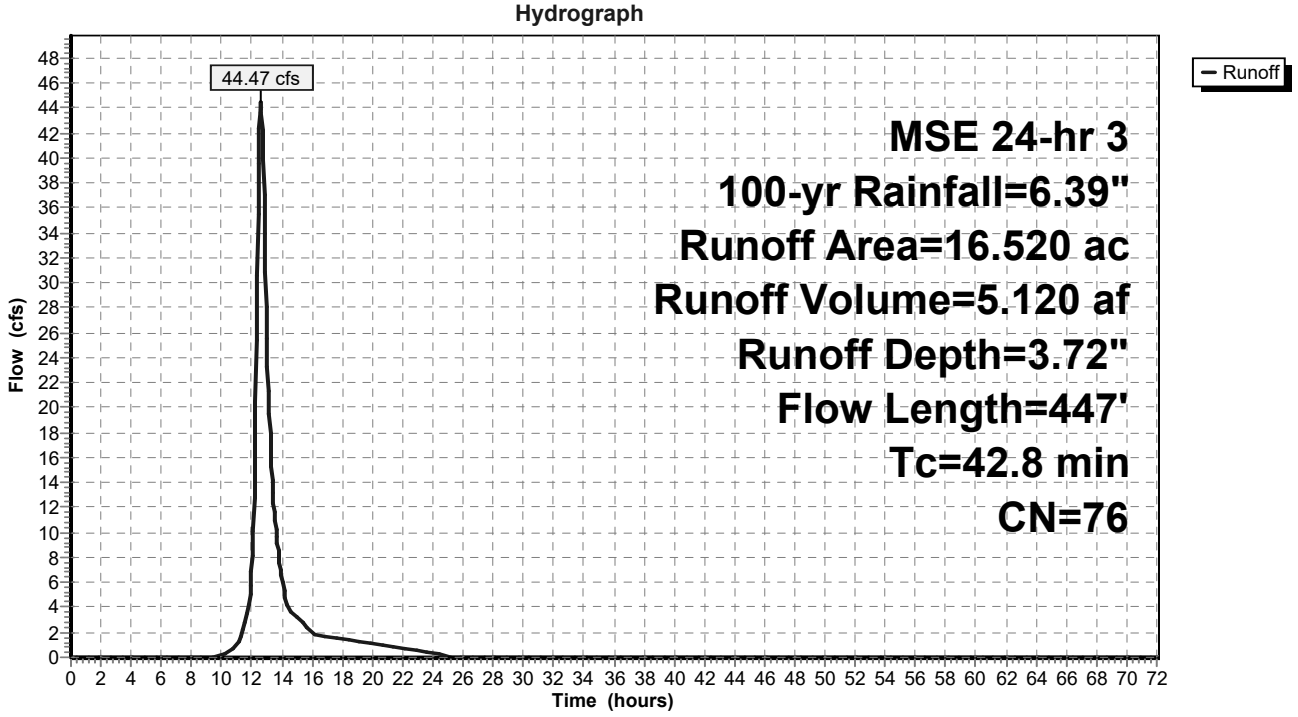
Runoff = 44.47 cfs @ 12.59 hrs, Volume= 5.120 af, Depth= 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.39"

	Area (ac)	CN	Description
*	16.520	76	Row crops, C&T + CR, Good, HSG C
	16.520		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	236	0.0060	0.10		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.37"
2.3	211	0.0300	1.56		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
42.8	447	Total			

Subcatchment 7S: WEST EXISTING



Summary for Subcatchment 8S: SOUTH EXISTING

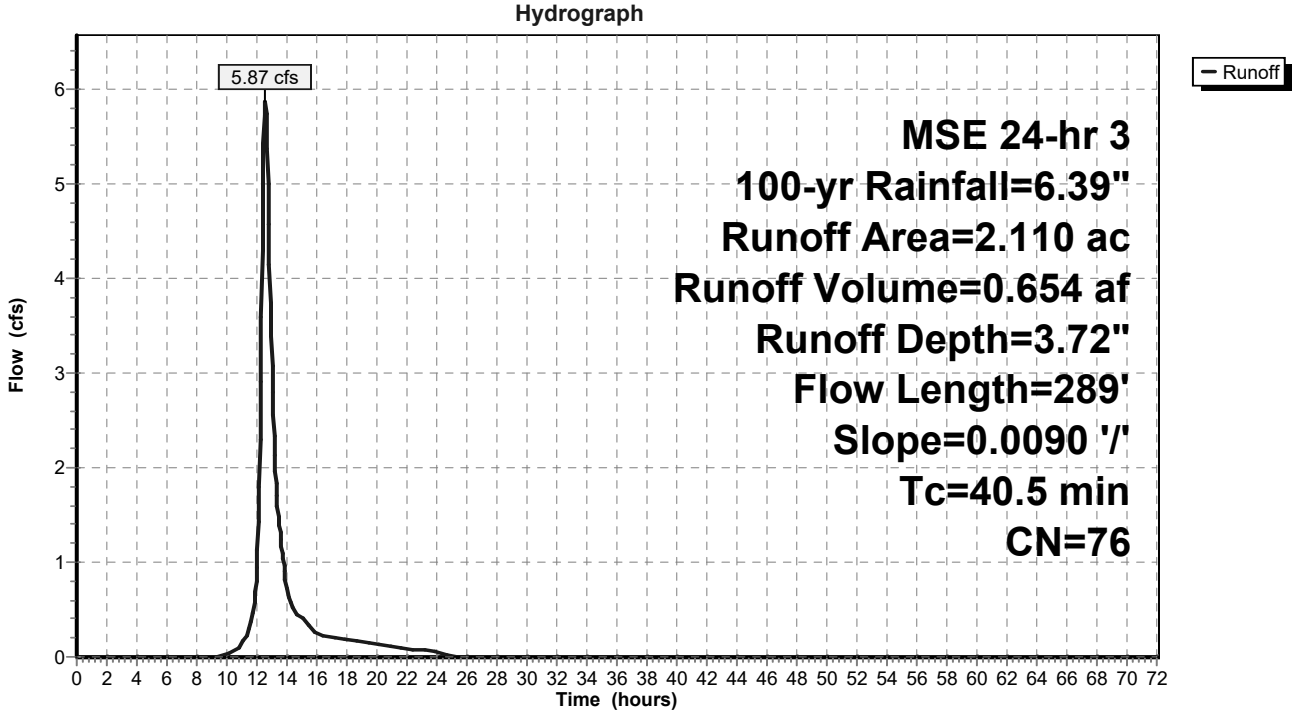
Runoff = 5.87 cfs @ 12.56 hrs, Volume= 0.654 af, Depth= 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.39"

	Area (ac)	CN	Description
*	2.110	76	Row crops, C&T + CR, Good, HSG C
	2.110		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
40.5	289	0.0090	0.12		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.37"

Subcatchment 8S: SOUTH EXISTING



Summary for Subcatchment 9S: EAST EXISTING

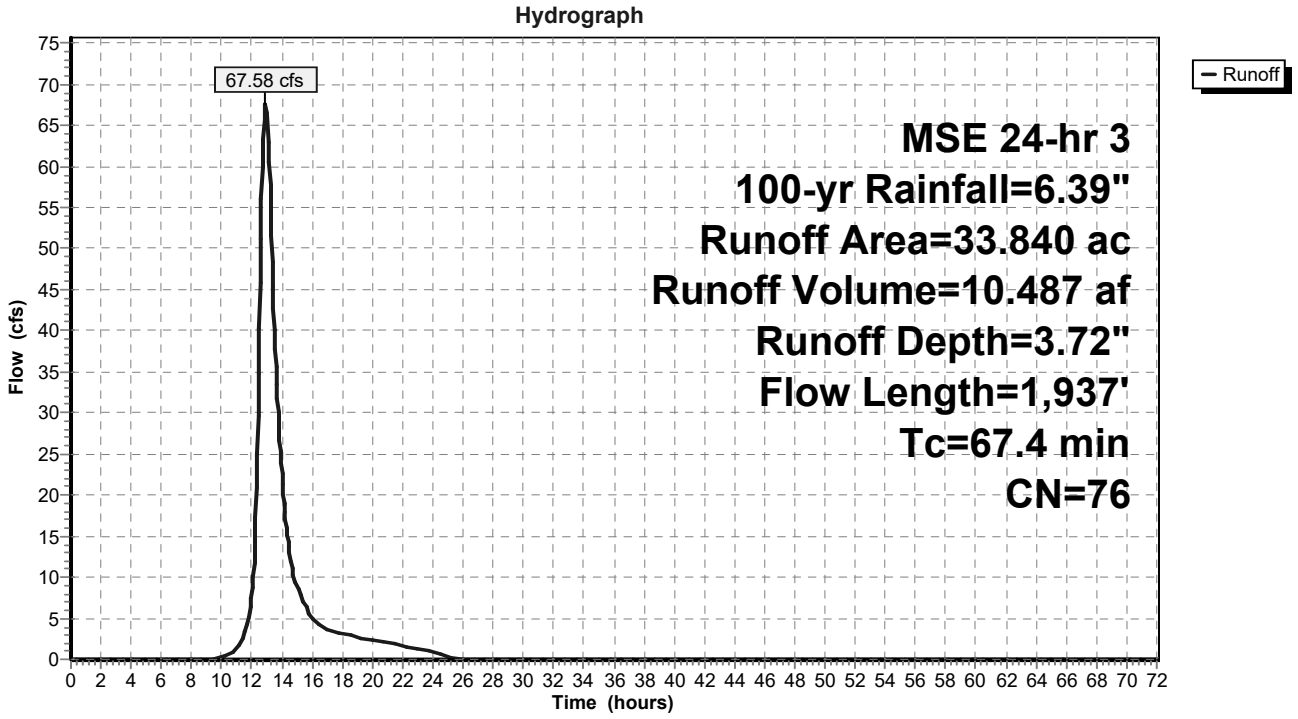
Runoff = 67.58 cfs @ 12.93 hrs, Volume= 10.487 af, Depth= 3.72"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.39"

	Area (ac)	CN	Description
*	33.840	76	Row crops, C&T + CR, Good, HSG C
	33.840		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
25.8	300	0.0300	0.19		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.37"
41.6	1,637	0.0053	0.66		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
67.4	1,937	Total			

Subcatchment 9S: EAST EXISTING

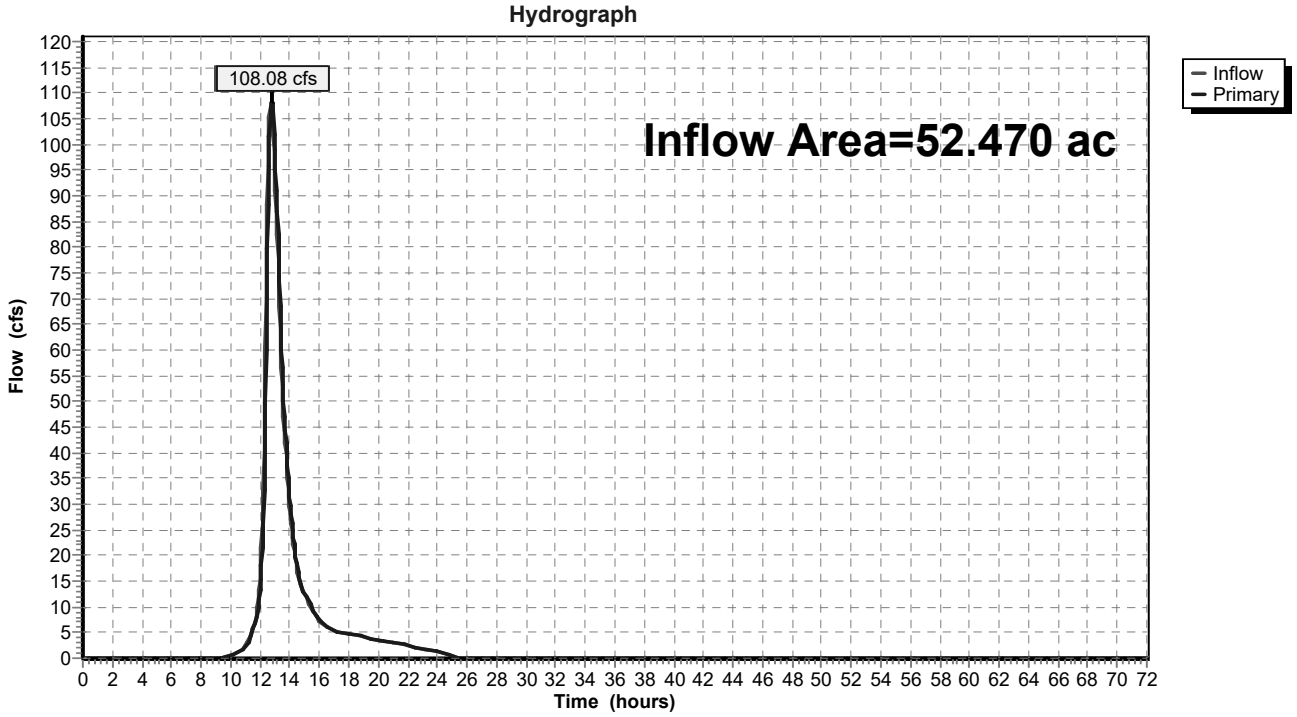


Summary for Link 6L: EXISTING SITE

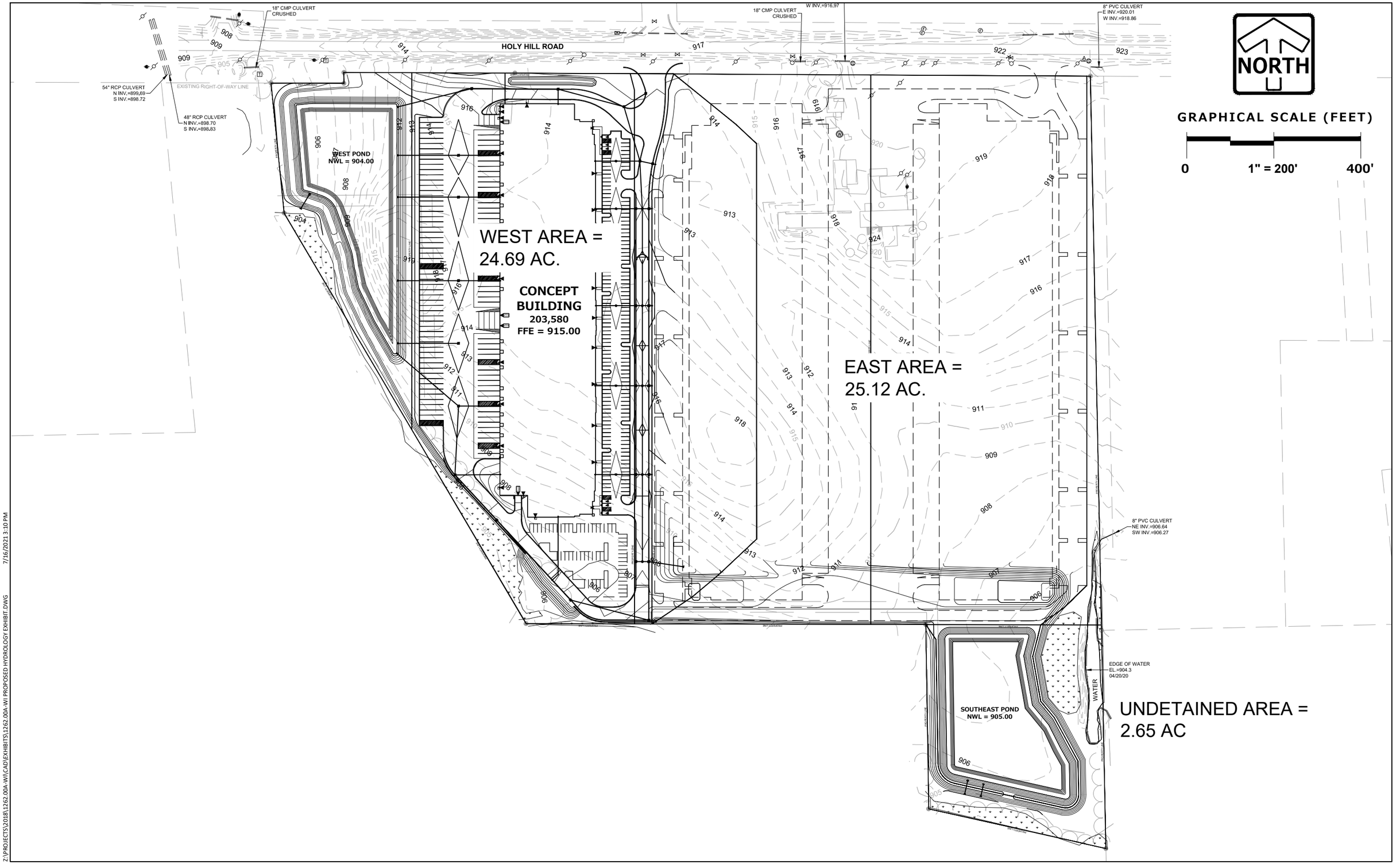
Inflow Area = 52.470 ac, 0.00% Impervious, Inflow Depth = 3.72" for 100-yr event
Inflow = 108.08 cfs @ 12.74 hrs, Volume= 16.261 af
Primary = 108.08 cfs @ 12.79 hrs, Volume= 16.261 af, Atten= 0%, Lag= 3.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 6L: EXISTING SITE



APPENDIX 3
POST DEVELOPMENT CONDITIONS RATE ATTENUATION



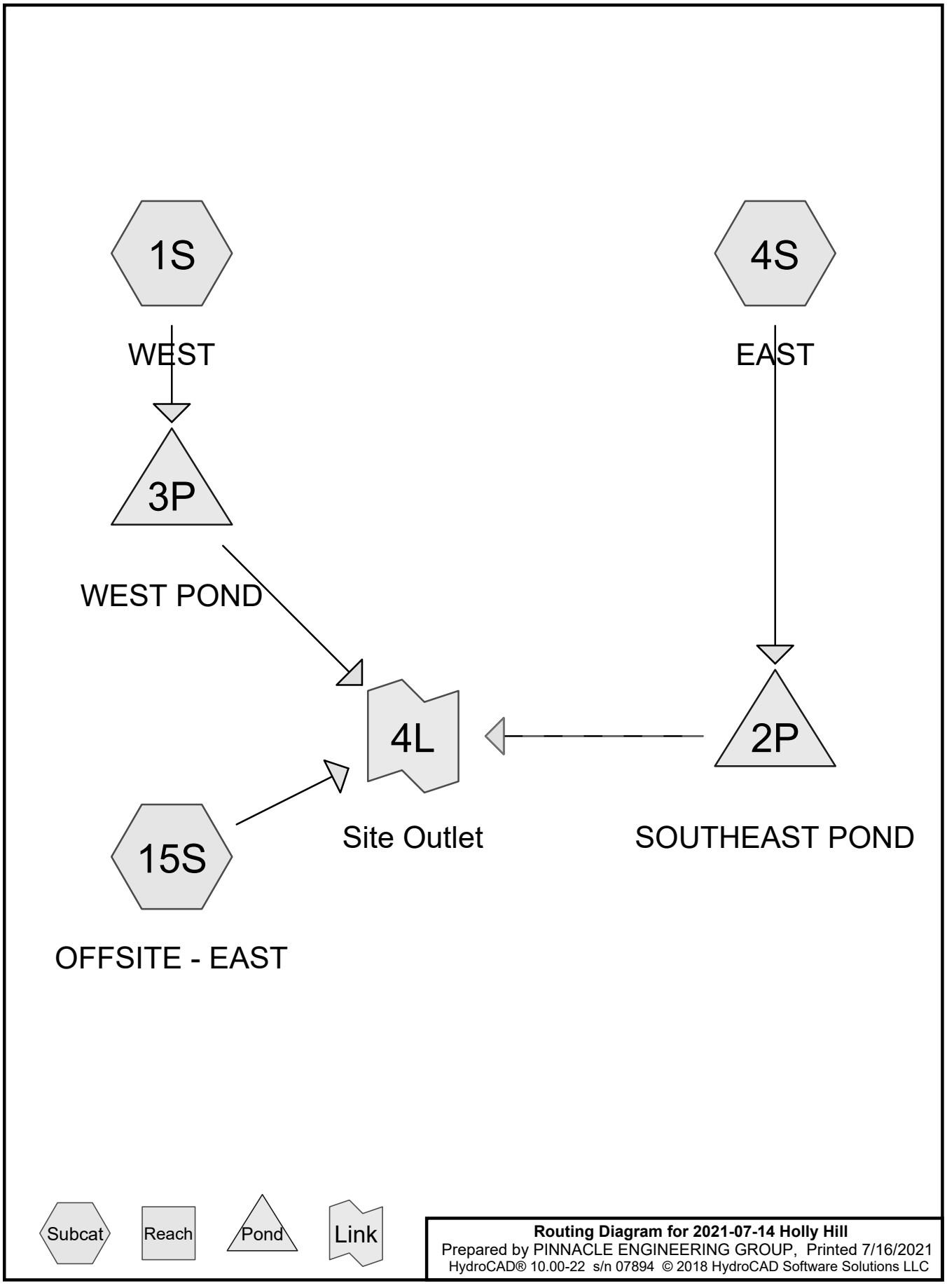
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CAPSTONE 41 - PROPOSED HYDROLOGY

7/16/21

PINNACLE ENGINEERING GROUP
20725 WATERTOWN ROAD | SUITE 100 | BROOKFIELD, WI 53186 | WWW.PINNACLE-ENGR.COM |

PLAN | DESIGN | DELIVER **PEG JOB#** 1262.00A



Routing Diagram for 2021-07-14 Holly Hill
Prepared by PINNACLE ENGINEERING GROUP, Printed 7/16/2021
HydroCAD® 10.00-22 s/n 07894 © 2018 HydroCAD Software Solutions LLC

Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.660	74	>75% Grass cover, Good, HSG C (15S)
49.810	94	Urban commercial, 85% imp, HSG C (1S, 4S)
52.470	**93**	**TOTAL AREA**

Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.000	HSG B	
52.470	HSG C	1S, 4S, 15S
0.000	HSG D	
0.000	Other	
52.470		**TOTAL AREA**

Ground Covers (selected nodes)

HSG-A (acres)	HSG-B (acres)	HSG-C (acres)	HSG-D (acres)	Other (acres)	Total (acres)	Ground Cover	Subcatchment Numbers
0.000	0.000	2.660	0.000	0.000	2.660	>75% Grass cover, Good	15S
0.000	0.000	49.810	0.000	0.000	49.810	Urban commercial, 85% imp	1S, 4S
0.000	**0.000**	**52.470**	**0.000**	**0.000**	**52.470**	**TOTAL AREA**	

Pipe Listing (selected nodes)

Line#	Node Number	In-Invert (feet)	Out-Invert (feet)	Length (feet)	Slope (ft/ft)	n	Diam/Width (inches)	Height (inches)	Inside-Fill (inches)
1	2P	905.00	905.00	32.8	0.0000	0.013	24.0	0.0	0.0
2	2P	906.80	907.00	35.0	-0.0057	0.013	18.0	0.0	0.0
3	3P	904.00	903.90	50.0	0.0020	0.013	15.0	0.0	0.0

Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1S: WEST Runoff Area=24.690 ac 85.00% Impervious Runoff Depth=1.75"
Tc=6.0 min CN=94 Runoff=73.35 cfs 3.591 af

Subcatchment4S: EAST Runoff Area=25.120 ac 85.00% Impervious Runoff Depth=1.75"
Tc=6.0 min CN=94 Runoff=74.63 cfs 3.654 af

Subcatchment15S: OFFSITE - EAST Runoff Area=2.660 ac 0.00% Impervious Runoff Depth=0.54"
Tc=6.0 min CN=74 Runoff=2.39 cfs 0.119 af

Pond 2P: SOUTHEASTPOND Peak Elev=906.70' Storage=139,039 cf Inflow=74.63 cfs 3.654 af
Primary=0.52 cfs 2.197 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.52 cfs 2.197 af

Pond 3P: WEST POND Peak Elev=905.56' Storage=129,791 cf Inflow=73.35 cfs 3.591 af
Primary=0.76 cfs 2.820 af Secondary=0.00 cfs 0.000 af Outflow=0.76 cfs 2.820 af

Link 4L: Site Outlet Inflow=3.21 cfs 5.134 af
Primary=3.21 cfs 5.134 af

Total Runoff Area = 52.470 ac Runoff Volume = 7.364 af Average Runoff Depth = 1.68"
19.31% Pervious = 10.131 ac 80.69% Impervious = 42.338 ac

Summary for Subcatchment 1S: WEST

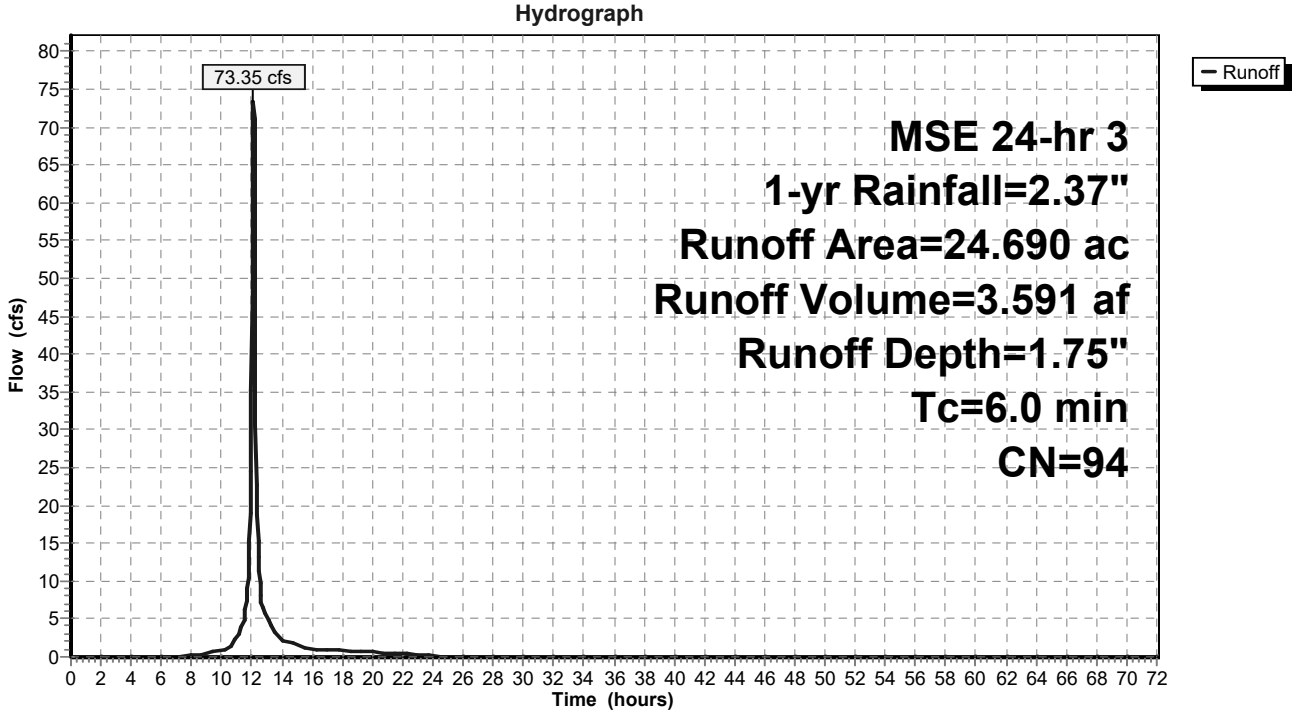
Runoff = 73.35 cfs @ 12.13 hrs, Volume= 3.591 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-yr Rainfall=2.37"

Area (ac)	CN	Description
24.690	94	Urban commercial, 85% imp, HSG C
3.703		15.00% Pervious Area
20.986		85.00% Impervious Area

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

Subcatchment 1S: WEST



Summary for Subcatchment 4S: EAST

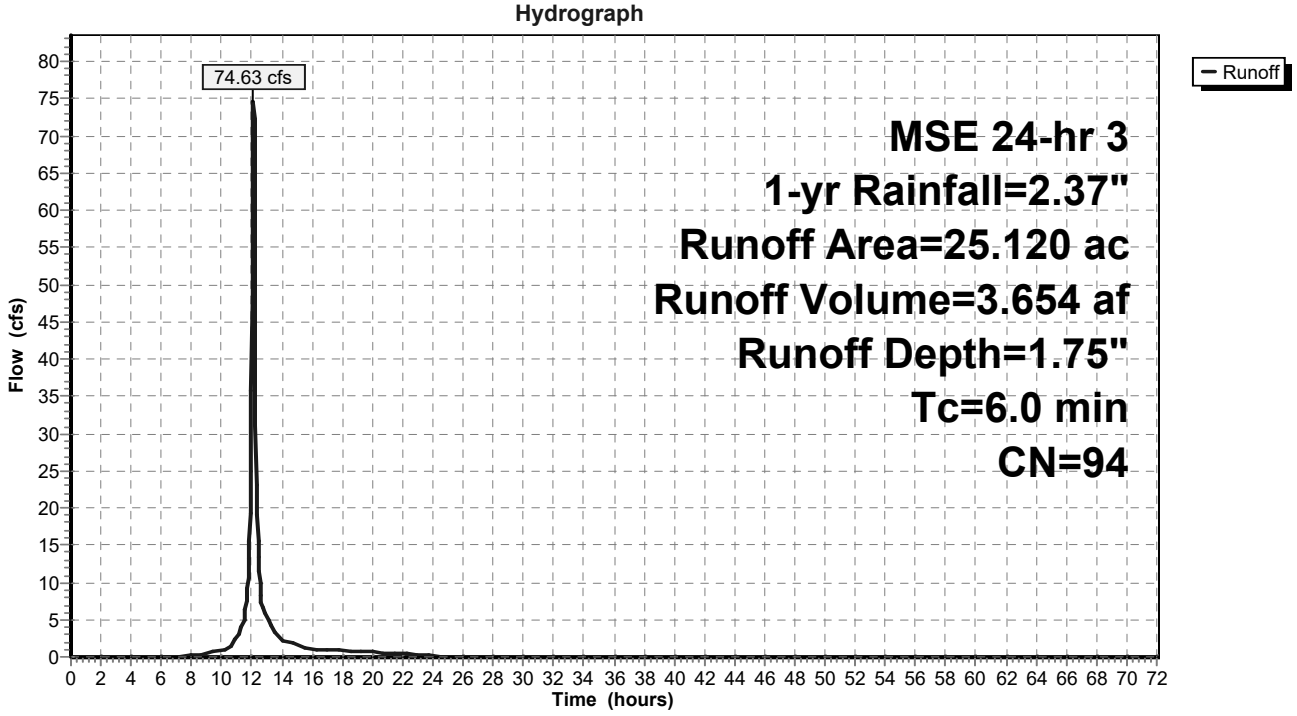
Runoff = 74.63 cfs @ 12.13 hrs, Volume= 3.654 af, Depth= 1.75"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-yr Rainfall=2.37"

Area (ac)	CN	Description
25.120	94	Urban commercial, 85% imp, HSG C
3.768		15.00% Pervious Area
21.352		85.00% Impervious Area

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

Subcatchment 4S: EAST



Summary for Subcatchment 15S: OFFSITE - EAST

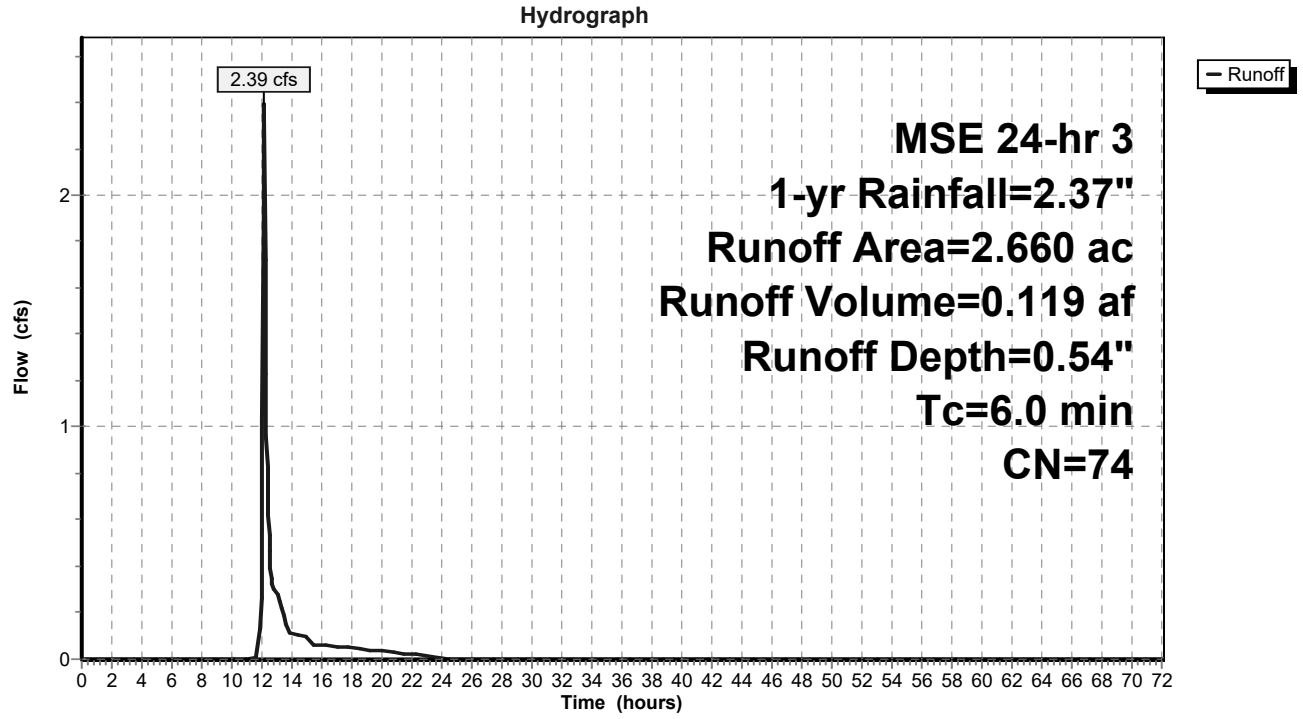
Runoff = 2.39 cfs @ 12.15 hrs, Volume= 0.119 af, Depth= 0.54"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 1-yr Rainfall=2.37"

Area (ac)	CN	Description
2.660	74	>75% Grass cover, Good, HSG C
2.660		100.00% Pervious Area

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

Subcatchment 15S: OFFSITE - EAST



Summary for Pond 2P: SOUTHEAST POND

Inflow Area = 25.120 ac, 85.00% Impervious, Inflow Depth = 1.75" for 1-yr event
Inflow = 74.63 cfs @ 12.13 hrs, Volume= 3.654 af
Outflow = 0.52 cfs @ 20.80 hrs, Volume= 2.197 af, Atten= 99%, Lag= 520.0 min
Primary = 0.52 cfs @ 20.80 hrs, Volume= 2.197 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 906.70' @ 20.80 hrs Surf.Area= 84,760 sf Storage= 139,039 cf

Plug-Flow detention time= 1,675.4 min calculated for 2.195 af (60% of inflow)
Center-of-Mass det. time= 1,601.8 min (2,384.2 - 782.4)

Volume	Invert	Avail.Storage	Storage Description
#1	905.00'	438,757 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
905.00	78,603	0	0
906.00	82,197	80,400	80,400
907.00	85,845	84,021	164,421
908.00	89,548	87,697	252,118
909.00	93,306	91,427	343,545
910.00	97,118	95,212	438,757

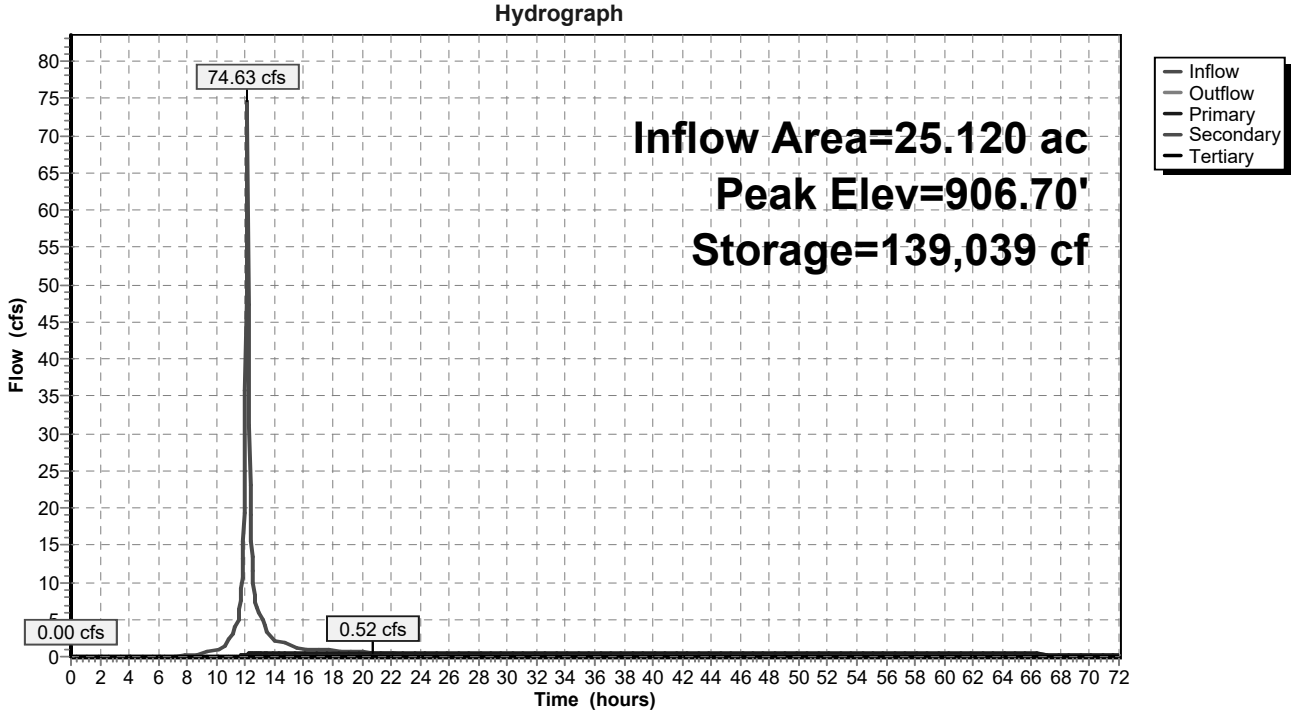
Device	Routing	Invert	Outlet Devices
#1	Primary	905.00'	**24.0" Round Culvert** L= 32.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 905.00' / 905.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	905.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	907.50'	**48.0" Vert. Orifice/Grate** C= 0.600
#4	Tertiary	907.00'	**18.0" Round Culvert** L= 35.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 906.80' / 907.00' S= -0.0057 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#5	Secondary	909.60'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.52 cfs @ 20.80 hrs HW=906.70' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 0.52 cfs of 8.17 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.52 cfs @ 5.97 fps)
  └─**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=905.00' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=905.00' TW=0.00' (Dynamic Tailwater)
└─**4=Culvert** (Controls 0.00 cfs)

Pond 2P: SOUTHEAST POND



Summary for Pond 3P: WEST POND

Inflow Area = 24.690 ac, 85.00% Impervious, Inflow Depth = 1.75" for 1-yr event
Inflow = 73.35 cfs @ 12.13 hrs, Volume= 3.591 af
Outflow = 0.76 cfs @ 18.53 hrs, Volume= 2.820 af, Atten= 99%, Lag= 383.8 min
Primary = 0.76 cfs @ 18.53 hrs, Volume= 2.820 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 905.56' @ 18.53 hrs Surf.Area= 86,954 sf Storage= 129,791 cf

Plug-Flow detention time= 1,531.2 min calculated for 2.818 af (78% of inflow)
Center-of-Mass det. time= 1,470.9 min (2,253.2 - 782.4)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	459,432 cf	**Custom Stage Data (Prismatic)** Listed below

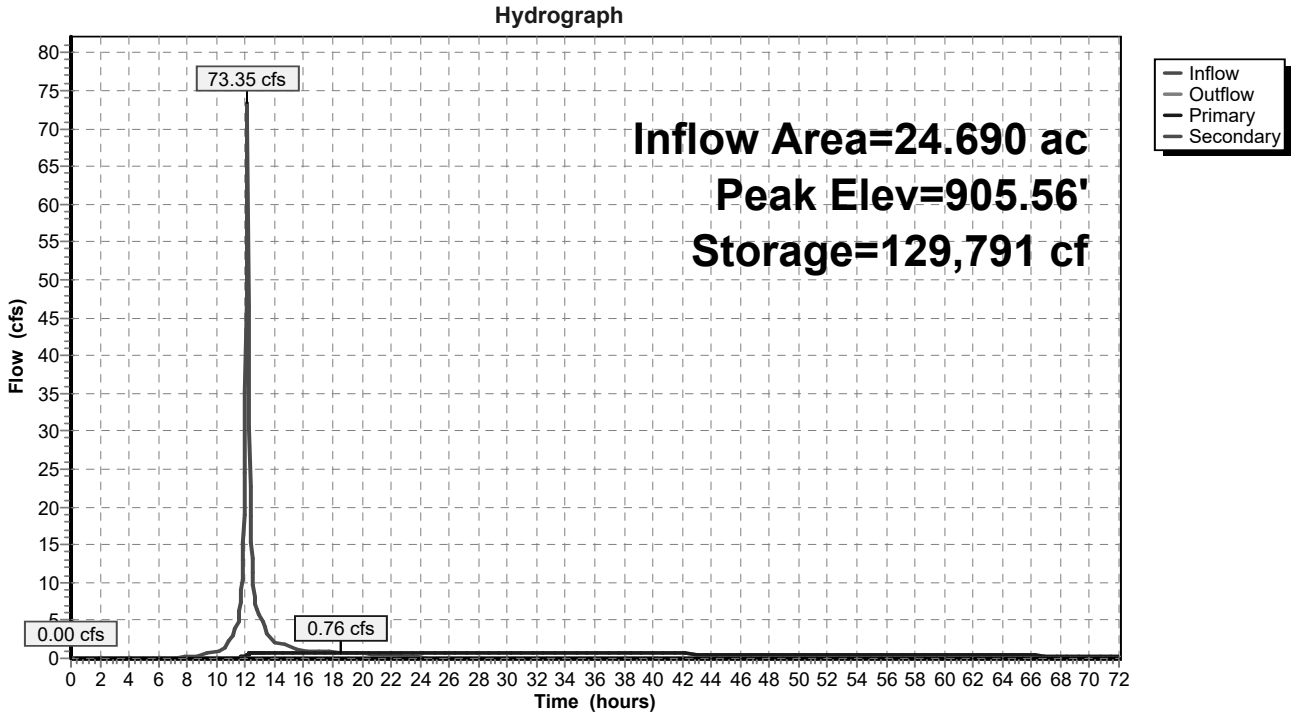
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
904.00	79,112	0	0
905.00	84,126	81,619	81,619
906.00	89,214	86,670	168,289
907.00	94,388	91,801	260,090
908.00	99,649	97,019	357,109
909.00	104,997	102,323	459,432

Device	Routing	Invert	Outlet Devices
#1	Primary	904.00'	**15.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 904.00' / 903.90' S= 0.0020 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	904.00'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	906.25'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	908.60'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.76 cfs @ 18.53 hrs HW=905.56' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.76 cfs of 4.27 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.76 cfs @ 5.59 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=904.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: WEST POND



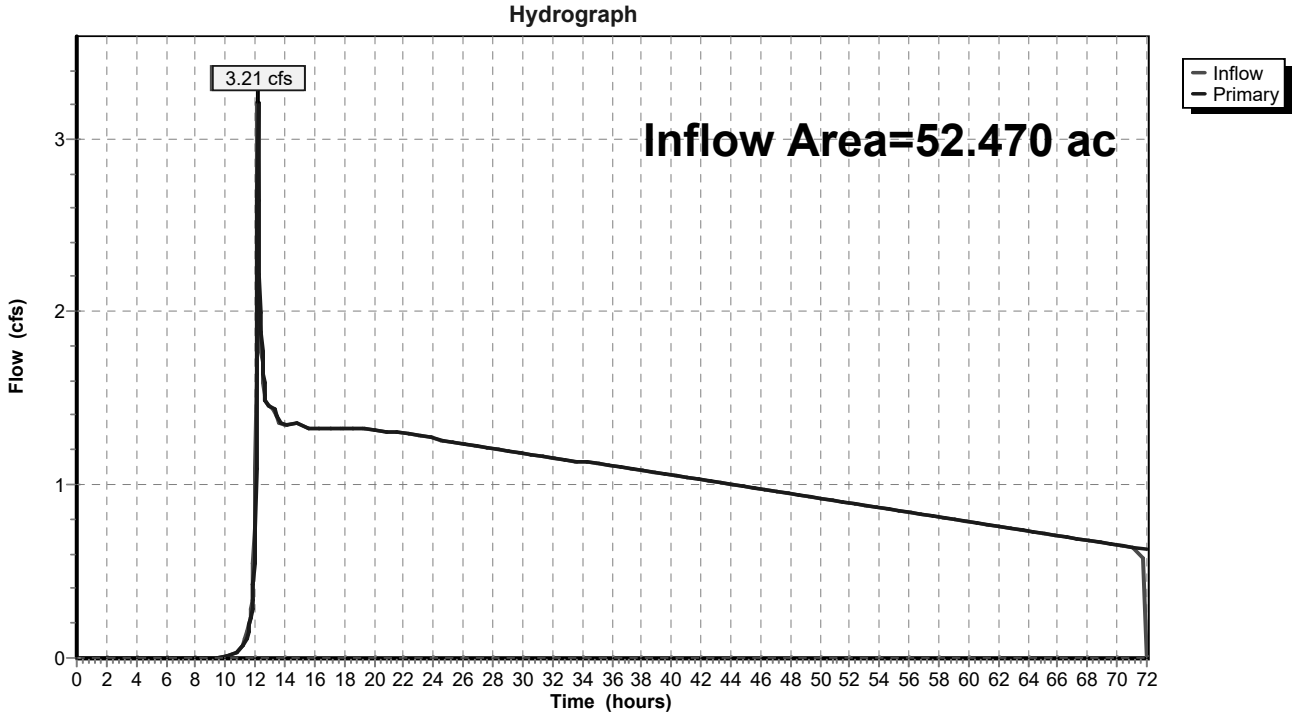
Summary for Link 4L: Site Outlet

2-year max = 18.94
100 year max = 63.13

Inflow Area = 52.470 ac, 80.69% Impervious, Inflow Depth > 1.17" for 1-yr event
Inflow = 3.21 cfs @ 12.15 hrs, Volume= 5.134 af
Primary = 3.21 cfs @ 12.20 hrs, Volume= 5.134 af, Atten= 0%, Lag= 3.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Site Outlet



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1S: WEST Runoff Area=24.690 ac 85.00% Impervious Runoff Depth=2.04"
Tc=6.0 min CN=94 Runoff=84.97 cfs 4.201 af

Subcatchment4S: EAST Runoff Area=25.120 ac 85.00% Impervious Runoff Depth=2.04"
Tc=6.0 min CN=94 Runoff=86.45 cfs 4.274 af

Subcatchment15S: OFFSITE - EAST Runoff Area=2.660 ac 0.00% Impervious Runoff Depth=0.71"
Tc=6.0 min CN=74 Runoff=3.27 cfs 0.158 af

Pond 2P: SOUTHEASTPOND Peak Elev=906.99' Storage=163,885 cf Inflow=86.45 cfs 4.274 af
Primary=0.57 cfs 2.440 af Secondary=0.00 cfs 0.000 af Tertiary=0.00 cfs 0.000 af Outflow=0.57 cfs 2.440 af

Pond 3P: WEST POND Peak Elev=905.83' Storage=153,196 cf Inflow=84.97 cfs 4.201 af
Primary=0.84 cfs 3.201 af Secondary=0.00 cfs 0.000 af Outflow=0.84 cfs 3.201 af

Link 4L: Site Outlet Inflow=4.19 cfs 5.795 af
Primary=4.19 cfs 5.795 af

Total Runoff Area = 52.470 ac Runoff Volume = 8.633 af Average Runoff Depth = 1.97"
19.31% Pervious = 10.131 ac 80.69% Impervious = 42.338 ac

Summary for Subcatchment 1S: WEST

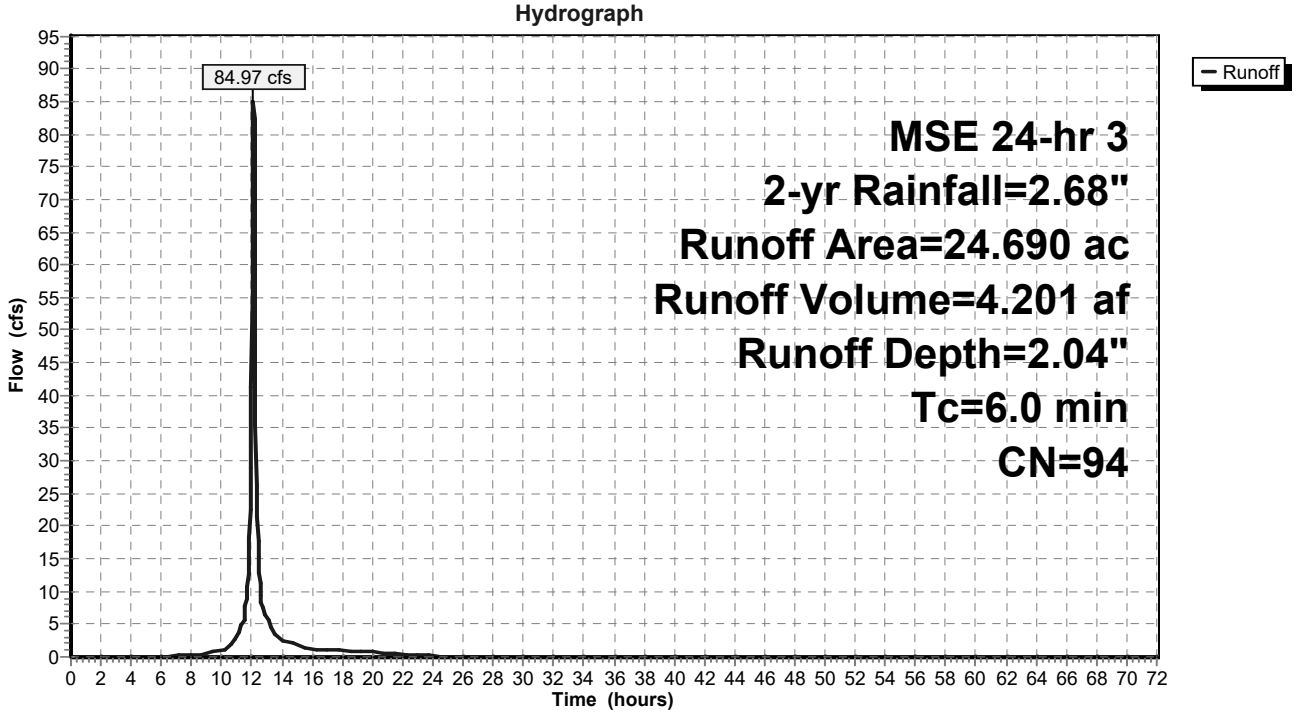
Runoff = 84.97 cfs @ 12.13 hrs, Volume= 4.201 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-yr Rainfall=2.68"

Area (ac)	CN	Description
24.690	94	Urban commercial, 85% imp, HSG C
3.703		15.00% Pervious Area
20.986		85.00% Impervious Area

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

Subcatchment 1S: WEST



Summary for Subcatchment 4S: EAST

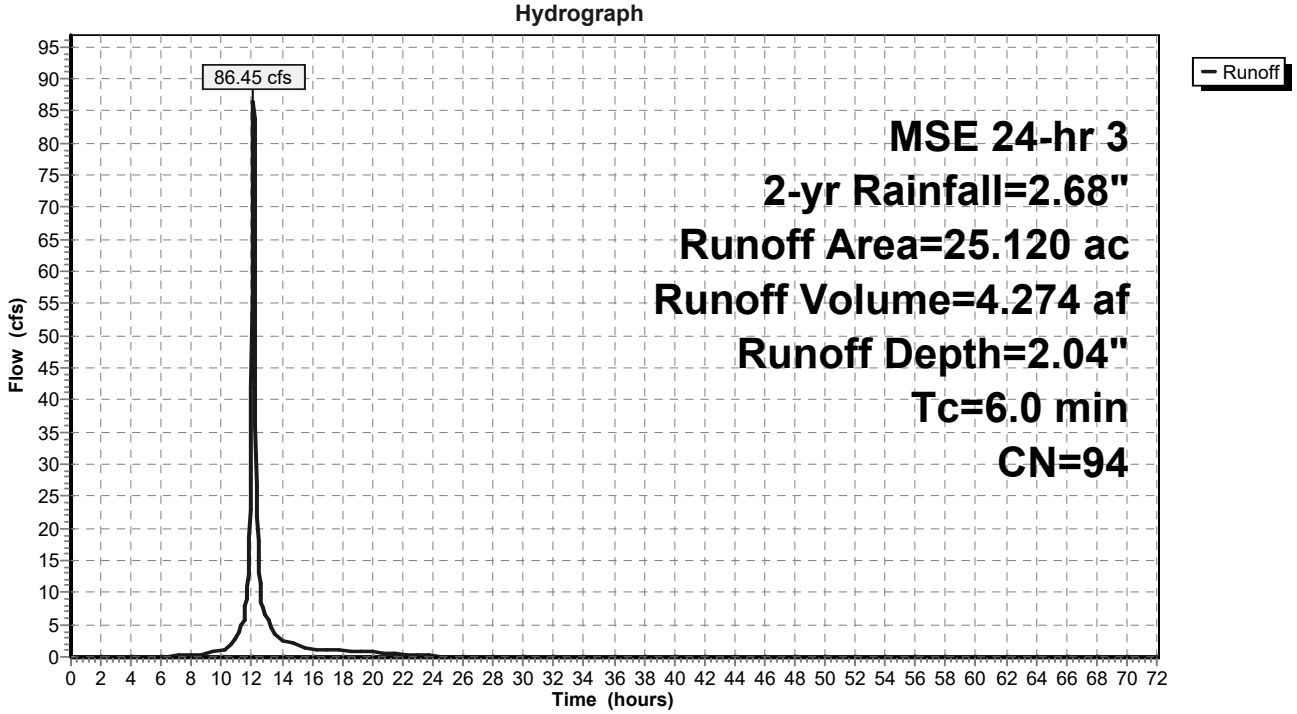
Runoff = 86.45 cfs @ 12.13 hrs, Volume= 4.274 af, Depth= 2.04"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-yr Rainfall=2.68"

Area (ac)	CN	Description
25.120	94	Urban commercial, 85% imp, HSG C
3.768		15.00% Pervious Area
21.352		85.00% Impervious Area

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

Subcatchment 4S: EAST



Summary for Subcatchment 15S: OFFSITE - EAST

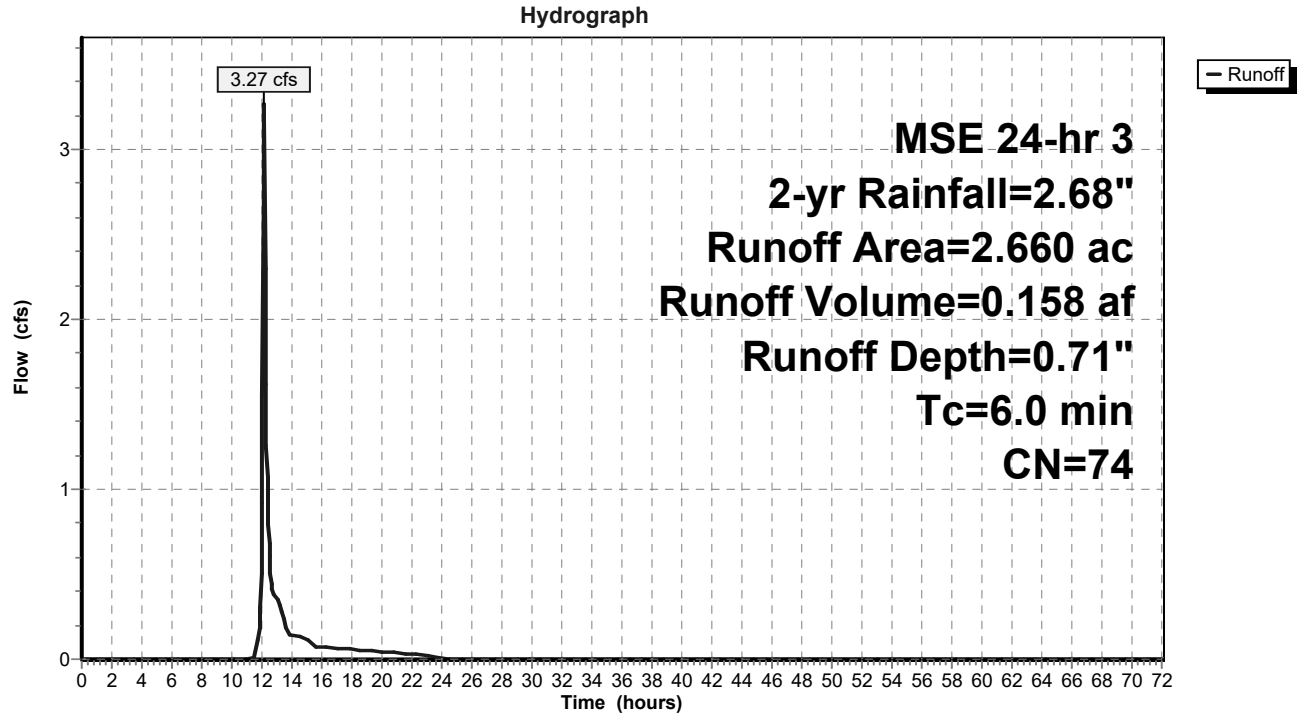
Runoff = 3.27 cfs @ 12.14 hrs, Volume= 0.158 af, Depth= 0.71"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 2-yr Rainfall=2.68"

Area (ac)	CN	Description
2.660	74	>75% Grass cover, Good, HSG C
2.660		100.00% Pervious Area

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

Subcatchment 15S: OFFSITE - EAST



Summary for Pond 2P: SOUTHEAST POND

Inflow Area = 25.120 ac, 85.00% Impervious, Inflow Depth = 2.04" for 2-yr event
Inflow = 86.45 cfs @ 12.13 hrs, Volume= 4.274 af
Outflow = 0.57 cfs @ 21.00 hrs, Volume= 2.440 af, Atten= 99%, Lag= 532.5 min
Primary = 0.57 cfs @ 21.00 hrs, Volume= 2.440 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 906.99' @ 21.00 hrs Surf.Area= 85,822 sf Storage= 163,885 cf

Plug-Flow detention time= 1,694.2 min calculated for 2.440 af (57% of inflow)
Center-of-Mass det. time= 1,617.9 min (2,397.2 - 779.3)

Volume	Invert	Avail.Storage	Storage Description
#1	905.00'	438,757 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
905.00	78,603	0	0
906.00	82,197	80,400	80,400
907.00	85,845	84,021	164,421
908.00	89,548	87,697	252,118
909.00	93,306	91,427	343,545
910.00	97,118	95,212	438,757

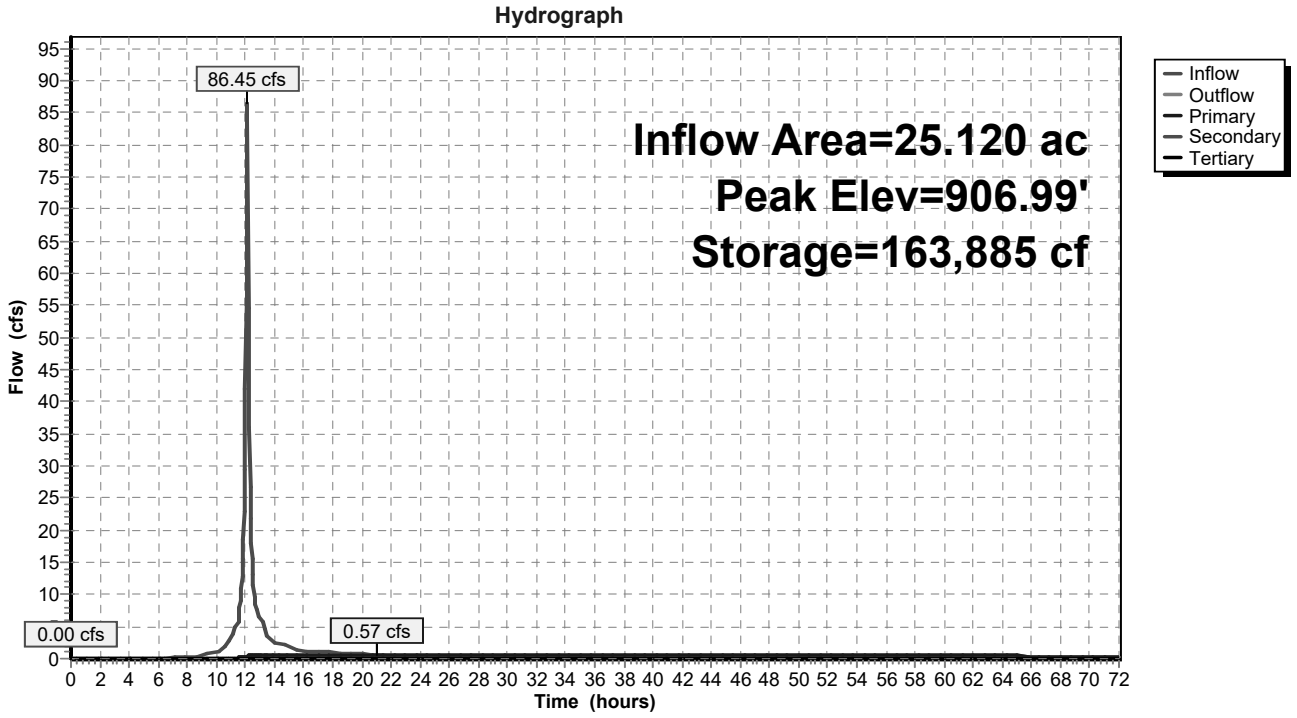
Device	Routing	Invert	Outlet Devices
#1	Primary	905.00'	**24.0" Round Culvert** L= 32.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 905.00' / 905.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	905.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	907.50'	**48.0" Vert. Orifice/Grate** C= 0.600
#4	Tertiary	907.00'	**18.0" Round Culvert** L= 35.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 906.80' / 907.00' S= -0.0057 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#5	Secondary	909.60'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.57 cfs @ 21.00 hrs HW=906.99' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.57 cfs of 10.58 cfs potential flow)
└**2=Orifice/Grate** (Orifice Controls 0.57 cfs @ 6.51 fps)
└**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=905.00' (Free Discharge)
└**5=Broad-Crested Rectangular Weir**(Controls 0.00 cfs)

Tertiary OutFlow Max=0.00 cfs @ 0.00 hrs HW=905.00' TW=0.00' (Dynamic Tailwater)
└**4=Culvert** (Controls 0.00 cfs)

Pond 2P: SOUTHEAST POND



Summary for Pond 3P: WEST POND

Inflow Area = 24.690 ac, 85.00% Impervious, Inflow Depth = 2.04" for 2-yr event
Inflow = 84.97 cfs @ 12.13 hrs, Volume= 4.201 af
Outflow = 0.84 cfs @ 18.78 hrs, Volume= 3.201 af, Atten= 99%, Lag= 399.2 min
Primary = 0.84 cfs @ 18.78 hrs, Volume= 3.201 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 905.83' @ 18.78 hrs Surf.Area= 88,328 sf Storage= 153,196 cf

Plug-Flow detention time= 1,570.6 min calculated for 3.201 af (76% of inflow)
Center-of-Mass det. time= 1,507.1 min (2,286.3 - 779.3)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	459,432 cf	**Custom Stage Data (Prismatic)** Listed below

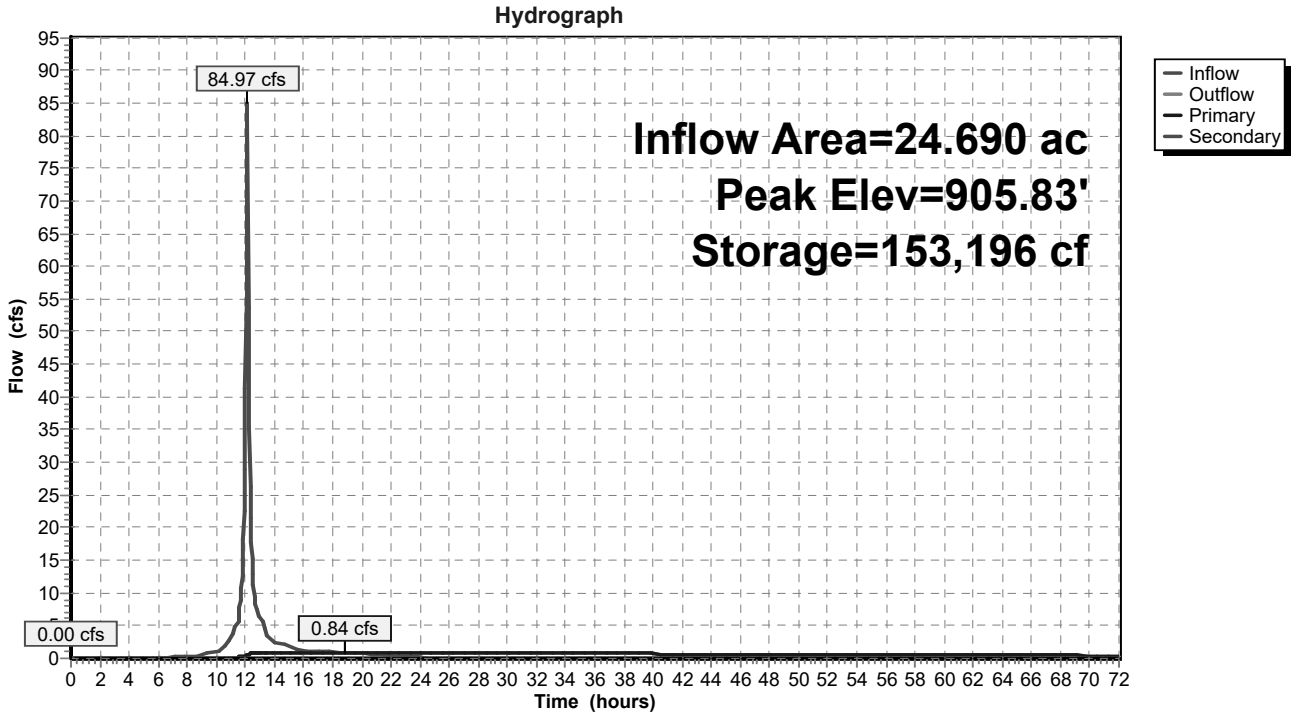
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
904.00	79,112	0	0
905.00	84,126	81,619	81,619
906.00	89,214	86,670	168,289
907.00	94,388	91,801	260,090
908.00	99,649	97,019	357,109
909.00	104,997	102,323	459,432

Device	Routing	Invert	Outlet Devices
#1	Primary	904.00'	**15.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 904.00' / 903.90' S= 0.0020 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	904.00'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	906.25'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	908.60'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=0.84 cfs @ 18.78 hrs HW=905.83' TW=0.00' (Dynamic Tailwater)
└**1=Culvert** (Passes 0.84 cfs of 4.96 cfs potential flow)
  ├**2=Orifice/Grate** (Orifice Controls 0.84 cfs @ 6.12 fps)
  └**3=Orifice/Grate** (Controls 0.00 cfs)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=904.00' (Free Discharge)
└**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: WEST POND



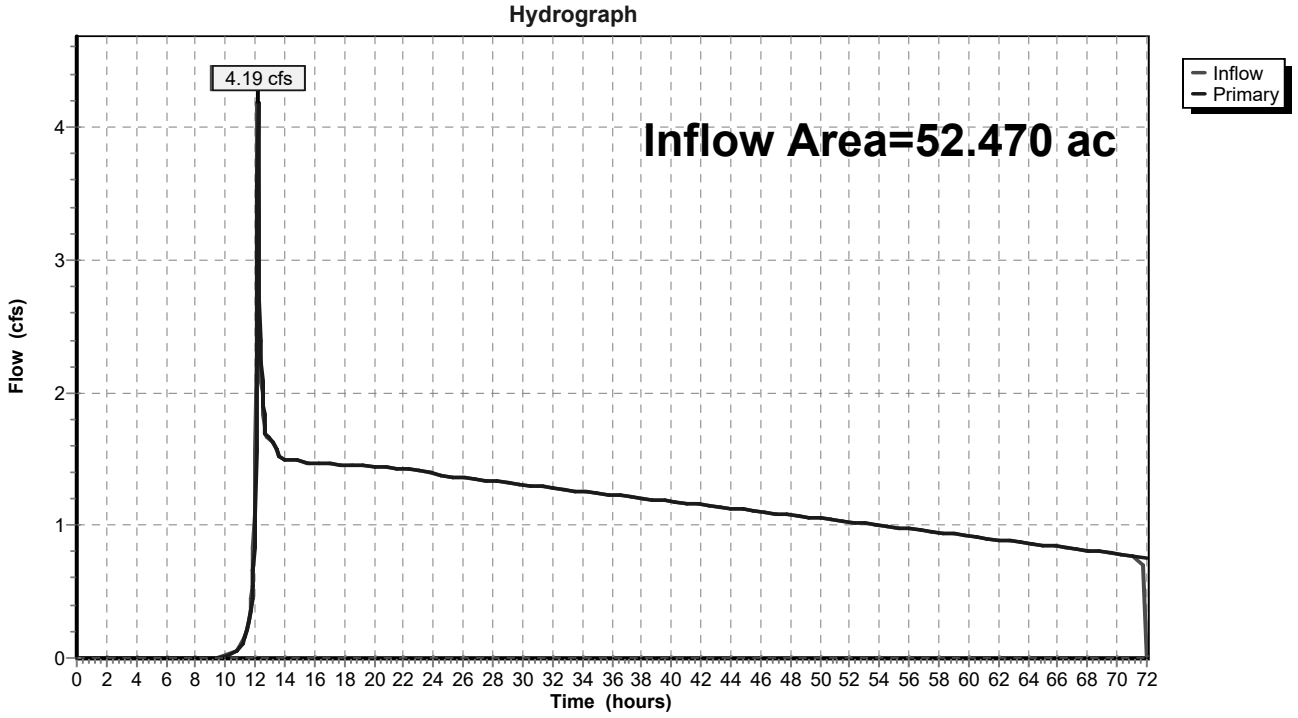
Summary for Link 4L: Site Outlet

2-year max = 18.94
100 year max = 63.13

Inflow Area = 52.470 ac, 80.69% Impervious, Inflow Depth > 1.33" for 2-yr event
Inflow = 4.19 cfs @ 12.15 hrs, Volume= 5.795 af
Primary = 4.19 cfs @ 12.20 hrs, Volume= 5.795 af, Atten= 0%, Lag= 3.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Site Outlet



Time span=0.00-72.00 hrs, dt=0.05 hrs, 1441 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Sim-Route method - Pond routing by Sim-Route method

Subcatchment1S: WEST Runoff Area=24.690 ac 85.00% Impervious Runoff Depth=5.68"
Tc=6.0 min CN=94 Runoff=221.43 cfs 11.693 af

Subcatchment4S: EAST Runoff Area=25.120 ac 85.00% Impervious Runoff Depth=5.68"
Tc=6.0 min CN=94 Runoff=225.29 cfs 11.897 af

Subcatchment15S: OFFSITE - EAST Runoff Area=2.660 ac 0.00% Impervious Runoff Depth=3.52"
Tc=6.0 min CN=74 Runoff=16.67 cfs 0.779 af

Pond 2P: SOUTHEASTPOND Peak Elev=908.95' Storage=338,817 cf Inflow=225.29 cfs 11.897 af
Primary=17.66 cfs 6.037 af Secondary=0.00 cfs 0.000 af Tertiary=7.81 cfs 3.532 af Outflow=25.47 cfs 9.569 af

Pond 3P: WEST POND Peak Elev=908.06' Storage=363,554 cf Inflow=221.43 cfs 11.693 af
Primary=10.29 cfs 10.148 af Secondary=0.00 cfs 0.000 af Outflow=10.29 cfs 10.148 af

Link 4L: Site Outlet Inflow=37.63 cfs 20.492 af
Primary=37.63 cfs 20.492 af

Total Runoff Area = 52.470 ac Runoff Volume = 24.369 af Average Runoff Depth = 5.57"
19.31% Pervious = 10.131 ac 80.69% Impervious = 42.338 ac

Summary for Subcatchment 1S: WEST

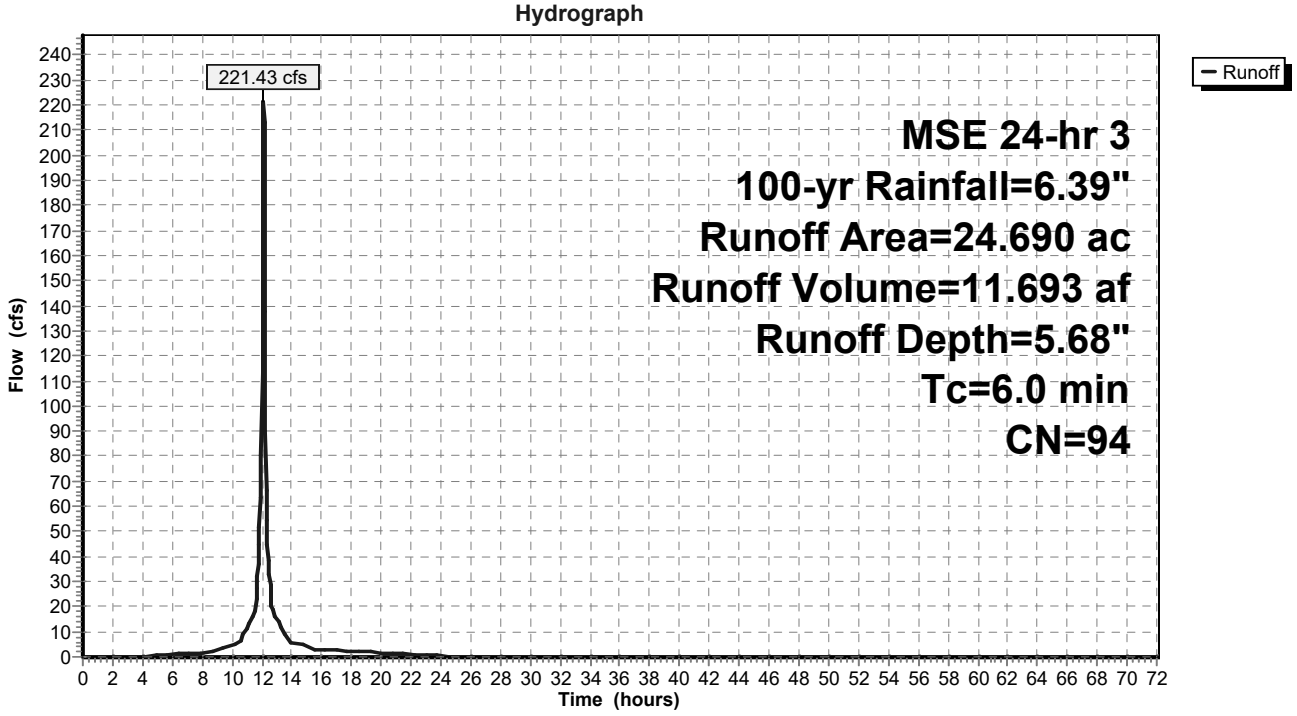
Runoff = 221.43 cfs @ 12.13 hrs, Volume= 11.693 af, Depth= 5.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.39"

Area (ac)	CN	Description
24.690	94	Urban commercial, 85% imp, HSG C
3.703		15.00% Pervious Area
20.986		85.00% Impervious Area

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

Subcatchment 1S: WEST



Summary for Subcatchment 4S: EAST

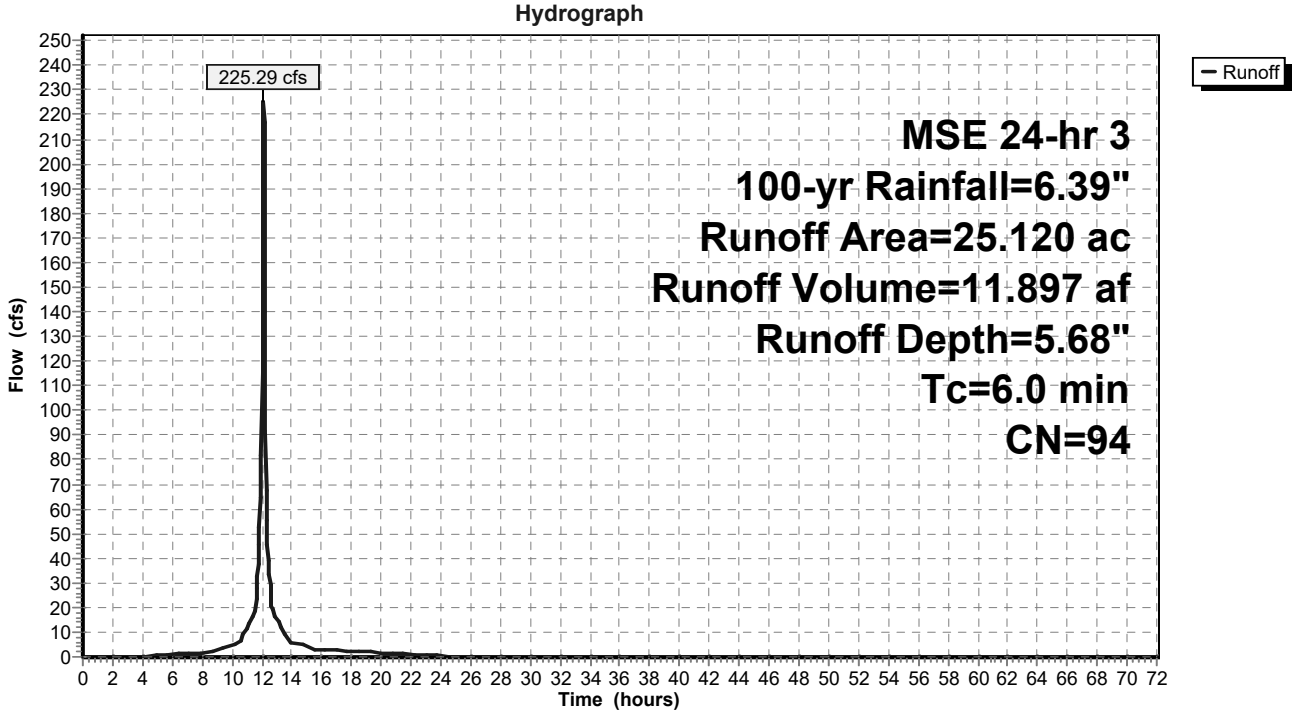
Runoff = 225.29 cfs @ 12.13 hrs, Volume= 11.897 af, Depth= 5.68"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.39"

Area (ac)	CN	Description
25.120	94	Urban commercial, 85% imp, HSG C
3.768		15.00% Pervious Area
21.352		85.00% Impervious Area

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

Subcatchment 4S: EAST



Summary for Subcatchment 15S: OFFSITE - EAST

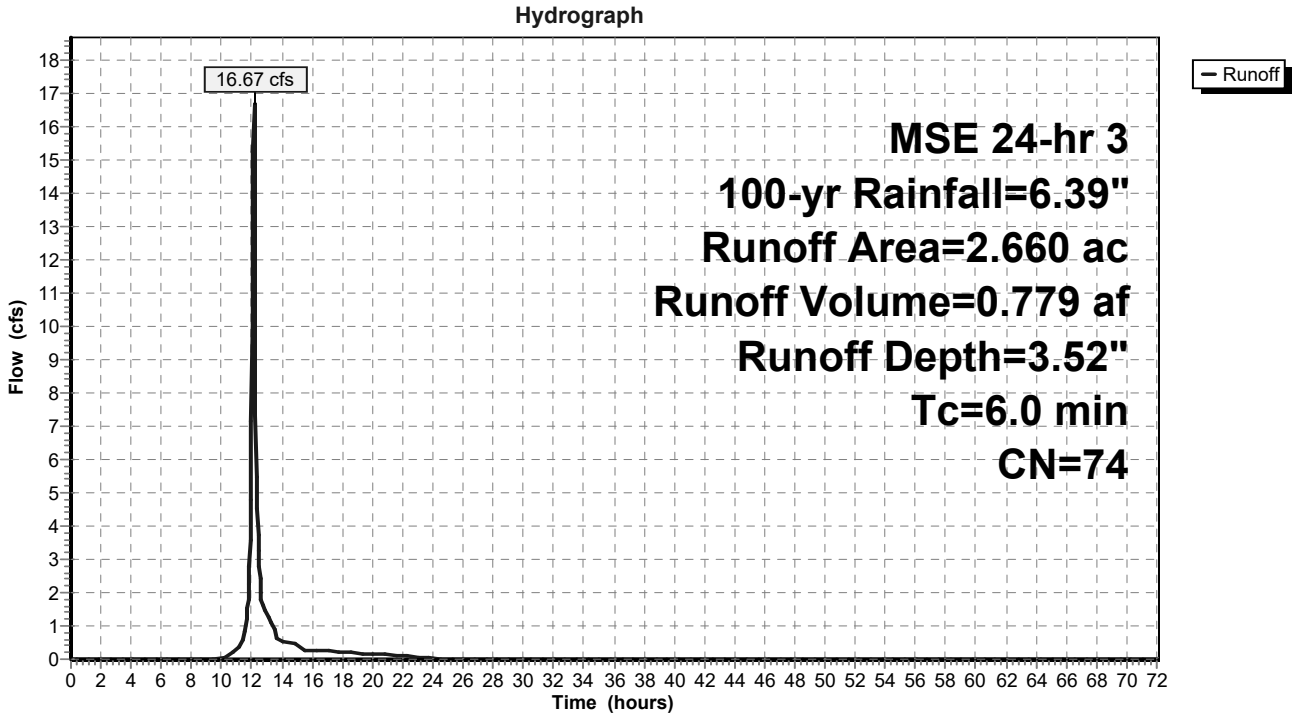
Runoff = 16.67 cfs @ 12.13 hrs, Volume= 0.779 af, Depth= 3.52"

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
MSE 24-hr 3 100-yr Rainfall=6.39"

Area (ac)	CN	Description
2.660	74	>75% Grass cover, Good, HSG C
2.660		100.00% Pervious Area

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

Subcatchment 15S: OFFSITE - EAST



Summary for Pond 2P: SOUTHEAST POND

Inflow Area = 25.120 ac, 85.00% Impervious, Inflow Depth = 5.68" for 100-yr event
Inflow = 225.29 cfs @ 12.13 hrs, Volume= 11.897 af
Outflow = 25.47 cfs @ 12.61 hrs, Volume= 9.569 af, Atten= 89%, Lag= 28.9 min
Primary = 17.66 cfs @ 12.61 hrs, Volume= 6.037 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Tertiary = 7.81 cfs @ 12.61 hrs, Volume= 3.532 af

Routing by Sim-Route method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 908.95' @ 12.61 hrs Surf.Area= 93,115 sf Storage= 338,817 cf

Plug-Flow detention time= 654.8 min calculated for 9.569 af (80% of inflow)
Center-of-Mass det. time= 597.0 min (1,356.9 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1	905.00'	438,757 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
905.00	78,603	0	0
906.00	82,197	80,400	80,400
907.00	85,845	84,021	164,421
908.00	89,548	87,697	252,118
909.00	93,306	91,427	343,545
910.00	97,118	95,212	438,757

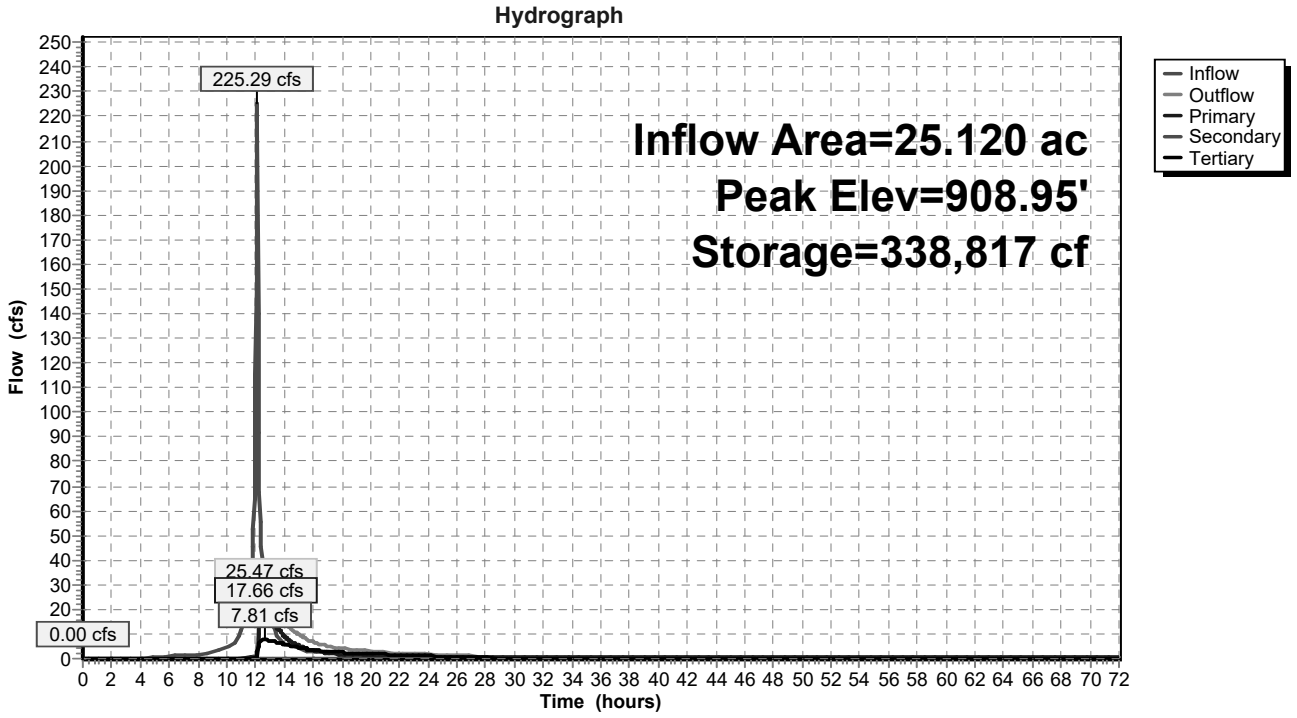
Device	Routing	Invert	Outlet Devices
#1	Primary	905.00'	**24.0" Round Culvert** L= 32.8' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 905.00' / 905.00' S= 0.0000 '/' Cc= 0.900 n= 0.013, Flow Area= 3.14 sf
#2	Device 1	905.00'	**4.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	907.50'	**48.0" Vert. Orifice/Grate** C= 0.600
#4	Tertiary	907.00'	**18.0" Round Culvert** L= 35.0' RCP, end-section conforming to fill, Ke= 0.500 Inlet / Outlet Invert= 906.80' / 907.00' S= -0.0057 '/' Cc= 0.900 n= 0.013, Flow Area= 1.77 sf
#5	Secondary	909.60'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=17.64 cfs @ 12.61 hrs HW=908.95' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Passes 17.64 cfs of 25.47 cfs potential flow)
  ├─**2=Orifice/Grate** (Orifice Controls 0.82 cfs @ 9.36 fps)
  └─**3=Orifice/Grate** (Orifice Controls 16.82 cfs @ 4.10 fps)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=905.00' (Free Discharge)
└─**5=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Tertiary OutFlow Max=7.81 cfs @ 12.61 hrs HW=908.95' TW=0.00' (Dynamic Tailwater)
└─**4=Culvert** (Barrel Controls 7.81 cfs @ 4.42 fps)

Pond 2P: SOUTHEAST POND



Summary for Pond 3P: WEST POND

Inflow Area = 24.690 ac, 85.00% Impervious, Inflow Depth = 5.68" for 100-yr event
Inflow = 221.43 cfs @ 12.13 hrs, Volume= 11.693 af
Outflow = 10.29 cfs @ 13.47 hrs, Volume= 10.148 af, Atten= 95%, Lag= 80.3 min
Primary = 10.29 cfs @ 13.47 hrs, Volume= 10.148 af
Secondary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af

Routing by Sim-Route method, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs
Peak Elev= 908.06' @ 13.47 hrs Surf.Area= 99,986 sf Storage= 363,554 cf

Plug-Flow detention time= 785.4 min calculated for 10.141 af (87% of inflow)
Center-of-Mass det. time= 738.9 min (1,498.9 - 759.9)

Volume	Invert	Avail.Storage	Storage Description
#1	904.00'	459,432 cf	**Custom Stage Data (Prismatic)** Listed below

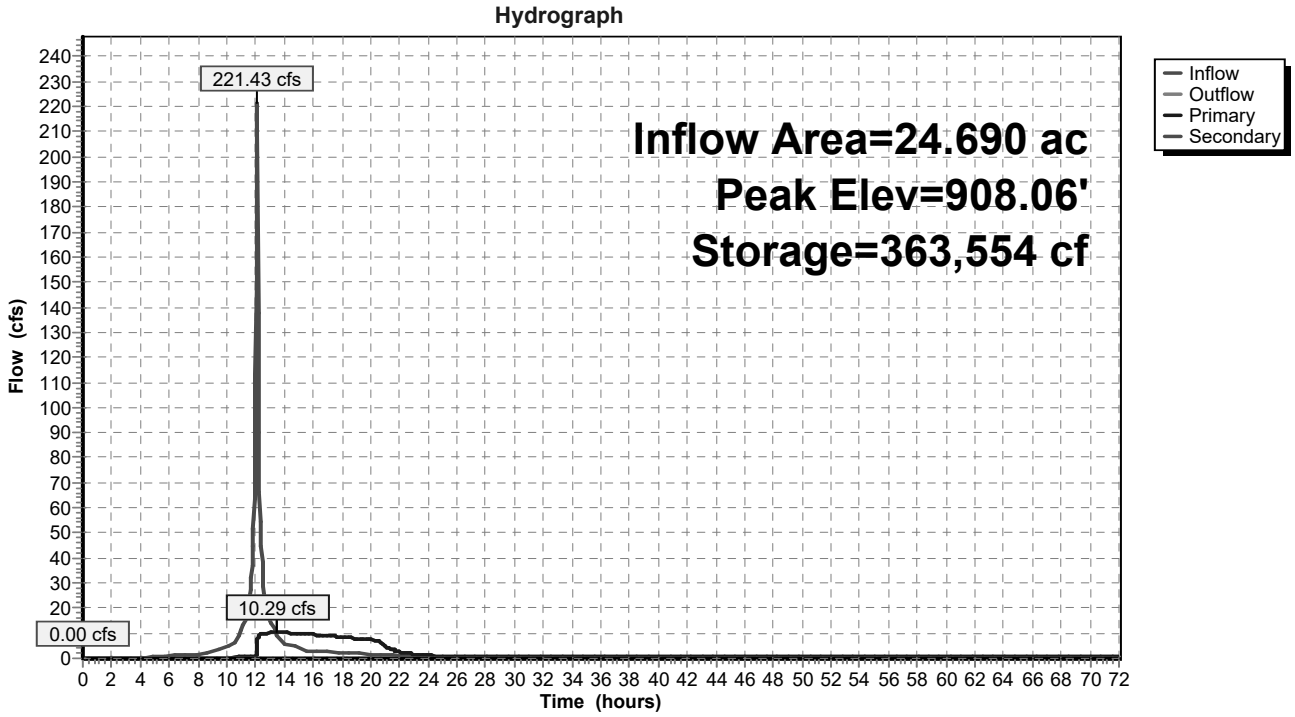
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
904.00	79,112	0	0
905.00	84,126	81,619	81,619
906.00	89,214	86,670	168,289
907.00	94,388	91,801	260,090
908.00	99,649	97,019	357,109
909.00	104,997	102,323	459,432

Device	Routing	Invert	Outlet Devices
#1	Primary	904.00'	**15.0" Round Culvert** L= 50.0' RCP, square edge headwall, Ke= 0.500 Inlet / Outlet Invert= 904.00' / 903.90' S= 0.0020 '/' Cc= 0.900 n= 0.013, Flow Area= 1.23 sf
#2	Device 1	904.00'	**5.0" Vert. Orifice/Grate** C= 0.600
#3	Device 1	906.25'	**48.0" Horiz. Orifice/Grate** C= 0.600 Limited to weir flow at low heads
#4	Secondary	908.60'	**20.0' long x 10.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 Coef. (English) 2.49 2.56 2.70 2.69 2.68 2.69 2.67 2.64

Primary OutFlow Max=10.29 cfs @ 13.47 hrs HW=908.06' TW=0.00' (Dynamic Tailwater)
└─**1=Culvert** (Barrel Controls 10.29 cfs @ 8.39 fps)
  ├─**2=Orifice/Grate** (Passes < 1.29 cfs potential flow)
  └─**3=Orifice/Grate** (Passes < 81.47 cfs potential flow)

Secondary OutFlow Max=0.00 cfs @ 0.00 hrs HW=904.00' (Free Discharge)
└─**4=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 3P: WEST POND



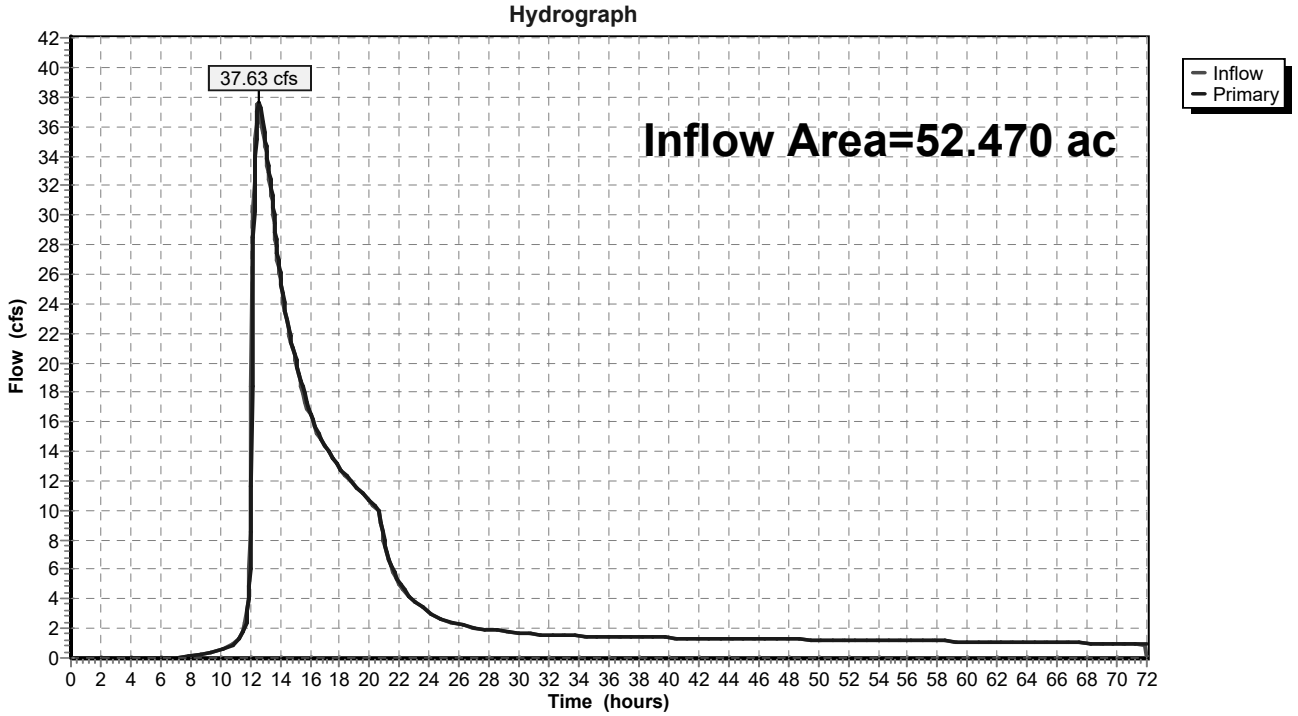
Summary for Link 4L: Site Outlet

2-year max = 18.94
100 year max = 63.13

Inflow Area = 52.470 ac, 80.69% Impervious, Inflow Depth > 4.69" for 100-yr event
Inflow = 37.63 cfs @ 12.55 hrs, Volume= 20.492 af
Primary = 37.63 cfs @ 12.60 hrs, Volume= 20.492 af, Atten= 0%, Lag= 3.0 min

Primary outflow = Inflow, Time Span= 0.00-72.00 hrs, dt= 0.05 hrs

Link 4L: Site Outlet



APPENDIX 4
MMSD VOLUMETRIC COMPARISON

PINNACLE ENGINEERING GROUP

2-YEAR VOLUMETRIC COMPARISON

2-Year Existing Volume				2-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
11.75	0.01	X	X	11.75	0.45	X	X
11.80	0.03	0.00008	0.000	11.80	0.54	0.00205	0.002
11.85	0.06	0.00019	0.000	11.85	0.66	0.00248	0.005
11.90	0.11	0.00035	0.001	11.90	0.83	0.00308	0.008
11.95	0.19	0.00062	0.001	11.95	1.08	0.00395	0.012
12.00	0.32	0.00105	0.002	12.00	1.56	0.00545	0.017
12.05	0.52	0.00174	0.004	12.05	2.27	0.00791	0.025
12.10	0.83	0.00279	0.007	12.10	3.55	0.01202	0.037
12.15	1.31	0.00442	0.011	12.15	4.18	0.01597	0.053
12.20	2.08	0.00700	0.018	12.20	3.33	0.01552	0.068
12.25	3.18	0.01087	0.029	12.25	2.72	0.01250	0.081
12.30	4.67	0.01622	0.045	12.30	2.39	0.01056	0.091
12.35	6.48	0.02304	0.068	12.35	2.23	0.00955	0.101
12.40	8.56	0.03107	0.099	12.40	2.08	0.00890	0.110
12.45	10.80	0.04000	0.139	12.45	1.99	0.00841	0.118
12.50	13.00	0.04917	0.189	12.50	1.90	0.00804	0.126
12.55	15.08	0.05802	0.247	12.55	1.83	0.00771	0.134
12.60	16.96	0.06620	0.313	12.60	1.74	0.00738	0.141
12.65	18.57	0.07341	0.386	12.65	1.69	0.00709	0.149
12.70	19.79	0.07926	0.465	12.70	1.67	0.00694	0.155
12.75	20.66	0.08357	0.549	12.75	1.67	0.00690	0.162
12.80	21.18	0.08645	0.636	12.80	1.66	0.00688	0.169
12.85	21.39	0.08795	0.723	12.85	1.66	0.00686	0.176
12.90	21.25	0.08810	0.812	12.90	1.65	0.00684	0.183
12.95	20.98	0.08725	0.899	12.95	1.65	0.00682	0.190
13.00	20.61	0.08593	0.985	13.00	1.64	0.00680	0.197
13.05	20.05	0.08401	1.069	13.05	1.64	0.00678	0.203
13.10	19.43	0.08157	1.150	13.10	1.63	0.00676	0.210
13.15	18.78	0.07895	1.229	13.15	1.62	0.00671	0.217
13.20	18.03	0.07605	1.305	13.20	1.61	0.00667	0.224
13.25	17.25	0.07289	1.378	13.25	1.61	0.00665	0.230
13.30	16.43	0.06959	1.448	13.30	1.59	0.00661	0.237
13.35	15.56	0.06610	1.514	13.35	1.59	0.00657	0.243
13.40	14.72	0.06256	1.576	13.40	1.58	0.00655	0.250
13.45	13.93	0.05919	1.636	13.45	1.57	0.00651	0.256
13.50	13.20	0.05605	1.692	13.50	1.56	0.00647	0.263
13.55	12.52	0.05314	1.745	13.55	1.54	0.00640	0.269
13.60	11.89	0.05043	1.795	13.60	1.51	0.00630	0.276
13.65	11.29	0.04789	1.843	13.65	1.49	0.00620	0.282
13.70	10.74	0.04552	1.889	13.70	1.49	0.00616	0.288
13.75	10.22	0.04331	1.932	13.75	1.49	0.00616	0.294

2-YEAR VOLUMETRIC COMPARISON

2-Year Existing Volume				2-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
13.80	9.72	0.04120	1.973	13.80	1.49	0.00616	0.300
13.85	9.24	0.03917	2.012	13.85	1.49	0.00616	0.306
13.90	8.77	0.03721	2.050	13.90	1.49	0.00616	0.313
13.95	8.32	0.03531	2.085	13.95	1.49	0.00616	0.319
14.00	7.90	0.03351	2.118	14.00	1.49	0.00616	0.325
14.05	7.50	0.03182	2.150	14.05	1.49	0.00616	0.331
14.10	7.11	0.03019	2.180	14.10	1.49	0.00616	0.337
14.15	6.74	0.02862	2.209	14.15	1.49	0.00616	0.343
14.20	6.40	0.02715	2.236	14.20	1.49	0.00616	0.350
14.25	6.07	0.02576	2.262	14.25	1.49	0.00616	0.356
14.30	5.77	0.02446	2.286	14.30	1.50	0.00618	0.362
14.35	5.50	0.02329	2.310	14.35	1.50	0.00620	0.368
14.40	5.24	0.02219	2.332	14.40	1.50	0.00620	0.374
14.45	5.01	0.02118	2.353	14.45	1.50	0.00620	0.380
14.50	4.80	0.02027	2.373	14.50	1.50	0.00620	0.387
14.55	4.60	0.01942	2.393	14.55	1.50	0.00620	0.393
14.60	4.42	0.01864	2.411	14.60	1.50	0.00620	0.399
14.65	4.27	0.01795	2.429	14.65	1.50	0.00620	0.405
14.70	4.12	0.01733	2.447	14.70	1.50	0.00620	0.411
14.75	3.99	0.01676	2.463	14.75	1.50	0.00620	0.418
14.80	3.88	0.01626	2.480	14.80	1.50	0.00620	0.424
14.85	3.77	0.01581	2.495	14.85	1.50	0.00620	0.430
14.90	3.67	0.01537	2.511	14.90	1.50	0.00620	0.436
14.95	3.59	0.01500	2.526	14.95	1.50	0.00620	0.442
15.00	3.51	0.01467	2.541	15.00	1.50	0.00620	0.449
15.05	3.44	0.01436	2.555	15.05	1.50	0.00620	0.455
15.10	3.38	0.01409	2.569	15.10	1.48	0.00616	0.461
15.15	3.31	0.01382	2.583	15.15	1.46	0.00607	0.467
15.20	3.25	0.01355	2.596	15.20	1.46	0.00603	0.473
15.25	3.20	0.01333	2.610	15.25	1.46	0.00603	0.479
15.30	3.14	0.01310	2.623	15.30	1.46	0.00603	0.485
15.35	3.08	0.01285	2.636	15.35	1.46	0.00603	0.491
15.40	3.02	0.01260	2.648	15.40	1.46	0.00603	0.497
15.45	2.94	0.01231	2.661	15.45	1.46	0.00603	0.503
15.50	2.87	0.01200	2.673	15.50	1.46	0.00603	0.509
15.55	2.79	0.01169	2.684	15.55	1.46	0.00603	0.515
15.60	2.71	0.01136	2.696	15.60	1.46	0.00603	0.521
15.65	2.63	0.01103	2.707	15.65	1.46	0.00603	0.527
15.70	2.55	0.01070	2.717	15.70	1.46	0.00603	0.533
15.75	2.47	0.01037	2.728	15.75	1.46	0.00603	0.539
15.80	2.39	0.01004	2.738	15.80	1.46	0.00603	0.545

2-YEAR VOLUMETRIC COMPARISON							
2-Year Existing Volume				2-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
15.85	2.32	0.00973	2.748	15.85	1.46	0.00603	0.552
15.90	2.25	0.00944	2.757	15.90	1.46	0.00603	0.558
15.95	2.19	0.00917	2.766	15.95	1.46	0.00603	0.564
16.00	2.13	0.00893	2.775	16.00	1.46	0.00603	0.570
16.05	2.08	0.00870	2.784	16.05	1.46	0.00603	0.576
16.10	2.03	0.00849	2.792	16.10	1.46	0.00603	0.582
16.15	1.98	0.00829	2.801	16.15	1.46	0.00603	0.588
16.20	1.94	0.00810	2.809	16.20	1.46	0.00603	0.594
16.25	1.90	0.00793	2.817	16.25	1.46	0.00603	0.600
16.30	1.87	0.00779	2.824	16.30	1.46	0.00603	0.606
16.35	1.84	0.00767	2.832	16.35	1.46	0.00603	0.612
16.40	1.81	0.00754	2.840	16.40	1.46	0.00603	0.618
16.45	1.78	0.00742	2.847	16.45	1.46	0.00603	0.624
16.50	1.76	0.00731	2.854	16.50	1.46	0.00603	0.630
16.55	1.73	0.00721	2.861	16.55	1.46	0.00603	0.636
16.60	1.71	0.00711	2.869	16.60	1.46	0.00603	0.642
16.65	1.69	0.00702	2.876	16.65	1.46	0.00603	0.648
16.70	1.68	0.00696	2.883	16.70	1.46	0.00603	0.654
16.75	1.66	0.00690	2.889	16.75	1.46	0.00603	0.660
16.80	1.64	0.00682	2.896	16.80	1.46	0.00603	0.666
16.85	1.63	0.00676	2.903	16.85	1.46	0.00603	0.672
16.90	1.62	0.00671	2.910	16.90	1.46	0.00603	0.678
16.95	1.60	0.00665	2.916	16.95	1.46	0.00603	0.684
17.00	1.59	0.00659	2.923	17.00	1.46	0.00603	0.690
17.05	1.58	0.00655	2.930	17.05	1.46	0.00603	0.696
17.10	1.57	0.00651	2.936	17.10	1.46	0.00603	0.702
17.15	1.56	0.00647	2.943	17.15	1.46	0.00603	0.708
17.20	1.55	0.00643	2.949	17.20	1.46	0.00603	0.714
17.25	1.53	0.00636	2.955	17.25	1.46	0.00603	0.720
17.30	1.52	0.00630	2.962	17.30	1.46	0.00603	0.726
17.35	1.52	0.00628	2.968	17.35	1.46	0.00603	0.732
17.40	1.51	0.00626	2.974	17.40	1.46	0.00603	0.739
17.45	1.50	0.00622	2.980	17.45	1.46	0.00603	0.745
17.50	1.49	0.00618	2.987	17.50	1.46	0.00603	0.751
17.55	1.48	0.00614	2.993	17.55	1.46	0.00603	0.757
17.60	1.47	0.00610	2.999	17.60	1.46	0.00603	0.763
17.65	1.46	0.00605	3.005	17.65	1.46	0.00603	0.769
17.70	1.45	0.00601	3.011	17.70	1.46	0.00603	0.775
17.75	1.44	0.00597	3.017	17.75	1.46	0.00603	0.781
17.80	1.44	0.00595	3.023	17.80	1.46	0.00603	0.787
17.85	1.43	0.00593	3.029	17.85	1.46	0.00603	0.793

2-YEAR VOLUMETRIC COMPARISON

2-Year Existing Volume				2-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
17.90	1.42	0.00589	3.035	17.90	1.46	0.00603	0.799
17.95	1.41	0.00585	3.040	17.95	1.46	0.00603	0.805
18.00	1.40	0.00581	3.046	18.00	1.46	0.00603	0.811
18.05	1.39	0.00576	3.052	18.05	1.46	0.00603	0.817
18.10	1.39	0.00574	3.058	18.10	1.46	0.00603	0.823
18.15	1.38	0.00572	3.063	18.15	1.46	0.00603	0.829
18.20	1.37	0.00568	3.069	18.20	1.46	0.00603	0.835
18.25	1.36	0.00564	3.075	18.25	1.46	0.00603	0.841
18.30	1.35	0.00560	3.080	18.30	1.46	0.00603	0.847
18.35	1.35	0.00558	3.086	18.35	1.46	0.00603	0.853
18.40	1.34	0.00556	3.092	18.40	1.46	0.00603	0.859
18.45	1.33	0.00552	3.097	18.45	1.46	0.00603	0.865
18.50	1.32	0.00548	3.103	18.50	1.46	0.00603	0.871
18.55	1.31	0.00543	3.108	18.55	1.46	0.00603	0.877
18.60	1.31	0.00541	3.113	18.60	1.46	0.00603	0.883
18.65	1.30	0.00539	3.119	18.65	1.46	0.00603	0.889
18.70	1.29	0.00535	3.124	18.70	1.46	0.00603	0.895
18.75	1.28	0.00531	3.129	18.75	1.45	0.00601	0.901
18.80	1.27	0.00527	3.135	18.80	1.45	0.00599	0.907
18.85	1.27	0.00525	3.140	18.85	1.45	0.00599	0.913
18.90	1.26	0.00523	3.145	18.90	1.45	0.00599	0.919
18.95	1.25	0.00519	3.150	18.95	1.45	0.00599	0.925
19.00	1.24	0.00514	3.156	19.00	1.45	0.00599	0.931
19.05	1.23	0.00510	3.161	19.05	1.45	0.00599	0.937
19.10	1.23	0.00508	3.166	19.10	1.45	0.00599	0.943
19.15	1.22	0.00506	3.171	19.15	1.45	0.00599	0.949
19.20	1.21	0.00502	3.176	19.20	1.45	0.00599	0.955
19.25	1.20	0.00498	3.181	19.25	1.45	0.00599	0.961
19.30	1.20	0.00496	3.186	19.30	1.45	0.00599	0.967
19.35	1.19	0.00494	3.191	19.35	1.45	0.00599	0.973
19.40	1.18	0.00490	3.196	19.40	1.45	0.00599	0.979
19.45	1.17	0.00486	3.200	19.45	1.45	0.00599	0.985
19.50	1.16	0.00481	3.205	19.50	1.45	0.00599	0.991
19.55	1.15	0.00477	3.210	19.55	1.45	0.00599	0.997
19.60	1.15	0.00475	3.215	19.60	1.45	0.00599	1.003
19.65	1.14	0.00473	3.219	19.65	1.45	0.00599	1.009
19.70	1.13	0.00469	3.224	19.70	1.45	0.00599	1.015
19.75	1.12	0.00465	3.229	19.75	1.45	0.00599	1.021
19.80	1.11	0.00461	3.233	19.80	1.45	0.00599	1.027
19.85	1.11	0.00459	3.238	19.85	1.45	0.00599	1.033
19.90	1.10	0.00457	3.243	19.90	1.45	0.00599	1.039

2-YEAR VOLUMETRIC COMPARISON

2-Year Existing Volume				2-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
19.95	1.09	0.00452	3.247	19.95	1.45	0.00599	1.045
20.00	1.08	0.00448	3.252	20.00	1.45	0.00599	1.051
20.05	1.07	0.00444	3.256	20.05	1.45	0.00599	1.057
20.10	1.06	0.00440	3.260	20.10	1.45	0.00599	1.063
20.15	1.06	0.00438	3.265	20.15	1.44	0.00597	1.069
20.20	1.05	0.00436	3.269	20.20	1.44	0.00595	1.075
20.25	1.04	0.00432	3.273	20.25	1.44	0.00595	1.081
20.30	1.03	0.00428	3.278	20.30	1.44	0.00595	1.087
20.35	1.02	0.00424	3.282	20.35	1.44	0.00595	1.093
20.40	1.01	0.00419	3.286	20.40	1.44	0.00595	1.099
20.45	1.01	0.00417	3.290	20.45	1.44	0.00595	1.105
20.50	1.00	0.00415	3.295	20.50	1.44	0.00595	1.111
20.55	0.99	0.00411	3.299	20.55	1.44	0.00595	1.117
20.60	0.98	0.00407	3.303	20.60	1.44	0.00595	1.123
20.65	0.97	0.00403	3.307	20.65	1.44	0.00595	1.129
20.70	0.96	0.00399	3.311	20.70	1.44	0.00595	1.135
20.75	0.96	0.00397	3.315	20.75	1.44	0.00595	1.141
20.80	0.95	0.00395	3.319	20.80	1.44	0.00595	1.147
20.85	0.94	0.00390	3.323	20.85	1.44	0.00595	1.152
20.90	0.93	0.00386	3.326	20.90	1.44	0.00595	1.158
20.95	0.92	0.00382	3.330	20.95	1.44	0.00595	1.164
21.00	0.91	0.00378	3.334	21.00	1.44	0.00595	1.170
21.05	0.91	0.00376	3.338	21.05	1.44	0.00595	1.176
21.10	0.90	0.00374	3.342	21.10	1.44	0.00595	1.182
21.15	0.89	0.00370	3.345	21.15	1.43	0.00593	1.188
21.20	0.88	0.00366	3.349	21.20	1.43	0.00591	1.194
21.25	0.87	0.00362	3.352	21.25	1.43	0.00591	1.200
21.30	0.86	0.00357	3.356	21.30	1.43	0.00591	1.206
21.35	0.86	0.00355	3.360	21.35	1.43	0.00591	1.212
21.40	0.85	0.00353	3.363	21.40	1.43	0.00591	1.218
21.45	0.84	0.00349	3.367	21.45	1.43	0.00591	1.224
21.50	0.83	0.00345	3.370	21.50	1.43	0.00591	1.230
21.55	0.82	0.00341	3.373	21.55	1.43	0.00591	1.235
21.60	0.81	0.00337	3.377	21.60	1.43	0.00591	1.241
21.65	0.81	0.00335	3.380	21.65	1.43	0.00591	1.247
21.70	0.80	0.00333	3.384	21.70	1.43	0.00591	1.253
21.75	0.79	0.00329	3.387	21.75	1.43	0.00591	1.259
21.80	0.78	0.00324	3.390	21.80	1.43	0.00591	1.265
21.85	0.77	0.00320	3.393	21.85	1.43	0.00591	1.271
21.90	0.76	0.00316	3.396	21.90	1.43	0.00591	1.277
21.95	0.75	0.00312	3.400	21.95	1.42	0.00589	1.283

2-YEAR VOLUMETRIC COMPARISON							
2-Year Existing Volume				2-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
22.00	0.75	0.00310	3.403	22.00	1.42	0.00587	1.289
22.05	0.74	0.00308	3.406	22.05	1.42	0.00587	1.294
22.10	0.73	0.00304	3.409	22.10	1.42	0.00587	1.300
22.15	0.72	0.00300	3.412	22.15	1.42	0.00587	1.306
22.20	0.71	0.00295	3.415	22.20	1.42	0.00587	1.312
22.25	0.70	0.00291	3.418	22.25	1.42	0.00587	1.318
22.30	0.69	0.00287	3.420	22.30	1.42	0.00587	1.324
22.35	0.68	0.00283	3.423	22.35	1.42	0.00587	1.330
22.40	0.68	0.00281	3.426	22.40	1.42	0.00587	1.335
22.45	0.67	0.00279	3.429	22.45	1.42	0.00587	1.341
22.50	0.66	0.00275	3.432	22.50	1.42	0.00587	1.347
22.55	0.65	0.00271	3.434	22.55	1.42	0.00587	1.353
22.60	0.64	0.00267	3.437	22.60	1.42	0.00587	1.359
22.65	0.63	0.00262	3.440	22.65	1.41	0.00585	1.365
22.70	0.62	0.00258	3.442	22.70	1.41	0.00583	1.371
22.75	0.62	0.00256	3.445	22.75	1.41	0.00583	1.376
22.80	0.61	0.00254	3.447	22.80	1.41	0.00583	1.382
22.85	0.60	0.00250	3.450	22.85	1.41	0.00583	1.388
22.90	0.59	0.00246	3.452	22.90	1.41	0.00583	1.394
22.95	0.58	0.00242	3.455	22.95	1.41	0.00583	1.400
23.00	0.57	0.00238	3.457	23.00	1.41	0.00583	1.406
23.05	0.56	0.00233	3.459	23.05	1.41	0.00583	1.411
23.10	0.56	0.00231	3.462	23.10	1.41	0.00583	1.417
23.15	0.55	0.00229	3.464	23.15	1.41	0.00583	1.423
23.20	0.54	0.00225	3.466	23.20	1.41	0.00583	1.429
23.25	0.53	0.00221	3.469	23.25	1.41	0.00583	1.435
23.30	0.52	0.00217	3.471	23.30	1.40	0.00581	1.441
23.35	0.51	0.00213	3.473	23.35	1.40	0.00579	1.446
23.40	0.50	0.00209	3.475	23.40	1.40	0.00579	1.452
23.45	0.49	0.00205	3.477	23.45	1.40	0.00579	1.458
23.50	0.49	0.00202	3.479	23.50	1.40	0.00579	1.464
23.55	0.48	0.00200	3.481	23.55	1.40	0.00579	1.469
23.60	0.47	0.00196	3.483	23.60	1.40	0.00579	1.475
23.65	0.46	0.00192	3.485	23.65	1.40	0.00579	1.481
23.70	0.45	0.00188	3.487	23.70	1.40	0.00579	1.487
23.75	0.44	0.00184	3.489	23.75	1.40	0.00579	1.493

EXISTING VOLUME

PROPOSED VOLUME

100-YEAR VOLUMETRIC COMPARISON							
100-Year Existing Volume				100-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
11.75	7.89	X	X	11.75	2.57	X	X
11.80	8.63	0.03413	0.034	11.80	2.92	0.01134	0.011
11.85	9.47	0.03740	0.072	11.85	3.43	0.01312	0.024
11.90	10.50	0.04126	0.113	11.90	3.98	0.01531	0.040
11.95	11.75	0.04597	0.159	11.95	4.84	0.01822	0.058
12.00	13.32	0.05180	0.211	12.00	6.10	0.02260	0.081
12.05	15.31	0.05915	0.270	12.05	8.55	0.03027	0.111
12.10	17.97	0.06876	0.338	12.10	11.66	0.04176	0.153
12.15	21.54	0.08163	0.420	12.15	18.41	0.06213	0.215
12.20	26.40	0.09905	0.519	12.20	28.46	0.09684	0.312
12.25	32.74	0.12219	0.641	12.25	30.29	0.12138	0.433
12.30	40.70	0.15174	0.793	12.30	32.28	0.12928	0.562
12.35	49.86	0.18711	0.980	12.35	33.96	0.13686	0.699
12.40	59.87	0.22671	1.207	12.40	35.23	0.14295	0.842
12.45	70.12	0.26857	1.475	12.45	36.27	0.14773	0.990
12.50	79.73	0.30961	1.785	12.50	37.08	0.15155	1.141
12.55	88.40	0.34738	2.132	12.55	37.50	0.15409	1.295
12.60	95.69	0.38035	2.513	12.60	37.67	0.15531	1.451
12.65	101.53	0.40748	2.920	12.65	37.50	0.15531	1.606
12.70	105.44	0.42762	3.348	12.70	37.22	0.15438	1.760
12.75	107.54	0.44004	3.788	12.75	36.90	0.15314	1.914
12.80	108.07	0.44548	4.233	12.80	36.58	0.15182	2.065
12.85	107.25	0.44488	4.678	12.85	36.23	0.15043	2.216
12.90	104.88	0.43829	5.117	12.90	35.87	0.14897	2.365
12.95	102.06	0.42756	5.544	12.95	35.49	0.14744	2.512
13.00	98.92	0.41525	5.959	13.00	35.10	0.14585	2.658
13.05	95.03	0.40072	6.360	13.05	34.69	0.14419	2.802
13.10	90.97	0.38430	6.744	13.10	34.27	0.14248	2.945
13.15	86.82	0.36733	7.112	13.15	33.84	0.14072	3.085
13.20	82.36	0.34955	7.461	13.20	33.40	0.13893	3.224
13.25	77.85	0.33101	7.792	13.25	32.94	0.13707	3.361
13.30	73.34	0.31238	8.105	13.30	32.60	0.13541	3.497
13.35	68.69	0.29345	8.398	13.35	32.21	0.13390	3.631
13.40	64.27	0.27471	8.673	13.40	31.82	0.13229	3.763
13.45	60.17	0.25711	8.930	13.45	31.39	0.13060	3.894
13.50	56.50	0.24105	9.171	13.50	30.96	0.12882	4.023
13.55	53.08	0.22640	9.397	13.55	30.50	0.12698	4.149
13.60	49.96	0.21289	9.610	13.60	30.02	0.12504	4.275
13.65	47.05	0.20043	9.811	13.65	29.45	0.12287	4.397
13.70	44.37	0.18888	10.000	13.70	28.90	0.12056	4.518
13.75	41.88	0.17820	10.178	13.75	28.37	0.11833	4.636

100-YEAR VOLUMETRIC COMPARISON							
100-Year Existing Volume				100-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
13.80	39.55	0.16824	10.346	13.80	27.87	0.11620	4.752
13.85	37.31	0.15880	10.505	13.85	27.40	0.11419	4.867
13.90	35.19	0.14979	10.655	13.90	26.94	0.11227	4.979
13.95	33.16	0.14122	10.796	13.95	26.50	0.11041	5.089
14.00	31.27	0.13312	10.929	14.00	26.09	0.10866	5.198
14.05	29.50	0.12556	11.055	14.05	25.69	0.10698	5.305
14.10	27.81	0.11841	11.173	14.10	25.30	0.10535	5.410
14.15	26.23	0.11165	11.285	14.15	24.93	0.10378	5.514
14.20	24.77	0.10537	11.390	14.20	24.58	0.10229	5.616
14.25	23.39	0.09950	11.490	14.25	24.24	0.10087	5.717
14.30	22.11	0.09401	11.584	14.30	23.92	0.09950	5.817
14.35	20.97	0.08901	11.673	14.35	23.61	0.09820	5.915
14.40	19.88	0.08440	11.757	14.40	23.31	0.09694	6.012
14.45	18.89	0.08010	11.837	14.45	23.02	0.09572	6.108
14.50	18.01	0.07624	11.913	14.50	22.74	0.09455	6.202
14.55	17.21	0.07277	11.986	14.55	22.47	0.09341	6.296
14.60	16.47	0.06959	12.056	14.60	22.22	0.09233	6.388
14.65	15.83	0.06674	12.122	14.65	21.97	0.09130	6.479
14.70	15.22	0.06415	12.187	14.70	21.73	0.09029	6.570
14.75	14.69	0.06180	12.248	14.75	21.50	0.08932	6.659
14.80	14.21	0.05971	12.308	14.80	21.28	0.08839	6.747
14.85	13.77	0.05781	12.366	14.85	21.06	0.08748	6.835
14.90	13.36	0.05605	12.422	14.90	20.86	0.08661	6.921
14.95	13.02	0.05450	12.476	14.95	20.65	0.08576	7.007
15.00	12.68	0.05310	12.529	15.00	20.46	0.08494	7.092
15.05	12.38	0.05178	12.581	15.05	20.27	0.08415	7.176
15.10	12.12	0.05062	12.632	15.10	20.06	0.08333	7.260
15.15	11.86	0.04955	12.681	15.15	19.79	0.08233	7.342
15.20	11.62	0.04851	12.730	15.20	19.54	0.08126	7.423
15.25	11.38	0.04752	12.777	15.25	19.30	0.08025	7.503
15.30	11.15	0.04655	12.824	15.30	19.07	0.07928	7.583
15.35	10.90	0.04556	12.870	15.35	18.86	0.07837	7.661
15.40	10.66	0.04455	12.914	15.40	18.65	0.07750	7.739
15.45	10.38	0.04347	12.958	15.45	18.45	0.07665	7.815
15.50	10.10	0.04231	13.000	15.50	18.25	0.07583	7.891
15.55	9.82	0.04116	13.041	15.55	18.06	0.07502	7.966
15.60	9.51	0.03994	13.081	15.60	17.88	0.07426	8.040
15.65	9.21	0.03868	13.120	15.65	17.71	0.07353	8.114
15.70	8.92	0.03746	13.157	15.70	17.54	0.07283	8.187
15.75	8.62	0.03624	13.193	15.75	17.37	0.07213	8.259
15.80	8.34	0.03504	13.228	15.80	17.21	0.07145	8.330

100-YEAR VOLUMETRIC COMPARISON							
100-Year Existing Volume				100-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
15.85	8.08	0.03393	13.262	15.85	17.06	0.07081	8.401
15.90	7.82	0.03285	13.295	15.90	16.91	0.07019	8.471
15.95	7.59	0.03184	13.327	15.95	16.76	0.06957	8.541
16.00	7.39	0.03095	13.358	16.00	16.62	0.06897	8.610
16.05	7.20	0.03014	13.388	16.05	16.48	0.06839	8.678
16.10	7.02	0.02938	13.418	16.10	16.35	0.06783	8.746
16.15	6.86	0.02868	13.446	16.15	16.22	0.06729	8.813
16.20	6.70	0.02802	13.474	16.20	16.09	0.06676	8.880
16.25	6.56	0.02740	13.502	16.25	15.97	0.06624	8.946
16.30	6.44	0.02686	13.528	16.30	15.85	0.06574	9.012
16.35	6.33	0.02638	13.555	16.35	15.73	0.06525	9.077
16.40	6.22	0.02593	13.581	16.40	15.61	0.06475	9.142
16.45	6.13	0.02552	13.606	16.45	15.50	0.06428	9.206
16.50	6.04	0.02514	13.631	16.50	15.39	0.06382	9.270
16.55	5.96	0.02479	13.656	16.55	15.29	0.06339	9.333
16.60	5.89	0.02448	13.681	16.60	15.18	0.06295	9.396
16.65	5.82	0.02419	13.705	16.65	15.08	0.06252	9.459
16.70	5.75	0.02390	13.729	16.70	14.98	0.06211	9.521
16.75	5.70	0.02366	13.752	16.75	14.88	0.06169	9.583
16.80	5.64	0.02343	13.776	16.80	14.79	0.06130	9.644
16.85	5.59	0.02320	13.799	16.85	14.69	0.06091	9.705
16.90	5.54	0.02300	13.822	16.90	14.60	0.06052	9.765
16.95	5.49	0.02279	13.845	16.95	14.51	0.06014	9.826
17.00	5.44	0.02258	13.867	17.00	14.42	0.05977	9.885
17.05	5.40	0.02240	13.890	17.05	14.33	0.05940	9.945
17.10	5.35	0.02221	13.912	17.10	14.25	0.05905	10.004
17.15	5.31	0.02202	13.934	17.15	14.16	0.05870	10.063
17.20	5.28	0.02188	13.956	17.20	14.08	0.05835	10.121
17.25	5.24	0.02174	13.978	17.25	14.00	0.05802	10.179
17.30	5.20	0.02157	13.999	17.30	13.92	0.05769	10.237
17.35	5.17	0.02143	14.021	17.35	13.84	0.05736	10.294
17.40	5.13	0.02128	14.042	17.40	13.76	0.05702	10.351
17.45	5.10	0.02114	14.063	17.45	13.69	0.05671	10.408
17.50	5.07	0.02101	14.084	17.50	13.61	0.05640	10.464
17.55	5.03	0.02087	14.105	17.55	13.54	0.05610	10.520
17.60	5.00	0.02072	14.126	17.60	13.46	0.05579	10.576
17.65	4.97	0.02060	14.146	17.65	13.39	0.05548	10.631
17.70	4.94	0.02048	14.167	17.70	13.32	0.05519	10.687
17.75	4.91	0.02035	14.187	17.75	13.25	0.05490	10.742
17.80	4.88	0.02023	14.207	17.80	13.18	0.05461	10.796
17.85	4.85	0.02010	14.227	17.85	13.11	0.05432	10.850

100-YEAR VOLUMETRIC COMPARISON

100-Year Existing Volume				100-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
17.90	4.82	0.01998	14.247	17.90	13.04	0.05403	10.904
17.95	4.79	0.01986	14.267	17.95	12.98	0.05376	10.958
18.00	4.76	0.01973	14.287	18.00	12.91	0.05349	11.012
18.05	4.73	0.01961	14.307	18.05	12.85	0.05322	11.065
18.10	4.70	0.01948	14.326	18.10	12.78	0.05295	11.118
18.15	4.67	0.01936	14.345	18.15	12.72	0.05269	11.171
18.20	4.64	0.01924	14.365	18.20	12.65	0.05242	11.223
18.25	4.62	0.01913	14.384	18.25	12.59	0.05215	11.275
18.30	4.58	0.01901	14.403	18.30	12.53	0.05190	11.327
18.35	4.56	0.01888	14.422	18.35	12.47	0.05165	11.379
18.40	4.53	0.01878	14.441	18.40	12.41	0.05140	11.430
18.45	4.50	0.01866	14.459	18.45	12.35	0.05116	11.481
18.50	4.47	0.01853	14.478	18.50	12.29	0.05091	11.532
18.55	4.44	0.01841	14.496	18.55	12.23	0.05066	11.583
18.60	4.41	0.01829	14.514	18.60	12.17	0.05041	11.633
18.65	4.38	0.01816	14.533	18.65	12.11	0.05017	11.683
18.70	4.36	0.01806	14.551	18.70	12.05	0.04992	11.733
18.75	4.33	0.01795	14.569	18.75	11.99	0.04967	11.783
18.80	4.30	0.01783	14.586	18.80	11.94	0.04944	11.832
18.85	4.27	0.01771	14.604	18.85	11.88	0.04921	11.882
18.90	4.24	0.01758	14.622	18.90	11.82	0.04897	11.931
18.95	4.21	0.01746	14.639	18.95	11.76	0.04872	11.979
19.00	4.19	0.01736	14.657	19.00	11.71	0.04849	12.028
19.05	4.16	0.01725	14.674	19.05	11.65	0.04826	12.076
19.10	4.13	0.01713	14.691	19.10	11.60	0.04804	12.124
19.15	4.10	0.01700	14.708	19.15	11.54	0.04781	12.172
19.20	4.07	0.01688	14.725	19.20	11.49	0.04758	12.220
19.25	4.04	0.01676	14.742	19.25	11.43	0.04736	12.267
19.30	4.02	0.01665	14.758	19.30	11.38	0.04713	12.314
19.35	3.99	0.01655	14.775	19.35	11.32	0.04690	12.361
19.40	3.96	0.01643	14.791	19.40	11.27	0.04667	12.408
19.45	3.93	0.01630	14.807	19.45	11.22	0.04647	12.454
19.50	3.90	0.01618	14.824	19.50	11.16	0.04624	12.500
19.55	3.88	0.01607	14.840	19.55	11.11	0.04601	12.546
19.60	3.85	0.01597	14.856	19.60	11.06	0.04581	12.592
19.65	3.82	0.01585	14.872	19.65	11.00	0.04558	12.638
19.70	3.79	0.01572	14.887	19.70	10.95	0.04535	12.683
19.75	3.76	0.01560	14.903	19.75	10.90	0.04514	12.728
19.80	3.73	0.01548	14.918	19.80	10.85	0.04494	12.773
19.85	3.71	0.01537	14.934	19.85	10.80	0.04473	12.818
19.90	3.68	0.01527	14.949	19.90	10.75	0.04452	12.862

100-YEAR VOLUMETRIC COMPARISON							
100-Year Existing Volume				100-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
19.95	3.65	0.01514	14.964	19.95	10.70	0.04432	12.907
20.00	3.62	0.01502	14.979	20.00	10.64	0.04409	12.951
20.05	3.59	0.01490	14.994	20.05	10.59	0.04386	12.995
20.10	3.56	0.01477	15.009	20.10	10.54	0.04366	13.038
20.15	3.54	0.01467	15.023	20.15	10.49	0.04345	13.082
20.20	3.51	0.01457	15.038	20.20	10.44	0.04324	13.125
20.25	3.48	0.01444	15.053	20.25	10.39	0.04304	13.168
20.30	3.45	0.01432	15.067	20.30	10.34	0.04283	13.211
20.35	3.42	0.01419	15.081	20.35	10.29	0.04262	13.254
20.40	3.39	0.01407	15.095	20.40	10.25	0.04244	13.296
20.45	3.36	0.01395	15.109	20.45	10.20	0.04225	13.338
20.50	3.34	0.01384	15.123	20.50	10.15	0.04205	13.380
20.55	3.31	0.01374	15.137	20.55	10.10	0.04184	13.422
20.60	3.28	0.01362	15.150	20.60	10.05	0.04163	13.464
20.65	3.25	0.01349	15.164	20.65	10.00	0.04143	13.505
20.70	3.22	0.01337	15.177	20.70	9.62	0.04054	13.546
20.75	3.19	0.01324	15.190	20.75	9.27	0.03903	13.585
20.80	3.17	0.01314	15.203	20.80	8.95	0.03764	13.622
20.85	3.14	0.01304	15.217	20.85	8.65	0.03636	13.659
20.90	3.11	0.01291	15.229	20.90	8.37	0.03517	13.694
20.95	3.08	0.01279	15.242	20.95	8.11	0.03405	13.728
21.00	3.05	0.01267	15.255	21.00	7.87	0.03302	13.761
21.05	3.02	0.01254	15.267	21.05	7.65	0.03207	13.793
21.10	2.99	0.01242	15.280	21.10	7.43	0.03116	13.824
21.15	2.96	0.01229	15.292	21.15	7.23	0.03029	13.854
21.20	2.94	0.01219	15.304	21.20	7.04	0.02948	13.884
21.25	2.91	0.01209	15.316	21.25	6.87	0.02874	13.913
21.30	2.88	0.01196	15.328	21.30	6.70	0.02804	13.941
21.35	2.85	0.01184	15.340	21.35	6.54	0.02736	13.968
21.40	2.82	0.01171	15.352	21.40	6.39	0.02671	13.995
21.45	2.79	0.01159	15.364	21.45	6.25	0.02612	14.021
21.50	2.76	0.01147	15.375	21.50	6.12	0.02556	14.046
21.55	2.74	0.01136	15.386	21.55	5.99	0.02502	14.071
21.60	2.71	0.01126	15.398	21.60	5.87	0.02450	14.096
21.65	2.68	0.01114	15.409	21.65	5.75	0.02401	14.120
21.70	2.65	0.01101	15.420	21.70	5.64	0.02353	14.144
21.75	2.62	0.01089	15.431	21.75	5.54	0.02310	14.167
21.80	2.59	0.01076	15.441	21.80	5.44	0.02269	14.189
21.85	2.56	0.01064	15.452	21.85	5.34	0.02227	14.212
21.90	2.53	0.01052	15.463	21.90	5.25	0.02188	14.233
21.95	2.51	0.01041	15.473	21.95	5.16	0.02151	14.255

100-YEAR VOLUMETRIC COMPARISON							
100-Year Existing Volume				100-Year Proposed Volume			
Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)	Time (hours)	Outflow (cfs)	Incremental Volume (Ac-ft)	Total Volume (Ac-ft)
22.00	2.48	0.01031	15.483	22.00	5.07	0.02114	14.276
22.05	2.45	0.01019	15.493	22.05	4.99	0.02079	14.297
22.10	2.42	0.01006	15.504	22.10	4.91	0.02045	14.317
22.15	2.39	0.00994	15.513	22.15	4.84	0.02014	14.338
22.20	2.36	0.00981	15.523	22.20	4.76	0.01983	14.357
22.25	2.33	0.00969	15.533	22.25	4.69	0.01952	14.377
22.30	2.30	0.00957	15.543	22.30	4.62	0.01924	14.396
22.35	2.27	0.00944	15.552	22.35	4.56	0.01897	14.415
22.40	2.24	0.00932	15.561	22.40	4.49	0.01870	14.434
22.45	2.22	0.00921	15.571	22.45	4.43	0.01843	14.452
22.50	2.19	0.00911	15.580	22.50	4.37	0.01818	14.470
22.55	2.16	0.00899	15.589	22.55	4.31	0.01793	14.488
22.60	2.13	0.00886	15.597	22.60	4.25	0.01769	14.506
22.65	2.10	0.00874	15.606	22.65	4.20	0.01746	14.523
22.70	2.07	0.00862	15.615	22.70	4.14	0.01723	14.541
22.75	2.04	0.00849	15.623	22.75	4.09	0.01700	14.558
22.80	2.01	0.00837	15.632	22.80	4.04	0.01680	14.574
22.85	1.98	0.00824	15.640	22.85	3.99	0.01659	14.591
22.90	1.96	0.00814	15.648	22.90	3.94	0.01638	14.607
22.95	1.93	0.00804	15.656	22.95	3.89	0.01618	14.624
23.00	1.90	0.00791	15.664	23.00	3.85	0.01599	14.640
23.05	1.87	0.00779	15.672	23.05	3.80	0.01581	14.655
23.10	1.84	0.00767	15.679	23.10	3.76	0.01562	14.671
23.15	1.81	0.00754	15.687	23.15	3.72	0.01545	14.687
23.20	1.78	0.00742	15.694	23.20	3.67	0.01527	14.702
23.25	1.75	0.00729	15.702	23.25	3.63	0.01508	14.717
23.30	1.72	0.00717	15.709	23.30	3.59	0.01492	14.732
23.35	1.70	0.00707	15.716	23.35	3.55	0.01475	14.747
23.40	1.67	0.00696	15.723	23.40	3.51	0.01459	14.761
23.45	1.64	0.00684	15.730	23.45	3.48	0.01444	14.776
23.50	1.61	0.00671	15.736	23.50	3.44	0.01430	14.790
23.55	1.58	0.00659	15.743	23.55	3.40	0.01413	14.804
23.60	1.55	0.00647	15.750	23.60	3.37	0.01399	14.818
23.65	1.52	0.00634	15.756	23.65	3.33	0.01384	14.832
23.70	1.49	0.00622	15.762	23.70	3.30	0.01370	14.846
23.75	1.46	0.00610	15.768	23.75	3.26	0.01355	14.859

EXISTING VOLUME

PROPOSED VOLUME

APPENDIX 5
POST DEVELOPMENT CONDITIONS WATER QUALITY

PINNACLE ENGINEERING GROUP

Data file name: Z:\Projects\2018\1262.00A-WI\DESIGN\SWMP\SLAMM\1262.00A Germantown Holy Hill.mdb
WinSLAMM Version 10.4.1
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.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:
Seed for random number generator: -42
Study period starting date: 01/05/69 Study period ending date: 12/31/69
Start of Winter Season: 12/06 End of Winter Season: 03/12
Date: 07-16-2021 Time: 15:02:57
Site information:

LU# 1 - Industrial: West Total area (ac): 25.120
1 - Roofs 1: 9.740 ac. Flat Connected PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 10.720 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 2.860 ac. Moderately Compacted Clayey PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 1.800 ac. PSD File:

LU# 2 - Industrial: EAST Total area (ac): 24.690
1 - Roofs 1: 8.300 ac. Flat Connected PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 7.690 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 6.880 ac. Moderately Compacted Clayey PSD File: C:\WinSLAMM Files\NURP.cpz
70 - Water Body Areas: 1.820 ac. PSD File: C:\WinSLAMM Files\\Industrial Land Use

LU# 3 - Industrial: UNDETAINED Total area (ac): 2.650
45 - Large Landscaped Areas 1: 2.650 ac. Moderately Compacted Clayey PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - SOUTHEAST POND
Particle Size Distribution file name: Not needed - calculated by program
Initial stage elevation (ft): 5
Peak to Average Flow Ratio: 3.8
Maximum flow allowed into pond (cfs): No maximum value entered
Outlet Characteristics:
Outlet type: Orifice 1
1. Orifice diameter (ft): 0.33
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5
Outlet type: Orifice 2
1. Orifice diameter (ft): 1.5
2. Number of orifices: 1
3. Invert elevation above datum (ft): 7
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 20
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 9.6
Outlet type: Vertical Stand Pipe
1. Stand pipe diameter (ft): 4
2. Stand pipe height above datum (ft): 7.5
Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.10	1.3400	0.00	0.00
2	1.00	1.3900	0.00	0.00
3	2.00	1.4400	0.00	0.00
4	3.00	1.4900	0.00	0.00
5	4.00	1.5400	0.00	0.00
6	5.00	1.8000	0.00	0.00
7	6.00	1.8900	0.00	0.00
8	7.00	1.9700	0.00	0.00
9	8.00	2.0600	0.00	0.00
10	9.00	2.1400	0.00	0.00
11	10.00	2.2300	0.00	0.00

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Control Practice 2: Wet Detention Pond CP# 2 (DS) - WEST POND

Particle Size Distribution file name: Not needed - calculated by program

Initial stage elevation (ft): 0

Peak to Average Flow Ratio: 3.8

Maximum flow allowed into pond (cfs): No maximum value entered

Outlet Characteristics:

Outlet type: Orifice 1

1. Orifice diameter (ft): 0.42
2. Number of orifices: 1
3. Invert elevation above datum (ft): 5

Outlet type: Broad Crested Weir

1. Weir crest length (ft): 20
2. Weir crest width (ft): 10
3. Height from datum to bottom of weir opening: 8.6

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 4
2. Stand pipe height above datum (ft): 7.25

Pond stage and surface area

Entry Number	Stage (ft)	Pond Area (acres)	Natural Seepage (in/hr)	Other Outflow (cfs)
0	0.00	0.0000	0.00	0.00
1	0.01	1.2500	0.00	0.00
2	1.00	1.3100	0.00	0.00
3	2.00	1.3700	0.00	0.00
4	3.00	1.4300	0.00	0.00
5	4.00	1.4900	0.00	0.00
6	5.00	1.8200	0.00	0.00
7	6.00	1.9310	0.00	0.00
8	7.00	2.0480	0.00	0.00
9	8.00	2.2880	0.00	0.00
10	9.00	2.4100	0.00	0.00

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SLAMM for Windows Version 10.4.1
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Data file name: Z:\Projects\2018\1262.00A-WI\DESIGN\SWMP\SLAMM\1262.00A Germantown Holy Hill.mdb
Data file description:
Rain file name: C:\WinSLAMM Files\Rain Files\WisReg - Milwaukee WI 1969.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
Pollutant Relative Concentration file name: C:\WinSLAMM Files\WI_GEO03.ppdx
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
Source Area PSD and Peak to Average Flow Ratio File: C:\WinSLAMM Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Start of Winter Season: 12/06 End of Winter Season: 03/12
Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69
Date of run: 07-16-2021 Time of run: 14:57:31
Total Area Modeled (acres): 52.460
Years in Model Run: 0.99

	Runoff Volume (cu ft)	Percent Runoff Volume Reduction	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of all Land Uses without Controls:	4.337E+06	-	145.5	39393	-
Outfall Total with Controls:	4.031E+06	7.06%	21.44	5396	86.30%
Annualized Total After Outfall Controls:	4.087E+06			5471	

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APPENDIX 6
STORM SEWER CALCULATIONS

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STORM SEWER COMPUTATIONS
FOR
CAPSTONE - GERMANTOWN

GERMANTOWN, WI

SHEET 1 OF 1
DESIGN BY: SRB
PROJECT NUMBER: 1262.00A
DATE: 7/16/2021

DESIGN DATA

County: Washington | **Design Storm:** 10 yr | **Storm Duration:** 10 min | **DESIGN INTENSITY (I):** 5.36 in/hr | Intensity calculated using SEWRPC IDF equations.

STRUCTURE DATA			DRAINAGE AREA AND FLOW DATA (Flow is determined by Rational Method Q = CIA)				PIPE DATA				PIPE CAPACITY INFORMATION (Pipe capacity is determined by Manning's Equation $Q = 1.486/n\ AR^{2/3} S^{1/2}$)					ELEVATIONS			
Notes	Upstream Structure	Downstream Structure	Individual Acres A	Individual Coefficient C	Individual Flow Q (cfs)	Cumulative Flow (cfs)	Length (ft)	Diameter (in)	Slope (%)	Manning Coefficient	Required Drop (ft)	Actual Drop (ft)	Percent Full (%)	Actual Velocity (fps)	Max. Capacity (cfs)	Rim/Toc Up	Invert Up	Invert Down	Cover to Crown
	FES 1.2	CB 1.1	1.03	0.90	4.97	4.97	81.40	18	0.20	0.012	0.16	0.16	86%	3.28	5.47	908.80	908.80	908.63	
TC / STORM DURATION = 6.0 MIN	CB 1.1	MH 1.0	0.10	0.90	0.61	5.58	15.00	24	0.20	0.012	0.01	0.03	51%	3.50	11.79	913.56	907.19	907.16	4.37
	CB 1.3	MH 1.0	0.35	0.90	1.69	1.69	15.00	15	0.20	0.012	0.01	0.03	53%	2.60	3.37	913.56	907.19	907.16	5.12
	STUB 2.2	CB 2.1	0.84	0.90	4.05	4.05	7.00	18	0.20	0.012	0.01	0.01	72%	3.20	5.47	914.75	906.81	906.79	6.44
	CB 2.1	MH 2.0	0.08	0.90	0.39	4.44	15.00	18	0.20	0.012	0.02	0.03	77%	3.25	5.47	913.83	906.79	906.76	5.54
TC / STORM DURATION = 6.0 MIN	BC 2.5	CB 2.4	0.36	0.90	2.19	2.19	48.30	10	1.04	0.011	0.35	0.50	74%	5.41	2.84	915.00	907.39	906.89	6.78
	CB 2.4	CB 2.3	0.32	0.90	1.54	3.74	45.50	18	0.20	0.012	0.05	0.09	67%	3.15	5.47	913.46	906.89	906.79	5.07
TC / STORM DURATION = 6.0 MIN	CB 2.3	MH 2.0	0.05	0.90	0.30	4.04	15.00	18	0.20	0.012	0.02	0.03	72%	3.20	5.47	913.83	906.79	906.76	5.54
	STUB 3.2	CB 3.1	1.07	0.90	5.16	5.16	7.00	24	0.20	0.012	0.00	0.01	48%	3.44	11.79	914.75	906.40	906.39	6.35
	CB 3.1	MH 3.0	0.10	0.90	0.48	5.64	15.00	24	0.20	0.012	0.01	0.03	51%	3.52	11.79	913.83	906.39	906.36	5.44
TC / STORM DURATION = 6.0 MIN	BC 3.5	CB 3.4	0.49	0.90	2.99	2.99	48.30	12	1.04	0.011	0.24	0.50	64%	5.91	4.62	915.00	906.98	906.48	7.02
	CB 3.4	CB 3.3	0.41	0.90	1.98	4.96	45.50	18	0.20	0.012	0.09	0.09	86%	3.28	5.47	913.46	906.48	906.39	5.48
TC / STORM DURATION = 6.0 MIN	CB 3.3	MH 3.0	0.07	0.90	0.43	5.39	15.00	24	0.20	0.012	0.01	0.03	49%	3.47	11.79	913.83	906.39	906.36	5.44
	STUB 4.2	CB 4.1	1.12	0.90	5.40	5.40	7.00	24	0.20	0.012	0.00	0.01	49%	3.48	11.79	914.75	906.03	906.02	6.72
	CB 4.1	MH 4.0	0.10	0.90	0.48	5.89	15.00	24	0.20	0.012	0.01	0.03	53%	3.55	11.79	913.83	906.02	905.99	5.81
TC / STORM DURATION = 6.0 MIN	BC 4.5	CB 4.4	0.49	0.90	2.99	2.99	46.60	12	1.04	0.011	0.23	0.48	64%	5.91	4.62	915.00	906.59	906.11	7.41
	CB 4.4	CB 4.3	0.43	0.90	2.07	5.06	45.50	18	0.20	0.012	0.09	0.09	87%	3.28	5.47	913.46	906.11	906.02	5.85
TC / STORM DURATION = 6.0 MIN	CB 4.3	MH 4.0	0.07	0.90	0.43	5.49	15.00	24	0.20	0.012	0.01	0.03	50%	3.49	11.79	913.83	906.02	905.99	5.81
	STUB 5.2	CB 5.1	0.90	0.90	4.34	4.34	6.70	18	0.20	0.012	0.01	0.01	76%	3.23	5.47	914.75	905.59	905.57	7.66
	CB 5.1	MH 5.0	0.08	0.90	0.39	4.73	15.00	18	0.20	0.012	0.03	0.03	82%	3.27	5.47	913.70	905.57	905.54	6.63
TC / STORM DURATION = 6.0 MIN	BC 5.5	CB 5.4	0.37	0.90	2.25	2.25	48.30	10	1.04	0.011	0.37	0.50	76%	5.44	2.84	915.00	906.17	905.66	8.00
	CB 5.4	CB 5.3	0.35	0.90	1.69	3.94	45.50	18	0.20	0.012	0.05	0.09	70%	3.18	5.47	913.46	905.66	905.57	6.30
TC / STORM DURATION = 6.0 MIN	CB 5.3	MH 5.0	0.07	0.90	0.43	4.37	15.00	18	0.20	0.012	0.02	0.03	76%	3.24	5.47	913.70	905.57	905.54	6.63
	STUB 6.2	CB 6.1	0.26	0.90	1.25	1.25	7.00	12	0.20	0.012	0.01	0.01	67%	2.40	1.86	914.75	905.40	905.38	8.35
	CB 6.1	CB 6.0	0.02	0.90	0.10	1.35	30.00	12	0.20	0.012	0.04	0.06	71%	2.43	1.86	914.07	905.38	905.32	7.69
TC / STORM DURATION = 6.0 MIN	BC 6.4	CB 6.3	0.34	0.90	1.64	1.64	48.30	10	1.04	0.011	0.19	0.50	59%	5.10	2.84	915.00	905.94	905.43	8.23
	CB 6.3	CB 6.0	0.26	0.90	1.25	2.89	54.90	15	0.20	0.012	0.09	0.11	81%	2.90	3.37	913.51	905.43	905.32	6.83
	CB 7.1	CB 7.0	0.96	0.90	4.63	4.63	58.50	18	0.20	0.012	0.10	0.12	80%	3.26	5.47	914.04	905.18	905.06	7.36
TC / STORM DURATION = 6.0 MIN	BC 8.1	CB 8.0	0.23	0.90	1.40	1.40	34.70	10	1.04	0.012	0.12	0.36	56%	4.60	2.60	915.00	908.28	907.92	5.89
	MH 1.0	MH 2.0	0.00	0.90	0.00	7.27	200.00	24	0.20	0.012	0.18	0.40	62%	3.73	11.79	913.58	907.16	906.76	4.42
	MH 2.0	MH 3.0	0.00	0.90	0.00	15.75	204.00	30	0.20	0.012	0.26	0.41	71%	4.49	21.38	914.13	906.76	906.36	4.87
	MH 3.0	MH 4.0	0.00	0.90	0.00	26.78	183.80	36	0.20	0.012	0.25	0.37	74%	5.11	34.76	914.13	906.36	905.99	4.77
	MH 4.0	MH 5.0	0.00	0.90	0.00	38.15	222.80	42	0.20	0.012	0.27	0.45	71%	5.61	52.43	914.13	905.99	905.54	4.64
	MH 5.0	CB 6.0	0.00	0.90	0.00	47.25	109.40	48	0.20	0.012	0.10	0.22	63%	5.95	74.86	914.00	905.54	905.32	4.46
TC / STORM DURATION = 6.0 MIN	CB 6.0	MH 7.0	0.04	0.90	0.24	51.74	130.30	48	0.20	0.012	0.14	0.26	68%	6.07	74.86	914.07	905.32	905.06	4.75
	CB 7.0	CB 8.0	0.13	0.90	0.63	57.00	156.60	48	0.20	0.012	0.21	0.31	73%	6.18	74.86	914.48	905.06	904.75	5.42
	CB 8.0	CB 9.0	0.36	0.90	1.74	60.13	198.50	48	0.20	0.012	0.30	0.40	77%	6.23	74.86	914.00	904.75	904.35	5.25
	CB 9.0	FES 10.0	0.30	0.90	1.45	61.58	177.00	54	0.20	0.013	0.17	0.35	65%	5.98	94.60	911.85	904.35	904.00	3.00

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STORM SEWER COMPUTATIONS
FOR
CAPSTONE - GERMANTOWN

GERMANTOWN, WI

SHEET 1 OF 1
DESIGN BY: SRB
PROJECT NUMBER: 1262.00A
DATE: 7/16/2021

DESIGN DATA

County: Washington | **Design Storm:** 10 yr | **Storm Duration:** 10 min | **DESIGN INTENSITY (I):** 5.36 in/hr | Intensity calculated using SEWRPC IDF equations.

STRUCTURE DATA			DRAINAGE AREA AND FLOW DATA (Flow is determined by Rational Method Q = CIA)				PIPE DATA				PIPE CAPACITY INFORMATION (Pipe capacity is determined by Manning's Equation $Q = 1.486/n\ AR^{2/3}\ S^{1/2}$)					ELEVATIONS			
Notes	Upstream Structure	Downstream Structure	Individual Acres A	Individual Coefficient C	Individual Flow Q (cfs)	Cumulative Flow (cfs)	Length (ft)	Diameter (in)	Slope (%)	Manning Coefficient	Required Drop (ft)	Actual Drop (ft)	Percent Full (%)	Actual Velocity (fps)	Max. Capacity (cfs)	Rim/Toc Up	Invert Up	Invert Down	Cover to Crown
TC / STORM DURATION = 6.0 MIN	BC 11.0	CB 12.0	0.39	0.90	2.38	2.38	96.30	10	1.04	0.011	0.81	1.00	80%	5.48	2.84	915.00	908.28	907.28	5.88
TC / STORM DURATION = 6.0 MIN	CB 12.0	FES 13.0	0.72	0.90	4.39	6.76	141.50	24	0.20	0.013	0.13	0.28	62%	3.45	10.88	909.18	904.28	904.00	2.90
TC / STORM DURATION = 6.0 MIN	BC 14.0	CB 15.0	0.39	0.90	2.38	2.38	96.30	10	1.04	0.011	0.81	1.00	80%	5.48	2.84	915.00	908.28	907.28	5.88
TC / STORM DURATION = 6.0 MIN	CB 15.0	FES 16.0	0.61	0.90	3.72	6.09	141.50	24	0.20	0.013	0.10	0.28	58%	3.37	10.88	909.09	904.28	904.00	2.81
TC / STORM DURATION = 6.0 MIN	BC 17.0	CB 18.0	0.52	0.90	3.17	3.17	96.30	12	1.04	0.011	0.55	1.00	67%	5.98	4.62	915.00	908.28	907.28	5.72
TC / STORM DURATION = 6.0 MIN	CB 18.0	FES 19.0	0.71	0.90	4.33	7.49	141.50	24	0.20	0.013	0.16	0.28	68%	3.53	10.88	909.17	904.28	904.00	2.89
TC / STORM DURATION = 6.0 MIN	CB 26.0	FES 27.0	0.61	0.90	3.72	3.72	141.50	18	0.20	0.013	0.18	0.28	71%	2.95	5.05	909.17	904.28	904.00	3.39
TC / STORM DURATION = 6.0 MIN	BC 24.1	CB 24.0	0.52	0.90	3.17	3.17	96.30	12	1.04	0.011	0.55	1.00	67%	5.98	4.62	915.00	908.38	907.38	5.62
TC / STORM DURATION = 6.0 MIN	BC 23.1	CB 23.0	0.36	0.90	2.19	2.19	104.40	10	1.04	0.011	0.75	1.09	74%	5.41	2.84	915.00	908.78	907.69	5.39
TC / STORM DURATION = 6.0 MIN	BC 21.3	WYE 21.1	0.20	0.90	1.22	1.22	152.00	10	1.04	0.011	0.34	1.58	47%	4.75	2.84	915.00	906.93	905.35	7.24
	CB 20.0	CB 21.0	0.66	0.90	3.18	3.18	185.70	18	0.20	0.012	0.15	0.37	59%	3.04	5.47	912.00	905.85	905.47	4.65
	CB 21.0	CB 22.0	0.12	0.90	0.58	4.98	250.20	18	0.20	0.012	0.48	0.50	86%	3.28	5.47	912.20	905.47	904.97	5.23
	CB 22.0	CB 23.0	0.42	0.90	2.03	7.01	141.10	24	0.20	0.012	0.12	0.28	60%	3.70	11.79	912.28	904.97	904.69	5.31
	CB 23.0	CB 24.0	0.17	0.90	0.82	10.02	158.40	24	0.20	0.012	0.26	0.32	81%	3.96	11.79	910.90	904.69	904.38	4.21
TC / STORM DURATION = 6.0 MIN	CB 24.0	FES 25.0	0.82	0.90	5.00	18.19	187.50	30	0.20	0.013	0.37	0.38	87%	4.26	19.73	909.17	904.38	904.00	2.29

APPENDIX 7
GEOTECHNICAL REPORT

PINNACLE ENGINEERING GROUP

Professional Service Industries, Inc.
821 Corporate Court, Waukesha, WI 53189
Phone: (262) 521-2125
Fax: (262) 521-2471

May 26, 2020

Capstone Development Company
N17 W24222 Riverwood Drive, Suite 160
Waukesha, WI 53188-1134

ATTN: Mr. Mike Faber
Principal

SUBJECT: Preliminary Subsurface Exploration and Site Feasibility Evaluation
Proposed Holy Hill Road Development
Holy Hill Road
Germantown, Wisconsin
PSI Project No. 00522563

Dear Mr. Faber:

The preliminary subsurface exploration and site feasibility evaluation for the referenced project has been completed. An electronic copy of the report is being provided via email. Paper copies can be issued upon request. After you have had the opportunity of reading the report, please call at any time with any questions or comments you may have. Professional Service Industries, Inc. (PSI), an Intertek Company, appreciates the opportunity to be of service on this project and looks forward to continuing as your geotechnical consultant during the design and construction phases, as well as your upcoming projects.

Sincerely,

PROFESSIONAL SERVICE INDUSTRIES, INC.

Cody A. Rodell
Staff Engineer
Geotechnical Services

James M. Becco, P.E.
Regional Vice President



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INTRODUCTION

General

This report presents the results of the preliminary subsurface exploration and site feasibility evaluation for the proposed development in Germantown, Wisconsin. The work was performed for Capstone Development Company at the request of Mr. Mike Faber.

Purpose

The purpose of this preliminary study was to evaluate the subsurface conditions at specific boring locations on the site, and to provide subsurface information for general site feasibility and preliminary design planning. A comprehensive foundation evaluation and recommendations for specific structures were beyond the scope of this preliminary site evaluation but are recommended as part of design planning.

Scope

The scope of services included a site reconnaissance, the subsurface exploration, a determination of soil characteristics by field and laboratory testing, and an evaluation of the data obtained. Subgrade preparation recommendations and construction considerations are also provided. The scope of the field work, including the number, depth and locations of the borings, wells, and hand auger probes was determined by the client.

Authorization

The description of services and authorization to perform this subsurface exploration and evaluation were in the form of a signed proposal (PSI Proposal No. 305169, dated April 9, 2019). The general conditions for the performance of the work were referenced in the proposal. This report has been prepared on behalf of, and exclusively for the use of Capstone Development Company. The information contained in this report may not be relied upon by any other parties without the express written consent of PSI, and acceptance by such parties of PSI's General Conditions.

SITE AND PROJECT DESCRIPTION

Site Features

The project site is an approximately 50-acre parcel located on the south side of Holy Hill Road, about 0.50 miles east of U.S. Highway 41 and about 0.25 miles west of County Highway Y, in Germantown, Wisconsin. At the time of the exploration, the project site

was occupied by agricultural land and a farmstead containing several existing structures at the northeast corner of the site. Wetland area borders the site to the west, south, and southeast. The topography of the site generally slopes down to the south and west, with an elevation difference of about 16 feet (EL. 920 to EL. 904).

Project Description

Based on information provided by the client, it is understood that the proposed development will consist of an industrial business park. Two options are being considered for the site plan. One option includes the construction of two buildings ranging in size from about 356,000 square feet to about 376,000 square feet, oriented in an east-west fashion with one building at the north portion of the site and one building at the south portion of the site. The other option includes the construction of three buildings ranging in size from about 170,000 square feet to about 295,000 square feet, oriented in a north-south fashion with one building at the west portion of the site, one building at the center, and one building at the east portion of the site. It is understood that the proposed buildings will consist of slab-on-grade construction, without basements, and be supported by a shallow spread foundation system.

The two plans being considered both include stormwater management areas at the northwest and southeast corners of the site, and pavement areas surrounding the proposed buildings that will consist of drives, passenger vehicle parking spaces, truck docks, and trailer stalls. It is understood that new utilities will also be constructed as part of the development.

The finished floor elevations for the proposed structures, utility invert elevations, bottom of stormwater management area elevations, surface grades, or other planned elevations were not known at the time of report preparation. Existing grades across the property range from about EL. 920 at the northeast portion of the site to about EL. 904 at the west and southeast portion of the site. There is an area southwest of the southwest boundary of the site that slopes down relatively steeply toward the property, from about EL. 830 to EL. 805. It is estimated that moderate to substantial grade changes will be required. When a grading plan is available, and when finished floor elevations, utility invert elevations, bottom of stormwater management area elevations, and pavement grades have been established, PSI must be informed so that any necessary re-evaluation or revisions to this report can be made.

This preliminary exploration has been commissioned to evaluate the subsurface conditions at the boring locations on the subject site and to provide subsurface information for general site feasibility and preliminary design planning for the proposed development. The number, spacing, and locations of the borings requested is not considered sufficient to serve as a conventional foundation evaluation for proposed buildings. Additional borings are necessary and recommended within any proposed building footprints to further evaluate more specific soil conditions and provide

subsequent recommendations at each building location. In addition, when finished floor, utility invert, roadway, and other elevations and the building locations are determined, PSI must be provided an opportunity to review them and determine if a redirection of the evaluation and recommendations contained herein is warranted, or if additional borings in areas beyond the planned structures are also necessary.

EXPLORATION AND LABORATORY PROCEDURES

Scope Summary

The field and laboratory data utilized in the evaluation of the subsurface materials was obtained by drilling exploratory test borings, securing soil samples by the split-spoon sampling method, and subjecting the samples to laboratory testing. Groundwater monitoring wells were also installed, and hand auger probes were performed to estimate topsoil thickness.

With respect to the stormwater management areas, the field and laboratory work for classification of the subgrade soils was performed to provide information for use by the basin design personnel when considering requirements of Chapter NR151 of the Wisconsin Administrative Code, and of WDNR Technical Standard 1002, “Site Evaluation for Stormwater Infiltration” guidelines. The design of the proposed stormwater management area was beyond the scope of services for this project.

Field Exploration

Twenty-six (26) soil borings were performed for this project to depths ranging from about 15 to 25 feet below existing grade. Three (3) of the soil borings were converted into groundwater monitoring wells upon completion of drilling. Twenty-two (22) hand auger probes were also performed to estimate topsoil thickness. The number, depths, and locations of the borings, hand auger probes, and groundwater monitoring wells were provided by the client. The locations were staked in the field by the client, who also provided surface elevations.

The soil test borings were performed with an ATV-mounted rotary drilling rig utilizing continuous flight hollow stem augers to advance the holes. Representative samples were obtained by the Standard Penetration Test (SPT) method using split-spoon sampling in general accordance with ASTM D-1586 procedures. Samples were secured at 2.5-foot intervals to a depth of 10 feet, and then at 5-foot intervals thereafter to the end of the borings. With respect to the stormwater management area borings, samples were collected continuously at 2-foot intervals. The standard penetration value (N) is defined as the number of blows of a 140-pound hammer, falling thirty (30) inches, required to advance the split-spoon sampler one (1) foot into the soil. The sampler is lowered to the bottom of the drill hole and the number of blows recorded for each of the

three (3) successive increments of six (6) inches penetration. The “N” value is obtained by adding the second and third incremental numbers. The SPT provides a means of estimating the relative density of granular soils and comparative consistency of cohesive soils, thereby providing a method of evaluating the relative strength and compressibility characteristics of the subsoils.

The SPT samples were transferred into clean glass jars immediately after retrieval and returned to the laboratory upon completion of the field operations. Samples will be discarded unless other instructions are received. The soil samples from the borings were visually classified in general accordance with the Unified Soil Classification System (USCS) (ASTM D-2488-75). With respect to the stormwater management areas, soil samples were visually classified in general accordance with USDA National Resources Conservation Service textural soil classification procedures. After completion of the borings, the auger holes were backfilled with bentonite chips.

The hand auger probes were performed with an approximately 3-inch diameter auger by retracting the device at approximately 6-inch increments to remove the retained material. The depth of topsoil was then estimated based on observation of the retained material and the soil along the side of the borehole. The hand auger boreholes were backfilled with removed soils upon completion.

A copy of the Soil Boring Logs and Boring Location Plan are enclosed in the Appendix. The soil stratification shown on the logs represents the approximate soil conditions in the actual boring locations at the time of the exploration. The terms and symbols used on the logs are described in the General Notes found in the Appendix.

Laboratory Physical Testing

Soil samples obtained from the exploration were visually classified in the laboratory, and subjected to testing, which included moisture content determinations. Selected cohesive soil samples were tested in unconfined compression with a calibrated hand penetrometer to aid in evaluating the soil strength characteristics. The values of strength tests performed on soil samples obtained by the Standard Penetration Test Method (SPT) are considered approximate, recognizing that the SPT method provides a representative but somewhat disturbed soil sample.

The laboratory testing was performed in general accordance with the respective ASTM methods, as applicable, and the results are shown on the boring logs in the Appendix.

DESCRIPTION OF SUBSURFACE CONDITIONS

General

A description of the subsurface conditions encountered at the test boring locations is shown on the Soil Boring Logs. The lines of demarcation shown on the logs represent approximate boundaries between the various soil classifications. It must be recognized that the soil descriptions are considered representative estimates for the specific test hole locations, but variations may occur between and beyond the sampling intervals and boring locations. Soil depths, topsoil, and layer thicknesses, and demarcation lines utilized for preconstruction planning should not be expected to yield exact and final quantities. A summary of the major soil profile components is described in the following paragraphs.

Soil Conditions

Hand Auger Probes

Approximate topsoil thicknesses encountered at the hand auger probe locations ranged from about 13.5 to 18.5 inches. Table 1 – Topsoil Probes, located in the Appendix of this report, summarizes the thicknesses encountered at each location.

Building and Pavement Area Borings – USCS Classification

Surficial material encountered at the building and pavement area borings consisted of about 11 to 18 inches of topsoil generally consisting of silty clay. Below the surficial topsoil at the building and pavement area borings, natural granular soils consisting of sandy silt with gravel, sandy silt, silt, silty sand, silty sand with gravel, and sand with gravel, were generally encountered to the boring termination depth of 15 or 16 feet (EL. 904.3 to EL. 891.5) below existing grade. These native granular soils were loose to very dense with N-values ranging from about 5 blows per foot (bpf) to about 50 blows per 2 inches of split spoon sampler penetration.

As an exception to the above, natural cohesive soils consisting of lean clay were encountered below the surficial topsoil at SB-305, SB-307, SB-324, and SB-328, extending to a depth of about 3 feet (EL. 907.7 to EL. 912.0) below existing grade. These native cohesive soils were stiff to very stiff in consistency, with estimated unconfined compressive strengths ranging from about 1.5 to 2.5 tons per square foot (tsf).

SB-318 was planned to extend to a depth of 25 feet below existing grade, however, auger refusal was experienced on possible cobbles, boulders, or bedrock at a depth of about 16 feet (EL. 891.5) below existing grade.

Stormwater Management Area Borings – USDA Classification

Surficial material encountered at the stormwater management area borings (SB-300, SB-302, SB-333, SB-334, and SB-336) consisted of about 12 to 24 inches of silty clay (SiC) topsoil. Below the surficial topsoil was generally clay (C), sandy loam (SL), coarse sand (COS), sand (S), and loamy sand (LS) soils with varying amounts of gravel extending to the boring termination depths.

The stormwater management area borings were planned to extend to a depth of 25 feet below existing grade. However, auger refusal was experienced on possible cobbles, boulders, or bedrock at SB-300 and SB-336 at depths of 18.5 feet (EL. 888.6) and 12 feet (EL. 893.7) below existing grade, respectively.
The foregoing discussion of soil conditions on this site represents a generalized soil profile as determined at the test boring locations. A more detailed description and supporting data for each test location can be found on the individual Soil Boring Logs.

Groundwater Observations

Groundwater observations were made during the drilling operations, and in the open boreholes at completion. Groundwater was encountered during auger advancement within the borings at depths ranging from about 1 to 12 feet (EL. 912.8 to EL. 896.3) below existing grade. Upon completion of drilling and removal of the augers, groundwater was encountered within the borings at depths ranging from about 2 to 11 feet (EL. 913.7 to EL. 899.7) below existing grade. As an exception to the above, groundwater was not encountered during auger advancement or upon completion of drilling and removal of the augers at SB-300, SB-303, SB-310, SB-330, and SB-346.

The observed water levels are considered to be somewhat erratic/variable, and may be indicative of both a perched condition and/or the long-term groundwater level.

The groundwater observations reported herein are considered approximate. It must be recognized that groundwater levels fluctuate with time due to variations in seasonal precipitation, lateral drainage conditions, and soil permeability characteristics. Longer term monitoring would be required to better evaluate groundwater levels on this site.

Groundwater Monitoring Wells

As requested, groundwater monitoring wells were installed at the locations of SB-302, SB-318, and SB-336. The monitoring wells were installed with 2-inch I.D. Schedule 40 PVC. 10-foot screen (0.01-inch slot size) sections were installed at varying depths, with 5 to 15 feet of riser extending about 3 feet above ground surface. The annulus space was filled with sand to about 1 to 2 feet above the slotted screen, with the remaining annulus filled with bentonite. Expandable caps were installed at the tops of the wells. The screened interval at each well is shown in the table below:

Monitoring Well	Surface Elevation (Feet MSL)	Well Screen Depth (Feet BGS)	Well Screen Elevation (feet MSL)	Approximate Water Level Elevation (5/19/20)*
SB-302	906.7	13 to 23	EL. 893.7 to EL. 883.7	906.2
SB-318	907.5	5 to 15	EL. 902.5 to EL. 892.5	907.0
SB-336	905.7	2 to 12	EL. 903.7 to EL. 893.7	905.2

*Measurements obtained by PSI.

It is understood that additional measurement of the water levels will be made by the client at future dates.

EVALUATION AND RECOMMENDATIONS

General Development Considerations

In view of the subsurface conditions encountered in the test borings, together with the structural loading criteria and development grades anticipated, conventional spread footings can generally be used for support of the proposed structures. However, the removal of soft, wet, or otherwise unstable zones may be necessary.

Shallow groundwater and granular soils were generally encountered within the upper 5.5 to 8 feet of most of the borings. Based on this, substantial difficulty with excavation stability and groundwater may be experienced during construction.

Auger refusal on possible cobbles, boulders, or bedrock was encountered at SB-300, SB-318, and SB-336 at depths ranging from about 12 to 18.5 feet (EL. 888.6 to EL. 893.7) below existing grade. Dependent on final grades, specialized excavation techniques and/or blasting may be required.

The existing soils (with the exception of topsoil) can generally be utilized for support of the floor slabs and pavements. However, some overexcavation of unsuitable soils may be necessary on at least an isolated basis. A discussion of the building foundation and pavement design parameters, as well as the support conditions for the floor slabs and pavements are included in later sections of this report.

The number, depth, and spacing of the borings performed for this preliminary study is not considered sufficient to serve as a conventional foundation evaluation for specific structures. Therefore, additional borings within the footprints of the proposed structures, and in utility areas are recommended and considered essential to further evaluate the subsurface conditions and groundwater levels in order to provide subsequent recommendations. It must be recognized that the conditions encountered by the additional explorations (along with finished floor elevations, and associated surface,

utility and other elevations) may warrant an alteration of the preliminary foundation and soil bearing design recommendations presented in this report. The additional borings will also be essential for further evaluating groundwater levels, in order to assist with establishing finished floor elevations. A discussion of preliminary guidelines and recommendations is included in the following sections.

Site Preparation

The presence of organic topsoil, vegetation, trees, and roots in the subgrade can adversely affect the serviceability of structural fills, foundations, floor slabs, pavements, and other structures placed upon them. Approximately 11 to 24 inches of topsoil was present on the surface of the site at the borings and hand auger probes. However, some variation should be anticipated. All topsoil, vegetation, trees, roots, and any other deleterious matter must be stripped from all structural areas.

Site preparation will require removal of the existing structures and remnants of former buildings, including foundations and underground utilities. Extensive areas of loose backfill material may be encountered within utility trenches, adjacent to the existing structures, and in former building, basement, and other structural areas. These will also require removal. The areas, including basements, must then be properly backfilled with compacted structural fill. Prior to the backfilling, the areas must be observed by a PSI representative to evaluate the suitability of the subgrade for subsequent support of the new building, utilities, or other structures.

The majority of the property was a farm field at the time of the field exploration. If any remnant drain tiles are encountered during construction, it is generally recommended that they be tied into new drainage structures or otherwise be properly drained to a suitable area (in accordance with any applicable regulatory requirements or restrictions), since they may still actively drain areas of the subject site or adjacent properties.

Topsoil depths and/or the presence of organic soils may increase substantially within and encroaching upon wetland areas. It is generally recommended that development within wetland areas not be performed due to the typical presence of highly organic soils and shallow groundwater. If such development is contemplated, special permits will likely be required from the Army Corps of Engineers, the WDNR, or other government agencies.

After stripping the topsoil and cutting high areas of the site to the planned finished grade, and prior to the placement of new fill used to raise grades, the subgrade must be thoroughly proofrolled to detect unstable, yielding soils, which must be removed or improved by appropriate preparation and compaction techniques. Proofrolling should consist of overlapping passes in a perpendicular grid pattern of a fully loaded tandem-axle dump truck, or other equipment of similar size and weight. However, care must be

used on this site to avoid disturbing the near surface fine-grained soils during the proofrolling, especially during periods of precipitation or spring thaw. Unstable soils may be encountered, at least on an isolated basis, but may become extensive depending upon moisture conditions at the time of construction. When encountered, unstable soils must be properly remediated. Scarification, drying, and recompaction of wet soils or removal and replacement with suitable fill, are two methods which can be considered, but the proper method must be determined by the soils engineer at the time of construction. Low areas may then be raised to the planned grades with suitable properly compacted fill. It must be recognized that the silt and clay soils present on the site are highly moisture sensitive, and substantial difficulty with subgrade preparation can be expected if the soils are wet during construction.

Equipment and worker traffic must be kept to a minimum on subgrade bearing surfaces, especially during times of precipitation or following spring thaw. Some difficulty with subgrade preparation can be expected in wet or cold weather conditions. Removal of unsuitable portions of the near surface soils and replacement with structural fill may be required, on at least an isolated basis, especially if earthwork is not carried out during periods of relatively warm, dry weather, which provide more favorable conditions for drying of these soils. Any soft zones, which cannot be improved by scarification and aeration, must be removed and replaced with compacted structural fill, such as clean crushed stone, possibly in conjunction with the use of a geotextile fabric. Lime, lime kiln dust, fly ash, or Portland cement modification are additional remedial measures which can be considered for fine grained soils. However, this must only be performed at the direction and under the supervision of the geotechnical engineer. A proper mix design must be performed prior to the performance of any modification. Substantial construction delays and difficulty with subgrade stabilization should be expected during periods of wet and/or cool weather. Consideration should be given to installing construction roads to reduce disturbance to the sensitive subgrade soils.

Every effort must be made to keep excavations dry. If construction proceeds during wet weather, some additional overexcavation may be necessary. If weather permits, the soil could be dried and recompacted. A crushed stone working mat, possibly in conjunction with a geotextile fabric, may also be feasible to help stabilize subgrades. Site grading runoff should be directed to catch basins, so that the potential for the softening of the subgrade soils is reduced.

Where the removal of unsuitable bearing material is performed beneath proposed footings or pavement areas, the excavation must extend laterally beyond the perimeter of the foundation, or edge of the pavement, for a distance at least equal to the thickness of the fill below the footing bottom or pavement subgrade. This general guideline also applies to instances where a raised structural fill pad is constructed to achieve a bearing elevation greater than existing grades. The influence zone of footing stresses can be represented as an imaginary 45° line extending downward and outward from the footing

bottom. All fill placed within this zone after cutting to firm soil must be properly engineered, from the bottom of the cut, up to the floor slab subgrade elevation.

Where site grades are raised in excess of 2 feet, the first lift of new fill must be placed to extend a minimum lateral distance of 5 feet beyond the planned top building pad dimension or edge of the pavement, or for a distance equal to at least 1 foot laterally beyond the top pad dimension, or edge of the pavement, for every foot of fill thickness (for fills greater than 5 feet in depth). Subsequent lifts can then be placed on an approximate 1H:1V slope up to the planned top perimeter dimension of the pad or pavement subgrade. Proper moisture control is essential to reduce the amount of compactive effort necessary to achieve the desired densities.

When a firm and stable subgrade is established, low areas may be raised to planned grades with properly compacted structural fill. Any new fill should be a clean granular soil, such as those materials meeting the gradations outlined in Section 209 or 305 of the State of Wisconsin Standard Specification for Highway and Structure Construction. If fine-grained soils, such as those with high silt or clay content are used, they should generally be placed over large open areas, where conditions are more favorable for the proper placement and compaction of such materials. It must be recognized that high silt or clay content materials are difficult to compact when placed at moisture contents beyond a few percent of the optimum moisture content. In addition, the near surface soils across the site are considered to be highly moisture sensitive; therefore, substantial instability and difficulty with subgrade preparation may be experienced, especially if they become wet during construction. Extensive undercutting or stabilization may be necessary. Fill must be placed in layers of not more than nine (9) inches in thickness, at moisture contents at or near optimum, and be compacted to a minimum density of 95 percent of the maximum dry density as determined by ASTM designation D-698 (Standard Proctor). Where fill thicknesses exceed 10 feet, it is recommended that the compaction percentage be increased to 98 percent. Silt, clay, and wet granular soils are not suitable for reuse as fill in trenches, or adjacent to foundation stem walls or retaining walls.

Proper moisture control is essential to reduce the amount of compactive effort necessary to achieve the desired densities. This is especially true of clayey soils, where scarification and aeration may be required to achieve near-optimum moisture levels prior to compaction. A sheepsfoot roller is generally required for compaction of clayey soils, whereas a vibratory smooth drum roller is preferred for granular material. Small hand-operated compactors should be used in confined areas; granular fills are generally more readily compacted to the required densities in such applications.

It is recommended that well-graded granular soils be utilized as backfill in new utility trenches and alongside below grade walls to reduce the potential for consolidation and settlement of the fill. All fill soils must be placed and compacted under engineering-controlled conditions, to provide suitable support for overlaying structures. Additional

guidance can be provided at the time of construction in the selection process for grade-raising fill and trench backfill.

When excavations encroach upon or extend below the groundwater or perched zones, and into sandy, silty, or soft clay soils, subgrade instability and sloughing/caving of sidewalls can occur. Some overexcavation of softened or loosened soils, in conjunction with the use of a crushed stone working mat, may be necessary. Additionally, significantly widened excavations may result, or be required for stability.

The selection of fill materials for various applications should be done in consultation with the soils engineer. Similarly, the evaluation of the subgrade and placement and compaction of fill for structural applications should be monitored and tested by a qualified representative of the soils engineer.

Preliminary Foundation Evaluation

The following is a general overview of the subsurface conditions for the site, as it relates to foundation evaluation, and can be used in preliminary site planning.

The proposed buildings may be supported by conventional spread foundations. For preliminary planning, spread and continuous wall footings bearing upon suitable natural soils encountered within the borings, or structural fill (or lean concrete mix) used to replace unsuitable materials, can generally be designed to exert net allowable soil bearing pressures of 2,000 to 4,000 psf, dependent upon location and bearing elevation. However, some undercutting of soft, loose, wet, or otherwise unsuitable natural soils may be required and may become extensive in some areas. All foundations must bear upon suitable and stable soils of sufficient strength. A more comprehensive exploration, consisting of additional borings is recommended to better evaluate subsurface conditions within each structure.

Wet soils may be encountered within footing excavations and may be widespread. These soils are susceptible to a substantial loss in strength when the confining effect of the overburden is removed. A significantly softened subgrade may develop, requiring undercutting and the use of a crushed stone working mat (or “mud mat”) to establish a stable bearing grade. Substantial sloughing and caving may also occur, and dewatering will likely be required.

The suitability of the existing soils for support of proposed foundations is recommended to be determined by testing by a qualified geotechnical engineer during construction, utilizing static cone penetrometer tests or dynamic cone penetrometer tests for cohesive and granular soils, respectively. Soft, loose, or otherwise unsuitable materials not disclosed by the borings, may be encountered in the foundation excavations at the bearing elevation. If unsuitable existing soil is present, it must be removed throughout a zone extending one foot laterally for each foot removed below the foundation, on either

side of the planned footing. The over-excavated area must be backfilled with structural compacted fill. Alternatively, the excavation could extend 4 inches beyond the planned footing width to suitable bearing soil and then backfilled with lean (500 to 1000 psi) concrete mix to planned footing grade to reduce lateral over-excavation.

All perimeter footings must be placed at a depth of at least 4 feet (or deeper if required by local code or in accordance with customary practice) below the finish grade for frost protection. Due to periodic severity of winters in this area, it is recommended that footings in poorly heated or unheated areas of the building also be placed at least 4 feet below the adjacent exterior grade. Interior footings not subject to frost action may be placed at a shallow depth of 18 inches below the floor slab, provided they bear on suitable natural soils or engineered fills. All foundations must be protected from the effects of frost if construction is carried out during winter months.

It is recommended that the footings supporting individual columns have a minimum dimension of 30 inches, and continuous footings have a minimum width of 24 inches, even if the maximum recommended allowable bearing pressure is not fully utilized. In order to minimize the effects of any slight differential movement that may occur due to variations in the character of the supporting soils and any variations in seasonal moisture contents, it is recommended that all foundations be suitably reinforced to make them as rigid as needed.

In general, the performance of the foundation system on this site is dependent on the various factors discussed herein. The excavation, preparation, and concreting of foundations should be monitored and tested by a representative of the soils engineer.

Preliminary Floor Slab and Pavement Subgrades

Prior to constructing the floor slabs or pavements, and prior to the placement of any fill used to raise grades, the exposed subgrade must be prepared utilizing the proofrolling procedures described previously. In areas that exhibit soft, yielding or unstable soil conditions, the following remedial measures are recommended to provide a stable subgrade. It must be recognized that the high silt and clay content near surface soils are highly sensitive to increases in moisture and construction disturbance. It will therefore be necessary to maintain these materials in a relatively dry condition to allow for proper subgrade preparation. It is recommended that the proofrolling operations be monitored by a representative of the geotechnical engineer so that a firm, suitable subgrade is present prior to placement of new fills, or to construction of floor slabs and pavements.

Localized wet, soft or unstable areas should be undercut to such depths determined necessary in the field to reach stable material. The overexcavations should then be backfilled with imported crushed stone, such as a 1¼-inch dense graded base specified in Section 305 of the WisDOT Standard Specifications, placed and compacted as recommended in the Site Preparation section of this report. If relatively thick zones or

areas of extensive yielding are observed that cannot be stabilized by normal discing, aeration and recompaction procedures, undercutting and replacement with crushed stone and geotextile fabric (if needed) may also be required in these areas.

The floor slabs may be designed utilizing an estimated modulus of subgrade reaction of 175 pci based on the presence of natural sandy silt soils. The final design and detailing should be performed by a qualified structural engineer based on the intended slab use, loading conditions and anticipated subgrade conditions.

A granular mat, which can be designed as a drainage layer, should be provided below floor slabs. This must be a minimum of six (6) inches in thickness and properly compacted. In moisture sensitive areas, a vapor barrier may be placed beneath the floor slab or base course; however, it is recommended that the architect be consulted in this regard. The proper use of a vapor barrier may not completely prevent moisture beneath or on top of slabs. If the base course contains sharp particles, a cushion layer of sand approximately 2 inches in thickness may be required to provide protection from puncture.

The floor slabs must be suitably reinforced to make them as rigid as necessary and proper joints provided at the junction of slabs and the foundation system so that a small amount of independent movement can occur without causing damage. Large floor areas must be provided with joints at frequent intervals (maximum spacing of 30 times the slab thickness, per ACI) to compensate for concrete volume changes (shrinkage). Where the slab will be supporting live loads, such as moving vehicles, joints must be keyed or dowelled to permit proper load transfer. It is recommended that appropriate construction methods and curing procedures be used to minimize shrinkage and curling of the floor slabs.

Preliminary Pavement Recommendations

The subgrade soils encountered in the borings generally consisted of sandy silt, silt, and lean clay. The following subgrade parameters are recommended for pavement construction design considerations based on the predominance of sandy silt and clay subgrade soils and based on the subgrade being properly prepared as discussed in the Site Preparation section of this report.

The poorer quality silt and clay subgrade soils have been assigned an estimated visual classification of A-4 and A-6 by the AASHTO classification method. They are generally rated as poor for pavement subgrade support due to their moderate to high frost susceptibility, poor drainage characteristics, and high susceptibility to strength loss when exposed to free water. Provided that the subgrade soils are prepared as outlined in the Site Preparation section of this report, the in-place subgrade soils and any new structural fill can be used for standard flexible or rigid pavement construction.

PAVEMENT SUBGRADE DESIGN COEFFICIENTS

AASHTO Soil Classification	A-4/A-6
Design Frost Index	F-3
Design Group Index	12
Soil Support Value	4.2
Estimated Subgrade Modulus (k)	150 pci

Some variations may be encountered and should be expected due to the relatively widely spaced borings. In order to use the above values, all new fill used to raise low areas or replace unsuitable material must have pavement support characteristics that are equal to or better than the existing soils. The final design should be performed by a qualified engineer based on the intended pavement use, anticipated loading and subgrade conditions, and desired service life.

The subject site is located in an area that experiences annual freezing cycles and the subgrade soils encountered have been classified as highly susceptible to frost action when free water is present. In order to reduce the potential for frost action, it will be necessary to control surface runoff and water seepage, because complete removal and replacement of the frost susceptible subgrade soils is not considered economically feasible. It is recommended that sufficient underdrains be placed within the subgrade, just below the granular base, to help reduce the potential for trapping water within the aggregate base layer.

Exterior/Unheated Area Slabs

Entry slabs, sidewalks, aprons, and other slabs in exterior or unheated areas may bear upon silty or clayey soils, which are highly frost susceptible and poorly drained. Slabs placed directly upon such soils are subject to heaving and subsequent settlement due to freeze/thaw cycles. This can result in heaving, cracking, misalignment, and other related effects (especially at joints). It is recommended that consideration be given to limited undercutting of the frost susceptible materials to a depth of 1 to 2 feet below the slab, and replacement with well graded, properly placed and compacted granular soils. A properly designed under drain system connected to the municipal sewer (if permissible) or directed to on-site stormwater management areas should also be incorporated to reduce the potential effects of freeze/thaw cycles.

Utility Construction

In general, the on-site soils can be used for support of utility lines. However, some undercutting of soft, loose, wet, or otherwise unsuitable soils, in conjunction with the placement of crushed stone or other suitable granular backfill may be necessary to establish a stable working mat and/or bearing subgrade, and may become extensive in some areas. Substantial difficulty with the stability of utility trenches may be

experienced, especially in the presence of water. The use of shoring, bracing, or trench boxes will be required for excavations. Additionally, excavations encroaching upon or extending below the groundwater or perched zones can become substantially unstable when the confining effect of the overburden is removed. An adequate dewatering effort and bracing of sidewalls will be required. Utility construction should be performed in accordance with "The Standard Specifications for Sewer and Water Line Construction" for the State of Wisconsin.

It is recommended that well graded granular soils such as those specified in Tables 37 and 39 of the Standard Specification for Sewer and Water Construction be utilized as backfill in utility trenches to reduce the potential for consolidation and settlement of the backfill. All fill soils must be properly placed and compacted under engineering-controlled conditions to provide suitable support for overlaying structures and roadways. Silty and clayey soils, organic soils, and wet granular materials are not recommended for use as backfill within utility trenches due to the substantial difficulty of obtaining proper compaction in confined areas. Substantial importing of suitable fill will likely be required.

Auger refusal on possible cobbles, boulders, or bedrock was encountered at SB-300, SB-318, and SB-336 at depths ranging from about 12 to 18.5 feet (EL. 888.6 to EL. 893.7) below existing grade. Utility excavations in some areas may encroach upon and extend below the refusal depths, and specialized excavation techniques and/or blasting may be necessary.

As with all excavation work, all open cut trenches must be properly shored and braced as required by applicable federal and state OSHA codes, and as necessary to protect life and property.

Loading Dock Walls

It is recommended that the dock walls be protected by a suitable drainage system to prevent development of excessive lateral pressures. The walls must therefore be backfilled for a lateral distance of 3 to 4 feet with a well-graded, free draining granular material such as clean crushed stone or sand and gravel. Silty and clayey soils are not recommended for such applications. The granular materials must be placed in lifts not exceeding 12 inches in thickness, and be compacted to at least 90% of the maximum dry density as determined by Standard Proctor (ASTM D698). However, where the wall backfill will be within the influence zone of the building footings, floor slab, or other structural areas, compaction must be increased to at least 95 percent of the Standard Proctor value.

Based upon the use of free draining granular backfill (ϕ=32; γ_m=130 pcf), an equivalent fluid pressure of 40 psf may be used as the horizontal component of the active earth pressure for walls which are not restrained from movement. For "fixed" walls, an at rest

fluid pressure of 65 psf should be used. However, when a proposed fill material has been selected, a representative sample must be submitted to PSI for testing to verify the above values and associated recommendations. It must be recognized that the above values are based upon a drained condition, and are exclusive of traffic and other surcharge loads near the walls, which must be factored into the design. It is therefore recommended that a fabric wrapped footing drain be placed behind the walls, and directed to a suitable outlet, such as the municipal sewer (if permissible). If this is not feasible, the drains must be properly daylighted to an appropriate area of the site to prevent pavement icing in winter.

Because of the relatively shallow groundwater on this site, careful design consideration must be given to proper groundwater control in the area of below grade dock walls in order to maintain a drained condition, thereby preventing excessive lateral pressures from developing. Larger diameter drain tile and possibly the use of collection sumps and pumps may be necessary if adequate gravity drainage cannot be provided.

CONSTRUCTION CONSIDERATIONS

Groundwater Control

Groundwater was encountered during auger advancement within the borings at depths ranging from about 1 to 12 feet (EL. 912.8 to EL. 896.3) below existing grade. Upon completion of drilling and removal of the augers, groundwater was encountered within the borings at depths ranging from about 2 to 11 feet (EL. 913.7 to EL. 899.7) below existing grade. As an exception to the above, groundwater was not encountered during auger advancement or upon completion of drilling and removal of the augers at SB-300, SB-303, SB-310, SB-330, and SB-346.

Based on these observations, and those at the monitoring wells, substantial difficulty with groundwater may be experienced during excavation work. If excavations extend only a few inches or so below the groundwater or perched zones, filtered sump pumps or other conventional means may suffice to control the groundwater. However, for deeper excavations, or for substantial perched zones, prolonged dewatering with a series of sumps or well points and high capacity sump pumps, or other more comprehensive means may be necessary to facilitate construction. Due care must be used during dewatering in order to avoid rapid or excessive drawdown, which may cause settlement or other related distress to existing buildings, utilities, or other structures. Additional evaluation of groundwater and related control procedures must be performed by PSI when building locations, elevations, and other details are finalized.

Since the foundation materials are subject to softening when exposed to free moisture, every effort should be made to keep excavations dry. Discharge water from roof drains should be directed away from buildings, and the site grading direct runoff to catch

basins or other appropriate areas of the site, so that the potential for the softening of the foundation and pavement subgrade soils is reduced.

The groundwater observations reported herein are considered approximate, and preliminary. It must be recognized that groundwater levels fluctuate with time due to variations in seasonal precipitation, lateral drainage conditions, and soil permeability characteristics.

Excavations and Site Drainage

Sloping, shoring or bracing of the excavation sidewalls will be necessary. Excavating may be difficult due to the instability of vertical slopes, and will therefore require a flattening of trench sides, or some other means of protection, to facilitate construction and to protect life and property. Substantial sloughting and caving should be expected within unprotected excavations. The degree of excavation instability problems is dependent upon the depth and length of time that excavations remain open, excavation bank slopes, water levels and the effectiveness of any dewatering systems. However, severe instability can be expected within granular or soft cohesive soils, especially encroaching upon and extending below the groundwater or perched zones. All excavation work must be performed in accordance with OSHA and local building code requirements.

Where excavations encroach upon or extend below the groundwater or perched zones and into fine sand, silt, or soft clay, they may become substantially unstable when the confining effect of the overburden is removed. Significant sloughing or caving of sidewalls may also occur. Some overexcavation of softened or loosened soils, in conjunction with the use of a crushed stone working mat, may be necessary to establish a stable bearing subgrade. Additionally, significantly widened excavations may result, or be required to maintain or achieve sidewall stability.

All excavations must be performed with caution and utilize methods which will prevent undermining or destabilization of slopes, buildings, utilities, pavements, sidewalks or other structures. The use of a properly designed shoring and bracing, sheet piling, or underpinning system must be utilized as necessary to adequately protect existing buildings, utilities, pavements, and other structures. This must be performed by an experienced specialty contractor. Additionally, extreme care must be used during the installation of any bracing system, especially those using driven or vibratory methods, in order to avoid damaging existing buildings, utilities, and other structures. Consideration should be given to the performance of video and/or photographic documentation of the condition of nearby buildings, utilities, and other structures prior to installation.

Auger refusal on possible cobbles, boulders, or bedrock was encountered at SB-300, SB-318, and SB-336 at depths ranging from about 12 to 18.5 feet (EL. 888.6 to EL. 893.7) below existing grade, and generally very dense granular soils were encountered

with increasing depth. Substantial difficulty digging and longer excavation times should be expected with increasing depth in at least some areas of the site. Specialized excavation techniques and/or blasting may be necessary. Dependent on final development grades, additional subsurface exploration with backhoe test pits may be necessary to further evaluate refusal depths, and the type and excavatability of the materials.

Since the subgrade soils are generally sensitive to moisture, every effort should be made to provide adequate drainage across the site during construction, and to prevent ponding of runoff on the subgrade. These soils are also subject to erosion caused by runoff, and erosion control measures should be implemented where needed or required by local ordinances.

It is mandated that excavations, whether they be for utility trenches, basement excavations or footing excavations, be constructed in accordance with current Occupational Safety and Health Administration (OSHA) guidelines to protect workers and others during construction. PSI recommends that these regulations be strictly enforced; otherwise, workers could be in danger and the owner(s) and the contractor(s) could be liable for substantial penalties. The contractor is solely responsible for designing and constructing stable, temporary excavations and should shore, slope, or bench the sides of the excavations as required to maintain stability of both the excavation sides and bottom. The contractor's "responsible person", as defined in 29 CFR Part 1926, should evaluate the soil exposed in the excavations as part of the contractor's safety procedures. In no case should slope height, slope inclination, or excavation depth, including utility trench excavation depth, exceed those specified in local, state, and federal safety regulations. PSI is providing this information solely as a service to our client. PSI does not assume responsibility for construction site safety or the contractor's or other parties' compliance with local, state, and federal safety or other regulations.

Seismic Design Considerations

The on-site natural soils are preliminarily estimated to meet the criteria for Site Class C or D in accordance with Table 1613.5.2 of the International Building Code-2015.

STORMWATER MANAGEMENT AREA CONSIDERATIONS

SB-300, SB-302, SB-333, SB-334, and SB-336, were performed in the area of planned stormwater management areas. The soils encountered in these borings have been visually classified in general accordance with the USDA textural soil classification system. Surficial material encountered at these borings consisted of about 12 to 24 inches of silty clay (SiC) topsoil. Below the surficial topsoil was generally clay (C), sandy loam (SL), coarse sand (COS), sand (S), and loamy sand (LS) soils with varying amounts of gravel extending to the boring termination depths.

The stormwater management area borings were planned to extend to a depth of 25 feet below existing grade. However, auger refusal was experienced on possible cobbles, boulders, or bedrock at SB-300 and SB-336 at depths of about 18.5 feet (EL. 888.6) and 12 feet (EL. 893.7) below existing grade, respectively.

Groundwater was encountered during auger advancement in SB-302, SB-333, SB-334, and SB-336 at depths ranging from about 3 to 5.5 feet (EL. 901.2 to EL. 903.5) below existing grade. Upon completion of drilling and removal of the augers, groundwater was encountered in SB-302, SB-333, SB-334, and SB-336 at depths ranging from about 4 to 6 feet (EL. 899.7 to EL. 902.5) below existing grade.

With regard to the above soil and groundwater conditions encountered at the borings, NR 151.124(4)(c)1 and 2 – *Infiltration rate exemptions* indicates that infiltration practices located in an area where the infiltration rate of the soil measured at the proposed bottom of the infiltration system is less than 0.6 inches per hour using a scientifically credible field test method; or where the least permeable soil horizon to 5 feet below the proposed bottom of the infiltration system using the USDA method of soils analysis consists of sandy clay loam, clay loam, sandy clay, silty clay or clay. These soils may be credited toward meeting the requirements, but the decision to infiltrate under these conditions is optional. In addition, NR 151.124(4)(b)1 – Separation distances indicates that infiltration practices shall be located so that the characteristics of the soil and the separation distance between the bottom of the infiltration system and the elevation of seasonal high groundwater or the top of bedrock are in accordance with the following Table (reproduced from NR 151.124):

Table 1. Separation Distances and Soil Characteristics

Source Area	Separation Distance	Soil Characteristics
Industrial, Commercial, Institutional Parking Lots and Roads	5 feet or more	Filtering Layer*
Residential Arterial Roads	5 feet or more	Filtering Layer*
Roofs Draining to Surface Infiltration Practices	1 foot or more	Native or Engineering Soils with Particles Finer than Coarse Sand
Roofs Draining to Surface Infiltration Practices	Not Applicable	
All Other Impervious Source Areas	3 feet or more	Filtering Layer*

*Defined in NR 151.002(14r) as a "soil that has at least a 3-foot deep layer with at least 20 percent fines; or at least a 5-foot deep layer with at least 10 percent fines; or an engineered soil with an equivalent level of protection as determined by the regulatory authority for the site."

The information shown above is a selected excerpt from NR151 that is intended only as general guidance for considering stormwater management in conjunction with the encountered subsurface conditions at the borings. Basin design must be performed by a qualified and experienced firm. In addition, the entirety of Chapter NR151 of the Wisconsin Administrative Code, the Site Evaluation for Stormwater Infiltration (1002)

document, and other applicable references; along with appropriate state, local or other municipal requirements must be consulted as part of site-specific stormwater design.

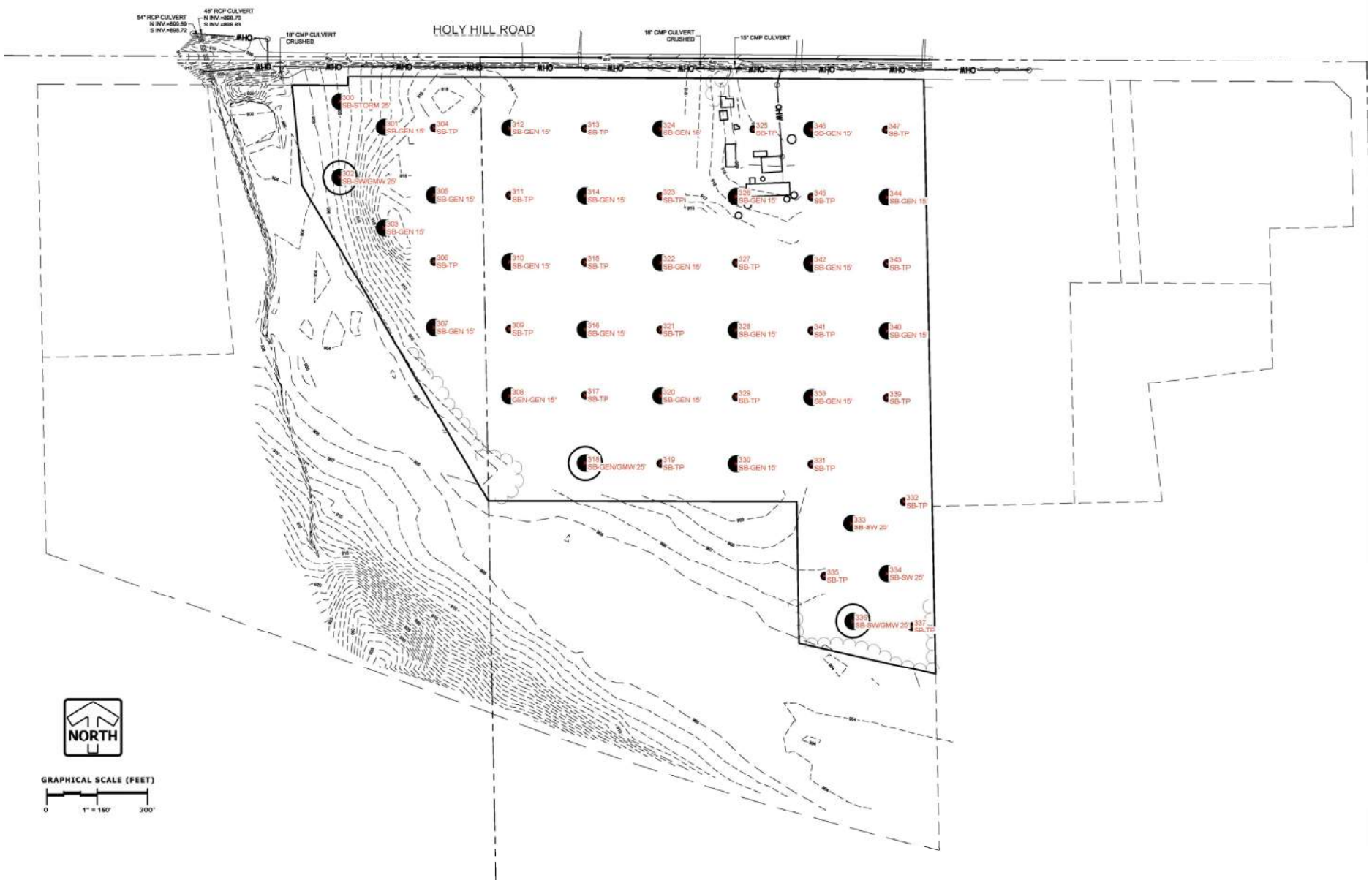
GENERAL COMMENTS

This preliminary subsurface exploration and site feasibility evaluation has been prepared to aid in the evaluation of the subject site for general site development. The recommendations presented herein are based on the available soil information and the design information provided. Any changes in the design information or building locations should be brought to the attention of PSI to determine if modifications in the recommendations are required. The final design plans and specifications should also be reviewed by PSI to determine that the recommendations presented herein have been interpreted and implemented as intended.

The widely spaced soil borings performed for this preliminary exploration and site evaluation are considered suitable for preliminary planning and design purposes. Additional exploration and evaluation should be performed within the proposed building footprints. The conditions encountered by the additional explorations may warrant an alteration of the preliminary foundation and soil bearing design recommendations presented in this report. Specific foundation and floor slab recommendations can then be provided.

This geotechnical study has been conducted in a manner consistent with that level of care ordinarily exercised by members of the profession currently practicing in the same locality under similar conditions. The findings, recommendations and opinions contained herein have been promulgated in accordance with generally accepted practice in the fields of foundation engineering, soils mechanics, and engineering geology. No other representations, expressed or implied, and no warranty or guarantee is included or intended in this report.

It is recommended that the earthwork and foundation operations be monitored by the soils engineer, to test and evaluate the bearing capacities, and the selection, placement and compaction of controlled fills.



intertek psi	Proposed Development Holy Hill Road Germantown, WI	SCALE: 1 inch = 400 feet (approx.)
		DATE: 5/22/2020
	FIGURE 1: BORING LOCATION PLAN	PROJECT NUMBER: 00522563

Table 1 - Topsoil Probes

Probe No.	Surface Elevation (feet MSL)	Approximate Topsoil Thickness (inches)
SB-TP-304	914.7	17
SB-TP-306	915.4	16.5
SB-TP-309	913.6	15
SB-TP-311	913.4	15.5
SB-TP-313	913.5	16
SB-TP-315	916.2	15
SB-TP-317	912.5	16.5
SB-TP-319	911.1	15
SB-TP-321	916.3	16
SB-TP-323	913.3	15.5
SB-TP-325	920	13.5
SB-TP-327	912.8	14
SB-TP-329	912.7	15
SB-TP-331	907.7	15
SB-TP-332	905.2	16
SB-TP-335	906.6	14.5
SB-TP-337	905.5	14
SB-TP-339	907.6	16.5
SB-TP-341	911.1	14.5
SB-TP-343	915.7	16.5
SB-TP-345	918.1	15
SB-TP-347	918.7	18.5

BORING SB-300

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** PR	**LOGGED BY:** RS
COMPLETION DEPTH	18.5 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	907.1 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water		
	While Drilling	Not Obsvd
	Upon Completion	Not Obsvd
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0			1	5	Topsoil (24"± Thick), Dark Brown Silty Clay (SiC), Very Moist		2-2-3-3 N=5	23		
905				2	5	Pale Brown Gravelly Sandy Loam (grSL), Very Moist		3-4-8-10 N=12	14		
	5			3	7			5-3-3-4 N=6	11		
900				4	10			5-4-3-3 N=7	9		
				5	12	Gray Clay (C), Very Moist		4-4-5-11 N=9	24		
	10			6	13			4-6-8-14 N=14	13		
895				7	11	Gray Gravelly Sandy Loam (grSL), Very Moist to Moist		9-21-19-15 N=40	10		
	15			8	8			30-35-50-5"	7		
890				9	2			50/3"			
				10	2			50/2"			
						End of Boring at 18.5' Due to Auger Refusal on Possible Cobbles, Boulders, or Bedrock Cave-In at 6'					

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-301

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	911.6 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	3 feet
Upon Completion	5 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (14"± Thick), Dark Brown Silty Clay, Very Moist	OL		26		
910				1	8	Brown Sandy Silt With Gravel, Wet		5-4-3 N=7	12		
	5			2	10			3-3-3 N=6	14		
905				3	6		ML	3-3-10 N=13	9		
	10			4	5			6-9-10 N=19	9		
900						Gray Sandy Silt With Gravel, Wet	ML				
	15			5	11	End of Boring at 15'		10-14-14 N=28	10		
						Cave-In at 7'					

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LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-302

DATE STARTED:	4/21/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/21/20	**DRILLER:** VJ	**LOGGED BY:** PR
COMPLETION DEPTH	25.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	906.7 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

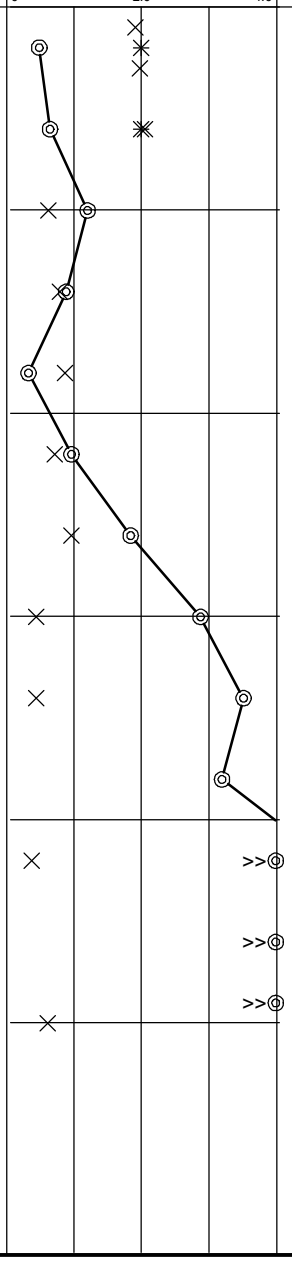
While Drilling	5.5 feet
Upon Completion	5 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
905	0	1	24	Topsoil (12"± Thick), Dark Brown Silty Clay (SiC), Very Moist Brown Clay (C), Moist		3-3-3-6 N=6	24 25
		2	24			5-5-3-8 N=8	26
	5	3	24	Pale Brown Gravelly Sandy Loam (grSL), Very Moist to Wet		6-9-6-15 N=15	8
900		4	18			7-6-5-11 N=11	10
		5	6			3-2-2-4 N=4	11
	10	6	12			4-4-8-12 N=12	9
895		7	18			6-13-10-23 N=23	12
	15	8	18			31-9-27-36 N=36	5
890		9	18	Gray Very Gravelly Sandy Loam (vgrSL), Wet		20-18-26-50 N=44	5
		10	2			22-25-15-40 N=40	
	20	11	6			24-50/5"	5
885		12	1			46-50/3"	
		13	4			50/5"	
	25			End of Boring at 25'			8

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
Moisture × PL ◪ LL ✚
0 25 50
STRENGTH, tsf
Qu ▲ Qp ✳
0 2.0 4.0

Additional Remarks



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Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-303

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** PR	**LOGGED BY:** RS
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	918.2 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water		
	While Drilling	Not Obsvd
	Upon Completion	Not Obsvd
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (11"± Thick), Dark Brown Silt Clay, Very Moist	OL		42		
				1	8	Brown Sandy Silt With Gravel, Very Moist to Moist		3-3-7 N=10	9		
915											
	5			2	13			3-3-3 N=6	11		
				3	13		ML	7-8-8 N=16	7		
910											
	10			4	3			4-10-15 N=25	1		
						Gray Sandy Silt With Gravel, Moist	ML				
905				5	5			11-20-20 N=40	3		
	15					End of Boring at 15'					
						Cave-In at 8'					

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Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-305

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** PR	**LOGGED BY:** RS
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	915.0 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water		
	While Drilling	5.5 feet
	Upon Completion	5.5 feet
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (13"± Thick), Dark Brown Silty Clay, Very Moist	OL		25		
				1	6	Light Brown Lean Clay, Very Moist	CL	3-3-4 N=7	20		
						Brown Sandy Silt, Very Moist					
910	5			2	7		ML	3-4-5 N=9	15		
						Brown Sandy Silt With Gravel, Wet					
				3	5			3-3-3 N=6	30		
				4	5			7-3-3 N=6	7		
905	10						ML				
				5	1			28-38-50/3"			
900	15					End of Boring at 15'					
						Cave-In at 7'					

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-307

DATE STARTED:	4/21/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/21/20	**DRILLER:** RS	**LOGGED BY:** AS
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	910.7 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	3 feet
Upon Completion	3 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
910	0					Topsoil (16"± Thick), Dark Brown Silty Clay, Very Moist	OL		24		
				1	9	Dark Brown Lean Clay, Very Moist	CL	5-3-3 N=6	24		Q_t = 1.7 tsf
				2	7	Brown Sandy Silt With Gravel, Wet		7-7-7 N=14	16		
905	5			3	10			5-5-8 N=13	8		
				4	8		ML	7-12-32 N=44	8		
900	10										
				5	12			50/5"	5	>>◎	
	15					End of Boring at 15' Cave-In at 9'					

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-308

DATE STARTED:	4/22/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/22/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	909.0 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	5.5 feet
Upon Completion	6 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (16"± Thick), Dark Brown Silty Clay, Very Moist	OL		11		
				1	7	Brown Silt, Trace Sand and Gravel, Very Moist	ML	3-3-5 N=8	26		
905	5			2	8	Brown Sandy Silt With Gravel, Very Moist to Wet	ML	5-4-3 N=7	7		
				3	10			5-3-3 N=6	10		
900	10			4	14	Gray Sandy Silt With Gravel, Wet	ML	9-12-13 N=25	9		
895	15			5	6			19-29-41 N=70	4	>>◎	
						End of Boring at 15'					
						Cave-In at 9'					

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Professional Service Industries, Inc.
821 Corporate Court, Suite 100
Waukesha, WI 53189
Telephone: (262) 521-2125

PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-310

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** PR	**LOGGED BY:** RS
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	914.7 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water		
	While Drilling	Not Obsvd
	Upon Completion	Not Obsvd
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (12"± Thick), Dark Brown Silty Clay, Very Moist	OL		24		
				1	4	Brown Sandy Silt With Gravel, Very Moist to Moist		5-3-3 N=6			
910	5			2	2			3-4-3 N=7	4		
				3	5		ML	5-6-7 N=13	11		
905	10			4	5			8-13-31 N=44	6		
				5	2			50/3"	2	>>◎	
900	15					End of Boring at 15' Cave-In at 5'					

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Germantown, WI

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BORING SB-312

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	914.0 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	3 feet
Upon Completion	5 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (15"± Thick), Dark Brown Silty Clay, Very Moist	OL		30		
				1	6	Brown Silty Sand, Very Moist	SM	3-3-5 N=8	18		
910						Brown Sandy Silt, Wet	ML				
	5			2	10			3-3-3 N=6	31		
						Brown Sand and Gravel, Wet					
				3	13			5-6-8 N=14	9		
905							SW				
	10			4	16			5-9-11 N=20	6		
						Gray Sandy Silt With Gravel, Wet					
900							ML				
				5	9			3-4-7 N=11	12		
	15					End of Boring at 15'					
						Cave-In at 8'					

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-314

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** PR	**LOGGED BY:** RS
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	913.1 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	8	feet
Upon Completion	5	feet
Delay	N/A	

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (12"± Thick), Dark Brown Silty Clay, Very Moist	OL		31		
				1	5	Brown Silty Fine Sand, Very Moist	SM	3-4-8 N=12	9		
910						Brown Sandy Silt With Gravel, Very Moist to Wet					
	5			2	2			10-12-8 N=20			
				3	6		ML	10-14-9 N=23	9		
905											
	10			4	4			3-3-3 N=6			
900						Gray Sandy Silt With Gravel, Wet	ML				
				5	10			23-50/5"	6	>>	
	15					End of Boring at 15'					
						Cave-In at 6'					

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-316

DATE STARTED:	4/21/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/21/20	**DRILLER:** RS	**LOGGED BY:** AS
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	915.7 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	3 feet
Upon Completion	2 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
915	0					Topsoil (14"± Thick), Dark Brown Silty Clay, Very Moist	OL		24		
				1	5	Brown Sandy Silt With Gravel, Very Moist to Wet		7-4-4 N=8	24		
				2	12			4-4-5 N=9	9		
910	5			3	6		ML	5-5-6 N=11			
				4	9			8-8-15 N=23	7		
905	10					Gray Sandy Silt With Gravel, Wet	ML				
				5	6			50/6"	5	>>◎	
	15					End of Boring at 15'					
						Cave-In at 8.5'					

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PROJECT NO.: 00522563
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Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-318

DATE STARTED:	4/21/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/21/20	**DRILLER:** RS	**LOGGED BY:** AS
COMPLETION DEPTH	16.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	907.5 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

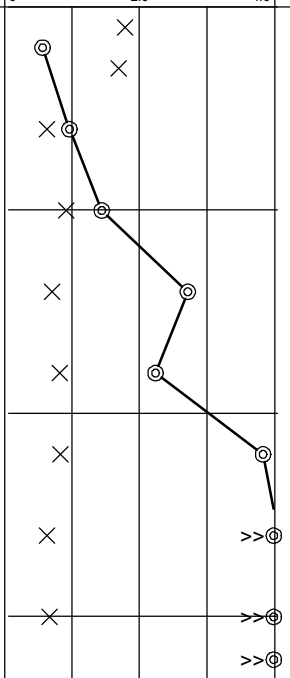
Water		
	While Drilling	5.5 feet
	Upon Completion	5 feet
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
	0					Topsoil (11"± Thick), Dark Brown Silty Clay, Very Moist	OL		
				1	18	Brown Silt, Moist	ML	2-3-4-3 N=7	22 21
905				2	24	Brown Silty Sand and Gravel, Very Moist to Wet		4-4-8-8 N=12	8
	5			3	18		SM	5-5-13-13 N=18	11
				4	5			16-21-13-11 N=34	9
900						Gray Sandy Silt with Gravel, Wet			
				5	12			5-6-22-26 N=28	10
	10			6	24			30-26-22-32 N=48	10
895							ML		
				7	18			11-21-30-36 N=51	8
	15			8	18			8-20-39-50/5" N=59	8
				9	0	End of Boring at 16' Due to Auger Refusal on Possible Cobbles, Boulders, or Bedrock		50/1"	

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0

Additional Remarks



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PROJECT NO.: 00522563
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LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-320

DATE STARTED:	4/22/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/22/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	917.2 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	5.5	feet
Upon Completion	8	feet
Delay	N/A	

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
	0					Topsoil (15"± Thick), Dark Brown Silty Clay, Very Moist	OL		26
915				1	10	Brown Sandy Silt With Gravel, Very Moist to Wet		6-3-5 N=8	12
				2	14			3-5-5 N=10	8
	5								
910				3	8		ML	4-5-8 N=13	3
				4	13			8-22-39 N=61	7
	10								
905				5	10			21-20-41 N=61	5
	15					End of Boring at 15'			
						Cave-In at 10'			

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0

Additional Remarks

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-322

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** PR	**LOGGED BY:** RS
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	913.1 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	1 feet
Upon Completion	4 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (14"± Thick), Dark Brown Silty Clay, Very Moist	OL		28		
				1	3	Brown Sandy Silt With Gravel, Wet		19-9-9 N=18	6		
910				2				4-3-4 N=7			
	5			3	5		ML	8-11-12 N=23			
905				4	8			5-12-13 N=25	7		
	10					Gray Sandy Silt, Wet					
900				5	9		ML	12-20-48 N=68	7	>>◎	
	15					End of Boring at 15'					
						Cave-In at 5'					

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-324

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	914.8 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	5.5 feet
Upon Completion	5 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
	0			Topsoil (16"± Thick), Dark Brown Silty Clay, Very Moist	OL		29
		1	10	Grayish Brown Lean Clay, Very Moist	CL	3-3-4 N=7	24
		2	13	Brown Sandy Silt, Trace Gravel, Very Moist to Wet		3-4-4 N=8	
910	5	3	10		ML	3-3-3 N=6	17
		4	14			3-3-5 N=8	9
905	10			Gray Sandy Silt With Gravel, Wet	ML		
		5	12			5-7-14 N=21	9
900	15			End of Boring at 15'			

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
Moisture, PL, LL
0 25 50
STRENGTH, tsf
Qu, Qp
0 2.0 4.0

Additional Remarks

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Germantown, WI

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BORING SB-326

DATE STARTED:	4/22/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/22/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	918.3 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	5.5 feet
Upon Completion	5 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (2"± Thick), Brown Silt With Root Matter, Very Moist	OL		15		
				1	9	Brown Silt, Trace Sand, Very Moist	ML	3-3-6 N=9	13		
915						Brown Sandy Silt With Gravel, Very Moist to Wet					
	5			2	12			8-10-12 N=22	10		
				3	10		ML	4-3-4 N=7	10		
910											
	10			4	9			8-14-16 N=30	7		
						Gray Sandy Silt With Gravel, Wet					
905							ML				
	15			5	13			12-18-24 N=42	7		
						End of Boring at 15'					
						Cave-In at 8'					

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PROJECT NO.: 00522563
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LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-328

DATE STARTED:	4/21/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/21/20	**DRILLER:** RS	**LOGGED BY:** AS
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	911.1 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	8 feet
Upon Completion	5 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (14"± Thick), Dark Brown Silty Clay, Very Moist	OL		28		
910				1	4	Brown Lean Clay, Trace Sand, Very Moist	CL	3-3-3 N=6			
				2		Brown Sandy Silt With Gravel, Moist to Very Moist	ML	3-3-4 N=7			
	5										
905				3	3			4-6-7 N=13	8		
				4	4	Gray Sandy Silt With Gravel, Wet	ML	5-5-3 N=8	11		
	10										
900				5	8			48-36-38 N=74	6	>>◎	
	15					End of Boring at 15'					
						Cave-In at 5'					

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PROJECT NO.: 00522563
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LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

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BORING SB-330

DATE STARTED:	4/22/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/22/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	910.4 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water		
	While Drilling	Not Obsvd
	Upon Completion	Not Obsvd
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
910	0					Topsoil (17"± Thick), Dark Brown Silty Clay, Very Moist	OL		22		
				1	8	Brown Sandy Silt With Gravel, Very Moist to Moist		3-3-6 N=9	7		
				2	8			4-3-4 N=7	10		
905	5										
				3	14		ML	4-3-6 N=9	10		
				4	12			11-16-21 N=37	7		
900	10										
						Gray Sandy Silt With Gravel, Moist	ML				
				5	12			23-26-30 N=56	7		
	15					End of Boring at 15'					
						Cave-In at 13'					

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-333

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	25.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	906.5 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water		
	While Drilling	3 feet
	Upon Completion	4 feet
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0			1		Topsoil (16"± Thick), Dark Brown Silty Clay (SiC), Very Moist		2-2-3-3 N=5	22		
905				2	7	Pale Brown Gravelly Sandy Loam (grSL), Moist		3-3-4-6 N=7	19		
				3	9	Pale Brown Very Gravelly Coarse Sand (vgrCOS), Wet		3-3-4-4 N=7	13		
	5			4	16			5-5-5-5 N=10	19		
900				5	10			5-6-5-7 N=11	9		
						Pale Brown Sandy (S), Wet					
	10			6	12			5-5-8-11 N=13	21		
895				7	8			6-12-18-10 N=30	26		
						Gray Gravelly Sandy Loam (grSL), Wet					
				8	14			5-9-11-14 N=20	8		
	15			9	12			7-10-16-15 N=26	9		
890				10	5			22-43-50-50/2" N=93	5	>>	
	20			11	8			26-33-44-50 N=77	8	>>	
885				12	6			32-48-50/4"	8		
				13	6			29-50-50/2"	7	>>	Q_r = 3.4 tsf
	25					End of Boring at 25'					
						Cave-In at 11'					

Professional Service Industries, Inc.
821 Corporate Court, Suite 100
Waukesha, WI 53189
Telephone: (262) 521-2125

PROJECT NO.:	00522563
PROJECT:	Holy Hill Rd Development
LOCATION:	N128 W20943 Holy Hill Rd
	Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-334

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	25.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	906.1 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water		
	While Drilling	3 feet
	Upon Completion	4 feet
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %
905	0	1	5	Topsoil (15"± Thick), Dark Brown Silty Clay (SiC), Very Moist		2-3-3-4 N=6	26
		2	6	Brown Gravelly Loamy Sand (grLS), Moist		3-3-4-6 N=7	11
		3	10	Brown Extremely Gravelly Coarse Sand (egrCOS), Wet		8-9-8-12 N=17	5
900	5	4	4			7-11-13-16 N=24	12
		5	10			7-7-9-11 N=16	8
895	10	6	9			11-14-18-20 N=32	6
		7	7			11-12-17-13 N=29	9
		8	6			10-13-18-16 N=31	11
890	15	9	7			13-12-15-14 N=27	8
		10	10			12-15-18-22 N=33	9
				Gray Very Gravelly Sandy Loam (vgrSL), Wet			
885	20	11	9			14-17-20-24 N=37	7
		12	5			16-26-24-30 N=50	7
		13	5			18-24-31-26 N=55	4
	25			End of Boring at 25'			
				Cave-In at 8'			

STANDARD PENETRATION TEST DATA
N in blows/ft ◎
× Moisture ◪ PL ✚ LL
0 25 50
STRENGTH, tsf
▲ Qu ✳ Qp
0 2.0 4.0

Additional Remarks

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-336

DATE STARTED:	4/22/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/22/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	24.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	905.7 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	3 feet
Upon Completion	6 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0 25 50) STRENGTH, tsf ▲ Qu ✳ Qp (0 2.0 4.0)	Additional Remarks
905	0			1	10	Topsoil (15"± Thick), Dark Brown Silty Clay (SiC), Very Moist		2-3-3-6 N=6	22		Q_t = 1.4 tsf
						Brown Clay (C), Very Moist					
				2	10	Pale Brown Extremely Gravelly Coarse Sand (egrCOS), Moist to Wet		3-3-16-16 N=19	5		
900	5			3	12			5-20-43-27 N=63	10		
				4	7			7-8-26-25 N=34	7		
				5	8			20-26-19-23 N=45	5		
895	10			6	8			13-15-14-12 N=29	7		
						End of Boring at 12' Due to Auger Refusal on Possible Cobbles, Boulders, or Bedrock.					
						Cave-In at 9'					
890	15										
885	20										

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-338

DATE STARTED:	4/21/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/21/20	**DRILLER:** PR	**LOGGED BY:** RS
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	908.3 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	12 feet
Upon Completion	6 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (15"± Thick), Dark Brown Silty Clay, Very Moist	OL				
				1	6	Brown Sand and Gravel, Wet (Possible Perched Water)		3-3-3 N=6	12		
905				2			SW	4-8-7 N=15			
	5					Gray Sandy Silt With Gravel, Moist to Wet					
				3	4			5-9-9 N=18	8		
900				4	6			6-8-12 N=20			
	10						ML				
895				5	9			18-50/5"	9	>>◎	
	15					End of Boring at 15'					
						Cave-In at 7'					

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-340

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** PR	**LOGGED BY:** RS
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	910.7 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	12 feet
Upon Completion	5 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
910	0					Topsoil (17"± Thick), Dark Brown Silty Clay, Very Moist	OL		30		
				1	8	Brown Sandy Silt With Gravel, Very Moist to Moist		3-3-3 N=6	19		
				2	8			3-3-4 N=7	14		
905	5			3	12		ML	3-3-5 N=8	8		
				4	10			6-6-10 N=16	9		
900	10					Gray Sandy Silt With Gravel, Wet	ML				
				5	7			18-50-50/2"	8		
	15					End of Boring at 15'					
						Cave-In at 7'					

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-342

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** PR	**LOGGED BY:** RS
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	CME 45 ATV - Rig #383
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	916.8 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	12 feet
Upon Completion	10 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (13"± Thick), Dark Brown Silty Clay, Very Moist	OL		20		
915				1	6	Brown Sandy Silt With Gravel, Very Moist to Wet		3-8-5 N=13	9		
				2	5			3-3-3 N=6	4		
	5										
910				3	3			5-5-9 N=14			
							ML				
				4	5			18-20-35 N=55	7	>>	
	10										
905											
				5	5			27-29-40 N=69	12	>>	
	15					End of Boring at 15'					
						Cave-In at 12'					

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PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-344

DATE STARTED:	4/20/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/20/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	917.5 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water

While Drilling	12 feet
Upon Completion	11 feet
Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (16"± Thick), Dark Brown Silty Clay, Very Moist	OL		28		
915				1	8	Brown Sandy Silt With Gravel, Very Moist		3-4-4 N=8	12		
	5			2	8			2-2-3 N=5	11		
910				3	8		ML	3-3-6 N=9	10		
	10			4	13			4-5-5 N=10	11		
905						Brown Silty Sand With Gravel, Wet	SM				
	15			5	10			8-16-22 N=38	13		
						End of Boring at 15'					
						Cave-In at 13'					

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Telephone: (262) 521-2125

PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

BORING SB-346

DATE STARTED:	4/22/20	**DRILL COMPANY:**	PSI, Inc.
DATE COMPLETED:	4/22/20	**DRILLER:** VJ	**LOGGED BY:** DB
COMPLETION DEPTH	15.0 ft	**DRILL RIG:**	Marooka D-50 ATV - Rig #395
BENCHMARK:	N/A	**DRILLING METHOD:**	Hollow Stem Auger
ELEVATION:	919.3 ft	**SAMPLING METHOD:**	2-in SS
LATITUDE:		**HAMMER TYPE:**	Automatic
LONGITUDE:		**EFFICIENCY**	N/A
STATION: N/A	**OFFSET:** N/A	**REVIEWED BY:**	CR

REMARKS:

Water		
	While Drilling	Not Obsvd
	Upon Completion	Not Obsvd
	Delay	N/A

BORING LOCATION:

Elevation (feet)	Depth, (feet)	Graphic Log	Sample Type	Sample No.	Recovery (inches)	MATERIAL DESCRIPTION	USCS Classification	SPT Blows per 6-inch (SS)	Moisture, %	STANDARD PENETRATION TEST DATA N in blows/ft ◎ × Moisture ◪ PL ✚ LL (0, 25, 50) STRENGTH, tsf ▲ Qu ✳ Qp (0, 2.0, 4.0)	Additional Remarks
	0					Topsoil (18"± Thick), Dark Brown Silty Clay, Very Moist	OL		22		
				1	8	Brown Sandy Silt With Gravel, Very Moist to Moist		5-4-3 N=7	12		
915	5			2	12			3-4-6 N=10	11		
				3	10			3-4-4 N=8	7		
910	10			4	16		ML	10-14-15 N=29	8		
905	15			5	6			23-29-32 N=61	1	>>◎	
						End of Boring at 15'					
						Cave-In at 11'					

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Telephone: (262) 521-2125

PROJECT NO.: 00522563
PROJECT: Holy Hill Rd Development
LOCATION: N128 W20943 Holy Hill Rd
Germantown, WI

The stratification lines represent approximate boundaries. The transition may be gradual.

Wisconsin Department of Safety and Professional Services
Division of Safety and Buildings

SOIL EVALUATION - STORM

In accordance with SPS 382.365 and 385, Wis. Adm. Code

Attach complete site plan on paper not less than 8 ½ x 11 inches in size. Plan must include, but not be limited to: vertical and horizontal reference point (BM), direction and percent slope, scale or dimensions, north arrow, and BM referenced to nearest road.

County	
Washington	
Parcel I.D.	
181987	
Reviewed by	Date

Please print all information

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

Property Owner	Property Location		
MLG/RMS LTD Partnership	N128 W20943 Holy Hill Rd		
Property Owner's Mailing Address	Lot #	Block #	Subd. Name or CSM#
19000 W Bluemound Rd	3		CSM 6506

City	State	Zip Code	Phone Number	☐ City ☒ Village ☐ Town	Nearest Road
Brookfield	WI	53045	( )	Germantown	Holy Hill Rd

Drainage area _____ ☐ sq. ft. ☐ acres

Optional:

Test Site Suitable for (check all that apply)

☐ Irrigation ☐ Bioretention trench ☐ Trench(es)

☐ Rain garden ☐ Infiltration Pond ☐ Reuse

☐ infiltration trench ☐ Retention Pond ☐ Other _____

Hydraulic Application Test Method:

☒ Morphological Evaluation

☐ Double-Ring Infiltrometer

☐ Other (specify)

_____

Soil Moisture
Date of Soil Borings:

USDA-NRCS WETS Value:

☐ Dry = 1

☒ Normal = 2

☐ Wet = 3

1 Obs. #

☒Boring SB-300

☐Pit

Ground surface elev. 907.1 ft.

Depth to limiting factor 96 in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.**	% Fines**,1	Table 2 Infiltration Rate Inches/Hr
1	Topsoil (24"± Thick)									
2	24-96	10YR 6/3	-	grSL	1, f, cr	mvfr	-	15-35	15-55	0.50
3	96-144	10YR 6/1	-	C	1, vf, sbk	mvfi	-	0-15	55-100	0.07
4	144-222*	10YR 6/1	-	grSL	1, f, cr	mvfr	-	15-35	15-55	0.50

2 Obs. #

☒Boring SB-302

☐Pit

Ground surface elev. 906.7 ft.

Depth to limiting factor 72 in.

Wet at 72 in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.**	% Fines**,1	Table 2 Infiltration Rate Inches/Hr
1	Topsoil (12"± Thick)									
2	12-48	10YR 4/3	-	C	1, vf, sbk	mvfi	-	0-15	55-100	0.07
3	48-192	10YR 6/3	-	grSL	1, f, cr	mvfr	-	15-35	15-55	0.50
4	192-300	10YR 6/1	-	vgrSL	1, f, cr	mvfr	-	35-60	15-55	0.50

3 Obs. #

☒Boring SB-333

☐Pit Ground surface elev. 906.5 ft. Depth to limiting factor 36 in. Wet at 36 in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.**	% Fines**,[1]	Table 2 Infiltration Rate Inches/Hr
1	Topsoil (16"± Thick)									
2	16-36	10YR 6/3	-	grSL	1, f, cr	mvfr	-	15-35	15-55	0.50
3	36-108	10YR 6/3	-	vgrCOS	0, c, gr	ml	-	35-60	0-15	3.60
4	108-156	10YR 6/3	-	S	0, f to m, gr	ml	-	0-15	0-15	3.60
5	156-300	10YR 6/1	-	grSL	1, f, cr	mvfr	-	15-35	15-55	0.50

4 Obs. #

☒Boring SB-334

☐Pit Ground surface elev. 906.1 ft. Depth to limiting factor 36 in. Wet at 36 in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.**	% Fines**,[1]	Table 2 Infiltration Rate Inches/Hr
1	Topsoil (15" ± Thick)									
2	15-36	10YR 5/3	-	grLS	0, f to m, gr	ml	-	15-35	10-30	1.63
3	36-228	10YR 5/3	-	egrCOS	0, c, gr	ml	-	60-90	0-15	3.60
4	228-300	10YR 6/1	-	vgrSL	1, f, cr	mvfr	-	35-60	15-55	0.50

5 Obs. #

☒Boring SB- 336

☐Pit Ground surface elev. 905.7 ft. Depth to limiting factor 36 in. Wet at 36 in.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frag.**	% Fines**,[1]	Table 2 Infiltration Rate Inches/Hr
1	Topsoil (15" ± Thick)									
2	15-24	10YR 4/3	-	C	1, vf, sbk	mvfi	-	0-15	55-100	0.07
3	24-144*	10YR 6/3	-	egrCOS	0, c, gr	ml	-	60-90	0-15	3.60

CST/PSS Name (Please Print)	Signature	WI-CST Number
Bradley J. Broback, P.E.	Bradley J. Broback	1411511
Address	**Date Evaluation Conducted**	**Telephone Number**
821 Corporate Court, Waukesha, Wisconsin 53189	5/6/20	262-521-2125

SBD-10793 (R.01/17)

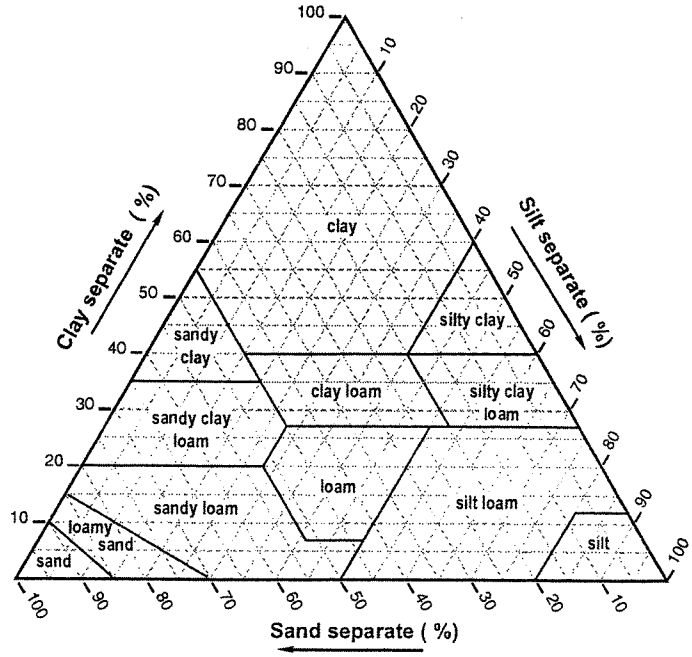
* Auger Refusal experienced on possible cobbles, boulders, or bedrock.

**Estimated based upon the visual classification and not based upon laboratory testing.

[1] Based on only the fraction of soil that passes through the No. 10 sieve.

Texture Triangle:

Fine Earth Texture Classes (——)



TEXTURE MODIFIERS - Conventions for using "Rock Fragment Texture Modifiers" and for using textural adjectives that convey the "% volume" ranges for **Rock Fragments - Size and Quantity**.

Fragment Content % By Volume	Rock Fragment Modifier Usage
< 15	No texture adjective is used (noun only; e.g., *loam*).
15 to < 35	Use adjective for appropriate size; e.g., *gravelly*.
35 to < 60	Use "very" with the appropriate size adjective; e.g., *very gravelly*.
60 to < 90	Use "extremely" with the appropriate size adjective; e.g., *extremely gravelly*.
≥ 90	No adjective or modifier. If ≤ 10% fine earth, use the appropriate noun for the dominant size class; e.g., *gravel*. Use **Terms in Lieu of Texture**.

(SOIL) TEXTURE

This is the numerical proportion (percent by weight) of sand, silt, and clay in a soil. Sand, silt, and clay content is estimated in the field by hand (or quantitatively measured in the office/lab by hydrometer or pipette) and then placed within the texture triangle to determine **Texture Class**. Estimate the **Texture Class**; e.g., *sandy loam*; or **Subclass**; e.g., *fine sandy loam* of the fine earth (≤ 2 mm) fraction, or choose a **Term in Lieu of Texture**; e.g., *gravel*. If appropriate, use a **Textural Class Modifier**; e.g., *gravelly silt loam*.

NOTE: **Soil Texture** encompasses only the fine earth fraction (≤ 2 mm). **Particle Size Distribution** (PSD) encompasses the whole soil, including both the fine earth fraction (≤ 2 mm; weight %) and rock fragments (> 2 mm; volume %).

TEXTURE CLASS

Texture Class or Subclass	Code	
	Conv.	NASIS
Coarse Sand	cos	COS
Sand	s	S
Fine Sand	fs	FS
Very Fine Sand	vfs	VFS
Loamy Coarse Sand	lcos	LCOS
Loamy Sand	ls	LS
Loamy Fine Sand	lfs	LFS
Loamy Very Fine Sand	lvfs	LVFS
Coarse Sandy Loam	cosl	COSL
Sandy Loam	sl	SL
Fine Sandy Loam	fsl	FSL
Very Fine Sandy Loam	vfsl	VFSL
Loam	l	L
Silt Loam	sil	SIL
Silt	si	SI
Sandy Clay Loam	scl	SCL
Clay Loam	cl	CL
Silty Clay Loam	sicl	SICL
Sandy Clay	sc	SC
Silty Clay	sic	SIC
Clay	c	C

TEXTURE MODIFIERS - *(adjectives)*

ROCK FRAGMENTS: Size & Quantity [1]	Code		Criteria: Percent (By Volume) of Total Rock Fragments and Dominated By (*name size*): [1]
	Conv.	PDP/ NASIS	
ROCK FRAGMENTS (> 2 mm; ≥ Strongly Cemented)			
Gravelly	GR	GR	≥ 15% but < 35% gravel
Fine Gravelly	FGR	GRF	≥15% but < 35% fine gravel
Medium Gravelly	MGR	GRM	≥15% but < 35% med. gravel
Coarse Gravelly	CGR	GRC	≥ 15% but < 35% coarse gravel
Very Gravelly	VGR	GRV	≥ 35% but < 60% gravel
Extremely Gravelly	XGR	GRX	≥ 60% but < 90% gravel
Cobbly	CB	CB	≥ 15% but < 35% cobbles
Very Cobbly	VCB	CBV	≥ 35% but < 60% cobbles
Extremely Cobbly	XCB	CBX	≥ 60% but < 90% cobbles
Stony	ST	ST	≥ 15% but < 35% stones
Very Stony	VST	STV	≥ 35% but < 60% stones
Extremely Stony	XST	STX	≥ 60% but < 90% stones
Bouldery	BY	BY	≥ 15% but < 35% boulders
Very Bouldery	VBY	BYV	≥ 35% but < 60% boulders
Extremely Bouldery	XBY	BYX	≥ 60% but < 90% boulders
Channery	CN	CN	≥ 15% but < 35% channers
Very Channery	VCN	CNV	≥ 35% but < 60% channers
Extremely Channery	XCN	CNX	≥ 60% but < 90% channers
Flaggy	FL	FL	≥ 15% but < 35% flagstones
Very Flaggy	VFL	FLV	≥ 35% but < 60% flagstones
Extremely Flaggy	XFL	FLX	≥ 60% but < 90% flagstones
PARAROCK FRAGMENTS (> 2 mm; < Strongly Cemented) [2, 3]			
Parabouldery	PBY	PBY	(same criteria as bouldery)
Very Parabouldery	VPBY	PBYV	(same criteria as very bouldery)
Extr. Parabouldery	XPBY	PBYX	(same criteria as ext. bouldery)
etc.	etc.	etc.	(same criteria as non-para)

[1] The "Quantity" modifier (e.g., *very*) is based on the total rock fragment content. The "Size" modifier (e.g., *cobbly*) is independently based on the largest, dominant fragment size. For a mixture of sizes (e.g., *gravel and stones*), a smaller size–class is named only if its quantity (%) sufficiently exceeds that of a larger size–class. For field texture determination, a smaller size-class must exceed 2 times the quantity (vol. %) of a larger size class before it is named (e.g., 30% gravel and 14% stones = *very gravelly*, but 20% gravel and 14% stones = *stony*). For more explicit naming criteria see NSSH-Part 618, Exhibit 618.11(Soil Survey Staff, 2001b).

GENERAL NOTES

SAMPLE IDENTIFICATION

The Unified Soil Classification System (USCS), AASHTO 1988 and ASTM designations D2487 and D-2488 are used to identify the encountered materials unless otherwise noted. Coarse-grained soils are defined as having more than 50% of their dry weight retained on a #200 sieve (0.075mm); they are described as: boulders, cobbles, gravel or sand. Fine-grained soils have less than 50% of their dry weight retained on a #200 sieve; they are defined as silts or clay depending on their Atterberg Limit attributes. Major constituents may be added as modifiers and minor constituents may be added according to the relative proportions based on grain size.

DRILLING AND SAMPLING SYMBOLS

SFA: Solid Flight Auger - typically 4" diameter flights, except where noted.
HSA: Hollow Stem Auger - typically 3¼" or 4¼ I.D. openings, except where noted.
M.R.: Mud Rotary - Uses a rotary head with Bentonite or Polymer Slurry
R.C.: Diamond Bit Core Sampler
H.A.: Hand Auger
P.A.: Power Auger - Handheld motorized auger

SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
ST: Shelby Tube - 3" O.D., except where noted.
RC: Rock Core
TC: Texas Cone
BS: Bulk Sample
PM: Pressuremeter
CPT-U: Cone Penetrometer Testing with Pore-Pressure Readings

SOIL PROPERTY SYMBOLS

N: Standard "N" penetration: Blows per foot of a 140 pound hammer falling 30 inches on a 2-inch O.D. Split-Spoon.
N_{60}: A "N" penetration value corrected to an equivalent 60% hammer energy transfer efficiency (ETR)
Q_u: Unconfined compressive strength, TSF
Q_p: Pocket penetrometer value, unconfined compressive strength, TSF
w%: Moisture/water content, %
LL: Liquid Limit, %
PL: Plastic Limit, %
PI: Plasticity Index = (LL-PL),%
DD: Dry unit weight, pcf
▼,▽,▼ Apparent groundwater level at time noted

RELATIVE DENSITY OF COARSE-GRAINED SOILS

Relative Density	N - Blows/foot
Very Loose	0 - 4
Loose	4 - 10
Medium Dense	10 - 30
Dense	30 - 50
Very Dense	50 - 80
Extremely Dense	80+

ANGULARITY OF COARSE-GRAINED PARTICLES

Description	Criteria
Angular:	Particles have sharp edges and relatively plane sides with unpolished surfaces
Subangular:	Particles are similar to angular description, but have rounded edges
Subrounded:	Particles have nearly plane sides, but have well-rounded corners and edges
Rounded:	Particles have smoothly curved sides and no edges

GRAIN-SIZE TERMINOLOGY

Component	Size Range
Boulders:	Over 300 mm (>12 in.)
Cobbles:	75 mm to 300 mm (3 in. to 12 in.)
Coarse-Grained Gravel:	19 mm to 75 mm (¾ in. to 3 in.)
Fine-Grained Gravel:	4.75 mm to 19 mm (No.4 to ¾ in.)
Coarse-Grained Sand:	2 mm to 4.75 mm (No.10 to No.4)
Medium-Grained Sand:	0.42 mm to 2 mm (No.40 to No.10)
Fine-Grained Sand:	0.075 mm to 0.42 mm (No. 200 to No.40)
Silt:	0.005 mm to 0.075 mm
Clay:	<0.005 mm

PARTICLE SHAPE

Description	Criteria
Flat:	Particles with width/thickness ratio > 3
Elongated:	Particles with length/width ratio > 3
Flat & Elongated:	Particles meet criteria for both flat and elongated

RELATIVE PROPORTIONS OF FINES

Descriptive Term	% Dry Weight
Trace:	< 5%
With:	5% to 12%
Modifier:	>12%

GENERAL NOTES

(Continued)

CONSISTENCY OF FINE-GRAINED SOILS

Q_U - TSF	N - Blows/foot	Consistency
0 - 0.25	0 - 2	Very Soft
0.25 - 0.50	2 - 4	Soft
0.50 - 1.00	4 - 8	Firm (Medium Stiff)
1.00 - 2.00	8 - 15	Stiff
2.00 - 4.00	15 - 30	Very Stiff
4.00 - 8.00	30 - 50	Hard
8.00+	50+	Very Hard

MOISTURE CONDITION DESCRIPTION

Description	Criteria
Dry:	Absence of moisture, dusty, dry to the touch
Moist:	Damp but no visible water
Wet:	Visible free water, usually soil is below water table

RELATIVE PROPORTIONS OF SAND AND GRAVEL

Descriptive Term	% Dry Weight
Trace:	< 15%
With:	15% to 30%
Modifier:	>30%

STRUCTURE DESCRIPTION

Description	Criteria
Stratified:	Alternating layers of varying material or color with layers at least ¼-inch (6 mm) thick
Laminated:	Alternating layers of varying material or color with layers less than ¼-inch (6 mm) thick
Fissured:	Breaks along definite planes of fracture with little resistance to fracturing
Slickensided:	Fracture planes appear polished or glossy, sometimes striated
Blocky:	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Lensed:	Inclusion of small pockets of different soils
Layer:	Inclusion greater than 3 inches thick (75 mm)
Seam:	Inclusion 1/8-inch to 3 inches (3 to 75 mm) thick extending through the sample
Parting:	Inclusion less than 1/8-inch (3 mm) thick

SCALE OF RELATIVE ROCK HARDNESS

Q_U - TSF	Consistency
2.5 - 10	Extremely Soft
10 - 50	Very Soft
50 - 250	Soft
250 - 525	Medium Hard
525 - 1,050	Moderately Hard
1,050 - 2,600	Hard
>2,600	Very Hard

ROCK BEDDING THICKNESSES

Description	Criteria
Very Thick Bedded	Greater than 3-foot (>1.0 m)
Thick Bedded	1-foot to 3-foot (0.3 m to 1.0 m)
Medium Bedded	4-inch to 1-foot (0.1 m to 0.3 m)
Thin Bedded	1¼-inch to 4-inch (30 mm to 100 mm)
Very Thin Bedded	½-inch to 1¼-inch (10 mm to 30 mm)
Thickly Laminated	1/8-inch to ½-inch (3 mm to 10 mm)
Thinly Laminated	1/8-inch or less "paper thin" (<3 mm)

ROCK VOIDS

Voids	Void Diameter
Pit	<6 mm (<0.25 in)
Vug	6 mm to 50 mm (0.25 in to 2 in)
Cavity	50 mm to 600 mm (2 in to 24 in)
Cave	>600 mm (>24 in)

GRAIN-SIZED TERMINOLOGY

(Typically Sedimentary Rock)

Component	Size Range
Very Coarse Grained	>4.76 mm
Coarse Grained	2.0 mm - 4.76 mm
Medium Grained	0.42 mm - 2.0 mm
Fine Grained	0.075 mm - 0.42 mm
Very Fine Grained	<0.075 mm

ROCK QUALITY DESCRIPTION

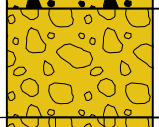
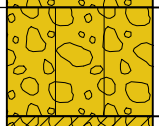
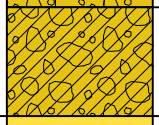
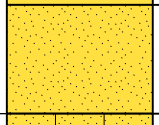
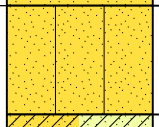
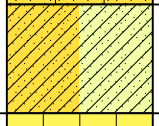
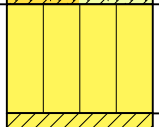
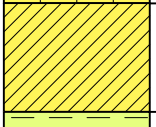
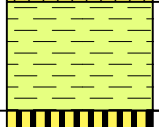
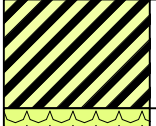
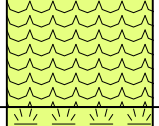
Rock Mass Description	RQD Value
Excellent	90 -100
Good	75 - 90
Fair	50 - 75
Poor	25 -50
Very Poor	Less than 25

DEGREE OF WEATHERING

Slightly Weathered:	Rock generally fresh, joints stained and discoloration extends into rock up to 25 mm (1 in), open joints may contain clay, core rings under hammer impact.
Weathered:	Rock mass is decomposed 50% or less, significant portions of the rock show discoloration and weathering effects, cores cannot be broken by hand or scraped by knife.
Highly Weathered:	Rock mass is more than 50% decomposed, complete discoloration of rock fabric, core may be extremely broken and gives clunk sound when struck by hammer, may be shaved with a knife.

SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS GRAPH	SYMBOLS LETTER	TYPICAL DESCRIPTIONS
COARSE GRAINED SOILS MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	CLEAN GRAVELS (LITTLE OR NO FINES)		GW	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
				GP	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES
		GRAVELS WITH FINES (APPRECIABLE AMOUNT OF FINES)		GM	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES
				GC	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
	SAND AND SANDY SOILS MORE THAN 50% OF COARSE FRACTION PASSING ON NO. 4 SIEVE	CLEAN SANDS (LITTLE OR NO FINES)		SW	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
				SP	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
		SANDS WITH FINES (APPRECIABLE AMOUNT OF FINES)		SM	SILTY SANDS, SAND - SILT MIXTURES
				SC	CLAYEY SANDS, SAND - CLAY MIXTURES
FINE GRAINED SOILS MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS	LIQUID LIMIT LESS THAN 50		ML	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
				CL	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				OL	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY
	SILTS AND CLAYS	LIQUID LIMIT GREATER THAN 50		MH	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS
				CH	INORGANIC CLAYS OF HIGH PLASTICITY
				OH	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
HIGHLY ORGANIC SOILS				PT	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS

intertek psi

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ONSITE CIVIL ENGINEERING INFRASTRUCTURE PLANS

FOR

CAPSTONE 41

GERMANTOWN, WI

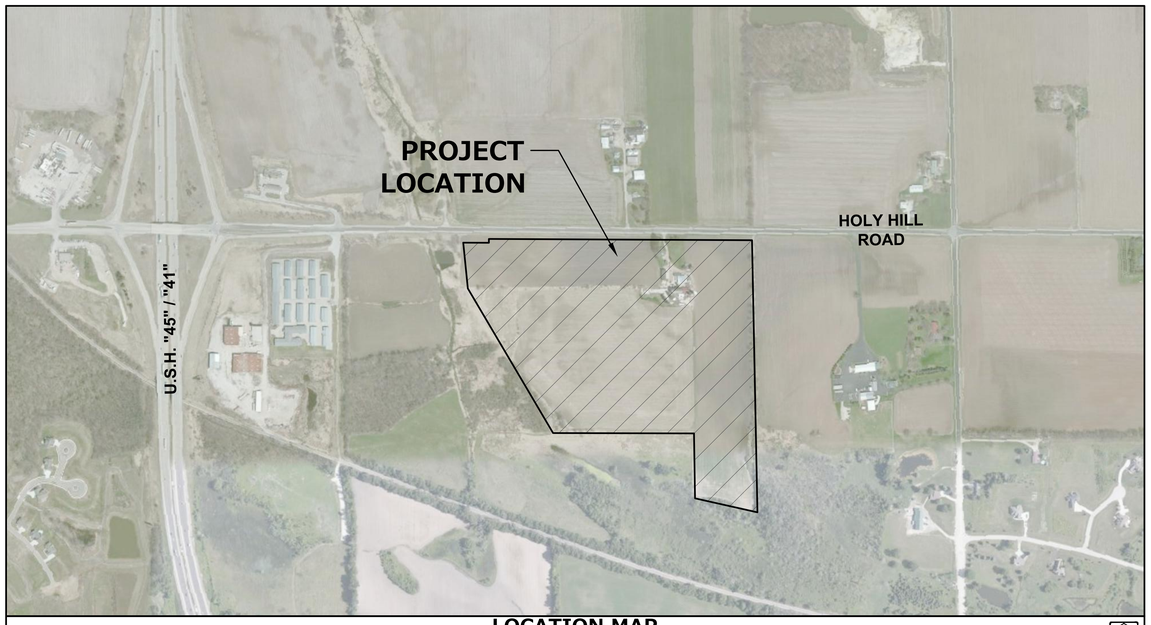
PLANS PREPARED
FOR

CAPSTONE QUADRANGLE

N17 W24222 RIVERWOOD DR., SUITE 160
WAUKESHA, WI 53188

LEGEND

	EXISTING	PROPOSED
SANITARY SEWER MANHOLE	◎	◉
STORM SEWER MANHOLE	◎	◉
STORM SEWER CATCH BASIN (ROUND CASTING)	○	●
STORM SEWER CATCH BASIN (RECTANGULAR CASTING)	□	■
PRECAST FLARED END SECTION	◁	▶
CONCRETE HEADWALL	⊂	⊂
AIR RELEASE ASSEMBLY	⊗	⊛
VALVE BOX	⊞	⊠
FIRE HYDRANT	⊄	⊄
BUFFALO BOX	⊕	•
CLEANOUT	⊡	⊡
SANITARY SEWER	——▷——	——▶——
FORCE MAIN	——\—\—\——	——\—\—\——
STORM SEWER	——⊃——	——⊃——
DRAIN TILE	——⊢——	——⊃⊃——
WATER MAIN	—— W ——	—— W ——
FIRE PROTECTION		—— FP ——
UTILITY CROSSING		—┼—
GRANULAR TRENCH BACKFILL		▨
LIGHTING	⊸○	⊸✹
ELECTRICAL CABLE	—— E ——	—— E ——
OVERHEAD WIRES	—— OHW ——	—— OHW ——
CAUTION EXISTING UTILITIES NEARBY		CAUTION
ELECTRICAL TRANSFORMER OR PEDESTAL	E	◪
POWER POLE	—○—	—●—
POWER POLE WITH LIGHT	—✳—	—✳—
GUY WIRE	—•	
STREET SIGN	▷	▶
GAS MAIN	—— G ——	—— G ——
TELEPHONE LINE	—— T ——	—— T ——
CONTOUR	749	749
SPOT ELEVATION	×(750.00)	+750.00
WETLANDS	WET	
PRIMARY ENVIRONMENTAL CORRIDOR	PEC	
FLOODWAY		
FLOODPLAIN		
HIGH WATER LEVEL (HWL)		
NORMAL WATER LEVEL (NWL)		
DIRECTION OF SURFACE FLOW		PAVE PAVEMENT
DITCH OR SWALE		
DIVERSION SWALE		
OVERFLOW RELIEF ROUTING	6" 6"	
TREE WITH TRUNK SIZE		
SOIL BORING		
TOPSOIL PROBE		
FENCE LINE, TEMPORARY SILT	—— SF ——	—— SF ——
FENCE LINE, WIRE		
FENCE LINE, CHAIN LINK OR IRON	—○—	—○—
FENCE LINE, WOOD OR PLASTIC	—□—	—□—
CONCRETE SIDEWALK		
CURB AND GUTTER		
DEPRESSED CURB		
REVERSE PITCH CURB & GUTTER		
EASEMENT LINE		



LOCATION MAP
SCALE: 1" = 400'

INDEX OF SHEETS

C-1	COVER SHEET
C-2	EXISTING CONDITIONS PLAN
C-3	SITE DIMENSIONAL & PAVING PLAN
C-4 - C-6	GRADING PLAN
C-7 - C-9	UTILITY PLAN
C-10 - C-12	SITE STABILIZATION PLAN
C-13 - C-16	CONSTRUCTION DETAILS
L-1 - L-5	LANDSCAPE PLAN

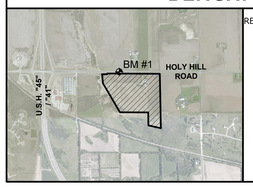
REQUIRED SUBMITTALS FOR APPROVAL

1. HOT MIX ASPHALT - MIX DESIGN
2. CONCRETE PAVEMENTS (EXTERIOR) - MIX DESIGN & JOINT PLAN
3. PAVEMENT STONE BASE COURSE - GRADATION
4. PIPE BEDDING & TRENCH BACKFILL - GRADATION
5. MANHOLE BACKFILL - GRADATION
6. PAVEMENT MARKING PAINT

REQUIRED SUBMITTALS FOR RECORDS

1. WATER MAIN PIPES, VALVES, HYDRANTS & FITTINGS
2. SANITARY SEWER PIPE & FITTINGS
3. STORM SEWER PIPE, STRUCTURES, & FITTINGS
4. TRACER WIRE
5. UNDERGROUND UTILITY LOCATION RECORD DRAWINGS
6. ADA SIGN & TRUNCATED DOMES, PAINT & STENCILS
7. CHEMICAL SOIL STABILIZATION MIX DESIGN (IF APPLICABLE)

BENCHMARKS



REFERENCE BENCHMARK 1:
NW CORNER, NE 1/4 (NE CORNER, NW 1/4)
SEC. 18, T9N, R20E - P.O.C.
(FOUND CONC. MON. W/ BRASS CAP)
N=461,119.72; E=2,455,363.90
(NORTH AMERICAN DATUM OF 1983/2011)
REFERENCE BENCHMARK EL.=916.61 (NAVD88)

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GENERAL NOTES

1. THE INTENTION OF THE PLANS AND SPECIFICATIONS IS TO SET FORTH PERFORMANCE AND CONSTRUCTION MATERIAL STANDARDS FOR THE PROPER EXECUTION OF WORK. ALL WORKS CONTAINED WITHIN THE PLANS AND SPECIFICATIONS SHALL BE COMPLETED IN ACCORDANCE WITH ALL REQUIREMENTS FROM LOCAL, STATE, FEDERAL OR OTHER GOVERNING AGENCY'S LAWS, REGULATIONS, JURISDICTIONAL ORDINANCES/CODES/RULES/ETC., AND THE OWNER'S DIRECTION.
2. A PRELIMINARY GEOTECHNICAL REPORT HAS BEEN PREPARED BY PROFESSIONAL SERVICE INDUSTRIES, INC. DATED MAY 26, 2020. THE DATA ON SUB-SURFACE SOIL CONDITIONS IS NOT INTENDED AS A REPRESENTATION OR WARRANTY OF THE CONTINUITY OF SUCH CONDITIONS BETWEEN BORINGS OR INDICATED SAMPLING LOCATIONS. IT SHALL BE EXPRESSLY UNDERSTOOD THAT OWNER WILL NOT BE RESPONSIBLE FOR ANY INTERPRETATIONS OR CONCLUSIONS DRAWN THERE FROM BY THE CONTRACTOR. DATA IS MADE AVAILABLE FOR THE CONVENIENCE OF THE CONTRACTOR. THE CONTRACTOR IS RESPONSIBLE FOR PERFORMING ANY ADDITIONAL SOILS INVESTIGATIONS THEY FEEL IS NECESSARY FOR THE PROPER EVALUATION OF THE SITE FOR PURPOSES OF PLANNING, BIDDING, OR CONSTRUCTING THE PROJECT AT NO ADDITIONAL COST TO THE OWNER.
3. THE CONTRACTOR IS RESPONSIBLE TO REVIEW AND UNDERSTAND ALL COMPONENTS OF THE PLANS AND SPECIFICATIONS, INCLUDING FIELD VERIFYING SOIL CONDITIONS, PRIOR TO SUBMISSION OF A BID PROPOSAL.
4. THE CONTRACTOR SHALL PROMPTLY REPORT ANY ERRORS OR AMBIGUITIES LEARNED AS PART OF THEIR REVIEW OF PLANS, SPECIFICATIONS, REPORTS AND FIELD INVESTIGATIONS.
5. THE CONTRACTOR IS SOLELY RESPONSIBLE FOR THE COMPUTATION OF QUANTITIES AND WORK REQUIRED TO COMPLETE THIS PROJECT. THE CONTRACTOR'S BID SHALL BE BASED ON ITS OWN COMPUTATIONS AND IN NO SUCH INSTANCE RELY ON THE ENGINEER'S ESTIMATE.
6. QUESTIONS/CLARIFICATIONS WILL BE INTERPRETED BY ENGINEER/OWNER PRIOR TO THE AWARD OF CONTRACT. ENGINEER/OWNER WILL SUBMIT OFFICIAL RESPONSES IN WRITING. INTERPRETATIONS PRESENTED IN OFFICIAL RESPONSES SHALL BE BINDING ON ALL PARTIES ASSOCIATED WITH THE CONTRACT. IN NO WAY SHALL WORD-OF-MOUTH DIALOG CONSTITUTE AN OFFICIAL RESPONSE.
7. PRIOR TO START OF WORK, CONTRACTOR SHALL BE COMPLETELY FAMILIAR WITH ALL CONDITIONS OF THE SITE, AND SHALL ACCOUNT FOR CONDITIONS THAT AFFECT, OR MAY AFFECT CONSTRUCTION INCLUDING, BUT NOT LIMITED TO, LIMITATIONS OF WORK ACCESS, SPACE LIMITATIONS, OVERHEAD OBSTRUCTIONS, TRAFFIC PATTERNS, LOCAL REQUIREMENTS, ADJACENT ACTIVITIES, ETC. FAILURE TO CONSIDER SITE CONDITIONS SHALL NOT BE CAUSE FOR CLAIM OF JOB EXTRAS.
8. COMMENCEMENT OF CONSTRUCTION SHALL EXPLICITLY CONFIRM THAT THE CONTRACTOR HAS REVIEWED THE PLANS AND SPECIFICATIONS IN ENTIRETY AND CERTIFIES THAT THEIR SUBMITTED BID PROPOSAL CONTAINS PROVISIONS TO COMPLETE THE PROJECT, WITH THE EXCEPTION OF UNFORESEEN FIELD CONDITIONS; ALL APPLICABLE PERMITS HAVE BEEN OBTAINED; AND CONTRACTOR UNDERSTANDS ALL OF THE REQUIREMENTS OF THE PROJECT.
9. SHOULD ANY DISCREPANCIES OR CONFLICTS IN THE PLANS OR SPECIFICATIONS BE DISCOVERED AFTER THE AWARD OF CONTRACT, ENGINEER SHALL BE NOTIFIED IN WRITING IMMEDIATELY AND CONSTRUCTION OF ITEMS AFFECTED BY THE DISCREPANCIES/CONFLICTS SHALL NOT COMMENCE, OR CONTINUE, UNTIL A WRITTEN RESPONSE FROM ENGINEER/OWNER IS DISTRIBUTED. IN THE EVENT OF A CONFLICT BETWEEN REFERENCED CODES, STANDARDS, SPECIFICATIONS AND PLANS, THE ONE ESTABLISHING THE MOST STRINGENT REQUIREMENTS SHALL BE FOLLOWED.
10. THE CONTRACTOR SHALL, AT ITS OWN EXPENSE, OBTAIN ALL NECESSARY PERMITS AND LICENSES TO COMPLETE THE PROJECT. OBTAINING PERMITS, OR DELAYS, IS NOT CAUSE FOR DELAY OF THE CONTRACT OR SCHEDULE. CONTRACTOR SHALL COMPLY WITH ALL PERMIT REQUIREMENTS.
11. THE CONTRACTOR SHALL NOTIFY ALL INTERESTED GOVERNING AGENCIES, UTILITY COMPANIES AFFECTED BY THIS CONSTRUCTION PROJECT, AND DIGGER'S HOTLINE IN ADVANCE OF CONSTRUCTION TO COMPLY WITH ALL JURISDICTIONAL ORDINANCES/CODES/RULES/ETC., PERMIT STIPULATIONS, AND OTHER APPLICABLE STANDARDS.
12. SAFETY IS THE SOLE RESPONSIBILITY OF THE CONTRACTOR. THE CONTRACTOR SHALL BE RESPONSIBLE TO INITIATE, INSTITUTE, ENFORCE, MAINTAIN, AND SUPERVISE ALL SAFETY PRECAUTIONS AND JOB SITE SAFETY PROGRAMS IN CONNECTION WITH THE WORK.
13. CONTRACTOR SHALL KEEP THE JOBSITE CLEAN AND ORDERLY AT ALL TIMES. ALL LOCATIONS OF THE SITE SHALL BE KEPT IN A WORKING MANNER SUCH THAT DEBRIS IS REMOVED CONTINUOUSLY AND ALL RESPECTIVE CONTRACTORS OPERATE UNDER GENERAL "GOOD HOUSEKEEPING."
14. THE CONTRACTOR SHALL INDEMNIFY THE OWNER, ENGINEER, AND THEIR AGENTS FROM ALL LIABILITY INVOLVED WITH THE CONSTRUCTION, INSTALLATION, AND TESTING OF THE WORK ON THIS PROJECT.
15. PRIOR TO CONSTRUCTION, A PRECONSTRUCTION MEETING MUST BE HELD AT THE VILLAGE HALL. THE PRECONSTRUCTION MEETING SHALL BE SCHEDULED AND MODERATED BY THE DESIGN ENGINEER OF RECORD.

ABBREVIATIONS

BL	BASE LINE	NWL	NORMAL WATER LEVEL
C	LONG CHORD OF CURVE	PC	POINT OF CURVATURE
C & G	CURB AND GUTTER	PT	POINT OF TANGENCY
CB	CATCH BASIN	PVI	POINT OF VERTICAL INTERSECTION
CL	CENTERLINE	R	RADIUS
D	DEGREE OF CURVE	ROW	RIGHT-OF-WAY
EP	EDGE OF PAVEMENT	SAN	SANITARY SEWER
FF	FINISHED FLOOR	ST	STORM SEWER
FG	FINISHED GRADE	T	TANGENCY OF CURVE
FL	FLOW LINE	TB	TOP OF BANK
FP	FLOODPLAIN	TC	TOP OF CURB
FR	FRAME	TF	TOP OF FOUNDATION
FW	FLOODWAY	TP	TOP OF PIPE
HWL	HIGH WATER LEVEL	TS	TOP OF SIDEWALK
INV	INVERT	TW	TOP OF WALK
L	LENGTH OF CURVE	WM	WATER MAIN
MH	MANHOLE	△	INTERSECTION ANGLE

DIGGERS HOTLINE
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Milwaukee Area (414) 259-1181
Hearing Impaired TDD (800) 542-2289
www.DiggersHotline.com

EXPIRATION DATE: JULY 31, 2022

PINNACLE ENGINEERING GROUP, LLC
ENGINEER'S LIMITATION

PINNACLE ENGINEERING GROUP, LLC AND THEIR CONSULTANTS DO NOT WARRANT OR GUARANTEE THE ACCURACY AND COMPLETENESS OF THE DELIVERABLES HEREIN BEYOND A REASONABLE DILIGENCE. IF ANY MISTAKES, OMISSIONS, OR DISCREPANCIES ARE FOUND TO EXIST WITHIN THE DELIVERABLES, THE ENGINEER SHALL BE PROMPTLY NOTIFIED PRIOR TO BID SO THAT HE MAY HAVE THE OPPORTUNITY TO TAKE WHATEVER STEPS NECESSARY TO RESOLVE THEM. FAILURE TO PROMPTLY NOTIFY THE ENGINEER OF SUCH CONDITIONS SHALL ABSOLVE THE ENGINEER FROM ANY RESPONSIBILITY FOR THE CONSEQUENCES OF SUCH FAILURE. ACTIONS TAKEN WITHOUT THE KNOWLEDGE AND CONSENT TO THE ENGINEER, OR IN CONTRADICTION TO THE ENGINEER'S DELIVERABLES OR RECOMMENDATIONS, SHALL BECOME THE RESPONSIBILITY NOT OF THE ENGINEER BUT OF THE PARTIES RESPONSIBLE FOR TAKING SUCH ACTION.

FURTHERMORE, PINNACLE ENGINEERING GROUP, LLC IS NOT RESPONSIBLE FOR CONSTRUCTION SAFETY OR THE MEANS AND METHODS OF CONSTRUCTION.

FOR REVIEW

REVIEWED: SRB
DESIGNED: SRB
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PINNACLE ENGINEERING GROUP
ENGINEERING | NATURAL RESOURCES | SURVEYING

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(262) 754-8888
CHICAGO | MILWAUKEE - NATIONWIDE

CAPSTONE 41

GERMANTOWN, WI

COVER SHEET

REVISIONS

PROJ. NO. 1262.00A-WI
DES. BY AJS
PRE PM
START DATE 06/01/21
SCALE N.T.S.

SHEET
C-1
OF
C-16

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COVER SHEET

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NORTH

GRAPHICAL SCALE (FEET)

0 1" = 80' 160'

POLES AND WIRES - WISCONSIN GAS AND ELECTRIC COMPANY EASEMENT PER DOC. 114474 & 1138957

BM #1

HOLY HILL ROAD

S89°48'14"E 393.09'

S89°41'38"E 1322.81'

S01°08'40"E 60.02'

EXISTING RIGHT-OF-WAY LINE

40' UTILITY & ACCESS EASEMENT PER CSM 6506

40'

S89°48'14"E 167.22'

N00°11'42"E 25.00'

N05°42'25"W 293.89'

25'

25' ACCESS EASEMENT PER CSM 6506

WETLANDS DELINEATED BY HEARTLAND ECOLOGICAL GROUP INC. MAY 2021

N08°39'43"W 1084.82'

LOT 3
C.S.M. NO. 6506
2,285,578 SQ. FT.
52.4697 ACRES

SANITARY SEWER EASEMENT

30'

S01°08'40"E 1774.61'

40' UTILITY & ACCESS EASEMENT PER CSM 6506

40'

WETLANDS DELINEATED BY HEARTLAND ECOLOGICAL GROUP INC. MAY 2021

WETLANDS DELINEATED BY HEARTLAND ECOLOGICAL GROUP INC. MAY 2021

25'

25' ACCESS EASEMENT PER CSM 6506

N89°51'42"W 918.79'

N00°54'00"W 423.24'

40' UTILITY & ACCESS EASEMENT PER CSM 6506

40'

N77°21'35"W 417.31'

WETLANDS DELINEATED BY HEARTLAND ECOLOGICAL GROUP INC. MAY 2021

REFERENCE BENCHMARK 1:
NW CORNER, NE 1/4 (NE CORNER, NW 1/4)
SEC. 18, T9N, R20E - P.O.C.
(FOUND CONC. MON. W/ BRASS CAP)
N=461,119.72; E=2,455,363.90
(NORTH AMERICAN DATUM OF 1983/2011)
REFERENCE BENCHMARK EL.=916.61 (NAVD88)

EXISTING CONDITIONS SURVEY

EXISTING CONDITIONS SURVEY PROVIDED BY PINNACLE ENGINEERING GROUP. ALTHOUGH PEG HAS NO REASON TO BELIEVE THE SURVEY IS INACCURATE, PEG MAKES NO WARRANTS THAT EXISTING INFORMATION CONTAINED WITHIN THESE PLANS IS ALL-INCLUSIVE OR ACCURATE. CONTRACTOR SHALL UNDERTAKE NECESSARY EFFORTS TO VERIFY THE EXISTING CONDITIONS PRIOR TO THE START OF MATERIAL PROCUREMENT AND CONSTRUCTION EFFORTS/ACTIVITIES.

CONTRACTOR RESPONSIBILITY

THE INFORMATION SHOWN ON THIS DRAWING CONCERNING TYPE AND LOCATION OF UNDERGROUND UTILITIES IS NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. THE CONTRACTOR IS RESPONSIBLE FOR MAKING HIS OWN DETERMINATIONS AS TO THE TYPE AND LOCATION OF UNDERGROUND UTILITIES AS MAY BE NECESSARY TO AVOID DAMAGE THERETO. IF ADDITIONAL UTILITIES ARE KNOWN TO EXIST IN THE PROPERTY, THE OWNER WILL PROVIDE EXISTING PLANS OF OTHER UTILITIES SERVING THE SITE AND THE BUILDING THAT OTHERWISE CANNOT BE LOCATED BY A VISUAL OBSERVATION OF THE PROPERTY OR OF WHICH THE SURVEYOR WOULD HAVE NO KNOWLEDGE.

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EXISTING CONDITIONS PLAN

REVIEWED: SRB
DESIGNED: SRB
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CHICAGO | MILWAUKEE - NATIONWIDE

CAPSTONE 41

GERMANTOWN, WI

EXISTING CONDITIONS PLAN

REVISIONS

PEG JOB # 1262.00A-WI
PEG PM AJS
START DATE 06/01/21
SCALE 1" = 80'

SHEET
C-2
OF
C-16

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NOTES

1. ALL DIMENSIONS ARE FACE OF CURB TO FACE OF CURB OR BUILDING UNLESS NOTED OTHERWISE. ALL UTILITY DIMENSIONS ARE TO THE CENTER OF STRUCTURE UNLESS OTHERWISE NOTED. ALL PAVING DIMENSIONS ARE TO FACE OF CURB OR TO EDGE OF PAVEMENT; EXCEPT FOR THE SETBACK FROM PARKING LOTS, MANEUVERING LANES AND FIRE ACCESS LANES, WHERE THE SETBACK IS MEASURED FROM THE BACK OF CURB TO THE PROPERTY LINE.
2. ALL CURB AND GUTTER RADII ARE MEASURED TO FACE OF CURB UNLESS NOTED OTHERWISE.
3. ALL "NON-SEMI TRAILER PARKING" CURB AND GUTTER SHALL BE 18" STANDARD CURB AND GUTTER (SEE DETAIL). UNLESS OTHERWISE NOTED. CURB AND GUTTER DRAINING AWAY FROM THE FACE OF CURB IS NOTED AS REVERSE CURB AND GUTTER.
4. BUILDING DIMENSIONS AND ADJACENT PARKING AND UTILITY LAYOUT HAVE BEEN PREPARED BASED UPON ARCHITECTURAL INFORMATION CURRENT AT THE DATE OF THIS DRAWING. SUBSEQUENT ARCHITECTURAL CHANGES MAY EXIST. THEREFORE CONTRACTOR SHALL REFER TO ARCHITECTURAL PLANS FOR PRECISE BUILDING DIMENSIONS AND EXACT UTILITY ENTRANCE LOCATIONS AND NOTIFY THE ARCHITECT AND ENGINEER OF ANY DISCREPANCIES PRIOR TO CONSTRUCTION.
5. THE CONTRACTOR SHALL CONTACT DIGGERS HOTLINE (1-800-242-8511) PRIOR TO ANY WORK TO LOCATE UTILITIES AND SHALL CONTACT THE OWNER SHOULD UTILITIES APPEAR TO BE IN CONFLICT WITH THE PROPOSED IMPROVEMENT.
6. IMPROVEMENTS ADJACENT TO BUILDING IF SHOWN SUCH AS TRUCK DOCK, RETAINING WALLS, SIDEWALKS, CURBING, FENCES, CANOPIES, RAMPS, HANDICAP ACCESS, PLANTERS, DUMPSTERS, AND TRANSFORMERS ETC. HAVE BEEN SHOWN FOR APPROXIMATE LOCATION ONLY. REFER TO ARCHITECTURAL & STRUCTURAL PLANS FOR EXACT LOCATIONS, SPECIFICATIONS, AND DETAILS.
7. REFER TO ELECTRICAL PLANS FOR LIGHTING LOCATIONS, SPECIFICATIONS, AND DETAILS.
8. SEE ADDITIONAL NOTES AND DETAILS ON SITE DIMENSIONAL PLANS AND CONSTRUCTION DETAILS.
9. CONTRACTOR SHALL CONFIRM STRIPING COLOR WITH OWNER PRIOR TO CONSTRUCTION.
10. FOR ON-SITE IMPROVEMENTS, PROVIDE CONTRACTOR GRADE ACRYLIC, STRIPING PAINT FOR NEW ASPHALT OR COATED ASPHALT. APPLY 2 COATS OF MARKING PAINT AT A RATE OF ONE (1) GALLON PER THREE TO FOUR HUNDRED (300-400) LINEAL FEET OF FOUR (4) INCH WIDE STRIPES OR TO MANUFACTURER'S SPECIFICATION, WHICHEVER IS GREATER. PAVEMENT MARKING WITHIN VILLAGE RIGHTS-OF-WAY SHALL BE EPOXY PER WISDOT SPECIFICATIONS.
11. THOROUGHLY CLEAN SURFACES FREE OF DIRT, SAND, GRAVEL, OIL AND OTHER FOREIGN MATTER. CONTRACTOR RESPONSIBLE TO INSPECT EXISTING PAVEMENT SURFACES FOR CONDITIONS AND DEFECTS THAT WILL ADVERSELY AFFECT QUALITY OF WORK, AND WHICH CANNOT BE PUT INTO AN ACCEPTABLE CONDITION THROUGH NORMAL PREPARATORY WORK AS SPECIFIED.
12. DO NOT PLACE MARKING OVER UNSOUND PAVEMENTS. IF THESE CONDITIONS EXIST, NOTIFY OWNER. STARTING INSTALLATION CONSTITUTES CONTRACTOR'S ACCEPTANCE OF SURFACE AS SUITABLE FOR INSTALLATION.
13. LAYOUT MARKINGS USING GUIDE LINES, TEMPLATES AND FORMS. STENCILS AND TEMPLATES SHALL BE PROFESSIONALLY MADE TO INDUSTRY STANDARDS. "FREE HAND" PAINTING OF ARROWS, SYMBOLS, OR WORDING SHALL NOT BE ALLOWED. APPLY STRIPES STRAIGHT AND EVEN.
14. PROTECT ADJACENT CURBS, WALKS, FENCES, AND OTHER ITEMS FROM RECEIVING PAINT.
15. BARRICADE MARKED AREAS DURING INSTALLATION AND UNTIL THE MARKING PAINT IS DRIED AND READY FOR TRAFFIC.
16. ALL PAVING SHALL CONFORM TO STATE OF WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY & STRUCTURE CONSTRUCTION AND APPLICABLE VILLAGE OF GERMANTOWN ORDINANCES, AND SPECIFICATIONS CONTAINED WITHIN THIS PLAN SET.
17. ASPHALTIC CONCRETE PAVING SPECIFICATIONS-

    CODES AND STANDARDS: THE PLACING, CONSTRUCTION AND COMPOSITION OF THE ASPHALTIC BASE COURSE AND ASPHALTIC CONCRETE SURFACING SHALL BE IN ACCORDANCE WITH THE REQUIREMENTS OF SECTIONS 450, 455, 460 AND 465 OF THE STATE OF WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION, EDITION OF 2015. HEREAFTER, THIS PUBLICATION WILL BE REFERRED TO AS THE STATE HIGHWAY SPECIFICATIONS.

    WEATHER LIMITATIONS: APPLY TACK COATS WHEN AMBIENT TEMPERATURE IS ABOVE 50° F (10° C) AND WHEN TEMPERATURE HAS NOT BEEN BELOW 35° F (1° C) FOR 12 HOURS IMMEDIATELY PRIOR TO APPLICATION. DO NOT APPLY WHEN BASE IS WET OR CONTAINS EXCESS OF MOISTURE. CONSTRUCT ASPHALTIC CONCRETE SURFACE COURSE WHEN ATMOSPHERIC TEMPERATURE IS ABOVE 40° (4°C) AND WHEN BASE IS DRY AND WHEN WEATHER IS NOT RAINY. BASE COURSE MAY BE PLACED WHEN AIR TEMPERATURE IS ABOVE 30° F (-1° C).

    GRADE CONTROL: ESTABLISH AND MAINTAIN REQUIRED LINES AND ELEVATIONS FOR EACH COURSE DURING CONSTRUCTION.

    CRUSHED AGGREGATE BASE COURSE: THE TOP LAYER OF BASE COURSE SHALL CONFORM TO SECTIONS 301 AND 305, STATE HIGHWAY SPECIFICATIONS.

    BINDER COURSE AGGREGATE: THE AGGREGATE FOR THE BINDER COURSE SHALL CONFORM TO SECTIONS 460.2.7 AND 315, STATE HIGHWAY SPECIFICATIONS.

    SURFACE COURSE AGGREGATE: THE AGGREGATE FOR THE SURFACE COURSE SHALL CONFORM TO SECTIONS 460.2.7 AND 465, STATE HIGHWAY SPECIFICATIONS.

    ASPHALTIC MATERIALS: THE ASPHALTIC MATERIALS SHALL CONFORM TO SECTION 455 AND 460, STATE HIGHWAY SPECIFICATIONS.

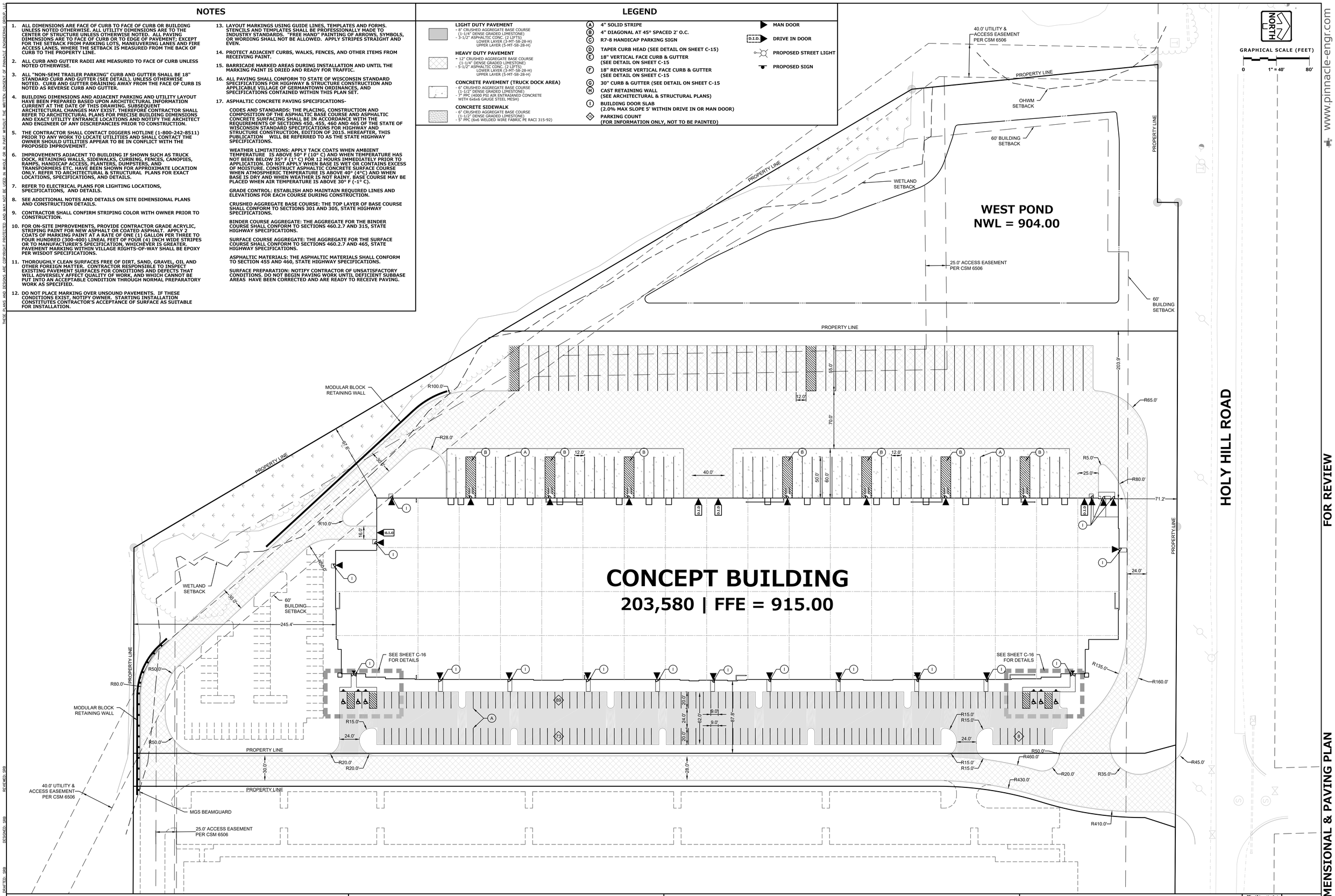
    SURFACE PREPARATION: NOTIFY CONTRACTOR OF UNSATISFACTORY CONDITIONS. DO NOT BEGIN PAVING WORK UNTIL DEFICIENT SUBBASE AREAS HAVE BEEN CORRECTED AND ARE READY TO RECEIVE PAVING.

LEGEND

- LIGHT DUTY PAVEMENT
  - 8" CRUSHED AGGREGATE BASE COURSE (1-1/4" DENSE GRADED LIMESTONE)
  - 3-1/2" ASPHALTIC CONC. (2 LIFTS) LOWER LAYER (3-MT-58-28-H) UPPER LAYER (3-MT-58-28-H)
- HEAVY DUTY PAVEMENT
  - 12" CRUSHED AGGREGATE BASE COURSE (1-1/4" DENSE GRADED LIMESTONE)
  - 5-1/2" ASPHALTIC CONC. (2 LIFTS) LOWER LAYER (3-MT-58-28-H) UPPER LAYER (3-MT-58-28-H)
- CONCRETE PAVEMENT (TRUCK DOCK AREA)
  - 6" CRUSHED AGGREGATE BASE COURSE (1-1/2" DENSE GRADED LIMESTONE)
  - 7" PPC (4000 PSI AIR ENTRAINED CONCRETE WITH 6x6x6 GAUGE STEEL MESH)
- CONCRETE SIDEWALK
  - 6" CRUSHED AGGREGATE BASE COURSE (1-1/2" DENSE GRADED LIMESTONE)
  - 5" PPC (6x6 WELDED WIRE FABRIC PE RACI 315-92)

- (A) 4" SOLID STRIPE
- (B) 4" DIAGONAL AT 45° SPACED 2' O.C.
- (C) R7-8 HANDICAP PARKING SIGN
- (D) TAPER CURB HEAD (SEE DETAIL ON SHEET C-15)
- (E) 18" VERTICAL FACE CURB & GUTTER (SEE DETAIL ON SHEET C-15
- (F) 18" REVERSE VERTICAL FACE CURB & GUTTER (SEE DETAIL ON SHEET C-15
- (G) 30" CURB & GUTTER (SEE DETAIL ON SHEET C-15
- (H) CAST RETAINING WALL (SEE ARCHITECTURAL & STRUCTURAL PLANS)
- (I) BUILDING DOOR SLAB (2.0% MAX SLOPE 5' WITHIN DRIVE IN OR MAN DOOR)
- (10) PARKING COUNT (FOR INFORMATION ONLY, NOT TO BE PAINTED)

- MAN DOOR
- D.I.D. DRIVE IN DOOR
- PROPOSED STREET LIGHT
- PROPOSED SIGN



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CHICAGO I MILWAUKEE : NATIONWIDE

CAPSTONE 41

GERMANTOWN, WI

SITE DIMENSIONAL & PAVING PLAN

REVISIONS

PEG JOB # 1262.00A-WI
PEG PM AJS
START DATE 06/01/21
SCALE 1" = 40'

SHEET C-3 & C-16

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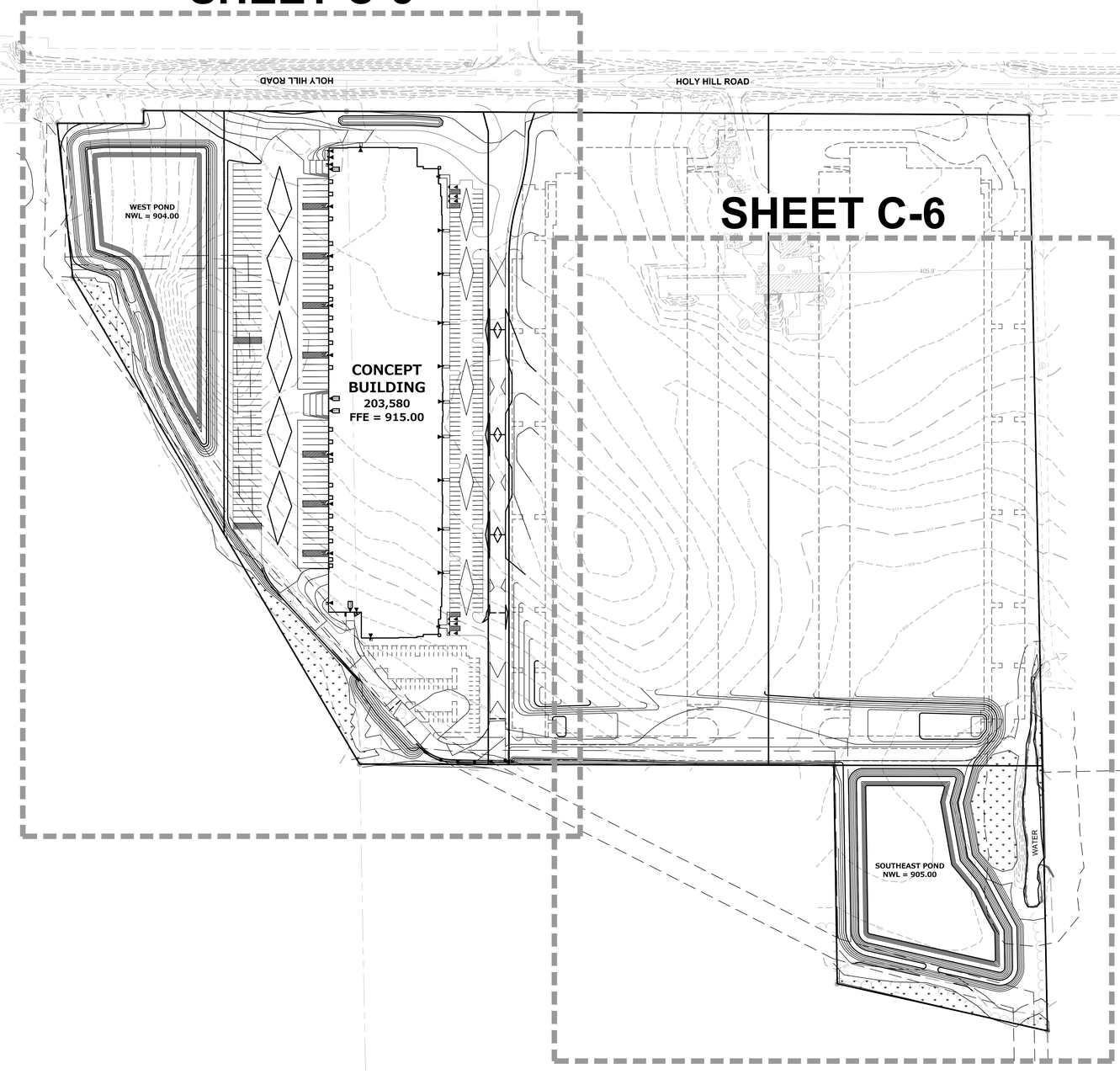
SITE DIMENSIONAL & PAVING PLAN

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DRAWN BY: SRB
DESIGNED: SRB
CHECKED: SRB

Z:\PROJECTS\2018\1262.00A-WI\CAD\SHEETS\1262.00A-WI SITE DIMENSIONAL & PAVING PLAN.DWG

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NORTH

GRAPHICAL SCALE (FEET)

0 1" = 100' 200'

GRADING NOTES

1. CONTRACTOR SHALL VERIFY ALL GRADES, ENSURE ALL AREAS DRAIN PROPERLY AND REPORT ANY DISCREPANCIES TO PINNACLE ENGINEERING GROUP PRIOR TO THE START OF ANY CONSTRUCTION ACTIVITIES.
2. ALL EXISTING CONTOURS REPRESENT EXISTING SURFACE GRADES UNLESS OTHERWISE NOTED. ALL PROPOSED GRADES SHOWN ARE FINISH SURFACE GRADES UNLESS OTHERWISE NOTED.
3. SPOT ELEVATIONS REPRESENT THE GRADE ALONG THE CURB AND GUTTER FLOWLINE UNLESS OTHERWISE NOTED.
4. ALL EXCAVATIONS AND MATERIAL PLACEMENT SHALL BE COMPLETED TO DESIGN ELEVATIONS AS DEPICTED IN THE PLANS.

   CONTRACTOR SHALL ASSUME SOLE RESPONSIBILITY FOR THE COMPUTATION(S) OF ALL GRADING QUANTITIES. WHILE PEG ATTEMPTS TO PROVIDE A COST EFFECTIVE APPROACH TO BALANCE EARTHWORK, GRADING DESIGN IS BASED ON MANY FACTORS, INCLUDING SAFETY, AESTHETICS, AND COMMON ENGINEERING STANDARD OF CARE, THEREFORE NO GUARANTEE CAN BE MADE FOR A BALANCED SITE.

   THE CONTRACTOR MAY SOLICIT APPROVAL FROM ENGINEER/OWNER TO ADJUST FINAL GRADES FROM DESIGN GRADES TO PROVIDE AN OVERALL SITE BALANCE AS A RESULT OF FIELD CONDITIONS.
5. GRADING ACTIVITIES SHALL BE IN A MANNER TO ALLOW POSITIVE DRAINAGE ACROSS DISTURBED SOILS, WHICH MAY INCLUDE EXCAVATION OF TEMPORARY DITCHES TO PREVENT PONDING, AND IF NECESSARY PUMPING TO ALLEVIATE PONDING. CONTRACTOR SHALL PREVENT SURFACE WATER FROM ENTERING INTO EXCAVATIONS. IN NO WAY SHALL OWNER BE RESPONSIBLE FOR REMEDIATION OF UNSUITABLE SOILS CREATED/ORIGINATED AS A RESULT OF IMPROPER SITE GRADING OR SEQUENCING. CONTRACTOR SHALL SEQUENCE GRADING ACTIVITIES TO LIMIT EXPOSURE OF DISTURBED SOILS DUE TO WEATHER.
6. THE CONTRACTOR IS RESPONSIBLE FOR MEETING MINIMUM COMPACTION STANDARDS. THE CONTRACTOR SHALL NOTIFY ENGINEER/OWNER IF PROPER COMPACTION CANNOT BE OBTAINED. THE PROJECT'S GEOTECHNICAL CONSULTANT SHALL DETERMINE WHICH IN-SITU SOILS ARE TO BE CONSIDERED UNSUITABLE SOILS. THE ENGINEER/OWNER AND GEOTECHNICAL TESTING CONSULTANT WILL DETERMINE IF REMEDIAL MEASURES WILL BE NECESSARY.
7. IN THE EVENT THAT ANY MOISTURE-DENSITY TEST(S) FAIL TO MEET SPECIFICATION REQUIREMENTS, THE CONTRACTOR SHALL PERFORM CORRECTIVE WORK AS NECESSARY TO BRING THE MATERIAL INTO COMPLIANCE AND RETEST THE FAILED AREA AT NO COST TO THE OWNER.
8. WITH THE AUTHORIZATION OF THE ENGINEER/OWNER, MATERIAL THAT IS TOO WET TO PERMIT PROPER COMPACTION MAY BE SPREAD ON FILL AREAS IN AN EFFORT TO DRY. CONTRACTOR SHALL CLEARLY FIELD MARK THE EXTERIOR LIMITS OF SPREAD MATERIAL WITH PAINTED LATH AND SUBMIT A PLAN TO THE ENGINEER/OWNER THAT IDENTIFIES THE LIMITS. UNDER NO CONDITION SHALL THE SPREAD MATERIAL DEPTH EXCEED THE MOST RESTRICTIVE OF: THE EFFECTIVE TREATMENT DEPTH OF MACHINERY THAT WILL BE USED TO TURNOVER THE SPREAD MATERIAL; OR THE MAXIMUM COMPACTION LIFT DEPTH.
9. THE CONTRACTOR SHALL IMMEDIATELY NOTIFY ENGINEER/OWNER IF GROUNDWATER IS ENCOUNTERED DURING EXCAVATION.
10. CONTRACTOR IS SOLELY RESPONSIBLE FOR THE DESIGN AND CONSTRUCTION OF ADEQUATE AND SAFE TEMPORARY SHORING, BRACING, RETENTION STRUCTURES, AND EXCAVATIONS.
11. THE SITE SHALL BE COMPLETED TO WITHIN 0.10-FT (+/-) OF THE PROPOSED GRADES AS INDICATED WITHIN THE PLANS PRIOR TO PLACEMENT OF TOPSOIL OR STONE. CONTRACTOR IS ENCOURAGED TO SEQUENCE CONSTRUCTION SUCH THAT THE SITE IS DIVIDED INTO SMALLER AREAS TO ALLOW STABILIZATION OF DISTURBED SOILS IMMEDIATELY UPON COMPLETION OF INDIVIDUAL SMALLER AREAS.
12. CONTRACTOR SHALL CONTACT "DIGGER'S HOTLINE" FOR LOCATIONS OF ALL EXISTING UTILITIES PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES AND SHALL BE RESPONSIBLE FOR PROTECTING SAID UTILITIES FROM ANY DAMAGE DURING CONSTRUCTION.
13. CONTRACTOR SHALL PROTECT INLETS AND ADJACENT PROPERTIES WITH SILT FENCING OR APPROVED EROSION CONTROL METHODS UNTIL CONSTRUCTION IS COMPLETED. CONTRACTOR SHALL PLACE SILT FENCING AT DOWN SLOPE SIDE OF GRADING LIMITS.
14. CONTRACTOR SHALL BE RESPONSIBLE FOR DAMAGE TO ANY EXISTING FACILITIES OR UTILITIES. ANY DAMAGE SHALL BE REPAIRED TO THE OWNER'S SATISFACTION AT THE EXPENSE OF THE CONTRACTOR.
15. WORK WITHIN ANY ROADWAY RIGHT-OF-WAY SHALL BE COORDINATED WITH THE APPROPRIATE MUNICIPAL OFFICIAL PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. CONTRACTOR SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND FEES. GRADING WITHIN RIGHT-OF-WAY IS SUBJECT TO APPROVAL BY SAID OFFICIALS. RESTORATION OF RIGHT-OF-WAY IS CONSIDERED INCIDENTAL AND SHALL BE INCLUDED IN THE COST OF GRADING. RESTORATION SHALL INCLUDE ALL ITEMS NECESSARY TO RESTORE RIGHT-OF-WAY IN-KIND INCLUDING LANDSCAPING.
16. CONTRACTOR SHALL COMPLY WITH ALL VILLAGE OF GERMANTOWN CONSTRUCTION STANDARDS/ORDINANCES.
17. LANDSCAPE AND TURF AREAS SHALL HAVE A MINIMUM OF 4-INCH TOPSOIL REPLACEMENT.
18. TOPSOIL BERMING SHALL ACHIEVE 90% STANDARD PROCTOR DENSITY AT 3%(±) OPTIMUM MOISTURE CONTENT.
19. SURVEY BENCHMARKS AND MAPPING HAS BEEN PROVIDED BY PINNACLE ENGINEERING GROUP. IN NO WAY DOES PEG WARRANT THE BASEMAP IS ALL INCLUSIVE OR REPRESENTATIVE OF ACTUAL CONDITIONS. CONTRACTOR SHALL PROVIDE CHECKS AS NECESSARY TO VERIFY THE BASEMAP CONTENT AND ACCURACY.

ALL WORK WITHIN PUBLIC R.O.W. SHALL CONFORM TO VILLAGE OF GERMANTOWN STANDARDS.

LEGEND

- SANITARY MANHOLE
- STORM CATCH BASIN
- CURB CATCH BASIN
- CONTOUR (749)
- SPOT ELEVATION (750.00)
- DIRECTION OF SURFACE FLOW
- DITCH OR SWALE
- FLOODPLAIN
- OVERFLOW RELIEF ROUTING

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FOR REVIEW

GRADING PLAN OVERVIEW

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DESIGNED: SRB
DRAFTED: SRB

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PINNACLE ENGINEERING GROUP
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20725 WATERTOWN ROAD, SUITE 100
BROOKFIELD, WI 53186
(262) 754-8888
CHICAGO I MILWAUKEE : NATIONWIDE

CAPSTONE 41

GERMANTOWN, WI

GRADING PLAN OVERVIEW

REVISIONS

PEG JOB # 1262.00A-WI
PEG PM: ASS
START DATE: 06/01/21
SCALE: 1"=100'

SHEET C-4 OF C-16

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LEGEND

- SANITARY MANHOLE
- STORM CATCH BASIN
- CURB CATCH BASIN
- 749 CONTOUR
- 750.00 SPOT ELEVATION
- DIRECTION OF SURFACE FLOW
- DITCH OR SWALE
- FLOODPLAIN
- OVERFLOW RELIEF ROUTING

ALL WORK WITHIN PUBLIC R.O.W. SHALL CONFORM TO VILLAGE OF GERMANTOWN STANDARDS.

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 40' 80'

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40.0' UTILITY & ACCESS EASEMENT PER CSM 6506

OHWM SETBACK

PROPERTY LINE

WETLAND SETBACK

60' BUILDING SETBACK

WEST POND
NWL = 904.00

25.0' ACCESS EASEMENT PER CSM 6506

CONCEPT BUILDING
203,580 | FFE = 915.00

HOLY HILL ROAD

MATCHLINE

SEE SHEET C-6

FOR REVIEW

GRADING PLAN

REVIEWED: SRB

DESIGNED: SRB

DRAFTED: SRB

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CAPSTONE 41

GERMANTOWN, WI

GRADING PLAN

REVISIONS

PEG JOB # 1262.00A-WI
PEG PM AJS
START DATE 06/01/21
SCALE 1" = 40'

SHEET
C-5
of
C-16

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MATCHLINE

SEE SHEET C-5

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 40' 80'

www.pinnacle-engr.com

FOR REVIEW

PROPERTY LINE

25.0' ACCESS EASEMENT PER CSM 6506

40.0' UTILITY & ACCESS EASEMENT PER CSM 6506

SOUTHEAST POND
NWL = 905.00

WETLAND SETBACK

OHWM SETBACK

405.9'

130.1'

102.5'

60.1'

36.6'

17.7'

16.0'

30.1'

47.1'

ALL WORK WITHIN PUBLIC R.O.W. SHALL CONFORM TO VILLAGE OF GERMANTOWN STANDARDS.

LEGEND

- SANITARY MANHOLE
- STORM CATCH BASIN
- CURB CATCH BASIN
- 749 CONTOUR
- 750.00 SPOT ELEVATION
- DIRECTION OF SURFACE FLOW
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- OVERFLOW RELIEF ROUTING

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GRADING PLAN

REVISIONS

PEG JOB # 1262.00A-WI
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START DATE: 06/01/21
SCALE: 1" = 40'

SHEET
C-6
OF
C-16

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GRADING PLAN

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ALL WORK WITHIN PUBLIC R.O.W. SHALL CONFORM TO VILLAGE OF GERMANTOWN STANDARDS.

LEGEND

- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- STORM SEWER CATCH BASIN (ROUND CASTING)
- STORM SEWER CATCH BASIN (RECTANGULAR CASTING)
- PRECAST CONCRETE FLARED END SECTION
- CLEANOUT
- VALVE BOX
- FIRE HYDRANT
- SANITARY SEWER
- STORM SEWER
- DRAIN TILE
- PROJECT LIMIT BETWEEN BID PACKAGE #1 AND BID PACKAGE #2

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 100' 200'

SHEET C-8

SHEET C-9

HOLY HILL ROAD

HOLY HILL ROAD

WEST POND
NWL = 904.00

CONCEPT BUILDING
203,580
FFE = 915.00

SOUTHEAST POND
NWL = 905.00

WATER

405.9'

UTILITY NOTES

1. EXISTING UTILITIES ARE SHOWN FOR INFORMATIONAL PURPOSES ONLY AND ARE NOT GUARANTEED TO BE ACCURATE OR ALL INCLUSIVE. CONTRACTOR IS RESPONSIBLE FOR VERIFYING THE TYPE, LOCATION, SIZE AND ELEVATION OF UNDERGROUND UTILITIES AS THEY DEEM NECESSARY FOR PROPOSED UTILITY CONNECTIONS AND/OR TO AVOID DAMAGE THERETO. CONTRACTOR SHALL CALL "DIGGER'S HOTLINE" PRIOR TO ANY CONSTRUCTION.
2. ALL UTILITY WORK SHALL BE DONE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR SEWER AND WATER CONSTRUCTION IN WISCONSIN (LATEST EDITION AND ADDENDUM) AND ALL STATE AND LOCAL CODES AND SPECIFICATIONS. IT IS THE CONTRACTORS RESPONSIBILITY TO DETERMINE WHICH SPECIFICATIONS AND CODES APPLY, AND TO COORDINATE ALL CONSTRUCTION ACTIVITIES WITH THE APPROPRIATE LOCAL AND STATE AUTHORITIES.
3. UTILITY CONSTRUCTION AND SPECIFICATIONS SHALL COMPLY WITH THE VILLAGE OF GERMANTOWN SPECIAL PROVISIONS AND WISCONSIN DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES COMM 82.
4. LENGTHS OF PROPOSED UTILITIES ARE TO CENTER OF STRUCTURES OR FITTINGS AND MAY VARY SLIGHTLY FROM PLAN. LENGTHS ARE SHOWN FOR CONTRACTOR CONVENIENCE ONLY. CONTRACTOR IS SOLELY RESPONSIBLE FOR COMPUTATIONS OF MATERIALS REQUIRED TO COMPLETE WORK. LENGTHS SHALL BE FIELD VERIFIED DURING CONSTRUCTION.
5. CONTRACTOR SHALL ADJUST AND/OR RECONSTRUCT EXISTING UTILITY COVERS (SUCH AS MANHOLE COVERS, VALVE BOX COVERS, ETC.) TO MATCH FINISHED GRADES OF THE AREAS DISTURBED DURING CONSTRUCTION.
6. CONTRACTOR SHALL FIELD VERIFY LOCATIONS, ELEVATIONS, AND SIZES OF PROPOSED UTILITIES AND CHECK ALL UTILITY CROSSINGS FOR CONFLICTS PRIOR TO ATTEMPTING CONNECTIONS AND BEGINNING UTILITY CONSTRUCTION AND NOTIFY THE OWNER OF ANY DISCREPANCIES OR CONFLICTS.
7. ALL NEW ON-SITE SANITARY, STORM AND WATER UTILITIES SHALL BE PRIVATELY OWNED AND MAINTAINED BY THE PROPERTY OWNER.
8. THE CONTRACTOR SHALL CONTACT THE VILLAGE OF GERMANTOWN PUBLIC WORKS DEPARTMENT 48-HOURS IN ADVANCE OF SANITARY, WATER AND STORM CONNECTIONS TO THE VILLAGE-OWNED SYSTEM TO SCHEDULE INSPECTIONS.
9. ROUTING OF GAS, ELECTRIC AND TELEPHONE SERVICES ARE SHOWN ON THE ARCHITECTURAL PLANS AND SUBJECT TO CHANGE BASED UPON FINAL REVIEW AND APPROVAL BY RESPECTIVE UTILITY COMPANIES AND OWNER. CONTRACTOR SHALL CONTACT EACH UTILITY COMPANY AND COORDINATE FINAL LOCATIONS FOR ALL UTILITY SERVICES PRIOR TO START OF CONSTRUCTION.
10. IT IS THE CONTRACTOR'S RESPONSIBILITY TO COORDINATE WITH THE PROPER AUTHORITIES FOR ANY REQUIRED PERMITS, AUTHORIZATIONS, TRAFFIC CONTROL AND ANY PERMIT FEES REQUIRED.
11. FIELD TILE CONNECTION - ALL FIELD TILE ENCOUNTERED DURING CONSTRUCTION SHALL BE INCLUDED IN THE UNIT PRICE(S) FOR STORM SEWER. TILE LINES CROSSED BY THE TRENCH SHALL BE REPLACED WITH THE SAME MATERIAL AS THE STORM SEWER.
12. THE CONTRACTOR IS RESPONSIBLE FOR THE SIZE, TYPE AND NUMBER OF WATER MAIN BENDS, HORIZONTAL AND VERTICAL, REQUIRED TO COMPLETE CONSTRUCTION. COST FOR BENDS, HORIZONTAL AND VERTICAL, SHALL BE INCIDENTAL AND INCLUDED IN THE OVERALL COST OF THE CONTRACT.
13. STORM SEWER SPECIFICATIONS -

    PIPE - REINFORCED CONCRETE PIPE (RCP) SHALL MEET THE REQUIREMENTS OF ASTM CLASS C-76 WITH RUBBER GASKET JOINTS CONFORMING TO ASTM C-443. STRENGTH CLASSIFICATIONS SHALL BE IN ACCORDANCE WITH THE FOLLOWING:

HEIGHT OF COVER (FEET):	0-2	2-3	3-6	6-15	15-25	25+
MINIMUM CONCRETE PIPE CLASSIFICATION:	II	III	II	III	IV	ENGINEER TO SPECIFY

    HIGH DENSITY DUAL-WALL POLYETHYLENE N-12 CORRUGATED PIPE (HDPE) SHALL BE AS MANUFACTURED BY ADS OR EQUAL WITH WATER TIGHT JOINTS, AND SHALL MEET THE REQUIREMENTS OF AASHTO DESIGNATION M-294 TYPE "S", OR POLYVINYL CHLORIDE (PVC) - CLASS PS46 MEETING AASHTO M278, AS NOTED. IF HDPE PIPE IS USED FOR POND OUTFALLS, A MINIMUM OF THREE (3) SECTIONS (2 STRAPS) SHALL BE STRAPPED TOGETHER.

    INLETS/CATCH BASINS - INLETS/CATCH BASINS SHALL BE CONSTRUCTED IN ACCORDANCE WITH FILE NO. 25 OF THE "STANDARD SPECIFICATIONS" WITH A 1'-8" X 2'-6" MAXIMUM OPENING. FRAME & GRATE SHALL BE NEENAH R-2502 WITH TYPE D GRATE, OR EQUAL. CURB FRAME & GRATE SHALL BE NEENAH R-3067, OR EQUAL. THE SUMP DEPTH (VERTICAL DISTANCE FROM THE BASE OF THE STRUCTURE TO OUTFALL INVERT OF THE PIPE) SHALL BE 18" MIN. STRUCTURE SHOP DRAWINGS SHALL BE SUBMITTED TO PINNACLE ENGINEERING GROUP FOR REVIEW AND APPROVAL PRIOR TO MANUFACTURING AND INSTALLATION.

    BACKFILL AND BEDDING - STORM SEWER SHALL BE CONSTRUCTED WITH GRAVEL BACKFILL AND CLASS "B" BEDDING IN ALL PAVED AREAS AND TO A POINT 5 FEET BEYOND THE EDGE OF PAVEMENT. TRENCHES RUNNING PARALLEL TO AND LESS THAN 5 FEET FROM THE EDGE OF PAVEMENT SHALL ALSO REQUIRE GRAVEL BACKFILL. SLURRY BACK FILL UNDER PUBLIC ROAD PAVEMENT. SLURRY LIMITS: FROM TOP OF COVER STONE TO PAVEMENT. SLURRY TO BE 1-BAG PORTLAND MIX. LANDSCAPED AREAS MAY BE BACKFILLED WITH EXCAVATED MATERIAL IN CONFORMANCE WITH SECTION 8.43.5 OF THE "STANDARD SPECIFICATIONS". MANHOLE FRAMES AND COVERS - MANHOLE FRAMES AND COVERS SHALL BE NEENAH R-1661 W/ NEENAH R-1660-0003 ROCKING COVER W/ 2 PICK HOLES AND 8 VENT HOLES
14. WATER MAIN SPECIFICATIONS -

    PIPE - WATER MAIN SHALL BE POLYVINYL CHLORIDE (PVC) PIPE MEETING THE REQUIREMENTS OF AWWA STANDARD C-900, CLASS 235, DR-18, WITH CAST IRON O.D. AND INTEGRAL ELASTOMERIC BELL AND SPIGOT JOINTS. VALVES AND VALVE BOXES - GATE VALVES SHALL BE AWWA GATE VALVES MEETING THE REQUIREMENTS OF AWWA C-500 AND CHAPTER 8.27.0 OF THE "STANDARD SPECIFICATIONS". GATE VALVES AND VALVE BOXES SHALL CONFORM TO LOCAL PLUMBING ORDINANCES.

    HYDRANTS - HYDRANTS SHALL CONFORM TO THE SPECIFICATIONS OF THE AND IN ACCORDANCE WITH FILE NO. 38 OF THE "STANDARD SPECIFICATIONS." THE DISTANCE FROM THE GROUND LINE TO THE CENTERLINE OF THE LOWEST NOZZLE AND THE LOWEST CONNECTION OF THE FIRE DEPARTMENT SHALL BE NO LESS THAN 18-INCHES AND NO GREATER THAN 24-INCHES. HYDRANT MANUFACTURE: KENNEDY GUARDIAN. HYDRANT AND TAP VALES: TRAFFIC MODEL W/ BREAKAWAY FLANGES, TWO 2-1/2" HOSE NOZZLES (7-1/2" NST) AND ONE 5-1/4" PUMPER OR STEAMER NOZZLE (4 NST), A 1-1/2" PENTAGON OPERATING NUT AND CCW OPENING, 6" MECHANICAL JOINT INLET CONNECTION.

    BEDDING AND COVER MATERIAL - PIPE BEDDING AND COVER MATERIAL SHALL BE SAND, CRUSHED STONE CHIPS OR CRUSHED STONE SCREENINGS CONFORMING TO CHAPTER 8.43.2 OF THE "STANDARD SPECIFICATIONS".

    BACKFILL - BACKFILL MATERIAL AND INSTALLATION SHALL BE IN ACCORDANCE WITH CHAPTER 2.6.0 OF THE "STANDARD SPECIFICATIONS". GRAVEL BACKFILL IS REQUIRED IN ALL PAVED AREAS AND TO A POINT 5 FEET BEYOND THE EDGE OF PAVEMENT. TRENCHES RUNNING PARALLEL TO AND LESS THAN 5 FEET FROM THE EDGE OF PAVEMENT SHALL ALSO REQUIRE GRAVEL BACKFILL. SLURRY BACK FILL UNDER PUBLIC ROAD PAVEMENT. SLURRY LIMITS: FROM TOP OF COVER STONE TO PAVEMENT. SLURRY TO BE 1-BAG PORTLAND MIX. LANDSCAPED AREAS MAY BE BACKFILLED WITH EXCAVATED MATERIAL IN CONFORMANCE WITH SECTION 8.43.5 OF THE "STANDARD SPECIFICATIONS".
15. SANITARY SEWER SPECIFICATIONS -

    PIPE - SANITARY SEWER PIPE MATERIAL SHALL BE POLYVINYL CHLORIDE (PVC) MEETING REQUIREMENTS OF ASTM D 3034, SDR-35, WITH INTEGRAL BELL TYPE FLEXIBLE ELASTOMERIC JOINTS, MEETING THE REQUIREMENTS OF ASTM D-3212.

    BEDDING AND COVER MATERIAL - BEDDING AND COVER MATERIAL SHALL CONFORM TO THE APPROPRIATE SECTIONS OF THE "STANDARD SPECIFICATION" WITH THE FOLLOWING MODIFICATION: "COVER MATERIAL SHALL BE THE SAME AS USED FOR BEDDING AND SHALL CONFORM TO SECTION 8.43.2 (A). BEDDING AND COVER MATERIAL SHALL BE PLACED IN A MINIMUM OF THREE SEPARATE LIFTS, OR AS REQUIRED TO INSURE ADEQUATE COMPACTING OF THESE MATERIALS, WITH ONE LIFT OF BEDDING MATERIAL ENDING AT OR NEAR THE SPRINGLINE OF THE PIPE. THE CONTRACTOR SHALL TAKE CARE TO COMPLETELY WORK BEDDING MATERIAL UNDER THE HAUNCH OF THE PIPE TO PROVIDE ADEQUATE SIDE SUPPORT."

    BACKFILL - BACKFILL MATERIAL AND INSTALLATION SHALL BE IN ACCORDANCE CHAPTER 2.6.0 OF THE "STANDARD SPECIFICATIONS." SLURRY BACK FILL UNDER PUBLIC ROAD PAVEMENT. SLURRY LIMITS: FROM TOP OF COVER STONE TO PAVEMENT. SLURRY TO BE 1-BAG PORTLAND MIX. GRAVEL BACKFILL IS REQUIRED IN ALL PAVED AREAS AND TO A POINT 5 FEET BEYOND THE EDGE OF PAVEMENT. TRENCHES RUNNING PARALLEL TO AND LESS THAN 5 FEET FROM THE EDGE OF PAVEMENT SHALL ALSO REQUIRE GRAVEL BACKFILL. LANDSCAPED AREAS MAY BE BACKFILLED WITH EXCAVATED MATERIAL IN CONFORMANCE WITH SECTION 8.43.5 OF THE "STANDARD SPECIFICATIONS."

    MANHOLES - MANHOLES SHALL BE CONSTRUCTED IN ACCORDANCE WITH FILE NOS. 12, 13 AND 15 OF THE "STANDARD SPECIFICATIONS" AND ALL SPECIAL PROVISIONS OF THE VILLAGE OF GERMANTOWN. STRUCTURE SHOP DRAWINGS SHALL BE SUBMITTED TO PINNACLE ENGINEERING GROUP FOR REVIEW AND APPROVAL PRIOR TO MANUFACTURING AND INSTALLATION.

    MANHOLE FRAMES AND COVERS - NEENAH R-1661 FRAME W/ SOLID GASKETED LID AND 2 CONCEALED PICK HOLES. CONFORM TO STANDARD SPECIFICATIONS CH. 3.5.0
16. WATER MAIN AND SANITARY SEWER SHALL BE INSULATED WHEREVER THE DEPTH OF COVER IS LESS THAN 6 FEET. INSULATION AND PLACING OF INSULATION SHALL CONFORM TO CHAPTER 4.17.0 "INSULATION" OF THE STANDARD SPECIFICATIONS FOR SEWER AND WATER CONSTRUCTION IN WISCONSIN 6TH EDITION UPDATED WITH ITS LATEST ADDENDUM (TYP.).
17. TRACER WIRE SHALL BE INSTALLED IN ACCORDANCE WITH THE PROVISIONS OF THESE CODE SECTIONS AS PER 182.0715(2R) OF THE STATUTES. TRACER WIRE: COPPERHEAD TRACERWIRE #10 SOLID CCS SUPERFLEX (BLUE). WIRE CONNECTORS SHALL BE SNAKEBITE (BLUE) MADE BYCOPPERHEAD INDUSTRIES, LLC. THE TRACER WIRE FOR THE SANITARY SEWER LATERAL SHALL BE CONTINUOUS AND SHALL BE EXTENDED ABOVE GRADE VIA A 4-INCH PVC PIPE WITH SCREW-ON CAP ADJACENT TO THE PROPOSED TERMINATION POINT OF THE LATERAL FOR THE PROPOSED BUILDING.
18. SEE UTILITY PLANS AND CONSTRUCTION DETAILS FOR ADDITIONAL INFORMATION.

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CAPSTONE 41

GERMANTOWN, WI

UTILITY PLAN OVERVIEW

REVISIONS

PEC JOB # 1262.00A-WI
PEC PM AJS
START DATE 06/01/21
SCALE 1"=100'

SHEET C-7 OF C-16

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UTILITY PLAN OVERVIEW

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DESIGNED: SRB
REVIEWED: SRB

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LEGEND

- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- STORM SEWER CATCH BASIN (ROUND CASTING)
- STORM SEWER CATCH BASIN (RECTANGULAR CASTING)
- PRECAST CONCRETE FLARED END SECTION
- CLEANOUT
- VALVE BOX
- FIRE HYDRANT
- SANITARY SEWER
- STORM SEWER
- DRAIN TILE
- PROJECT LIMIT BETWEEN BID PACKAGE #1 AND BID PACKAGE #2

ALL WORK WITHIN PUBLIC R.O.W. SHALL CONFORM TO VILLAGE OF GERMANTOWN STANDARDS.

GRAPHICAL SCALE (FEET)
0 1" = 40' 80'

www.pinnacle-engr.com

CONCEPT BUILDING
203,580 | FFE = 915.00

WEST POND
NWL = 904.00

OHWM SETBACK
WETLAND SETBACK
PROPERTY LINE
25.0' ACCESS EASEMENT PER CSM 6506
40.0' UTILITY & ACCESS EASEMENT PER CSM 6506
FIRE HYDRANT (TYP.)
WEST OCS
CONNECT TO SERVICE LATERAL. SERVICE TO BE PROVIDED BY THE VILLAGE.
PROPOSED WATER SERVICE LATERAL. CONTRACTOR TO ENSURE MIN 6.0' OF COVER
FP
MATCHLINE
SEE SHEET C-9

HOLY HILL ROAD

FOR REVIEW

UTILITY PLAN

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SCALE: 1" = 40'

SHEET C-8 OF C-16

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MATCHLINE

SEE SHEET C-8

25.0' ACCESS EASEMENT PER CSM 6506

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 40' 80'

www.pinnacle-engr.com

385.7 L.F. 10" PVC @ S=0.28%

SAN MH 4.0
48" DIA
RIM= 898.77
INV=894.88 (10" W)
INV=894.78 (10" E)

PROPERTY LINE

269.9 L.F. 10" PVC @ S=0.28%

25.0' ACCESS EASEMENT

PROPERTY LINE

40.0' UTILITY & ACCESS EASEMENT PER CSM 6506

SAN MH 5.0
48" DIA
RIM= 898.04
INV=894.05 (10" W)
INV=893.95 (10" E)

265.1 L.F. 10" PVC @ S=0.28%

PROPERTY LINE

FES 29.0
INV=905.00 (18")

32.8 L.F. 18" RCP @ S=0.00%

SOUTHEAST OCS

FES 31.0
INV=906.00 (18")

31.0 L.F. 18" RCP @ S=3.23%

FES 30.0
INV=907.00 (18")

SOUTHEAST POND
NWL = 905.00

PROPERTY LINE

PROPERTY LINE

SAN MH 6.0
48" DIA
RIM= 896.80
INV=893.21 (10" W)
INV=893.11 (10" E)

405.9'

SAN MH 7.0
48" DIA
RIM= 896.15
INV=892.71 (10" W)
INV=892.46 (10" NE)

204.3 L.F. 10" PVC @ S=0.28%

PROPERTY LINE

TIE INTO EX SAN MH
INV=891.89 (10")

30.1'
36.6'
17.7'
16.0'
47.1'
130.1'
102.5'
60.1'
47.1'
36.6'

ALL WORK WITHIN PUBLIC R.O.W. SHALL CONFORM TO VILLAGE OF GERMANTOWN STANDARDS.

LEGEND

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DESIGNED: SRB
REVIEWED: SRB

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GERMANTOWN, WI

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REVISIONS

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PEG PM ASS
START DATE 06/01/21
SCALE 1" = 40'

SHEET C-9 OF C-16

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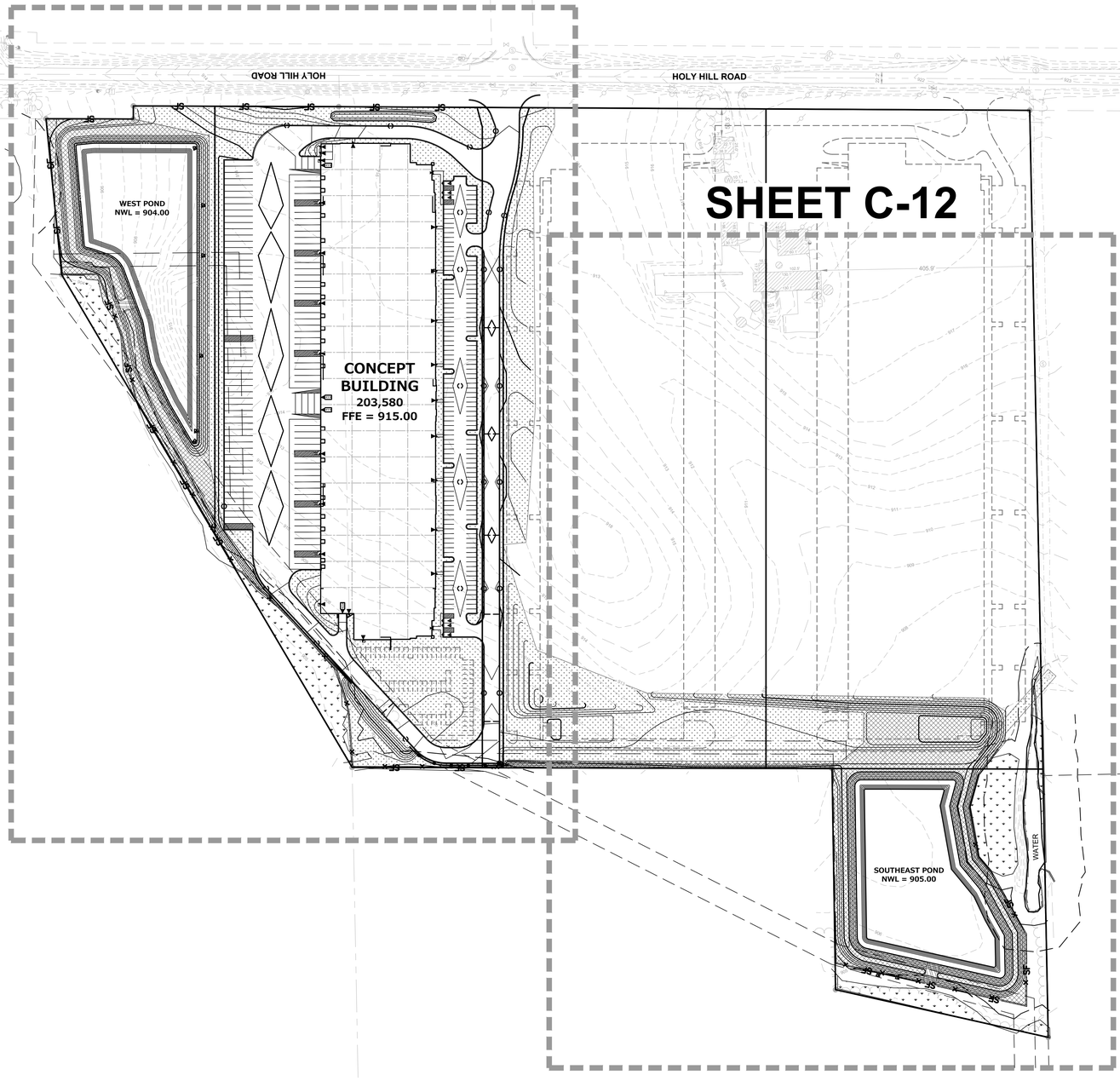
FOR REVIEW

UTILITY PLAN

Z:\PROJECTS\2018\1262.00A-WI\CAD\SHEETS\1262.00A-WI UTILITY PLAN.DWG

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SHEET C-11



SHEET C-12

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 100' 200'

LEGEND

- SANITARY SEWER MANHOLE
- STORM SEWER MANHOLE
- STORM STORM CATCH BASIN (ROUND CASTING)
- STORM SEWER CATCH BASIN (RECTANGULAR CASTING)
- RISER
- PRECAST FLARED END SECTION
- CLEANOUT
- VALVE BOX
- FIRE HYDRANT
- PROPOSED CONTOUR
- 760.0 PROPOSED SPOT ELEVATION
- WETLANDS
- HIGH WATER LEVEL (HWL)
- NORMAL WATER LEVEL (NWL)
- DIRECTION OF SURFACE FLOW
- DIVERSION SWALE
- DIVERSION DITCH
- OVERFLOW RELIEF ROUTING
- SILT FENCE
- ORANGE SAFETY FENCE
- INLET PROTECTION
- CONSTRUCTION ENTRANCE
- TURF REINFORCEMENT MAT (TRF)
- HYDROSEED (PER MANUFACTURER SPECIFICATIONS)
- EROSION CONTROL BLANKET (NORTH AMERICAN GREEN S75 OR EQUAL)

EXISTING CONDITIONS SURVEY:

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ALL WORK WITHIN PUBLIC R.O.W. SHALL CONFORM TO VILLAGE OF GERMANTOWN STANDARDS.

GENERAL EROSION AND SEDIMENT CONTROL NOTES

1. ALL CONSTRUCTION SHALL ADHERE TO THE REQUIREMENTS SET FORTH IN EPA'S NATIONAL POLLUTANT DISCHARGE ELIMINATION SYSTEM (NPDES) STORMWATER GENERAL PERMIT FOR CONSTRUCTION SITE LAND DISTURBANCE ACTIVITIES. ALL EROSION AND SEDIMENT CONTROL MEASURES ARE TO BE CONSTRUCTED AND MAINTAINED IN ACCORDANCE WITH LOCAL, STATE AND FEDERAL TECHNICAL STANDARDS AND PROVISIONS IN EFFECT AT THE TIME OF CONSTRUCTION. THESE PROCEDURES AND STANDARDS SHALL BE REFERRED TO AS BEST MANAGEMENT PRACTICES (BMP'S). IT IS THE RESPONSIBILITY OF ALL CONTRACTORS ASSOCIATED WITH THE PROJECT TO OBTAIN A COPY OF, AND UNDERSTAND, THE BMP'S PRIOR TO THE START OF CONSTRUCTION ACTIVITIES.
2. THE EROSION CONTROL MEASURES INDICATED ON THE PLANS ARE THE MINIMUM REQUIREMENTS. ADDITIONAL CONTROL MEASURES AS DIRECTED BY OWNER/ENGINEER OR GOVERNING AGENCIES SHALL BE INSTALLED WITHIN 24 HOURS OF REQUEST.
3. MODIFICATIONS TO THE APPROVED SWPPP IN ORDER TO MEET UNFORESEEN FIELD CONDITIONS ARE ALLOWED IF MODIFICATIONS CONFORM TO BMP'S. ALL MODIFICATIONS MUST BE APPROVED BY OWNER/ENGINEER/GOVERNING AGENCY PRIOR TO DEVIATION OF THE APPROVED PLAN.
4. INSTALL PERIMETER EROSION CONTROL MEASURES (SUCH AS CONSTRUCTION ENTRANCES, SILT FENCE AND EXISTING INLET PROTECTION) PRIOR TO ANY SITE WORK, INCLUDING GRADING OR DISTURBANCE OF EXISTING SURFACE COVER, AS SHOWN ON PLAN IN ORDER TO PROTECT ADJACENT PROPERTIES/STORM SEWER SYSTEMS FROM SEDIMENT TRANSPORT.
5. CONSTRUCTION ENTRANCES SHALL BE INSTALLED AT ALL LOCATIONS OF VEHICLE INGRESS/EGRESS POINTS. CONTRACTOR IS RESPONSIBLE TO COORDINATE LOCATION(S) WITH THE PROPER AUTHORITIES, PROVIDE NECESSARY FEES AND OBTAIN ALL REQUIRED APPROVALS OR PERMITS. ADDITIONAL CONSTRUCTION ENTRANCES OTHER THAN AS SHOWN ON THE PLANS MUST BE APPROVED BY THE APPLICABLE GOVERNING AGENCIES PRIOR TO INSTALLATION.
6. PAVED SURFACES ADJACENT TO CONSTRUCTION ENTRANCES SHALL BE SWEPT AND/OR SCRAPED TO REMOVE ACCUMULATED SOIL, DIRT AND/OR DUST IMMEDIATELY AND AS REQUESTED BY THE GOVERNING AGENCIES.
7. ALL EXISTING STORM SEWER FACILITIES THAT WILL COLLECT RUNOFF FROM DISTURBED AREAS SHALL BE PROTECTED TO TO PREVENT SEDIMENT DEPOSITION WITHIN STORM SEWER SYSTEMS. INLET PROTECTION SHALL BE IMMEDIATELY FITTED AT THE INLET OF ALL INSTALLED STORM SEWER AND SILT FENCE SHALL BE IMMEDIATELY FITTED AT ALL INSTALLED CULVERT INLETS . ALL INLETS, STRUCTURES, PIPES, AND SWALES SHALL BE KEPT CLEAN AND FREE OF SEDIMENTATION AND DEBRIS.
8. EROSION CONTROL FOR UTILITY CONSTRUCTION (STORM SEWER, WATER MAIN, ETC.) OUTSIDE OF THE PERIMETER CONTROLS SHALL INCORPORATE THE FOLLOWING:

   PLACE EXCAVATED TRENCH MATERIAL ON THE HIGH SIDE OF THE TRENCH.

   BACKFILL, COMPACT AND STABILIZE THE TRENCH IMMEDIATELY AFTER PIPE CONSTRUCTION.

   DISCHARGE TRENCH WATER INTO A SEDIMENTATION BASIN OR FILTERING TANK IN ACCORDANCE WITH BMP'S PRIOR TO RELEASE INTO STORM SEWER OR DITCHES.
9. AT A MINIMUM, SEDIMENT BASINS AND NECESSARY TEMPORARY DRAINAGE PROVISIONS SHALL BE CONSTRUCTED AND OPERATIONAL BEFORE BEGINNING OF SIGNIFICANT MASS GRADING OPERATIONS TO PREVENT OFFSITE DISCHARGE OF UNTREATED RUNOFF.
10. ALL WATERCOURSES AND WETLANDS SHALL BE PROTECTED WITH SILT FENCE TO PREVENT ANY DIRECT DISCHARGE FROM DISTURBED SOILS.
11. ALL TEMPORARY AND PERMANENT EROSION CONTROL MEASURES MUST BE MAINTAINED AND REPAIRED AS NEEDED. THE GENERAL CONTRACTOR WILL BE RESPONSIBLE FOR INSPECTION AND REPAIR DURING CONSTRUCTION. THE OWNER WILL BE RESPONSIBLE IF EROSION CONTROL IS REQUIRED AFTER THE CONTRACTOR HAS COMPLETED THE PROJECT.
12. TOPSOIL STOCKPILES SHALL HAVE A BERM OR TRENCH AROUND THE CIRCUMFERENCE AND PERIMETER SILT FENCE TO CONTROL SILT. IF TOPSOIL STOCKPILE REMAINS UNDISTURBED FOR MORE THAN SEVEN (7) DAYS, TEMPORARY SEEDING AND STABILIZATION IS REQUIRED.
13. EROSION CONTROL MEASURES TEMPORARILY REMOVED FOR UNAVOIDABLE CONSTRUCTION ACTIVITIES SHALL BE IN WORKING ORDER IMMEDIATELY FOLLOWING COMPLETION OF SUCH ACTIVITIES OR PRIOR TO THE COMPLETION OF EACH WORK DAY, WHICH EVER OCCURS FIRST.
14. MAINTAIN SOIL EROSION CONTROL DEVICES THROUGH THE DURATION OF THIS PROJECT. ALL TEMPORARY EROSION AND SEDIMENT CONTROL MEASURES SHALL BE REMOVED WITHIN THIRTY (30) DAYS AFTER FINAL SITE STABILIZATION IS ACHIEVED OR AFTER THE TEMPORARY MEASURES ARE NO LONGER NEEDED. DISTURBANCES ASSOCIATED WITH EROSION CONTROL REMOVAL SHALL BE IMMEDIATELY STABILIZED.
15. PUMPS MAY BE USED AS BYPASS DEVICES. IN NO CASE SHALL PUMPED WATER BE DIVERTED OUTSIDE THE PROJECT LIMITS. PUMP DISCHARGE SHALL BE DIRECTED INTO AN APPROVED FILTER BAG OR APPROVED SETTLING DEVICE.
16. GRADING EFFORTS SHALL BE CONDUCTED IN SUCH A MANNER AS TO MINIMIZE EROSION. EROSION AND SEDIMENT CONTROL MEASURES SHALL CONSIDER THE TIME OF YEAR, SITE CONDITIONS, AND THE USE OF TEMPORARY OR PERMANENT MEASURES. ALL DISTURBED AREAS THAT WILL NOT BE WORKED FOR A PERIOD OF FOURTEEN (14) DAYS REQUIRE TEMPORARY SEEDING FOR EROSION CONTROL. SEEDING FOR EROSION CONTROL SHALL BE IN ACCORDANCE WITH TECHNICAL STANDARDS.
17. ALL DISTURBED SLOPES EXCEEDING 4:1, SHALL BE STABILIZED WITH NORTH AMERICAN GREEN S75BN EROSION MATTING (OR APPROVED EQUAL) AND ALL CHANNELS SHALL BE STABILIZED WITH CLASS I TYPE B (SEE WISCONSIN DOT PRODUCT ACCEPTABILITY LISTS) OR APPLICATION OF AN APPROVED POLYMER SOIL STABILIZATION TREATMENT OR A COMBINATION THEREOF, AS REQUIRED. EROSION MATTING AND/OR NETTING USED ONSITE SHALL BE INSTALLED IN ACCORDANCE WITH MANUFACTURER'S GUIDELINES.
18. DURING PERIODS OF EXTENDED DRY WEATHER, THE CONTRACTOR SHALL KEEP A WATER TRUCK ON SITE FOR THE PURPOSE OF WATERING DOWN SOILS WHICH MAY OTHERWISE BECOME AIRBORNE.THE CONTRACTOR IS RESPONSIBLE FOR CONTROLLING WIND EROSION (DUST) DURING CONSTRUCTION AT HIS/HER EXPENSE.
19. DISTURBED AREAS AND AREAS USED FOR STORAGE OF MATERIALS THAT ARE EXPOSED TO PRECIPITATION SHALL BE VISUALLY INSPECTED FOR EVIDENCE OF, OR THE POTENTIAL FOR, POLLUTANTS ENTERING THE DRAINAGE SYSTEM ON A DAILY BASIS.
20. QUALIFIED PERSONNEL (PROVIDED BY THE GENERAL/PRIME CONTRACTOR) SHALL INSPECT DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED AND EROSION AND SEDIMENT CONTROLS WITHIN 24 HOURS OF ALL 0.5-INCH, OR MORE, PRECIPITATION EVENTS WITH A MINIMUM INSPECTION INTERVAL OF ONCE EVERY SEVEN (7) CALENDAR DAYS IN THE ABSENCE OF A QUALIFYING RAIN OR SNOWFALL EVENT. REPORTING SHALL BE IN ACCORDANCE WITH OF THE GENERAL PERMIT. CONTRACTOR SHALL IMMEDIATELY ARRANGE TO HAVE ANY DEFICIENT ITEMS REVEALED DURING INSPECTIONS REPAIRED/REPLACED.
21. SEE ADDITIONAL DETAILS AND NOTES ON SITE STABILIZATION AND CONSTRUCTION DETAILS.

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FOR REVIEW

SITE STABILIZATION PLAN OVERVIEW

REVIEWED: SRB
DESIGNED: SRB
DRAWN: SRB

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CHICAGO | MILWAUKEE : NATIONWIDE

CAPSTONE 41

GERMANTOWN, WI

SITE STABILIZATION PLAN OVERVIEW

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PEG JOB # 1262.00A-WI
PEG PM ASS
START DATE 06/01/21
SCALE 1"=100'

SHEET
C-10
OF
C-16

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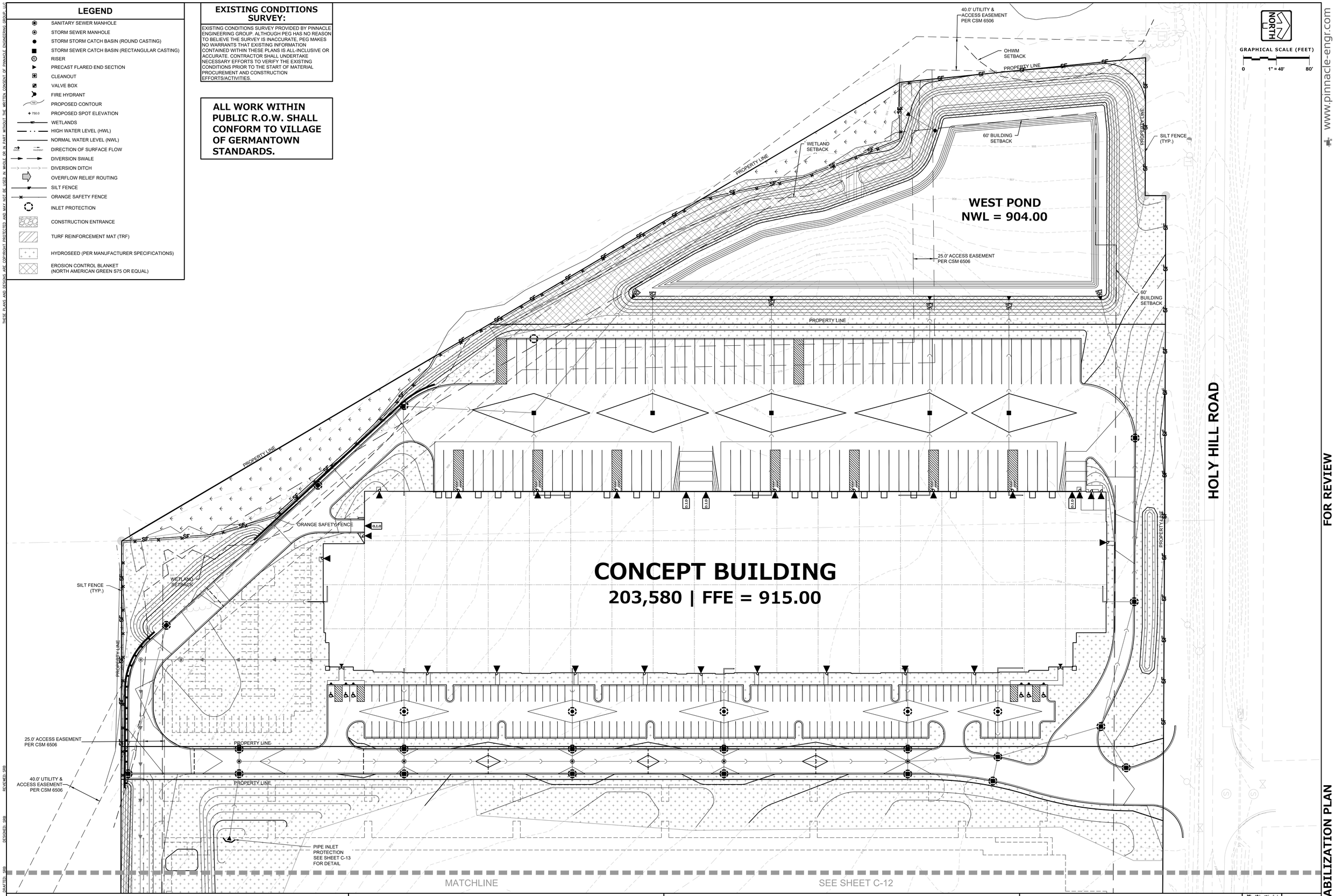
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NORTH

GRAPHICAL SCALE (FEET)

0 1" = 40' 80'

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HOLY HILL ROAD

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SITE STABILIZATION PLAN

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GERMANTOWN, WI

SITE STABILIZATION PLAN

REVISIONS

PEG JOB # 1262.00A-WI
PEG PM: ASS
START DATE: 06/01/21
SCALE: 1" = 40'

SHEET C-11 of C-16

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MATCHLINE

SEE SHEET C-11

INLET PROTECTION
SEE SHEET C-13
FOR DETAIL

NORTH

GRAPHICAL SCALE (FEET)
0 1" = 40' 80'

PROPERTY LINE

40.0' UTILITY & ACCESS EASEMENT PER CSM 6506

25.0' ACCESS EASEMENT PER CSM 6506

ORANGE SAFETY FENCE (TYP.)

25.0' ACCESS EASEMENT PER CSM 6506

PROPERTY LINE

SOUTHEAST POND
NWL = 905.00

PROPERTY LINE

PROPERTY LINE

WETLAND SETBACK

WATER

SILT FENCE (TYP.)

PROPERTY LINE

PROPERTY LINE

OHWM SETBACK

30.1'
36.6'
17.7'
16.0'
47.1'
130.1'
130.1'
102.5'
60.1'
47.1'
36.6'

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1.0 POTENTIAL POLLUTANT SOURCES

GIVEN THE PROPOSED ACTIVITY ON THE PROJECT SITE, THE PRIMARY POTENTIAL POLLUTANT SOURCE ASSOCIATED WITH THIS CONSTRUCTION PROJECT IS SOIL EROSION AND TRANSPORTATION; REFER TO SECTION 4 OF THIS PLAN. ADDITIONAL POTENTIAL SOURCES OF POLLUTION MAY INCLUDE: FUEL TANKS, WASTE CONTAINERS, OIL OR OTHER PETROLEUM PRODUCTS, DETERGENTS, PAINTS, CONSTRUCTION DEBRIS, SANITARY STATIONS, FERTILIZERS, AND DUST; REFER TO SECTION 5 OF THIS PLAN.

2.0 EROSION AND SEDIMENT CONTROL IMPLEMENTATION

THE FOLLOWING ARE DESCRIPTIONS OF THE EROSION AND SEDIMENT CONTROL PRACTICES THAT SHALL BE IMPLEMENTED DURING CONSTRUCTION OF THIS PROJECT. IN ADDITION TO THESE MEASURES, CONTRACTOR SHALL DISTURB ONLY AREAS NECESSARY TO COMPLETE THE CONSTRUCTION PROJECT. ALL PRACTICES SHALL BE CONDUCTED IN ACCORDANCE WITH THE BEST MANAGEMENT PRACTICES (BMP).

2.1 CONSTRUCTION AND EROSION CONTROL SEQUENCING

CONSTRUCTION SEQUENCING WILL BE UTILIZED AS A MEANS OF CONTROLLING EROSION AND LIMITING SEDIMENT TRANSPORT. SEQUENCING AS LISTED BELOW IS GENERAL IN NATURE AND MAY VARY DEPENDING ON WEATHER CONDITIONS AND/OR PHASING OF CONSTRUCTION. THE CONTRACTOR SHALL SUBMIT A DETAILED SITE SEQUENCING PLAN TO OWNER FOR APPROVAL AT LEAST 5 BUSINESS DAYS PRIOR TO COMMENCEMENT OF ANY CONSTRUCTION ACTIVITIES. CONTRACTOR MAY MODIFY SEQUENCING AFTER ITEM 6 AS NEEDED TO COMPLETE CONSTRUCTION ONLY IF EROSION CONTROLS ARE MAINTAINED IN ACCORDANCE WITH THE CONSTRUCTION SITE EROSION AND SEDIMENT CONTROL REQUIREMENTS.

1. INSTALL TEMPORARY CONSTRUCTION ENTRANCES, INLET PROTECTION ON EXISTING STORM SEWER AND CULVERT INLET LOCATIONS SEDIMENT TRAPS, DIVERSION BERMS, DITCH CHECKS, AND PERIMETER SILT FENCING.
2. INSTALL SILT FENCING ALONG THE PERIMETER OF PROPOSED TOPSOIL STOCKPILE LOCATIONS. THE FIRST TOPSOIL DEPOSITED WITHIN THE STOCKPILE LIMITS SHALL BE PLACED TO CREATE TEMPORARY BERMING ALONG THE SILT FENCE TO PREVENT DIRECT STORMWATER RUNOFF AGAINST SILT FENCING. CONTRACTOR SHALL LIMIT LAND DISTURBING ACTIVITIES ASSOCIATED WITH TEMPORARY BERMING TO A MINIMUM.
3. CONDUCT ROUGH GRADING OPERATIONS AND UTILITY PIPING INSTALLATION. DRAIN TILE SHALL NOT BE INSTALLED UNTIL UPLAND AREAS CONTRIBUTING STORMWATER RUNOFF ARE STABILIZED. DITCH CHECKS SHALL BE INSTALLED WITHIN DRAINAGE DITCHES IMMEDIATELY FOLLOWING CREATION OF DITCHES AND INLET PROTECTION SHALL BE INSTALLED TO PROTECT ANY STORM SEWER OR CULVERTS THAT WILL FUNCTION DURING CONSTRUCTION.
4. FINE GRADE SUB-GRADE SOILS WITHIN PAVEMENT AND BUILDING LIMITS. PLACE STONE BASE MATERIAL AS SOON AS POSSIBLE FOLLOWING COMPLETION OF FINE GRADING EFFORTS.
5. FINE GRADE REMAINING DISTURBED AREAS. PLACE SALVAGED TOPSOIL, EROSION BLANKETS/MATTING, AND SEED/MULCH AS SOON AS POSSIBLE FOLLOWING COMPLETION OF FINE GRADING EFFORTS.
6. EROSION CONTROLS SHALL NOT BE REMOVED UNTIL SITE IS FULLY STABILIZED OR 70% VEGETATIVE COVER IS ESTABLISHED. CONTRACTOR IS RESPONSIBLE FOR REMOVAL OF SILT FENCE, TEMPORARY FENCING/PRETECTION, DITCH CHECKS, AND OTHER TEMPORARY CONTROLS, AND RESTORATION PRACTICES AS NECESSARY, TO THE SATISFACTION OF THE OWNER.

2.2 STABILIZATION PRACTICES

THE DATES WHEN MAJOR GRADING ACTIVITIES OCCUR, WHEN CONSTRUCTION ACTIVITIES TEMPORARILY OR PERMANENTLY CEASE ON A PORTION OF THE SITE, AND WHEN STABILIZATION MEASURES ARE INITIATED, SHALL BE RECORDED ON THE STABILIZATION SCHEDULE FOR MAJOR GRADING ACTIVITIES.

STABILIZATION MEASURES SHALL BE INITIATED AS SOON AS PRACTICABLE IN PORTIONS OF THE SITE WHERE CONSTRUCTION ACTIVITIES HAVE TEMPORARILY OR PERMANENTLY CEASED. NO MORE THAN SEVEN (7) DAYS SHALL PASS AFTER THE CONSTRUCTION ACTIVITY IN THAT PORTION OF THE SITE HAS PERMANENTLY CEASED UNLESS:

THE INITIATION OF STABILIZATION MEASURES BY THE SEVENTH (7) DAY AFTER CONSTRUCTION ACTIVITY TEMPORARILY OR PERMANENTLY CEASE IS PRECLUDED BY SNOW COVER. IN THAT EVENT, STABILIZATION MEASURE SHALL BE INITIATED AS SOON AS PRACTICABLE.

CONSTRUCTION ACTIVITY WILL RESUME ON A PORTION OF THE SITE WITHIN FOURTEEN (14) DAYS FROM WHEN ACTIVITIES CEASED, (I.E. THE TOTAL TIME PERIOD THAT THE CONSTRUCTION ACTIVITY IS TEMPORARILY CEASED IS LESS THAN FOURTEEN (14) DAYS). IN THAT EVENT, STABILIZATION MEASURES DO NOT HAVE TO BE INITIATED ON THAT PORTION OF THE SITE BY THE SEVENTH (7) DAY AFTER CONSTRUCTION ACTIVITY HAS TEMPORARILY CEASED. SEE THE SOIL PROTECTION CHART PRESENTED IN THE CONSTRUCTION DOCUMENTS FOR RATES OF PERMANENT AND TEMPORARY VEGETATION.

STABILIZATION MEASURES SHALL BE DETERMINED BASED ON SITE CONDITIONS AT THE TIME CONSTRUCTION ACTIVITY HAS CEASED, INCLUDING BUT NOT LIMITED TO WEATHER CONDITIONS AND LENGTH OF TIME MEASURE MUST BE EFFECTIVE. THE FOLLOWING ARE ACCEPTABLE STABILIZATION MEASURES.

PERMANENT SEEDING: IN ACCORDANCE WITH APPROVED LANDSCAPING PLAN
TEMPORARY SEEDING MAY CONSIST OF SPRING OATS (100LBS/ACRE) AND/OR WHEAT OR CEREAL RYE (150LBS/ACRE)
HYDRO-MULCHING WITH A TACKIFIER
GEOTEXTILE EROSION MATTING
SODDING

2.3 STRUCTURAL PRACTICES

THE FOLLOWING ARE DESCRIPTIONS OF STRUCTURAL PRACTICES TO BE IMPLEMENTED TO DIVERT FLOWS FROM EXPOSED SOILS, STORE FLOWS, OR OTHERWISE LIMIT THE DISCHARGE OF POLLUTANTS FROM EXPOSED AREAS OF THE SITE INCLUDING THE PROPOSED AND EXISTING WETLAND AREAS. SUCH PRACTICES COULD INCLUDE SILT FENCE, PROTECTION FENCE, CONSTRUCTION ENTRANCE, DITCH CHECK, EROSION CONTROL MATTING, DIVERSION BERM/SWALE, SEDIMENT TRAP, LEVEL SPREADER, INLET PROTECTION, OUTLET PROTECTION, AND TEMPORARY OR PERMANENT SEDIMENT BASIN. THE FOLLOWING STRUCTURAL PRACTICES ARE TO BE UTILIZED DURING THIS PROJECT.

SILT FENCE SHALL BE PLACED DOWN SLOPE OF DISTURBED AREAS OF THE CONSTRUCTION SITE AND AROUND THE PERIMETER OF THE TOPSOIL STOCKPILE. THIS INCLUDES PROTECTION OF EXISTING WETLAND AREAS TO BE MAINTAINED. SILT FENCE MAY ALSO BE USED AS A TEMPORARY CONTROL DEVICE WHERE SEDIMENTATION RUNOFF IS DISCOVERED.

CONSTRUCTION ENTRANCE SHALL BE INSTALLED TO REDUCE SOIL EROSION POLLUTANTS FROM LEAVING THE SITE DURING CONSTRUCTION ACTIVITIES. IF THE CRUSHED STONE DOES NOT ADEQUATELY REMOVE MUD FROM VEHICLE TIRES, THEY SHALL BE HOSED OFF BEFORE ENTERING A PAVED ROADWAY. ANY SOIL DEPOSITED ON THE PUBLIC PAVED ROAD WAY SHALL BE REMOVED IMMEDIATELY.

DITCH CHECK SHALL BE INSTALLED IN DRAINAGE CHANNELS AS NEEDED.

EROSION CONTROL MATTING SHALL BE PLACED ON AREAS OR EMBANKMENTS HAVING SLOPES GREATER THAN OR EQUAL TO 3H:1V, BEFORE VEGETATION IS ESTABLISHED.

INLET PROTECTION SHALL BE INSTALLED AT STORMWATER DRAINAGE INLETS TO REDUCE SEDIMENT WITHIN STORM SEWER CONVEYANCE FEATURES.

OUTLET SCOUR PROTECTION SHALL BE INSTALLED AT STORMWATER DRAINAGE OUTLETS TO DIFFUSE FLOWS.

3.0 ADDITIONAL PRACTICES

ADDITIONAL POLLUTANT CONTROL MEASURES TO BE IMPLEMENTED DURING CONSTRUCTION ACTIVITIES SHALL INCLUDE, BUT NOT BE LIMITED TO THE FOLLOWING.

CONSTRUCTION WASTE SHALL BE PROPERLY DISPOSED OF. THIS INCLUDES ALL CONSTRUCTION SITE WASTE MATERIAL, SANITARY WASTE, AND WASTE FROM VEHICLE TRACKING OF SEDIMENTS. THE CONTRACTOR SHALL ENSURE THAT NO MATERIAL WASTES OR UNUSED BUILDING MATERIALS SHALL BE BURIED, DUMPED, BURNED, OR DISCHARGED TO THE WATERS OF THE STATE. VEHICLES HAULING MATERIAL AWAY FROM THE SITE SHALL BE COVERED WITH A TARPAULIN TO PREVENT BLOWING DEBRIS.

DUST CONTROL SHALL BE ACCOMPLISHED BY ONE OR MORE OF THE FOLLOWING METHODS:

COVERING 30% OR MORE OF THE SOIL SURFACE WITH A NON-ERODIBLE MATERIAL.

ROUGHENING (EQUIPMENT TRACKING) THE SOIL TO PRODUCE RIDGES PERPENDICULAR TO THE PREVAILING WIND. RIDGES SHALL BE AT LEAST SIX (6) INCHES IN HEIGHT.

FREQUENT WATERING OF EXCAVATION AND FILL AREAS.

PROVIDING GRAVEL OR PAVING AT ENTRANCE/EXIT DRIVES, PARKING AREAS AND TRANSIT PATHS.

STREET SWEEPING SHALL BE PERFORMED TO IMMEDIATELY REMOVE ANY SEDIMENT TRACKED ON PAVEMENTS.

4.0 EROSION AND SEDIMENT STRUCTURAL PRACTICE MAINTENANCE

THE FOLLOWING MAINTENANCE PRACTICES SHALL BE USED TO MAINTAIN, IN GOOD AND EFFECTIVE OPERATING CONDITIONS, VEGETATION, EROSION AND SEDIMENT CONTROL MEASURES, AND OTHER PROTECTIVE MEASURES IDENTIFIED IN THIS PLAN. UPON IDENTIFICATION, DEFICIENCIES IN STORMWATER CONTROLS SHALL BE ADDRESSED IMMEDIATELY. THE MAINTENANCE PROCEDURES FOR THIS DEVELOPMENT SHALL INCLUDE, BUT NOT BE LIMITED TO THE BELOW.

SILT FENCE - REPAIR OR REPLACE ANY DAMAGED FILTER FABRIC AND/OR STAKES. REMOVE ACCUMULATED SEDIMENT WHEN IT HAS REACHED ONE-HALF THE ABOVE GROUND HEIGHT OF THE FENCE.

CONSTRUCTION ENTRANCE - AS NEEDED, ADD STONE TO MAINTAIN CONSTRUCTION ENTRANCE DIMENSIONS AND EFFECTIVENESS.

DITCH CHECK - RE-SECURE STAKES; ADJUST OR REPOSITION BALES TO ADDRESS PROPER FLOW OF STORMWATER; AND REMOVE ACCUMULATED SEDIMENT WHEN IT HAS REACHED ONE-HALF THE HEIGHT OF THE BALE.

EROSION CONTROL MATTING - REPAIR MATTING IMMEDIATELY IF INSPECTION REVEALS BREACHED OR FAILED CONDITIONS. REPAIR AND RE-GRADE SOIL WHERE CHANNELIZATION HAS OCCURRED.

INLET PROTECTION - CLEAN, REPAIR OR REPLACE FILTER FABRIC AND/OR STONE WHEN CONTROL MEASURE IS CLOGGED. INLET FILTER BAGS SHALL BE REPLACED ONCE ONE-HALF FULL OF SEDIMENT.

OUTLET PROTECTION - CLEAN, REPAIR OR REPLACE FILTER FABRIC, TURF REINFORCEMENT MATTING AND/OR STONE WHEN CONTROL MEASURE IS ONE-HALF FULL OF SEDIMENT.

5.0 INSPECTION

INSPECTIONS SHALL BE COMPLETED WITHIN TWENTY-FOUR (24) HOURS OF THE END OF A RAINFALL EVENT THAT IS ONE-HALF INCH OR GREATER OR EQUIVALENT SNOWFALL, OR AT A MINIMUM ONCE EVERY SEVEN (7) CALENDAR DAYS. INSPECTIONS SHALL BE UNDERTAKEN BY QUALIFIED PERSONNEL PROVIDED BY THE CONTRACTOR, AND SHALL INCLUDE: DISTURBED AREAS OF THE CONSTRUCTION SITE THAT HAVE NOT BEEN FINALLY STABILIZED, STRUCTURAL CONTROL MEASURES, AND LOCATIONS WHERE VEHICLES ENTER OR EXIT THE SITE. A STORMWATER POLLUTION PREVENTION PLAN INSPECTION REPORT SHALL BE COMPLETED AND ADDED TO THE SWPPP. RAINFALL SHALL BE RECORDED ON THE SWPPP RAINFALL LOG. CONTRACTOR SHALL IMMEDIATELY ARRANGE FOR REPAIR OR REPLACEMENT OF ANY DAMAGED OR DEFICIENT CONTROL MEASURES OBSERVED DURING THE INSPECTION.

QUALIFIED PERSONNEL MEANS A PERSON KNOWLEDGEABLE IN THE PRINCIPLES AND PRACTICES OF EROSION AND SEDIMENT CONTROL MEASURES, SUCH AS A LICENSED PROFESSIONAL ENGINEER, A CERTIFIED PROFESSIONAL IN EROSION AND SEDIMENT CONTROL, A CERTIFIED EROSION SEDIMENT OR STORMWATER INSPECTOR, OR OTHER TRAINED INDIVIDUAL.

6.0 SPILL PREVENTION

6.1 GENERAL MATERIAL MANAGEMENT PRACTICES

THE GOOD HOUSEKEEPING PRACTICES LISTED BELOW SHALL BE FOLLOWED THROUGHOUT THE CONSTRUCTION PROJECT.

1. CONTRACTOR SHALL STORE ONLY ENOUGH PRODUCTS REQUIRED TO COMPLETE THIS PROJECT.
2. ALL MATERIAL SHALL BE STORED IN A NEAT, ORDERLY MANNER IN THEIR ORIGINAL CONTAINERS CONTAINING MANUFACTURER'S LABEL.
3. MANUFACTURERS' RECOMMENDATIONS FOR PROPER USE AND DISPOSAL SHALL BE FOLLOWED.
4. MATERIALS REQUIRED TO HAVE A MATERIAL SAFETY DATA SHEET (MSDS) SHALL HAVE A COPY STORED IN THE PROJECT'S MSDS DATABASE.

6.2 SPILL CONTROL PRACTICES

THE PRACTICES LISTED BELOW SHALL BE FOLLOWED FOR SPILL PREVENTION AND CLEANUP.

1. MATERIALS AND EQUIPMENT NECESSARY FOR SPILL CLEANUP SHALL BE MAINTAINED ONSITE.
2. IMMEDIATELY UPON DISCOVERY ALL SPILLS SHALL BE CLEANED UP ACCORDING TO THE MANUFACTURERS' RECOMMENDED METHODS.
3. PERSONNEL CLEANING UP A SPILL SHALL USE PERSONAL PROTECTIVE EQUIPMENT.
4. IMMEDIATELY UPON DISCOVERY, SPILLS OF TOXIC OR HAZARDOUS MATERIALS SHALL BE REPORTED TO THE OWNER AND GENERAL CONTRACTOR.
5. NOTIFICATION AND REPORTING TO THE APPROPRIATE FEDERAL, STATE, AND LOCAL GOVERNMENT AGENCIES SHALL BE MADE AS REQUIRED.

GENERAL INFORMATION:

THIS STORMWATER POLLUTION PREVENTION PLAN (SWPPP) HAS BEEN DEVELOPED TO FULFILL ONE OF THE REQUIREMENTS OF THE GENERAL ENVIRONMENTAL PROTECTION AGENCY (EPA) NATIONAL POLLUTION DISCHARGE ELIMINATION SYSTEM (WISCONSIN POLLUTION DISCHARGE ELIMINATION SYSTEM "WPDES") FOR THE DISCHARGE OF STORMWATER ASSOCIATED WITH CONSTRUCTION PROJECTS DISTURBING ONE ACRE OR MORE. THE OWNER AND CONTRACTORS SHALL COMPLY WITH ALL REQUIREMENTS OF THE WPDES FOR ALL SUCH CONSTRUCTION PROJECTS. THE STORMWATER DISCHARGES ASSOCIATED WITH THE CONSTRUCTION ACTIVITY FROM THIS SITE ARE SUBJECT TO THE CONDITIONS AND REQUIREMENTS OF THE PERMITS.

THE EXECUTED OWNER CERTIFICATION AND THE CONTRACTOR CERTIFICATIONS SHALL BE KEPT ONSITE WITH THE APPROVED PLANS.

SWPPP AVAILABILITY:

THE OWNER SHALL RETAIN A COPY OF THE SWPPP AT THE CONSTRUCTION SITE FROM THE DATE OF THE PROJECT INITIATION TO THE DATE OF FINAL STABILIZATION.

KEEPING PLANS CURRENT:

THE CONTRACTOR SHALL AMEND THE PLAN WHENEVER THERE IS A CHANGE IN DESIGN, CONSTRUCTION, OPERATION, OR MAINTENANCE, WHICH HAS A SIGNIFICANT EFFECT ON THE POTENTIAL FOR THE DISCHARGE OF POLLUTANTS TO THE WATERS OF THE STATE AND WHICH HAS NOT OTHERWISE BEEN ADDRESSED IN THE PLAN OR IF THE PLAN PROVES TO BE INEFFECTIVE IN ELIMINATING OR SIGNIFICANTLY CONTROLLING POLLUTANTS IN STORMWATER DISCHARGES ASSOCIATED WITH CONSTRUCTION SITE ACTIVITY. IN ADDITION, THE THE PLAN SHALL BE AMENDED TO IDENTIFY ANY NEW CONTRACTOR AND/OR SUBCONTRACTOR THAT WILL IMPLEMENT A MEASURE OF THE PLAN. AMENDMENTS TO THE PLAN MAY BE REQUIRED BY THE MUNICIPALITY, OWNER, OR OTHER REVIEWING AGENCY. COPIES OF THE AMENDMENTS SHALL BE KEPT ONSITE AS PART OF THE SWPPP.

RETENTION OF RECORDS:

THE OWNER SHALL RETAIN COPIES OF THIS AND ALL REPORTS AND NOTICES REQUIRED BY THIS PERMIT, AND RECORDS OF ALL DATA USED TO COMPLETE THE NOTICE OF INTENT TO BE COVERED BY THIS PERMIT, FOR A PERIOD OF AT LEAST THREE YEARS FROM THE DATE PERMIT COVERAGE EXPIRES OR IS TERMINATED. THIS PERIOD MAY BE EXTENDED BY THE REQUEST OF THE AGENCY AT ANY TIME. IN ADDITION, THE OWNER SHALL RETAIN A COPY OF THE PLAN REQUIRED BY THIS PERMIT AT THE CONSTRUCTION SITE FROM THE DATE OF PROJECT INITIATION TO THE DATE OF FINAL STABILIZATION.

A NOTICE OF INTENT (NOI) APPLICATION MUST BE COMPLETED AND INCORPORATED INTO THE SWPPP.

WPDES NOTICE OF TERMINATION GUIDANCE:

WHEN A SITE HAS BEEN FINALLY STABILIZED AND ALL STORMWATER DISCHARGES FROM CONSTRUCTION SITES THAT ARE AUTHORIZED BY THE PERMIT ARE ELIMINATED, THE OWNER OF THE FACILITY MUST SUBMIT A COMPLETED NOTICE OF TERMINATION THAT IS SIGNED IN ACCORDANCE WITH THE PERMIT. CONTRACTOR SHALL SUBMIT A COMPLETED NOTICE OF TERMINATION TO OWNER FOR EXECUTION PRIOR TO THEIR FINAL PAY APPLICATION REQUEST.

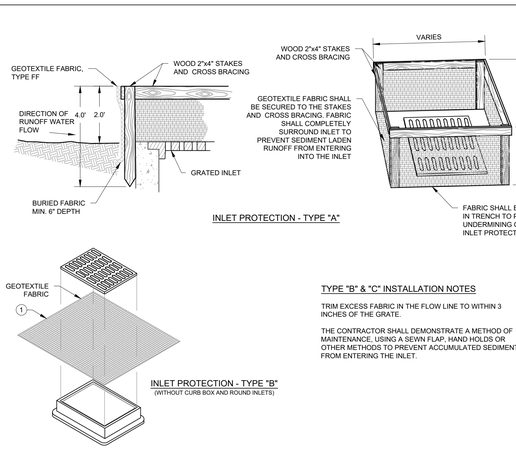
CONTROL MEASURE GROUP	CONTROL MEASURE	CONTROL MEASURE CHARACTERISTICS
VEGETATIVE SOIL COVER	TEMPORARY SEEDING	PROVIDES QUICK TEMPORARY COVER TO CONTROL EROSION WHEN PERMANENT SEEDING IS NOT DESIRED OR TIME OF YEAR IS INAPPROPRIATE.
	PERMANENT SEEDING	PROVIDES PERMANENT VEGETATIVE COVER TO CONTROL EROSION, FILTERS SEDIMENT FROM WATER, MAY BE PART OF FINAL LANDSCAPE PLAN.
NON VEGETATIVE SOIL COVER	AGGREGATE COVER	PROVIDES TEMPORARY COVER ON ROADS AND PARKING LOTS AND AREAS WHERE VEGETATION CANNOT BE ESTABLISHED. PREVENTS MUD FROM BEING PICKED UP AND TRANSPORTED OFF-SITE.
	PAVING	PROVIDES PERMANENT COVER ON PARKING LOTS AND ROADS OR OTHER AREAS WHERE VEGETATION CANNOT BE ESTABLISHED.
DIVERSIONS	DIVERSION BERM / SWALE	DIVERTS RUNOFF TO A SEDIMENT TRAP OR OTHER CONTROL
ENCLOSED DRAINAGE	STORM SEWER	CONVEYS SEDIMENT LADEN WATER TO A SEDIMENT BASIN.
OUTLETS	APRON ENDWALL OR RIPRAP	PROTECTS DOWNSTREAM CHANNEL FROM HIGH VELOCITY OF FLOW DISCHARGING FROM STRUCTURE.
SEDIMENT BASINS	TEMPORARY SEDIMENT TRAP	CONSTRUCTED TO REMOVE SILTATION FROM RUNOFF FROM SITE DIVERSION BERMS/SWALES AND IN OVERLAND FLOOD ROUTE. CAN BE CONVERTED TO PERMANENT SEDIMENT BASIN.
SEDIMENT FILTERS	SILT FENCE	PLACED DOWN SLOPE OF DISTURBED AREA TO KEEP RUNOFF CONTAINED ON-SITE.
	INLET PROTECTION	INSTALLED IN OPEN GRATE STRUCTURES TO COLLECT SEDIMENT.
	DITCH CHECK	PLACED IN DRAINAGE CHANNELS TO FILTER SEDIMENT FROM RUNOFF.
MUD AND DUST CONTROL	CONSTRUCTION ENTRANCE	REDUCES SOIL EROSION POLLUTANTS BEING TRANSPORTED OFF-SITE.
	STREET SWEEPING	REDUCES POLLUTANTS TRACKED FROM CONSTRUCTION SITE.
	DUST CONTROL	PREVENTS DUST FROM LEAVING CONSTRUCTION SITE.

STABILIZATION EFFECTIVENESS (TIME OF YEAR)

STABILIZATION TYPE	STABILIZATION UTILIZATION PERIODS											
	JAN.	FEB.	MAR.	APR.	MAY	JUNE	JULY	AUG.	SEPT.	OCT.	NOV.	DEC.
PERMANENT SEEDING			A	*	*	*	*	*	*			
DORMANT SEEDING	B										B	
TEMPORARY SEEDING			C	*	*	*	D	*				
SODDING			E	*	*	*	*	*	*			

A. KENTUCKY BLUEGRASS 90 LBS/ACRE MIXED WITH PERENNIAL RYEGRASS 30 LBS/ACRE.
B. KENTUCKY BLUEGRASS 135 LBS/ACRE MIXED WITH PERENNIAL RYEGRASS 45 LBS/ACRE + 2 TONS STRAW MULCH/ACRE.
C. SPRING OATS 100 LBS/ACRE.
D. WHEAT OR CEREAL RYE 150 LBS/ACRE.
E. SOD.
F. STRAW MULCH 2 TONS/ACRE.

* IRRIGATION/WATERING REQUIRED TO SUPPORT ESTABLISHMENT AS NEEDED.



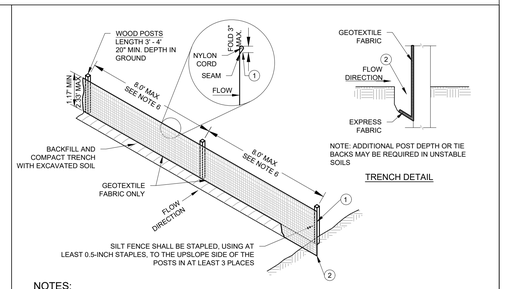
NOTES:

1. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF MATERIAL SPECIFICATION 592 GEOTEXTILE TABLE 1 OR 2, CLASS I, WITH AN EOS OF AT LEAST 30 FOR NONWOVEN AND 50 FOR WOVEN.
2. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED ON THE GEOTEXTILE FABRIC DOES NOT FALL INTO THE INLET. ANY MATERIAL FALLING INTO THE INLET SHALL BE REMOVED IMMEDIATELY.
1. FINISHED SIZE, INCLUDING FLAP POCKET WHERE REQUIRED, SHALL EXTEND A MINIMUM OF 10 INCHES AROUND THE PERIMETER TO FACILITATE MAINTENANCE OR REMOVAL.
2. FOR INLET PROTECTION, TYPE "C" (WITH CURB BOX), AN ADDITIONAL 18 INCHES OF FABRIC IS WRAPPED AROUND THE WOOD AND SECURED WITH STAPLES. THE WOOD SHALL NOT BLOCK THE ENTIRE HEIGHT OF THE CURB BOX OPENING.
3. FLAP POCKETS SHALL BE LARGE ENOUGH TO ACCEPT WOOD 2x4.

INLET PROTECTION - TYPE "A"

INLET PROTECTION

#104 04-04-11

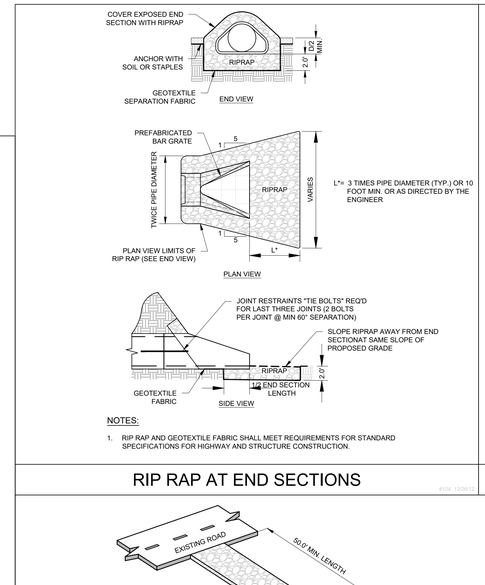


NOTES:

1. ALL SILT FENCE MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH WI DNR TECHNICAL STANDARD 1056.
2. GEOTEXTILE FABRIC SHALL MEET THE REQUIREMENTS OF MATERIAL SPECIFICATION 592 GEOTEXTILE TABLE 1 OR 2, CLASS I WITH EQUIVALENT OPENING SIZE OF AT LEAST 30 FOR NONWOVEN AND 50 FOR WOVEN.
3. SILT FENCE SHALL BE ANCHORED BY SPREADING AT LEAST 8-INCHES OF FABRIC IN A 4-INCH WIDE AND 8-INCH DEEP TRENCH OR 6-INCH DEEP V-TRENCH ON THE UPSLOPE SIDE OF THE FENCE. TRENCHES SHALL NOT BE EXCAVATED WIDER OR DEEPER THAN NECESSARY FOR PROPER INSTALLATION.
4. FOLD MATERIAL TO FIT TRENCH AND BACKFILL AND COMPACT TRENCH WITH EXCAVATED SOIL.
5. WOOD POSTS SHALL BE A MINIMUM SIZE OF 1.125-INCHES x 1.125-INCHES OF DRIED OAK OR HICKORY.
6. SILT FENCE TO EXTEND ABOVE THE TOP OF PIPE, WHERE APPLICABLE.
7. POST SPACING SHALL BE SELECTED BASED ON GEOTEXTILE FABRIC (8-FEET FOR WOVEN AND 3-FEET FOR NON-WOVEN).

SILT FENCE

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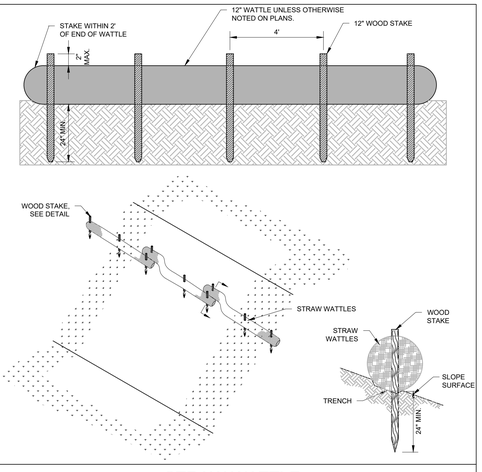


NOTES:

1. RIP RAP AND GEOTEXTILE FABRIC SHALL MEET REQUIREMENTS FOR STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION.

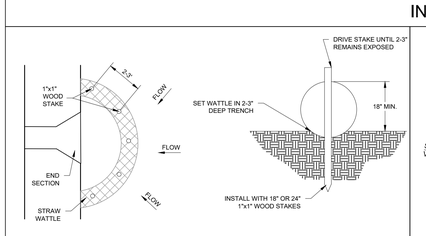
RIP RAP AT END SECTIONS

#124 10/26/15



STRAW WATTLE

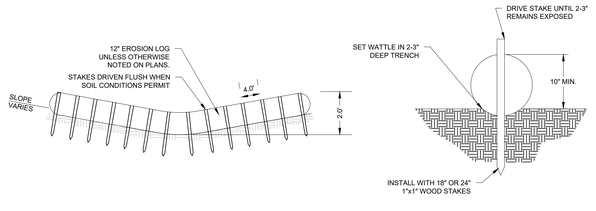
#137 06/01/15



NOTES:

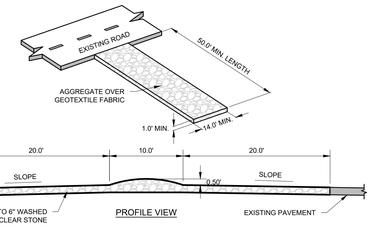
1. REMOVE ACCUMULATED SEDIMENT FROM THE FACE OF THE WATTLE WHEN THE SEDIMENT ACCUMULATION IS HALF THE HEIGHT OF THE WATTLE.
2. INSPECT AFTER EVERY RAINFALL EVENT.

PIPE INLET PROTECTION - STRAW WATTLE



STRAW WATTLE DITCH CHECK

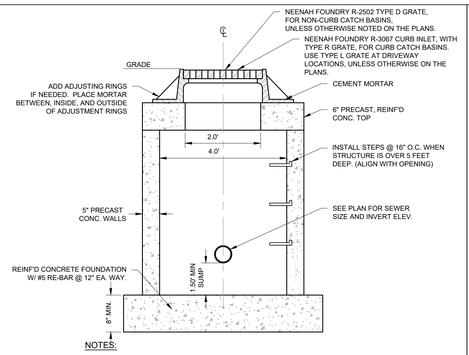
#138 05/31/2013



NOTES:

1. ALL TRACKING PAD MATERIALS AND INSTALLATION SHALL BE IN CONFORMANCE WITH WI DNR TECHNICAL STANDARD 1057.
2. TRACKING PADS SHALL BE INSTALLED PRIOR TO ANY TRAFFIC LEAVING THE SITE. CONTRACTOR SHALL VERIFY LOCATION WITH OWNER.
3. THE AGGREGATE FOR TRACKING PADS SHALL BE 3 TO 6 INCH CLEAR OR WASHED STONE. ALL MATERIALS TO BE RETAINED ON A 3-INCH SIEVE
4. THE AGGREGATE SHALL BE PLACED IN A LAYER AT LEAST 12-INCHES THICK. ON SITES WHERE SATURATED CONDITIONS ARE EXPECTED DURING THE LIFE OF THE PAD, THE PAD SHALL BE UNDERLAIN WITH GEOTEXTILE FABRIC WHICH MEETS MATERIAL SPECIFICATION 592 GEOTEXTILE, TABLE 1 OR 2, CLASS I, II OR IV, TO PREVENT MIGRATION OF UNDERLYING SOILS INTO THE STONE LAYER.
5. THE TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT. MINIMUM WIDTH IS 14 FEET FOR ONE-WAY TRAFFIC AND 20 FEET FOR TWO-WAY TRAFFIC, WITH AN ADDITIONAL INCREASE OF 4 FEET FOR TRAILER TRAFFIC. THE TRACKING PAD SHALL BE A M

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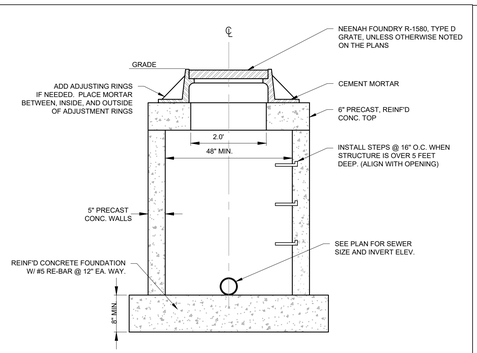


NOTES:

1. EASY STICK, RUBBER GASKET OR APPROVED EQUIVALENT SHALL BE PLACED AT ALL JOINTS BETWEEN ADJUSTING RINGS FOR STORM CATCH BASINS.
2. THE FLAT TOP MAY BE USED IN LIEU OF THE TAPERED TOP WHEN FIELD CONDITIONS PROHIBIT USE OF A TAPERED TOP.
3. STRUCTURE TO BE 4.0' DIA. OR AS INDICATED ON THE PLANS.

CATCH BASIN

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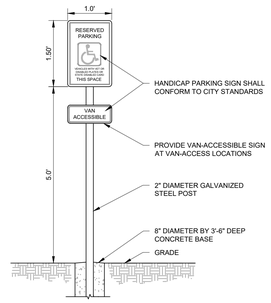


NOTES:

1. EASY STICK, RUBBER GASKET OR APPROVED EQUIVALENT SHALL BE PLACED AT ALL JOINTS BETWEEN ADJUSTING RINGS FOR STORM CATCH BASINS.
2. THE FLAT TOP MAY BE USED IN LIEU OF THE TAPERED TOP WHEN FIELD CONDITIONS PROHIBIT USE OF A TAPERED TOP.
3. STRUCTURE TO BE 4.0' DIA. OR AS INDICATED ON THE PLANS.

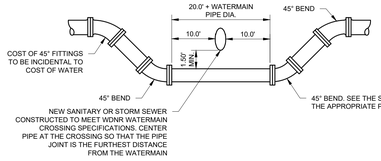
STORM SEWER MANHOLE

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ADA SIGN

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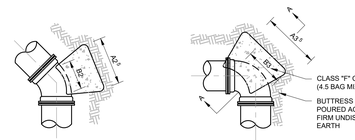


NOTES:

1. IN LIEU OF 45° BENDS, WATERMAIN DEPRESSION MAYBE CONSTRUCTED BY DEFLECTING THE WATERMAIN PER MANUFACTURER'S RECOMMENDATION TO ACHIEVE THE MINIMUM 18" OF VERTICAL SEPARATION.

WATER MAIN DEPRESSION

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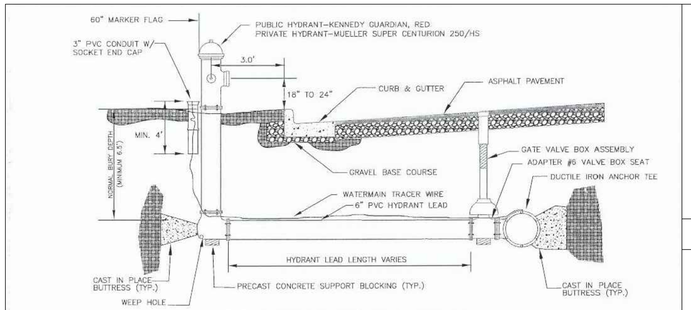


PIPE SIZE	22 1/2° BENDS		45° BENDS		90° BENDS	
	A1	B1	A2	B2	A3	B3
6"	1'-0"	1'-0"	1'-0"	1'-0"	1'-4"	1'-2"
8"	1'-0"	1'-0"	1'-4"	1'-2"	1'-10"	1'-8"
12"	1'-4"	1'-4"	1'-10"	1'-10"	2'-8"	2'-3"
16"	1'-10"	1'-8"	2'-6"	2'-4"	3'-10"	2'-10"
20"	2'-4"	2'-0"	3'-3"	2'-10"	5'-0"	3'-4"
24"	2'-10"	2'-4"	4'-0"	3'-3"	6'-4"	3'-10"
30"	3'-6"	3'-0"	5'-4"	3'-10"	8'-0"	4'-8"

NOTES:

1. PROVIDE THRUST BLOCKING TO PREVENT MOVEMENT OF LINES UNDER PRESSURE AT BENDS, TEES, CAPS, VALVES, HYDRANTS, AND AT POINTS SPECIFIED BY THE ENGINEER
2. ALL BLOCKING SHALL BE WITH POURED CLASS SI CONCRETE AGAINST UNDISTURBED VERTICAL EARTH SURFACE
3. THRUST BLOCKS TO BE AT ALL BENDS 11¼° OR GREATER
4. THE COST OF INSTALLING THE THRUST BLOCK SHALL BE INCIDENTAL TO THE CONSTRUCTION OF THE WATER
5. DIMENSION A2 & A3 SHOULD BE AS LARGE AS POSSIBLE WITHOUT INTERFERING WITH M.J BOLTS

THRUST BLOCK



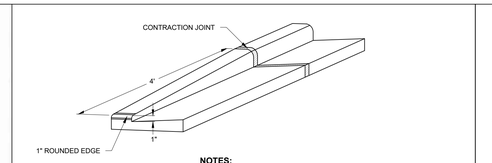
1. HYDRANT LEADS SHALL BE INSTALLED WITH CLASS B BEDDING.
2. HYDRANT LEAD TRENCH SHALL BE BACKFILLED WITH GRANULAR MATERIAL.
3. ALL CONNECTIONS ON HYDRANT LEAD SHALL BE RESTRAINED MECHANICAL JOINTS WITH MEGA LUG.
4. ALL HYDRANT TO HAVE A 5-1/4 IN PUMPER NOZZLE AND TWO 2-1/2 IN HOSE NOZZLES
5. ALL HYDRANTS ASSEMBLYS SHALL BE "LIVE TAPPED" TO THE EXISTING WATER MAIN.

ENGINEERING DEPARTMENT Village of Germantown ...Wilkommen

PVC HYDRANT BRANCH DETAIL

N.T.S.

REV. 05/5/2015

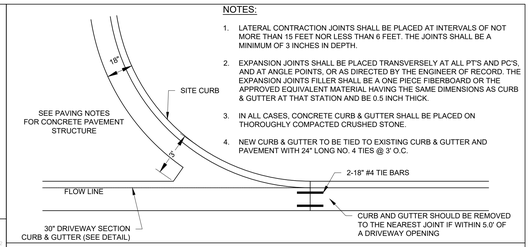


NOTES:

1. CONTRACTION JOINTS SHALL BE PLACED EVERY 10 FEET
2. EXPANSION JOINTS (3/4" EXPANSION FIBER MATERIAL) SHALL BE PLACED EVERY 300 FEET AND AT EVERY PC/PT AND 3 FEET FROM STRUCTURES

TAPER CURB HEAD

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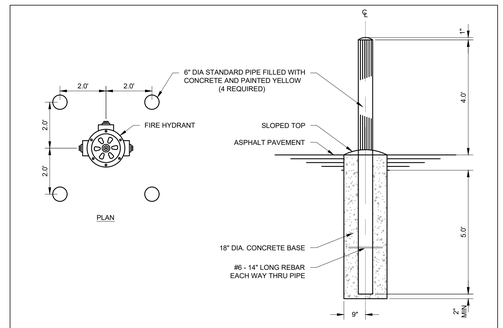


NOTES:

1. LATERAL CONTRACTION JOINTS SHALL BE PLACED AT INTERVALS OF NOT MORE THAN 15 FEET NOR LESS THAN 6 FEET. THE JOINTS SHALL BE A MINIMUM OF 3 INCHES IN DEPTH.
2. EXPANSION JOINTS SHALL BE PLACED TRANSVERSELY AT ALL PT'S AND PC'S, AND AT ANGLE POINTS, OR AS DIRECTED BY THE ENGINEER OF RECORD. THE EXPANSION JOINTS FILLER SHALL BE A ONE PIECE FIBERBOARD OR THE APPROVED EQUIVALENT MATERIAL HAVING THE SAME DIMENSIONS AS CURB & GUTTER AT THAT STATION AND BE 0.5 INCH THICK.
3. IN ALL CASES, CONCRETE CURB & GUTTER SHALL BE PLACED ON THOROUGHLY COMPACTED CRUSHED STONE.
4. NEW CURB & GUTTER TO BE TIED TO EXISTING CURB & GUTTER AND PAVEMENT WITH 24" LONG NO. 4 TIES @ 3' O.C.

DRIVEWAY ENTRANCE

#683_20501

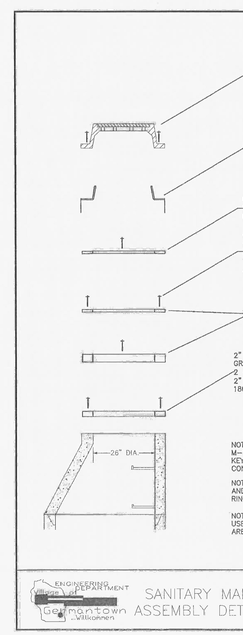


NOTES:

1. USE WHERE HYDRANT IS LOCATED WITHIN PAVED AREAS. COST INCIDENTAL.

HYDRANT BOLLARD

#603_10-10-12

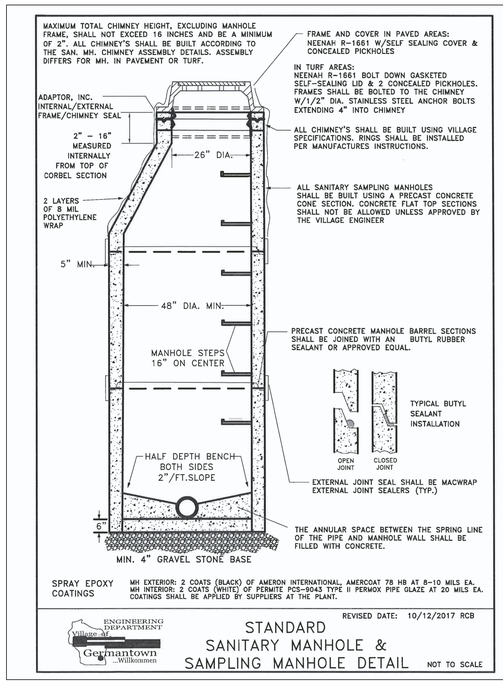


ENGINEERING DEPARTMENT Village of Germantown ...Wilkommen

SANITARY MANHOLE CHIMNEY ASSEMBLY DETAIL IN TURF

REVISED DATE: JUNE 2016

NOT TO SCALE



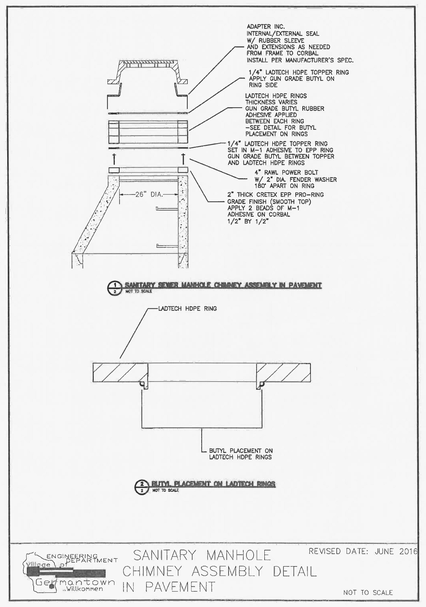
SPRAY EPOXY COATINGS — MH EXTERIOR: 2 COATS (BLACK) OF AMERON INTERNATIONAL, AMERCOAT 78 HB AT 8-10 MILS EA. MH INTERIOR: 2 COATS (WHITE) OF PERMITE PCS-9043 TYPE II PERMOX PIPE GLAZE AT 20 MILS EA. COATINGS SHALL BE APPLIED BY SUPPLIERS AT THE PLANT.

ENGINEERING DEPARTMENT Village of Germantown ...Wilkommen

STANDARD SANITARY MANHOLE & SAMPLING MANHOLE DETAIL

REVISED DATE: 10/12/2017 RCB

NOT TO SCALE

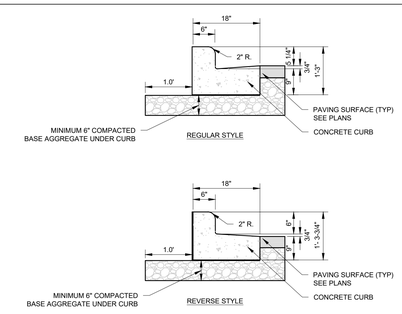


ENGINEERING DEPARTMENT Village of Germantown ...Wilkommen

SANITARY MANHOLE CHIMNEY ASSEMBLY DETAIL IN PAVEMENT

REVISED DATE: JUNE 2016

NOT TO SCALE



NOTES:

1. LATERAL CONTRACTION JOINTS SHALL BE PLACED AT INTERVALS OF NOT MORE THAN 10 FEET NOR LESS THAN 6 FEET. THE JOINTS SHALL BE A MINIMUM OF 3 INCHES IN DEPTH.
2. EXPANSION JOINTS SHALL BE PLACED TRANSVERSELY AT ALL PT'S AND PC'S, 3 FEET EITHER SIDE OF THE CATCH BASINS IN THE CURB LINE, AND AT ANGLE POINTS, OR AS DIRECTED BY THE ENGINEER OF RECORD. THE EXPANSION JOINTS FILLER SHALL BE A ONE PIECE FIBERBOARD OR THE APPROVED EQUIVALENT MATERIAL HAVING THE SAME DIMENSIONS AS CURB & GUTTER AT THAT STATION AND BE 0.5 INCH THICK.
3. IN ALL CASES, CONCRETE CURB & GUTTER SHALL BE PLACED ON THOROUGHLY COMPACTED CRUSHED STONE.
4. REVERSE STYLE CURB LOCATIONS ARE NOTED ON THE PLANS.

18" VERTICAL FACE CURB

#602-WI 12-14-12

REVIEWED: SRB
DESIGNED: SRB
DRAFTED: SRB

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CHICAGO I MILWAUKEE - NATIONWIDE

CAPSTONE 41

GERMANTOWN, WI

CONSTRUCTION DETAILS

REVISIONS

PEG JOB # 1262.00A-WI
PEG PM AJS
START DATE 06/01/21
SCALE N.T.S.

SHEET C-14 OF C-16

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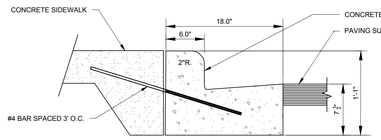
FOR REVIEW

CONSTRUCTION DETAILS

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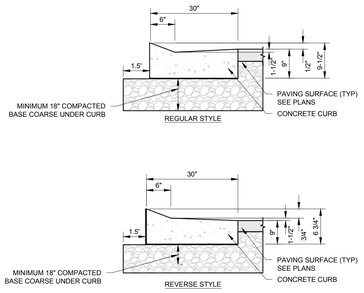
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18" CURB ADJACENT TO SIDEWALK

#619, 3/20/18

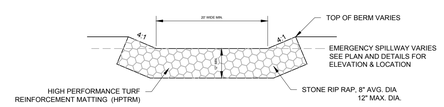


NOTES:

1. LATERAL CONTRACTION JOINTS SHALL BE PLACED AT INTERVALS OF NOT MORE THAN 10 FEET NOR LESS THAN 6 FEET. THE JOINTS SHALL BE A MINIMUM OF 3 INCHES IN DEPTH.
2. EXPANSION JOINTS SHALL BE PLACED TRANSVERSELY AT ALL PT'S AND PC'S, AND AT ANGLE POINTS, OR AS DIRECTED BY THE ENGINEER OF RECORD. THE EXPANSION JOINTS FILLER SHALL BE A ONE PIECE FIBERBOARD OR THE APPROVED EQUIVALENT MATERIAL HAVING THE SAME DIMENSIONS AS CURB & GUTTER AT THAT STATION AND BE 0.5 INCH THICK.
3. IN ALL CASES, CONCRETE CURB & GUTTER SHALL BE PLACED ON THOROUGHLY COMPACTED CRUSHED STONE.
4. REVERSE STYLE CURB LOCATIONS ARE NOTED ON THE PLANS.

30" DEPRESSED CURB

#607/40, 12-17-13

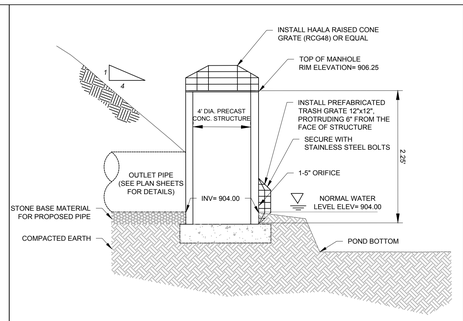


NOTES:

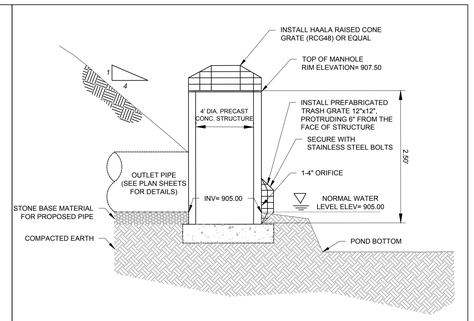
1. THE WATER QUALITY BASIN WILL HAVE A 100-YR WSEL LOWER THAN THE SPILLWAY
2. THE CONTRACTOR SHALL MAINTAIN THE SEDIMENT BASIN UNTIL SUCH TIME AS THERE AR NO UNDISTURBED AREAS ON THE REMAINDER OF THE SITE. MAINTENANCE SHALL INCLUDE REMOVING EXCESS DEPOSITS OF SEDIMENTS AS NECESSARY AND BERM REBUILDING AS NECESSARY.
3. TOP OF BERM & SPILLWAY TO BE TREATED WITH EROSION CONTROL MATTING & SEED.
4. FINAL BOTTOM ELEVATIONS OF POND 1 SHALL NOT EXCEED ____ AFTER FINAL STABILIZATION OF THE AREA DRAINING TO THE POND IS ACHIEVED.
5. EXTEND RIP RAP 2' BELOW THE ELEVATION OF THE EMERGENCY SPILLWAY ON THE INSIDE OF THE POND. EXTEND RIP RAP TO TOE OF SLOPE ON THE OUTSIDE OF THE POND.

EMERGENCY SPILLWAY

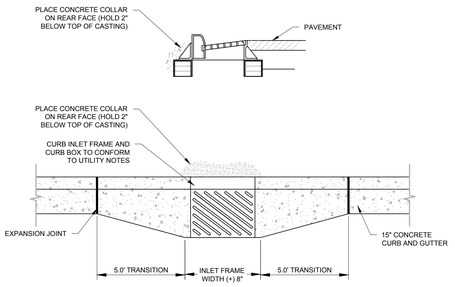
#210, 09-03-13



WEST POND OUTLET STRUCTURE



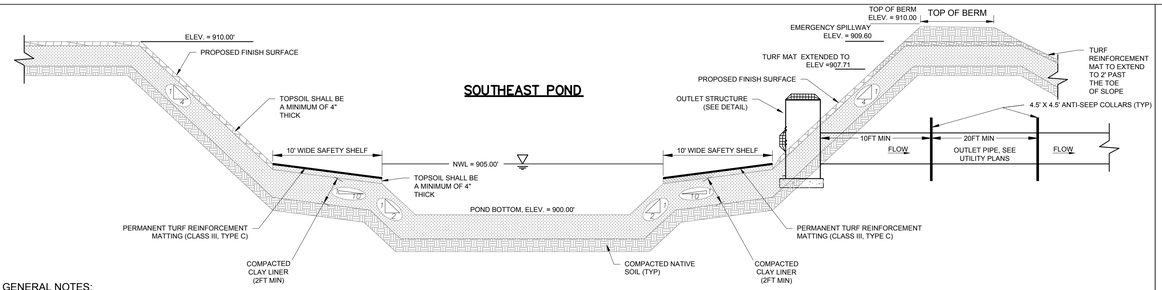
SOUTHEAST POND OUTLET STRUCTURE



NOTE : CURB CONTRACTOR TO VERIFY POSITION AND ELEVATION OF FRAME AND GRATE PRIOR TO POUR. IF NOT CORRECT, FIVE (5) FOOT TRANSITION AREA TO BE LEFT UNPOURED UNTIL SITUATION IS CORRECTED BY CONTRACTOR.

CURB AND GUTTER BUMP OUT

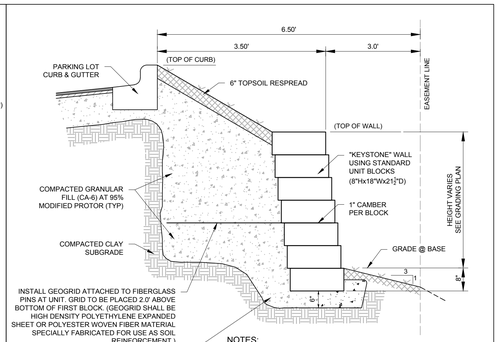
#622, 10-10-13



GENERAL NOTES:

1. ALL CONSTRUCTION SHALL MEET THE SPECIFICATIONS OF "WDNR WET DETENTION BASIN TECHNICAL STANDARD 1001".
2. ALL WORK TO BE CONDUCTED IN CONFORMANCE WITH THE STORM WATER MANAGEMENT PLAN FOR THE PROJECT SITE AS APPROVED BY THE REGULATORY ENGINEER OF RECORD.
3. RCP PIPING & INSTALLATION WITHIN THE BASIN SHALL BE IN ACCORDANCE WITH (ASTM C-76/C443) WITH RUBBER GASKETS.
4. OWNER OR CONTRACTOR MUST CONSULT LANDSCAPE ARCHITECT OR ECOLOGICAL PLANNING AGENCY FOR APPROPRIATE PLANTS AND PLANTING CONFIGURATIONS.
5. CLAY LINER SHALL BE A MINIMUM OF 2-FEET THICK. CLAY SHALL BE COMPACTED AT ±2.0% OPTIMAL MOISTURE CONTENT TO 90% MODIFIED PROCTOR. MEDIUM STIFF TO STIFF CLAYS PRESENT IN-PLACE AT THE POND SIDE SLOPES OR OTHER ONSITE MEDIUM STIFF TO STIFF CLAYS MAY BE USED AT THE DISCRETION OF THE GEOTECHNICAL ENGINEER OF RECORD.
6. FOR CONSTRUCTED EMBANKMENTS WHERE THE PERMANENT POOL IS PONDED 3-FEET OR MORE AGAINST THE EMBANKMENT, THERE SHALL BE A CORE TRENCH OR KEYWAY ALONG THE CENTERLINE OF THE EMBANKMENT UP TO THE PERMANENT POOL ELEVATION. THE CORE TRENCH OR KEYWAY SHALL BE A MINIMUM OF 2-FEET DEEP AND 8-FEET WIDE WITH A SIDE SLOPE OF 1:1 OR FLATTER.

SOUTHEAST POND CROSS SECTION

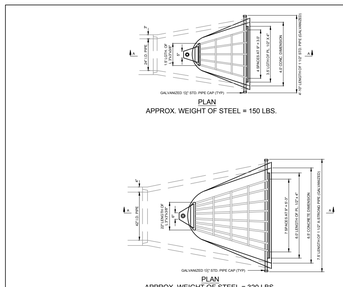


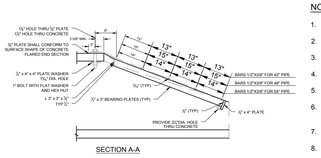
NOTES:

1. RETAINING WALL DETAIL IS CONCEPTUAL AND SCHEMATIC ONLY. THE CONTRACTOR MUST SUBMIT INFORMATION ON THE PRODUCT CHOSEN (I.E. "KEYSTONE" OR EQUIVALENT) INCLUDING A STATEMENT FROM THE MANUFACTURER THAT THE PRODUCT IS SUITABLE FOR THE PROPOSED APPLICATION. THIS INFORMATION SHALL BE SUBMITTED TO THE OWNER, THE ENGINEER AND THE VILLAGE ENGINEER FOR REVIEW, PRIOR TO CONSTRUCTION. THIS REVIEW DOES NOT RELIEVE THE CONTRACTOR AND MANUFACTURER OF RESPONSIBILITY FOR THE WALL. THE CONTRACTOR SHALL ADHERE STRICTLY TO THE MANUFACTURER'S SPECIFICATIONS AND DESIGN REQUIREMENTS DURING CONSTRUCTION.
2. WALL TO BE SET WITH BOTTOM OF FIRST BLOCK 8" BELOW GRADE AT FACE OF WALL.

KEYSTONE RETAINING WALL

#633 3/31/15



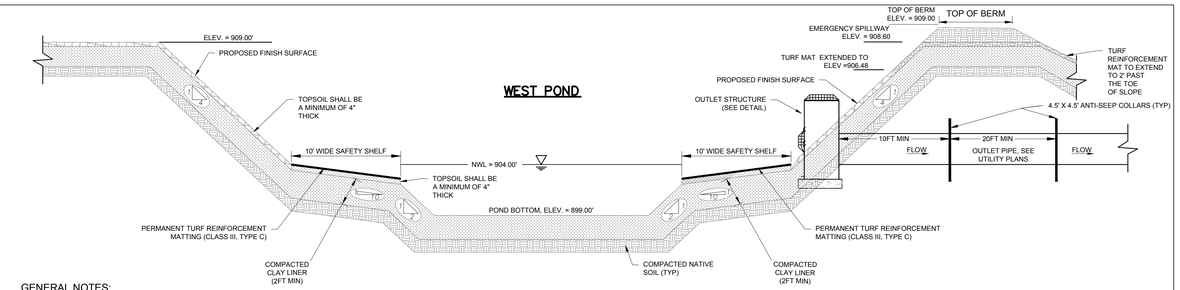


NOTES:

1. GRATING DETAILS SHOWN ARE INTENDED FOR USE WITH PARTICULAR SIZES OF PRECAST REINFORCED CONCRETE FLARED END SECTION AS SHOWN ON WisDOT STANDARDS.
2. STRUCTURAL STEEL SHAPES AND PLATES SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION.
3. GALVANIZED STEEL PIPE SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
4. BOLTS, NUTS AND WASHERS SHALL BE IN ACCORDANCE WITH THE STANDARD SPECIFICATIONS.
5. ALL FABRICATION SHALL BE COMPLETED AND READY FOR ASSEMBLY BEFORE GALVANIZING.
6. THE CORED HOLES IN THE THE PRECAST CONCRETE FLARED END SECTIONS SHALL BE TO THE DIAMETERS NOTED. IF CONE-OUT ON THE OTHER END OF THE HOLE OCCURS, THE HOLE SHALL BE FILLED WITH GROUT TO CORRECT DIAMETER OF THE HOLE.
7. APPROXIMATE WEIGHT OF STEEL SHOWN INCLUDES TOTAL WEIGHT OF GRATING, BOLTS, WASHERS, NUTS, AND STEEL PIPE.
8. THE CONTRACT UNIT PRICE "EACH" FOR GRATING FOR CONCRETE FLARED END SECTION OF THE SIZE INDICATED SHALL INCLUDED FABRICATION AND INSTALLATION OF THE GRATING AS DETAILED HEREON, INCLUDING FABRICATION OF THE NECESSARY MOUNTING HOLES IN THE FLARED END SECTION. THIS PRICE DOES NOT INCLUDE THE COST OF THE PRECAST CONCRETE FLARED END SECTION.

FLARED END SECTION GRATES

#513 6/18/13



GENERAL NOTES:

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WEST POND CROSS SECTION

REVIEWED: SRB
DESIGNED: SRB
DRAFTED: SRB

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BROOKFIELD, WI 53186
(262) 754-8888
CHICAGO I MILWAUKEE - NATIONWIDE

CAPSTONE 41

GERMANTOWN, WI

CONSTRUCTION DETAILS

REVISIONS

PEC JOB # 1262.00A-WI
PEC PM ASS
START DATE 06/01/21
SCALE N.T.S.

SHEET C-15 OF C-16

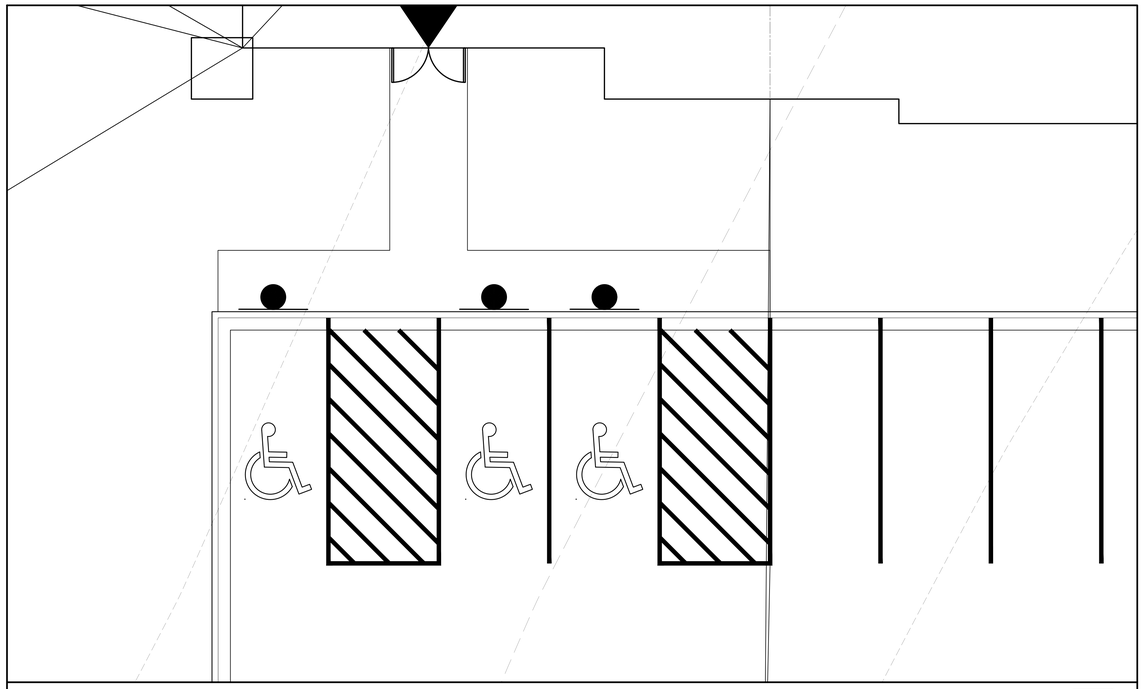
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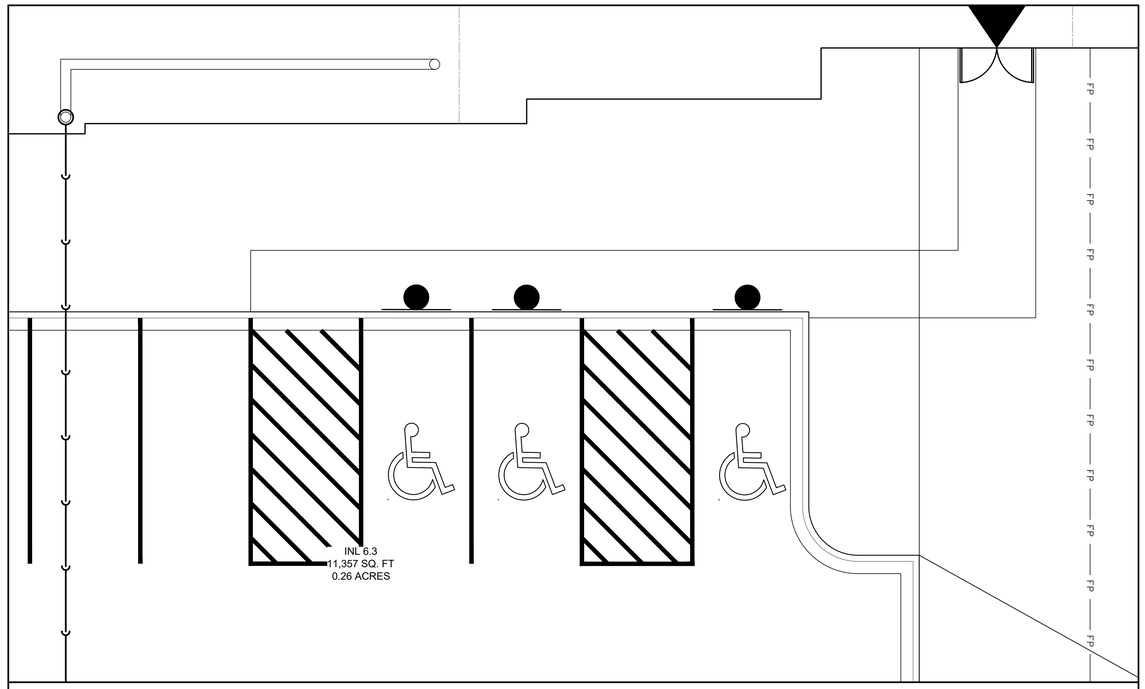
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ADA PARKING DETAILS
SOUTHWEST BUILDING I CORNER

SCALE: 1" = 5'

NORTH



ADA PARKING DETAILS
SOUTHWEST BUILDING I CORNER

SCALE: 1" = 5'

NORTH

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CONSTRUCTION DETAILS

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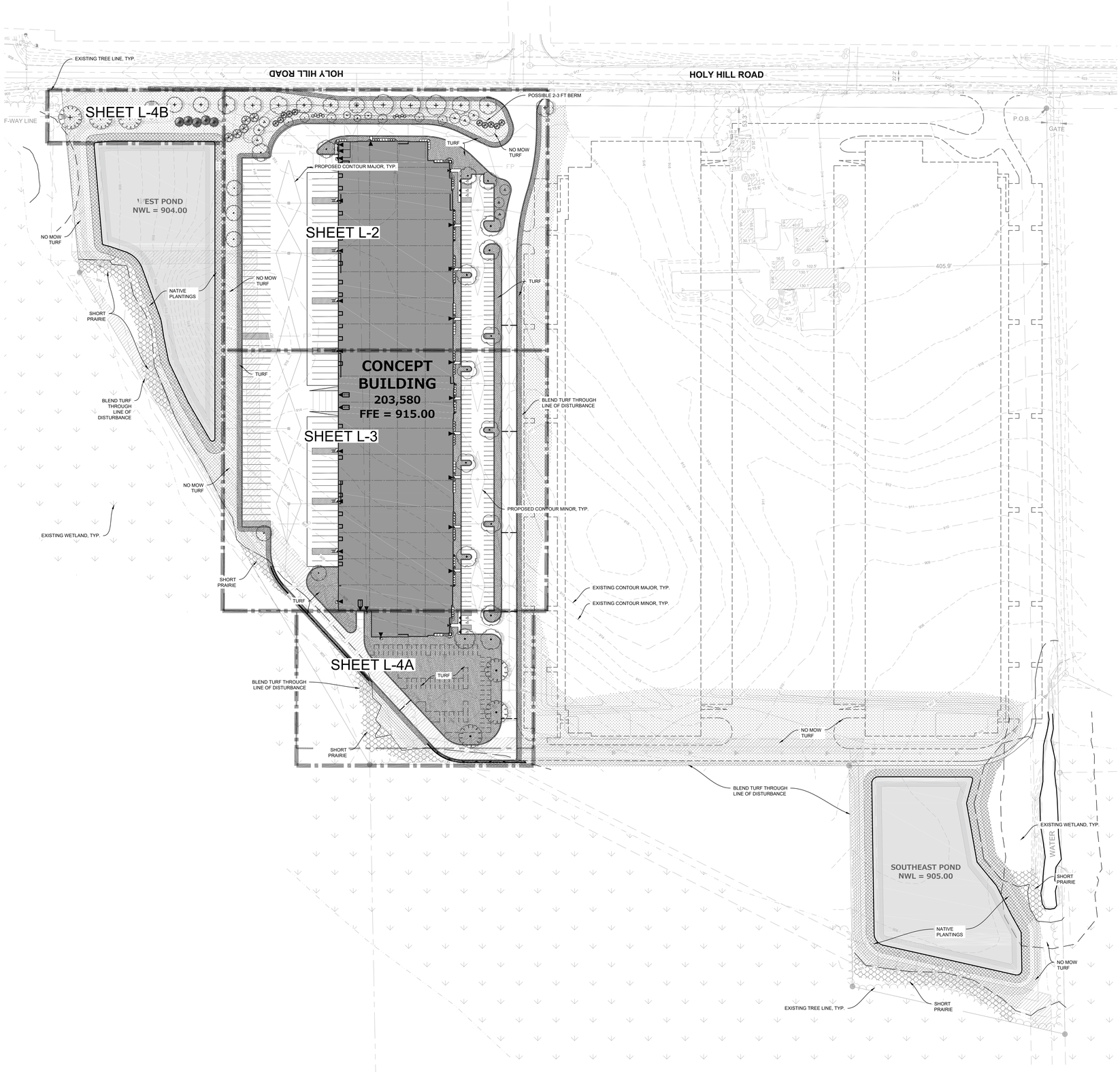
REVISIONS

PEG JOB: 1262.00A-WI
PEG PM: AJS
START DATE: 06/01/21
SCALE: N.T.S.

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PLANT SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	SIZE
ASM	4	Acer saccharum / Sugar Maple 60` T x 45` W	2.5" Cal.
ASM2	6	Acer saccharum / Sugar Maple 60` T x 45` W	3" Cal.
AAB	9	Amelanchier x grandiflora `Autumn Brilliance` / Autumn Brilliance Serviceberry 20` T x 20` W	8` Ht.
CNC2	3	Catalpa speciosa / Northern Catalpa 55` T x 35` W	3" Cal.
GTS	7	Gleditsia triacanthos inermis `Shademaster` / Shademaster Locust 60` T x 50` W	2.5" Cal.
GTS2	3	Gleditsia triacanthos inermis `Shademaster` / Shademaster Locust 60` T x 50` W	3" Cal.
GDK	5	Gymnocladus dioica / Kentucky Coffee Tree 60` T x 45` W	2.5" Cal.
MPM	6	Malus x `Prairie Maid` / Prairie Maid Crabapple 20` T x 25` W	1.5" Cal.
MR2	3	Malus x `Royal Raindrops` / Royal Raindrops Crabapple - Multi-Stem 20` T x 15` W	8` Ht.
QXS	3	Quercus x schuetti / Swamp Bur Oak 70` T x 65` W	2.5" Cal.
QXS2	3	Quercus x schuetti / Swamp Bur Oak 70` T x 65` W	3" Cal.
TTS	5	Tilia tomentosa `Sterling` / Sterling Silver Linden 60` T x 35` W	2.5" Cal.
TTS2	3	Tilia tomentosa `Sterling` / Sterling Silver Linden 60` T x 35` W	3" Cal.

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	SIZE
ACF	5	Abies concolor / White Fir 25` T x 25` W	5` Ht.
PGB	10	Picea glauca `Densata` / Black Hills Spruce 30` T x 15` W	5` Ht.
PSW	5	Pinus strobus / Eastern White Pine 60` T x 30` W	5` Ht.

SHRUBS	QTY	BOTANICAL / COMMON NAME	SIZE
HAN	6	Hydrangea arborescens `Annabelle` / Annabelle Smooth Hydrangea 5` T x 5` W	2` Ht.
HBO	14	Hydrangea paniculata `Bobo` / Bobo Hydrangea 3` T x 3` W	2` Ht.
HVS	24	Hydrangea paniculata `Vanilla Strawberry` / Vanilla Strawberry Panicled Hydrangea 6` T x 5` W	2` Ht.
IVH	10	Itea virginica `Little Henry` / Little Henry Sweetspire 3` T x 3` W	2` Ht.
RPP	18	Rosa rugosa `Purple Pavement` / Purple Pavement Rugosa Rose 5` T x 5` W	2` Ht.
SBE	13	Sambucus nigra `Black Lace` / Black Lace Elderberry 7` T x 7` W	2` Ht.
SMC	6	Spiraea japonica `Magic Carpet` / Magic Carpet Spirea 2` T x 3` W	2` Ht.
SMP	5	Syringa meyeri `Palibin` / Dwarf Korean Lilac 5` T x 6` W	2` Ht.

EVERGREEN SHRUBS	QTY	BOTANICAL / COMMON NAME	SIZE
JSG	12	Juniperus chinensis `Sea Green` / Sea Green Juniper 5` T x 6` W	2` Ht.
JSP	12	Juniperus x `J.N Select Blue` / Star Power Juniper 15` T x 8` W	4` Ht.
PPS	10	Picea abies `Pumila` / Pumila Spruce 3` T x 4` W	24" W
PMS	8	Pinus mugo `Slowmound` / Slowmound Mugo Pine 3` T x 3` W	24" W
TMD	6	Taxus x media `Densiformis` / Densiform Yew 5` T x 5` W	2` Ht.
TTI	10	Taxus x media `Tauntonii` / Tauton Yew 4` T x 5` W	2` Ht.
THH	6	Thuja occidentalis `Holmstrup` / Holmstrup Cedar 14` T x 4` W	4` Ht.

ORNAMENTAL GRASSES	QTY	BOTANICAL / COMMON NAME	SIZE
CFO	6	Calamagrostis x a `Overdam` / Overdam Reed Grass 24" T x 24" W	1 gal.
CK3	12	Calamagrostis x acutiflora `Karl Foerster` / Feather Reed Grass 36" T x 30" W	1 gal.
MSO	12	Miscanthus sinensis `Oktoberfest` / Oktoberfest Miscanthus 48" T x 36" W	1 gal.
PN3	21	Panicum virgatum `Northwind` / Switch Grass 48" T x 30" W	1 gal.
SB4	18	Schizachyrium scoparium `Blue Heaven` / Blue Heaven Little Bluestem 36" T x 30" W	1 gal.
STD	12	Sporobolus heterolepis `Tara` / Prairie Dropseed 15" T x 20" W	1 gal.

PERENNIALS	QTY	BOTANICAL / COMMON NAME	SIZE
AS2	12	Allium x `Summer Beauty` / Summer Beauty Allium 18" T x 18" W	4.5" cont.
AVR	10	Astilbe chinensis `Vision in Red` / Vision in Red Astilbe 15" T x 18" W	4.5" cont.
CAL	24	Calamintha nepeta / Calamint 12" T x 18" W	4.5" cont.
EMS	11	Echinacea purpurea `Magnus Superior` / Magnus Superior Coneflower 28" T x 16" W	4.5" Cont.
HPP	28	Heuchera m `Palace Purple` / Palace Purple Coral Bells 18" T x 18" W	4.5" Cont.
HGS	5	Hosta x `Gold Standard` / Gold Standard Hosta 20" T x 50" W	4.5" cont.
HPA	7	Hosta x `Patriot` / Patriot Hosta 20" T x 38" W	4.5" cont.
LBS	13	Leucanthemum x `Becky` / Becky Shasta Daisy 15" T x 15" W	4.5" Cont.
NWL	14	Nepeta x `Walker`s Low` / Walker`s Low Catmint 20" T x 28" W	4.5" Cont.
SMN	20	Salvia nemorosa `May Night` / May Night Sage 18" T x 18" W	4.5" Cont.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME
	52,627 sf	Native Plantings / AGRECOL RAINWATER RENEWAL MIX
	33,729 sf	SHORTGRASS PRAIRIE- MESIC / AGRECOL SHORTGRASS PRAIRIE MESIC MIX
	104,400 sf	Turf Hydroseed / Reinders - Cadet 70/30 Fescue/Blue Mix
	306,548 sf	Turf Hydroseed Low Grow / Reinders No Mow/Low Grow Mix

NOTES

- REFER TO INDIVIDUAL SHEETS FOR PLANTING KEY AND SPECIES CALLOUTS

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 80' 160'

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BROOKFIELD, WI 53186
(262) 754-8888
CHICAGO | MILWAUKEE : NATIONWIDE

CAPSTONE 41

GERMANTOWN, WI

LANDSCAPE PLAN OVERVIEW

REVISIONS

PEG JOB # 1262.00A-WI
PEG PM AJS
START DATE 06/01/21
SCALE 1" = 80'

SHEET L-1 OF L-5

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LANDSCAPE PLAN OVERVIEW

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HOLY HILL ROAD

SHEET L-4B

SHEET L-2

(3) CNC2
(3) ASM2
(3) GTS2
(2) ASM2
(5) ACF
(5) PGB
(5) JSP
(5) JSP
POSSIBLE 2-3 FT BERM
(1) ASM2
(3) MR2
(3) MPM
(3) AAB
(5) PGB
(3) HAN
(1) JSP
(13) LBS
(3) SBE
(6) TMD
(6) HPA
(1) JSP
(3) HAN
(3) MPM
(2) ASM
(3) AAB
TURF
NO MOW TURF
(3) SMP
(3) SBE
(5) HGS
(1) HPA
TURF
(3) PN3
(2) HBO
D.L.D
(3) THH
(5) IVH
(3) MSO
(10) SMN
(6) HBO
(2) ASM
(3) AAB
TURF
(2) PMS
(3) MSO
(3) SMC
(3) TTI
(1) SMP
(3) CFO
PROPOSED CONTOUR MAJOR, TYP.
(6) SB4
(2) PPS
(6) RPP
(6) PN3
(10) AVR
(3) TTS
EXISTING CONTOUR MINOR, TYP.
TURF
EXISTING CONTOUR MAJOR, TYP.
(6) NWL
(2) TTI
(6) HVS
(2) PMS
(6) STD
TURF
PROPOSED CONTOUR MINOR, TYP.
(3) GTS
TURF
(2) SBE
(6) JSG
(6) CK3
(14) HPP
(1) GDK

SHEET L-2
SHEET L-3

NORTH

GRAPHICAL SCALE (FEET)

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PLANT KEY

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ASM2	Acer saccharum Sugar Maple
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PEG JOB # 1262.00A-WI
PEG PM AJS
START DATE 06/01/21
SCALE 1" = 20'

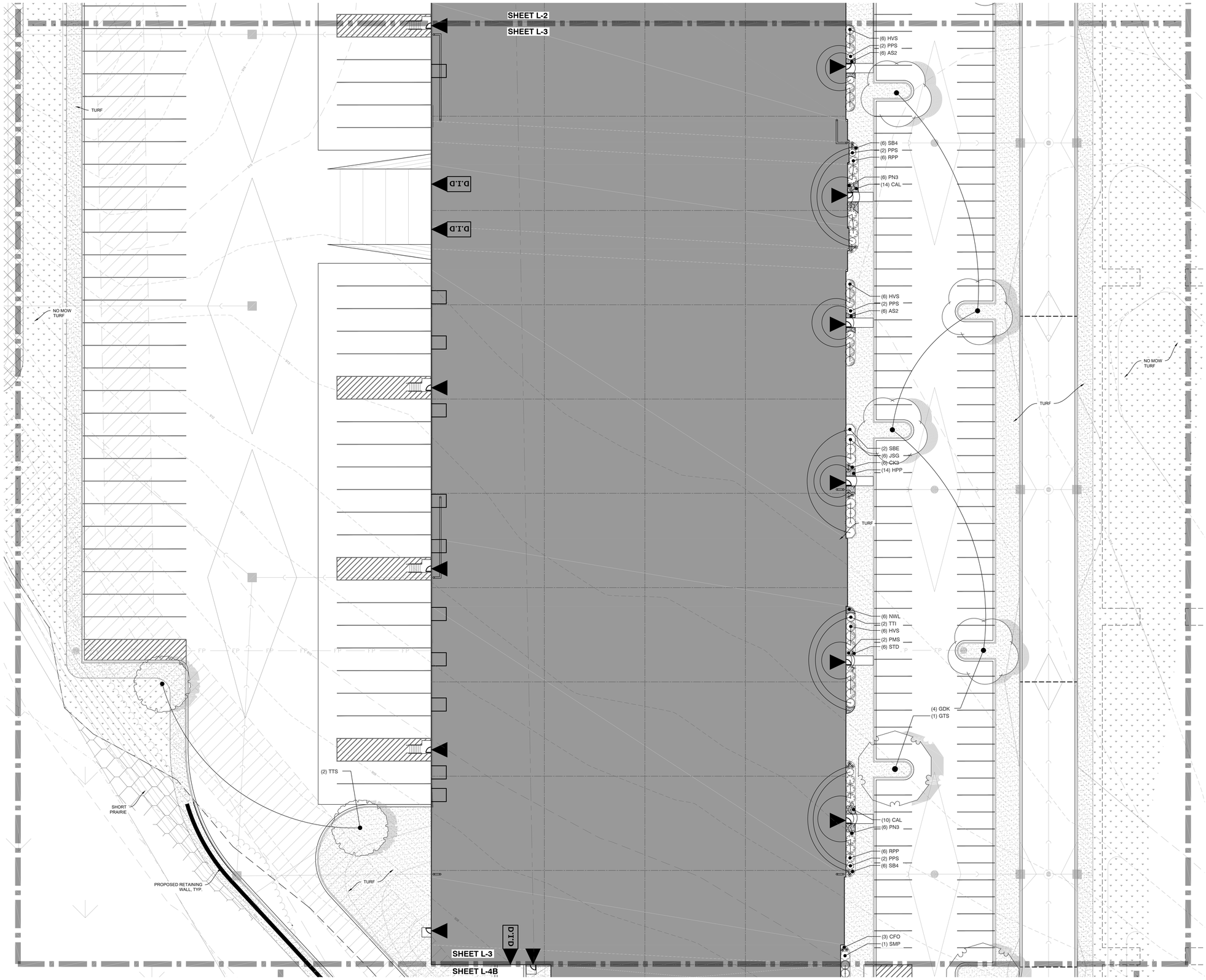
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L-2
OF
L-5

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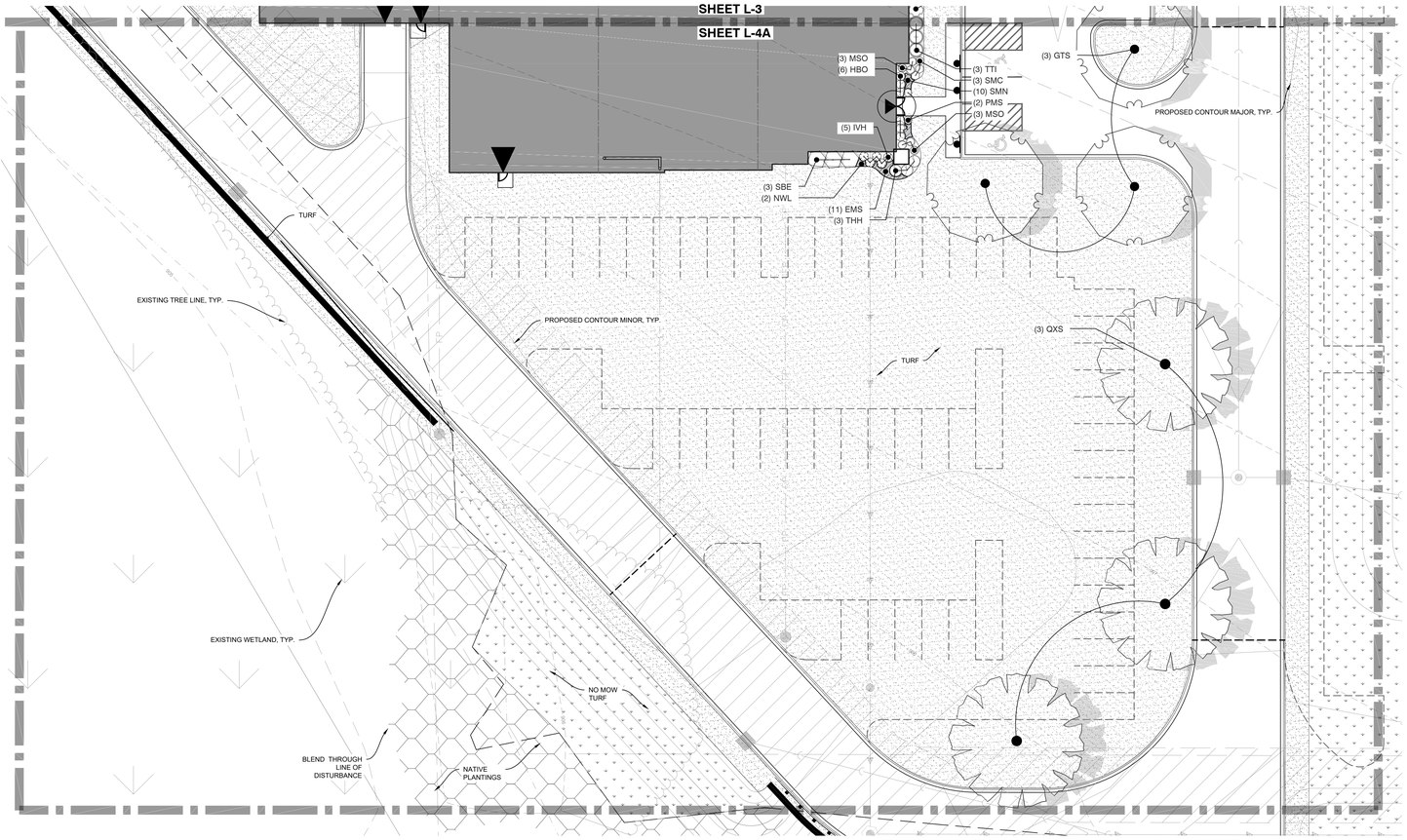
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SCALE 1" = 20'

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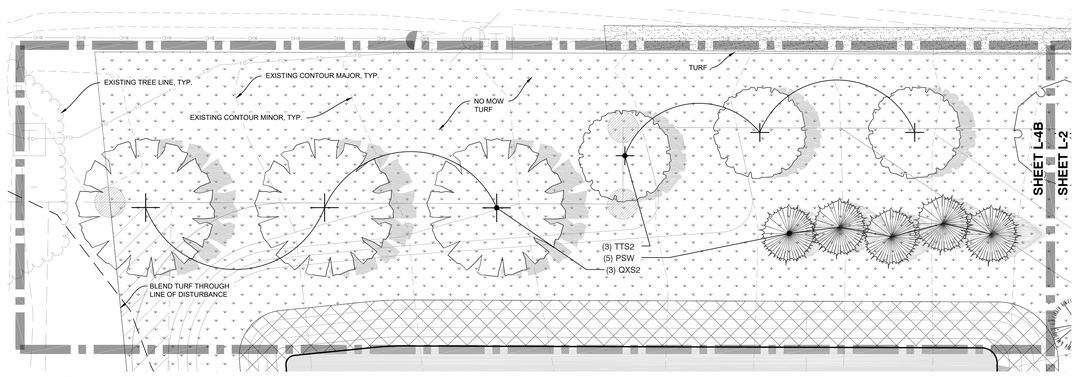
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ENLARGEMENT L-4A

SCALE: 1"=20'



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GRAPHICAL SCALE (FEET)

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LANDSCAPE ENLARGEMENT

REVISIONS

PROJ. JOB # 1262.00A-WI
PROJ. MGR. ASS
START DATE 06/01/21
SCALE 1" = 20'

SHEET L-4 OF L-5

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DESIGN: JSJ
PRINTED: 6/8

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GENERAL PLANTING NOTES

1. THE LAYOUT OF ALL PLANTING BEDS AND INDIVIDUAL TREES AND SHRUBS SHALL BE STAKED BY THE CONTRACTOR IN ADVANCE OF INSTALLATION. FLAGGING, STAKES, OR PAINT MAY BE USED TO DELINEATE LOCATIONS AS SCALED FROM THE PLANS. AN APPROVED REPRESENTATIVE WILL REVIEW THESE LOCATIONS WITH THE CONTRACTOR AND MAKE MINOR ADJUSTMENTS AS NECESSARY. BED LAYOUT SHALL ALSO INCLUDE PERENNIAL GROUPINGS BY SPECIES.
2. THE CONTRACTOR IS RESPONSIBLE FOR INDEPENDENTLY DETERMINING THE PLANT MATERIAL QUANTITIES REQUIRED BY THE LANDSCAPE PLANS. REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT.
3. NO PLANT MATERIAL OR PLANT SIZE SUBSTITUTIONS WILL BE ACCEPTED UNLESS APPROVAL BY THE LANDSCAPE ARCHITECT. ANY CHANGES SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT IN WRITING PRIOR TO INSTALLATION.
4. ALL BNB STOCK SHALL BE NURSERY GROWN IN A CLAY LOAM SOIL FOR A MINIMUM OF THREE GROWING SEASONS WITHIN 200 MILES OF PROJECT LOCATION, IN A ZONE COMPATIBLE WITH USDA HARDINESS ZONE 5A. SEED SHALL BE PROVIDED FROM A NURSERY (WITHIN 200 MILES) WITH A SIMILAR PLANT HARDINESS ZONE AS PROJECT LOCATION. EXISTING SOIL SHALL BE AMENDED PER SOIL ANALYSIS REPORT TO ENSURE A PROPER GROWING MEDIUM IS ACHIEVED.
5. ALL PLANT MATERIAL SHALL COMPLY WITH STANDARDS DESCRIBED IN AMERICAN STANDARD OF NURSERY STOCK - Z60.1 ANSI. LANDSCAPE ARCHITECT OR OWNERS AUTHORIZED REPRESENTATIVE RESERVES THE RIGHT TO INSPECT AND POTENTIALLY REJECT ANY PLANT MATERIAL DEEMED TO NOT MEET THE REQUIRED STANDARDS.
6. ALL STOCK SHALL BE FREE OF DISEASES AND HARMFUL INSECTS, DAMAGE, DISORDERS AND DEFORMITIES.
7. TREES SHALL BE INSTALLED A MINIMUM DISTANCE OF 5' FROM ANY SEWER AND WATER LINES, 10' FROM DRIVEWAYS, LIGHT POLES, AND FIRE HYDRANTS.
8. TREES SHALL BE INSTALLED A MINIMUM OF 25' FROM STREET CORNERS OF MINOR ROADS, AND 50' FROM STREET CORNERS OF ARTERIAL ROADS.
9. ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH PLANTING DETAILS. FOR STREET TREE PLANTINGS, REFER TO TREE PLANTING DETAIL AND TO THE VILLAGE OF GERMANTOWN SPECIFICATIONS FOR PLANTING STREET TREES.
10. TREES SHALL HAVE SINGLE, STRAIGHT TRUNKS AND WELL BALANCED BRANCH SYSTEMS. MUTLI-STEM TREES SHALL HAVE 3-4 STRAIGHT TRUNKS AND WELL BALANCED BRANCH SYSTEMS. HEIGHT-TO-CALIPER RATIOS SHALL BE CONSISTENT WITH THE LATEST EDITION OF ANSI Z60.1.
11. ROOT SYSTEMS SHALL BE LARGE ENOUGH TO ALLOW FOR FULL RECOVERY OF THE TREE, AND SHALL CONFORM TO STANDARDS AS THEY APPEAR IN THE MOST CURRENT REVISION OF THE AMERICAN ASSOCIATION OF NURSERYMEN'S AMERICAN STANDARD OF NURSERY STOCK ANSI Z60.1.
12. BNB TREES SHALL BE DUG WITH A BALL OF SOIL, NOT SOFT BALLED OR POTTED AND SHALL BE FIRM IN THEIR ROOTBALL. ROOT BALL SHALL BE WRAPPED (WITH BIODEGRADABLE MATERIAL). THE TREE ROOT FLARE, OR COLLAR, SHALL BE AT OR WITHIN THE TOP THREE INCHES OF GRADE.
13. ALL SPRING TREES MUST BE FRESHLY DUG IN THE MOST RECENT SPRING.
14. ALL AUTUMN TREES MUST BE FRESHLY DUG IN THE MOST RECENT AUTUMN.
15. TREES SHALL BE ALIVE, HEALTHY AND APPROPRIATELY MOIST, AT TIME OF DELIVERY. TREES SHALL BE SUBJECT TO INSPECTION FOR CONFORMITY TO SPECIFICATION REQUIREMENTS AND APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE. THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY TREES THAT DO NOT MEET THE SPECIFICATIONS OR THAT HAVE BEEN DAMAGED DURING SHIPMENT. THE LANDSCAPE INSTALLER MUST RECEIVE APPROVAL FROM LANDSCAPE ARCHITECT FOR ANY SUBSTITUTIONS OR ALTERATIONS.
16. ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH PLANTING DETAILS.
17. ALL PLANTING BEDS SHALL HAVE A MINIMUM 10" DEPTH OF PREPARED SOIL. WITH APPROVAL, EXISTING SOIL MAY BE UTILIZED PROVIDED THE PROPER SOIL AMENDMENTS ARE TILLED THOROUGHLY INTO THE TOP 10" OF SOIL. REFER TO SOIL PLACEMENT NOTES.
18. WHILE PLANTING TREES AND SHRUBS, BACKFILL ¾ OF PLANTING HOLE AND WATER TREE THOROUGHLY BEFORE INSTALLING THE REMAINDER OF SOIL MIXTURE. AFTER ALL SOIL HAS BEEN PLACED INTO THE PLANTING HOLE WATER THOROUGHLY AGAIN.
19. THE CONTRACTOR MUST LABEL ALL TREES WITH THE COMMON AND BOTANICAL NAMES PRIOR TO FINAL INSPECTION.
20. OAK TREES SHALL BE TREATED FOR TWO-LINE CHESTNUT BORER BOTH AT THE TIME OF INSTALLATION AND DURING THE SECOND GROWING SEASON.
21. ALL PLANTING BEDS SHALL BE MULCHED WITH 3" DEEP SHREDDED HARDWOOD MULCH, AND ALL TREES PLANTED IN TURF AREAS SHALL RECEIVE A 3" DEEP SHREDDED HARDWOOD MULCHED RING AS SHOWN IN PLANTING DETAILS.
22. ALL PLANTING BEDS AND TREE RINGS SHALL HAVE A 4" DEEP TRENCHED BED EDGE CREATED BY EITHER A FLAT LANDSCAPE SPADE OR MECHANICAL EDGER. BED EDGES ARE TO BE CUT CLEAN AND SMOOTH AS SHOWN ON LANDSCAPE PLANS WITH A CLEAN DEFINITION BETWEEN TURF AND PLANTING AREAS.
23. ALL TURF SEED AREAS SHALL RECEIVE A MINIMUM OF 6" DEPTH OF TOPSOIL. WITH APPROVAL, EXISTING SOIL MAY BE UTILIZED PROVIDED THE PROPER SOIL AMENDMENTS ARE TILLED THOROUGHLY INTO THE TOP 6" OF SOIL AS INDICATED IN THE SOIL PLACEMENT NOTES. REQUIRED AMENDMENTS SHALL BE DETERMINED BASED ON A SOIL ANALYSIS TO BE PERFORMED. ALL TOPSOIL AMENDMENT SHALL BE AGED WEED FREE MANURE OR CLASS 1 ORGANIC MATTER.
24. FOR LAWN SEEDING, APPLY A STARTER FERTILIZER AND SEED UNIFORMLY AT THE RATE RECOMMENDED BY MANUFACTURER, AND PROVIDE A MULCH COVERING THAT IS SUITABLE TO PROMOTE SEED GERMINATION AND TURF ESTABLISHMENT. CONTRACTOR TO PROVIDE FERTILIZER, SEED, AND MULCH SPECIFICATIONS TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. EROSION CONTROL MEASURES ARE TO BE INSTALLED IN THOSE AREAS REQUIRING STABILIZATION (SWALES, SLOPES EXCEEDING 1:3, AND THOSE LOCATIONS INDICATED IN CIVIL DRAWINGS).
25. THE CONTRACTOR TO ENSURE A SMOOTH, UNIFORM QUALITY TURF IS ACHIEVED WITH NO BARE SPOTS LARGER THAN 6" X 6". ANY BARE SPOTS LARGER THAN 6" X6" AT THE END OF ESTABLISHMENT PERIOD SHALL BE RESEEDED AT THE CONTRACTORS EXPENSE TO OBTAIN A DENSE, UNIFORM LAWN.
26. ALL FINISH GRADING AND LAWN AREAS TO BE INSTALLED BY LANDSCAPE CONTRACTOR.
27. ALL DISTURBED AREAS WITHIN THE PROJECT SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
28. ALL DISTURBED AREAS OUTSIDE THE LIMITS OF WORK SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE OWNER.
29. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES, INCLUDING ANY IRRIGATION LINES, PRIOR TO DIGGING. CONSULT DIGGERS HOTLINE.
30. TREES SHALL BE INSTALLED NO CLOSER THAN:
    - -10 FEET FROM ANY FIRE HYDRANT
    - - 7 FEET FROM STORM SEWER, SANITARY SEWER LATERALS, AND WATER SERVICE
31. THE CONTRACTOR SHALL ENSURE THAT SOIL CONDITIONS AND COMPACTION ARE ADEQUATE TO ALLOW FOR PROPER DRAINAGE AROUND THE CONSTRUCTION SITE. UNDESIRABLE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT PRIOR TO BEGINNING OF WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE PROPER SURFACE AND SUBSURFACE DRAINAGE IN ALL AREAS
32. THE CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS, FEES, AND LICENSES NECESSARY FOR THE INSTALLATION OF THIS PLAN.
33. THE CONTRACTOR IS TO REVIEW ALL SITE ENGINEERING DOCUMENTS PRIOR TO INSTALLATION. ANY CONFLICTS MUST BE REPORTED TO THE LANDSCAPE ARCHITECT. THESE LANDSCAPE DRAWINGS ARE FOR THE INSTALLATION OF PLANT MATERIALS ONLY UNLESS OTHERWISE STATED.
34. THE CONTRACTOR SHALL PROVIDE WATERING AND MAINTENANCE SERVICES FOR A PERIOD OF 60 DAYS TO ENSURE VEGETATIVE ESTABLISHMENT. UPON COMPLETION OF THE PROJECT, CONTRACTOR SHALL SUPPLY THE OWNER IN WRITING WITH ONGOING WATERING AND MAINTENANCE INSTRUCTIONS.
35. THE CONTRACTOR IS RESPONSIBLE TO CONDUCT A FINAL WALK THROUGH WITH THE LANDSCAPE ARCHITECT, VILLAGE FORESTER, AND OR OWNERS REPRESENTATIVE TO ANSWER QUESTIONS, PROVIDE INSTRUCTIONS, AND ENSURE THAT PROJECT REQUIREMENTS HAVE BEEN MET.
36. PLANT MATERIALS SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM TIME OF OWNER ACCEPTANCE. ONLY ONE REPLACEMENT PER PLANT WILL BE REQUIRED DURING THE WARRANTY PERIOD EXCEPT IN THE EVENT OF FAILURE TO COMPLY WITH THE SPECIFIED REQUIREMENTS.
37. THE CONTRACTOR IS RESPONSIBLE TO CONDUCT A FINAL WALK THROUGH WITH THE LANDSCAPE ARCHITECT AND OR OWNERS REPRESENTATIVE TO ANSWER QUESTIONS, PROVIDE INSTRUCTIONS, AND ENSURE THAT PROJECT REQUIREMENTS HAVE BEEN MET.

SOIL PLACEMENT NOTES

1. LOOSEN SUBGRADE TO A MINIMUM DEPTH INDICATED IN PLANTING NOTES USING A CULTI-MULCHER OR SIMILAR EQUIPMENT, AND REMOVE STONES MEASURING OVER 1-1/2 INCHES IN ANY DIMENSION, STICKS, RUBBISH AND OTHER EXTRANEOUS MATTER. AREAS ADJACENT TO WALKS AND PAVEMENT SHALL BE FREE OF EXCESS STONE AND PAVING MATERIALS SO AS TO PROVIDE AN UNINTERRUPTED CROSS SECTION OF SOIL. INTERNAL PARKING ISLANDS SHALL BE LOOSENED TO A DEPTH OF 30".
2. THOROUGHLY BLEND PLANTING SOIL MIX FOR PLANTING BED AREAS. (1 PART EXISTING SOIL, 1 PART TOPSOIL, 1 PART ORGANIC SOIL AMENDMENT, 2.9 POUNDS PER CUBIC YARD OF 4-4-4 ANALYSIS SLOW-RELEASE FERTILIZER)
3. TREE AND SHRUB HOLES SHALL BE FILLED WITH A PREPARED PLANTING MIXTURE OF 1 PART TOPSOIL, 2 PARTS PLANTING SOIL MIX.
4. SPREAD SOIL AND SOIL AMENDMENTS TO DEPTH INDICATED ON DRAWINGS, BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT. (FINISH GRADE OF PLANTING BEDS SHALL BE 3" BELOW ALL ADJACENT SURFACES. FINISH GRADE OF TURF SEEDING AREAS SHALL BE 1" BELOW ALL ADJACENT HARD SURFACES, WALKS, AND CURBS.)
5. PLACE APPROXIMATELY 1/2 OF TOTAL AMOUNT OF SOIL REQUIRED. WORK INTO TOP OF LOOSENED SUBGRADE TO CREATE A TRANSITION LAYER, THEN PLACE REMAINDER OF THE SOIL. SOIL TRANSITION LAYER SHALL BE TILLED TO A MINIMUM DEPTH OF 6" BELOW THE DEPTH OF NEWLY PLACED SOIL. PARKING LOT ISLANDS SHALL BE CROWNED TO A HEIGHT OF 6" TO PROVIDE PROPER DRAINAGE UNLESS OTHERWISE NOTED.
6. DO NOT SPREAD IF PLANTING SOIL OR SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET.
7. FINISH GRADING: GRADE SOIL TO A SMOOTH, UNIFORM SURFACE PLANE WITH A LOOSE, UNIFORMLY FINE TEXTURE.
8. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES.
9. RESTORE PLANTING BEDS IF ERODED OR OTHERWISE DISTURBED AFTER FINISH GRADING AND BEFORE PLANTING.

NATIVE AND SHORT PRAIRIE PLANTINGS

SPECIFICATIONS FOR HAND BROADCASTING:

SEEDING SHALL BE CONDUCTED IN LATE FALL (SEPTEMBER 1- SOIL FREEZE) SO THAT SEEDS MAY LIE DORMANT DURING THE WINTER, ALLOWING FOR STRATIFICATION, OR SPRING (MARCH 1-JUNE 1) TO ALLOW A COMPLETE GROWING SEASON TO BECOME ESTABLISHED.

A. PREPARATION OF SOIL PRIOR TO SEEDING
   1. REFER TO CIVIL PLANS FOR SOIL MIX.
   2. ALL FOREIGN MATERIALS LARGER THAN 1-INCH SHALL BE REMOVED FROM THE SOIL PRIOR TO SEEDING OR PLANTING.
   3. AREA SHOULD BE FREE FROM UNSIGHTLY VARIATIONS, RIDGES, AND DEPRESSIONS.
   4. AVOID DRIVING OVER THE SPECIFIED AREA WITH MACHINERY.

B. COVER CROP
   1. ANNUAL RYE SHALL BE SPREAD AT A DENSITY OF 20 POUNDS PER ACRE DURING THE PLANTING OR SEEDING OF THE NATIVE PLANT SPECIES TO STABILIZE THE SOIL AND REDUCE THE GROWTH OF UNWANTED VEGETATION. THIS ANNUAL GRASS GROWS RAPIDLY WITHOUT COMPETING WITH THE WILDFLOWERS AND GRASSES THAT ARE PLANTED IN THE TARGET AREAS.
   2. WINTER WHEAT OR PERENNIAL RYE SHALL NOT BE USED AS A COVER CROP. THESE GRASSES MAY OUT COMPETE PRAIRIE SEEDLINGS, LEADING TO A REDUCTION IN THE SUCCESS OF THE PLANTINGS.

C. SEED MIX: MIX ALL PRAIRIE SEED WITH VERMICULITE ACCORDING TO AGRECOL RECOMMENDATIONS AND INSTALLATION GUIDELINES.
   1. BROADCAST HALF THE SEED OVER THE ENTIRE SITE OR TARGET AREA.
   2. BROADCAST THE OTHER HALF OF SEED PERPENDICULAR TO THE DIRECTION THAT THE FIRST HALF OF THE SEED WAS BROADCAST.
   3. COVER SEED WITH ¼ -INCH TO ½ -INCH OF SOIL (USE ANY EXCESS SOIL FROM THE SITE) WITH RAKE OR DRAG.
   4. ROLL SITE TO ENSURE FIRM SEED-TO-GROUND CONTACT.
   5. KEEP SEED CONSTANTLY WET THROUGH GERMINATION PERIOD. GENERALLY 3 WEEKS.

ALL SEEDING SHALL BE COVERED WITH 1-INCH OF CLEAN, NON-INVASIVE STRAW (NO MARSH HAY, OR REED CANARY GRASS) WITHOUT SEEDS, WITHIN SEVEN DAYS. WHEAT, RYE, OATS, OR BARLEY ARE ACCEPTABLE FORMS OF STRAW. THOSE AREAS OF SLOPES STEEPER THAN 8:1 (EIGHT FEET HORIZONTAL TO ONE FOOT VERTICAL) SHALL BE PLANTED NO LATER THAN OCTOBER 1 AND STAKED WITH AN EROSION CONTROL BLANKET TO PREVENT EROSION.

NATIVE PLANTINGS:

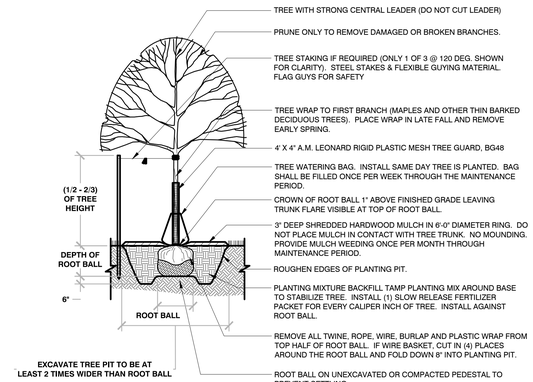
WEED SUPPRESSION MEASURES:

1st YEAR - PERFORM SPOT SPRAY WITH HERBICIDE TO SUPPRESS WEEDS. THIS SHOULD OCCUR APPROXIMATELY EVERY MONTH OF THE GROWING SEASON AFTER NATIVE PLANTINGS HAVE BEEN ROUGH GRADED.

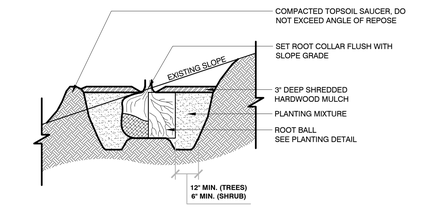
2nd YEAR - IN MAY/JUNE MOW NATIVE PLANTINGS AT 6" HEIGHT TO SUPPRESS THE WEEDS. PERFORM SPOT SPRAY WITH HERBICIDE TO SUPPRESS WEEDS. HAVE PROFESSIONAL ASSESS PLANTINGS. REPEAT MOWING NATIVE PLANTINGS AND SPOT-SPRAY IN EARLY JULY.

3rd YEAR - IN MAY/JUNE MOW NATIVE PLANTINGS AT 6" HEIGHT TO SUPPRESS THE WEEDS. PERFORM SPOT SPRAY WITH HERBICIDE TO SUPPRESS WEEDS.

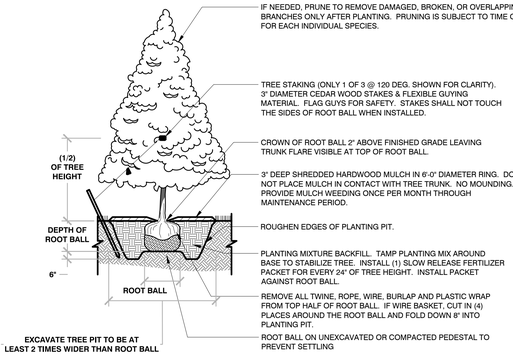
4th YEAR - IN MAY PERFORM A PRESCRIBED BURN. IN JUNE HAVE A QUALIFIED PROFESSIONAL ASSESS PLANTINGS. IF A PRESCRIBED BURN CAN NOT BE UTILIZED, NATIVE PLANTINGS SHALL BE CUT TO THE GROUND AND ALL CUT MATERIAL SHALL BE REMOVED AND DISPOSED OF OFF SITE.



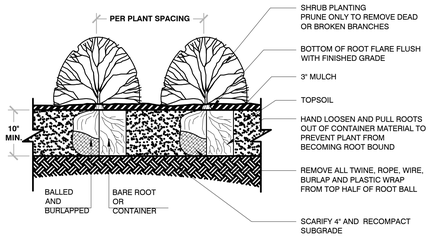
1 TREE PLANTING
1/4" = 1'-0" 329343-01



2 TREE PLANTING ON SLOPE
3/8" = 1'-0" 329343-02

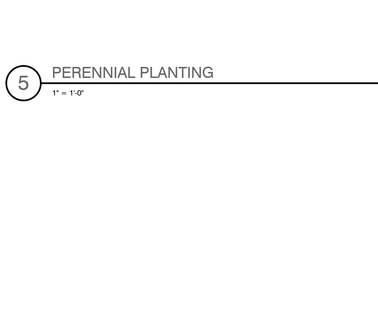


3 EVERGREEN TREE PLANTING
1/4" = 1'-0" 329343-03

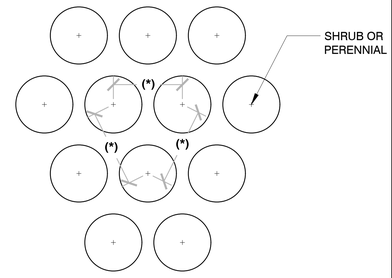


BAREROOT PLANTING NOTES:
1. SOAK ROOTS IN WATER FOR AT LEAST ONE HOUR BUT NOT MORE THAN 24 HOURS PRIOR TO PLANTING.
2. SCARIFY SIDES AND BOTTOMS OF HOLE.
3. PROCEED WITH CORRECTIVE PRUNING OF THE TOP AND BOTTOM ROOTS.
4. TRANSFER PLANT DIRECTLY FROM WATER TO HOLE. SET PLANT SO THE ROOT FLARE IS APPROXIMATELY AT THE FINISHED SOIL ELEVATION. SPREAD ROOTS OUT EVENLY. PLUMB AND IMMEDIATELY BACKFILL WITH PLANTING SOIL MIX.
5. WATER THOROUGHLY WITHIN 2 HOURS TO SETTLE PLANTS AND FILL VOIDS.
6. BACKFILL VOIDS AND WATER SECOND TIME.
7. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.

4 SHRUB PLANTING
1/2" = 1'-0" 329333-02

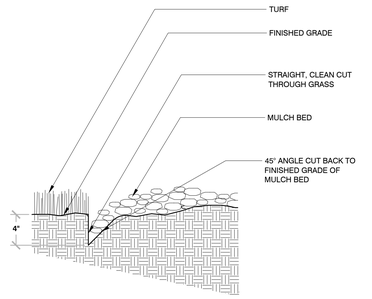


5 PERENNIAL PLANTING
1" = 1'-0" 3293-01



(*) = SPECIFIED PLANT SPACING PER PLANTING LIST

6 PLANT SPACING
3/4" = 1'-0" 3293-02



7 TRENCHED BED EDGE
3/4" = 1'-0" 3293-03

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CHICAGO | MILWAUKEE | NATIONWIDE

CAPSTONE 41

GERMANTOWN, WI

LANDSCAPE GENERAL NOTES & DETAILS

REVISIONS

PEG JOB 1262.00A-WI ASS
PEG PM
START DATE 06/01/21
SCALE VARIES

SHEET L-5 OF L-5

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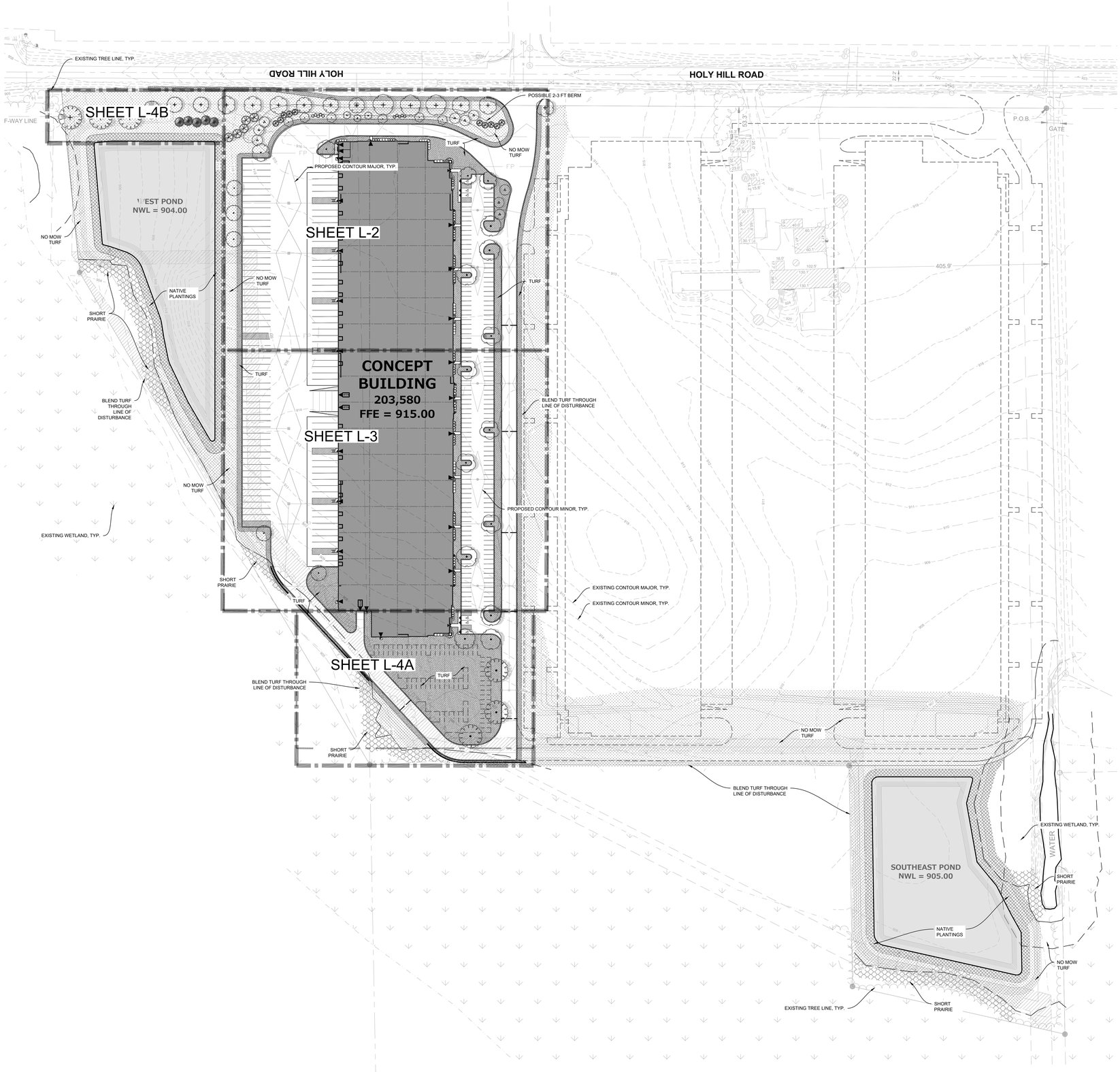
FOR REVIEW

LANDSCAPE GENERAL NOTES & DETAILS

DRAFTED: JSJ
DESIGNED: JSJ
REVIEWED: DVB

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PLANT SCHEDULE

TREES	QTY	BOTANICAL / COMMON NAME	SIZE
ASM	4	Acer saccharum / Sugar Maple 60` T x 45` W	2.5" Cal.
ASM2	6	Acer saccharum / Sugar Maple 60` T x 45` W	3" Cal.
AAB	9	Amelanchier x grandiflora `Autumn Brilliance` / Autumn Brilliance Serviceberry 20` T x 20` W	8` Ht.
CNC2	3	Catalpa speciosa / Northern Catalpa 55` T x 35` W	3" Cal.
GTS	7	Gleditsia triacanthos inermis `Shademaster` / Shademaster Locust 60` T x 50` W	2.5" Cal.
GTS2	3	Gleditsia triacanthos inermis `Shademaster` / Shademaster Locust 60` T x 50` W	3" Cal.
GDK	5	Gymnocladus dioica / Kentucky Coffee Tree 60` T x 45` W	2.5" Cal.
MPM	6	Malus x `Prairie Maid` / Prairie Maid Crabapple 20` T x 25` W	1.5" Cal.
MR2	3	Malus x `Royal Raindrops` / Royal Raindrops Crabapple - Multi-Stem 20` T x 15` W	8` Ht.
QXS	3	Quercus x schuetti / Swamp Bur Oak 70` T x 65` W	2.5" Cal.
QXS2	3	Quercus x schuetti / Swamp Bur Oak 70` T x 65` W	3" Cal.
TTS	5	Tilia tomentosa `Sterling` / Sterling Silver Linden 60` T x 35` W	2.5" Cal.
TTS2	3	Tilia tomentosa `Sterling` / Sterling Silver Linden 60` T x 35` W	3" Cal.

EVERGREEN TREES	QTY	BOTANICAL / COMMON NAME	SIZE
ACF	5	Abies concolor / White Fir 25` T x 25` W	5` Ht.
PGB	10	Picea glauca `Densata` / Black Hills Spruce 30` T x 15` W	5` Ht.
PSW	5	Pinus strobus / Eastern White Pine 60` T x 30` W	5` Ht.

SHRUBS	QTY	BOTANICAL / COMMON NAME	SIZE
HAN	6	Hydrangea arborescens `Annabelle` / Annabelle Smooth Hydrangea 5` T x 5` W	2` Ht.
HBO	14	Hydrangea paniculata `Bobo` / Bobo Hydrangea 3` T x 3` W	2` Ht.
HVS	24	Hydrangea paniculata `Vanilla Strawberry` / Vanilla Strawberry Panicled Hydrangea 6` T x 5` W	2` Ht.
IVH	10	Itea virginica `Little Henry` / Little Henry Sweetspire 3` T x 3` W	2` Ht.
RPP	18	Rosa rugosa `Purple Pavement` / Purple Pavement Rugosa Rose 5` T x 5` W	2` Ht.
SBE	13	Sambucus nigra `Black Lace` / Black Lace Elderberry 7` T x 7` W	2` Ht.
SMC	6	Spiraea japonica `Magic Carpet` / Magic Carpet Spirea 2` T x 3` W	2` Ht.
SMP	5	Syringa meyeri `Palibin` / Dwarf Korean Lilac 5` T x 6` W	2` Ht.

EVERGREEN SHRUBS	QTY	BOTANICAL / COMMON NAME	SIZE
JSG	12	Juniperus chinensis `Sea Green` / Sea Green Juniper 5` T x 6` W	2` Ht.
JSP	12	Juniperus x `J.N Select Blue` / Star Power Juniper 15` T x 8` W	4` Ht.
PPS	10	Picea abies `Pumila` / Pumila Spruce 3` T x 4` W	24" W
PMS	8	Pinus mugo `Slowmound` / Slowmound Mugo Pine 3` T x 3` W	24" W
TMD	6	Taxus x media `Densiformis` / Densiform Yew 5` T x 5` W	2` Ht.
TTI	10	Taxus x media `Tauntonii` / Tauton Yew 4` T x 5` W	2` Ht.
THH	6	Thuja occidentalis `Holmstrup` / Holmstrup Cedar 14` T x 4` W	4` Ht.

ORNAMENTAL GRASSES	QTY	BOTANICAL / COMMON NAME	SIZE
CFO	6	Calamagrostis x a `Overdam` / Overdam Reed Grass 24" T x 24" W	1 gal.
CK3	12	Calamagrostis x acutiflora `Karl Foerster` / Feather Reed Grass 36" T x 30" W	1 gal.
MSO	12	Miscanthus sinensis `Oktoberfest` / Oktoberfest Miscanthus 48" T x 36" W	1 gal.
PN3	21	Panicum virgatum `Northwind` / Switch Grass 48" T x 30" W	1 gal.
SB4	18	Schizachyrium scoparium `Blue Heaven` / Blue Heaven Little Bluestem 36" T x 30" W	1 gal.
STD	12	Sporobolus heterolepis `Tara` / Prairie Dropseed 15" T x 20" W	1 gal.

PERENNIALS	QTY	BOTANICAL / COMMON NAME	SIZE
AS2	12	Allium x `Summer Beauty` / Summer Beauty Allium 18" T x 18" W	4.5" cont.
AVR	10	Astilbe chinensis `Vision in Red` / Vision in Red Astilbe 15" T x 18" W	4.5" cont.
CAL	24	Calamintha nepeta / Calamint 12" T x 18" W	4.5" cont.
EMS	11	Echinacea purpurea `Magnus Superior` / Magnus Superior Coneflower 28" T x 16" W	4.5" Cont.
HPP	28	Heuchera m `Palace Purple` / Palace Purple Coral Bells 18" T x 18" W	4.5" Cont.
HGS	5	Hosta x `Gold Standard` / Gold Standard Hosta 20" T x 50" W	4.5" cont.
HPA	7	Hosta x `Patriot` / Patriot Hosta 20" T x 38" W	4.5" cont.
LBS	13	Leucanthemum x `Becky` / Becky Shasta Daisy 15" T x 15" W	4.5" Cont.
NWL	14	Nepeta x `Walker`s Low` / Walker`s Low Catmint 20" T x 28" W	4.5" Cont.
SMN	20	Salvia nemorosa `May Night` / May Night Sage 18" T x 18" W	4.5" Cont.

GROUND COVERS	QTY	BOTANICAL / COMMON NAME
	52,627 sf	Native Plantings / AGRECOL RAINWATER RENEWAL MIX
	33,729 sf	SHORTGRASS PRAIRIE- MESIC / AGRECOL SHORTGRASS PRAIRIE MESIC MIX
	104,400 sf	Turf Hydroseed / Reinders - Cadet 70/30 Fescue/Blue Mix
	306,548 sf	Turf Hydroseed Low Grow / Reinders No Mow/Low Grow Mix

NOTES

- REFER TO INDIVIDUAL SHEETS FOR PLANTING KEY AND SPECIES CALLOUTS

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 80' 160'

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GERMANTOWN, WI

LANDSCAPE PLAN OVERVIEW

REVISIONS

PEG JOB # 1262.00A-WI
PEG PM AS
START DATE 06/01/21
SCALE 1" = 80'

SHEET L-1 OF L-5

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LANDSCAPE PLAN OVERVIEW

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BROOKFIELD, WI
DESIGNED - ASJ
DRAWN - ASJ

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HOLY HILL ROAD

SHEET L-4B

SHEET L-2

(3) CNC2
(3) ASM2
(5) ACF
(5) PGB
(5) JSP
(3) GTS2
(2) ASM2
(5) JSP
(3) MR2
(3) MPM
POSSIBLE 2-3 FT BERM
(1) ASM2
(3) AAB
(5) PGB
(3) MPM
(2) ASM
(3) HAN
(1) JSP
(13) LBS
(3) SBE
(6) TMD
(6) HPA
(1) JSP
(3) HAN
TURF
NO MOW
TURF
(3) AAB
(3) PN3
(2) HBO
D.L.D
(3) SMP
(3) SBE
(5) HGS
(1) HPA
TURF
(3) THH
(5) IVH
(3) MSO
(10) SMN
(6) HBO
(2) ASM
(3) AAB
(2) PMS
(3) MSO
(3) SMC
(3) TTI
(1) SMP
(3) CFO
PROPOSED CONTOUR MAJOR, TYP.
(6) SB4
(2) PPS
(6) RPP
(6) PN3
(10) AVR
(3) TTS
EXISTING CONTOUR MINOR, TYP.
TURF
EXISTING CONTOUR MAJOR, TYP.
(6) NWL
(2) TTI
(6) HVS
(2) PMS
(6) STD
TURF
PROPOSED CONTOUR MINOR, TYP.
(3) GTS
TURF
(2) SBE
(6) JSG
(6) CK3
(14) HPP
(1) GDK

SHEET L-2
SHEET L-3

PLANT KEY

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HVS	Hydrangea paniculata `Vanilla Strawberry` Vanilla Strawberry Panicled Hydrangea
IVH	Itea virginica `Little Henry` Little Henry Sweetspire
RPP	Rosa rugosa `Purple Pavement` Purple Pavement Rugosa Rose
SBE	Sambucus nigra `Black Lace` Black Lace Elderberry
SMC	Spiraea japonica `Magic Carpet` Magic Carpet Spirea
SMP	Syringa meyeri `Palibin` Dwarf Korean Lilac

EVERGREEN SHRUBS	BOTANICAL / COMMON NAME
JSG	Juniperus chinensis `Sea Green` Sea Green Juniper
JSP	Juniperus x `J.N Select Blue` Star Power Juniper
PPS	Picea abies `Pumila` Pumila Spruce
PMS	Pinus mugo `Slowmound` Slowmound Mugo Pine
TMD	Taxus x media `Densiformis` Densiform Yew
TTI	Taxus x media `Tauntonii` Tauton Yew
THH	Thuja occidentalis `Holmstrup` Holmstrup Cedar

ORNAMENTAL GRASSES	BOTANICAL / COMMON NAME
CFO	Calamagrostis x a `Overdam` Overdam Reed Grass
CK3	Calamagrostis x acutiflora `Karl Foerster` Feather Reed Grass
MSO	Miscanthus sinensis `Oktoberfest` Oktoberfest Miscanthus
PN3	Panicum virgatum `Northwind` Switch Grass
SB4	Schizachyrium scoparium `Blue Heaven` Blue Heaven Little Bluestem
STD	Sporobolus heterolepis `Tara` Prairie Dropseed

PERENNIALS	BOTANICAL / COMMON NAME
AS2	Allium x `Summer Beauty` Summer Beauty Allium
AVR	Astilbe chinensis `Vision in Red` Vision in Red Astilbe
CAL	Calamintha nepeta Calamint
EMS	Echinacea purpurea `Magnus Superior` Magnus Superior Coneflower
HPP	Heuchera m `Palace Purple` Palace Purple Coral Bells
HGS	Hosta x `Gold Standard` Gold Standard Hosta
HPA	Hosta x `Patriot` Patriot Hosta
LBS	Leucanthemum x `Becky` Becky Shasta Daisy
NWL	Nepeta x `Walker`s Low` Walker`s Low Catmint
SMN	Salvia nemorosa `May Night` May Night Sage

GROUND COVERS	BOTANICAL / COMMON NAME
	Native Plantings AGRECOL RAINWATER RENEWAL MIX
	SHORTGRASS PRAIRIE- MESIC AGRECOL SHORTGRASS PRAIRIE MESIC MIX
	Turf Hydroseed Reinders - Cadet 70/30 Fescue/Blue Mix
	Turf Hydroseed Low Grow Reinders No Mow/Low Grow Mix

NORTH

GRAPHICAL SCALE (FEET)

0 1" = 20' 40'

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PEG JOB # 1262.00A-WI
PEG PM AJS
START DATE 06/01/21
SCALE 1" = 20'

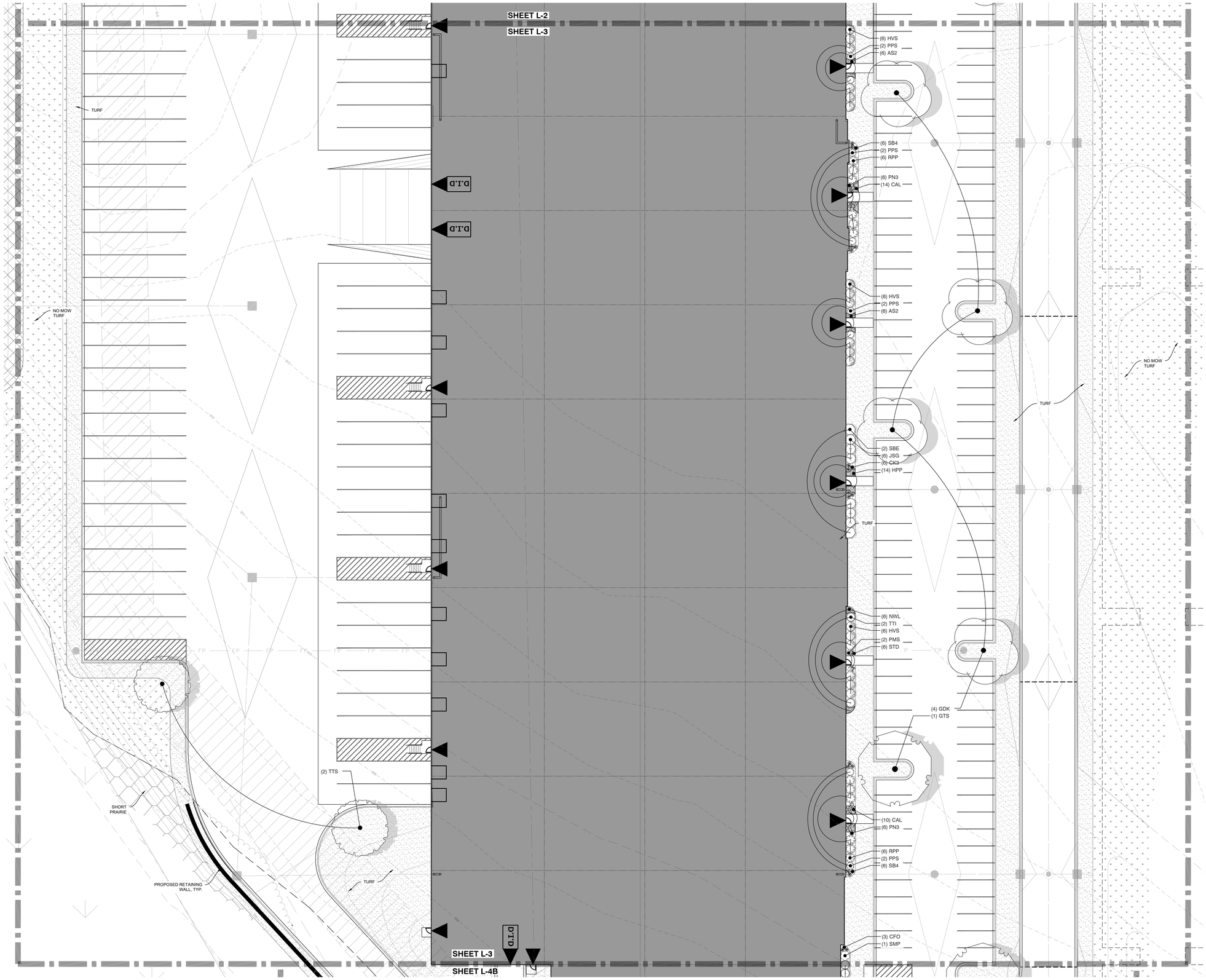
SHEET
L-2
OF
L-5

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DRAWN: DJB
DESIGNED: AJS
CHKD: AJS

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PLANT KEY

TREES	BOTANICAL / COMMON NAME
ASM	Acer saccharum Sugar Maple
ASM2	Acer saccharum Sugar Maple
AAB	Amelanchier x grandiflora `Autumn Brilliance` Autumn Brilliance Serviceberry
CNC2	Catalpa speciosa Northern Catalpa
GTS	Gleditsia triacanthos inermis `Shademaster` Shademaster Locust
GTS2	Gleditsia triacanthos inermis `Shademaster` Shademaster Locust
GDK	Gymnocladus dioica Kentucky Coffee Tree
MPM	Malus x `Prairie Maid` Prairie Maid Crabapple
MR2	Malus x `Royal Raindrops` Royal Raindrops Crabapple - Multi-Stem
QXS	Quercus x schuetti Swamp Bur Oak
QXS2	Quercus x schuetti Swamp Bur Oak
TTS	Tilia tomentosa `Sterling` Sterling Silver Linden
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NORTH

GRAPHICAL SCALE (FEET)

0 1" = 20' 40'

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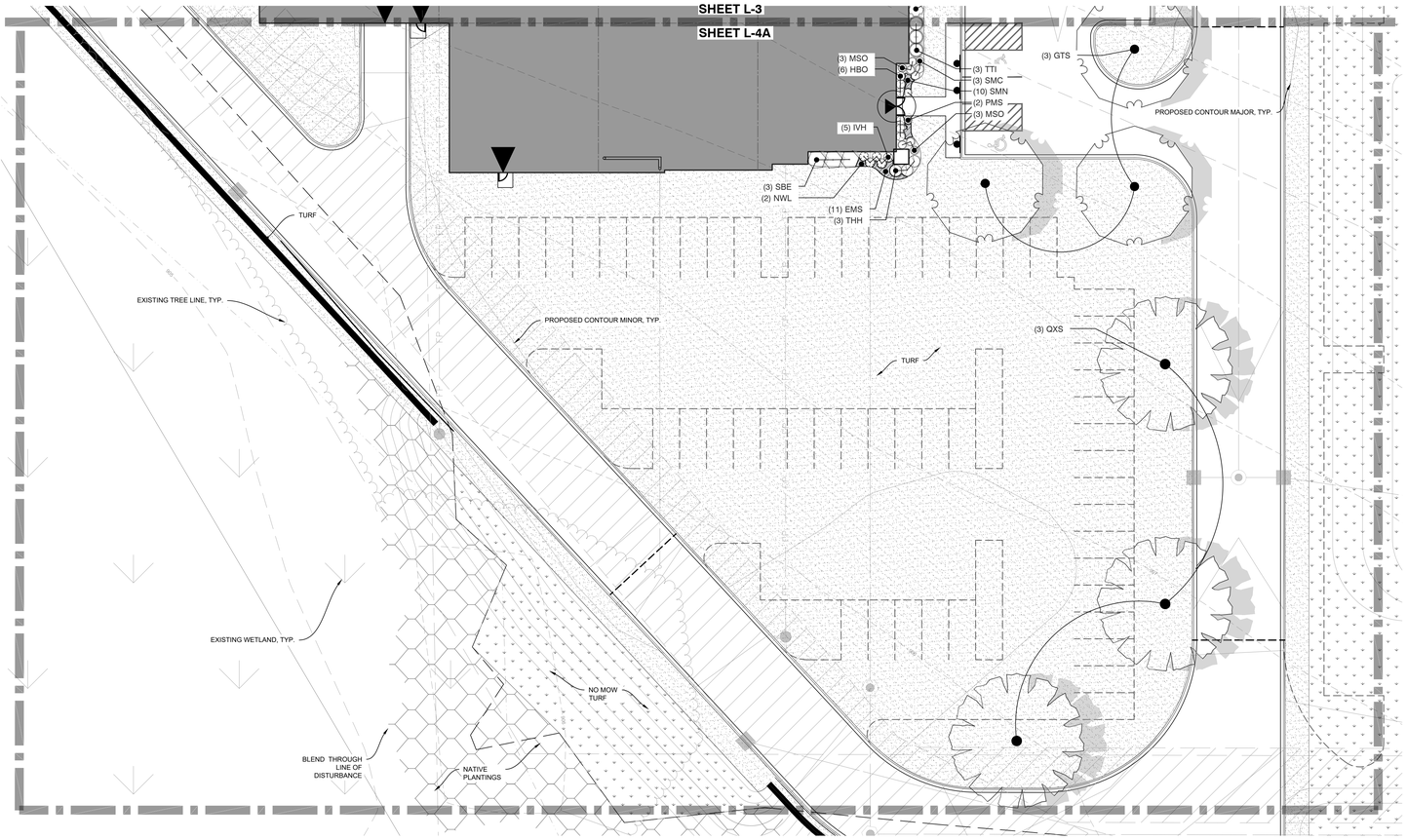
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DRAWN BY# ASS
CHECKED BY# JSJ
PLOT DATE 06/01/21
START DATE
SCALE 1" = 20'

SHEET L-3 OF L-5

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GROUND: JSJ
PAINTED: JSJ

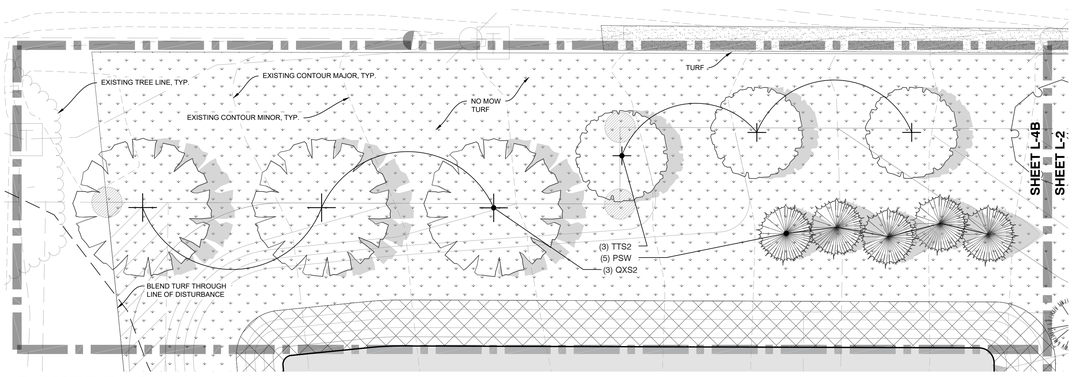
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ENLARGEMENT L-4A

SCALE: 1"=20'



ENLARGEMENT L-4B

SCALE: 1"=20'

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NORTH

GRAPHICAL SCALE (FEET)

0 1" = 20' 40'

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PEG JOB # 1262.00A-WI
PEG PM ASS
START DATE 06/01/21
SCALE 1" = 20'

SHEET L-4 OF L-5

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GENERAL PLANTING NOTES

1. THE LAYOUT OF ALL PLANTING BEDS AND INDIVIDUAL TREES AND SHRUBS SHALL BE STAKED BY THE CONTRACTOR IN ADVANCE OF INSTALLATION. FLAGGING, STAKES, OR PAINT MAY BE USED TO DELINEATE LOCATIONS AS SCALED FROM THE PLANS. AN APPROVED REPRESENTATIVE WILL REVIEW THESE LOCATIONS WITH THE CONTRACTOR AND MAKE MINOR ADJUSTMENTS AS NECESSARY. BED LAYOUT SHALL ALSO INCLUDE PERENNIAL GROUPINGS BY SPECIES.
2. THE CONTRACTOR IS RESPONSIBLE FOR INDEPENDENTLY DETERMINING THE PLANT MATERIAL QUANTITIES REQUIRED BY THE LANDSCAPE PLANS. REPORT ANY DISCREPANCIES TO THE LANDSCAPE ARCHITECT.
3. NO PLANT MATERIAL OR PLANT SIZE SUBSTITUTIONS WILL BE ACCEPTED UNLESS APPROVAL BY THE LANDSCAPE ARCHITECT. ANY CHANGES SHALL BE SUBMITTED TO THE LANDSCAPE ARCHITECT IN WRITING PRIOR TO INSTALLATION.
4. ALL BNB STOCK SHALL BE NURSERY GROWN IN A CLAY LOAM SOIL FOR A MINIMUM OF THREE GROWING SEASONS WITHIN 200 MILES OF PROJECT LOCATION, IN A ZONE COMPATIBLE WITH USDA HARDINESS ZONE 5A. SEED SHALL BE PROVIDED FROM A NURSERY (WITHIN 200 MILES) WITH A SIMILAR PLANT HARDINESS ZONE AS PROJECT LOCATION. EXISTING SOIL SHALL BE AMENDED PER SOIL ANALYSIS REPORT TO ENSURE A PROPER GROWING MEDIUM IS ACHIEVED.
5. ALL PLANT MATERIAL SHALL COMPLY WITH STANDARDS DESCRIBED IN AMERICAN STANDARD OF NURSERY STOCK - Z60.1 ANSI. LANDSCAPE ARCHITECT OR OWNERS AUTHORIZED REPRESENTATIVE RESERVES THE RIGHT TO INSPECT AND POTENTIALLY REJECT ANY PLANT MATERIAL DEEMED TO NOT MEET THE REQUIRED STANDARDS.
6. ALL STOCK SHALL BE FREE OF DISEASES AND HARMFUL INSECTS, DAMAGE, DISORDERS AND DEFORMITIES.
7. TREES SHALL BE INSTALLED A MINIMUM DISTANCE OF 5' FROM ANY SEWER AND WATER LINES, 10' FROM DRIVEWAYS, LIGHT POLES, AND FIRE HYDRANTS.
8. TREES SHALL BE INSTALLED A MINIMUM OF 25' FROM STREET CORNERS OF MINOR ROADS, AND 50' FROM STREET CORNERS OF ARTERIAL ROADS.
9. ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH PLANTING DETAILS. FOR STREET TREE PLANTINGS, REFER TO TREE PLANTING DETAIL AND TO THE VILLAGE OF GERMANTOWN SPECIFICATIONS FOR PLANTING STREET TREES.
10. TREES SHALL HAVE SINGLE, STRAIGHT TRUNKS AND WELL BALANCED BRANCH SYSTEMS. MUTLI-STEM TREES SHALL HAVE 3-4 STRAIGHT TRUNKS AND WELL BALANCED BRANCH SYSTEMS. HEIGHT-TO-CALIPER RATIOS SHALL BE CONSISTENT WITH THE LATEST EDITION OF ANSI Z60.1.
11. ROOT SYSTEMS SHALL BE LARGE ENOUGH TO ALLOW FOR FULL RECOVERY OF THE TREE, AND SHALL CONFORM TO STANDARDS AS THEY APPEAR IN THE MOST CURRENT REVISION OF THE AMERICAN ASSOCIATION OF NURSERYMEN'S AMERICAN STANDARD OF NURSERY STOCK ANSI Z60.1.
12. BNB TREES SHALL BE DUG WITH A BALL OF SOIL, NOT SOFT BALLED OR POTTED AND SHALL BE FIRM IN THEIR ROOTBALL. ROOT BALL SHALL BE WRAPPED (WITH BIODEGRADABLE MATERIAL). THE TREE ROOT FLARE, OR COLLAR, SHALL BE AT OR WITHIN THE TOP THREE INCHES OF GRADE.
13. ALL SPRING TREES MUST BE FRESHLY DUG IN THE MOST RECENT SPRING.
14. ALL AUTUMN TREES MUST BE FRESHLY DUG IN THE MOST RECENT AUTUMN.
15. TREES SHALL BE ALIVE, HEALTHY AND APPROPRIATELY MOIST, AT TIME OF DELIVERY. TREES SHALL BE SUBJECT TO INSPECTION FOR CONFORMITY TO SPECIFICATION REQUIREMENTS AND APPROVAL BY THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE. THE LANDSCAPE ARCHITECT OR OWNERS REPRESENTATIVE RESERVES THE RIGHT TO REJECT ANY TREES THAT DO NOT MEET THE SPECIFICATIONS OR THAT HAVE BEEN DAMAGED DURING SHIPMENT. THE LANDSCAPE INSTALLER MUST RECEIVE APPROVAL FROM LANDSCAPE ARCHITECT FOR ANY SUBSTITUTIONS OR ALTERATIONS.
16. ALL PLANT MATERIAL SHALL BE INSTALLED IN ACCORDANCE WITH PLANTING DETAILS.
17. ALL PLANTING BEDS SHALL HAVE A MINIMUM 10" DEPTH OF PREPARED SOIL. WITH APPROVAL, EXISTING SOIL MAY BE UTILIZED PROVIDED THE PROPER SOIL AMENDMENTS ARE TILLED THOROUGHLY INTO THE TOP 10" OF SOIL. REFER TO SOIL PLACEMENT NOTES.
18. WHILE PLANTING TREES AND SHRUBS, BACKFILL ¾ OF PLANTING HOLE AND WATER TREE THOROUGHLY BEFORE INSTALLING THE REMAINDER OF SOIL MIXTURE. AFTER ALL SOIL HAS BEEN PLACED INTO THE PLANTING HOLE WATER THOROUGHLY AGAIN.
19. THE CONTRACTOR MUST LABEL ALL TREES WITH THE COMMON AND BOTANICAL NAMES PRIOR TO FINAL INSPECTION.
20. OAK TREES SHALL BE TREATED FOR TWO-LINE CHESTNUT BORER BOTH AT THE TIME OF INSTALLATION AND DURING THE SECOND GROWING SEASON.
21. ALL PLANTING BEDS SHALL BE MULCHED WITH 3" DEEP SHREDDED HARDWOOD MULCH, AND ALL TREES PLANTED IN TURF AREAS SHALL RECEIVE A 3" DEEP SHREDDED HARDWOOD MULCHED RING AS SHOWN IN PLANTING DETAILS.
22. ALL PLANTING BEDS AND TREE RINGS SHALL HAVE A 4" DEEP TRENCHED BED EDGE CREATED BY EITHER A FLAT LANDSCAPE SPADE OR MECHANICAL EDGER. BED EDGES ARE TO BE CUT CLEAN AND SMOOTH AS SHOWN ON LANDSCAPE PLANS WITH A CLEAN DEFINITION BETWEEN TURF AND PLANTING AREAS.
23. ALL TURF SEED AREAS SHALL RECEIVE A MINIMUM OF 6" DEPTH OF TOPSOIL. WITH APPROVAL, EXISTING SOIL MAY BE UTILIZED PROVIDED THE PROPER SOIL AMENDMENTS ARE TILLED THOROUGHLY INTO THE TOP 6" OF SOIL AS INDICATED IN THE SOIL PLACEMENT NOTES. REQUIRED AMENDMENTS SHALL BE DETERMINED BASED ON A SOIL ANALYSIS TO BE PERFORMED. ALL TOPSOIL AMENDMENT SHALL BE AGED WEED FREE MANURE OR CLASS 1 ORGANIC MATTER.
24. FOR LAWN SEEDING, APPLY A STARTER FERTILIZER AND SEED UNIFORMLY AT THE RATE RECOMMENDED BY MANUFACTURER, AND PROVIDE A MULCH COVERING THAT IS SUITABLE TO PROMOTE SEED GERMINATION AND TURF ESTABLISHMENT. CONTRACTOR TO PROVIDE FERTILIZER, SEED, AND MULCH SPECIFICATIONS TO THE LANDSCAPE ARCHITECT FOR APPROVAL PRIOR TO INSTALLATION. EROSION CONTROL MEASURES ARE TO BE INSTALLED IN THOSE AREAS REQUIRING STABILIZATION (SWALES, SLOPES EXCEEDING 1:3, AND THOSE LOCATIONS INDICATED IN CIVIL DRAWINGS).
25. THE CONTRACTOR TO ENSURE A SMOOTH, UNIFORM QUALITY TURF IS ACHIEVED WITH NO BARE SPOTS LARGER THAN 6" X 6". ANY BARE SPOTS LARGER THAN 6" X6" AT THE END OF ESTABLISHMENT PERIOD SHALL BE RESEEDED AT THE CONTRACTORS EXPENSE TO OBTAIN A DENSE, UNIFORM LAWN.
26. ALL FINISH GRADING AND LAWN AREAS TO BE INSTALLED BY LANDSCAPE CONTRACTOR.
27. ALL DISTURBED AREAS WITHIN THE PROJECT SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION.
28. ALL DISTURBED AREAS OUTSIDE THE LIMITS OF WORK SHALL BE RESTORED TO ORIGINAL OR BETTER CONDITION AT NO ADDITIONAL COST TO THE OWNER.
29. THE CONTRACTOR SHALL VERIFY ALL EXISTING UTILITIES, INCLUDING ANY IRRIGATION LINES, PRIOR TO DIGGING. CONSULT DIGGERS HOTLINE.
30. TREES SHALL BE INSTALLED NO CLOSER THAN:
    - -10 FEET FROM ANY FIRE HYDRANT
    - - 7 FEET FROM STORM SEWER, SANITARY SEWER LATERALS, AND WATER SERVICE
31. THE CONTRACTOR SHALL ENSURE THAT SOIL CONDITIONS AND COMPACTION ARE ADEQUATE TO ALLOW FOR PROPER DRAINAGE AROUND THE CONSTRUCTION SITE. UNDESIRABLE CONDITIONS SHALL BE BROUGHT TO THE ATTENTION OF THE LANDSCAPE ARCHITECT PRIOR TO BEGINNING OF WORK. IT SHALL BE THE CONTRACTOR'S RESPONSIBILITY TO ENSURE PROPER SURFACE AND SUBSURFACE DRAINAGE IN ALL AREAS
32. THE CONTRACTOR IS RESPONSIBLE FOR ALL PERMITS, FEES, AND LICENSES NECESSARY FOR THE INSTALLATION OF THIS PLAN.
33. THE CONTRACTOR IS TO REVIEW ALL SITE ENGINEERING DOCUMENTS PRIOR TO INSTALLATION. ANY CONFLICTS MUST BE REPORTED TO THE LANDSCAPE ARCHITECT. THESE LANDSCAPE DRAWINGS ARE FOR THE INSTALLATION OF PLANT MATERIALS ONLY UNLESS OTHERWISE STATED.
34. THE CONTRACTOR SHALL PROVIDE WATERING AND MAINTENANCE SERVICES FOR A PERIOD OF 60 DAYS TO ENSURE VEGETATIVE ESTABLISHMENT. UPON COMPLETION OF THE PROJECT, CONTRACTOR SHALL SUPPLY THE OWNER IN WRITING WITH ONGOING WATERING AND MAINTENANCE INSTRUCTIONS.
35. THE CONTRACTOR IS RESPONSIBLE TO CONDUCT A FINAL WALK THROUGH WITH THE LANDSCAPE ARCHITECT, VILLAGE FORESTER, AND OR OWNERS REPRESENTATIVE TO ANSWER QUESTIONS, PROVIDE INSTRUCTIONS, AND ENSURE THAT PROJECT REQUIREMENTS HAVE BEEN MET.
36. PLANT MATERIALS SHALL BE GUARANTEED FOR A PERIOD OF ONE (1) YEAR FROM TIME OF OWNER ACCEPTANCE. ONLY ONE REPLACEMENT PER PLANT WILL BE REQUIRED DURING THE WARRANTY PERIOD EXCEPT IN THE EVENT OF FAILURE TO COMPLY WITH THE SPECIFIED REQUIREMENTS.
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SOIL PLACEMENT NOTES

1. LOOSEN SUBGRADE TO A MINIMUM DEPTH INDICATED IN PLANTING NOTES USING A CULTI-MULCHER OR SIMILAR EQUIPMENT, AND REMOVE STONES MEASURING OVER 1-1/2 INCHES IN ANY DIMENSION, STICKS, RUBBISH AND OTHER EXTRANEOUS MATTER. AREAS ADJACENT TO WALKS AND PAVEMENT SHALL BE FREE OF EXCESS STONE AND PAVING MATERIALS SO AS TO PROVIDE AN UNINTERRUPTED CROSS SECTION OF SOIL. INTERNAL PARKING ISLANDS SHALL BE LOOSENED TO A DEPTH OF 30".
2. THOROUGHLY BLEND PLANTING SOIL MIX FOR PLANTING BED AREAS. (1 PART EXISTING SOIL, 1 PART TOPSOIL, 1 PART ORGANIC SOIL AMENDMENT, 2.9 POUNDS PER CUBIC YARD OF 4-4-4 ANALYSIS SLOW-RELEASE FERTILIZER)
3. TREE AND SHRUB HOLES SHALL BE FILLED WITH A PREPARED PLANTING MIXTURE OF 1 PART TOPSOIL, 2 PARTS PLANTING SOIL MIX.
4. SPREAD SOIL AND SOIL AMENDMENTS TO DEPTH INDICATED ON DRAWINGS, BUT NOT LESS THAN REQUIRED TO MEET FINISH GRADES AFTER NATURAL SETTLEMENT. (FINISH GRADE OF PLANTING BEDS SHALL BE 3" BELOW ALL ADJACENT SURFACES. FINISH GRADE OF TURF SEEDING AREAS SHALL BE 1" BELOW ALL ADJACENT HARD SURFACES, WALKS, AND CURBS.)
5. PLACE APPROXIMATELY 1/2 OF TOTAL AMOUNT OF SOIL REQUIRED. WORK INTO TOP OF LOOSENED SUBGRADE TO CREATE A TRANSITION LAYER, THEN PLACE REMAINDER OF THE SOIL. SOIL TRANSITION LAYER SHALL BE TILLED TO A MINIMUM DEPTH OF 6" BELOW THE DEPTH OF NEWLY PLACED SOIL. PARKING LOT ISLANDS SHALL BE CROWNED TO A HEIGHT OF 6" TO PROVIDE PROPER DRAINAGE UNLESS OTHERWISE NOTED.
6. DO NOT SPREAD IF PLANTING SOIL OR SUBGRADE IS FROZEN, MUDDY, OR EXCESSIVELY WET.
7. FINISH GRADING: GRADE SOIL TO A SMOOTH, UNIFORM SURFACE PLANE WITH A LOOSE, UNIFORMLY FINE TEXTURE.
8. ROLL AND RAKE, REMOVE RIDGES, AND FILL DEPRESSIONS TO MEET FINISH GRADES.
9. RESTORE PLANTING BEDS IF ERODED OR OTHERWISE DISTURBED AFTER FINISH GRADING AND BEFORE PLANTING.

NATIVE AND SHORT PRAIRIE PLANTINGS

SPECIFICATIONS FOR HAND BROADCASTING:

SEEDING SHALL BE CONDUCTED IN LATE FALL (SEPTEMBER 1- SOIL FREEZE) SO THAT SEEDS MAY LIE DORMANT DURING THE WINTER, ALLOWING FOR STRATIFICATION, OR SPRING (MARCH 1-JUNE 1) TO ALLOW A COMPLETE GROWING SEASON TO BECOME ESTABLISHED.

A. PREPARATION OF SOIL PRIOR TO SEEDING
   1. REFER TO CIVIL PLANS FOR SOIL MIX.
   2. ALL FOREIGN MATERIALS LARGER THAN 1-INCH SHALL BE REMOVED FROM THE SOIL PRIOR TO SEEDING OR PLANTING.
   3. AREA SHOULD BE FREE FROM UNSIGHTLY VARIATIONS, RIDGES, AND DEPRESSIONS.
   4. AVOID DRIVING OVER THE SPECIFIED AREA WITH MACHINERY.

B. COVER CROP
   1. ANNUAL RYE SHALL BE SPREAD AT A DENSITY OF 20 POUNDS PER ACRE DURING THE PLANTING OR SEEDING OF THE NATIVE PLANT SPECIES TO STABILIZE THE SOIL AND REDUCE THE GROWTH OF UNWANTED VEGETATION. THIS ANNUAL GRASS GROWS RAPIDLY WITHOUT COMPETING WITH THE WILDFLOWERS AND GRASSES THAT ARE PLANTED IN THE TARGET AREAS.
   2. WINTER WHEAT OR PERENNIAL RYE SHALL NOT BE USED AS A COVER CROP. THESE GRASSES MAY OUT COMPETE PRAIRIE SEEDLINGS, LEADING TO A REDUCTION IN THE SUCCESS OF THE PLANTINGS.

C. SEED MIX: MIX ALL PRAIRIE SEED WITH VERMICULITE ACCORDING TO AGRECOL RECOMMENDATIONS AND INSTALLATION GUIDELINES.
   1. BROADCAST HALF THE SEED OVER THE ENTIRE SITE OR TARGET AREA.
   2. BROADCAST THE OTHER HALF OF SEED PERPENDICULAR TO THE DIRECTION THAT THE FIRST HALF OF THE SEED WAS BROADCAST.
   3. COVER SEED WITH ¼ -INCH TO ½ -INCH OF SOIL (USE ANY EXCESS SOIL FROM THE SITE) WITH RAKE OR DRAG.
   4. ROLL SITE TO ENSURE FIRM SEED-TO-GROUND CONTACT.
   5. KEEP SEED CONSTANTLY WET THROUGH GERMINATION PERIOD. GENERALLY 3 WEEKS.

ALL SEEDING SHALL BE COVERED WITH 1-INCH OF CLEAN, NON-INVASIVE STRAW (NO MARSH HAY, OR REED CANARY GRASS) WITHOUT SEEDS, WITHIN SEVEN DAYS. WHEAT, RYE, OATS, OR BARLEY ARE ACCEPTABLE FORMS OF STRAW. THOSE AREAS OF SLOPES STEEPER THAN 8:1 (EIGHT FEET HORIZONTAL TO ONE FOOT VERTICAL) SHALL BE PLANTED NO LATER THAN OCTOBER 1 AND STAKED WITH AN EROSION CONTROL BLANKET TO PREVENT EROSION.

NATIVE PLANTINGS:

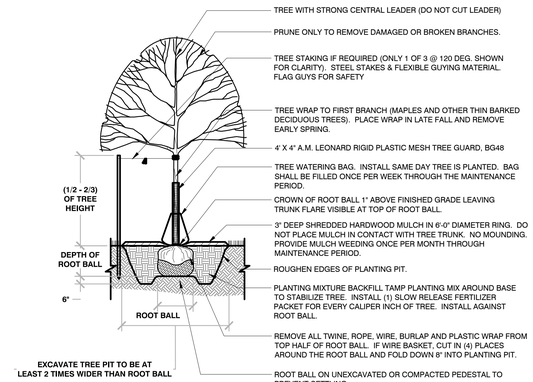
WEED SUPPRESSION MEASURES:

1st YEAR - PERFORM SPOT SPRAY WITH HERBICIDE TO SUPPRESS WEEDS. THIS SHOULD OCCUR APPROXIMATELY EVERY MONTH OF THE GROWING SEASON AFTER NATIVE PLANTINGS HAVE BEEN ROUGH GRADED.

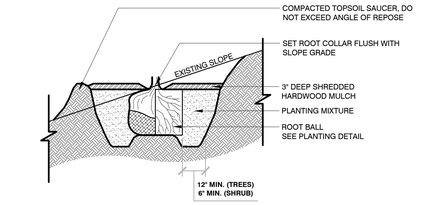
2nd YEAR - IN MAY/JUNE MOW NATIVE PLANTINGS AT 6" HEIGHT TO SUPPRESS THE WEEDS. PERFORM SPOT SPRAY WITH HERBICIDE TO SUPPRESS WEEDS. HAVE PROFESSIONAL ASSESS PLANTINGS. REPEAT MOWING NATIVE PLANTINGS AND SPOT-SPRAY IN EARLY JULY.

3rd YEAR - IN MAY/JUNE MOW NATIVE PLANTINGS AT 6" HEIGHT TO SUPPRESS THE WEEDS. PERFORM SPOT SPRAY WITH HERBICIDE TO SUPPRESS WEEDS.

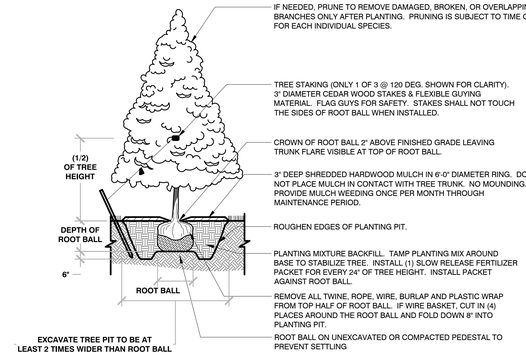
4th YEAR - IN MAY PERFORM A PRESCRIBED BURN. IN JUNE HAVE A QUALIFIED PROFESSIONAL ASSESS PLANTINGS. IF A PRESCRIBED BURN CAN NOT BE UTILIZED, NATIVE PLANTINGS SHALL BE CUT TO THE GROUND AND ALL CUT MATERIAL SHALL BE REMOVED AND DISPOSED OF OFF SITE.



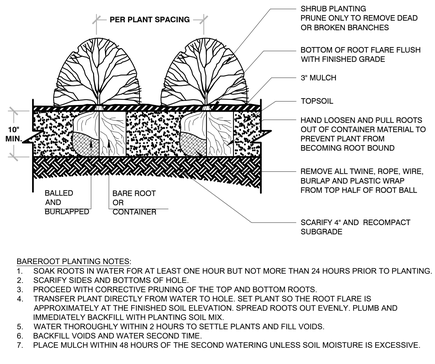
1 TREE PLANTING
1/4" = 1'-0" 329343-01



2 TREE PLANTING ON SLOPE
3/8" = 1'-0" 329343-02

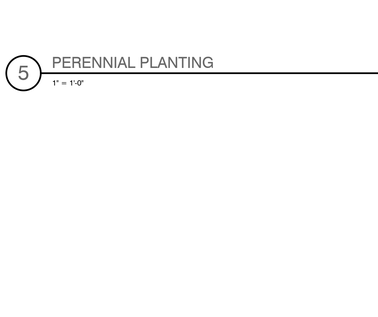


3 EVERGREEN TREE PLANTING
1/4" = 1'-0" 329343-03

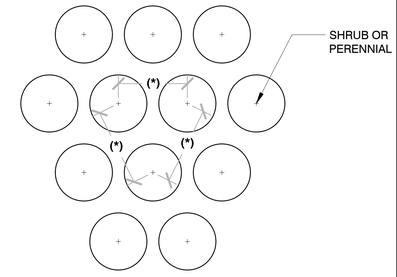


BAREROOT PLANTING NOTES:
1. SOAK ROOTS IN WATER FOR AT LEAST ONE HOUR BUT NOT MORE THAN 24 HOURS PRIOR TO PLANTING.
2. SCARIFY SIDES AND BOTTOMS OF HOLE.
3. PROCEED WITH CORRECTIVE PRUNING OF THE TOP AND BOTTOM ROOTS.
4. TRANSFER PLANT DIRECTLY FROM WATER TO HOLE. SET PLANT SO THE ROOT FLARE IS APPROXIMATELY AT THE FINISHED SOIL ELEVATION. SPREAD ROOTS OUT EVENLY. PLUMB AND IMMEDIATELY BACKFILL WITH PLANTING SOIL MIX.
5. WATER THOROUGHLY WITHIN 2 HOURS TO SETTLE PLANTS AND FILL VOIDS.
6. BACKFILL VOIDS AND WATER SECOND TIME.
7. PLACE MULCH WITHIN 48 HOURS OF THE SECOND WATERING UNLESS SOIL MOISTURE IS EXCESSIVE.

4 SHRUB PLANTING
1/2" = 1'-0" 329333-02

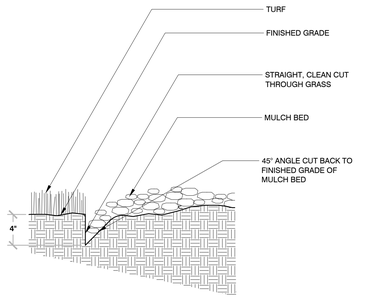


5 PERENNIAL PLANTING
1" = 1'-0" 3293-01



(*) = SPECIFIED PLANT SPACING PER PLANTING LIST

6 PLANT SPACING
3/4" = 1'-0" 3293-02



7 TRENCHED BED EDGE
3/4" = 1'-0" 3293-03

DRAFTED: JSJ
DESIGNED: JSJ
REVIEWED: DVB

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LANDSCAPE GENERAL NOTES & DETAILS

REVISIONS

PEG JOB 1262.00A-WI
PEG PM ASS
START DATE 06/01/21
SCALE VARIES

SHEET L-5 OF L-5

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FOR REVIEW

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