



Village of



Germantown

Willkommen

RECEIVED FEB - 9 REC'D OFFICE OF THE VILLAGE PLANNER OF GERMANTOWN

Fee must accompany application

- \$810 Minor Addition
- \$1,430 Construction <10,000 SF
- \$2,410 Construction 10,000 SF to 50,000 SF
- \$3,980 Industrial Construction >50,000 SF
- \$3,980 Commercial Construction >50,000
- \$350 Plan Commission Consultation
- \$125 Fire Department Plan Review

Paid On: 2/9/26 Check/CC 14039

# 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

Keith Solum  
 Abacus Architects  
 640 N. Vel R. Phillips Ave, Ste 210  
 Milwaukee, WI 53203

Phone (920) 234-2394  
 E-Mail ksolum@abacusarch.com

### PROPERTY OWNER

DONTOP LLC  
 W180N11819 River Ln  
 PO Box 757  
 Germantown, WI 53022-757

Phone (262) 345-3174  
 E-Mail afogel@basicmetals.com

2

### PROPERTY ADDRESS

W180N11819 and W180N11711 N. River Lane  
 Germantown, WI 53022

3

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

North Nelson Box - Industrial Basic Metals - Industrial	South Wacker Neuson - Industrial	East Heaney, Thompson, Scheidmeier - Residential	West Banner - Ind.
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4

### READ AND INITIAL THE FOLLOWING:

- AP I am aware of the Village of Germantown ordinance requiring fire sprinklers in most new construction.
- AP I understand that all new development is subject to Impact and/or Connection Fees that must be paid before building permits will be issued.
- AP I understand that an incomplete application will be withdrawn from the Plan Commission agenda and that all resubmissions to the Plan Commission are subject to a new application fee.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!

Keith Solum 02-06-2026  
 Applicant Date

Al Fogel 2-6-25  
 Owner Date



**Village of**  
 \*\*\*  
**Germantown**  
 ...Willkommen

**RECEIVED**  
 FEB - 9 REC'D  
 OFFICE OF THE VILLAGE PLANNER  
 VILLAGE OF GERMANTOWN

Fee must accompany application.  
 \$3340 with public improvements  
 \$2260 no public improvements  
 Paid On: 2/9/26 Check/CC 14039

## 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.

**APPLICANT/AGENT:**

Keith Solum  
Abacus Architects  
640 N. Vel R. Phillips Ave, Ste 210  
Milwaukee, WI 53203  
Phone (920) 234 - 2394  
Email ksolum@abacusarch.com

**PROPERTY OWNER:**

DONT OF LLC  
W180N11819 River Ln  
PO Box 757  
Germantown, WI 53022-0757  
Phone (262) 345-3174  
Email afoegel@basicmetals.com

**PROPERTY ADDRESS**

**TAX KEY NUMBER**

<u>W180N11819 and W180N11711 N. River Lane</u>	<u>212904 and 212970</u>
--	--------------------------

**PURPOSE OF LAND SPLIT**

<u>The purpose is to combine two properties into one property</u>	<u>Will the land split require rezoning?</u>	
	<u>No</u>	
	<u>From N/A</u>	<u>To N/A</u>

**READ AND INITIAL THE FOLLOWING:**

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

**SIGNATURES: ALL APPLICATIONS MUST BE SIGNED**

Keith Solum 02-06-2026  
 Applicant Date

[Signature] 2-6-25  
 Owner Date

Village of Germantown

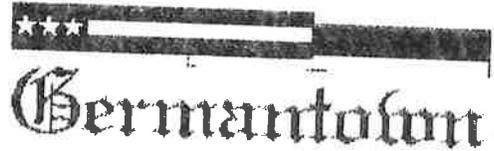
2/5/2026

Date	Type	Reference	Original Amt.	Balance Due	Discount	Payment	
2/5/2026	Bill	CSM Application	2,260.00	2,260.00		2,260.00	
2/5/2026	Bill	Site Plan Applicatio	2,535.00	2,535.00		2,535.00	
						Check Amount	4,795.00

OSB Checking

4,795.00

# Village of



Village of Germantown  
 Clerk Treasurer  
 N112W17001 MEQUON ROAD  
 Germantown, WI 53022  
 (262)250-4700  
 Welcome

02/09/2026 03:27PM PRAVINA P  
 001073-0036  
 Payment effective date 02/05/2026

### MISCELLANEOUS

PLAN COMMISSION REVIEW  
 FEES (GENPLN)  
 2026 GENPLN  
 1 @ \$4795.00

\$4,795.00

-----  
\$4,795.00

Subtotal \$4,795.00  
 Total \$4,795.00

Tenders  
 CHECK \$4,795.00  
 Check Number 14039

Change due -----  
 \$0.00

Thank you for your payment

Village of Germantown COPY  
DUPLICATE RECEIPT



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*The Cutting Edge Source  
For Your Metal Needs*

Dear Village of Germantown Officials,

My name is Andrew Fogel, and I am the President of Basic Metals Inc., located in the Germantown Industrial Park. We are currently planning a 42,000 square foot warehouse addition to our existing facility, representing a significant investment in Germantown and supporting continued growth, employment, and economic activity within the Village.

We are writing to respectfully request relief from the Village's recently implemented ordinance limiting industrial driveway entrances to a maximum width of 35 feet.

Our proposed building addition has been specifically designed to safely and efficiently accommodate our daily truck traffic, including the simultaneous loading and unloading of up to six full-size 53-foot flatbed trailers. Under the new ordinance, we would be limited to only two loading docks instead of the six total truck positions (two docks and four drive-in doors) included in the current design. This reduction would materially impact our operations and create unintended traffic and safety concerns.

Specifically:

Limiting the facility to two loading docks would result in increased truck congestion on Fulton Drive as trucks wait for available loading or unloading positions. With only two on-site parking spaces available, truck drivers would likely begin preparing their loads for final delivery while staged on Fulton Drive. This preparation often includes removing tarps, releasing straps, and adjusting loads, activities that are not appropriate to perform on the side of a public road.

Allowing a wider driveway would enable us to accommodate trucks fully on-site, reducing congestion on Fulton Drive and eliminating the temptation for drivers to conduct strapping or untarpping activities on the street.

The proposed driveway configuration would also allow us to shift a significant portion of our truck traffic away from Bunsen Drive, where our current loading docks are located, improving overall traffic flow within the industrial park.

Additionally, other businesses within the Industrial Park have driveway entrances exceeding the 35' requirement. Basic Metals current drive is approximately 110' on Bunsen Dr. D&G Transportation (west of Basic Metals on Bunsen) drive is approximately 165' and Wacker Neuson Logistics (south of Basic Metals on Morse Dr) has a drive approximately 250' wide.

Our goal is to design a facility that operates efficiently, minimizes traffic impacts, and prioritizes safety for drivers, employees, and neighboring businesses. Granting relief from the driveway width limitation would directly support these objectives and, in our view, aligns with the original intent of industrial zoning within the park.

Thank you for your time and consideration. We appreciate your willingness to review this request and would welcome the opportunity to discuss our site plan in greater detail.

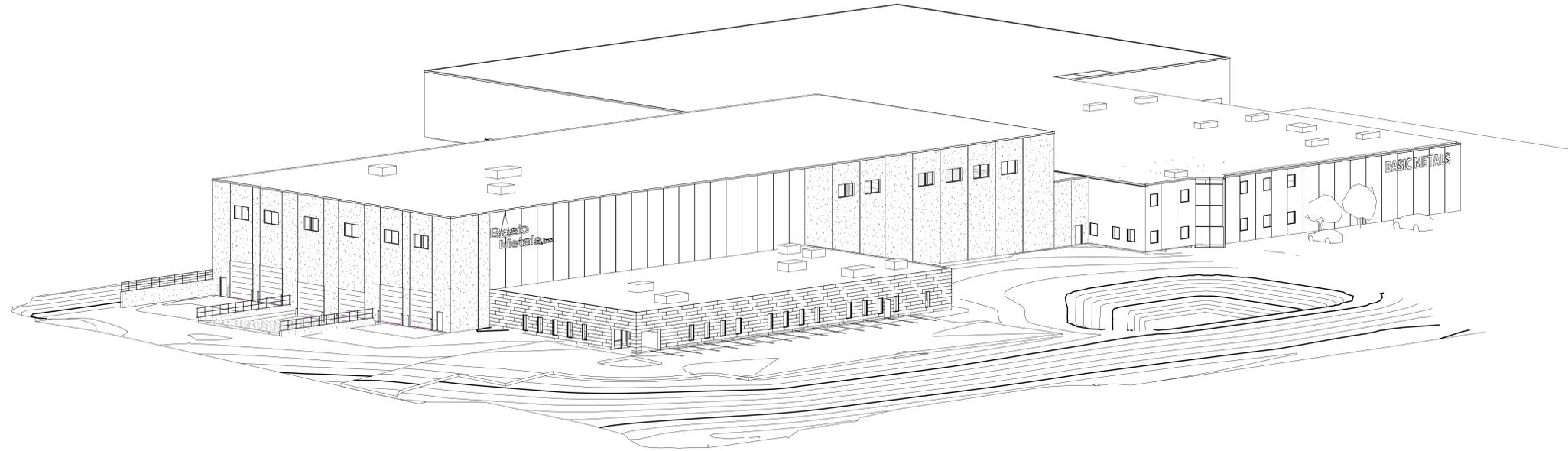
Sincerely,

Andrew Fogel  
President  
Basic Metals Inc.

BUILDING ADDITION & ALTERATION

# BASIC METALS II

BASIC METALS INC., W180N11819 N RIVER LN, GERMANTOWN, WI, 53022



REVISIONS:

△	DATE	ISSUE

NOTICE TO BIDDERS  
BIDDERS SHALL REVIEW ALL DRAWINGS AND SPECIFICATION SECTIONS TO DETERMINE THE IMPACT OF OTHER SECTIONS OF WORK ON THEIR OWN WORK

© 2024 ABACUS ARCHITECTS, INC.

ISSUE DATE: 02/07/2025  
BUILDING ADDITION & ALTERATION

BASIC METALS II

BASIC METALS INC., W180N11819 N RIVER LN, GERMANTOWN, WI, 53022

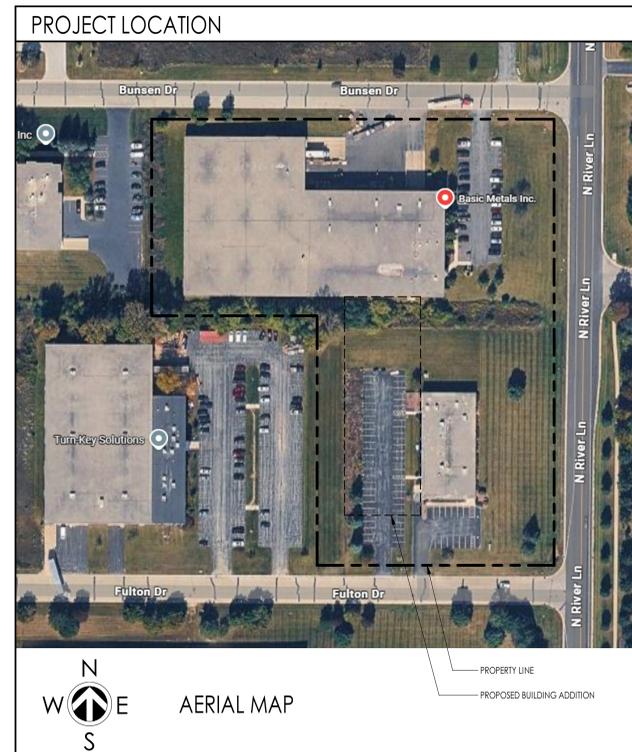
1135A MICHIGAN AVE., SHEBOYGAN, WI 53081 | (727) 452-4444 | 640 VEL R. PHILLIPS AVE., SUITE 210, MILWAUKEE, WI 53203

PRELIMINARY - NOT FOR CONSTRUCTION

ARCHITECTURAL / CIVIL	STRUCTURAL																						
<p>ABACUS ARCHITECTS, INC. 1135A MICHIGAN AVENUE SHEBOYGAN, WISCONSIN 53081 P: 920-452-4444</p> <table border="1"> <tr><td>A 101</td><td>TITLE SHEET</td></tr> <tr><td>A 200</td><td>EXISTING CONDITIONS AND DEMO PLAN</td></tr> <tr><td>A 201</td><td>SITE PLAN</td></tr> <tr><td>A 202</td><td>GRADING PLAN</td></tr> <tr><td>A 203</td><td>EROSION CONTROL PLAN</td></tr> <tr><td>A 204</td><td>UTILITY PLAN</td></tr> <tr><td>A 205</td><td>DETAILS</td></tr> <tr><td>A 206</td><td>LANDSCAPE PLAN</td></tr> <tr><td>A 302</td><td>EXISTING DEMO &amp; NEW FLOOR PLANS</td></tr> <tr><td>A 303</td><td>OVERALL FLOOR PLAN &amp; CLERESTORY PLAN</td></tr> <tr><td>A 501</td><td>EXTERIOR ELEVATIONS</td></tr> </table>	A 101	TITLE SHEET	A 200	EXISTING CONDITIONS AND DEMO PLAN	A 201	SITE PLAN	A 202	GRADING PLAN	A 203	EROSION CONTROL PLAN	A 204	UTILITY PLAN	A 205	DETAILS	A 206	LANDSCAPE PLAN	A 302	EXISTING DEMO & NEW FLOOR PLANS	A 303	OVERALL FLOOR PLAN & CLERESTORY PLAN	A 501	EXTERIOR ELEVATIONS	<p>CSD STRUCTURAL ENGINEERS 8989 N FORT WASHINGTON RD, SUITE 101 MILWAUKEE, WI 53217 P: 414-351-5588</p>
A 101	TITLE SHEET																						
A 200	EXISTING CONDITIONS AND DEMO PLAN																						
A 201	SITE PLAN																						
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A 203	EROSION CONTROL PLAN																						
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A 206	LANDSCAPE PLAN																						
A 302	EXISTING DEMO & NEW FLOOR PLANS																						
A 303	OVERALL FLOOR PLAN & CLERESTORY PLAN																						
A 501	EXTERIOR ELEVATIONS																						

PROJECT INFORMATION						
<p><b>APPLICABLE BUILDING CODES</b></p> <p>2025 WISCONSIN ADMINISTRATIVE CODE (W.C.B.C.), SPS 361-366 2021 INTERNATIONAL BUILDING CODE (IBC) 2021 INTERNATIONAL EXISTING BUILDING CODE (IEBC) 2021 INTERNATIONAL ENERGY CONSERVATION CODE (IECC) 2017 ICC / ANSI A117.1 ACCESSIBLE AND USABLE BUILDING AND FACILITIES</p> <p><b>PROJECT SUMMARY</b></p> <p>BASIC METALS ACQUIRED THE PROPERTY TO THE SOUTH OF THEIR CURRENT SITE. PARCELS ARE TO BE COMBINED THROUGH REVISED CSM. EXISTING 12,000 SF OFFICE BUILDING TO REMAIN AS AN OFFICE BUILDING. NEW ADDITION IS A STORAGE OCCUPANCY. ADDITION TO HAVE 3/8" FIRE WALL BETWEEN BUILDING TO THE NORTH AND THE ADDITION. NO FIRE WALL REQUIRED BETWEEN ADDITION AND OFFICE BUILDING TO THE EAST.</p> <p><b>BUILDING AREA</b></p> <table border="0"> <tr> <td>EXISTING BUILDING AREA:</td> <td>BUILDING ADDITION AREA:</td> </tr> <tr> <td>NORTH BLDG AREA - 74,855 S.F.</td> <td>FLOOR AREA - 41,658 S.F.</td> </tr> <tr> <td>EAST BLDG AREA - 12,640 S.F.</td> <td></td> </tr> </table> <p><b>CONSTRUCTION CLASSIFICATION</b></p> <p>TYPE IIB CONSTRUCTION (W.C.B.C. SECTION 602.2)</p> <p><b>OCCUPANCY CLASSIFICATION</b></p> <p>NON-SEPARATED OCCUPANCIES (W.C.B.C. SECTION 508.3)</p> <p>USE GROUPS PRESENT IN THE BUILDING INCLUDE:</p> <p>BUSINESS GROUP "B" (W.C.B.C. SECTION 304.1)</p> <p>FACTORY INDUSTRIAL GROUP "F-1" MODERATE HAZARD (W.C.B.C. SECTION 306.2)</p> <p>STORAGE GROUP (S-2) LOW HAZARD (SECTION 311.3)</p> <p><b>FIRE PROTECTION</b></p> <p>BUILDING IS FULLY PROTECTED WITH AN AUTOMATIC SPRINKLER SYSTEM PER NFPA 13.</p>	EXISTING BUILDING AREA:	BUILDING ADDITION AREA:	NORTH BLDG AREA - 74,855 S.F.	FLOOR AREA - 41,658 S.F.	EAST BLDG AREA - 12,640 S.F.	
EXISTING BUILDING AREA:	BUILDING ADDITION AREA:					
NORTH BLDG AREA - 74,855 S.F.	FLOOR AREA - 41,658 S.F.					
EAST BLDG AREA - 12,640 S.F.						

PROJECT NOTES
<p><b>EXTENT OF WORK</b></p> <p>THE INTENT OF THE CONTRACT DOCUMENTS IS TO INCLUDE ALL ITEMS NECESSARY FOR THE PROPER EXECUTION AND COMPLETION OF THE WORK BY THE CONTRACTOR. PERFORMANCE BY THE CONTRACTOR SHALL BE REQUIRED TO THE EXTENT CONSISTENT WITH THE CONTRACT DOCUMENTS AND REASONABLY INFERRABLE FROM THEM AS BEING NECESSARY TO PRODUCE THE INTENDED RESULTS.</p> <p><b>SITE VISIT</b></p> <p>THE CONTRACTOR SHALL VISIT THE SITE, BECOME FAMILIAR WITH LOCAL CONDITIONS UNDER WHICH THE WORK IS TO BE PERFORMED AND CORRELATE PERSONAL OBSERVATIONS WITH REQUIREMENTS OF THE CONTRACT DOCUMENTS.</p> <p><b>NOTICE TO BIDDERS</b></p> <p>BIDDERS SHALL REVIEW ALL DRAWINGS AND ALL SPECIFICATION SECTIONS TO DETERMINE THE IMPACT OF OTHER SECTIONS OF WORK ON THEIR OWN WORK.</p> <p><b>COPYRIGHT</b></p> <p>ABACUS ARCHITECTS, INC. HOLDS ALL RIGHTS OF COPYRIGHT IN AND TO THESE PRINTS, DRAWINGS, AND DOCUMENTS. NO REPRODUCTION, COPYING, ALTERATION, MODIFICATION, USAGE, INCORPORATION, INTO OTHER DOCUMENTS, OR ASSIGNMENT OF THE SAME MAY OCCUR WITHOUT THE PRIOR WRITTEN PERMISSION OF ABACUS ARCHITECTS, INC.</p> <p>© 2024 ABACUS ARCHITECTS, INC.</p>



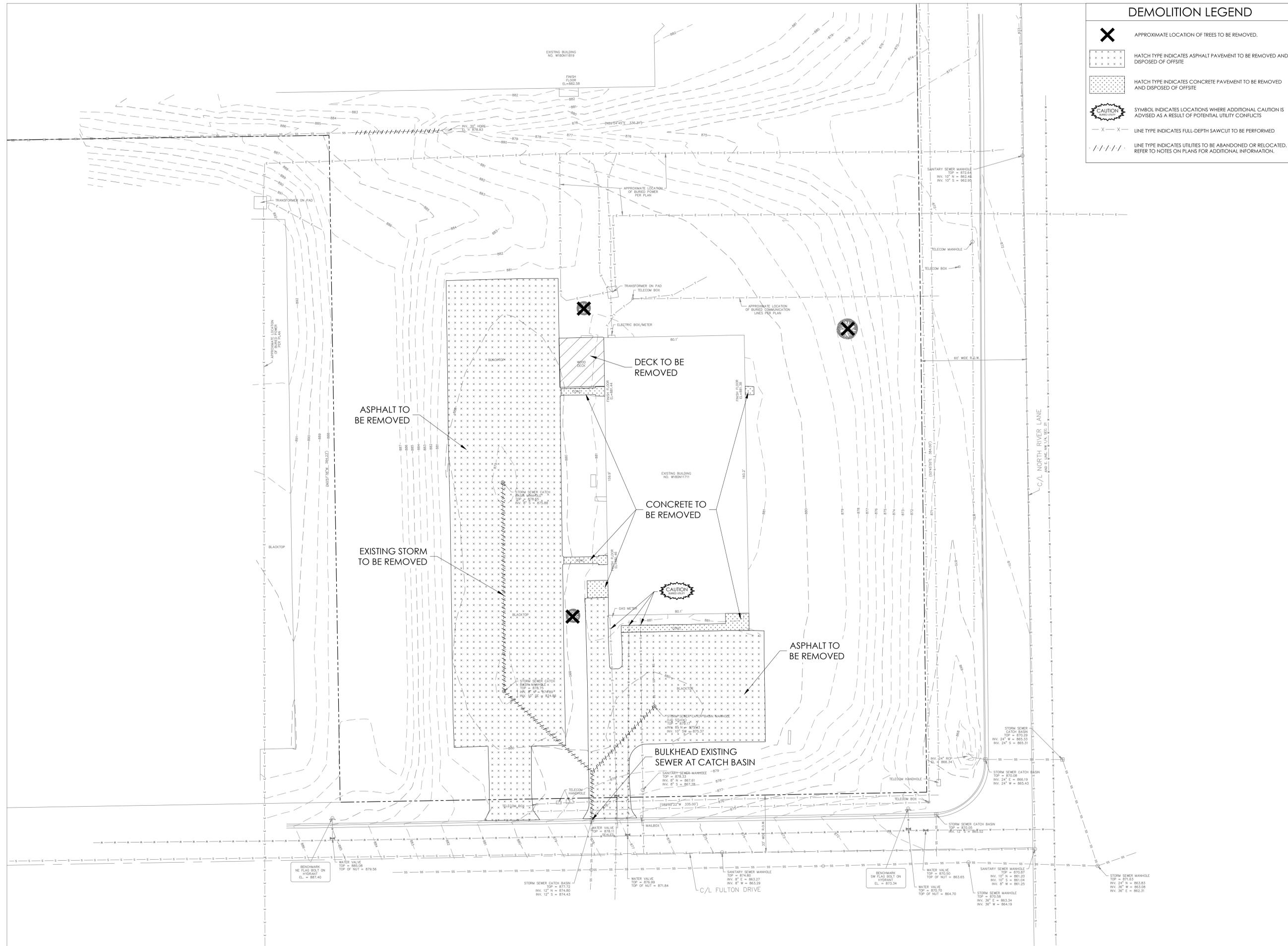
DRAWN BY: MSJ

CHECKED BY: KS

TITLE SHEET

A  
101

PROJ. NO. 2024-100



DEMOLITION LEGEND

- APPROXIMATE LOCATION OF TREES TO BE REMOVED.
- HATCH TYPE INDICATES ASPHALT PAVEMENT TO BE REMOVED AND DISPOSED OFF-SITE
- HATCH TYPE INDICATES CONCRETE PAVEMENT TO BE REMOVED AND DISPOSED OFF-SITE
- SYMBOL INDICATES LOCATIONS WHERE ADDITIONAL CAUTION IS ADVISED AS A RESULT OF POTENTIAL UTILITY CONFLICTS
- LINE TYPE INDICATES FULL-DEPTH SAWCUT TO BE PERFORMED
- LINE TYPE INDICATES UTILITIES TO BE ABANDONED OR RELOCATED. REFER TO NOTES ON PLANS FOR ADDITIONAL INFORMATION.



REVISIONS:

DATE	ISSUE

NOTICE TO BIDDERS  
 BIDDERS SHALL REVIEW ALL DRAWINGS AND SPECIFICATION SECTIONS TO DETERMINE THE IMPACT OF OTHER SECTIONS OF WORK ON THEIR OWN WORK  
 © 2024 ABACUS ARCHITECTS, INC.

ISSUE DATE: 02/09/2024  
 NEW CONSTRUCTION/EXPANSION  
**BASIC METALS II**  
 BASIC METALS INC., W180N11819 N RIVER LN, GERMANTOWN, WI, 53022  
 1135A MICHIGAN AVE, SHEBOYGAN, WI 53081 | (920) 452-4444 | 640' N V.E.L.R. PHILLIPS AVE, SUITE 210, MILWAUKEE, WI 53203

DRAWN BY: JMN  
 CHECKED BY: JRV

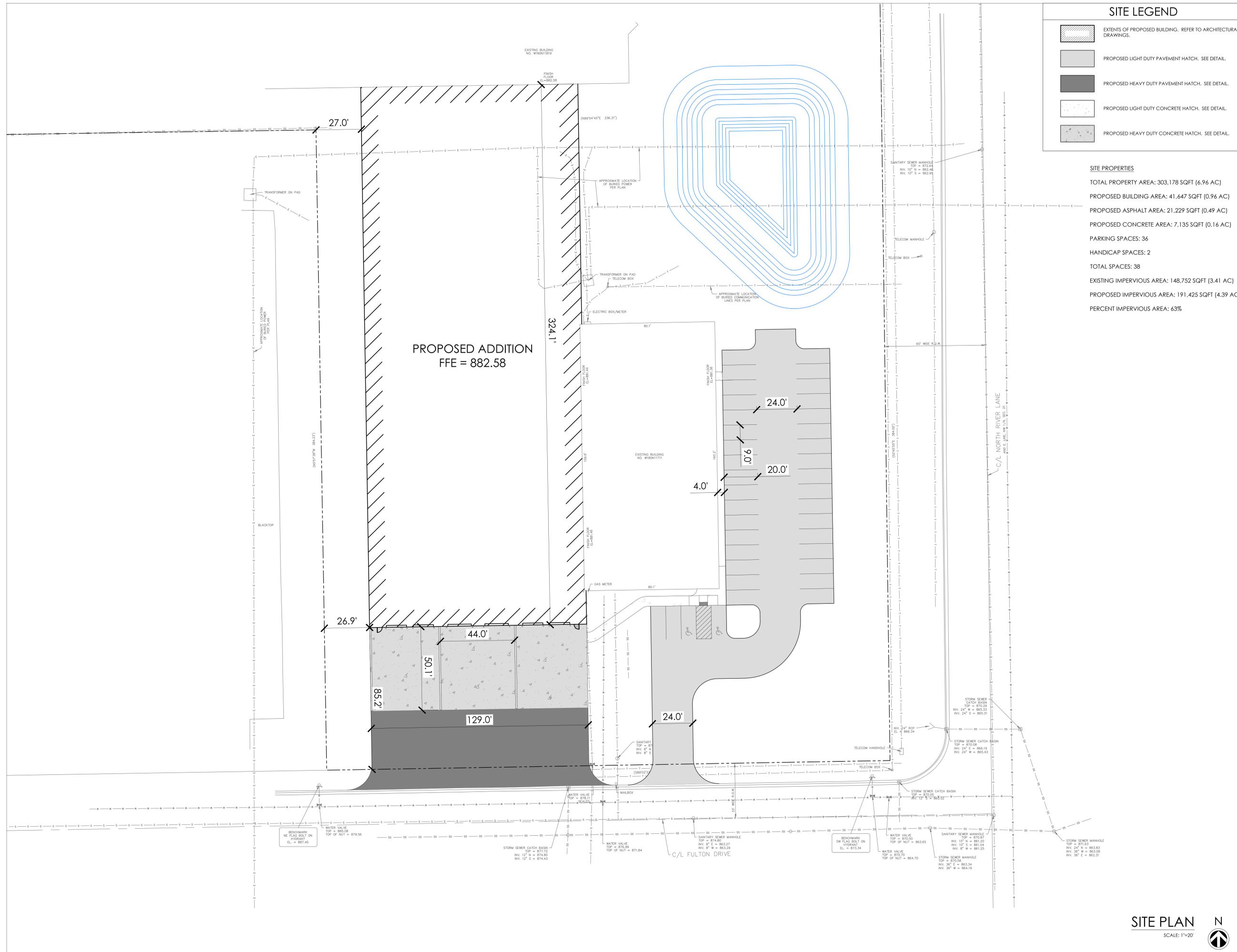
EXISTING CONDITIONS AND DEMO PLAN

**A**  
**200**  
 PROJ. NO. 2024-100

EXISTING CONDITIONS AND DEMO PLAN

SCALE: 1"=20'





### SITE LEGEND

- EXTENTS OF PROPOSED BUILDING. REFER TO ARCHITECTURAL DRAWINGS.
- PROPOSED LIGHT DUTY PAVEMENT HATCH. SEE DETAIL.
- PROPOSED HEAVY DUTY PAVEMENT HATCH. SEE DETAIL.
- PROPOSED LIGHT DUTY CONCRETE HATCH. SEE DETAIL.
- PROPOSED HEAVY DUTY CONCRETE HATCH. SEE DETAIL.

### SITE PROPERTIES

- TOTAL PROPERTY AREA: 303,178 SQFT (6.96 AC)
- PROPOSED BUILDING AREA: 41,647 SQFT (0.96 AC)
- PROPOSED ASPHALT AREA: 21,229 SQFT (0.49 AC)
- PROPOSED CONCRETE AREA: 7,135 SQFT (0.16 AC)
- PARKING SPACES: 36
- HANDICAP SPACES: 2
- TOTAL SPACES: 38
- EXISTING IMPERVIOUS AREA: 148,752 SQFT (3.41 AC)
- PROPOSED IMPERVIOUS AREA: 191,425 SQFT (4.39 AC)
- PERCENT IMPERVIOUS AREA: 63%



### REVISIONS:

DATE	ISSUE

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**BASIC METALS II**  
 BASIC METALS INC., W180N1181 N RIVER LN, GERMANTOWN, WI, 53022  
 1135A MICHIGAN AVE, SHEBOYGAN, WI 53081 | (920) 452-4444 | 640' N VEL. R. PHILLIPS AVE, SUITE 210, MILWAUKEE, WI 53203

DRAWN BY: JMN  
 CHECKED BY: JRV

**SITE PLAN**

**A**  
**201**

PROJ. NO. 2024-100

**SITE PLAN**  
 SCALE: 1"=20'

GRADING LEGEND

- 595 — PROPOSED CONTOUR
- 595 - EXISTING CONTOUR
- ⊕ 595.00± PROPOSED SPOT ELEVATION
- ⊕ 595.00± MATCH EXISTING ELEVATION
- ⊕ TC 595.00 PROPOSED TOP OF CURB ELEVATION
- ⊕ BC 595.50 PROPOSED BOTTOM OF CURB ELEVATION

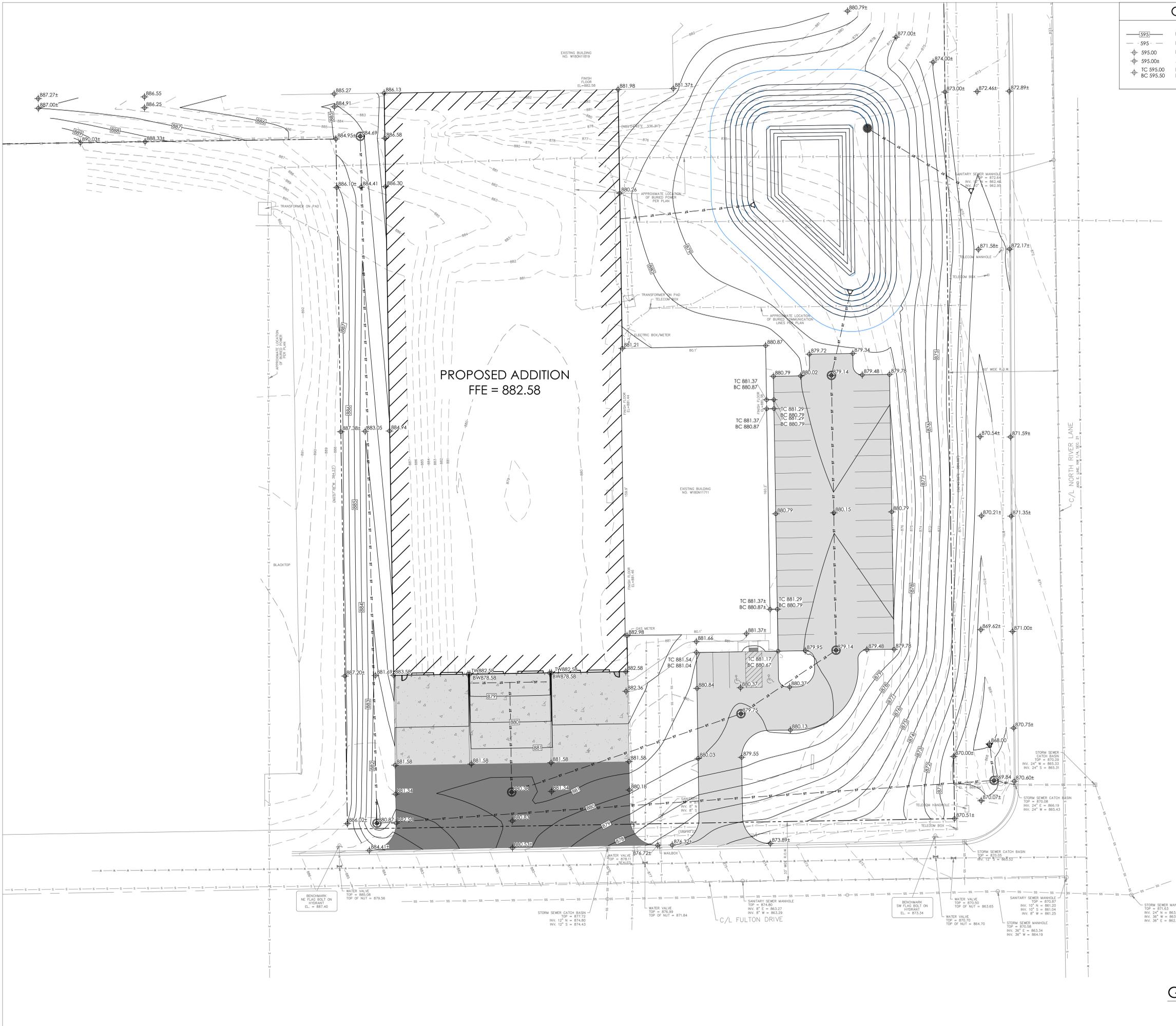


REVISIONS:

△	DATE	ISSUE

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PROPOSED ADDITION  
 FFE = 882.58



ISSUE DATE: 02/09/2024  
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**BASIC METALS II**  
 BASIC METALS INC., W180N11819 N RIVER LN, GERMANTOWN, WI, 53022  
 1135A MICHIGAN AVE, SHEBOYGAN, WI 53081 | 920.452.4444 | 640' N VEL R. PHILLIPS AVE, SUITE 210, MILWAUKEE, WI 53203

DRAWN BY: JMN  
 CHECKED BY: JRV

GRADING PLAN

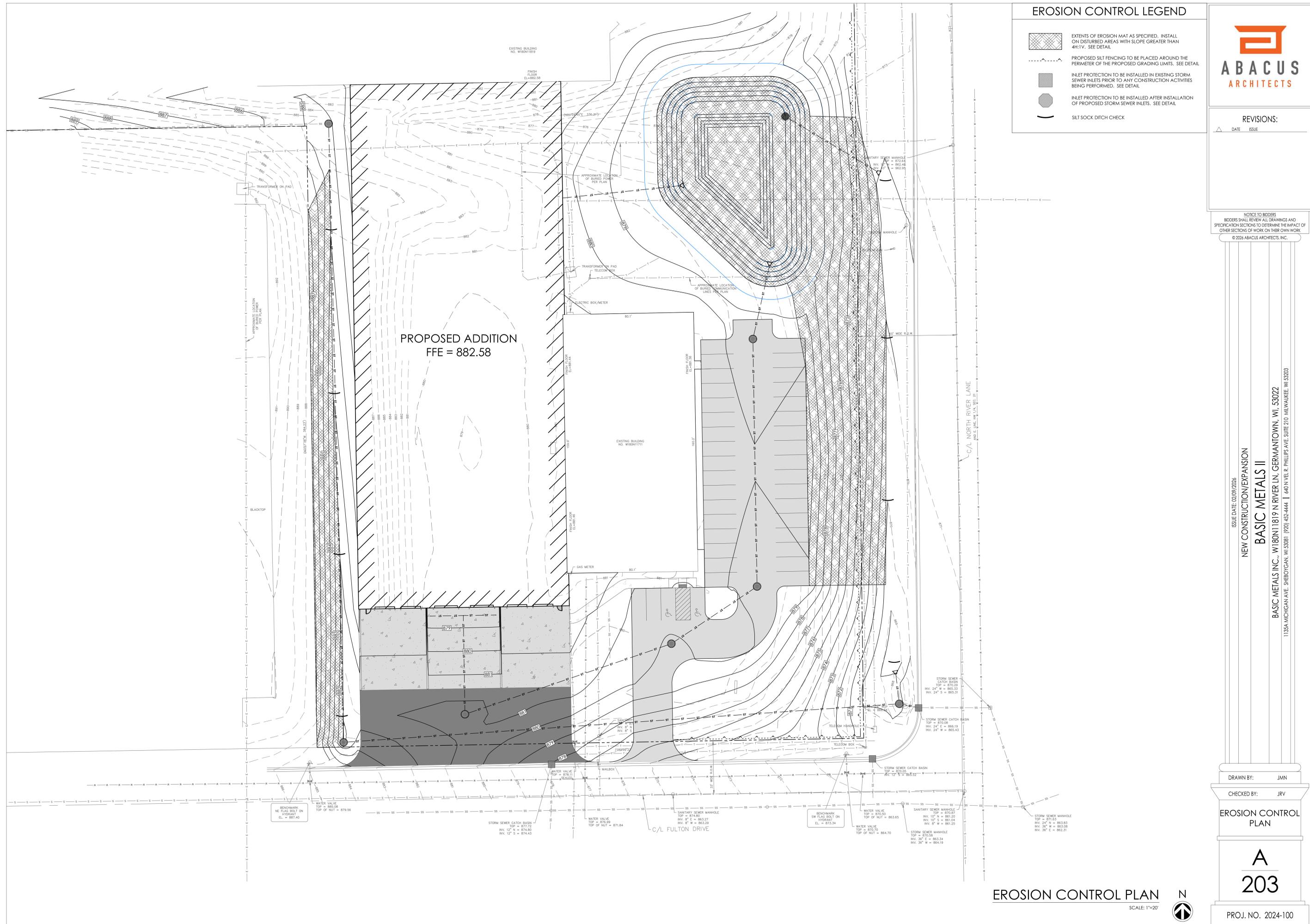
A  
 202

PROJ. NO. 2024-100

GRADING PLAN

SCALE: 1"=20'





### EROSION CONTROL LEGEND

- EXTENTS OF EROSION MAT AS SPECIFIED. INSTALL ON DISTURBED AREAS WITH SLOPE GREATER THAN 4H:1V. SEE DETAIL.
- PROPOSED SILT FENCING TO BE PLACED AROUND THE PERIMETER OF THE PROPOSED GRADING LIMITS. SEE DETAIL.
- INLET PROTECTION TO BE INSTALLED IN EXISTING STORM SEWER INLETS PRIOR TO ANY CONSTRUCTION ACTIVITIES BEING PERFORMED. SEE DETAIL.
- INLET PROTECTION TO BE INSTALLED AFTER INSTALLATION OF PROPOSED STORM SEWER INLETS. SEE DETAIL.
- SILT SOCK DITCH CHECK



REVISIONS:

DATE	ISSUE

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DRAWN BY: JMN  
 CHECKED BY: JRV

**EROSION CONTROL PLAN**

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203

PROJ. NO. 2024-100

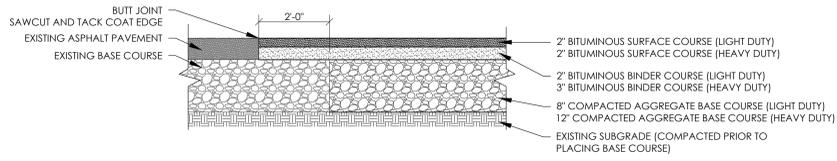
**EROSION CONTROL PLAN**  
 SCALE: 1"=20'



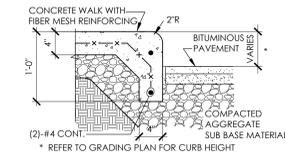
REVISIONS:

DATE	ISSUE

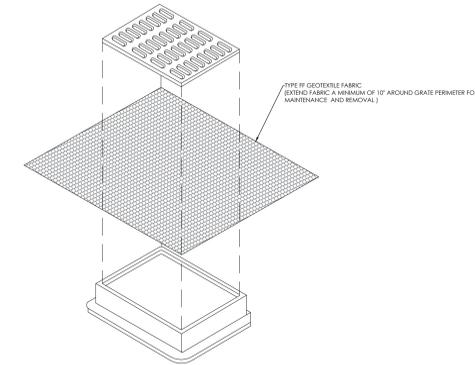
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© 2024 ABACUS ARCHITECTS, INC.



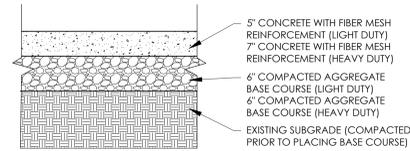
ASPHALT PAVEMENT CROSS SECTION



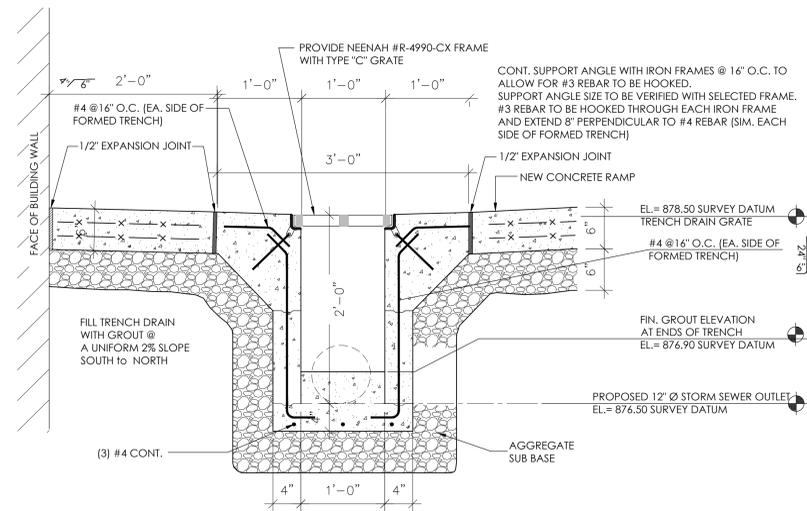
CONCRETE CURB & SIDEWALK SECTION



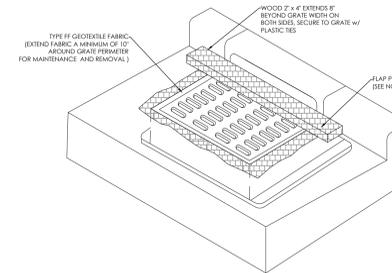
INLET PROTECTION TYPE "B"



CONCRETE PAVEMENT CROSS SECTION

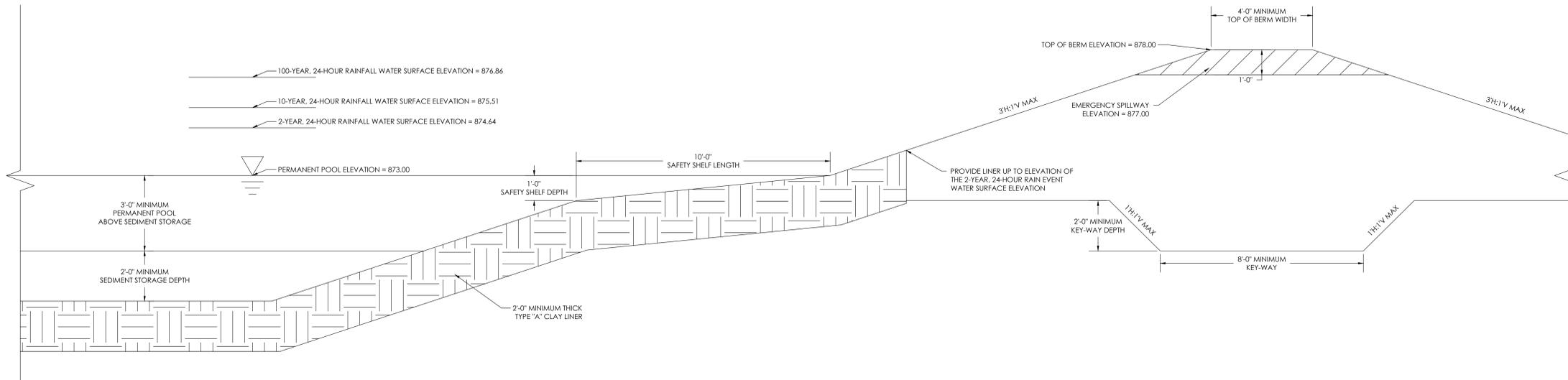


TRENCH DRAIN SECTION



INLET PROTECTION TYPE "C"

MAINTENANCE NOTES:  
1. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.



WET DETENTION POND CROSS SECTION

DETAILS

DRAWN BY: JMN  
CHECKED BY: JRV

DETAILS

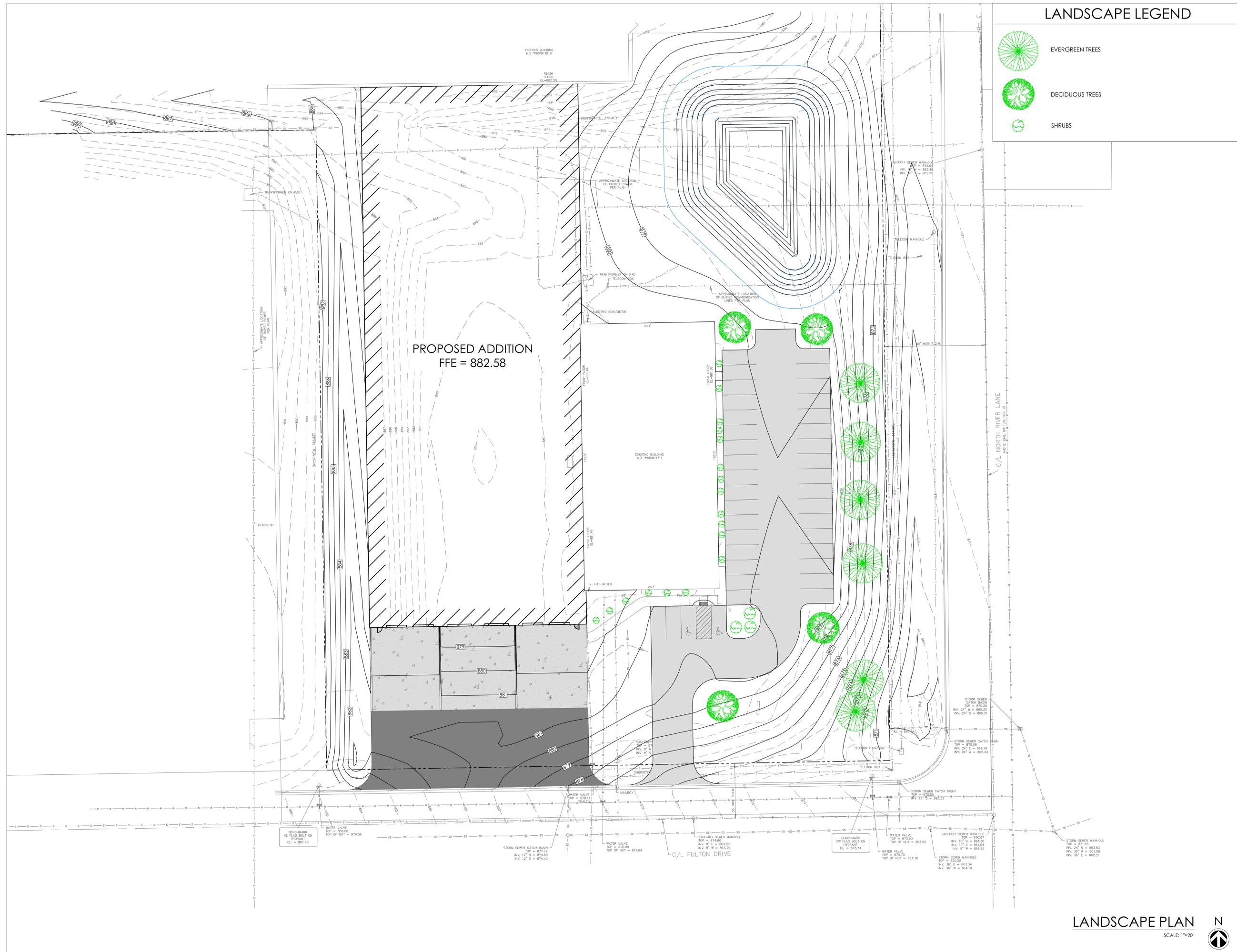
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205

PROJ. NO. 2024-100

ISSUE DATE: 02/09/2024  
NEW CONSTRUCTION/EXPANSION  
BASIC METALS II

BASIC METALS INC., WI 180N11819 N RIVER LN, GERMANTOWN, WI, 53022

1135A MICHIGAN AVE. SHEBOYGAN, WI 53081 | (920) 452-4444 | 6401 N VIL R. PHILLIPS AVE. SUITE 210 MILWAUKEE, WI 53203



### LANDSCAPE LEGEND

-  EVERGREEN TREES
-  DECIDUOUS TREES
-  SHRUBS



**ABACUS**  
ARCHITECTS

REVISIONS:

DATE	ISSUE

NOTICE TO BIDDERS  
BIDDERS SHALL REVIEW ALL DRAWINGS AND SPECIFICATION SECTIONS TO DETERMINE THE IMPACT OF OTHER SECTIONS OF WORK ON THEIR OWN WORK.  
© 2026 ABACUS ARCHITECTS, INC.

ISSUE DATE: 02/09/2026  
NEW CONSTRUCTION/EXPANSION  
**BASIC METALS II**  
BASIC METALS INC., W180N1181 N RIVER LN, GERMANTOWN, WI, 53022  
1135A MICHIGAN AVE, SHEBOYGAN, WI 53081 | (920) 452-4444 | 640' N VEL. R. PHILLIPS AVE. SUITE 210, MILWAUKEE, WI 53203

DRAWN BY: JMN  
CHECKED BY: JRV

LANDSCAPE PLAN

**A**  
**206**

PROJ. NO. 2024-100

LANDSCAPE PLAN  
SCALE: 1"=20'



REVISIONS:

DATE	ISSUE

NOTICE TO BIDDERS  
 BIDDERS SHALL REVIEW ALL DRAWINGS AND SPECIFICATION SECTIONS TO DETERMINE THE IMPACT OF OTHER SECTIONS OF WORK ON THEIR OWN WORK

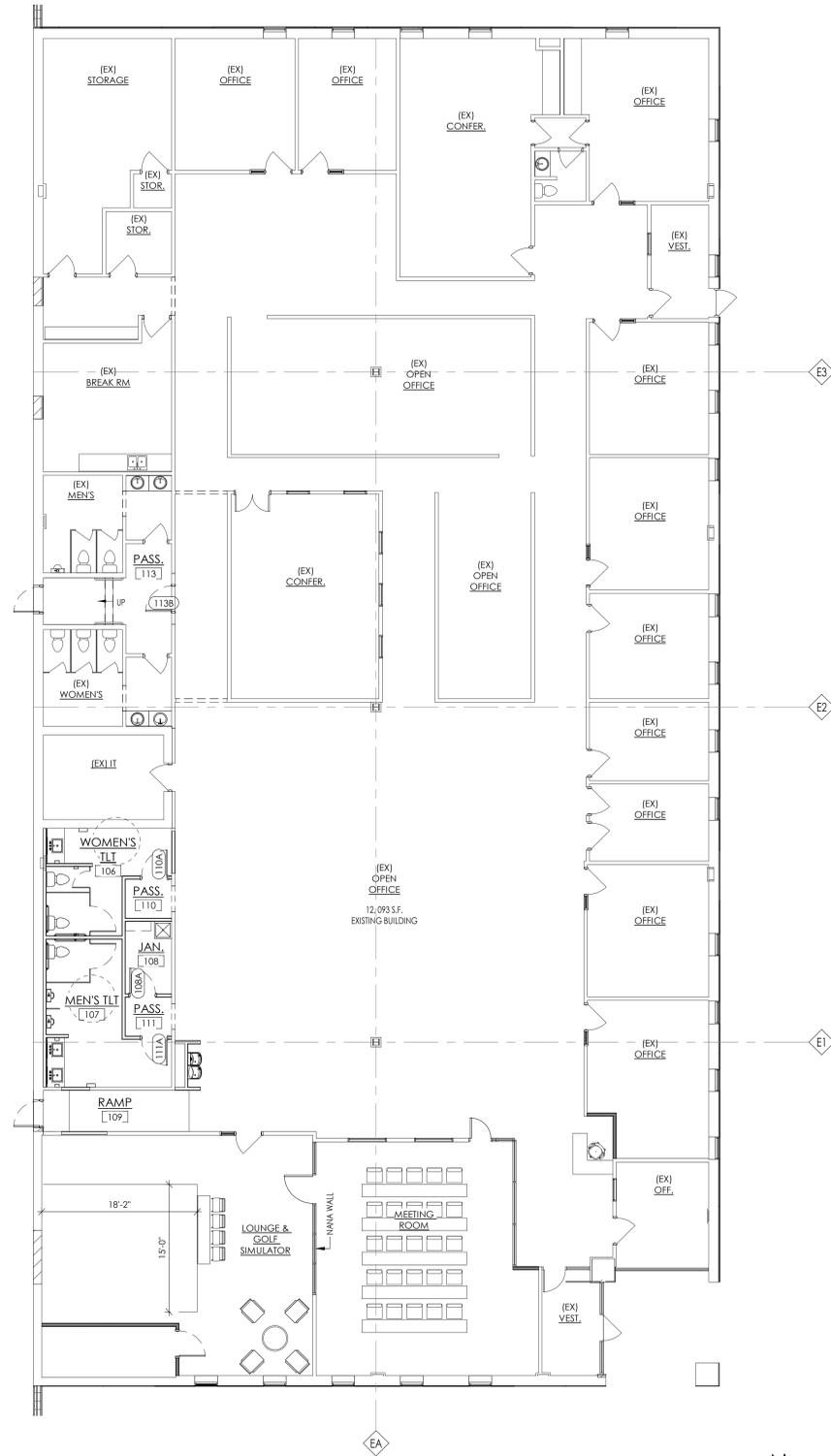
© 2024 ABACUS ARCHITECTS, INC.

GENERAL DEMOLITION PLAN NOTES

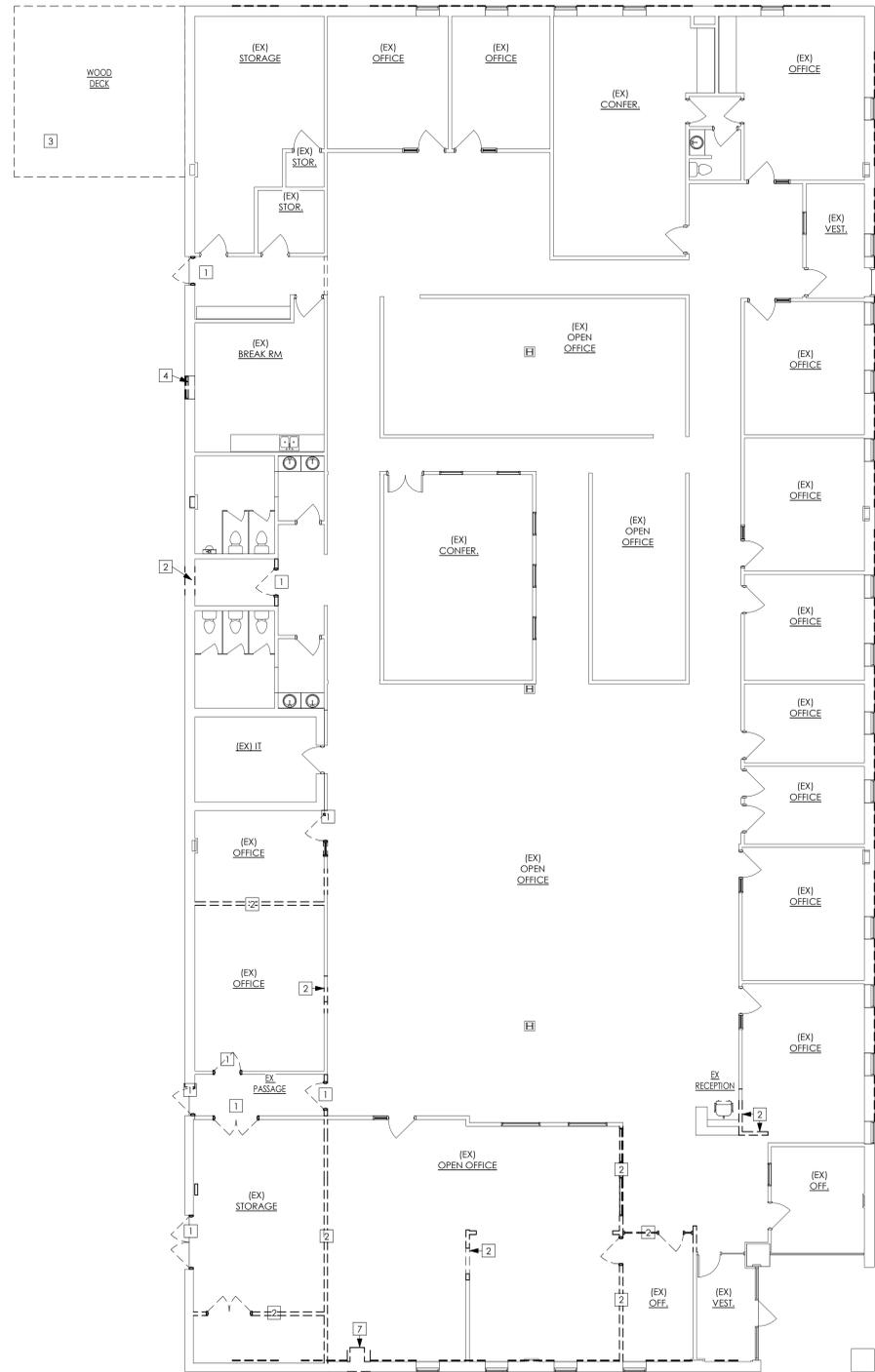
- GENERAL CONTRACTOR AND SUBCONTRACTORS TO VERIFY ALL FIELD CONDITIONS & DIMENSIONS.
- OWNER SHALL REMOVE ALL MOVABLE FURNISHINGS AND EQUIPMENT WHICH IS NOT MECHANICALLY FASTENED TO EXISTING PRIOR TO DEMOLITION PHASE. GENERAL CONTRACTOR SHALL COORDINATE WITH OWNER.
- WHERE ITEMS ARE TO BE REMOVED, PATCH & REPAIR ADJACENT SURFACES AS NECESSARY TO RECEIVE NEW FINISHES.
- DIMENSIONS SHOWING THE EXTENT OF REMOVAL ARE TO BE FIELD VERIFIED TO COORDINATE WITH NEW CONDITIONS.
- ALL EXISTING MATERIALS TO BE TURNED OVER TO OWNER.
- GENERAL CONTRACTOR TO CONFIRM EXTENT OF DEMOLITION/RENOVATION WITH ALL TRADES PRIOR TO BIDDING. DRAWINGS DO NOT SHOW EXTENT OF PLUMBING, HVAC, OR ELECTRICAL DESIGN INTENT.
- PATCH & REPAIR ALL EXISTING CONSTRUCTION TO REMAIN AS NECESSARY FOR NEW CONSTRUCTION.

DEMOLITION PLAN KEYNOTES

NO.	DESCRIPTION
1	REMOVE DOOR/OPENING TO REPLACE
2	REMOVE WALLS/SECTION OF WALL
3	REMOVE EXTERIOR DECK & SUPPORT STRUCTURE
4	REMOVE & INFILL WINDOW
5	REMOVE DOOR/OPENING AND INFILL
6	REMOVE WALLS/SECTION OF WALL FOR NEW DOOR
7	REMOVE SECTION OF WALL FOR NEW WINDOW



FLOOR PLAN 2  
 SCALE: 1/8" = 1'-0" A 302



DEMOLITION FLOOR PLAN 1  
 SCALE: 1/8" = 1'-0" A 302



ISSUE DATE: 02/09/2024

BUILDING ADDITION & ALTERATION

BASIC METALS II

BASIC METALS INC., W180N11819 N RIVER LN, GERMANTOWN, WI, 53022

1135A MICHIGAN AVE. SHEBOYGAN, WI 53081 | (720) 452-4444 | 640 V.L.R. PHILLIPS AVE. SUITE 210, MILWAUKEE, WI 53203

PRELIMINARY - NOT FOR CONSTRUCTION

DRAWN BY: BK/MSJ

CHECKED BY: KS

EXISTING DEMO & NEW FLOOR PLANS

A  
 302

PROJ. NO. 2024-100

**GENERAL PLAN NOTES**

- ALL LOOSE FURNISHINGS SHOWN ON PLANS ARE NOT IN CONTRACT AND ARE SHOWN FOR REFERENCE PURPOSES ONLY. ANY DEVICES OR EQUIPMENT TO BE LOCATED BASED UPON LOCATION OR CONFIGURATION OF LOOSE FURNISHINGS SHALL BE VERIFIED WITH THE OWNER PRIOR TO INSTALLATION.
- INTERIOR DIMENSIONS TAKEN FROM FACE OF STUD TO FACE OF STUD.

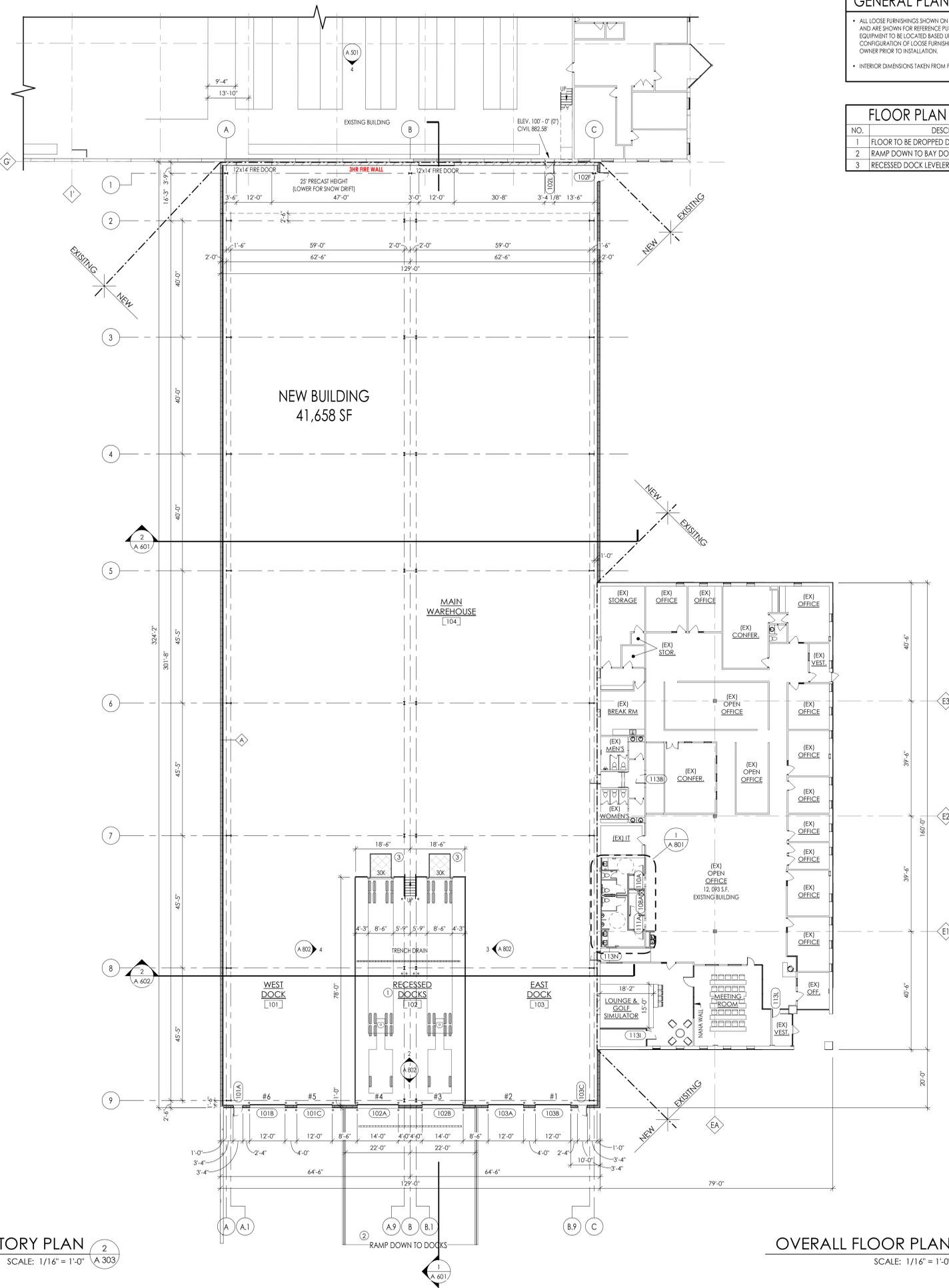
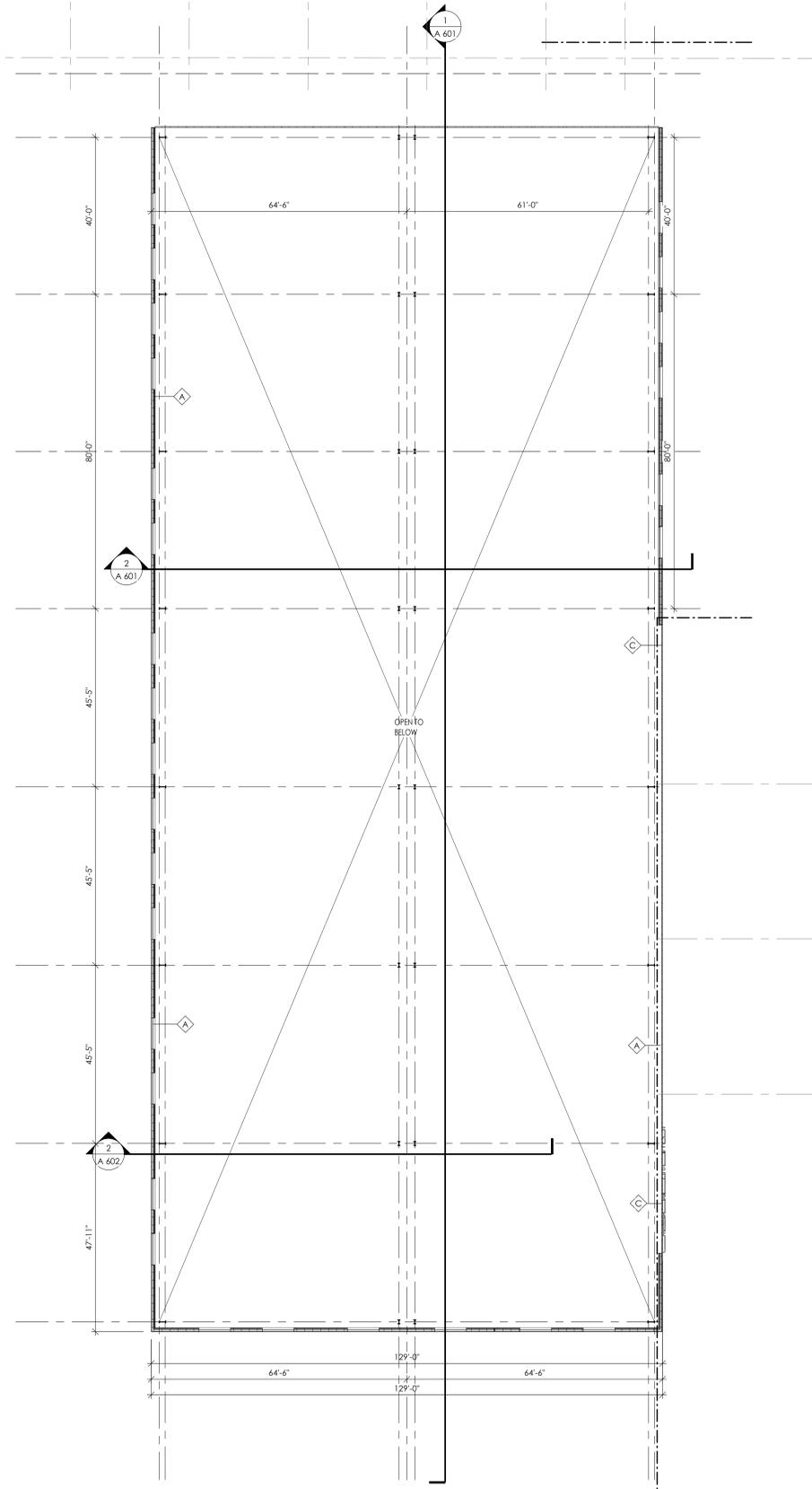
**FLOOR PLAN KEYNOTES**

NO.	DESCRIPTION
1	FLOOR TO BE DROPPED DOWN 4" OF REST OF FLOOR
2	RAMP DOWN TO BAY DOORS
3	RECESSED DOCK LEVELER AND DOCK BUMPERS

**REVISIONS:**

NO.	DATE	ISSUE

NOTICE TO BIDDERS  
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ISSUE DATE: 02/09/2024  
 BUILDING ADDITION & ALTERATION

**BASIC METALS II**

BASIC METALS INC., W180N11819 N RIVER LN, GERMANTOWN, WI, 53022  
 1135A MICHIGAN AVE. SHEBOYGAN, WI 53081 | (720) 452-4444 | 640 VEL R. PHILLIPS AVE. SUITE 210, MILWAUKEE, WI 53203

**PRELIMINARY - NOT FOR CONSTRUCTION**

DRAWN BY: MSJ/BK  
 CHECKED BY: KS

OVERALL FLOOR PLAN & CLERESTORY PLAN

**A**  
**303**

PROJ. NO. 2024-100

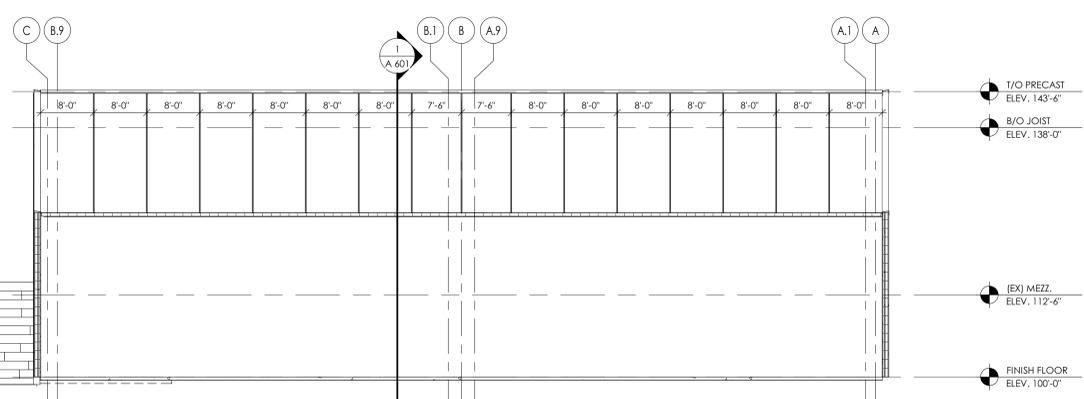


**GENERAL EXTERIOR ELEVATION NOTES**

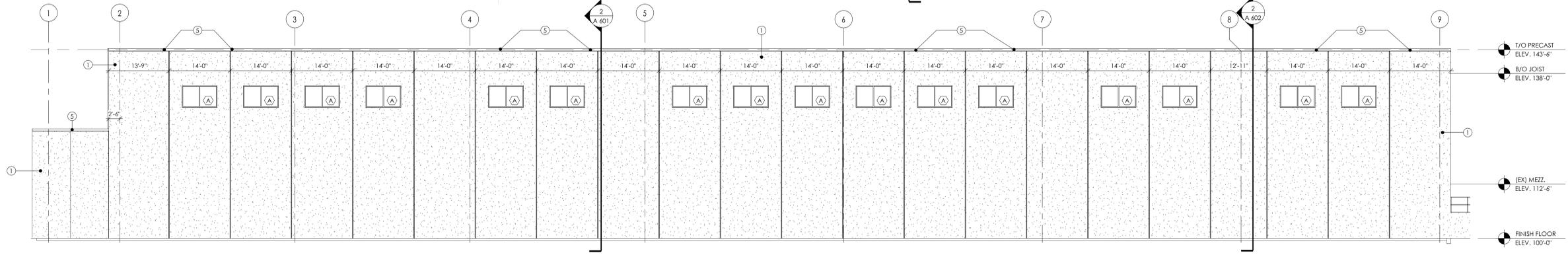
- ALL EXPOSED MISC. EXTERIOR STEEL SHALL BE PAINTED WITH PAINT FINISH E.1.
- MASONRY COURSING SHOWN FOR MATERIAL REPRESENTATION ONLY. ACTUAL COURSING MAY VARY.
- MASONRY CONTROL JOINTS SHALL BE LOCATED AT ALL MASONRY HEIGHT CHANGES, WINDOW OPENINGS, DOOR OPENINGS, 5' MAX. FROM BUILDING CORNERS, AND 25' MAX. AT CONTINUOUS WALL LOCATIONS.

**ELEVATION KEYNOTES**

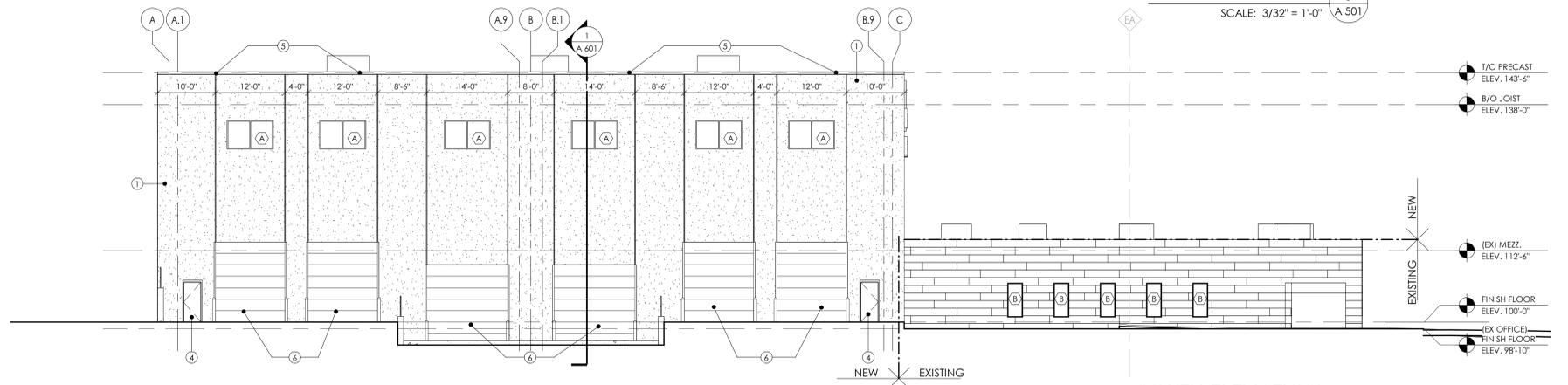
NO.	DESCRIPTION
1	PRECAST CONCRETE PANELS
2	INSULATED METAL PANEL
4	HOLLOW METAL DOOR AND FRAME
5	METAL PARAPET COPING
6	OVER HEAD DOOR WITH DOCK SEAL LEVELER, STOPS & VEHICLE RESTRAINT



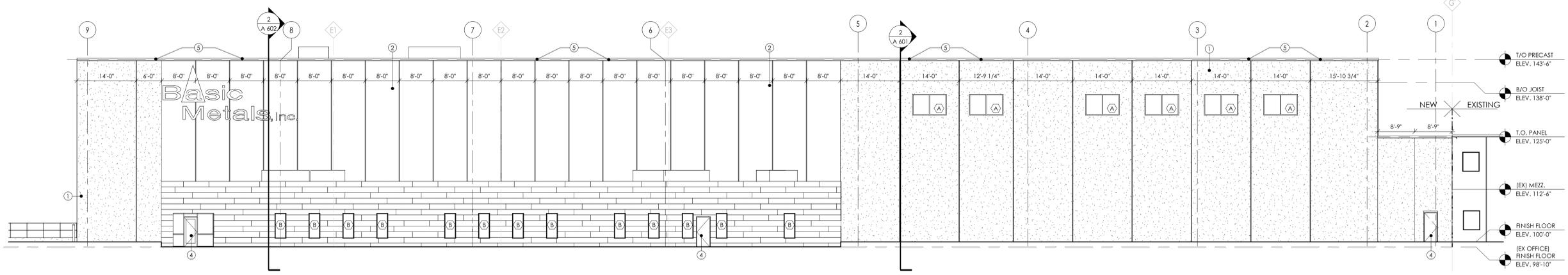
**NORTH ELEVATION**  
 SCALE: 3/32" = 1'-0"  
 A 501



**WEST ELEVATION**  
 SCALE: 3/32" = 1'-0"  
 A 501



**SOUTH ELEVATION**  
 SCALE: 3/32" = 1'-0"  
 A 501



**EAST ELEVATION**  
 SCALE: 3/32" = 1'-0"  
 A 501

ISSUE DATE: 02/09/2024  
 BUILDING ADDITION & ALTERATION

**BASIC METALS II**

BASIC METALS INC., W180N11819 N RIVER LN., GERMANTOWN, WI, 53022  
 1135A MICHIGAN AVE., SHEBOYGAN, WI 53081 | (720) 452-4444 | 640 VEL R. PHILLIPS AVE., SUITE 210, MILWAUKEE, WI 53203

**PRELIMINARY - NOT FOR CONSTRUCTION**

DRAWN BY: MSJ  
 CHECKED BY: KS

EXTERIOR ELEVATIONS

**A 501**

PROJ. NO. 2024-100



02/09/2026

## BASIC METALS II

BASIC METALS INC., W180N11819 N RIVER LN, GERMANTOWN, WI, 53022

A1 RENDERING

PROJ. NO. 2024-100



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REVISIONS:  
DATE  
ESSE

ISSUE TO OWNER:  
BIDDERS SHALL REVIEW ALL DRAWINGS AND SPECIFICATION SECTIONS TO DETERMINE THE IMPACT OF OTHER SECTIONS OF WORK ON THEIR OWN WORK.  
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ISSUE DATE: 12/10/2025  
NEW CONSTRUCTION/EXPANSION  
**BASIC METALS II**  
BASIC METALS INC., W180N11819 N RIVER LN, GERMAN TOWN, WI, 53022  
1135A MICHIGAN AVE, SHEBOYGAN, WI 53081 | (920) 452-4444 | 640 N VEL R, PHILIPS AVE, SUITE 210 MILWAUKEE, WI 53023

DRAWN BY: JMN

CHECKED BY: JRV

SITE PLAN

A

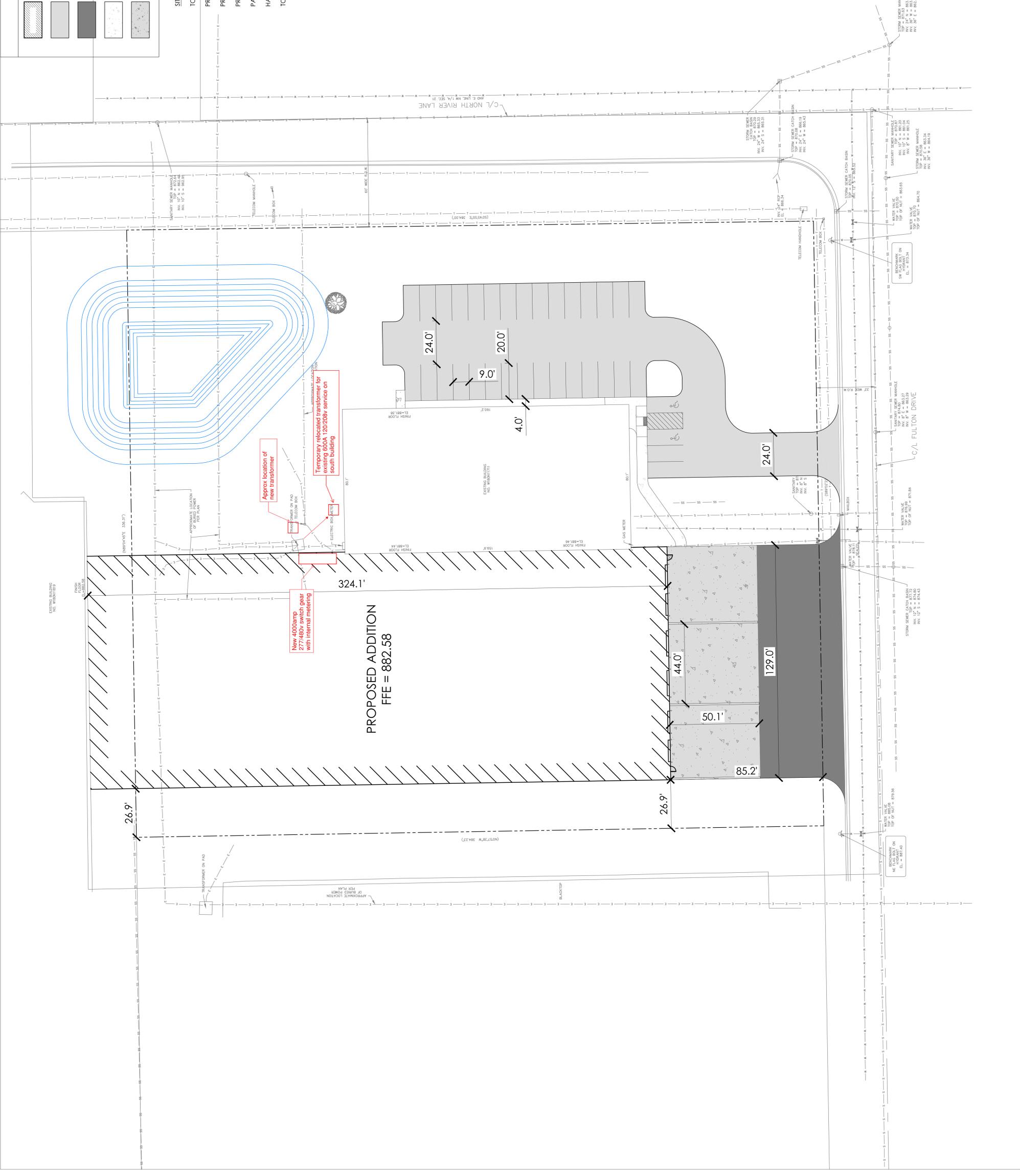
201

PROJ. NO. 2024-100

**SITE LEGEND**

- EXTENTS OF PROPOSED BUILDING. REFER TO ARCHITECTURAL DRAWINGS.
- PROPOSED LIGHT DUTY PAVEMENT HATCH. SEE DETAIL.
- PROPOSED HEAVY DUTY PAVEMENT HATCH. SEE DETAIL.
- PROPOSED LIGHT DUTY CONCRETE HATCH. SEE DETAIL.
- PROPOSED HEAVY DUTY CONCRETE HATCH. SEE DETAIL.

**SITE PROPERTIES**  
 TOTAL PROPERTY AREA: 128,811 SQFT (2.96 AC)  
 PROPOSED BUILDING AREA: 41,647 SQFT (0.96 AC)  
 PROPOSED ASPHALT AREA: 26,545 SQFT (0.61 AC)  
 PROPOSED CONCRETE AREA: 1,450 SQFT (0.04 AC)  
 PARKING SPACES: 32  
 HANDICAP SPACES: 2  
 TOTAL SPACES: 34

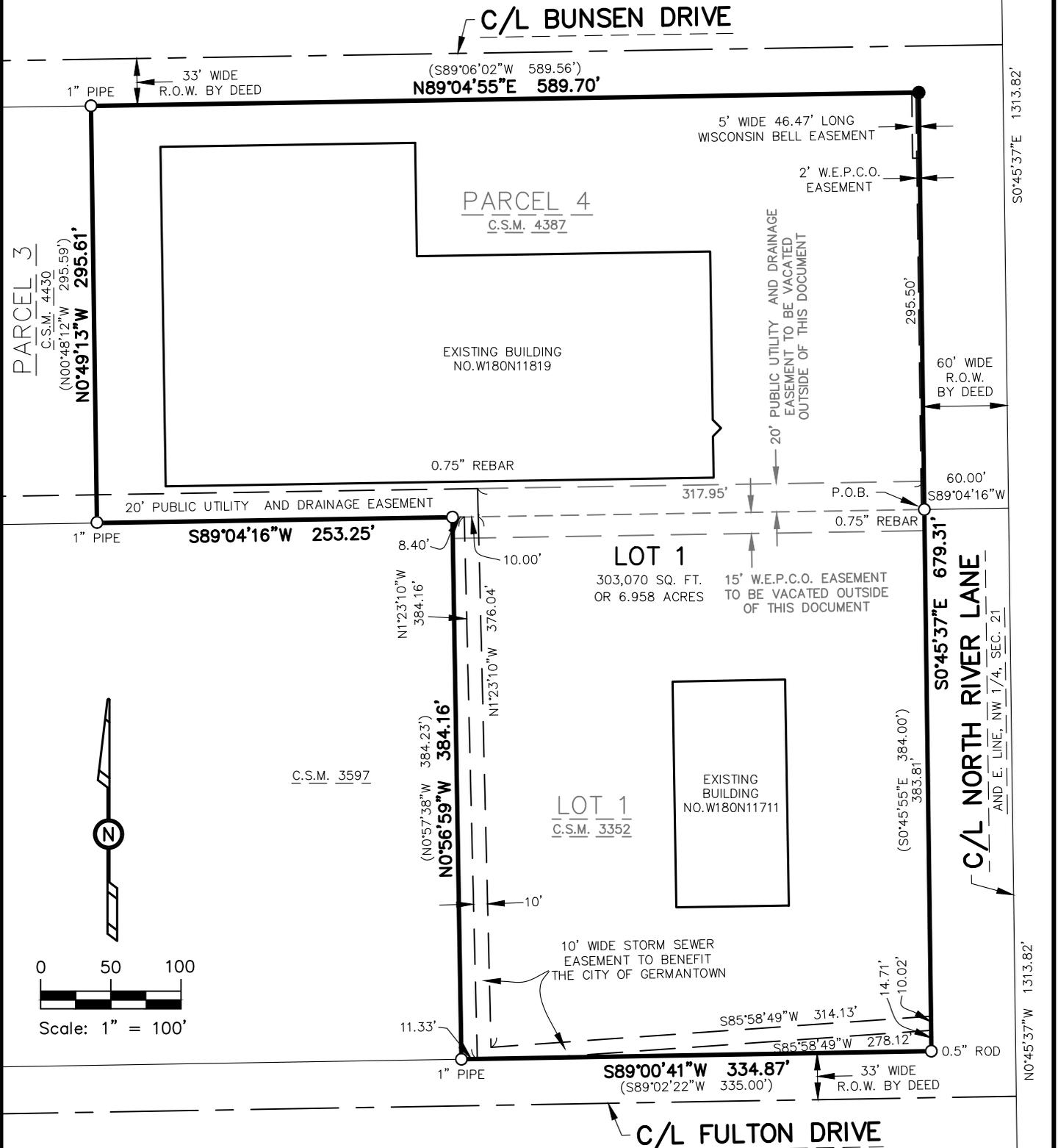


**SITE PLAN**  
SCALE: 1"=20'  
N

# CERTIFIED SURVEY MAP NO. \_\_\_\_\_

LOT 1 C.S.M. 3352 AND PARCEL 4 C.S.M. 4387, PART OF THE SE 1/4 OF THE NW 1/4 AND THE NE 1/4 OF THE NW 1/4 OF SECTION 21, T9N, R20E, VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WISCONSIN.

N. 1/4 COR.  
SEC. 21  
T9N, R20E



## LEGEND

- = County Monument
- = Iron Stake Found
- = 0.75" Iron Stake Set
- = Recorded Dimension

### NOTES:

OWNER AND SUBDIVIDER:  
DONTOF, LLC

BEARINGS ARE BASED ON THE EAST LINE OF THE NORTHWEST 1/4 OF SECTION 21, T9N, R20E, AS BEING S0°45'37"E PER THE WISCONSIN STATE PLANE COORDINATE SYSTEM GRID SOUTH ZONE.

**CEDAR CREEK CIVIL**  
ENGINEERS • SURVEYORS • DRAFTERS  
[www.cedarcreekcivil.com](http://www.cedarcreekcivil.com)

FILE No.: 2025190S      DATE: 1/14/2026      PAGE: 1 OF 3

**WISCONSIN**  
*Benjamin J. Reenders*  
BENJAMIN J. REENDERS  
S-3114  
OOSTBURG  
WIS.  
1/14/2026  
**LAND SURVEYOR**

This instrument was drafted by Benjamin J. Reenders.

# CERTIFIED SURVEY MAP NO. \_\_\_\_\_

LOT 1 C.S.M. 3352 AND PARCEL 4 C.S.M. 4387, PART OF THE SE 1/4  
OF THE NW 1/4 AND THE NE 1/4 OF THE NW 1/4 OF SECTION 21,  
T9N, R20E, VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WISCONSIN.

## SURVEYOR'S CERTIFICATE

I, Benjamin J. Reenders, Professional Land Surveyor, hereby certify:

That I have surveyed, divided and mapped Lot 1, Certified Survey Map Number 3352 and Parcel 4, Certified Survey Map Number 4387 being a part of the Southeast 1/4 of the Northwest 1/4 and the Northeast 1/4 of the Northwest 1/4 of Section 21, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin bounded and described as follows:

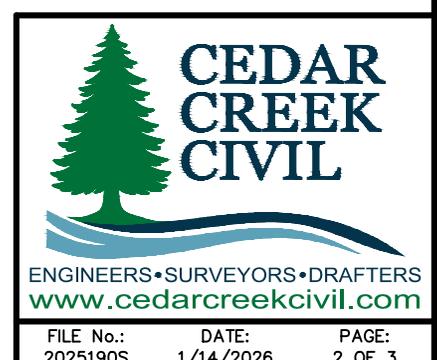
Commencing at the North 1/4 Corner of said Section 21; thence S0°45'37"E 1313.82 feet along the East line of said Northwest 1/4; thence S89°04'16"W 60.00 feet to the West right-of-way line of River Lane and the POINT OF BEGINNING of this description; thence S0°45'37"E 383.81 feet along said West right-of-way line; thence S89°00'41"W 334.87 feet along the North right-of-way line of Fulton Drive; thence N0°56'59"W 384.16 feet along the West line of said Lot 1; thence S89°04'16"W 253.25 feet along the South line of said Parcel 4; thence N0°49'13"W 295.61 feet along the West line of said Parcel 4; thence N89°04'55"E 589.70 feet along the South right-of-way line of Bunsen Drive; thence S0°45'37"E 295.50 feet along the West right-of-way line of River Lane to the point of beginning.

This parcel contains 303,070 square feet, or 6.958 acres.

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

That I have fully complied with provisions of Section 236.34 of the Wisconsin Statutes and the subdivision regulation of the Village of Germantown in surveying, dividing and mapping the same.

*Benjamin J. Reenders* Dated this 14th day of January, 2026  
Benjamin J. Reenders PLS S-3114



# CERTIFIED SURVEY MAP NO. \_\_\_\_\_

LOT 1 C.S.M. 3352 AND PARCEL 4 C.S.M. 4387, PART OF THE SE 1/4  
OF THE NW 1/4 AND THE NE 1/4 OF THE NW 1/4 OF SECTION 21,  
T9N, R20E, VILLAGE OF GERMANTOWN, WASHINGTON COUNTY, WISCONSIN.

## **CORPORATE OWNER'S CERTIFICATE**

DONTOF, LLC as Owner, does hereby certify they have caused the lands described herein to be surveyed, divided, mapped, and dedicated as represented on this map. DONTOF, LLC further certifies that this map is required by section 236.20 or 236.12 to be submitted to the following for approval or objection: Village of Germantown.

\_\_\_\_\_  
Managing Member

WITNESS the hand and seal of said Owner on this \_\_\_\_\_ day of \_\_\_\_\_ 2026.

STATE OF WISCONSIN )  
WASHINGTON COUNTY) ss

PERSONALLY came before me on this \_\_\_\_\_ day of \_\_\_\_\_, 2026  
The signer is to me known to be the person who executed the foregoing certificate and acknowledged the same.

\_\_\_\_\_  
Notary Public My Commission Expires \_\_\_\_\_

## **VILLAGE OF GERMANTOWN PLANNING COMMISSION APPROVAL**

APPROVED by the Village of Germantown Planning Commission on this \_\_\_\_\_ day of \_\_\_\_\_ 2026.

\_\_\_\_\_  
Planning Commission Chairperson

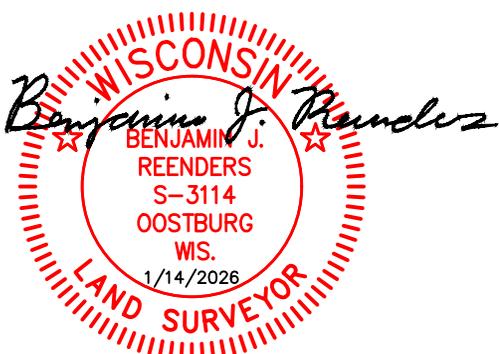
\_\_\_\_\_  
Planning Commission Secretary

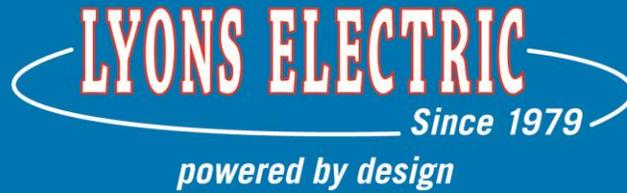
## **VILLAGE OF GERMANTOWN BOARD APPROVAL**

APPROVED by the Village of Germantown Village Board on this \_\_\_\_\_ day of \_\_\_\_\_ 2026.

\_\_\_\_\_  
Village President

\_\_\_\_\_  
Village Clerk





## ELECTRICAL LIGHTING SUBMITTAL

To: Kathryn Sullivan  
Attn: Moore Construction Services

Project: Basic Metals  
W180N11819 North River Lane  
Germantown, WI 53022

Submittal Number: (1)

Division: Electrical  
Specification Section: 26 51 00  
Description: Product Data – Site Lighting

LYONS ELECTRIC APPROVAL STAMP

**APPROVED**  
 APPROVED AS NOTED  
 REVISE & RESUBMIT

\*Please review and send this submittal back as product will not be ordered until submittal is APPROVED.\*

Date: February 5, 2026

By: *Kevin Konkel*  
Kevin Konkel  
Design/Estimating Department Manager  
Designer of Engineering Systems  
Certified Master Electrician  
TC Lyons Electric

75 Enterprise Rd.  
262-646-6828

Delafield, WI 53018  
262-646-6829

[www.lyons-electric.com](http://www.lyons-electric.com)

Type: OA  
 Project: Basic Metals  
 Catalog #: PRV-C25-840-D-UNV-T4-SA-BZ/RPSQ-20-4-11-AB-D1-NB



# Lumark

## Prevail LED

Area / Site Luminaire

### Product Features



### Interactive Menu

- Ordering Information page 2
- Mounting Details page 3, 4
- Optical Configurations page 5
- Product Specifications page 5
- Energy and Performance Data page 6, 7
- Control Options page 8

### Product Certifications



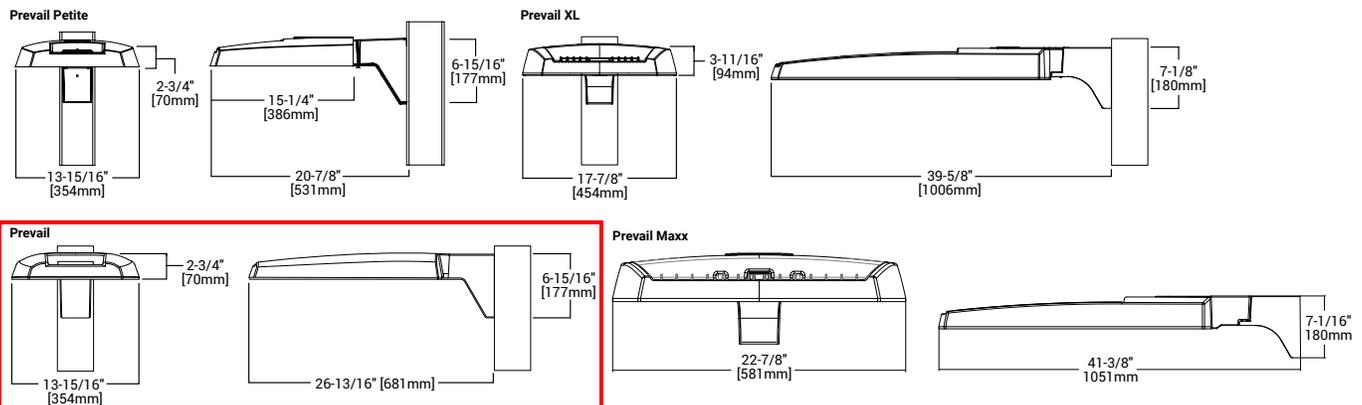
### Quick Facts

- Lumen packages range from 4,800 - 84,000 lumens (35W - 588W)
- Replaces 70W up to 1,000W HID equivalents
- Efficacies up to 160 lumens per watt
- Energy and maintenance savings up to 85% versus HID solutions
- Standard universal quick mount arm with universal drill pattern

### Connected Systems

- WaveLinx PRO Wireless
- WaveLinx LITE Wireless

### Dimensional Details



NOTES:  
 1. Visit <https://www.designlights.org/search/> to confirm qualification. Not all product variations are DLC qualified.  
 2. IDA Certified for 3000K CCT and warmer only.

Ordering Information

SAMPLE NUMBER: PRV-XL-C75-740-D-UNV-T4-SA-BZ

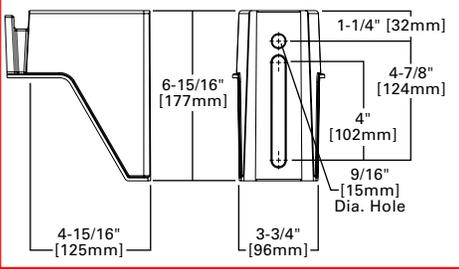
Product Family <sup>1,2</sup>	Light Engine <sup>4</sup>	Color Temperature	Driver	Voltage	Distribution	Mounting	Color
<b>PRV-P=Prevail Petite</b> <b>BAA-PRV-P=Prevail Petite BAA Compliant <sup>3</sup></b> <b>TAA-PRV-P=Prevail Petite TAA Compliant <sup>3</sup></b> <b>BABA-PRV-P=Prevail Petite BABA Build America Buy America Act Compliant <sup>30</sup></b>	<b>C10=(1 LED) 4,900 Nominal Lumens</b> <b>C15=(1 LED) 6,900 Nominal Lumens</b> <b>C20=(1 LED) 9,800 Nominal Lumens</b> <b>C25=(1 LED) 11,800 Nominal Lumens</b>	<b>740=70CRI, 4000K</b> <b>727=70CRI, 2700K</b> <b>730=70CRI, 3000K</b> <b>750=70CRI, 5000K</b> <b>8540=85CRI, 4000K</b>	<b>D=Dimming (0-10V)</b>	<b>UNV=Universal (120-277V)</b> <b>H=High Voltage, 347-480V</b> <b>8=480V <sup>5</sup></b> <b>9=347V</b> <b>DV=DuraVolt (277-480V) <sup>5,6</sup></b>	<b>T2=Type II</b> <b>T3=Type III</b> <b>T4=Type IV</b> <b>T5=Type V</b>	<b>SA=QM Standard Versatile Arm</b> <b>MA=QM Mast Arm</b> <b>WM=QM Wall Mount Arm</b> <b>ADJA-WM=Adjustable Arm-Wall Mount <sup>28</sup></b> <b>ADJA=Adjustable Arm-Pole Mount <sup>28</sup></b> <b>ADJS=Adjustable Arm-Slipfitter, 3" vertical tenon <sup>28</sup></b> <b>SP2=Adjustable Arm-Slipfitter, 2 3/8" vertical tenon <sup>28,29</sup></b>	<b>BZ=Bronze</b> <b>AP=Grey</b> <b>BK=Black</b> <b>DP=Dark Platinum</b> <b>GM=Graphite Metallic</b> <b>WH=White</b>
<b>PRV=Prevail</b> <b>BAA-PRV=Prevail BAA Compliant <sup>3</sup></b> <b>TAA-PRV=Prevail TAA Compliant <sup>3</sup></b> <b>BABA-PRV=Prevail BABA Build America Buy America Act Compliant <sup>30</sup></b>	<b>C15=(1 LED) 7,100 Nominal Lumens</b> <b>C25=(2 LEDs) 13,100 Nominal Lumens</b> <b>C40=(2 LEDs) 17,100 Nominal Lumens</b> <b>C60=(2 LEDs) 20,000 Nominal Lumens</b>						
<b>PRV-XL=Prevail XL</b> <b>BAA-PRV-XL=Prevail XL BAA Compliant <sup>3</sup></b> <b>TAA-PRV-XL=Prevail XL TAA Compliant <sup>3</sup></b> <b>BABA-PRV-XL=Prevail XL BABA Build America Buy America Act Compliant <sup>30</sup></b>	<b>C75=(4 LED) 26,100 Nominal Lumens</b> <b>C100=(4 LED) 31,000 Nominal Lumens</b> <b>C125=(4 LED) 36,000 Nominal Lumens</b> <b>C150=(6 LED) 41,100 Nominal Lumens</b> <b>C175=(6 LED) 48,600 Nominal Lumens</b>						
<b>PRV-M=Prevail Maxx</b> <b>BAA-PRV-M=Prevail Maxx BAA Compliant<sup>3</sup></b> <b>TAA-PRV-M=Prevail MaxxTAA Compliant <sup>3</sup></b> <b>BABA-PRV-M=Prevail Maxx BABA Build America Buy America Act Compliant <sup>30</sup></b>	<b>C200=(9 LED) 48,000 Nominal Lumens</b> <b>C225=(9 LED) 56,000 Nominal Lumens</b> <b>C250=(9 LED) 65,000 Nominal Lumens</b> <b>C275=(9 LED) 73,000 Nominal Lumens</b>						
Options (Add as Suffix)			Accessories (Order Separately) <sup>20,21</sup>				
<b>CC=Coastal Construction finish <sup>9</sup></b> <b>HSS=House Side Shield <sup>7</sup></b> <b>L90=Optics Rotated 90° Left</b> <b>R90=Optics Rotated 90° Right</b> <b>10K=10kV/10kA UL 1449 Fused Surge Protective Device</b> <b>20MSP=20kV MOV Surge Protective Device</b> <b>20K=20kV UL 1449 Fused Surge Protective Device</b> <b>HA=50°C High Ambient Temperature <sup>8</sup></b> <b>PR=NEMA 3-PIN Twistlock Photocontrol Receptacle <sup>10</sup></b> <b>PR7=NEMA 7-PIN Twistlock Photocontrol Receptacle <sup>10</sup></b> <b>FADC=Field Adjustable Dimming Controller <sup>29</sup></b> <b>MS/DIM-L08=Dimming Motion and Daylight Sensor, IR Remote Programmable, &lt; 8' Mounting Height <sup>11,12</sup></b> <b>MS/DIM-L20=Dimming Motion and Daylight Sensor, IR Remote Programmable, 8' - 20' Mounting Height <sup>11,12</sup></b> <b>MS/DIM-L40=Dimming Motion and Daylight Sensor, IR Remote Programmable, 21' - 40' Mounting <sup>11,12</sup></b>	<b>SPB1=Dimming Motion and Daylight Sensor, Bluetooth Programmable, &lt; 8' Mounting Height <sup>11,13</sup></b> <b>SPB2=Dimming Motion and Daylight Sensor, Bluetooth Programmable, 8' - 20' Mounting Height <sup>11,13</sup></b> <b>SPB4=Dimming Motion and Daylight Sensor, Bluetooth Programmable, 21' - 40' Mounting Height <sup>11,13,26,27</sup></b> <b>WPS2XX=WaveLinX Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 7' - 15' Mounting <sup>11,14,15,16</sup></b> <b>WPS4XX=WaveLinX Pro, SR Driver, Dimming Motion and Daylight, WAC Programmable, 15' - 40' Mounting <sup>11,14,15,16</sup></b> <b>WLS2XX=WaveLinX Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 7' - 15' Mounting <sup>11,14,15,16</sup></b> <b>WLS4XX=WaveLinX Lite, SR Driver, Dimming Motion and Daylight, Bluetooth Programmable, 15' - 40' Mounting <sup>11,14,15,16</sup></b>	<b>PRVSA-XX=Standard Arm Mounting Kit <sup>21</sup></b> <b>PRVMA-XX=Mast Arm Mounting Kit <sup>21</sup></b> <b>PRVWM-XX=Wall Mount Kit <sup>21</sup></b> <b>PRV-ADJA-XX=Adjustable Arm - Pole Mount Kit <sup>21</sup></b> <b>PRV-ADJS-XX=Adjustable Arm - Slipfitter Kit <sup>21</sup></b> <b>PRV-ADJA-WM-XX=Adjustable Arm - Wall Mount Kit <sup>21</sup></b> <b>PRVXLSA-XX=Standard Arm Mounting Kit <sup>27</sup></b> <b>PRVXLMA-XX=Mast Arm Mounting Kit <sup>27</sup></b> <b>PRVXLWM-XX=Wall Mount Kit <sup>27</sup></b> <b>PRV-XL-ADJA-XX=Adjustable Arm - Pole Mount Kit <sup>27</sup></b> <b>PRV-XL-ADJS-XX=Adjustable Arm - Slipfitter Kit <sup>27</sup></b> <b>PRV-XL-ADJA-WM-XX=Adjustable Arm - Wall Mount Kit <sup>27</sup></b> <b>PRV-M-ADJA-XX=Adjustable Arm - Pole Mount Kit <sup>26</sup></b> <b>PRV-M-ADJS-XX=Adjustable Arm - Slipfitter Kit <sup>26</sup></b> <b>PRV-M-ADJA-WM-XX=Adjustable Arm - Wall Mount Kit <sup>26</sup></b> <b>MA1010-XX=Single Tenon Adapter for 3-1/2" O.D. Tenon</b>	<b>MA1011-XX=2@180° Tenon Adapter for 3-1/2" O.D. Tenon</b> <b>MA1017-XX=Single Tenon Adapter for 2-3/8" O.D. Tenon</b> <b>MA1018-XX=2@180° Tenon Adapter for 2-3/8" O.D. Tenon</b> <b>SRA238=Tenon Adapter from 3" to 2-3/8"</b> <b>PRV/COB-FDV=Full Drop Visor <sup>22</sup></b> <b>PRVXL/COB-FDV=Full Drop Visor <sup>17</sup></b> <b>HS/VERD=House Side Shield Kit <sup>7,23</sup></b> <b>VGS-F/B=Vertical Glare Shield Kit, Front/Back <sup>23</sup></b> <b>VGS-SIDE=Vertical Glare Shield Kit, Side <sup>23</sup></b> <b>OA/RA1013=Photocontrol Shorting Cap</b> <b>OA/RA1014=NEMA Photocontrol - 120V</b> <b>OA/RA1016=NEMA Photocontrol - Multi-Tap 105-285V</b> <b>OA/RA1201=NEMA Photocontrol - 347V</b> <b>OA/RA1027=NEMA Photocontrol - 480V</b> <b>FSIR-100=Wireless Configuration Tool for Occupancy Sensor <sup>24</sup></b> <b>WOLC-7P-10A=WaveLinX Outdoor Control Module (7-PIN) <sup>25</sup></b>				
<b>NOTES:</b> 1. DesignLights Consortium® Qualified. Refer to <a href="http://www.designlights.org">www.designlights.org</a> Qualified Products List under Family Models for details. 2. Customer is responsible for engineering analysis to confirm pole and fixture compatibility for all applications. Refer to installation instructions IB500002EN and pole white paper WP513001EN for additional support information. 3. Only product configurations with these designated prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or Trade Agreements Act of 1979 (TAA), respectively. Please refer to <a href="http://www.designlights.org">DOMESTIC PREFERENCES</a> website for more information. Components shipped separately may be separately analyzed under domestic preference requirements. 4. Standard 4000K CCT and 70CRI. 5. 480V not to be used with ungrounded or impedance grounded systems. 6. DuraVolt drivers feature added protection from power quality issues such as loss of neutral, transients and voltage fluctuations. Visit <a href="http://www.signify.com/duravolt">www.signify.com/duravolt</a> for more information. 7. House Side Shield not suitable with T5 distribution. Not available with PRV-C60 lumen package. 8. Not available with PRV-C60 lumen package. Not available with PRV-P-C25 lumen package. 9. Coastal construction finish salt spray tested to over 5,000-hours per ASTM B117, with a scribe rating of 9 per ASTM D1654. 10. If DuraVolt (DV) is specified, use a photocontrol that matches the input voltage used. 11. Controls system is not available in combination with a photocontrol receptacle (PR & PER7) or another controls system (MS or SPB). Option not available with DuraVolt (DV) voltage option. 12. Utilizes the Wattstopper sensor FSP-211. Sensor color white unless specified otherwise via PDR. To field-configure, order FSIR-100 accessory separately. 13. Utilizes the Wattstopper sensor FSP-3XX series. Sensor color determined by product finish. See Sensor Color Reference Table. Field-configures via mobile application. See Controls section for details. 14. Sensor passive infrared (PIR) may be overly sensitive when operating below -20°C (-4°F). 15. For the device to be field-configurable, requires WAC Gateway components WAC-PoE and WPOE-120 in appropriate quantities. Only compatible with WaveLinX system and software and requires system components to be installed for operation. See website for more WaveLinX application information. 16. Replace XX with sensor color (WH, BZ, or BK). 17. Only available in PRV-XL configurations C75, C100, C125, C150, or C175. 18. Not available with 347V, 480V, DV, or HA options. 19. Replace XX with paint color. 20. For BAA or TAA requirements, Accessories sold separately will be separately analyzed under domestic preference requirements. Consult factory for further information. 21. Not for use with PRV-XL or PRV-M configurations. 22. Only for use with PRV. Not applicable to PRV-M, PRV-XL, or PRV-P. 23. Must order one per optic/LED when ordering as a field-installable accessory (1, 2, 4, 6 or 9). 24. This tool enables adjustment to Motion Sensor (MS) parameters including high and low modes, sensitivity, time delay, cutoff and more. Consult your lighting representative for more information. 25. Requires 7-PIN NEMA twistlock photocontrol receptacle (PR & PER7) option. The WOLC-7 cannot be used in conjunction with other controls systems (MS or LWR). Operates on 120-347V input voltages. 26. Only for use with PRV-M configurations. 27. Only for use with PRV-XL configurations. 28. Fixed for PRV-M. 29. Cannot be used with PR7 or other motion response control options 30. Only product configurations with these prefixes are built to be compliant with the Buy American Act of 1933 (BAA) or the Build America Buy America Act (BABA). BABA is the minimum Government compliance requirement for the Build America Buy America standards which is part of the Infrastructure and Investment Jobs Act (IIJA). Individual Government Agencies may have more stringent compliance standards. Please refer to the <a href="http://www.designlights.org">DOMESTIC PREFERENCES</a> website or consult the CLS Domestic Preferences team for more information. Components shipped separately may be separately analyzed under domestic preference requirements.							

Stock Ordering Information

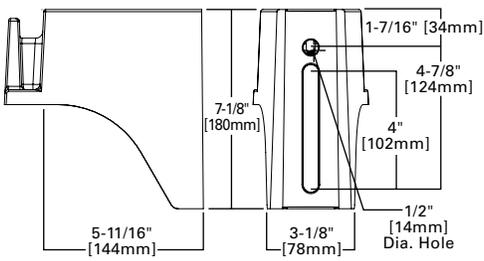
Product Family <sup>1</sup>	Light Engine	Voltage	Distribution
<b>PRVS=Prevail</b>	<b>C15=(1 LED) 7,100 Nominal Lumens</b> <b>C25=(2 LEDs) 13,100 Nominal Lumens</b> <b>C40=(2 LEDs) 17,100 Nominal Lumens</b> <b>C60=(2 LEDs) 20,000 Nominal Lumens</b>	<b>UNV=Universal (120-277V)</b> <b>347=347V <sup>2</sup></b>	<b>T3=Type III</b> <b>T4=Type IV</b>
<b>PRVS-XL=Prevail XL</b>	<b>C75=(4 LED) 26,100 Nominal Lumens</b> <b>C100=(4 LED) 31,000 Nominal Lumens</b> <b>C125=(4 LED) 36,000 Nominal Lumens</b> <b>C150=(6 LED) 41,100 Nominal Lumens</b> <b>C175=(6 LED) 48,600 Nominal Lumens</b>		
<b>NOTES:</b> 1. All stock configurations are standard 4000K/70CRI, bronze finish, and include the standard versatile mounting arm. 2. Only available in PRVS configurations C15, C25, C40 or C60.			

Mounting Details

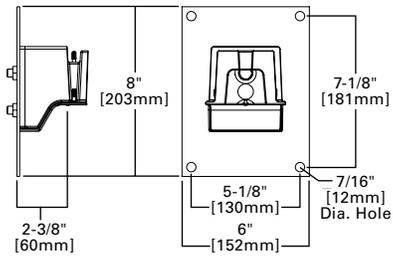
SA=QM Pole Mount Arm (PRV & PRV-P)



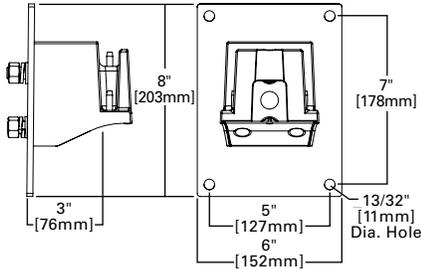
SA=QM Pole Mount Arm (PRV-XL)



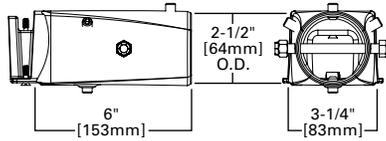
WM=QM Wall Mount Arm (PRV & PRV-P)



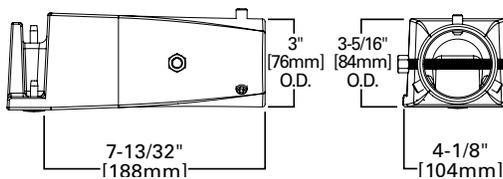
WM=QM Wall Mount Arm (PRV-XL)



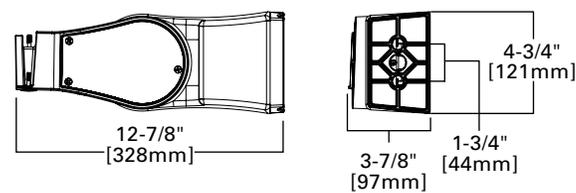
MA=QM Mast Arm (PRV & PRV-P)



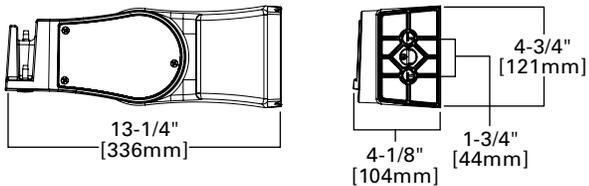
MA=QM Mast Arm (PRV-XL)



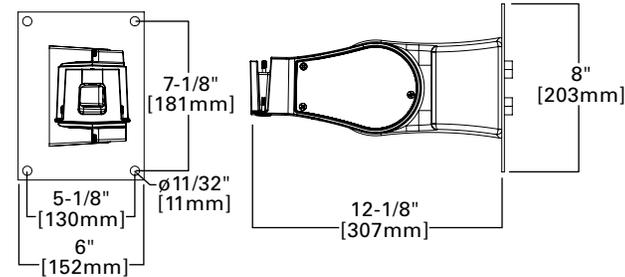
ADJA=Adjustable Arm Pole Mount (PRV & PRV-P)



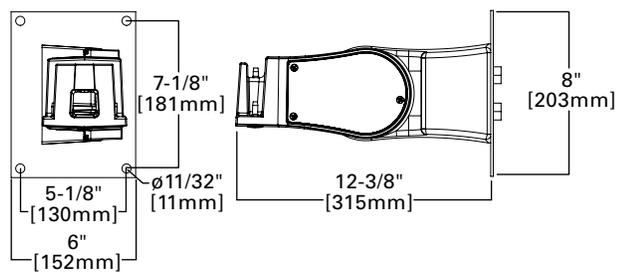
ADJA=Adjustable Arm Pole Mount (PRV-XL)



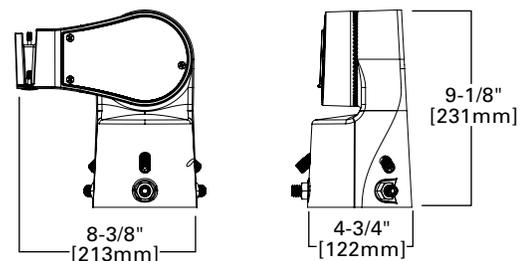
ADJA-WM=Adjustable Arm Wall Mount (PRV & PRV-P)



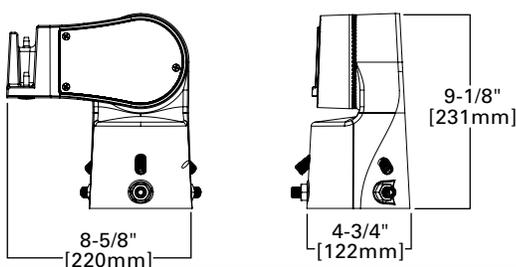
ADJA-WM=Adjustable Arm Wall Mount (PRV-XL)



ADJS=Adjustable Slipfitter 3 (PRV & PRV-P)

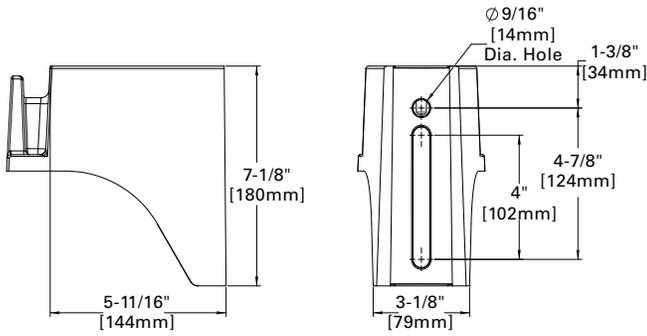


ADJS=Adjustable Slipfitter 3 (PRV-XL)

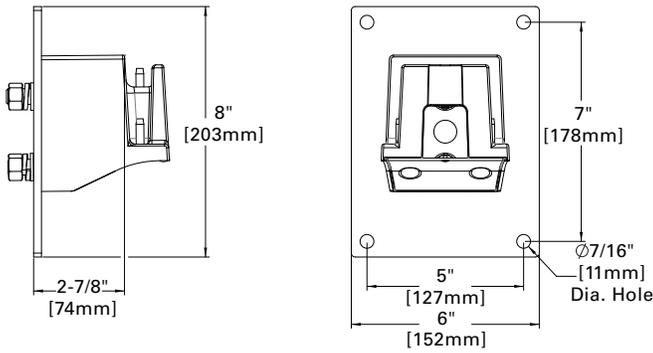


Mounting Details

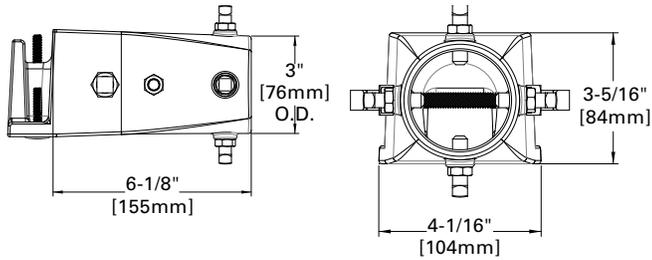
SA=QM Pole Mount Arm (PRV-M)



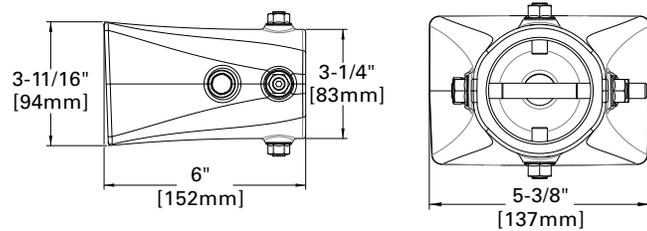
WM=QM Wall Mount Arm (PRV-M)



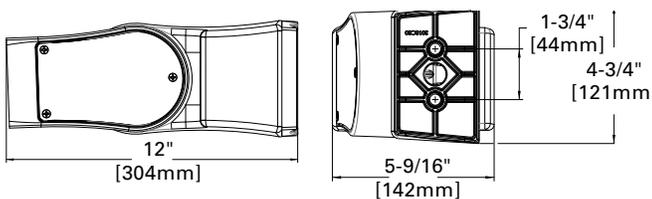
MA=QM Mast Arm (PRV-M)



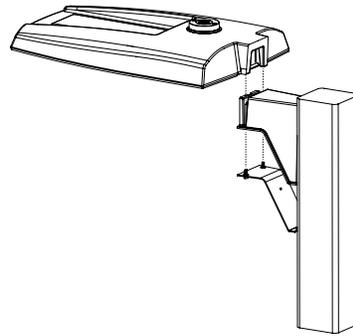
FMA=Fixed Mast Arm (PRV-M)



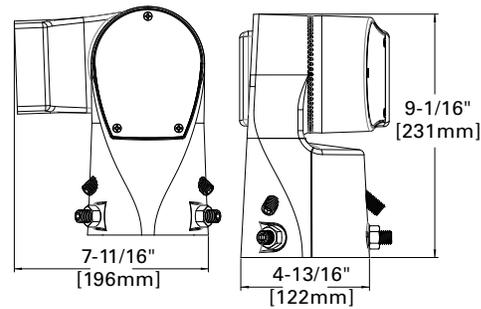
DM=Direct Pole Mount Arm (PRV-M)



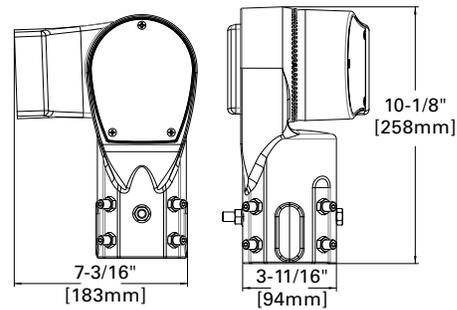
Versatile Mount System



ADJS=Adjustable Slipfitter (PRV-M)

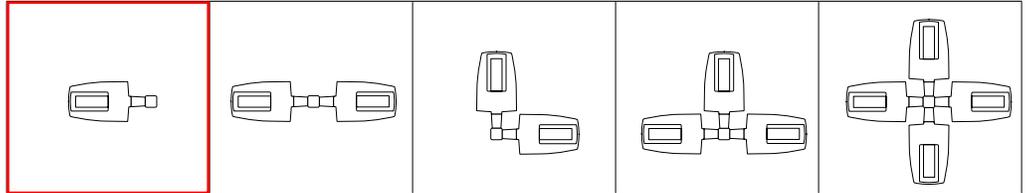


SP2=Adjustable Slipfitter 2-3/8\" (PRV-M)



## Mounting Details

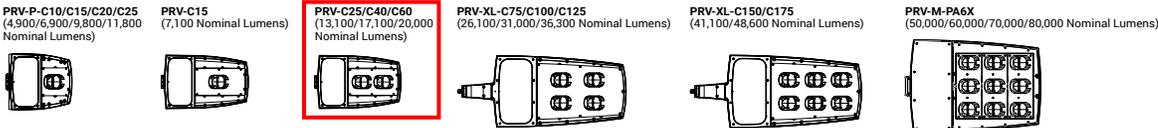
### Mounting Configurations and EPAs



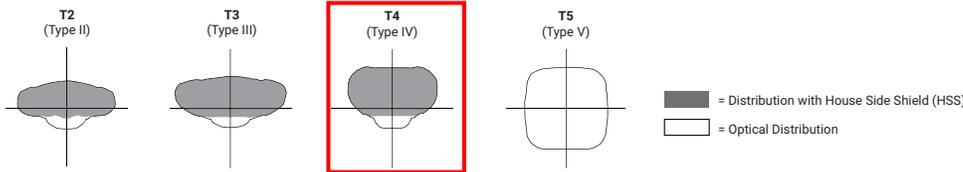
Housing Size	Tilt Angle (Degrees)	Arm Mount Single	Arm Mount 2 @ 180°	Arm Mount 2 @ 90°	Arm Mount 3 @ 90°	Arm Mount 4 @ 90°
Prevail Petite	0°	0.54	1.08	0.84	1.38	1.38
	60°	1.68	1.85	2.42	3.15	3.30
Prevail	0°	0.92	1.35	1.42	1.63	1.63
	60°	2.20	2.40	3.05	3.88	4.07
	60° + Full Drop Visor	2.20	2.40	3.25	4.28	4.47
Prevail XL	0°	1.12	2.25	2.13	2.52	2.52
	60°	3.99	4.30	5.26	6.51	6.79
	60° + Full Drop Visor	3.99	4.30	5.59	7.17	7.49
Prevail Maxx	0°	1.28	2.56	1.7	2.69	2.69
	60°	5.09	5.52	6.34	7.49	7.81

**NOTE:** For 2 PRV's mounted at 90°, requires minimum 3" square or 4" round pole for fixture clearance. For 2 PRV-XL's mounted at 90°, requires minimum 4" square or round pole for fixture clearance. Customer is responsible for engineering analysis to confirm pole and fixture compatibility for applications.

## Optical Configurations



### Optical Distributions



## Product Specifications

### Optics

- Precision molded polycarbonate optics

### Electrical

- 40°C minimum operating temperature
- 40°C maximum operating temperature
- >.9 power factor
- <20% total harmonic distortion
- Class 1 electronic drivers have expected life of 100,000 hours with <1% failure rate
- 0-10V dimming driver is standard with leads external to the fixture
- Standard MOV surge protective device designed to withstand 10kV of transient line surge

### Physical Characteristics

- Single-piece die-cast aluminum housing
- Tethered die-cast aluminum door
- Five-stage super TGIC polyester powder coat paint, 2.5 mil nominal thickness
- Finish is compliant to 3,000 hour salt spray standard (per ASTM B117)
- Versatile, patented, standard mount arm accommodates multiple drill patterns ranging from 1-1/2" to 4-7/8" (Type M drilling recommended for new installations)
- A knock-out on the standard mounting arm enables round pole mounting
- Adjustable pole and wall mount arms adjust in 5° increments from 0° to 60°; Downward facing orientation only (Type N drilling required for ADJA mount)
- Adjustable slipfitter arm adjusts in 5° increments from -5° to 85°; Downward facing orientation only

### Controls

- Luminaire available with the field adjustable dimming controller (FADC) to manually adjust wattage and reduce the total lumen output and light levels; Comes pre-set to the highest position at the lumen output selected

### Compliance

- DarkSky approved for 3000K CCT and warmer, with mounting options less than 10° of tilt.
- DLC and DLC Premium listed – visit [designlights.org](http://designlights.org) to confirm listed variations
- Prevail and Prevail Petite: 3G vibration rated
- Prevail XL Mast Arm: 3G vibration rated
- Prevail XL Standard Arm: 1.5G vibration rated
- Adjustable Arms: 1.5G vibration rated
- BAA domestic preference option meets BAA requirements. See [DOMESTIC.PREFERENCES](http://DOMESTIC.PREFERENCES) website or consult the CLS Domestic Preferences team for more information
- FHWA and FTA agencies are utilizing their BAA rules for BABA compliance. Cooper's products with a BAA designation are manufactured in the US and utilize a BAA COTS exemption rule for compliance. To verify a configured product with specific accessories and options meet BABA Domestic Preference Requirements; submit this catalog number to Cooper Lighting Quotation team for validation by our Engineering and Manufacturing teams. Please refer to the [DOMESTIC.PREFERENCES](http://DOMESTIC.PREFERENCES) website or consult the CLS Domestic Preferences team for more information. Components shipped separately may be separately analyzed under domestic preference requirements.

### Typical Applications

- Parking lots
- Walkways
- Roadways
- Building Areas

### Shipping Data

- Prevail Petite: 18 lbs. (7.94 kgs.)
- Prevail: 20 lbs. (9.09 kgs.)
- Prevail XL: 45 lbs. (20.41 kgs.)
- Prevail Maxx: 49 lbs. (22.23 kgs.)

### Warranty

- Five year limited warranty, consult website for details. [www.cooperlighting.com/legal](http://www.cooperlighting.com/legal)

Energy and Performance Data

[View PRV-P IES files](#)

[View PRV IES files](#)

[View PRV-XL IES files](#)

Power and Lumens

Product Family	Prevail Petite				Prevail				Prevail XL				Prevail Maxx					
Light Engine	C10	C15	C20	C25	C15	C25	C40	C60	C75	C100	C125	C150	C175	C200	C225	C250	C275	
Power (Watts)	35	49	73	94	52	96	131	153	176	217	264	285	346	346	418	487	588	
Input Current @ 120V (A)	0.29	0.41	0.61	0.79	0.43	0.80	1.09	1.32	1.50	1.84	2.21	2.38	2.92	2.89	3.49	4.06	4.90	
Input Current @ 277V (A)	0.13	0.18	0.27	0.35	0.19	0.35	0.48	0.57	0.66	0.82	0.97	1.04	1.25	1.26	1.51	1.72	2.06	
Input Current @ 347V (A)	0.11	0.16	0.23	0.29	0.17	0.30	0.41	0.48	0.54	0.66	0.79	0.84	1.02	1.00	1.21	1.40	1.70	
Input Current @ 480V (A)	0.08	0.12	0.17	0.22	0.12	0.22	0.30	0.35	0.40	0.48	0.57	0.62	0.74	0.73	0.88	1.00	1.21	
Distribution <sup>1</sup>																		
Type II	4000K Lumens	4,775	6,717	9,542	11,521	7,123	13,205	17,172	20,083	26,263	31,231	36,503	41,349	48,876	50,349	59,444	68,447	79,322
	BUG Rating	B1-U0-G1	B1-U0-G1	B2-U0-G2	B2-U0-G2	B2-U0-G2	B2-U0-G2	B3-U0-G3	B3-U0-G3	B3-U0-G3	B3-U0-G4	B4-U0-G4	B4-U0-G4	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B5-U0-G5
	Lumens per Watt	138	137	131	122	137	138	131	131	149	144	138	145	141	146	142	141	135
	3000K Lumens <sup>1</sup>	4,869	6,595	9,369	11,312	6,994	12,965	16,860	19,718	25,786	30,664	35,840	40,598	47,989	49,437	58,368	67,208	77,886
Type III	4000K Lumens	4,782	6,727	9,556	11,538	7,111	13,183	17,144	20,050	26,120	31,061	36,304	41,124	48,610	50,162	59,223	68,193	79,027
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B1-U0-G2	B2-U0-G3	B3-U0-G4	B3-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	138	137	131	123	137	137	131	131	148	143	138	144	140	145	142	140	135
	3000K Lumens <sup>1</sup>	4,695	6,605	9,383	11,329	6,982	12,944	16,832	19,686	25,646	30,497	35,645	40,377	47,727	49,254	58,151	66,958	77,596
Type IV	4000K Lumens	4,880	6,865	9,752	11,774	7,088	13,140	17,087	19,984	26,098	31,035	36,274	41,089	48,569	50,575	59,711	68,754	79,678
	BUG Rating	B1-U0-G2	B1-U0-G2	B2-U0-G3	B2-U0-G3	B1-U0-G3	B2-U0-G4	B2-U0-G4	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B3-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B4-U0-G5	B5-U0-G5
	Lumens per Watt	141	140	134	125	136	137	130	131	148	143	137	144	140	146	143	141	136
	3000K Lumens <sup>1</sup>	4,792	6,740	9,575	11,561	6,959	12,901	16,777	19,621	25,624	30,471	35,615	40,343	47,687	49,659	58,630	67,510	78,235
Type V	4000K Lumens	5,067	7,128	10,126	12,226	7,576	14,045	18,264	21,360	28,129	33,450	39,097	44,287	52,349	53,531	63,201	72,773	84,335
	BUG Rating	B3-U0-G2	B3-U0-G2	B4-U0-G3	B4-U0-G3	B3-U0-G3	B4-U0-G3	B4-U0-G4	B5-U0-G4	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5	B5-U0-G5
	Lumens per Watt	146	145	139	130	146	146	139	140	160	154	148	155	151	155	151	150	144
	3000K Lumens <sup>1</sup>	4,975	6,999	9,942	12,004	7,438	13,790	17,932	20,972	27,618	32,843	38,387	43,483	51,398	52,562	62,057	71,455	82,808

NOTES:  
1. For 3000K, 5000K or HSS data, refer to published IES files.

**Lumen Maintenance**

Configuration	TM-21 Lumen Maintenance (50,000 Hours)	Theoretical L70 (Hours)
Prevail and Prevail Petite at 25°C	91.30%	> 194,000
Prevail and Prevail Petite at 40°C	87.59%	> 134,000
Prevail XL at 25°C	91.40%	> 204,000
Prevail XL at 40°C	89.41%	> 158,000
Prevail Maxx at 25°C	91.40%	> 204,000
Prevail Maxx at 40°C	89.41%	> 158,000

**Lumen Multiplier**

Ambient Temperature	Lumen Multiplier
10°C	1.02
15°C	1.01
25°C	1.00
40°C	0.99

**FADC Settings**

FADC Position	Lumen Multiplier
1	25%
2	46%
3	55%
4	62%
5	72%
6	77%
7	82%
8	85%
9	90%
10	100%

Note: +/-5% typical value

**Sensor Color Reference Table (SPBx)**

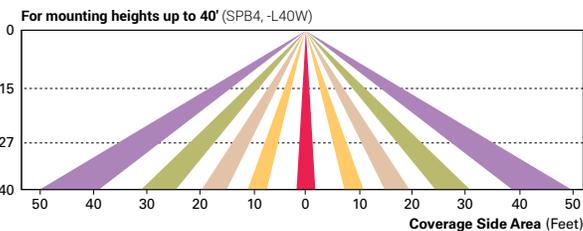
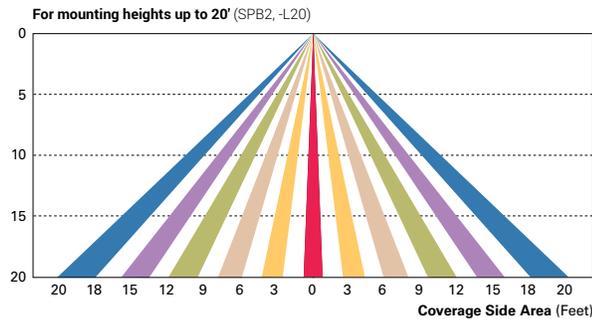
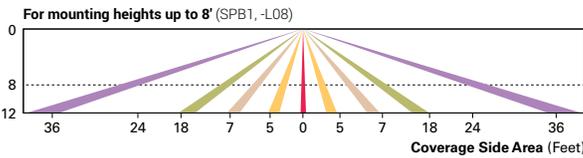
Housing Finish	Sensor Color
AP=Grey	Grey
BZ=Bronze	Bronze
BK=Black	Black
DP=Dark Platinum	Grey
GM=Graphite Metallic	Black
WH=White	White

**Control Options**

**0-10V** This fixture provides 0-10V dimming wire leads for use with a lighting control panel or other control method.

**Photocontrol** (PR and PR7) Photocontrol receptacles provide a flexible solution to enable “dusk-to-dawn” lighting by sensing light levels. Advanced control systems compatible with NEMA 7-PIN standards can be utilized with the PR7 receptacles.

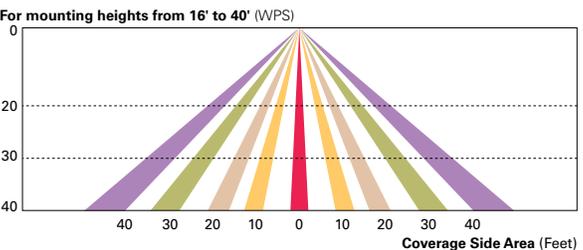
**Dimming Occupancy Sensor** (SPB, MS/DIM-LXX) These sensors are factory installed in the luminaire housing. When the SPB or MS/DIM sensor options are selected, the luminaire will dim down after five minutes of no activity detected. When activity is detected, the luminaire returns to full light output. These occupancy sensors include an integral photocell for “dusk-to-dawn” control or “daylight harvesting.” Factory default is enabled for the MS sensors and disabled for the SPB. SPB motion sensors require the Sensor Configuration mobile application by Wattstopper to change factory default dimming level, time delay, sensitivity and other parameters. Available for iOS and Android devices. The SPB sensor is factory preset to dim down to approximately 10% power with a time delay of five minutes.



**WaveLinx Wireless Control and Monitoring System** Available in 7-PIN or 4-PIN configurations, the WaveLinx Outdoor control platform operates on a wireless mesh network based on IEEE 802.15.4 standards enabling wireless control of outdoor lighting. At least one Wireless Area Controller (WAC) is required for full functionality and remote communication (including adjustment of any factory pre-sets).

**WaveLinx Outdoor Control Module (WOLC-7P-10A)** A photocontrol that enables astronomical or time-based schedules to provide ON, OFF and dimming control of fixtures utilizing a 7-PIN receptacle. The out-of-box functionality is ON at dusk and OFF at dawn.

**WaveLinx Wireless Sensor (WPS2 and WPS4)** These outdoor sensors offer passive infrared (PIR) occupancy sensing and a photocell for closed-loop daylight sensing. These sensors are factory preset to dim down to approximately 50 percent power after 15 minutes of no activity detected, and the photocell for “dusk-to-dawn” control is default enabled. A variety of sensor lenses are available to optimize the coverage pattern for mounting heights from 7'-40'.



# Spec Sheets

## SQUARE STRAIGHT STEEL POLES



### Specifications, Options, and Accessories

United Lighting Standard's Square Straight Steel Poles are engineered to meet the rigorous demands of the natural environment. The Information below can be used to determine the exact pole needed for a variety of lighting applications.

Please note that standards mounted on structures (parking garages, buildings, bridges, piers, etc.) require factory consultation.

#### Pole Shaft Specifications

- The pole shaft is one-piece construction — fabricated from a weldable-grade carbon steel structural tubing with a uniform wall thickness. The pole shaft material shall conform to ASTM A-500 Grade B with a minimum yield strength of 46,000 psi. It has a full-length longitudinal resistance weld and is uniformly square in cross section with flat sides, small corner radii, and excellent torsional properties.

#### Base Plate Cover

- For our anchor-base designs, a full base cover is supplied. The base cover is made of automotive structural grade ABS plastic with a UV inhibitor to eliminate color fading. It is rust proof and tamper resistant.

#### Anchor Bolts

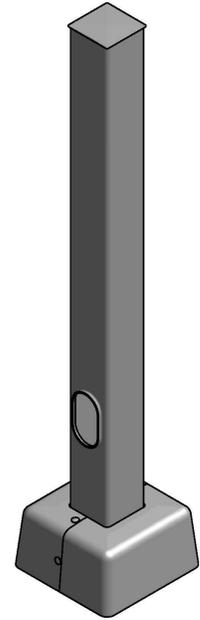
- Complete sets of (4) anchor bolts are included with each of our poles. The size of the bolts are determined by the pole type. Our 3/4" anchor bolts are fully galvanized. All other sizes are partially galvanized on the threaded side of the bolt only. Fully galvanized bolts are available upon request.

#### Direct Burial

- For embedded designs, an optional alkali-resistant, coal-tar epoxy can be applied to the burial portion of embedded poles. Our direct-burial poles are supplied complete with a 2"x4" wiring slot below grade.

#### Hand Hole

- All of our straight steel poles come standard with a 3"x5" hand hole, centered at 14" above grade. Each pole comes with a complete ABS hand hole cover assembly to match the finish of the pole.



# Wind Loading Data: AASHTO

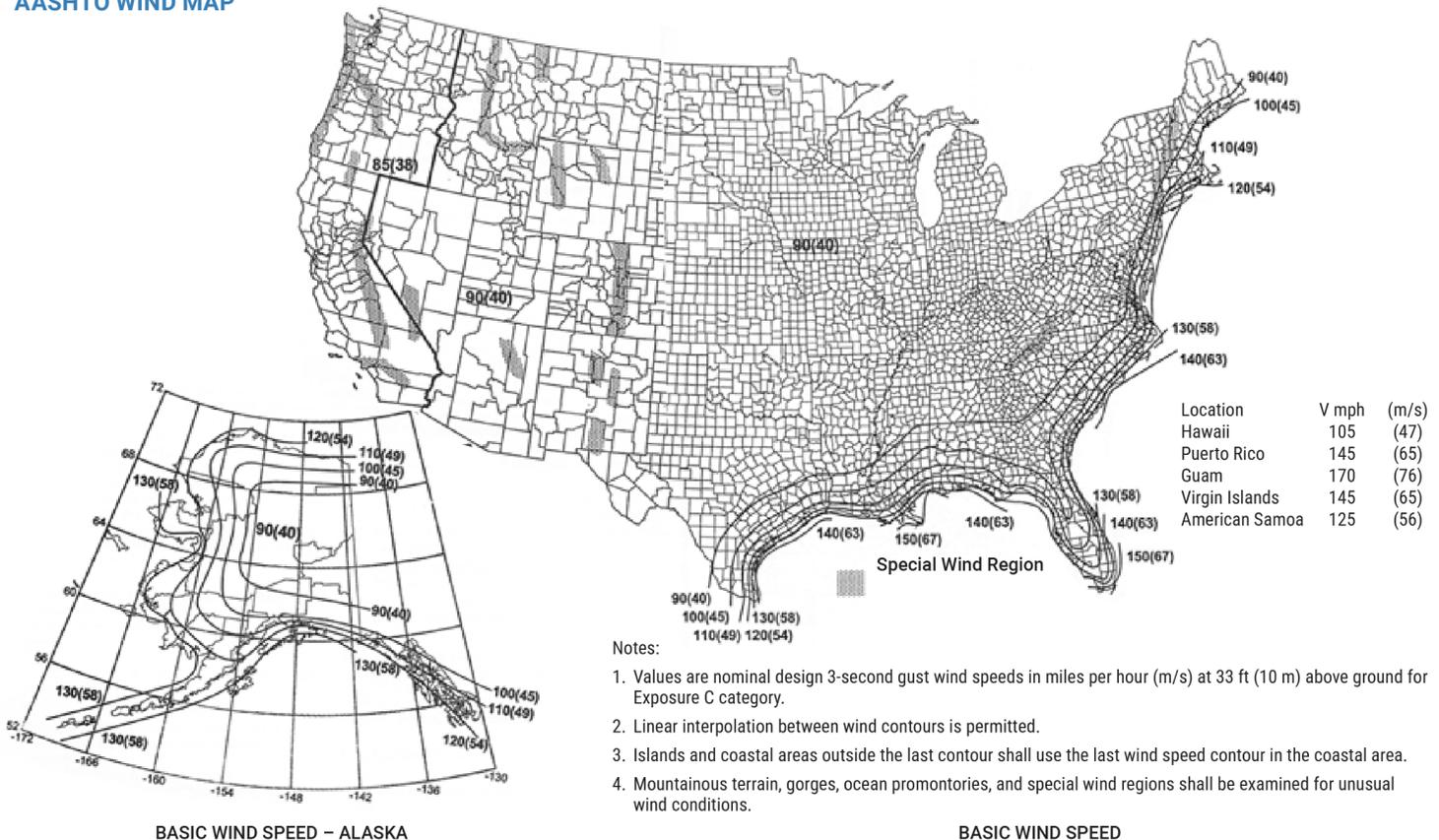
## 2013 AASHTO LTS-6

ULS PART #	Mounting Height (ft)	Diameter (A)x Wall (B)x Height (C)	Plate	Bolt Circle (Range)	Bolt Dia x Vertical x Horizontal	Max Luminaire Weight	Pole EPA Rating						
							80 MPH	90 MPH	100 MPH	110 MPH	120 MPH	130 MPH	140 MPH
RPSQ 10-4-11	10	4" x 11 ga. x 10'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	35.7	27.6	21.8	17.6	14.3	11.8	9.8
RPSQ 12-4-11	12	4" x 11 ga. x 12'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	28.6	21.9	17.1	13.5	10.8	8.7	7.1
RPSQ 14-4-11	14	4" x 11 ga. x 14'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	23.3	17.6	13.5	10.5	8.2	6.4	5
RPSQ 15-4-11	15	4" x 11 ga. x 15'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	21.1	15.8	12	9.2	7.1	5.4	4.1
RPSQ 16-4-11	16	4" x 11 ga. x 16'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	19.1	14.2	10.7	8	6	4.5	3.3
RPSQ 18-4-11	18	4" x 11 ga. x 18'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	15.6	11.3	8.2	5.9	4.2	2.8	1.8
RPSQ 20-4-11	20	4" x 11 ga. x 20'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	12.5	8.7	6	4.1	2.6	1.4	0.4
RPSQ 20-4-7	20	4" x 7 ga. x 20'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	19.4	14.3	10.7	8	5.9	4.3	3.1
RPSQ 25-4-11	25	4" x 11 ga. x 25'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	6.7	3.9	1.9	0.4	N/A	N/A	N/A
RPSQ 25-4-7	25	4" x 7 ga. x 25'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	8.7	8.7	6	3.9	2.3	1.1	N/A
RPSQ 20-5-11	20	5" x 11 ga. x 20'	11" x 0.75"	10.5/11.5" (11.0")	.75 x 17 x 3	200	19.3	13.8	9.8	6.9	4.7	3	1.6
RPSQ 20-5-7	20	5" x 7 ga. x 20'	11" x 1.00"	10.5/11.5" (11.0")	1 x 36 x 4	200	38	28.7	22	17.1	13.3	10.4	8.1
RPSQ 25-5-11	25	5" x 11 ga. x 25'	11" x 0.75"	10.5/11.5" (11.0")	.75 x 17 x 3	200	11.2	7.1	4.1	1.9	0.3	N/A	N/A
RPSQ 25-5-7	25	5" x 7 ga. x 25'	11" x 1.00"	10.5/11.5" (11.0")	1 x 36 x 4	200	25.6	18.6	13.6	9.9	7.1	4.9	3.1
RPSQ 30-5-11	30	5" x 11 ga. x 30'	11" x 0.75"	10.5/11.5" (11.0")	.75 x 17 x 3	200	5.4	2.2	N/A	N/A	N/A	N/A	N/A
RPSQ 30-5-7	30	5" x 7 ga. x 30'	11" x 1.00"	10.5/11.5" (11.0")	1 x 36 x 4	200	17.1	11.6	7.6	4.7	2.5	0.7	N/A
RPSQ 35-5-7	35	5" x 7 ga. x 35'	11" x 1.00"	10.5/11.5" (11.0")	1 x 36 x 4	200	10.7	6.2	3	0.6	N/A	N/A	N/A
RPSQ 25-6-7	25	6" x 7 ga. x 25'	12" x 1.00"	11.0/12.0" (11.5")	1 x 36 x 4	200	38.2	28.1	20.9	15.8	11.5	8.4	5.9
RPSQ 30-6-7	30	6" x 7 ga. x 30'	12" x 1.00"	11.0/12.0" (11.5")	1 x 36 x 4	200	26.9	18.8	13.1	8.8	5.5	3	1
RPSQ 35-6-7	35	6" x 7 ga. x 35'	12" x 1.00"	11.0/12.0" (11.5")	1 x 36 x 4	200	18.2	11.6	6.8	3.3	0.7	N/A	N/A
RPSQ 39-6-7	39	6" x 7 ga. x 39'	12" x 1.00"	11.0/12.0" (11.5")	1 x 36 x 4	200	6.7	6.6	2.6	N/A	N/A	N/A	N/A

For steel poles, we have the ability to modify the base plate to accommodate alternate bolt circles to fit existing anchor bolt patterns. Note that we can only increase the size to the standard bolt circle; we cannot accommodate decreased bolt circle sizes for our cataloged poles. Contact the factory with any questions. New anchor bolts should be set using factory-supplied anchor bolt templates.

Vibration dampeners are recommended for poles 25' and above.

### AASHTO WIND MAP



# Wind Loading Data: Florida Building Code

2020 FBC / ASCE-7

ULS PART #	Mounting Height (ft)	Diameter (A)x Wall (B)x Height (C)	Plate	Bolt Circle (Range)	Bolt Dia x Vertical x Horizontal	Max Luminaire Weight	Pole EPA Rating						
							120 MPH	130 MPH	140 MPH	150 MPH	160 MPH	170 MPH	180 MPH
RPSQ 10-4-11	10	4" x 11 ga. x 10'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	31.1	26	22.1	18.9	16.2	14.1	12.2
						500	29.9	25	21.2	18.1	15.5	13.4	11.8
RPSQ 12-4-11	12	4" x 11 ga. x 12'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	24.8	20.7	17.4	14.7	12.5	10.7	9.2
						500	23.8	19.8	16.6	14	11.9	10.2	8.7
RPSQ 14-4-11	14	4" x 11 ga. x 14'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	20.3	16.7	13.8	11.5	9.7	8.1	6.8
						500	19.5	15.9	13.2	11	9.2	7.7	6.4
RPSQ 15-4-11	15	4" x 11 ga. x 15'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	18.4	15	12.4	10.2	8.5	7	5.8
						500	17.5	14.3	11.8	9.7	8	6.6	5.4
RPSQ 16-4-11	16	4" x 11 ga. x 16'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	16.5	13.4	10.9	8.9	7.3	6	4.8
						500	15.7	12.7	10.4	8.4	6.9	5.6	4.5
RPSQ 18-4-11	18	4" x 11 ga. x 18'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	13.3	10.6	8.4	6.7	5.3	4.1	3.2
						500	12.6	10	7.9	6.3	4.9	3.8	2.9
RPSQ 20-4-11	20	4" x 11 ga. x 20'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	10.6	8.3	6.4	4.9	3.6	2.6	1.7
						500	10	7.8	6	4.5	3.3	2.3	1.5
RPSQ 20-4-7	20	4" x 7 ga. x 20'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	11.2	8.8	7	5.4	4.2	3.2	2.3
						500	10.6	8.3	6.5	5.1	3.8	2.9	2
RPSQ 25-4-11	25	4" x 11 ga. x 25'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	5.7	3.9	2.4	1.3	0.3	N/A	N/A
						500	5.2	3.5	2	1	N/A	N/A	N/A
RPSQ 25-4-7	25	4" x 7 ga. x 25'	8" x 0.75"	8.0/9.0" (8.5)	.75 x 17 x 3	200	6.4	4.6	3.1	2	1	N/A	N/A
						500	5.9	4.2	2.8	1.7	0.8	N/A	N/A
RPSQ 20-5-11	20	5" x 11 ga. x 20'	11" x 0.75"	10.5/11.5" (11.0")	.75 x 17 x 3	200	13.8	10.8	8.3	6.3	4.7	3.4	2.3
						500	13.3	10.3	7.9	6	4.4	3.1	2
RPSQ 20-5-7	20	5" x 7 ga. x 20'	11" x 1.00"	10.5/11.5" (11.0")	1 x 36 x 4	200	33.2	27.4	22.7	19	15.9	13.3	11.2
						500	32.8	27.1	22.4	18.7	15.7	13.1	11
RPSQ 25-5-11	25	5" x 11 ga. x 25'	11" x 0.75"	10.5/11.5" (11.0")	.75 x 17 x 3	200	7.4	5	3.2	1.7	0.4	N/A	N/A
						500	6.9	4.7	2.8	1.4	N/A	N/A	N/A
RPSQ 25-5-7	25	5" x 7 ga. x 25'	11" x 1.00"	10.5/11.5" (11.0")	1 x 36 x 4	200	22.5	18	14.5	11.6	9.3	7.3	5.7
						500	22.2	17.7	14.2	11.4	9.1	7.1	5.5
RPSQ 30-5-11	30	5" x 11 ga. x 30'	11" x 0.75"	10.5/11.5" (11.0")	.75 x 17 x 3	200	2.7	0.8	N/A	N/A	N/A	N/A	N/A
						500	2.3	0.5	N/A	N/A	N/A	N/A	N/A
RPSQ 30-5-7	30	5" x 7 ga. x 30'	11" x 1.00"	10.5/11.5" (11.0")	1 x 36 x 4	200	15.1	11.5	8.6	6.3	4.5	2.9	1.6
						500	14.8	11.3	8.4	6.2	4.3	2.8	1.5
RPSQ 35-5-7	35	5" x 7 ga. x 35'	11" x 1.00"	10.5/11.5" (11.0")	1 x 36 x 4	200	9.5	6.5	4.2	2.3	0.7	N/A	N/A
						500	9.3	6.3	4	2.1	0.6	N/A	N/A
RPSQ 25-6-7	25	6" x 7 ga. x 25'	12" x 1.00"	11.0/12.0" (11.5")	1 x 36 x 4	200	22	17.3	13.6	10.5	8.1	6	4.3
						500	21.6	17	13.3	10.3	7.9	5.9	4.2
RPSQ 30-6-7	30	6" x 7 ga. x 30'	12" x 1.00"	11.0/12.0" (11.5")	1 x 36 x 4	200	13.9	10.1	7.2	4.7	2.8	1.1	N/A
						500	13.6	9.9	7	4.6	2.6	1	N/A
RPSQ 35-6-7	35	6" x 7 ga. x 35'	12" x 1.00"	11.0/12.0" (11.5")	1 x 36 x 4	200	7.8	4.7	2.2	N/A	N/A	N/A	N/A
						500	7.6	4.5	2	N/A	N/A	N/A	N/A
RPSQ 39-6-7	39	6" x 7 ga. x 39'	12" x 1.00"	11.0/12.0" (11.5")	1 x 36 x 4	200	3.7	1	N/A	N/A	N/A	N/A	N/A
						500	3.5	0.8	N/A	N/A	N/A	N/A	N/A

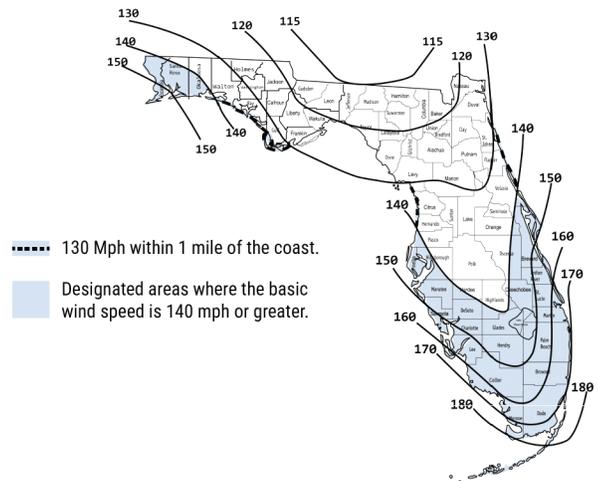
For steel poles, we have the ability to modify the base plate to accommodate alternate bolt circles to fit existing anchor bolt patterns. Note that we can only increase the size to the standard bolt circle; we cannot accommodate decreased bolt circle sizes for our cataloged poles. Contact the factory with any questions. New anchor bolts should be set using factory-supplied anchor bolt templates.

Vibration dampeners are recommended for poles 25' and above.

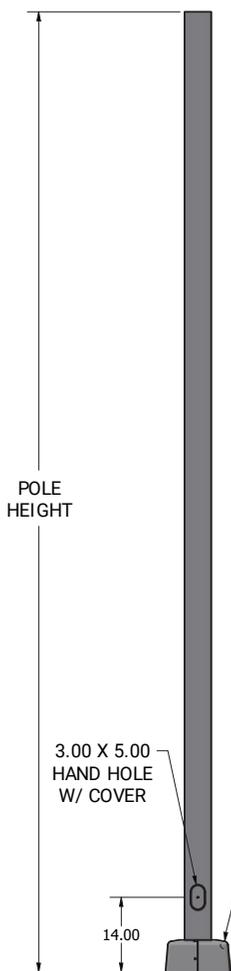
## FBC WIND MAP

### Notes:

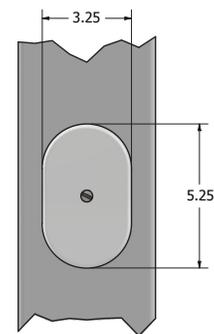
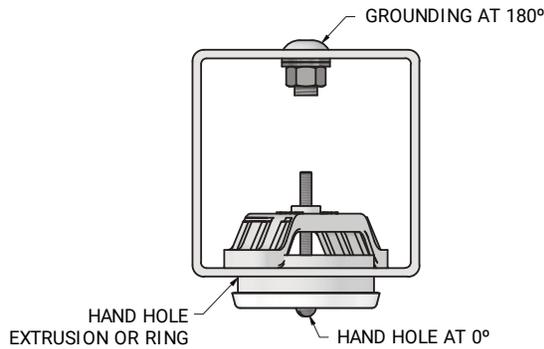
1. Values are nominal design 3-second gust wind speeds in miles per hour (m/s) at 33 ft (10 m) above ground for Exposure C category.
2. Linear interpolation between wind contours is permitted.
3. Islands and coastal areas outside the last contour shall use the last wind speed contour in the coastal area.
4. Mountainous terrain, gorges, ocean promontories, and special wind regions shall be examined for unusual wind conditions.
5. Wind speeds correspond to approximately a 7% probability of exceedance in 50 years (Annual Exceedance Probability = 0.00143, MRI = 700 years).
6. This map is accurate to the county. Local Governments establish specific wind speed/wind-borne debris lines using physical landmarks such as major roads, canals, rivers and shorelines.
7. Within 1 mile (1.61 km) of the mean high-water line where and Exposure D condition exists upwind at the waterline and the ultimate design wind speed,  $V_{ult}$  is 130 mph (58 m/s) or greater.
8. Location-specific wind speeds shall be permitted to be determined using the ASCE Wind Design Geodatabase. The ASCE Wind Design Geodatabase can be accessed at the ASCE 7 Hazard Tool (<https://asce7hazardtool.online>) or equivalent.



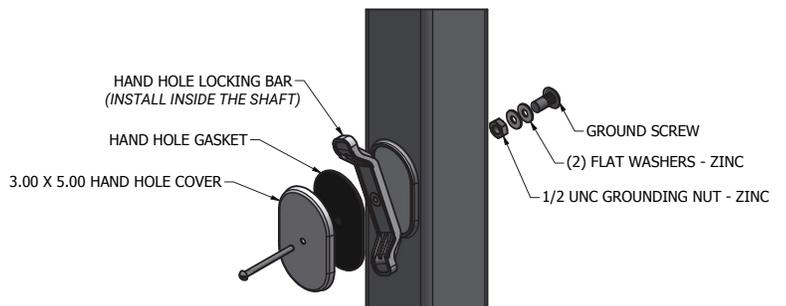
# Pole Details



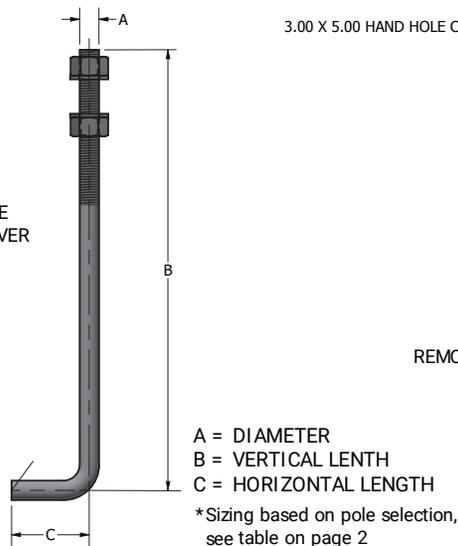
## Hand Hole Detail



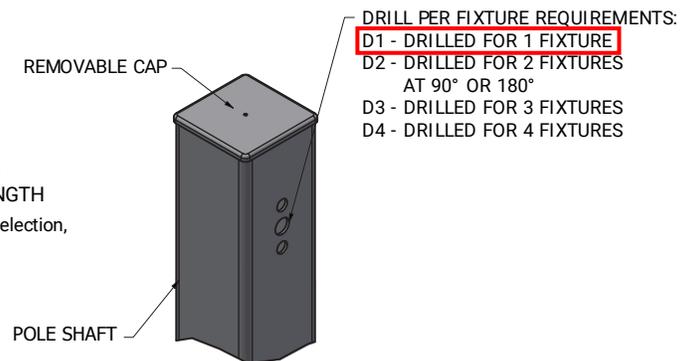
## Hand Hole Cover Assembly



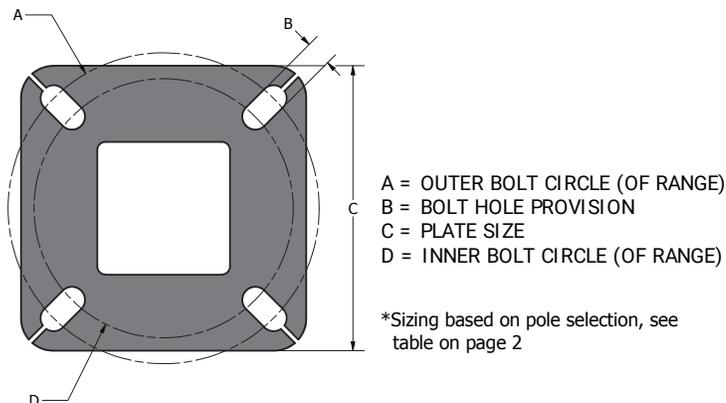
## Anchor Bolt Detail



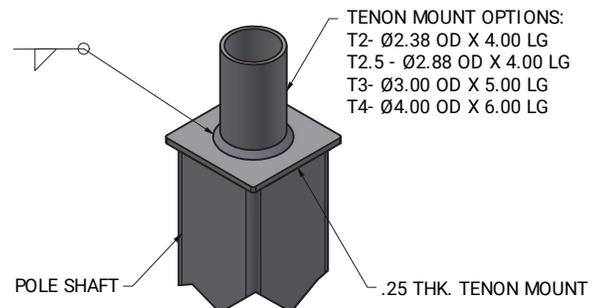
## Drill Mount Options



## Base Plate / Bolt Circle



## Tenon Mount Options



# Build Your Part Number

The information below allows you to pull together the exact part number for the Square Straight Steel Pole required for your application. Details about the various options and accessories available can be found on the following pages. Please note that each option and accessory must denote a mounting orientation (hand hole is at 0°) and height from base the of the pole.

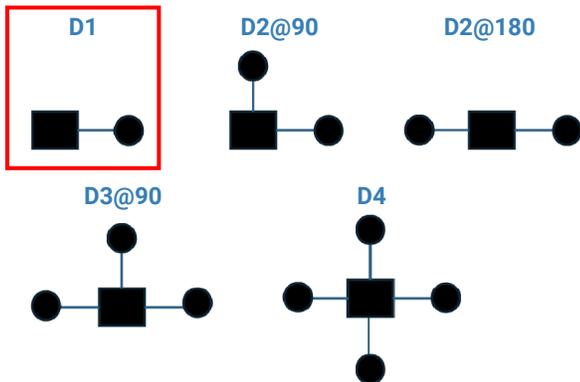
Catalog Number (found in wind load tables)				Mounting Type	Fixture Mounting Arrangement	Finish	Options			Accessories		
Design	Shaft Size	Wall Thickness	Mounting Height				Design	Orientation	Height From Base	Design	Orientation	Height From Base

## Mounting Type Options

AB = Anchor Base  
 EMB = Embedded (Direct Burial)

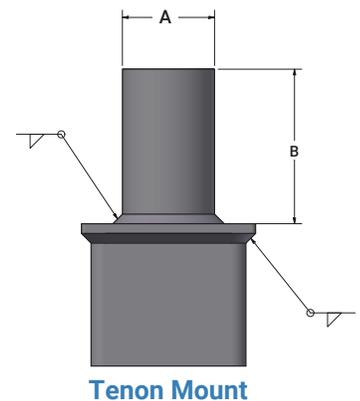
## Fixture Mounting Arrangement Options

### Drill Mount Options



### Tenon Mount Options

Design	Dia. (A)	Length (B)
T2	2.38"	4.00"
T2.5	2.88"	4.00"
T3	3.00"	5.00"
T4	4.00"	6.00"



## Finish Options

### Standard Finishes

DP = Dark Platinum  
 MG = Moss Green  
 WH = White  
 TWH = Textured White  
 DB = Dark Bronze  
 HB = Harvest Bronze

TMB = Textured Medium Bronze  
**NB = New Bronze**  
 SL = Silver  
 MGY = Medium Gray  
 GR = Gray

TGR = Textured Gray  
 MA = Matte Aluminum  
 PSP = Platinum Silver  
 BK = Black  
 TBK = Textured Black

### Premium Finishes

GM = Graphite Metallic  
 DP = Dark Platinum  
 MG = Moss Green

## Available Options

CSBC = Custom Steel Base Cover  
 MODBASE = Modified Steel Base Plate  
 VD = Vibration Dampener  
 GFI = Ground Fault Circuit Interrupter  
 FESTOON = Switch or Receptacle Mounting Provision  
 CMB = Camera Mounting Bracket  
 CMP = Camera Mounting Plate  
 WB = Welded Bracket  
 WC = Welded Coupling  
 WN = Welded Nipple  
 PE = Pad Eye  
 SCP = Shielded Circuit Provision

XHH = Extra Hand Hole  
 FGAB = Fully Galvanized Anchor Bolts  
 L/AB = Anchor Bolt Deduct  
 UL = UL Listed  
 CSA = CSA Listed  
 BUY AMERICA = Buy America Act (BAA) Requirement for US-Sourced Steel (must be requested at time of order)

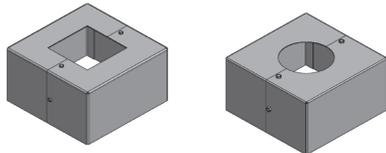
## Available Accessories

BA = Banner Arm  
 FH = Flag Holder  
 FPH = Flower Pot Holder  
 PTTA = Pole Top Tenon Adapter  
 BAC = Breakaway Couplings  
 TTAP = Two-Tier Adapter Plate

# Available Options Detail

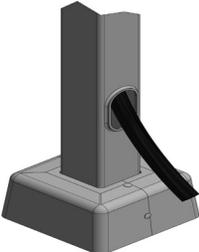
## Custom Steel Base Cover

Design	Description
CSBC	Custom Steel Base Cover



## Vibration Dampener\*

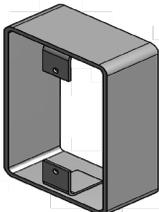
Design	Description
VD	Recommended for use with all poles 25' and higher



\*All vibration dampeners are plus freight if purchased and shipped separately.

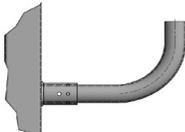
## Festoon - Switch or Receptacle Mounting Provision

Design	Description
FESTOON	Mounting provision for customer-supplied switch or standard receptacle.



## Welded Bracket

Design	Description
WB	2-3/8" OD Bent Slip-fit Pipe Bracket Welded on Pole



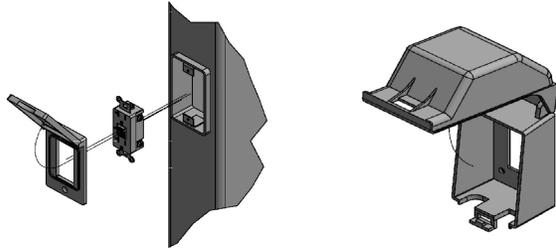
## Modified Steel Base Plate\*

Catalog Number	Description
MODBASE	Accommodate existing bolt patterns or other required specifications on steel poles. Plates can only be made to increase the standard bolt circle of a pole, smaller bolt circles cannot be accommodated. Bolt circle size must be provided to release an order.

\*Includes custom steel base cover to fit

## Ground Fault Circuit Interrupter\*

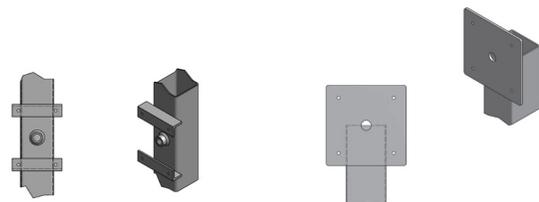
Design	Description
GFI	Weatherproof 15-20 amp, 125V A/C Recessed Ground Fault Circuit Interrupter with In Use Cover



\*Requires a mounting location of a minimum of 10" above hand hole to not affect the structural integrity of the pole.

## Mounting Bracket

Design	Description
CMB	Mounting Bracket
CMP	Mounting Plate



## Welded Coupling\*

Design	Description
WC	Threaded Pipe Coupling with Wire Hole Welded to Pole



\*See cutsheet on our website for available coupling sizes.

### Available Options Detail (continued)

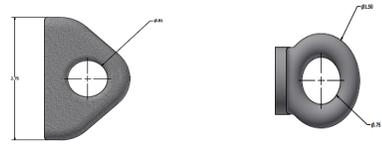
#### Welded Nipple

Design	Description
WN	Threaded Pipe Nipple with Wire Hole Welded to Pole
	

#### Shielded Circuit Provision

Design	Description
SCP	Shielded Circuit Mounting Provision
	

#### Pad Eye

Design	Description
PE	Welded Padeye Provision Available in Aluminum or Steel to Match Pole
	

#### Extra Hand Hole\*

Design	Description
XHH	Extra Hand Hole Provision Located as Specified on Order
	

\*Includes hand hole cover assembly.

#### Fully Galvanized Anchor Bolts\*

Catalog Number	Description (in.)
FGAB	3/4" x 20"
	3/4" x 28"
	1" o.d.
	1.5" o.d.



\*3/4" x 20" standard bolt is fully galvanized, all other anchor bolts are partially galvanized on the threaded end only.

#### Anchor Bolt Deduct – Used When Customer Does Not Want Anchor Bolts Shipped

Catalog Number	Description
L/AB	Deduct amount for all 3/4" anchor bolts (see pole type matrices for anchor bolt size)
	Deduct amount for all 1" anchor bolts (see pole type matrices for anchor bolt size)

#### UL or CSA Listing

Catalog Number	Description
UL	Poles can be ordered to meet UL requirements. "UL" must appear in the part number. UL Listed poles include a metal hand hole cover and UL label.
CSA	Poles can be ordered to meet CSA requirements. "CSA" must appear in the part number. CSA approved poles include required grounding provision and CSA label.



LUMINAIRE POLE WITH RESPECT TO ELECTRICAL HAZARDS ONLY <E473617>



CLASS - 3426 03 - LUMINAIRES - LUMINAIRE POLES

CATALOG NUMBER

YEAR OF MANUFACTURE

SUITABLE FOR WET LOCATIONS.

# Available Accessories Detail

## Banner Arm – Includes Top And Bottom Arm

Catalog Number	Description
BA	Banner Arm 25" or 31"



## Flower Pot Holder

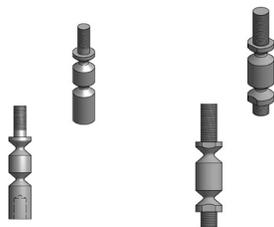
Catalog Number	Description
FPH	Flower Pot Holder



## Break Away Couplings\*

Catalog Number	To Fit Anchor Bolt Size (in.)
BAC-.75-SET	0.75 O.D.
BAC-1.0-SET	1.00 O.D.

\*Break away couplings provided with square skirt cover.



## Flag Holder

Catalog Number	Description
FH	Flag Holder



## Ptta – Square Pole Top Tenon Adapters

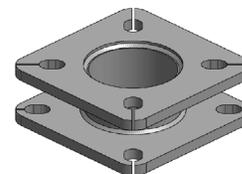
Catalog Number	Drill Mount Options	Height (in.)	Pole Size (in. sq.)
PTTA-4SQ-DXX	D1,D2,D3,D4	13	4
PTTA-5SQ-DXX	D1,D2,D3,D4	13	5
PTTA-6SQ-DXX	D1,D2,D3,D4	13	6



## Two-Tier Adapter Plate\*

Catalog Number	Min Bolt Circle (in.)	Max Bolt Circle (in.)	Included Base Cover
TTAP	-----	12	YES
TTAP-16	12	16	YES

\*Includes connecting hardware and Square Steel Base Cover



# WME G2 - Emergency Wall Pack



**CONTRACTOR XP**



Type: OW1  
Project: Basic Metals  
Catalog #: WME-L14-G2-FSK

## KEY FEATURES

- Sturdy, weather resistant emergency wall pack.
- 3 CCT selectable.
- Preinstalled, switchable photocell.
- 3 year warranty.
- Emergency mode lasting up to 190 mins (see Page 2 for details).



(Images are shown for illustration purposes only)

## SPECIFICATIONS

### Housing

High impact, weather resistant lens die-cast aluminum housing.

### Ambient Temperature

Suitable for use in -20° C to 50° C (-4° F to 122° F).

### Finish

Dark bronze.

### Mounting

Wall mount.

### Efficacy

Up to 140 lumens per watt.

### Lumen Output

1,400 Lm at 10W (AC mode).  
700 Lm 4W (EM mode).

### CCT and CRI

Field Selectable: 3000K, 4000K, and 5000K - 80 CRI

### Lifespan

L70 > 50,000 hours @ 25°C.

### Warranty

3-year limited warranty.  
Comprehensive warranty terms can be located on [www.slgus.com](http://www.slgus.com).

### Electrical

Standard voltage 120-277V.  
PF > 90%. THD <20%.

### Certifications

UL Listed for wet locations. FCC compliant.

## ORDERING GUIDE

Example: **WME L14 G2 FSK**

Fixture Type	Lumen Output	Generation	Voltage	CCT	Photocell	Finish
• <b>WME LED Emergency Wall Pack</b>	• <b>L14</b> 1,400 Lm / 10 W (AC). 700 Lm / 4 W (EM)	• <b>G2 Second Generation</b>	• <b>BLANK</b> 120-277V	• <b>FSK</b> 3000K 4000K 5000K -CRI 80	• <b>BLANK</b> Preinstalled switchable photocell.	• <b>BLANK</b> Dark Bronze

For stocking opportunities please reach out to your local SLG Lighting rep or contact [sales@slgus.com](mailto:sales@slgus.com).  
Leadtimes may vary based on current inventory levels - always consult your local SLG Lighting rep for leadtimes and project needs.

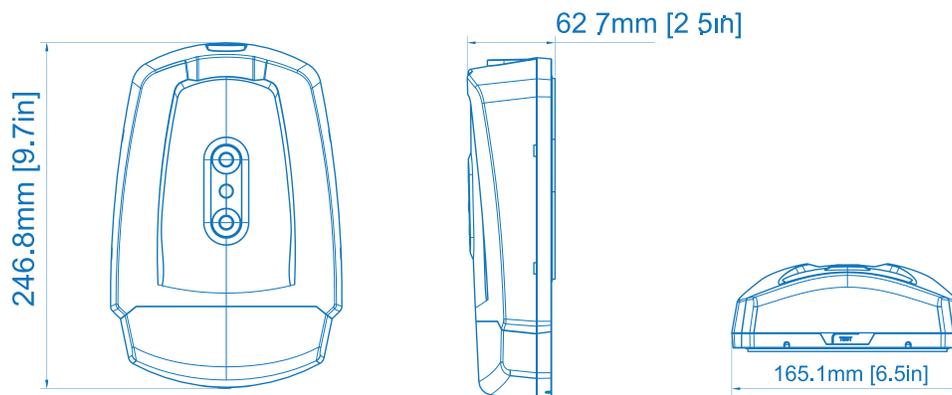
## PERFORMANCE INFORMATION

Series Number	Power Setting	Wattage	Lumens (3000K)	LPW	Lumens (4000K)	LPW	Lumens (5000K)	LPW	CRI
<b>WME L14 G2 FSK</b>	AC (Standard Mode)	10 W	1,300 Lm	130 Lm/W	1,400 Lm	140 Lm/W	1,350 Lm	135 Lm/W	80

Performance data based on vigorous, industry standard testing and has been verified by lab results.

## DIMENSIONS

**WME G2 - 10 W**



Due to continuous product improvements, specification and/or equipment updates may change without notice.

## EMERGENCY BACKUP MODE

Series Number	Wattage	Lumens	Operating Temperature	Operating Time
WME L14 G2 FSK	4 W	>700 Lm	18°C to +40°C (64.4° F to 104° F)	190 Min (Roughly 3 hours, 10 mins)
			0° C (32° F)	160 Min (Roughly 2 hours, 40 mins)
			-20°C (-4° F)	100 Min (Roughly 1 hour, 40 mins)

## SHIPPING INFORMATION

Product number	Individual box size	Master Carton Size	Master Carton Quantity
WME L14 G2 FSK	10.04" X 6.69" X 2.87"	20.87" X 10.83" X 12.40"	12 Pcs

Fixtures ship 1 per box and specific dimensions may change without notice due to improvements.

## PHOTOMETRIC

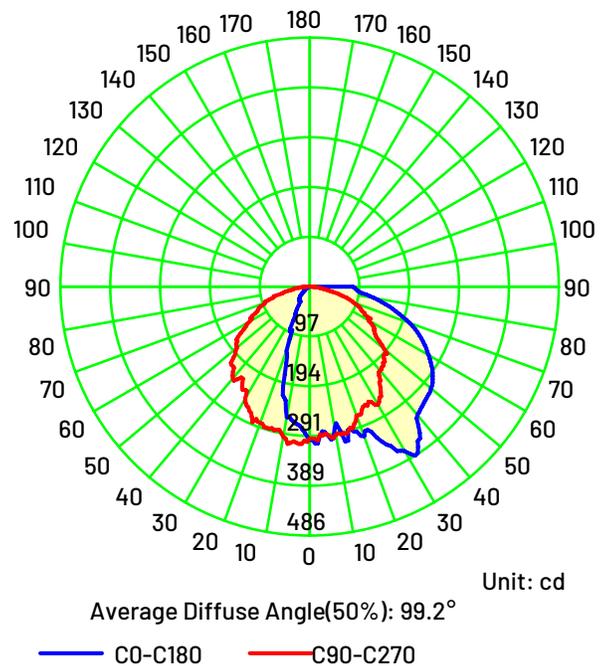
### Luminaire Property

Luminaire Manufacturer: SLG Lighting  
 Luminaire Category: Wall Mount  
 Luminaire Description: WME G2  
 Lamp Catalog:  
 Number of Lamps: 1  
 Luminous Length (mm): 245  
 Luminous Height (mm):  
 Current: 0 A  
 Power Factor: 0  
 Lamp Description:  
 Lumens per Lamp:  
 Luminous Width (mm): 162  
 Voltage: 0 V  
 Power: 0 W

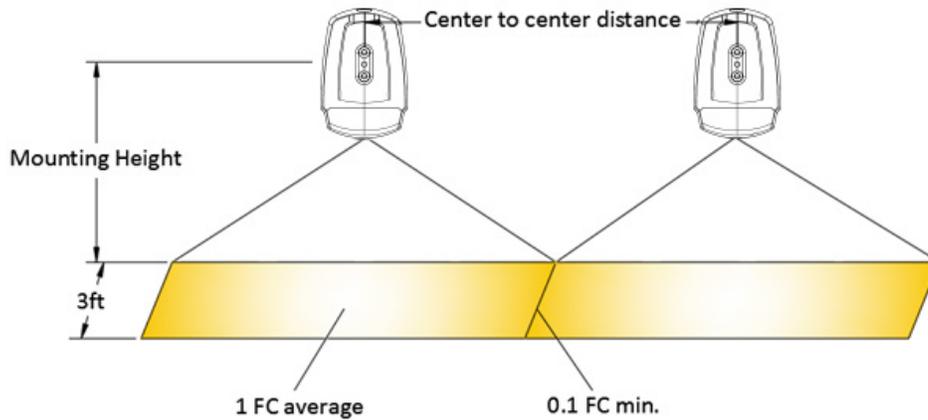
### Photometric Results

CIE Class: Direct  
 Measurement Flux: 832.1 lm  
 Downward Ratio: 100%  
 Horizontal Diffuse Angle(10%,50%,75%,100%): H132.6,H89.1,H67.9,H32  
 Vertical Diffuse Angle(10%,50%,75%,100%): V162,V114.2,V77.7,V11  
 Luminaire Efficacy Rating (LER): 832.15  
 Max. Intensity: 389.26 cd  
 S/MH(C0/C180): 0.99  
 Total Rated Lamp Lumens: 832.1 lm  
 Efficiency: 100%  
 Upward Ratio: 0%  
 C0r0 Intensity: 299.27 cd  
 Pos of Max. Intensity: H0 V32  
 S/MH(C90/C270): 1.27

Luminous Intensity Distribution Curve



Due to continuous product improvements, specification and/or equipment updates may change without notice.



NFPA 101 requires 1.0 foot-candle average and 0.1 foot-candle minimum with a 40:1 maximum /minimum ratio. The corridor used is 80 feet long, 9 feet ceiling with a 6 foot wide walkway and 6&3 feet path of egress. The reflectance are 80% ceiling, 50% walls and 20% floors. The fixture mounting height is 7.5 feet.

Model (Emergency Mode)	7.5ft Mount Height	8ft Mount Height	10ft Mount Height
WME G2	45ft distance	50ft distance	46ft distance

*Due to continuous product improvements, specification and/or equipment updates may change without notice.*

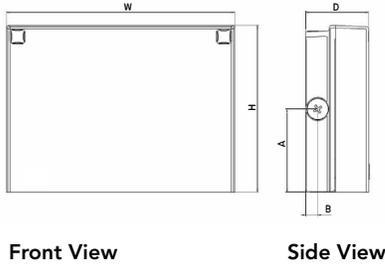


# WPX LED Wall Packs



Type: OW2  
 Project: Basic Metals  
 Catalog #: WPX3-LED-40K-MVOLT

## Specifications



Luminaire	Height (H)	Width (W)	Depth (D)	Side Conduit Location		Weight
				A	B	
WPX1	8.1" (20.6 cm)	11.1" (28.3 cm)	3.2" (8.1 cm)	4.0" (10.3 cm)	0.6" (1.6 cm)	6.1 lbs (2.8kg)
WPX2	9.1" (23.1 cm)	12.3" (31.1 cm)	4.1" (10.5 cm)	4.5" (11.5 cm)	0.7" (1.7 cm)	8.2 lbs (3.7kg)
WPX3	9.5" (24.1 cm)	13.0" (33.0 cm)	5.5" (13.7 cm)	4.7" (12.0 cm)	0.7" (1.7 cm)	11.0 lbs (5.0kg)

## Introduction

The WPX LED wall packs are energy-efficient, cost-effective, and aesthetically appealing solutions for both HID wall pack replacement and new construction opportunities. Available in three sizes, the WPX family delivers 1,550 to 9,200 lumens with a wide, uniform distribution.

The WPX full cut-off solutions fully cover the footprint of the HID glass wall packs that they replace, providing a neat installation and an upgraded appearance. Reliable IP66 construction and excellent LED lumen maintenance ensure a long service life. Photocell and emergency egress battery options make WPX ideal for every wall mounted lighting application.

## Ordering Information

EXAMPLE: WPX2 LED 40K MVOLT DDBXD

Series	Color Temperature	Voltage	Options	Finish
WPX1 LED P1	30K 3000K	MVOLT 120V - 277V	(blank) None	DDBXD Dark bronze
WPX1 LED P2	40K 4000K	347 347V <sup>3</sup>	E4WH Emergency battery backup, CEC compliant (4W, 0°C min) <sup>2</sup>	DWHXD White
WPX2 LED	50K 5000K		E14WC Emergency battery backup, CEC compliant (14W, -20°C min) <sup>2</sup>	DBLXD Black
WPX3 LED			PE Photocell <sup>3</sup>	Note: For other options, consult factory.

Note: The lumen output and input power shown in the ordering tree are average representations of all configuration options. Specific values are available on request.

### NOTES

- All WPX wall packs come with 6kV surge protection standard, except WPX1 LED P1 package which comes with 2.5kV surge protection standard. Add SPD6KV option to get WPX1 LED P1 with 6kV surge protection. Sample nomenclature: WPX1 LED P1 40K MVOLT SPD6KV DDBXD
- Battery pack options only available on WPX1 and WPX2.
- Battery pack options not available with 347V or PE options.

## FEATURES & SPECIFICATIONS

### INTENDED USE

The WPX LED wall packs are designed to provide a cost-effective, energy-efficient solution for the one-for-one replacement of existing HID wall packs. The WPX1, WPX2 and WPX3 are ideal for replacing up to 150W, 250W, and 400W HID luminaires respectively. WPX luminaires deliver a uniform, wide distribution. WPX is rated for -40°C to 40°C.

### CONSTRUCTION

WPX feature a die-cast aluminum main body with optimal thermal management that both enhances LED efficacy and extends component life. The luminaires are IP66 rated, and sealed against moisture or environmental contaminants.

### ELECTRICAL

Light engine(s) configurations consist of high-efficacy LEDs and LED lumen maintenance of L90/100,000 hours. Color temperature (CCT) options of 3000K, 4000K and 5000K with minimum CRI of 70. Electronic drivers ensure system power factor >90% and THD <20%. All luminaires have 6kV surge protection (Note: WPX1 LED P1 package comes with a standard surge protection rating of 2.5kV. It can be ordered with an optional 6kV surge protection). All photocell (PE) operate on MVOLT (120V - 277V) input.

Note: The standard WPX LED wall pack luminaires come with field-adjustable drive current feature. This feature allows tuning the output current of the LED drivers to adjust the lumen output (to dim the luminaire).

### INSTALLATION

WPX can be mounted directly over a standard electrical junction box. Three 1/2 inch conduit ports on three sides allow for surface conduit wiring. A port on the back surface allows poke-through conduit wiring on surfaces that don't have an electrical junction box. Wiring can be made in the integral wiring compartment in all cases. WPX is only recommended for installations with LEDs facing downwards. The WPX is intended for installation on flat wall surfaces. Other applications may void warranty.

### LISTINGS

CSA Certified to meet U.S. and Canadian standards. Suitable for wet locations. IP66 Rated. DesignLights Consortium® (DLC) qualified product. Not all versions of this product may be DLC qualified. Please check the DLC Qualified Products List at [www.designlights.org/QPL](http://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. This is the only warranty provided and no other statements in this specification sheet create any warranty of any kind. All other express and implied warranties are disclaimed. Complete warranty terms located at: [www.acuitybrands.com/support/warranty/terms-and-conditions](http://www.acuitybrands.com/support/warranty/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.



## Performance Data

### Electrical Load

Luminaire	Input Power (W)	120V	208V	240V	277V	347V
WPX1 LED P1	11W	0.09	0.05	0.05	0.04	0.03
WPX1 LED P2	24W	0.20	0.12	0.10	0.09	0.07
WPX2	47W	0.39	0.23	0.20	0.17	0.14
WPX3	69W	0.58	0.33	0.29	0.25	0.20

### Projected LED Lumen Maintenance

Data references the extrapolated performance projections in a 25°C ambient, based on 6,000 hours of LED testing (tested per IESNA LM-80-08 and projected per IESNA TM-21-11).

To calculate LLF, use the lumen maintenance factor that corresponds to the desired number of operating hours below. For other lumen maintenance values, contact factory.

Operating Hours	50,000	75,000	100,000
Lumen Maintenance Factor	>0.94	>0.92	>0.90

### HID Replacement Guide

Luminaire	Equivalent HID Lamp	WPX Input Power
WPX1 LED P1	100W	11W
WPX1 LED P2	150W	24W
WPX2	250W	47W
WPX3	400W	69W

### Lumen Output

Luminaire	Color Temperature	Lumen Output
WPX1 LED P1	3000K	1,537
	4000K	1,568
	5000K	1,602
WPX1 LED P2	3000K	2,748
	4000K	2,912
	5000K	2,954
WPX2	3000K	5,719
	4000K	5,896
	5000K	6,201
WPX3	3000K	8,984
	4000K	9,269
	5000K	9,393

### Lumen Ambient Temperature (LAT) Multipliers

Use these factors to determine relative lumen output for average ambient temperatures from 0-40°C (32-104°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

### Emergency Egress Battery Packs

The emergency battery backup is integral to the luminaire — no external housing or back box is required. The emergency battery will power the luminaire for a minimum duration of 90 minutes and deliver minimum initial output of 550 lumens. Both battery pack options are CEC compliant.

Battery Type	Minimum Temperature Rating	Power (Watts)	Controls Option	Ordering Example
Standard	0°C	4W	E4WH	WPX2 LED 40K MVOLT <b>E4WH</b> DDBXD
Cold Weather	-20°C	14W	E14WC	WPX2 LED 40K MVOLT <b>E14WC</b> DDBXD

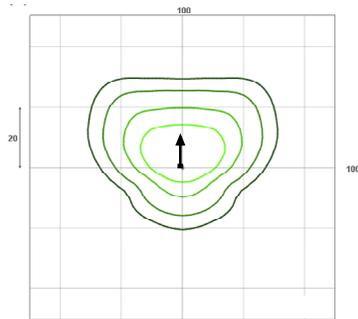
## Photometric Diagrams

To see complete photometric reports or download .ies files for this product, visit the Lithonia Lighting [WPX LED](#) homepage. Tested in accordance with IESNA LM-79 and LM-80 standards

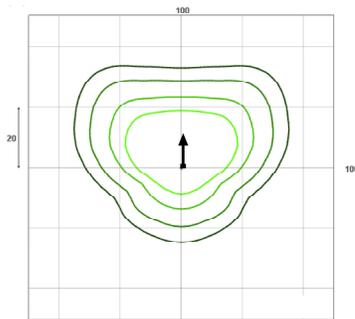
#### LEGEND

<span style="display:inline-block; width:10px; height:10px; background-color:#004a00;"></span>	0.1 fc
<span style="display:inline-block; width:10px; height:10px; background-color:#008000;"></span>	0.2 fc
<span style="display:inline-block; width:10px; height:10px; background-color:#00c000;"></span>	0.5 fc
<span style="display:inline-block; width:10px; height:10px; background-color:#90e090;"></span>	1.0 fc

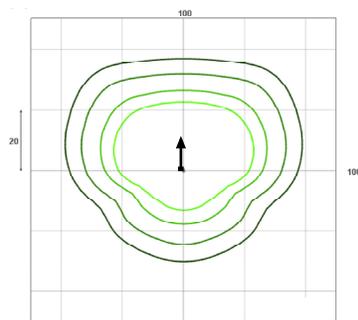
WPX1 LED P1



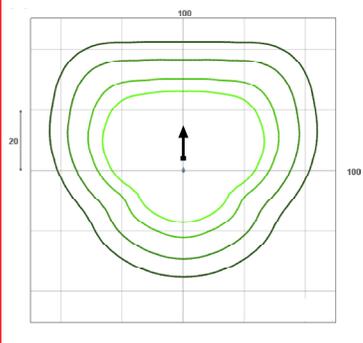
WPX1 LED P2



WPX2 LED



WPX3 LED



Mounting Height = 12 Feet.

LUMINAIRE SCHEDULE									
QTY	TYPE	DESCRIPTION	LAMP DATA		PART NUMBERS		MOUNT	VOLT	NOTES
			#	TYPE	MFG	CATALOG #			
3	OA	SINGLE HEAD 20'-0" POLE	LED	96 WATT-4.000K-85CRI-13,140 LUMENS	LUMARK	PRV-C25-D-UNV-T4-BZ / RPSQ-20-4-11-AB-D1-NB	POLE	120	1.2,3,4,5
2	OW1	WALL PACK	LED	10.11 WATT-4.000K-85CRI-1,401 LUMENS	SLG	WME-L14-G2-FSK	SURFACE	120	1,2,6,7
3	OW2	WALL PACK	LED	72.33 WATT-4.000K-85CRI-9,270 LUMENS	LITHONIA	WPX3-LED-48K-MVOLT	SURFACE	120	1,2

NOTES:  
 1. 4,000K TEMPERATURE  
 2. DARK BRONZE FINISH  
 3. TYPE 4 DISTRIBUTION  
 4. 20" DIAMETER CONCRETE BASE, 36" ABOVE FINISH GRADE TO TOP OF BASE.  
 5. BOLT CIRCLE 8-1/2" RANGE IS 8" - 8" BOLTS ARE 3/4" x 17" x 3"  
 6. FIELD SELECT CCT TEMPERATURE OUTPUT SETTING TO "4,000K"  
 7. BATTERY BACK UP PROVIDES A MINIMUM OF 90 MINUTES OF EMERGENCY POWER PER CODE.

CALCULATION SUMMARY						
Label	CalcType	Units	Avg	Max	Min	Avg/Min
LOADING DOCK AREA	Illuminance	Fc	1.36	5.00	0.10	13.60
OPEN PARKING LOT	Illuminance	Fc	0.98	2.00	0.30	3.27
OUTDOOR	Illuminance	Fc	0.24	2.80	0.00	N/A
PRESUMED LOT LINE EAST	Illuminance	Fc	0.15	0.40	0.00	N/A
PRESUMED LOT LINE SOUTH	Illuminance	Fc	0.12	0.50	0.00	N/A

VILLAGE  
 SUBMITTAL  
 PLAN  
 02.05.2026

**LYONS ELECTRIC**  
 Since 1979  
 powered by design

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REVISIONS		
NO.	DESCRIPTION	DATE

FIRM NAME AND ADDRESS:  
**LYONS ELECTRIC**  
 75 ENTERPRISE ROAD  
 DELAFIELD, WI 53018  
 www.lyons-electric.com

CONTACT INFORMATION:  
 TIM ANDERSON  
 MOBILE: (262) 370-1589  
 EMAIL: timanderson@lyons-electric.com

PROJECT NAME:

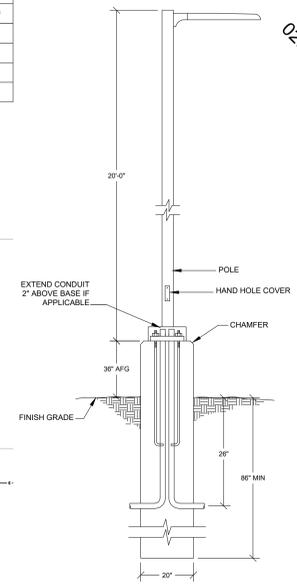
PROPOSED BUILDING ADDITION FOR:  
**BASIC METALS, INC**  
**OFFICE ADDITION**  
 W180 N11819 NORTH RIVER LANE  
 GERMANTOWN, WI 53022

SHEET TITLE:  
 SITE PHOTOMETRIC STUDY PLAN

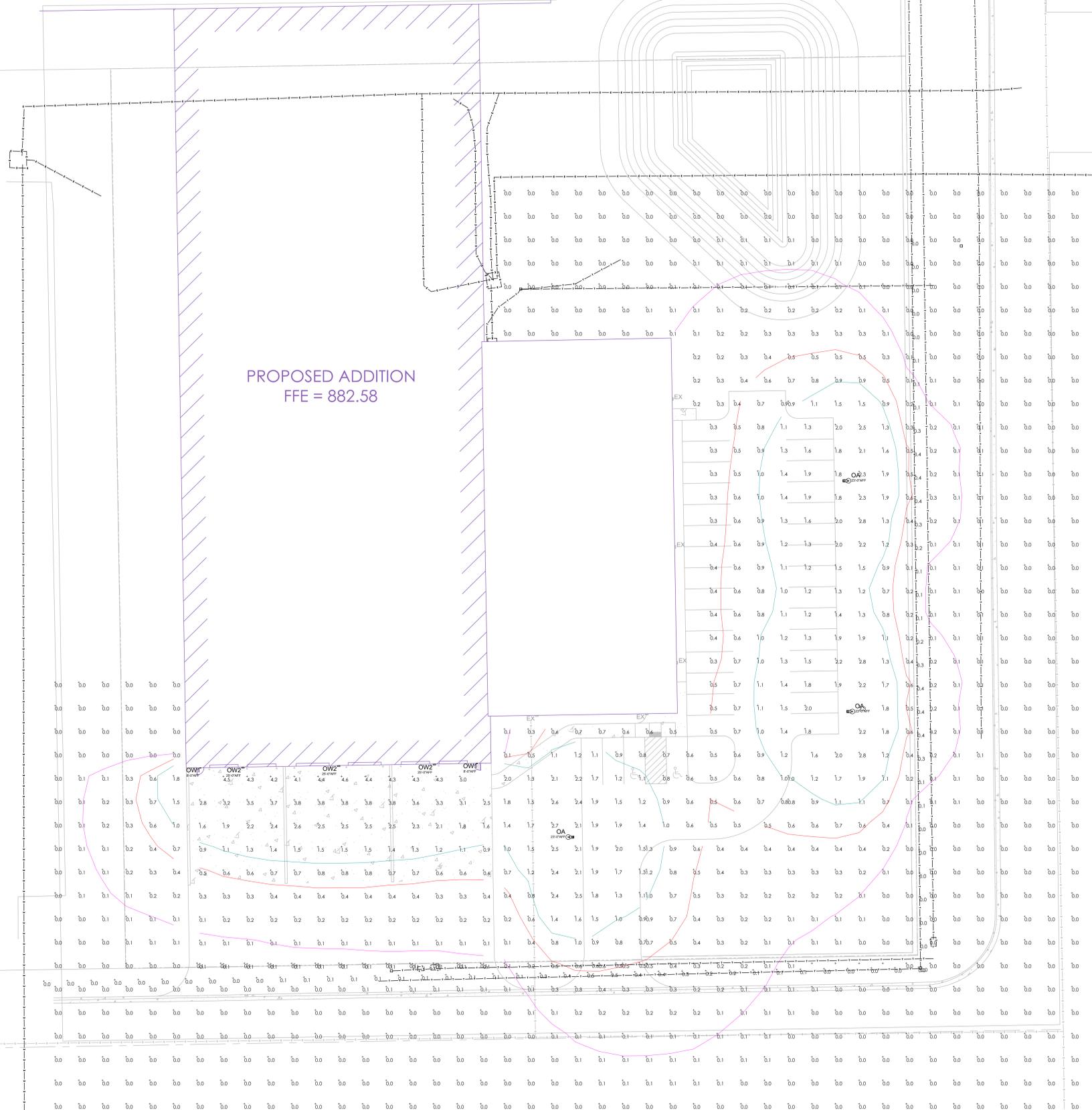
DRAWN BY: DMG	JOB NUMBER: -
DATE DRAWN: 02.05.2026	APPROVED BY: KRK

SHEET OF  
**1 1**

SHEET #:  
**ES100**



TYPICAL POLE BASE DETAIL  
 NTS



- GENERAL NOTES:**
- SWITCH ARC IS DRAWN FOR REFERENCE ONLY AND DOES NOT REPRESENT ACTUAL BRANCH WIRING.
  - ALL NIGHT LIGHTS, EXIT LIGHTS, EMERGENCY BATTERY UNITS AND OCCUPANCY SENSORS SHALL BE WIRED AHEAD OF ANY LIGHTING CONTROL SYSTEM THE PROJECT MAY CONTAIN.
  - REFER TO SHEET E000 FOR MOUNTING STYLES, HEIGHTS AND LUMINAIRE PART NUMBERS.
  - RECORD ANY AND ALL CHANGES TO THIS SHEET IN RED PEN FOR AS BUILT PURPOSES. SUBMIT AS BUILTS TO SUPERINTENDENT AT THE END OF THE PROJECT. MAKE REVISIONS AS JOB PROGRESSES NOT ALL AT ONCE IN THE END PLEASE WRITE LEGIBLY.
  - TEST LIGHTS, EXITS, EMERGENCY BATTERY UNITS AND ALL SWITCHES PRIOR TO THE END OF THE PROJECT AND REPORT ANY FAILED COMPONENTS.
  - PROGRAM AND TEST ALL OCCUPANCY SENSORS, TIME CLOCKS AND LIGHTING CONTACTORS PRIOR TO THE END OF THE PROJECT AND REPORT ANY FAILED COMPONENTS.
  - INSTALL TYPED PANEL SCHEDULES UPON COMPLETION OF THE PROJECT.
  - INSTALL ALL WALL PLATES LEVEL WITH THE SLOTS OF THE SCREW HEAD IN A VERTICAL POSITION.
  - INSTALL ARC FLASH STICKERS AND PANEL IDENTIFICATION PER NEC.
  - ALL NEW DEVICES MUST MATCH COLOR OF EXISTING DEVICES.
  - ALL DRAWINGS ARE SCHEMATIC ONLY. THE INSTALLING ELECTRICAL CONTRACTOR SHALL BE THE ENGINEER OF RECORD. THE INSTALLING ELECTRICAL CONTRACTOR IS RESPONSIBLE FOR ALL CALCULATIONS, SIZING, ENGINEERING AND MEETING OF NEC.

**SITE PHOTOMETRIC STUDY PLAN**  
 1" = 20'-0"





*Civil Engineering Services*

## **STORM WATER MANAGEMENT AND SITE NARRATIVE**

Basic Metals Addition  
W180N11711 North River Lane, Germantown, WI 53022

February 2026

**OWNER CONTACT:**

Andy Fogel  
Basic Metals  
W180N11819 North River Lane  
Germantown, WI 53022  
(262) 255-9034  
afogel@basicmetals.com

**REGISTERED PROFESSIONAL ENGINEER:**

Joel VanEss, P.E.  
Abacus Architects, Inc.  
1135A Michigan Avenue  
Sheboygan, WI 53081  
(920)452-4444  
jvaness@abacusarchitects.net

## **PROJECT DESCRIPTION**

A total of about 149,945 sq.ft. of area will be disturbed during this project. Approximately 28,183 sq.ft. of new concrete and pavement and 41,647 sq.ft. of new building additions will be added to the existing Basic Metals.

The roads to be constructed will be asphalt roads with curb and gutter. The storm sewer was designed to collect the drainage associated with the majority of the site, which is then directed to a detention pond located northeast on the site.

## **PROPERTY INFORMATION**

This development involves Parcels #GTNV212904 and #GTNV212970 that are being combined as part of this project.

The parcels listed above are part of the SE  $\frac{1}{4}$  of the NW  $\frac{1}{4}$  and the NE  $\frac{1}{4}$  of the NW  $\frac{1}{4}$  of Section 21, Township 9 North, Range 20 East, Village of Germantown, Washington County, Wisconsin.

## **EXISTING CONDITIONS**

The existing site consists of grassland with Hydrologic Grade C and D soil, which were modeled with a runoff curve number (CN) of 74 and 80, and paved parking and an existing building, which were modeled with a runoff curve number (CN) of 98, per the requirement of the MMSD.

The existing site was divided into two separate drainage areas for modeling purposes, which are as follows:

- E-1 Existing East Area
- E-2 Existing West Area

E-1 consists of the majority of the existing grass on the site that flows to the east and off the site through a culvert in the southeast.

E-2 consists of the majority of the development on the existing site, including the existing building and pavement, that flows into the existing storm system on the site and into the storm system in the street to the south.

Refer to the appendix for information on the soils. Soils information was gathered using the NRCS Web Soil Survey.

Refer to the appendix for rainfall information. Rainfall information was gathered using the NOAA Atlas 14 Point Precipitation Estimates.

The following table represents the flow rates with respect to the existing drainage areas:

Design Storm	Flow Rate (cfs)		
	E-1	E-2	Total
1-year/24-hour MSE 4	0.88	2.61	3.34
2-year/24-hour MSE 4	1.23	3.13	4.19
10-year/24-hour MSE 4	2.75	5.10	7.58
100-year/24-hour MSE 4	6.74	9.49	15.73
Time of Concentration (min)	20.7	18.2	---
Size (acres)	2.0	1.7	3.7

Table 1: Existing Storm Water Runoff Peak Flow Rates

### **PROPOSED CONDITIONS**

Refer to the appendix for information regarding the proposed site layout and drainage patterns. The project site has been divided into two separate drainage areas, which are as follows:

- P-1 Captured To Pond
- P-2 Uncaptured Area

P-1 will consist of the proposed building addition and a majority of the paved parking areas, as well as the existing building. This drainage area will be collected by the proposed storm sewer network, which will direct the runoff to the proposed detention pond.

P-2 will consist of the uncaptured paved parking and drives, and the uncaptured grass areas on the outside of the site.

The following tables summarize the proposed storm water runoff peak flow rates:

Design Storm	Flow Rate (cfs)		
	P-1	P-2	Total
1-year/24-hour MSE 4	6.18	0.76	6.41
2-year/24-hour MSE 4	7.20	0.99	7.53
10-year/24-hour MSE 4	10.99	1.94	11.76
100-year/24-hour MSE 4	19.26	4.30	21.17
Time of Concentration (min)	6.0	27.9	---
Size (acres)	2.4	1.3	3.7

Table 2: Proposed Storm Water Runoff Peak Flow Rates without Controls

Design Storm	Flow Rate (cfs)		
	P-1	P-2	Total
1-year/24-hour MSE 4	0.29	0.76	1.03
2-year/24-hour MSE 4	0.31	0.99	1.28
10-year/24-hour MSE 4	0.39	1.94	2.30
100-year/24-hour MSE 4	2.39	4.30	6.33
Time of Concentration (min)	6.0	27.9	---
Size (acres)	2.4	1.3	3.7

Table 3: Proposed Storm Water Runoff Peak Flow Rates with Controls

Design Storm	Flow Rate (cfs)	
	Requirement	Proposed
1-year/24-hour Type II	3.34	1.03
2-year/24-hour Type II	4.19	1.28
10-year/24-hour Type II	7.58	2.30
100-year/24-hour Type II	7.58	6.33

Table 4: Requirement vs. Proposed Storm Water Runoff Peak Flow Rates

The detention pond has been designed per the requirements of the DNR using HydroCAD and WinSLAMM software. The proposed TSS reduction has been modeled to be **56.82%**. Additional information regarding the proposed detention pond and modeling of the TSS reduction can be found in the Proposed HydroCAD modeling and WinSLAMM summary, located in the appendix of this report.

This development will not require storm water infiltration practices due to being a redevelopment post-construction site, under s. NR 151.121 (5). Additional information regarding the soils can be found in the Intertek Geotechnical Exploration and Evaluation Report and the Intertek Stormwater Tests Pits Letter, located in the appendix of this report.

## Storm Water Requirements

### NR 151.122 Total suspended solids performance standard.

(1) Requirement. BMPs shall be designed, installed and maintained to control total suspended solids carried in runoff from the post-construction site. BMPs shall be designed in accordance with Table 1... The design shall be based on an average annual rainfall, as compared to no runoff management controls.

Development Type	TSS Reduction
New Development	80 percent
In-fill $\geq$ 5 acres	80 percent
In-fill < 5 acres on or after October 1, 2012	80 percent
Redevelopment	40 percent of load from parking areas and roads
In-fill < 5 acres and before October 1, 2012	40 percent

### NR 151.123 Peak discharge performance standard.

(1) Requirement. By design, BMPs shall be employed to maintain or reduce the 1-year, 24-hour and the 2-year, 24-hour post-construction peak runoff discharge rates to the 1-year, 24-hour and the 2-year, 24-hour pre-development peak runoff discharge rates respectively, or to the maximum extent practicable. The runoff curve numbers in Table 2. shall be used to represent the actual pre-development condition.

Runoff Curve Number	Hydrologic Soil Group			
	A	B	C	D
Woodland	30	55	70	77
Grassland	39	61	71	78
Cropland	55	69	78	83

Note: Where the pre-development condition is a combination of woodland, grassland, or cropland, the runoff curve number should be pro-rated by area.

### 151.124(4)(c) Infiltration performance standard.

(1) 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.

## **APPENDIX TABLE OF CONTENTS**

### **EXISTING STORMWATER MODELING**

EXISTING CONDITIONS  
EXISTING HYDROCAD MODELING REPORT

### **PROPOSED STORMWATER MODELING**

PROPOSED CONDITIONS  
PROPOSED HYDROCAD MODELING REPORT  
WINSLAMM ANALYSIS

### **SOILS INFORMATION**

USGS WEB SOIL SURVEY

### **RAINFALL INFORMATION**

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES

### **GEOTECH INFORMATION**

INTERTEK GEOTECHNICAL EXPLORATION AND EVALUATION

### **CIVIL PLAN SET**

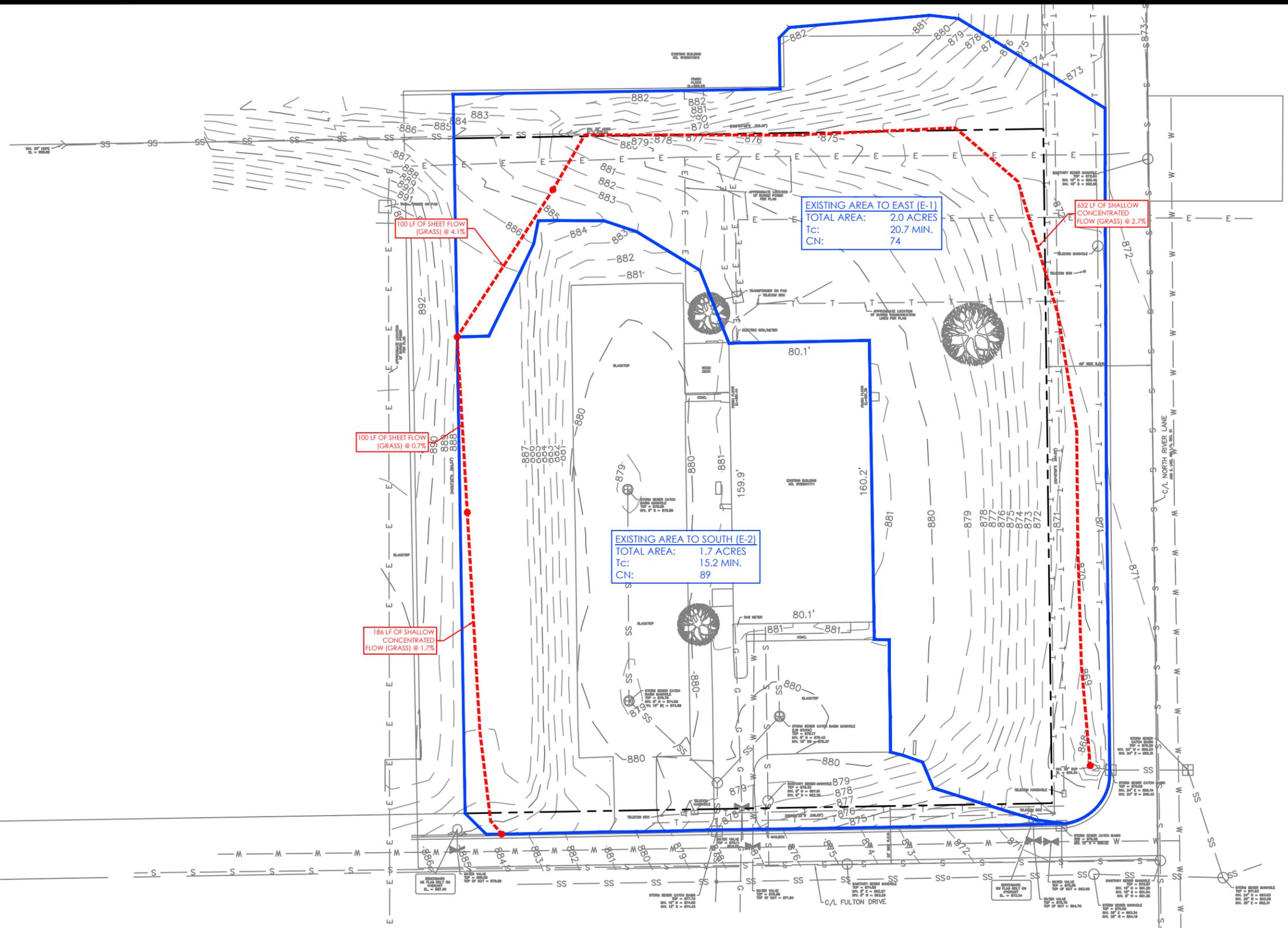
1 EXISTING CONDITIONS AND DEMO PLAN  
2 SITE PLAN  
3 GRADING PLAN  
4 EROSION CONTROL PLAN  
5 UTILITY PLAN  
6 DETAILS

## **EXISTING STORMWATER MODELING**

EXISTING CONDITIONS

EXISTING HYDROCAD MODELING REPORT

F:\2024-CONTRACTS\2024-100 Basic Metals Expansion\Phase - 2\Construction Documents\3.3 Site\SWMP\2024-100 - SWMP.dwg 2/3/2026

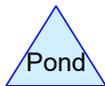
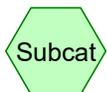
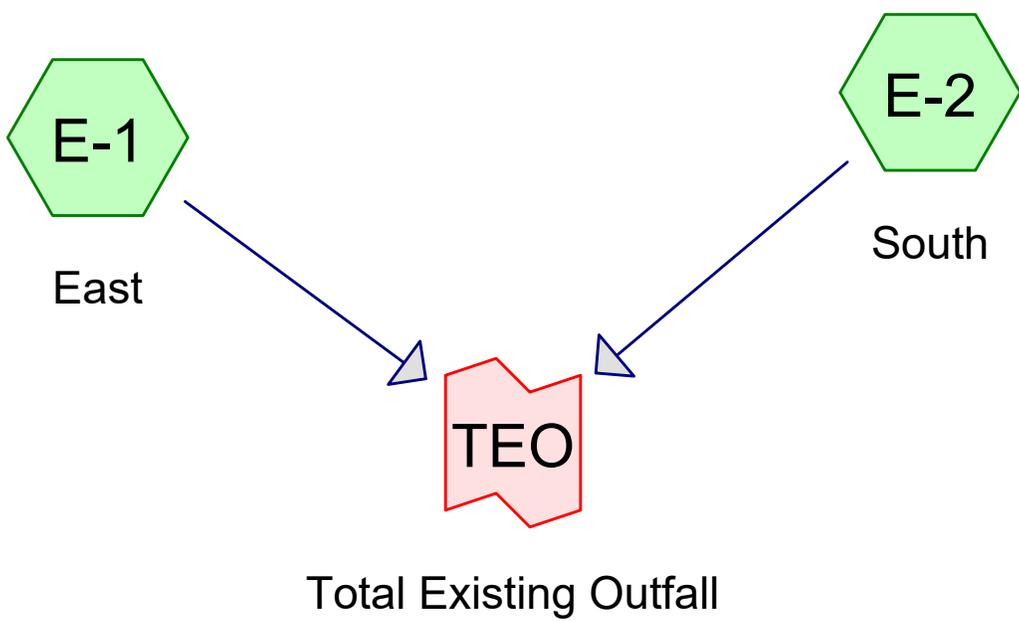


SCALE: 1"=60'

February 4, 2026  
**Basic Metals**  
 Germantown, WI 2024-100

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## 2024-100 - Basic Metals

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Page 2

### Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
2.153	74	>75% Grass cover, Good, HSG C (E-1, E-2)
0.600	80	>75% Grass cover, Good, HSG D (E-1, E-2)
0.628	98	Paved parking, HSG B (E-2)
0.294	98	Roofs, HSG B (E-2)
<b>3.675</b>	<b>81</b>	<b>TOTAL AREA</b>

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Page 3

### Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.000	HSG A	
0.922	HSG B	E-2
2.153	HSG C	E-1, E-2
0.600	HSG D	E-1, E-2
0.000	Other	
<b>3.675</b>		<b>TOTAL AREA</b>

## 2024-100 - Basic Metals

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### 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	2.153	0.600	0.000	2.753	>75% Grass cover, Good	E-1, E-2
0.000	0.628	0.000	0.000	0.000	0.628	Paved parking	E-2
0.000	0.294	0.000	0.000	0.000	0.294	Roofs	E-2
<b>0.000</b>	<b>0.922</b>	<b>2.153</b>	<b>0.600</b>	<b>0.000</b>	<b>3.675</b>	<b>TOTAL AREA</b>	

**2024-100 - Basic Metals**

*MSE 24-hr 4 1-year Rainfall=2.36"*

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentE-1: East**

Runoff Area=1.958 ac 0.00% Impervious Runoff Depth>0.53"  
Flow Length=732' Tc=20.7 min CN=74 Runoff=0.88 cfs 0.086 af

**SubcatchmentE-2: South**

Runoff Area=1.717 ac 53.70% Impervious Runoff Depth>1.33"  
Flow Length=286' Tc=15.2 min CN=89 Runoff=2.61 cfs 0.190 af

**Link TEO: Total Existing Outfall**

Inflow=3.34 cfs 0.277 af  
Primary=3.34 cfs 0.277 af

**Total Runoff Area = 3.675 ac Runoff Volume = 0.277 af Average Runoff Depth = 0.90"**  
**74.91% Pervious = 2.753 ac 25.09% Impervious = 0.922 ac**

**Summary for Subcatchment E-1: East**

Runoff = 0.88 cfs @ 12.35 hrs, Volume= 0.086 af, Depth> 0.53"

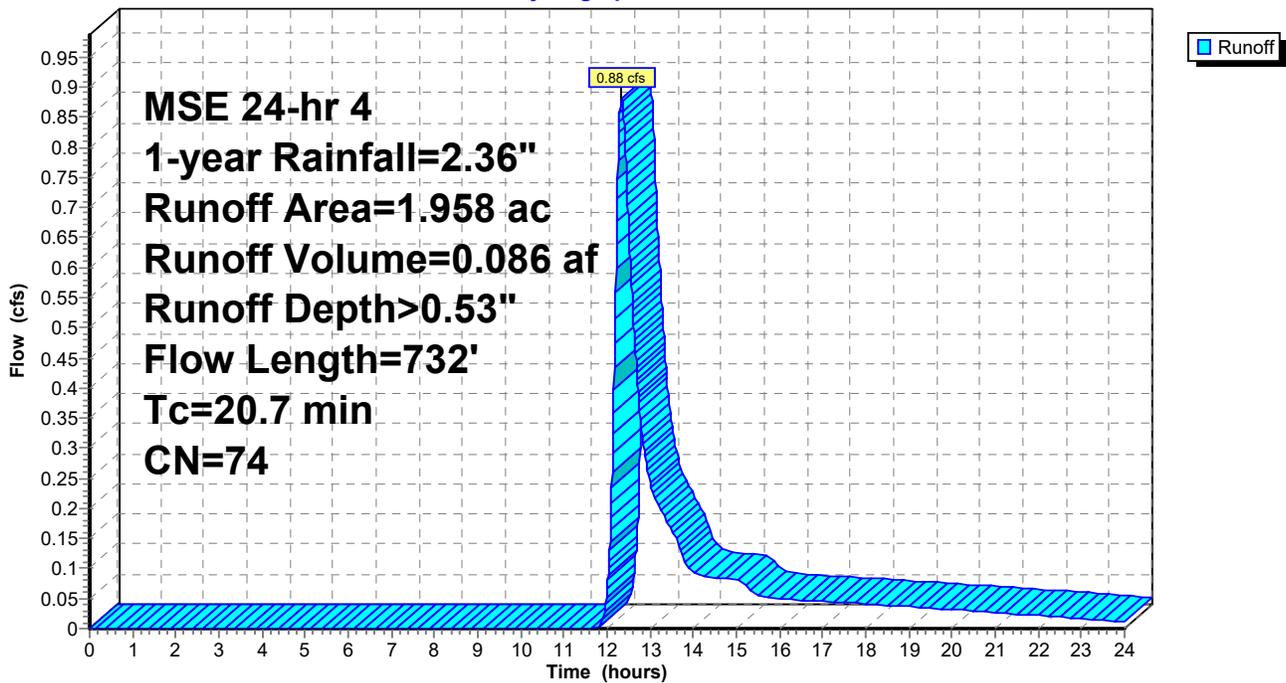
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
MSE 24-hr 4 1-year Rainfall=2.36"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
* 1.847	74	>75% Grass cover, Good, HSG C
* 0.111	80	>75% Grass cover, Good, HSG D
0.000	98	Paved parking, HSG B
0.000	98	Roofs, HSG B
1.958	74	Weighted Average
1.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0413	0.14		<b>Sheet Flow, Sheet Flow</b>
					Grass: Dense n= 0.240 P2= 2.70"
9.1	632	0.0273	1.16		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b>
					Short Grass Pasture Kv= 7.0 fps
20.7	732	Total			

**Subcatchment E-1: East**

Hydrograph



### Summary for Subcatchment E-2: South

Runoff = 2.61 cfs @ 12.24 hrs, Volume= 0.190 af, Depth> 1.33"

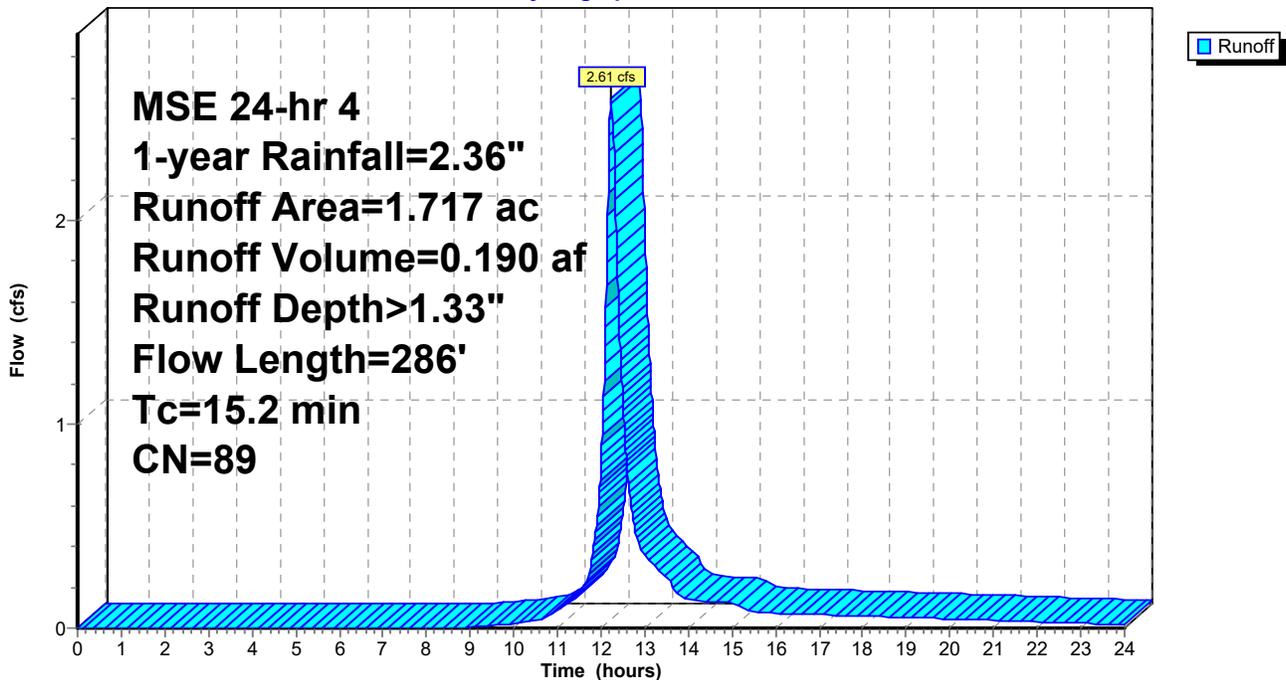
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 1-year Rainfall=2.36"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.306	74	>75% Grass cover, Good, HSG C
0.489	80	>75% Grass cover, Good, HSG D
0.628	98	Paved parking, HSG B
0.294	98	Roofs, HSG B
1.717	89	Weighted Average
0.795		46.30% Pervious Area
0.922		53.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0400	0.14		<b>Sheet Flow, Sheet Flow</b>
					Grass: Dense n= 0.240 P2= 2.70"
3.4	186	0.0173	0.92		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b>
					Short Grass Pasture Kv= 7.0 fps
15.2	286	Total			

### Subcatchment E-2: South

Hydrograph

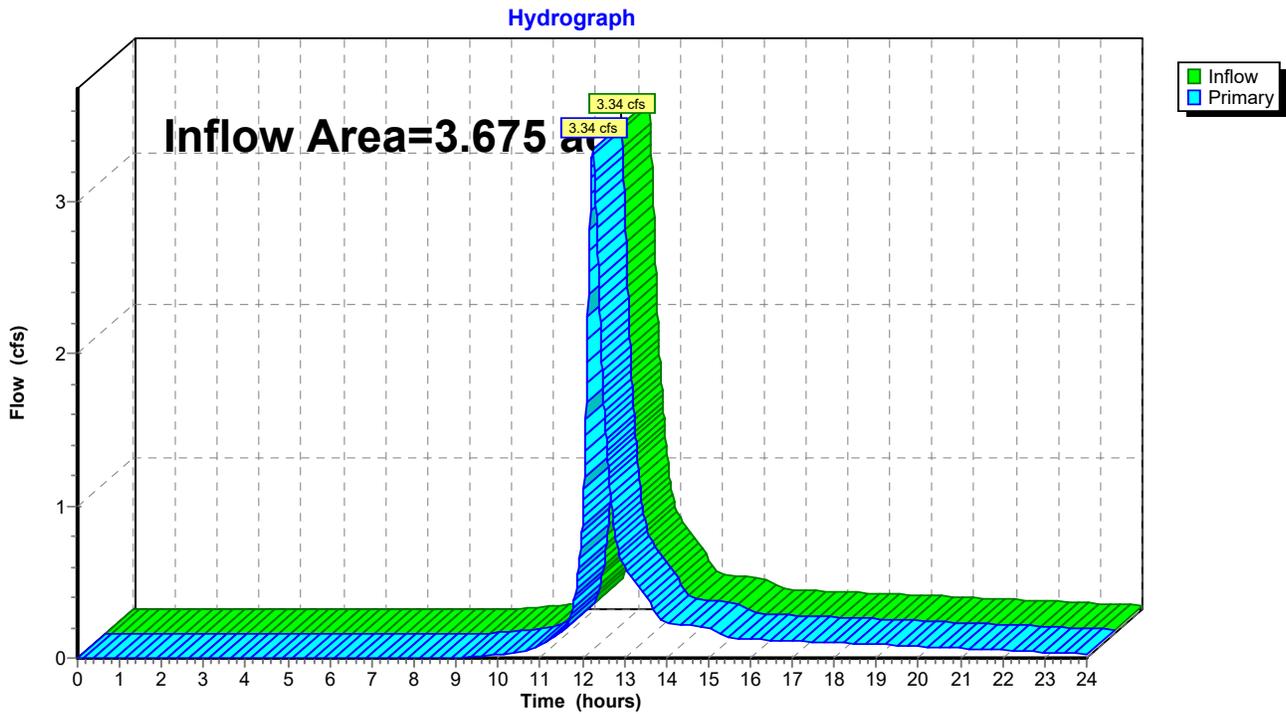


### Summary for Link TEO: Total Existing Outfall

Inflow Area = 3.675 ac, 25.09% Impervious, Inflow Depth > 0.90" for 1-year event  
Inflow = 3.34 cfs @ 12.25 hrs, Volume= 0.277 af  
Primary = 3.34 cfs @ 12.25 hrs, Volume= 0.277 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

### Link TEO: Total Existing Outfall



**2024-100 - Basic Metals**

MSE 24-hr 4 2-year Rainfall=2.67"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentE-1: East**

Runoff Area=1.958 ac 0.00% Impervious Runoff Depth>0.70"  
Flow Length=732' Tc=20.7 min CN=74 Runoff=1.23 cfs 0.115 af

**SubcatchmentE-2: South**

Runoff Area=1.717 ac 53.70% Impervious Runoff Depth>1.60"  
Flow Length=286' Tc=15.2 min CN=89 Runoff=3.13 cfs 0.229 af

**Link TEO: Total Existing Outfall**

Inflow=4.19 cfs 0.344 af  
Primary=4.19 cfs 0.344 af

**Total Runoff Area = 3.675 ac Runoff Volume = 0.344 af Average Runoff Depth = 1.12"**  
**74.91% Pervious = 2.753 ac 25.09% Impervious = 0.922 ac**

**Summary for Subcatchment E-1: East**

Runoff = 1.23 cfs @ 12.33 hrs, Volume= 0.115 af, Depth> 0.70"

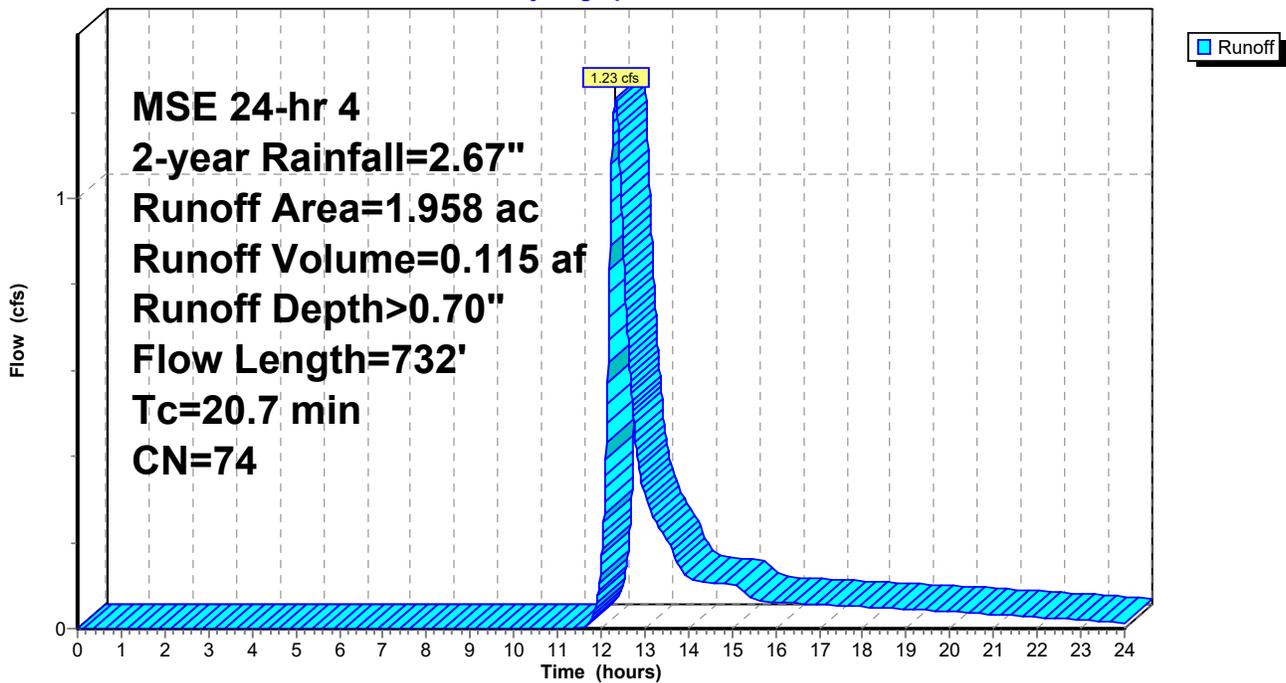
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
MSE 24-hr 4 2-year Rainfall=2.67"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
* 1.847	74	>75% Grass cover, Good, HSG C
* 0.111	80	>75% Grass cover, Good, HSG D
0.000	98	Paved parking, HSG B
0.000	98	Roofs, HSG B
1.958	74	Weighted Average
1.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0413	0.14		<b>Sheet Flow, Sheet Flow</b> Grass: Dense n= 0.240 P2= 2.70"
9.1	632	0.0273	1.16		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b> Short Grass Pasture Kv= 7.0 fps
20.7	732	Total			

**Subcatchment E-1: East**

Hydrograph



**Summary for Subcatchment E-2: South**

Runoff = 3.13 cfs @ 12.24 hrs, Volume= 0.229 af, Depth> 1.60"

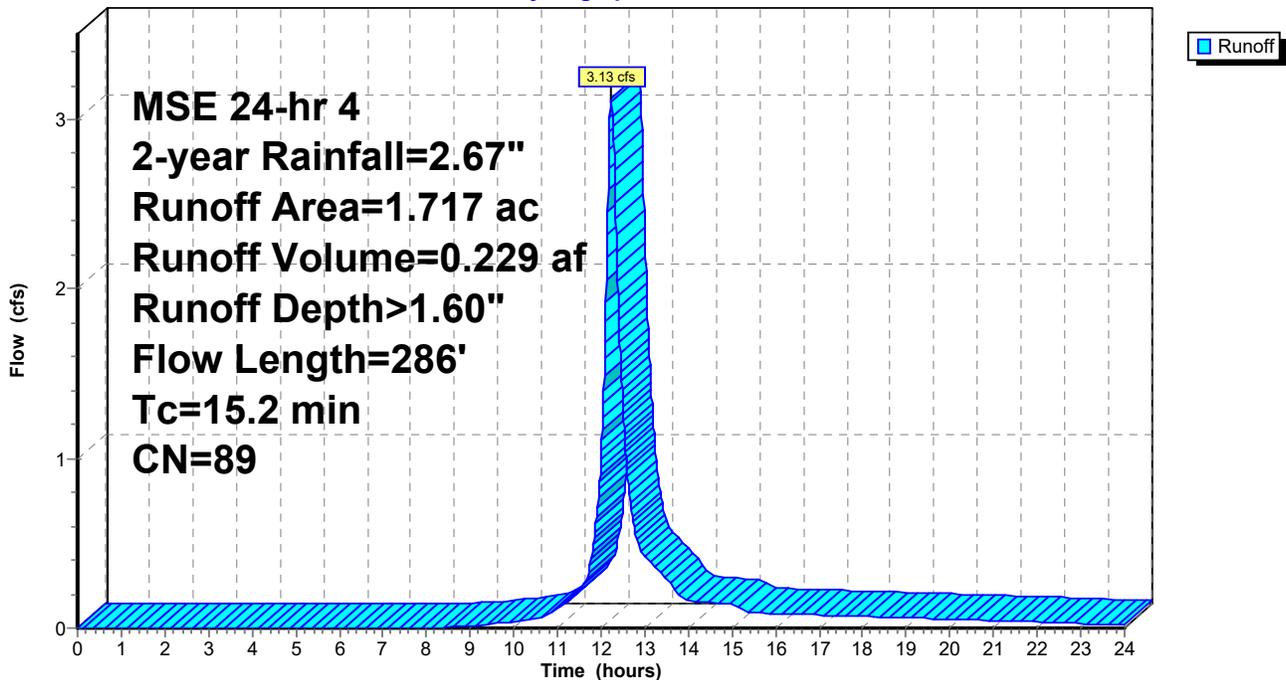
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 2-year Rainfall=2.67"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
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1.717	89	Weighted Average
0.795		46.30% Pervious Area
0.922		53.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0400	0.14		<b>Sheet Flow, Sheet Flow</b>
					Grass: Dense n= 0.240 P2= 2.70"
3.4	186	0.0173	0.92		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b>
					Short Grass Pasture Kv= 7.0 fps
15.2	286	Total			

**Subcatchment E-2: South**

Hydrograph

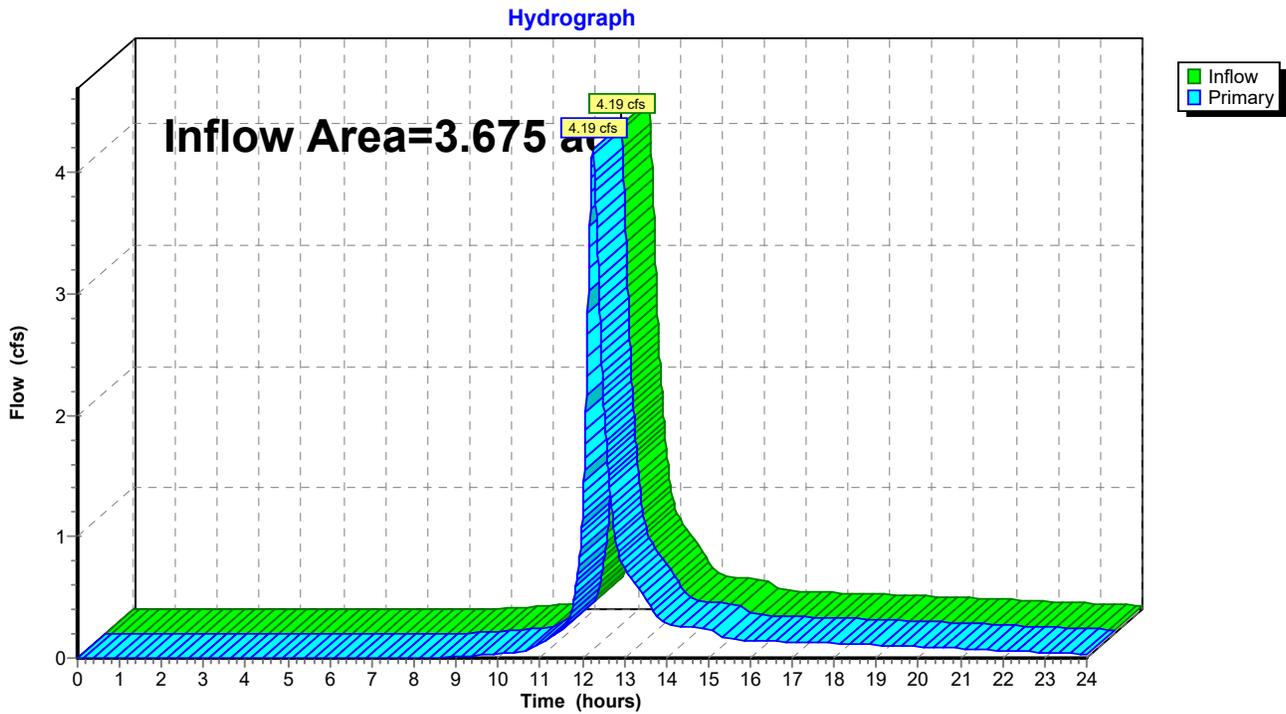


### Summary for Link TEO: Total Existing Outfall

Inflow Area = 3.675 ac, 25.09% Impervious, Inflow Depth > 1.12" for 2-year event  
Inflow = 4.19 cfs @ 12.25 hrs, Volume= 0.344 af  
Primary = 4.19 cfs @ 12.25 hrs, Volume= 0.344 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

### Link TEO: Total Existing Outfall



**2024-100 - Basic Metals**

*MSE 24-hr 4 10-year Rainfall=3.82"*

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentE-1: East**

Runoff Area=1.958 ac 0.00% Impervious Runoff Depth>1.46"  
Flow Length=732' Tc=20.7 min CN=74 Runoff=2.75 cfs 0.239 af

**SubcatchmentE-2: South**

Runoff Area=1.717 ac 53.70% Impervious Runoff Depth>2.65"  
Flow Length=286' Tc=15.2 min CN=89 Runoff=5.10 cfs 0.379 af

**Link TEO: Total Existing Outfall**

Inflow=7.58 cfs 0.618 af  
Primary=7.58 cfs 0.618 af

**Total Runoff Area = 3.675 ac Runoff Volume = 0.618 af Average Runoff Depth = 2.02"**  
**74.91% Pervious = 2.753 ac 25.09% Impervious = 0.922 ac**

**Summary for Subcatchment E-1: East**

Runoff = 2.75 cfs @ 12.31 hrs, Volume= 0.239 af, Depth> 1.46"

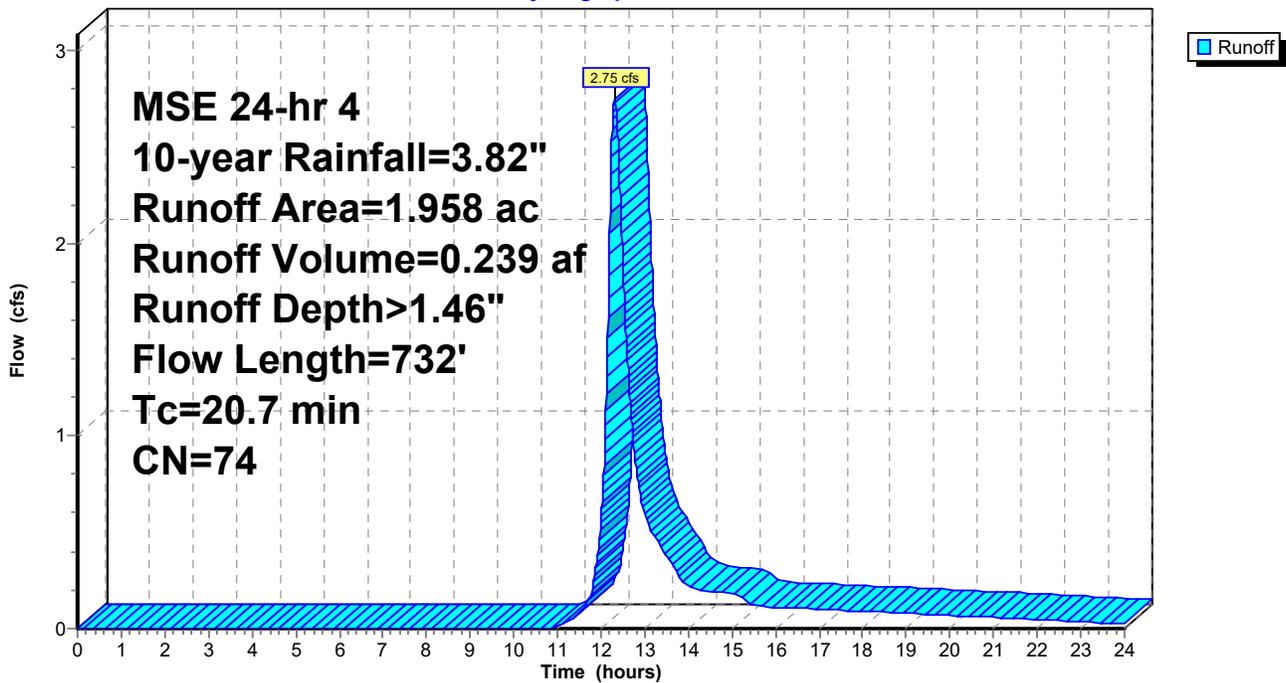
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 10-year Rainfall=3.82"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
* 1.847	74	>75% Grass cover, Good, HSG C
* 0.111	80	>75% Grass cover, Good, HSG D
0.000	98	Paved parking, HSG B
0.000	98	Roofs, HSG B
1.958	74	Weighted Average
1.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0413	0.14		<b>Sheet Flow, Sheet Flow</b>
					Grass: Dense n= 0.240 P2= 2.70"
9.1	632	0.0273	1.16		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b>
					Short Grass Pasture Kv= 7.0 fps
20.7	732	Total			

**Subcatchment E-1: East**

Hydrograph



**Summary for Subcatchment E-2: South**

Runoff = 5.10 cfs @ 12.23 hrs, Volume= 0.379 af, Depth> 2.65"

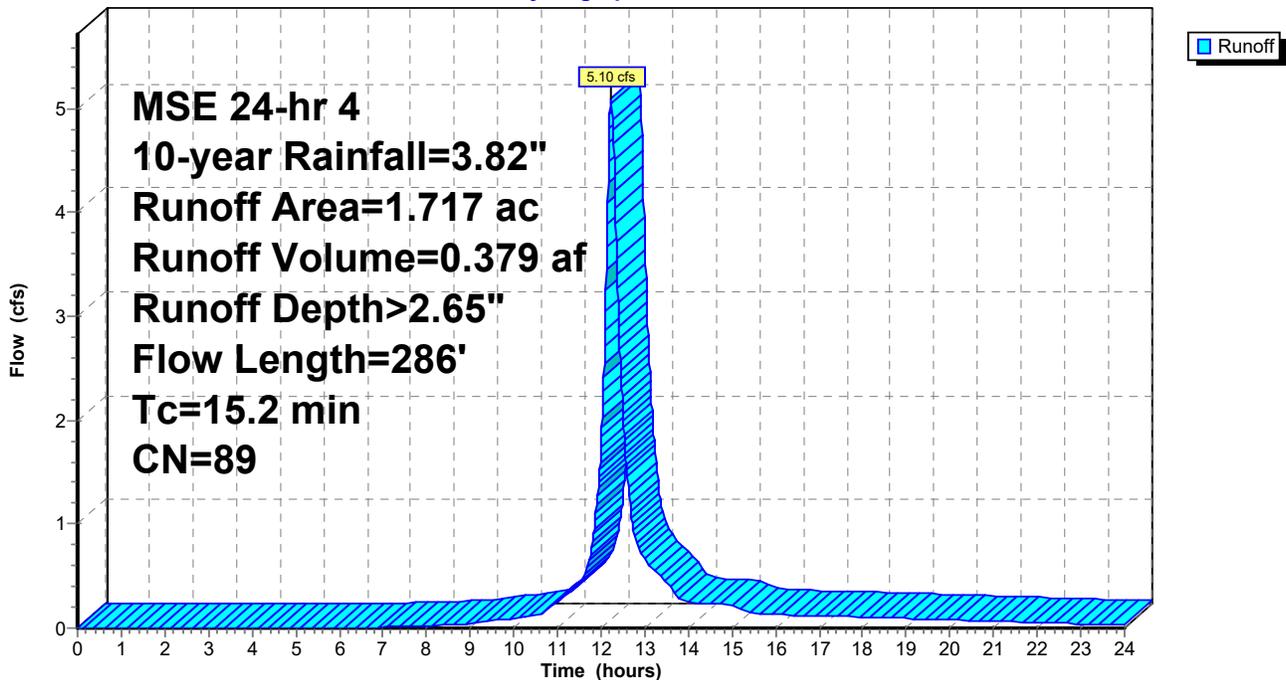
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 10-year Rainfall=3.82"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.306	74	>75% Grass cover, Good, HSG C
0.489	80	>75% Grass cover, Good, HSG D
0.628	98	Paved parking, HSG B
0.294	98	Roofs, HSG B
1.717	89	Weighted Average
0.795		46.30% Pervious Area
0.922		53.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0400	0.14		<b>Sheet Flow, Sheet Flow</b>
					Grass: Dense n= 0.240 P2= 2.70"
3.4	186	0.0173	0.92		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b>
					Short Grass Pasture Kv= 7.0 fps
15.2	286	Total			

**Subcatchment E-2: South**

Hydrograph



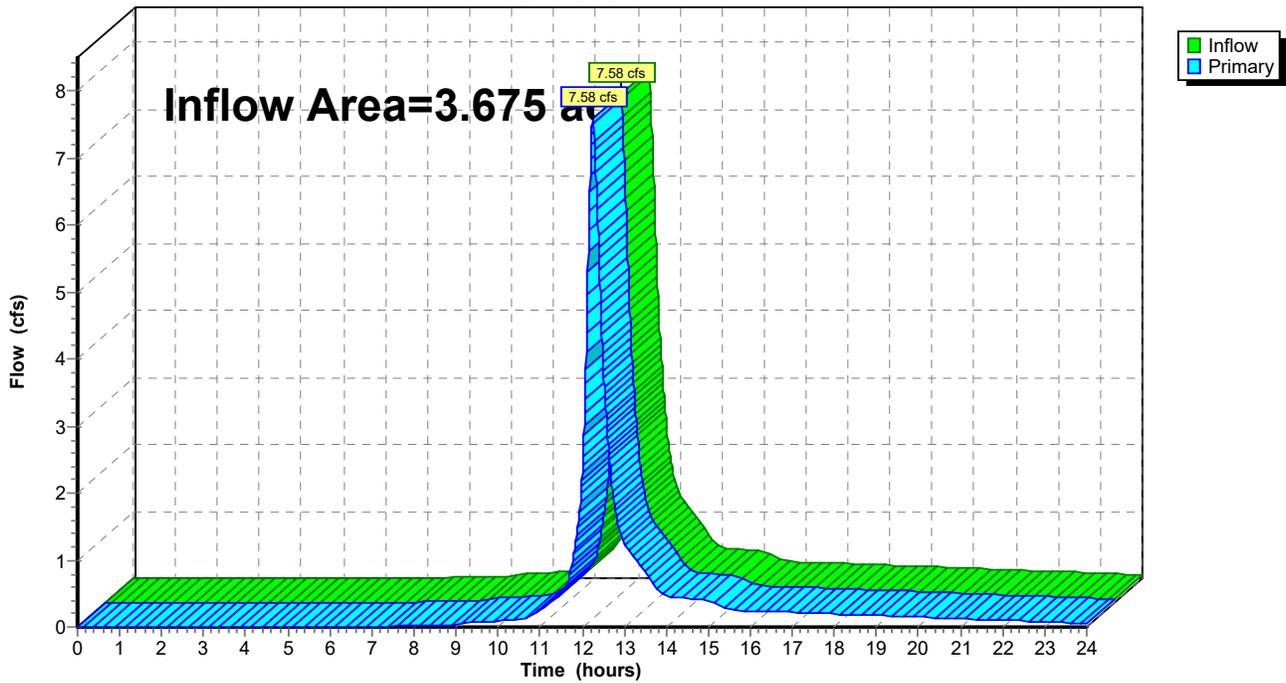
### Summary for Link TEO: Total Existing Outfall

Inflow Area = 3.675 ac, 25.09% Impervious, Inflow Depth > 2.02" for 10-year event  
Inflow = 7.58 cfs @ 12.25 hrs, Volume= 0.618 af  
Primary = 7.58 cfs @ 12.25 hrs, Volume= 0.618 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

### Link TEO: Total Existing Outfall

Hydrograph



**2024-100 - Basic Metals**

*MSE 24-hr 4 100-year Rainfall=6.37"*

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentE-1: East**

Runoff Area=1.958 ac 0.00% Impervious Runoff Depth>3.49"  
Flow Length=732' Tc=20.7 min CN=74 Runoff=6.74 cfs 0.570 af

**SubcatchmentE-2: South**

Runoff Area=1.717 ac 53.70% Impervious Runoff Depth>5.09"  
Flow Length=286' Tc=15.2 min CN=89 Runoff=9.49 cfs 0.728 af

**Link TEO: Total Existing Outfall**

Inflow=15.73 cfs 1.298 af  
Primary=15.73 cfs 1.298 af

**Total Runoff Area = 3.675 ac Runoff Volume = 1.298 af Average Runoff Depth = 4.24"**  
**74.91% Pervious = 2.753 ac 25.09% Impervious = 0.922 ac**

### Summary for Subcatchment E-1: East

Runoff = 6.74 cfs @ 12.30 hrs, Volume= 0.570 af, Depth> 3.49"

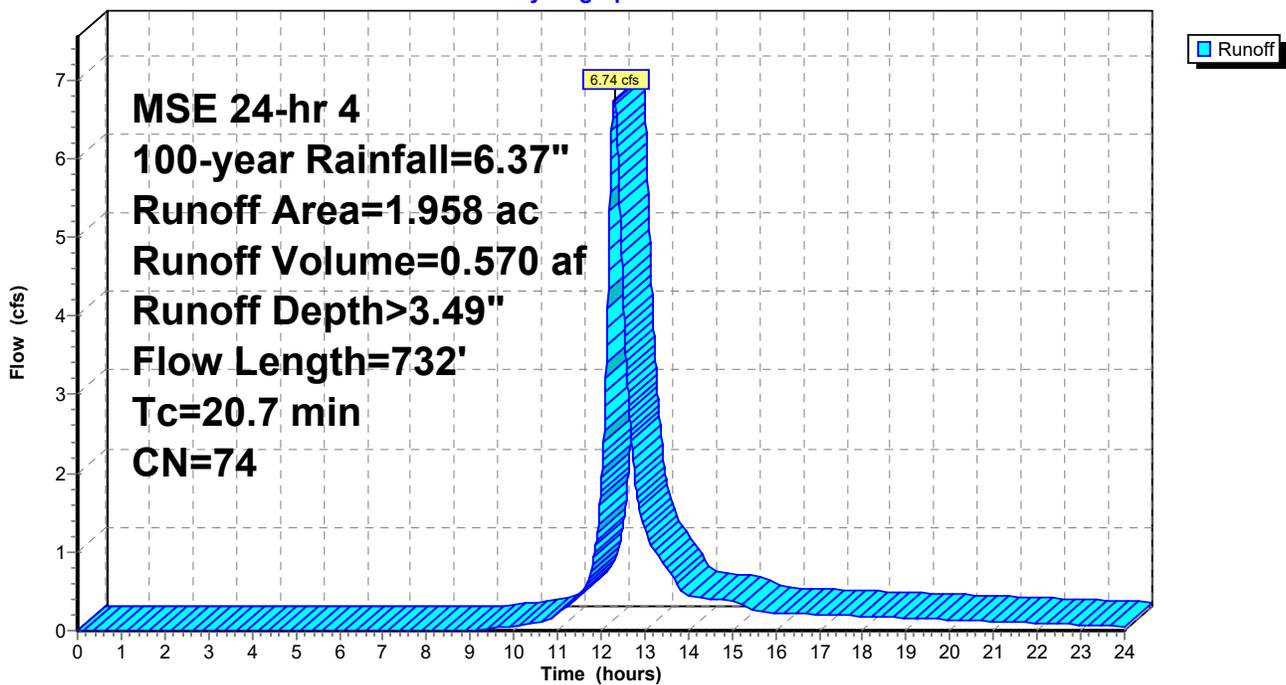
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 100-year Rainfall=6.37"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
* 1.847	74	>75% Grass cover, Good, HSG C
* 0.111	80	>75% Grass cover, Good, HSG D
0.000	98	Paved parking, HSG B
0.000	98	Roofs, HSG B
1.958	74	Weighted Average
1.958		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.6	100	0.0413	0.14		<b>Sheet Flow, Sheet Flow</b> Grass: Dense n= 0.240 P2= 2.70"
9.1	632	0.0273	1.16		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b> Short Grass Pasture Kv= 7.0 fps
20.7	732	Total			

### Subcatchment E-1: East

Hydrograph



### Summary for Subcatchment E-2: South

Runoff = 9.49 cfs @ 12.23 hrs, Volume= 0.728 af, Depth> 5.09"

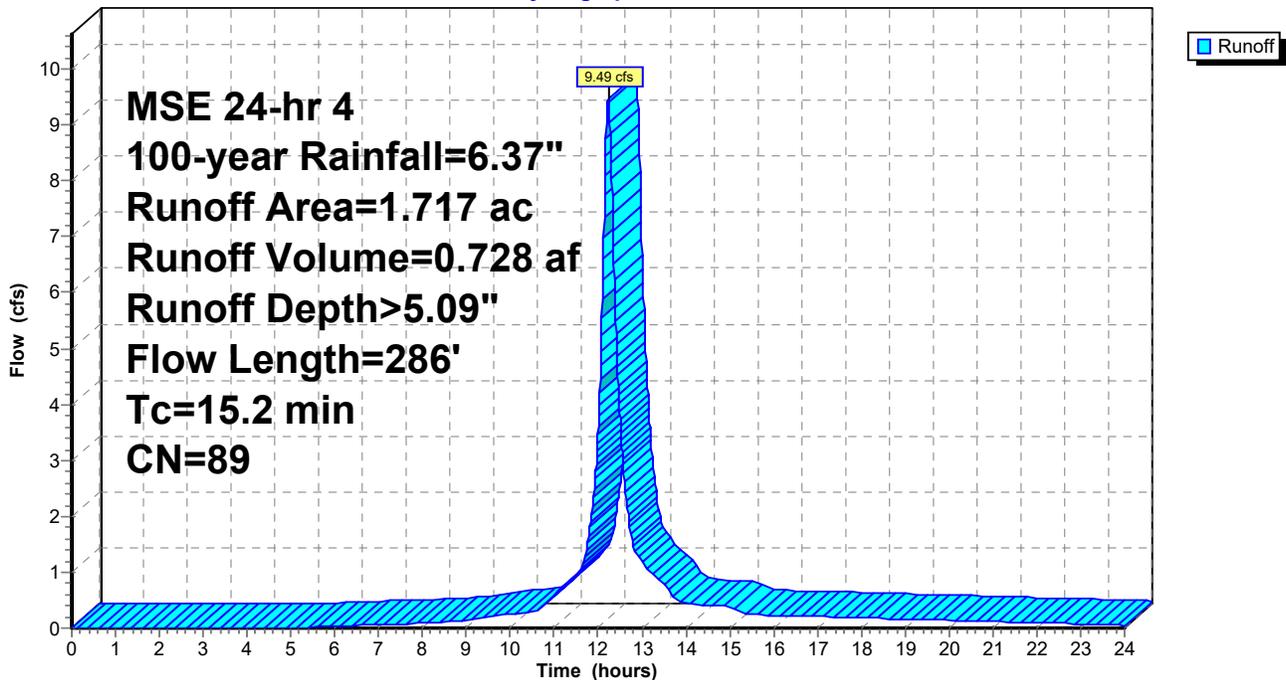
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 100-year Rainfall=6.37"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.306	74	>75% Grass cover, Good, HSG C
0.489	80	>75% Grass cover, Good, HSG D
0.628	98	Paved parking, HSG B
0.294	98	Roofs, HSG B
1.717	89	Weighted Average
0.795		46.30% Pervious Area
0.922		53.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
11.8	100	0.0400	0.14		<b>Sheet Flow, Sheet Flow</b>
					Grass: Dense n= 0.240 P2= 2.70"
3.4	186	0.0173	0.92		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b>
					Short Grass Pasture Kv= 7.0 fps
15.2	286	Total			

### Subcatchment E-2: South

Hydrograph



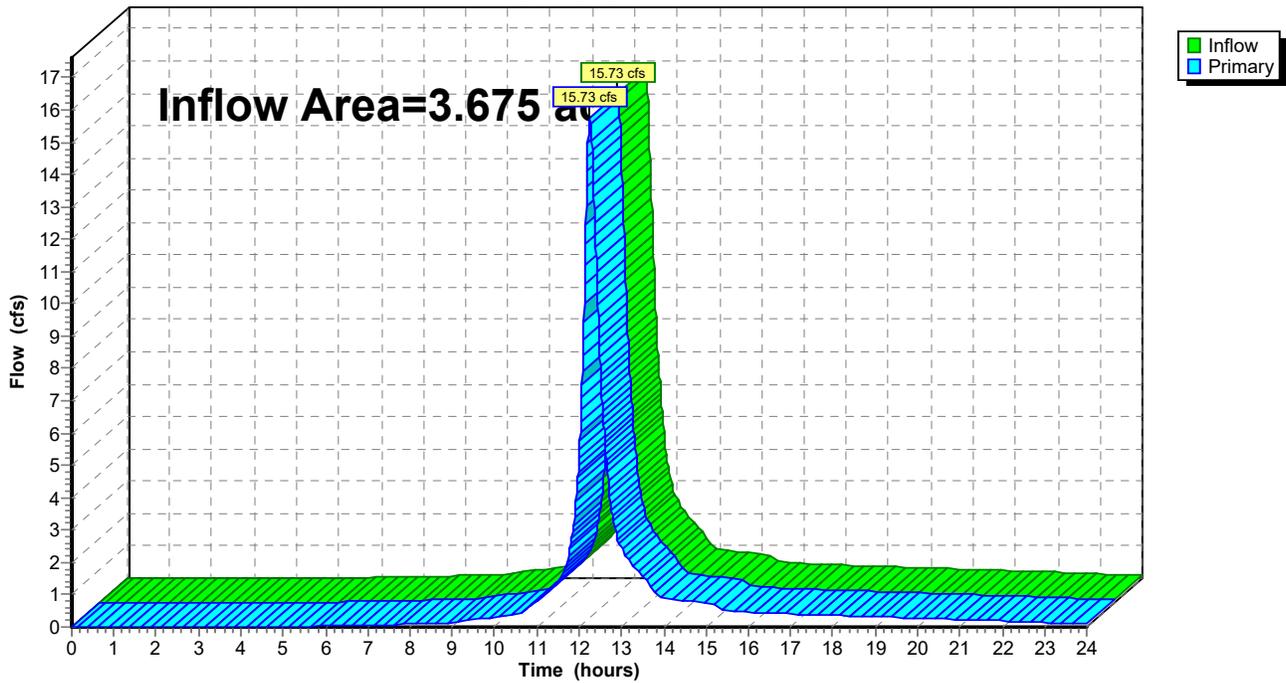
### Summary for Link TEO: Total Existing Outfall

Inflow Area = 3.675 ac, 25.09% Impervious, Inflow Depth > 4.24" for 100-year event  
Inflow = 15.73 cfs @ 12.25 hrs, Volume= 1.298 af  
Primary = 15.73 cfs @ 12.25 hrs, Volume= 1.298 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

### Link TEO: Total Existing Outfall

Hydrograph



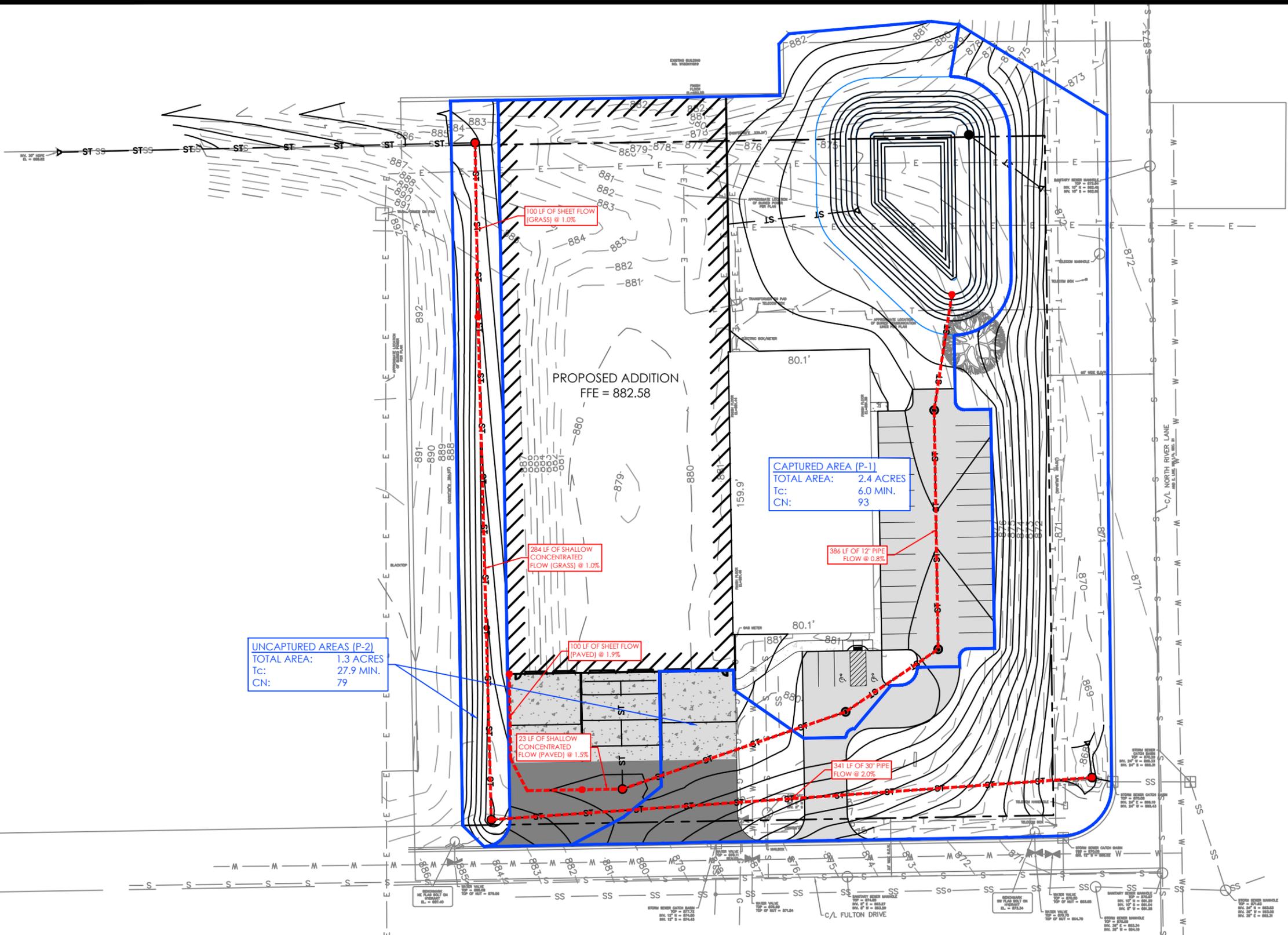
## **PROPOSED STORMWATER MODELING**

PROPOSED CONDITIONS

PROPOSED HYDROCAD MODELING REPORT

WINSLAMM ANALYSIS

P:\2024-CONTRACTS\2024-100 Basic Metals Expansion\Phase - 2\Construction Documents\3.3 Site\SWMP\2024-100 - SWMP.dwg 2/3/2026



UNCAPTURED AREAS (P-2)  
 TOTAL AREA: 1.3 ACRES  
 Tc: 27.9 MIN.  
 CN: 79

CAPTURED AREA (P-1)  
 TOTAL AREA: 2.4 ACRES  
 Tc: 6.0 MIN.  
 CN: 93

# PROPOSED CONDITIONS

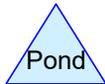
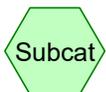
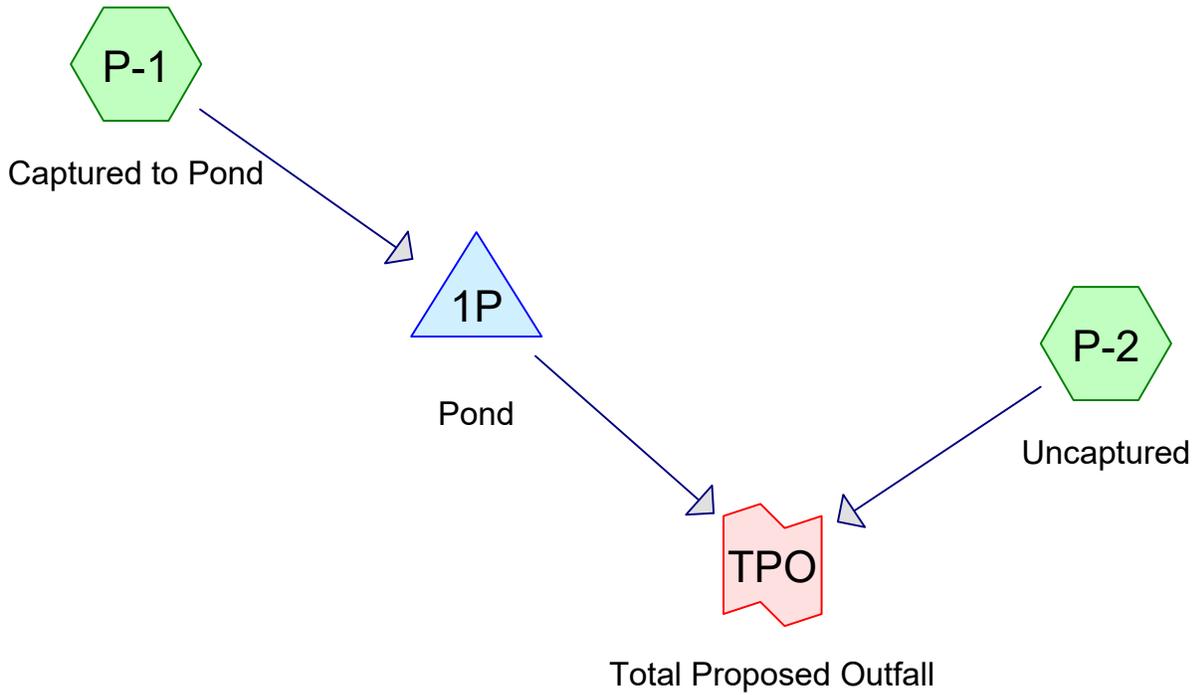


SCALE: 1"=60'

February 4, 2026  
**Basic Metals**  
 Germantown, WI 2024-100

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## 2024-100 - Basic Metals

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### Area Listing (selected nodes)

Area (acres)	CN	Description (subcatchment-numbers)
1.343	74	>75% Grass cover, Good, HSG C (P-1, P-2)
0.322	80	>75% Grass cover, Good, HSG D (P-1, P-2)
0.647	98	Paved parking, HSG B (P-1, P-2)
1.247	98	Roofs, HSG B (P-1)
0.117	98	Water Surface, HSG A (P-1)
<b>3.676</b>	<b>88</b>	<b>TOTAL AREA</b>

## 2024-100 - Basic Metals

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### Soil Listing (selected nodes)

Area (acres)	Soil Group	Subcatchment Numbers
0.117	HSG A	P-1
1.894	HSG B	P-1, P-2
1.343	HSG C	P-1, P-2
0.322	HSG D	P-1, P-2
0.000	Other	
<b>3.676</b>		<b>TOTAL AREA</b>

## 2024-100 - Basic Metals

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### 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	1.343	0.322	0.000	1.665	>75% Grass cover, Good	P-1, P-2
0.000	0.647	0.000	0.000	0.000	0.647	Paved parking	P-1, P-2
0.000	1.247	0.000	0.000	0.000	1.247	Roofs	P-1
0.117	0.000	0.000	0.000	0.000	0.117	Water Surface	P-1
<b>0.117</b>	<b>1.894</b>	<b>1.343</b>	<b>0.322</b>	<b>0.000</b>	<b>3.676</b>	<b>TOTAL AREA</b>	

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### 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	P-1	0.00	0.00	386.0	0.0079	0.010	12.0	0.0	0.0
2	P-2	0.00	0.00	341.0	0.0204	0.010	30.0	0.0	0.0
3	1P	872.50	872.00	66.0	0.0076	0.010	15.0	0.0	0.0

**2024-100 - Basic Metals**

MSE 24-hr 4 1-year Rainfall=2.36"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentP-1: Captured to Pond**

Runoff Area=2.391 ac 76.75% Impervious Runoff Depth>1.65"  
Flow Length=509' Tc=6.0 min CN=93 Runoff=6.18 cfs 0.328 af

**SubcatchmentP-2: Uncaptured**

Runoff Area=1.285 ac 13.70% Impervious Runoff Depth>0.74"  
Flow Length=725' Tc=27.9 min CN=79 Runoff=0.76 cfs 0.079 af

**Pond 1P: Pond**

Peak Elev=874.50' Storage=8,629 cf Inflow=6.18 cfs 0.328 af  
Outflow=0.29 cfs 0.260 af

**Link TPO: Total Proposed Outfall**

Inflow=1.03 cfs 0.340 af  
Primary=1.03 cfs 0.340 af

**Total Runoff Area = 3.676 ac Runoff Volume = 0.408 af Average Runoff Depth = 1.33"**  
**45.29% Pervious = 1.665 ac 54.71% Impervious = 2.011 ac**

**Summary for Subcatchment P-1: Captured to Pond**

Runoff = 6.18 cfs @ 12.13 hrs, Volume= 0.328 af, Depth> 1.65"

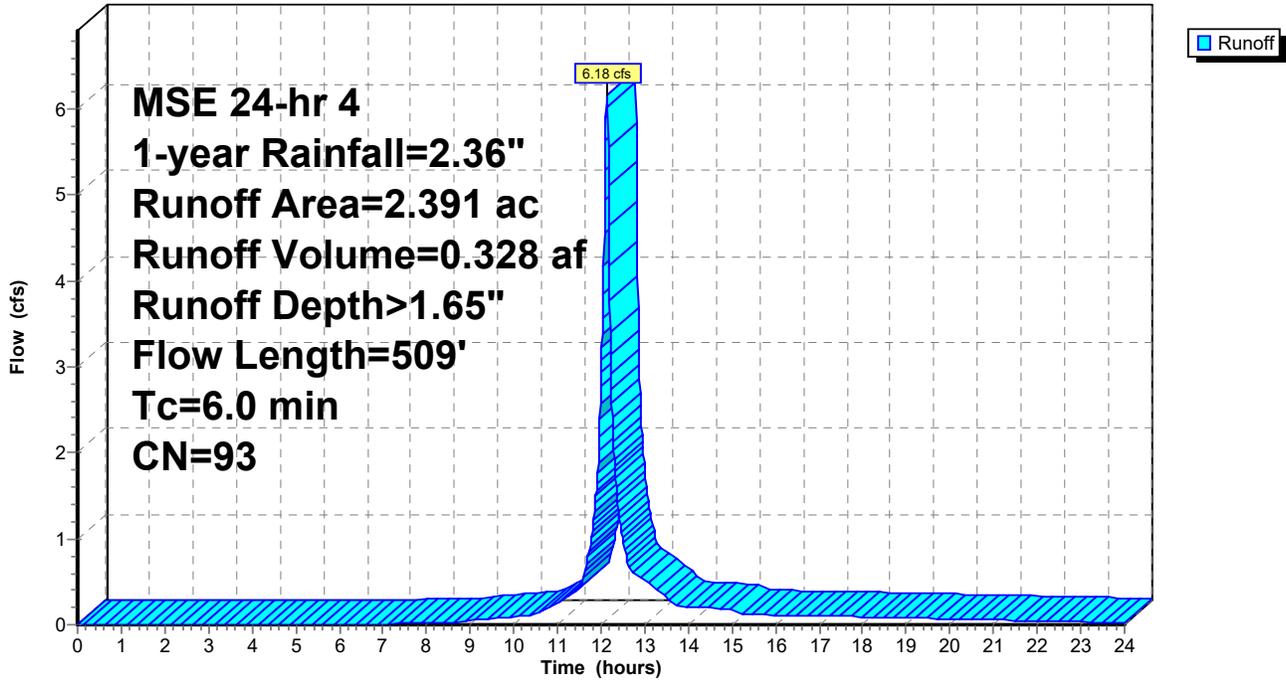
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 1-year Rainfall=2.36"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.521	74	>75% Grass cover, Good, HSG C
0.035	80	>75% Grass cover, Good, HSG D
0.471	98	Paved parking, HSG B
1.247	98	Roofs, HSG B
0.117	98	Water Surface, HSG A
2.391	93	Weighted Average
0.556		23.25% Pervious Area
1.835		76.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0186	1.23		<b>Sheet Flow, Sheet Flow</b> Smooth surfaces n= 0.011 P2= 2.70"
0.2	23	0.0149	2.48		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b> Paved Kv= 20.3 fps
1.2	386	0.0079	5.24	4.12	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
2.8	509	Total, Increased to minimum Tc = 6.0 min			

### Subcatchment P-1: Captured to Pond

Hydrograph



**Summary for Subcatchment P-2: Uncaptured**

Runoff = 0.76 cfs @ 12.43 hrs, Volume= 0.079 af, Depth> 0.74"

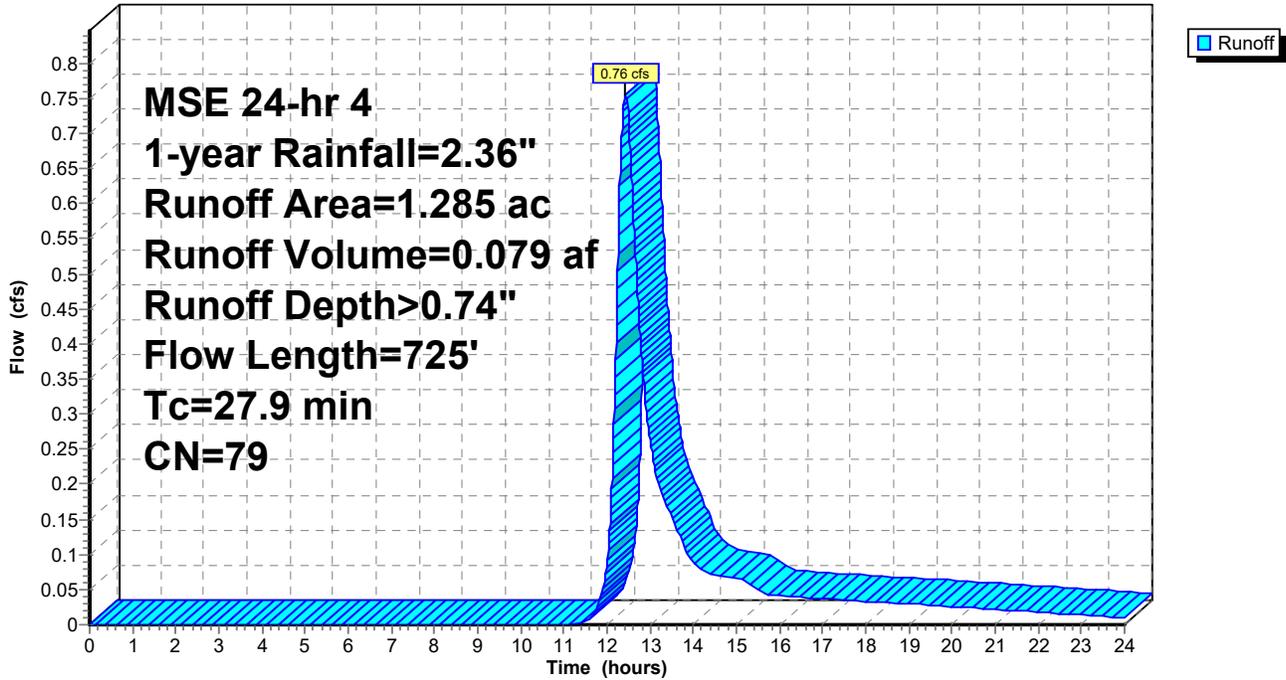
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 1-year Rainfall=2.36"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.822	74	>75% Grass cover, Good, HSG C
0.287	80	>75% Grass cover, Good, HSG D
0.176	98	Paved parking, HSG B
0.000	98	Roofs, HSG B
1.285	79	Weighted Average
1.109		86.30% Pervious Area
0.176		13.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0098	0.08		<b>Sheet Flow, Sheet Flow</b> Grass: Dense n= 0.240 P2= 2.70"
6.8	284	0.0100	0.70		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b> Short Grass Pasture Kv= 7.0 fps
0.4	341	0.0204	15.52	76.16	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010 PVC, smooth interior
27.9	725	Total			

### Subcatchment P-2: Uncaptured

Hydrograph



**Summary for Pond 1P: Pond**

Inflow Area = 2.391 ac, 76.75% Impervious, Inflow Depth > 1.65" for 1-year event  
 Inflow = 6.18 cfs @ 12.13 hrs, Volume= 0.328 af  
 Outflow = 0.29 cfs @ 13.57 hrs, Volume= 0.260 af, Atten= 95%, Lag= 86.1 min  
 Primary = 0.29 cfs @ 13.57 hrs, Volume= 0.260 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 Peak Elev= 874.50' @ 13.57 hrs Surf.Area= 6,455 sf Storage= 8,629 cf

Plug-Flow detention time= 303.1 min calculated for 0.260 af (79% of inflow)  
 Center-of-Mass det. time= 234.0 min ( 1,028.1 - 794.1 )

Volume	Invert	Avail.Storage	Storage Description
#1	873.00'	37,425 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
873.00	5,107	0	0
874.00	5,990	5,549	5,549
875.00	6,930	6,460	12,009
876.00	7,927	7,429	19,437
877.00	8,980	8,454	27,891
878.00	10,089	9,535	37,425

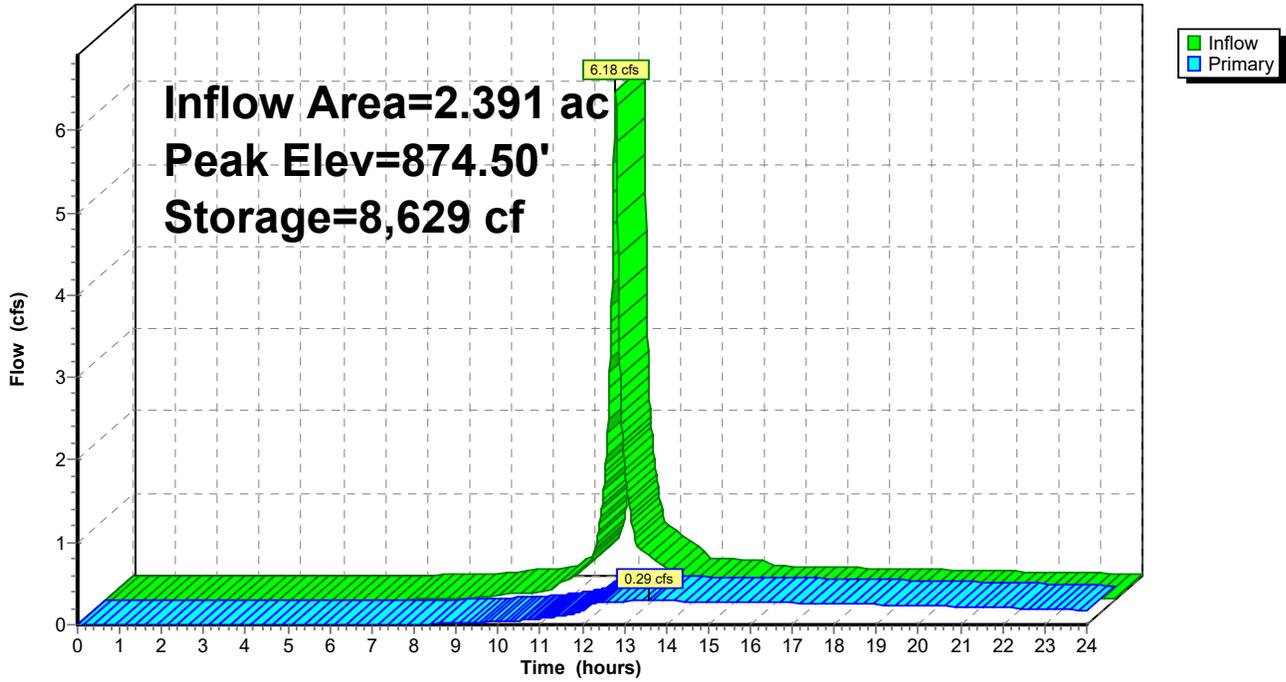
Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	<b>15.0" Round Culvert</b> L= 66.0' Ke= 1.000 Inlet / Outlet Invert= 872.50' / 872.00' S= 0.0076 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	873.00'	<b>3.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.50'	<b>48.0" Vert. Orifice/Grate</b> C= 0.600
#4	Primary	877.00'	<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> 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=0.29 cfs @ 13.57 hrs HW=874.50' (Free Discharge)

- 1=Culvert (Passes 0.29 cfs of 5.19 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.29 cfs @ 5.89 fps)
- 3=Orifice/Grate ( Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 1P: Pond

Hydrograph

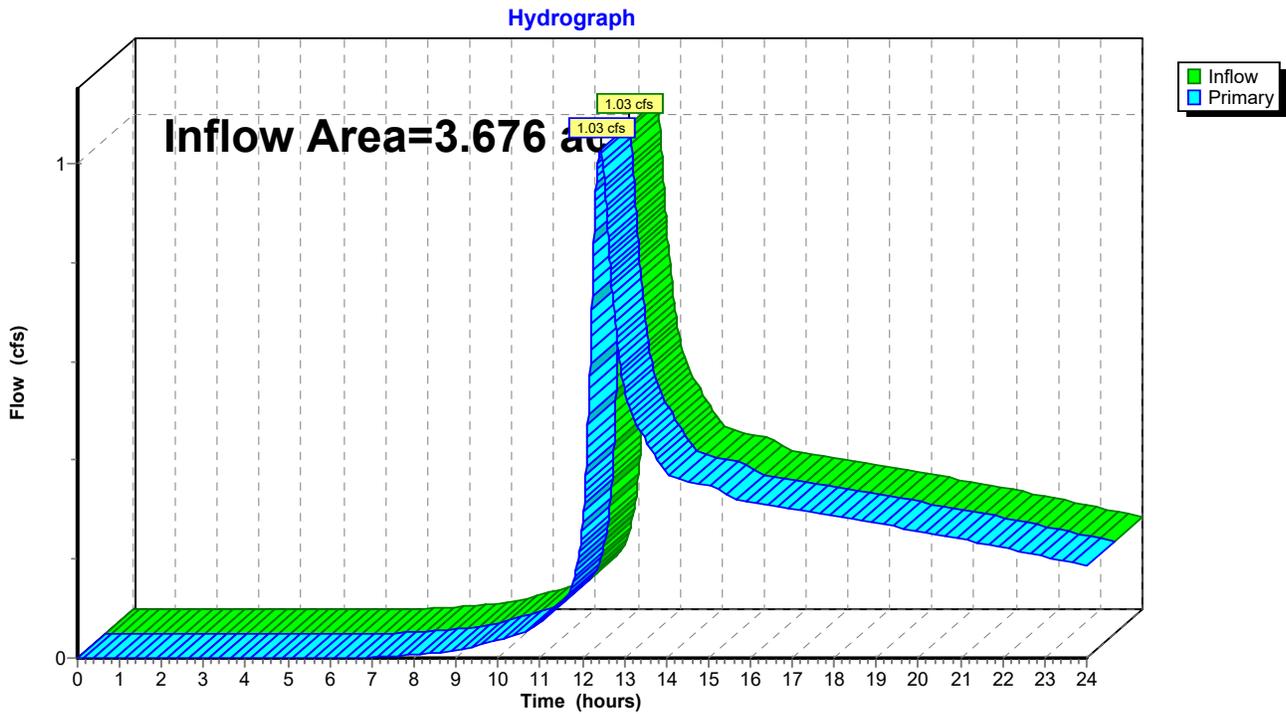


### Summary for Link TPO: Total Proposed Outfall

Inflow Area = 3.676 ac, 54.71% Impervious, Inflow Depth > 1.11" for 1-year event  
Inflow = 1.03 cfs @ 12.43 hrs, Volume= 0.340 af  
Primary = 1.03 cfs @ 12.43 hrs, Volume= 0.340 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

### Link TPO: Total Proposed Outfall



**2024-100 - Basic Metals**

MSE 24-hr 4 2-year Rainfall=2.67"

Prepared by HP Inc.

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentP-1: Captured to Pond**

Runoff Area=2.391 ac 76.75% Impervious Runoff Depth>1.94"  
Flow Length=509' Tc=6.0 min CN=93 Runoff=7.20 cfs 0.386 af

**SubcatchmentP-2: Uncaptured**

Runoff Area=1.285 ac 13.70% Impervious Runoff Depth>0.95"  
Flow Length=725' Tc=27.9 min CN=79 Runoff=0.99 cfs 0.102 af

**Pond 1P: Pond**

Peak Elev=874.76' Storage=10,346 cf Inflow=7.20 cfs 0.386 af  
Outflow=0.31 cfs 0.291 af

**Link TPO: Total Proposed Outfall**

Inflow=1.28 cfs 0.393 af  
Primary=1.28 cfs 0.393 af

**Total Runoff Area = 3.676 ac Runoff Volume = 0.488 af Average Runoff Depth = 1.59"**  
**45.29% Pervious = 1.665 ac 54.71% Impervious = 2.011 ac**

**Summary for Subcatchment P-1: Captured to Pond**

Runoff = 7.20 cfs @ 12.13 hrs, Volume= 0.386 af, Depth> 1.94"

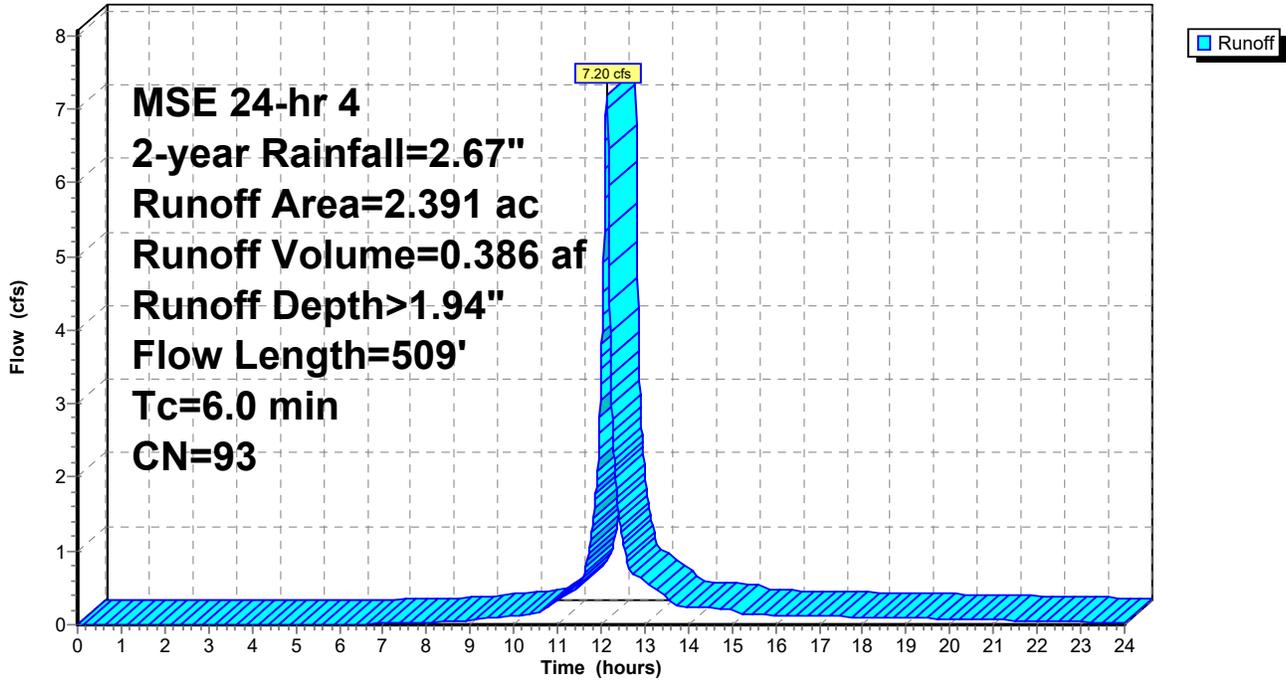
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 2-year Rainfall=2.67"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.521	74	>75% Grass cover, Good, HSG C
0.035	80	>75% Grass cover, Good, HSG D
0.471	98	Paved parking, HSG B
1.247	98	Roofs, HSG B
0.117	98	Water Surface, HSG A
2.391	93	Weighted Average
0.556		23.25% Pervious Area
1.835		76.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0186	1.23		<b>Sheet Flow, Sheet Flow</b> Smooth surfaces n= 0.011 P2= 2.70"
0.2	23	0.0149	2.48		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b> Paved Kv= 20.3 fps
1.2	386	0.0079	5.24	4.12	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
2.8	509	Total, Increased to minimum Tc = 6.0 min			

### Subcatchment P-1: Captured to Pond

Hydrograph



**Summary for Subcatchment P-2: Uncaptured**

Runoff = 0.99 cfs @ 12.43 hrs, Volume= 0.102 af, Depth> 0.95"

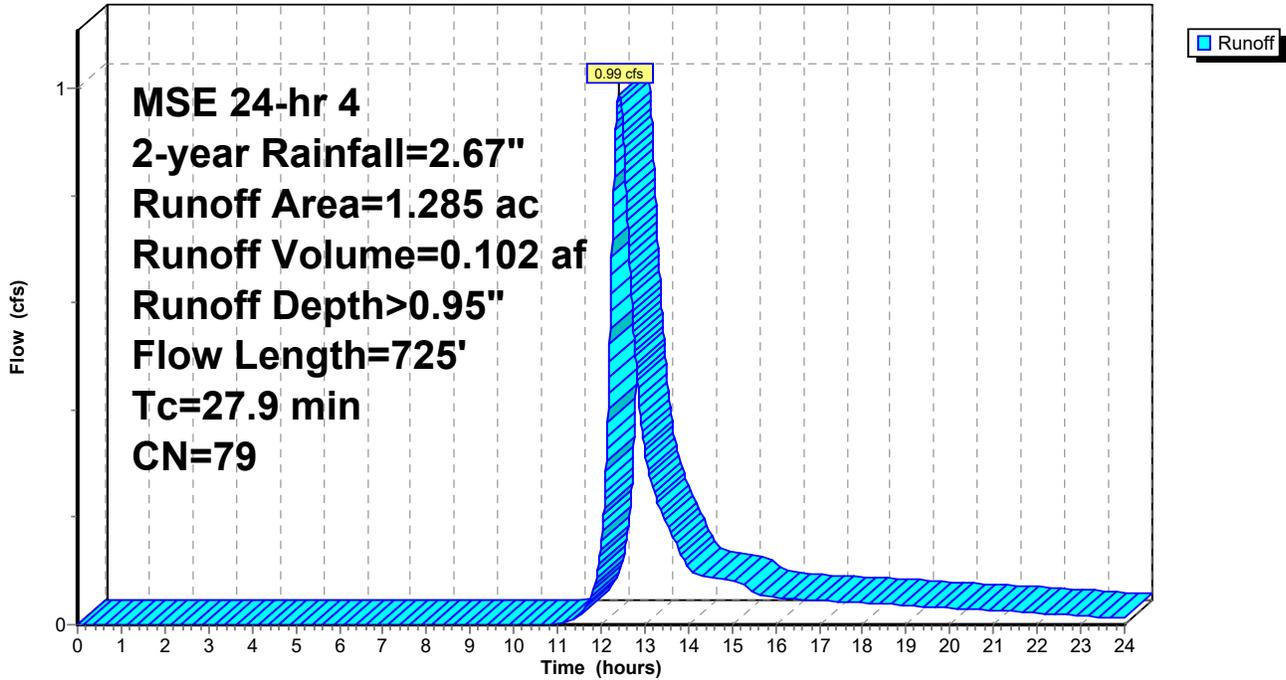
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
MSE 24-hr 4 2-year Rainfall=2.67"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.822	74	>75% Grass cover, Good, HSG C
0.287	80	>75% Grass cover, Good, HSG D
0.176	98	Paved parking, HSG B
0.000	98	Roofs, HSG B
1.285	79	Weighted Average
1.109		86.30% Pervious Area
0.176		13.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0098	0.08		<b>Sheet Flow, Sheet Flow</b> Grass: Dense n= 0.240 P2= 2.70"
6.8	284	0.0100	0.70		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b> Short Grass Pasture Kv= 7.0 fps
0.4	341	0.0204	15.52	76.16	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010 PVC, smooth interior
27.9	725	Total			

### Subcatchment P-2: Uncaptured

Hydrograph



**Summary for Pond 1P: Pond**

Inflow Area = 2.391 ac, 76.75% Impervious, Inflow Depth > 1.94" for 2-year event  
 Inflow = 7.20 cfs @ 12.13 hrs, Volume= 0.386 af  
 Outflow = 0.31 cfs @ 13.58 hrs, Volume= 0.291 af, Atten= 96%, Lag= 87.0 min  
 Primary = 0.31 cfs @ 13.58 hrs, Volume= 0.291 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 Peak Elev= 874.76' @ 13.58 hrs Surf.Area= 6,701 sf Storage= 10,346 cf

Plug-Flow detention time= 311.8 min calculated for 0.291 af (75% of inflow)  
 Center-of-Mass det. time= 238.1 min ( 1,028.4 - 790.3 )

Volume	Invert	Avail.Storage	Storage Description
#1	873.00'	37,425 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
873.00	5,107	0	0
874.00	5,990	5,549	5,549
875.00	6,930	6,460	12,009
876.00	7,927	7,429	19,437
877.00	8,980	8,454	27,891
878.00	10,089	9,535	37,425

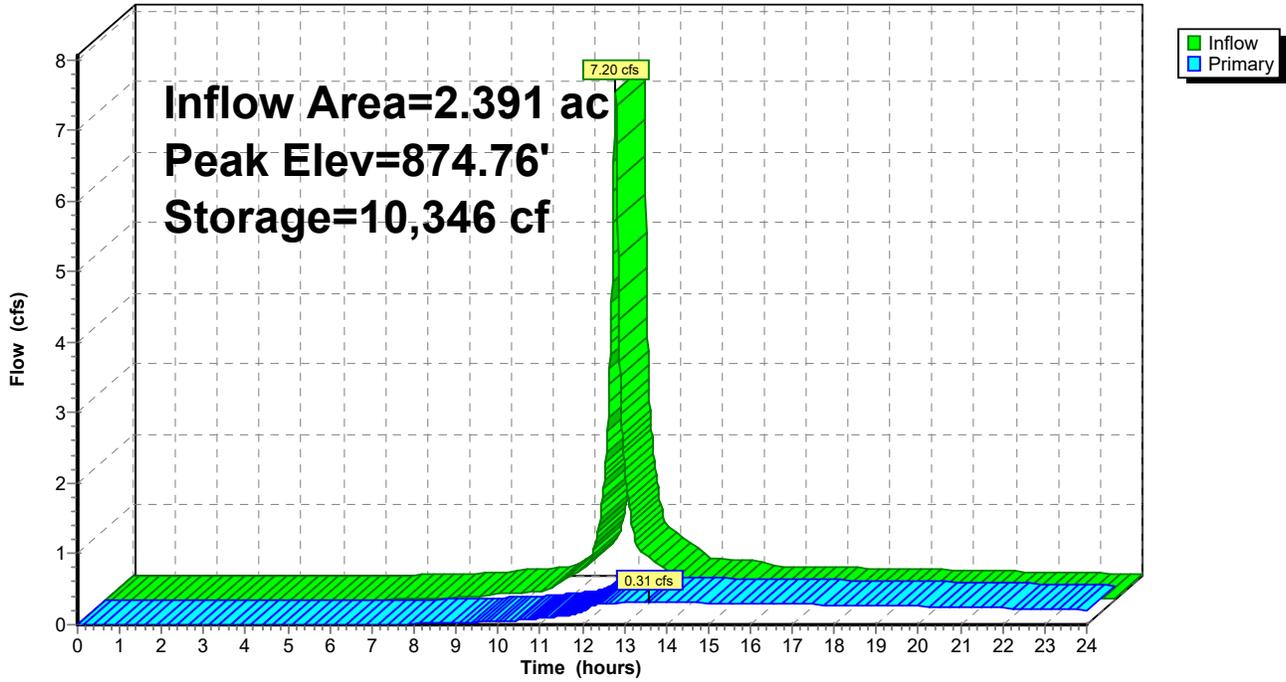
Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	<b>15.0" Round Culvert</b> L= 66.0' Ke= 1.000 Inlet / Outlet Invert= 872.50' / 872.00' S= 0.0076 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	873.00'	<b>3.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.50'	<b>48.0" Vert. Orifice/Grate</b> C= 0.600
#4	Primary	877.00'	<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> 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=0.31 cfs @ 13.58 hrs HW=874.76' (Free Discharge)

- 1=Culvert (Passes 0.31 cfs of 5.66 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.31 cfs @ 6.38 fps)
- 3=Orifice/Grate ( Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 1P: Pond

Hydrograph

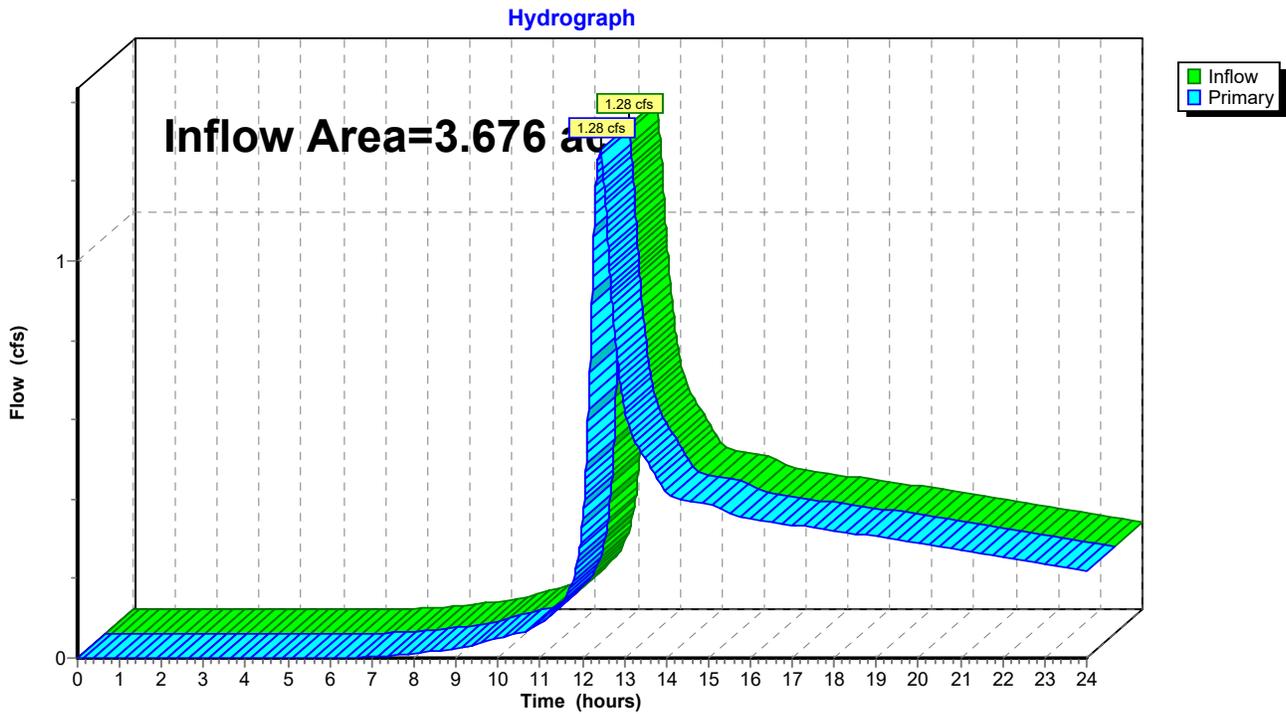


### Summary for Link TPO: Total Proposed Outfall

Inflow Area = 3.676 ac, 54.71% Impervious, Inflow Depth > 1.28" for 2-year event  
Inflow = 1.28 cfs @ 12.43 hrs, Volume= 0.393 af  
Primary = 1.28 cfs @ 12.43 hrs, Volume= 0.393 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

### Link TPO: Total Proposed Outfall



**2024-100 - Basic Metals**

MSE 24-hr 4 10-year Rainfall=3.82"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentP-1: Captured to Pond**

Runoff Area=2.391 ac 76.75% Impervious Runoff Depth>3.04"  
Flow Length=509' Tc=6.0 min CN=93 Runoff=10.99 cfs 0.606 af

**SubcatchmentP-2: Uncaptured**

Runoff Area=1.285 ac 13.70% Impervious Runoff Depth>1.81"  
Flow Length=725' Tc=27.9 min CN=79 Runoff=1.94 cfs 0.194 af

**Pond 1P: Pond**

Peak Elev=875.69' Storage=16,997 cf Inflow=10.99 cfs 0.606 af  
Outflow=0.39 cfs 0.389 af

**Link TPO: Total Proposed Outfall**

Inflow=2.30 cfs 0.583 af  
Primary=2.30 cfs 0.583 af

**Total Runoff Area = 3.676 ac Runoff Volume = 0.801 af Average Runoff Depth = 2.61"**  
**45.29% Pervious = 1.665 ac 54.71% Impervious = 2.011 ac**

**Summary for Subcatchment P-1: Captured to Pond**

Runoff = 10.99 cfs @ 12.13 hrs, Volume= 0.606 af, Depth> 3.04"

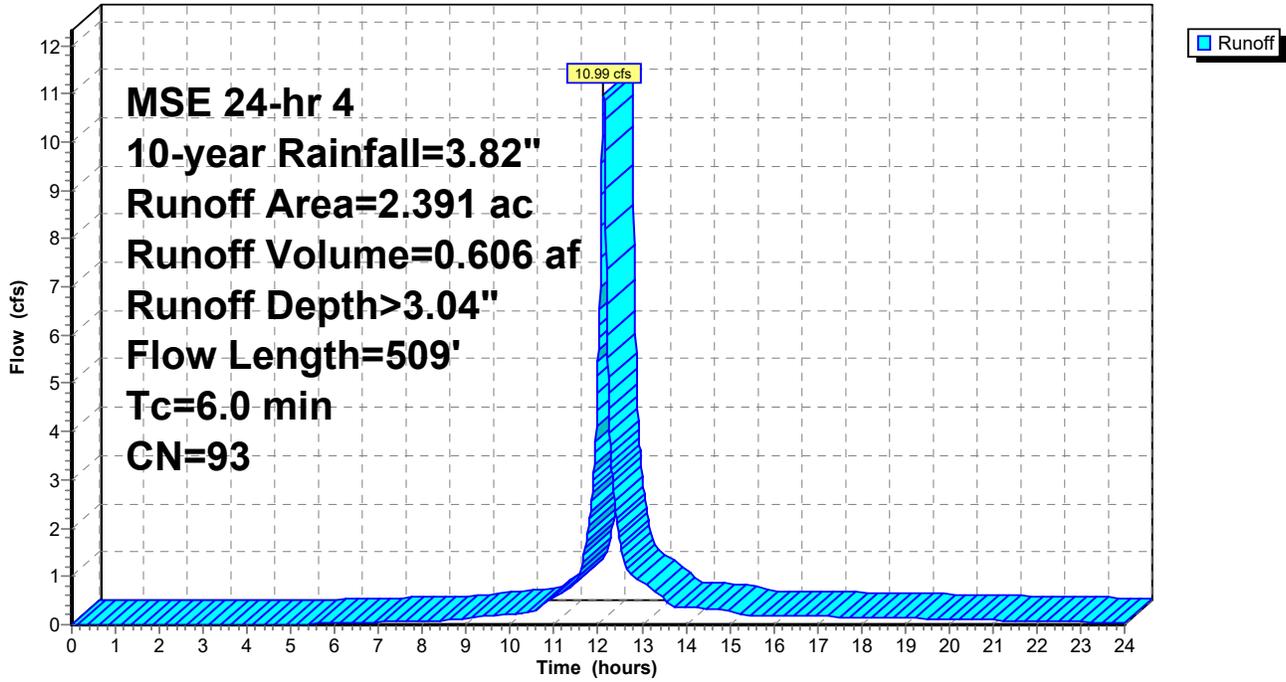
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 10-year Rainfall=3.82"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.521	74	>75% Grass cover, Good, HSG C
0.035	80	>75% Grass cover, Good, HSG D
0.471	98	Paved parking, HSG B
1.247	98	Roofs, HSG B
0.117	98	Water Surface, HSG A
2.391	93	Weighted Average
0.556		23.25% Pervious Area
1.835		76.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0186	1.23		<b>Sheet Flow, Sheet Flow</b> Smooth surfaces n= 0.011 P2= 2.70"
0.2	23	0.0149	2.48		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b> Paved Kv= 20.3 fps
1.2	386	0.0079	5.24	4.12	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
2.8	509	Total, Increased to minimum Tc = 6.0 min			

### Subcatchment P-1: Captured to Pond

Hydrograph



**Summary for Subcatchment P-2: Uncaptured**

Runoff = 1.94 cfs @ 12.40 hrs, Volume= 0.194 af, Depth> 1.81"

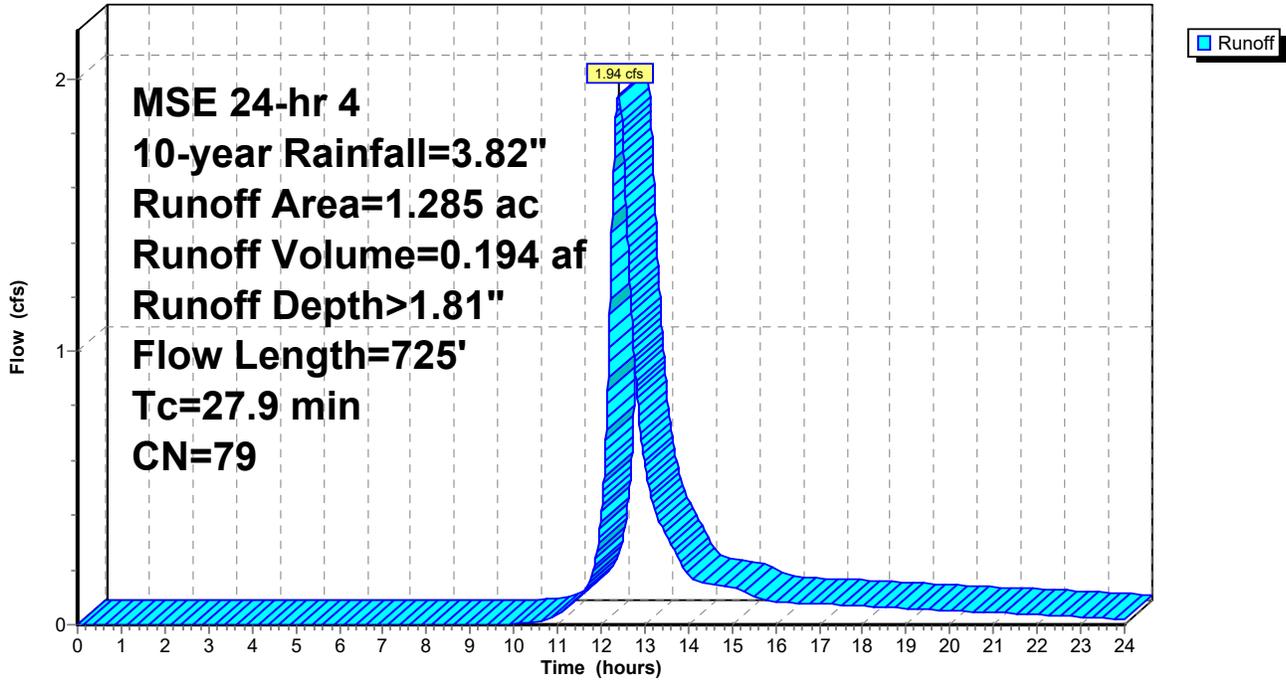
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 10-year Rainfall=3.82"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.822	74	>75% Grass cover, Good, HSG C
0.287	80	>75% Grass cover, Good, HSG D
0.176	98	Paved parking, HSG B
0.000	98	Roofs, HSG B
1.285	79	Weighted Average
1.109		86.30% Pervious Area
0.176		13.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0098	0.08		<b>Sheet Flow, Sheet Flow</b> Grass: Dense n= 0.240 P2= 2.70"
6.8	284	0.0100	0.70		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b> Short Grass Pasture Kv= 7.0 fps
0.4	341	0.0204	15.52	76.16	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010 PVC, smooth interior
27.9	725	Total			

### Subcatchment P-2: Uncaptured

Hydrograph



**Summary for Pond 1P: Pond**

Inflow Area = 2.391 ac, 76.75% Impervious, Inflow Depth > 3.04" for 10-year event  
 Inflow = 10.99 cfs @ 12.13 hrs, Volume= 0.606 af  
 Outflow = 0.39 cfs @ 13.65 hrs, Volume= 0.389 af, Atten= 96%, Lag= 91.2 min  
 Primary = 0.39 cfs @ 13.65 hrs, Volume= 0.389 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 Peak Elev= 875.69' @ 13.65 hrs Surf.Area= 7,614 sf Storage= 16,997 cf

Plug-Flow detention time= 327.8 min calculated for 0.389 af (64% of inflow)  
 Center-of-Mass det. time= 244.8 min ( 1,024.6 - 779.8 )

Volume	Invert	Avail.Storage	Storage Description
#1	873.00'	37,425 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
873.00	5,107	0	0
874.00	5,990	5,549	5,549
875.00	6,930	6,460	12,009
876.00	7,927	7,429	19,437
877.00	8,980	8,454	27,891
878.00	10,089	9,535	37,425

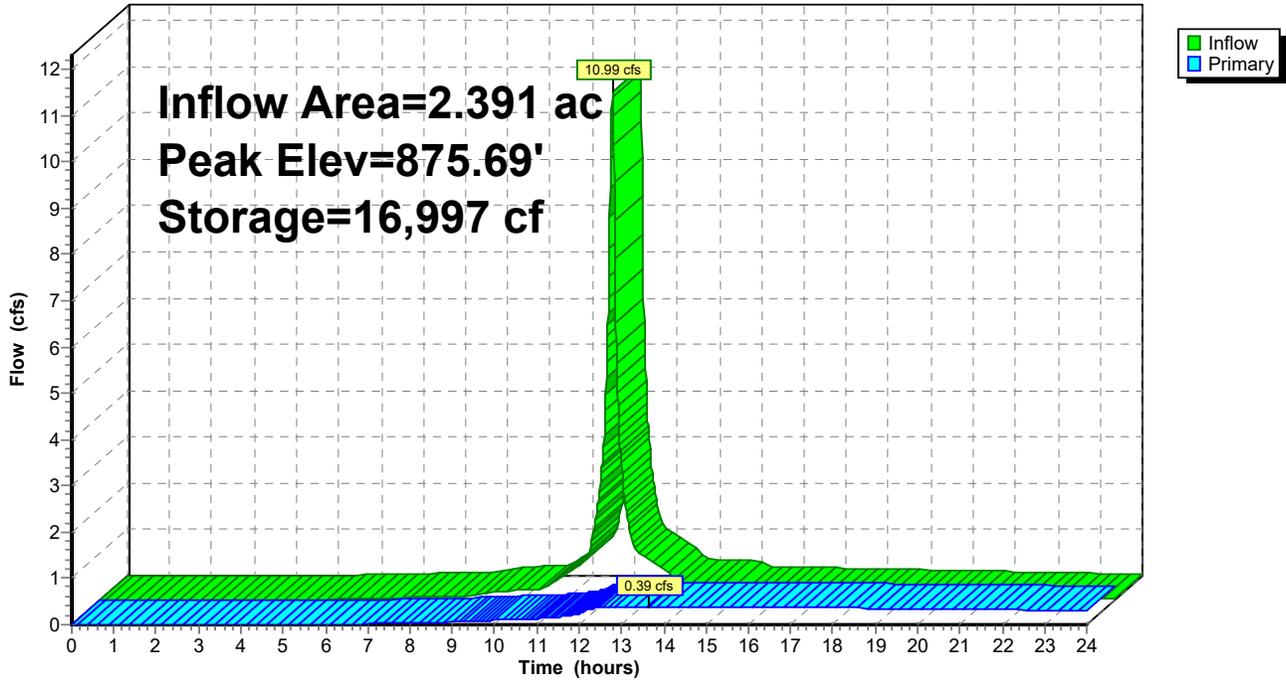
Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	<b>15.0" Round Culvert</b> L= 66.0' Ke= 1.000 Inlet / Outlet Invert= 872.50' / 872.00' S= 0.0076 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	873.00'	<b>3.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.50'	<b>48.0" Vert. Orifice/Grate</b> C= 0.600
#4	Primary	877.00'	<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> 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=0.39 cfs @ 13.65 hrs HW=875.69' (Free Discharge)

- 1=Culvert (Passes 0.39 cfs of 7.09 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.39 cfs @ 7.89 fps)
- 3=Orifice/Grate ( Controls 0.00 cfs)
- 4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 1P: Pond

Hydrograph

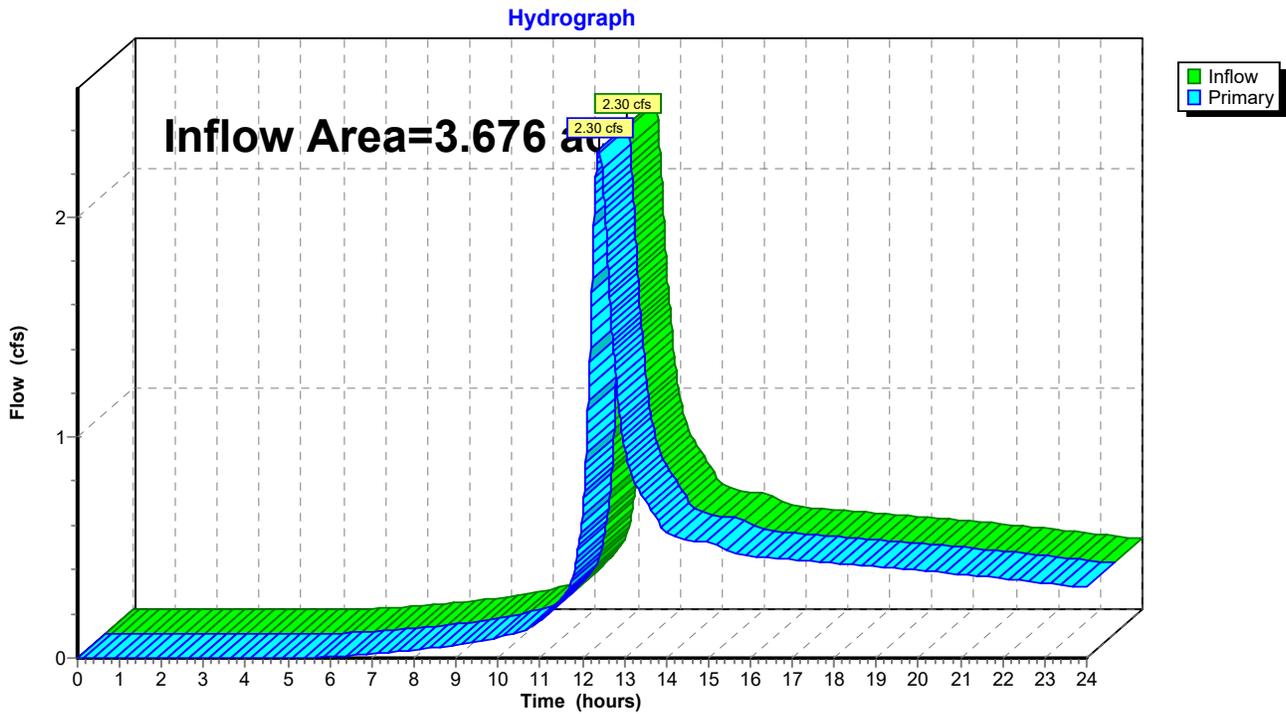


### Summary for Link TPO: Total Proposed Outfall

Inflow Area = 3.676 ac, 54.71% Impervious, Inflow Depth > 1.90" for 10-year event  
Inflow = 2.30 cfs @ 12.40 hrs, Volume= 0.583 af  
Primary = 2.30 cfs @ 12.40 hrs, Volume= 0.583 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

### Link TPO: Total Proposed Outfall



**2024-100 - Basic Metals**

MSE 24-hr 4 100-year Rainfall=6.37"

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Time span=0.00-24.00 hrs, dt=0.01 hrs, 2401 points  
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN  
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

**SubcatchmentP-1: Captured to Pond**

Runoff Area=2.391 ac 76.75% Impervious Runoff Depth>5.55"  
Flow Length=509' Tc=6.0 min CN=93 Runoff=19.26 cfs 1.105 af

**SubcatchmentP-2: Uncaptured**

Runoff Area=1.285 ac 13.70% Impervious Runoff Depth>4.00"  
Flow Length=725' Tc=27.9 min CN=79 Runoff=4.30 cfs 0.428 af

**Pond 1P: Pond**

Peak Elev=876.97' Storage=27,596 cf Inflow=19.26 cfs 1.105 af  
Outflow=2.39 cfs 0.708 af

**Link TPO: Total Proposed Outfall**

Inflow=6.33 cfs 1.136 af  
Primary=6.33 cfs 1.136 af

**Total Runoff Area = 3.676 ac Runoff Volume = 1.533 af Average Runoff Depth = 5.01"**  
**45.29% Pervious = 1.665 ac 54.71% Impervious = 2.011 ac**

**Summary for Subcatchment P-1: Captured to Pond**

Runoff = 19.26 cfs @ 12.13 hrs, Volume= 1.105 af, Depth> 5.55"

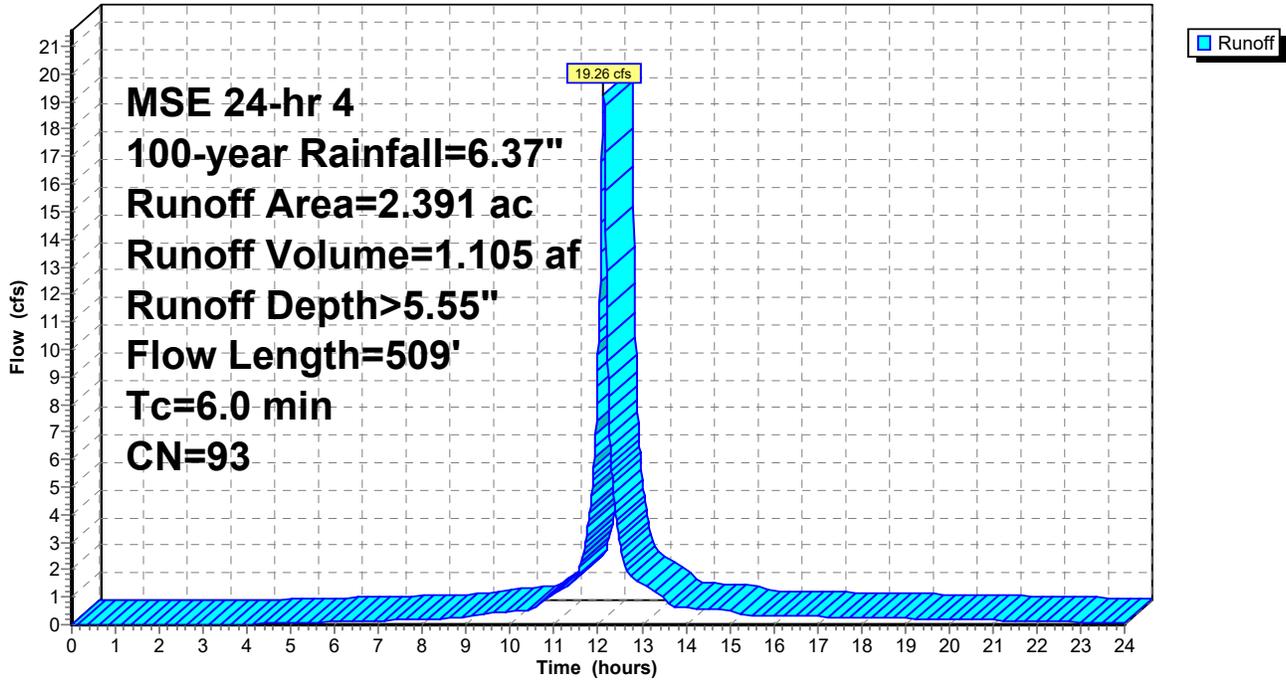
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 MSE 24-hr 4 100-year Rainfall=6.37"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.521	74	>75% Grass cover, Good, HSG C
0.035	80	>75% Grass cover, Good, HSG D
0.471	98	Paved parking, HSG B
1.247	98	Roofs, HSG B
0.117	98	Water Surface, HSG A
2.391	93	Weighted Average
0.556		23.25% Pervious Area
1.835		76.75% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
1.4	100	0.0186	1.23		<b>Sheet Flow, Sheet Flow</b> Smooth surfaces n= 0.011 P2= 2.70"
0.2	23	0.0149	2.48		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b> Paved Kv= 20.3 fps
1.2	386	0.0079	5.24	4.12	<b>Pipe Channel,</b> 12.0" Round Area= 0.8 sf Perim= 3.1' r= 0.25' n= 0.010 PVC, smooth interior
2.8	509	Total, Increased to minimum Tc = 6.0 min			

### Subcatchment P-1: Captured to Pond

Hydrograph



**Summary for Subcatchment P-2: Uncaptured**

Runoff = 4.30 cfs @ 12.40 hrs, Volume= 0.428 af, Depth> 4.00"

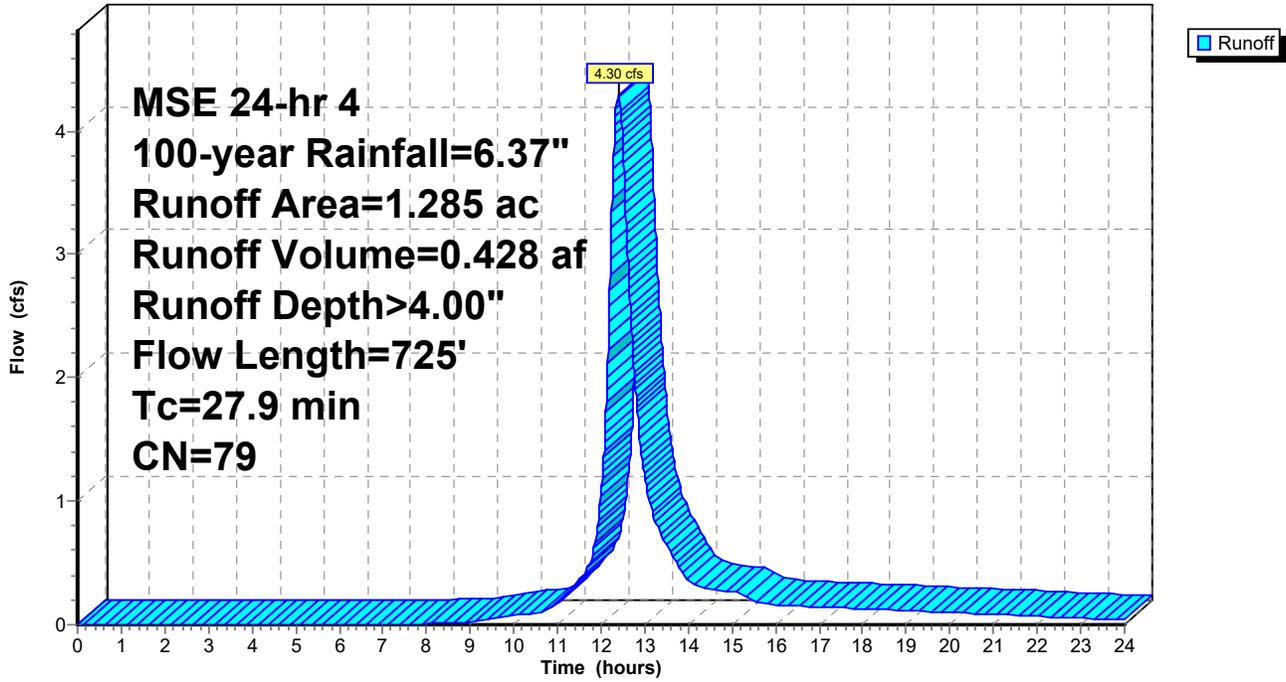
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
MSE 24-hr 4 100-year Rainfall=6.37"

Area (ac)	CN	Description
0.000	39	>75% Grass cover, Good, HSG A
0.000	61	>75% Grass cover, Good, HSG B
0.822	74	>75% Grass cover, Good, HSG C
0.287	80	>75% Grass cover, Good, HSG D
0.176	98	Paved parking, HSG B
0.000	98	Roofs, HSG B
1.285	79	Weighted Average
1.109		86.30% Pervious Area
0.176		13.70% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
20.7	100	0.0098	0.08		<b>Sheet Flow, Sheet Flow</b> Grass: Dense n= 0.240 P2= 2.70"
6.8	284	0.0100	0.70		<b>Shallow Concentrated Flow, Shallow Concentrated Flow</b> Short Grass Pasture Kv= 7.0 fps
0.4	341	0.0204	15.52	76.16	<b>Pipe Channel,</b> 30.0" Round Area= 4.9 sf Perim= 7.9' r= 0.63' n= 0.010 PVC, smooth interior
27.9	725	Total			

### Subcatchment P-2: Uncaptured

Hydrograph



**Summary for Pond 1P: Pond**

Inflow Area = 2.391 ac, 76.75% Impervious, Inflow Depth > 5.55" for 100-year event  
 Inflow = 19.26 cfs @ 12.13 hrs, Volume= 1.105 af  
 Outflow = 2.39 cfs @ 12.57 hrs, Volume= 0.708 af, Atten= 88%, Lag= 26.7 min  
 Primary = 2.39 cfs @ 12.57 hrs, Volume= 0.708 af

Routing by Stor-Ind method, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs  
 Peak Elev= 876.97' @ 12.57 hrs Surf.Area= 8,945 sf Storage= 27,596 cf

Plug-Flow detention time= 258.4 min calculated for 0.707 af (64% of inflow)  
 Center-of-Mass det. time= 174.7 min ( 941.4 - 766.7 )

Volume	Invert	Avail.Storage	Storage Description
#1	873.00'	37,425 cf	<b>Custom Stage Data (Prismatic)</b> Listed below (Recalc)

Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
873.00	5,107	0	0
874.00	5,990	5,549	5,549
875.00	6,930	6,460	12,009
876.00	7,927	7,429	19,437
877.00	8,980	8,454	27,891
878.00	10,089	9,535	37,425

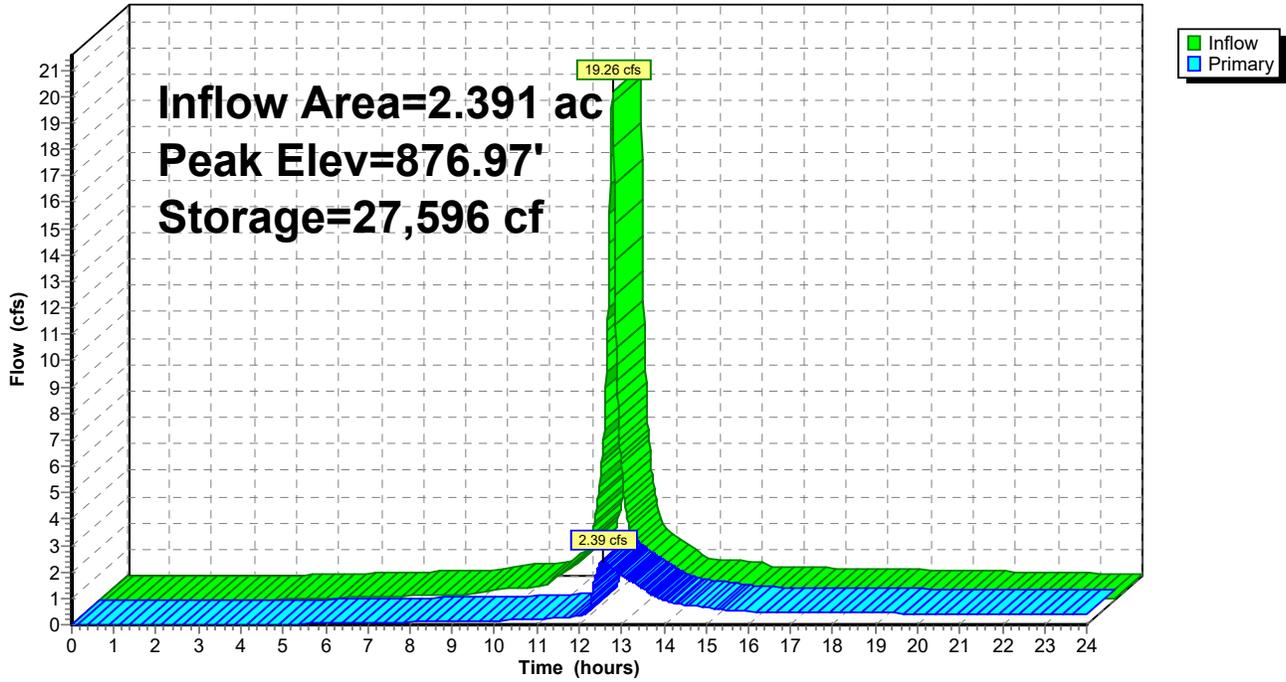
Device	Routing	Invert	Outlet Devices
#1	Primary	872.50'	<b>15.0" Round Culvert</b> L= 66.0' Ke= 1.000 Inlet / Outlet Invert= 872.50' / 872.00' S= 0.0076 '/' Cc= 0.900 n= 0.010 PVC, smooth interior, Flow Area= 1.23 sf
#2	Device 1	873.00'	<b>3.0" Horiz. Orifice/Grate</b> C= 0.600 Limited to weir flow at low heads
#3	Device 1	876.50'	<b>48.0" Vert. Orifice/Grate</b> C= 0.600
#4	Primary	877.00'	<b>10.0' long x 10.0' breadth Broad-Crested Rectangular Weir</b> 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=2.38 cfs @ 12.57 hrs HW=876.97' (Free Discharge)

- 1=Culvert (Passes 2.38 cfs of 8.69 cfs potential flow)
- 2=Orifice/Grate (Orifice Controls 0.47 cfs @ 9.59 fps)
- 3=Orifice/Grate (Orifice Controls 1.91 cfs @ 2.33 fps)
- 4=Broad-Crested Rectangular Weir ( Controls 0.00 cfs)

### Pond 1P: Pond

Hydrograph



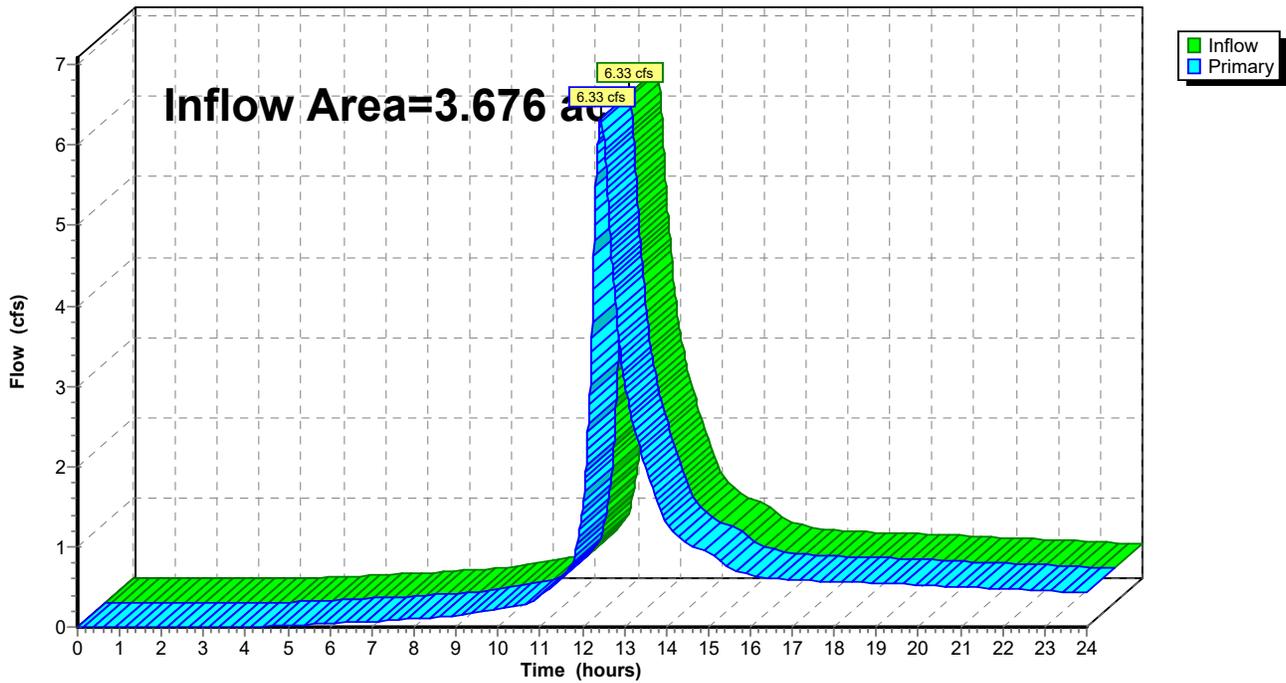
### Summary for Link TPO: Total Proposed Outfall

Inflow Area = 3.676 ac, 54.71% Impervious, Inflow Depth > 3.71" for 100-year event  
Inflow = 6.33 cfs @ 12.44 hrs, Volume= 1.136 af  
Primary = 6.33 cfs @ 12.44 hrs, Volume= 1.136 af, Atten= 0%, Lag= 0.0 min

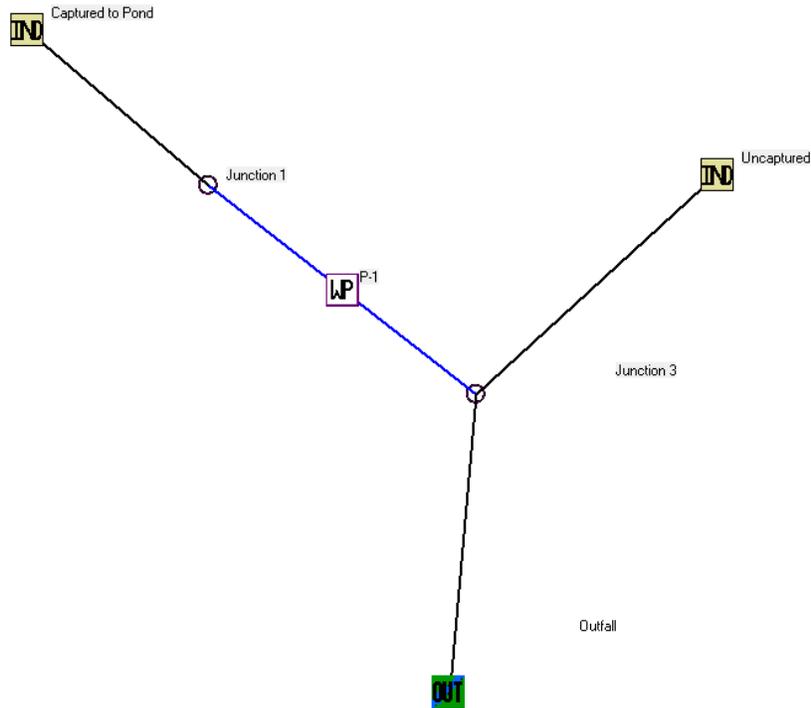
Primary outflow = Inflow, Time Span= 0.00-24.00 hrs, dt= 0.01 hrs

### Link TPO: Total Proposed Outfall

Hydrograph



# WINSLAMM ANALYSIS SUMMARY FINAL



File Name:

P:\2024-CONTRACTS\2024-100 Basic Metals Expansion\Phase - 2\Construction Documents\S.3 Site\S\WMP\2024-100 - Basic Metals.mdb

## Outfall Output Summary

	Runoff Volume (cu. ft.)	Percent Runoff Reduction	Runoff Coefficient (Rv)	Particulate Solids Conc. (mg/L)	Particulate Solids Yield (lbs)	Percent Particulate Solids Reduction
Total of All Land Uses without Controls	177038		0.40	101.1	1117	
Outfall Total with Controls	177197	-0.09 %	0.40	43.60	482.3	56.82 %
Current File Output: Annualized Total After Outfall Controls	179658		Years in Model Run: 0.99		489.0	

Print Output Summary to .csv File

Print Output Summary to Text File

Print Output Summary to Printer

Total Area Modeled (ac)

3.675

## Total Control Practice Costs

Capital Cost	N/A
Land Cost	N/A
Annual Maintenance Cost	N/A
Present Value of All Costs	N/A
Annualized Value of All Costs	N/A

Perform Outfall  
Flow Duration  
Curve Calculations

## Receiving Water Impacts Due To Stormwater Runoff (CWP Impervious Cover Model)

	Calculated Rv	Approximate Urban Stream Classification
Without Controls	0.40	Poor
With Controls	0.40	Poor

## Input Data

Data file name: P:\2024-CONTRACTS\2024-100 Basic Metals Expansion\Phase - 2\Construction Documents\S.3 Site\SWMP\2024-100 - Basic Metals.mdb

WinSLAMM Version 10.4.1

Rain file name: C:\WinSLAMM Files\Rain Files\WI\_Multi\_rain\Milwaukee\WisReg - Milwaukee Annual 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: 12/02

End of Winter Season: 03/12

Date: 02-06-2026

Time: 16:31:43

Site information:

LU# 1 - Industrial: Captured to Pond Total area (ac): 2.390  
 1 - Roofs 1: 1.247 ac. Flat Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 13 - Paved Parking 1: 0.470 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 45 - Large Landscaped Areas 1: 0.556 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 70 - Water Body Areas: 0.117 ac. Source Area PSD File:

LU# 2 - Industrial: Uncaptured Total area (ac): 1.285  
 13 - Paved Parking 1: 0.176 ac. Connected Source Area PSD File: C:\WinSLAMM Files\NURP.cpz  
 45 - Large Landscaped Areas 1: 1.109 ac. Normal Silty Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Wet Detention Pond CP# 1 (DS) - P-1

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: Broad Crested Weir

1. Weir crest length (ft): 10

2. Weir crest width (ft): 5

3. Height from datum to bottom of weir opening: 9

Outlet type: Vertical Stand Pipe

1. Stand pipe diameter (ft): 4

2. Stand pipe height above datum (ft): 8.5

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	0.01	0.0324	0.00	0.00
2	1.00	0.0404	0.00	0.00
3	2.00	0.0493	0.00	0.00
4	3.00	0.0590	0.00	0.00
5	4.00	0.0695	0.00	0.00
6	5.00	0.1172	0.00	0.00
7	6.00	0.1375	0.00	0.00
8	7.00	0.1591	0.00	0.00
9	8.00	0.1820	0.00	0.00
10	9.00	0.2061	0.00	0.00
11	10.00	0.2316	0.00	0.00

## Output Summary

SLAMM for Windows Version 10.4.1

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Data file name: P:\2024-CONTRACTS\2024-100 Basic Metals Expansion\Phase - 2\Construction Documents\S.3 Site\SWMP\2024-100 - Basic Metals.mdb

Data file description:

Rain file name: C:\WinSLAMM Files\Rain Files\WI\_Multi\_rain\Milwaukee\WisReg - Milwaukee Annual 1969.ran

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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: 12/02 End of Winter Season: 03/12

Model Run Start Date: 01/05/69 Model Run End Date: 12/31/69

Date of run: 02-06-2026 Time of run: 16:31:31

Total Area Modeled (acres): 3.675

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:	177038	-	101.1	1117	-
Outfall Total with Controls:	177197	-0.09%	43.60	482.3	56.82%
Annualized Total After Outfall Controls:	179658			489.0	

## **SOILS INFORMATION**

USGS WEB SOIL SURVEY

# Custom Soil Resource Report for Washington County, Wisconsin



# Preface

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Soil surveys contain information that affects land use planning in survey areas. They highlight soil limitations that affect various land uses and provide information about the properties of the soils in the survey areas. Soil surveys are designed for many different users, including farmers, ranchers, foresters, agronomists, urban planners, community officials, engineers, developers, builders, and home buyers. Also, conservationists, teachers, students, and specialists in recreation, waste disposal, and pollution control can use the surveys to help them understand, protect, or enhance the environment.

Various land use regulations of Federal, State, and local governments may impose special restrictions on land use or land treatment. Soil surveys identify soil properties that are used in making various land use or land treatment decisions. The information is intended to help the land users identify and reduce the effects of soil limitations on various land uses. The landowner or user is responsible for identifying and complying with existing laws and regulations.

Although soil survey information can be used for general farm, local, and wider area planning, onsite investigation is needed to supplement this information in some cases. Examples include soil quality assessments (<http://www.nrcs.usda.gov/wps/portal/nrcs/main/soils/health/>) and certain conservation and engineering applications. For more detailed information, contact your local USDA Service Center (<https://offices.sc.egov.usda.gov/locator/app?agency=nrcs>) or your NRCS State Soil Scientist ([http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2\\_053951](http://www.nrcs.usda.gov/wps/portal/nrcs/detail/soils/contactus/?cid=nrcs142p2_053951)).

Great differences in soil properties can occur within short distances. Some soils are seasonally wet or subject to flooding. Some are too unstable to be used as a foundation for buildings or roads. Clayey or wet soils are poorly suited to use as septic tank absorption fields. A high water table makes a soil poorly suited to basements or underground installations.

The National Cooperative Soil Survey is a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local agencies. The Natural Resources Conservation Service (NRCS) has leadership for the Federal part of the National Cooperative Soil Survey.

Information about soils is updated periodically. Updated information is available through the NRCS Web Soil Survey, the site for official soil survey information.

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# How Soil Surveys Are Made

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Soil surveys are made to provide information about the soils and miscellaneous areas in a specific area. They include a description of the soils and miscellaneous areas and their location on the landscape and tables that show soil properties and limitations affecting various uses. Soil scientists observed the steepness, length, and shape of the slopes; the general pattern of drainage; the kinds of crops and native plants; and the kinds of bedrock. They observed and described many soil profiles. A soil profile is the sequence of natural layers, or horizons, in a soil. The profile extends from the surface down into the unconsolidated material in which the soil formed or from the surface down to bedrock. The unconsolidated material is devoid of roots and other living organisms and has not been changed by other biological activity.

Currently, soils are mapped according to the boundaries of major land resource areas (MLRAs). MLRAs are geographically associated land resource units that share common characteristics related to physiography, geology, climate, water resources, soils, biological resources, and land uses (USDA, 2006). Soil survey areas typically consist of parts of one or more MLRA.

The soils and miscellaneous areas in a survey area occur in an orderly pattern that is related to the geology, landforms, relief, climate, and natural vegetation of the area. Each kind of soil and miscellaneous area is associated with a particular kind of landform or with a segment of the landform. By observing the soils and miscellaneous areas in the survey area and relating their position to specific segments of the landform, a soil scientist develops a concept, or model, of how they were formed. Thus, during mapping, this model enables the soil scientist to predict with a considerable degree of accuracy the kind of soil or miscellaneous area at a specific location on the landscape.

Commonly, individual soils on the landscape merge into one another as their characteristics gradually change. To construct an accurate soil map, however, soil scientists must determine the boundaries between the soils. They can observe only a limited number of soil profiles. Nevertheless, these observations, supplemented by an understanding of the soil-vegetation-landscape relationship, are sufficient to verify predictions of the kinds of soil in an area and to determine the boundaries.

Soil scientists recorded the characteristics of the soil profiles that they studied. They noted soil color, texture, size and shape of soil aggregates, kind and amount of rock fragments, distribution of plant roots, reaction, and other features that enable them to identify soils. After describing the soils in the survey area and determining their properties, the soil scientists assigned the soils to taxonomic classes (units). Taxonomic classes are concepts. Each taxonomic class has a set of soil characteristics with precisely defined limits. The classes are used as a basis for comparison to classify soils systematically. Soil taxonomy, the system of taxonomic classification used in the United States, is based mainly on the kind and character of soil properties and the arrangement of horizons within the profile. After the soil

## Custom Soil Resource Report

scientists classified and named the soils in the survey area, they compared the individual soils with similar soils in the same taxonomic class in other areas so that they could confirm data and assemble additional data based on experience and research.

The objective of soil mapping is not to delineate pure map unit components; the objective is to separate the landscape into landforms or landform segments that have similar use and management requirements. Each map unit is defined by a unique combination of soil components and/or miscellaneous areas in predictable proportions. Some components may be highly contrasting to the other components of the map unit. The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The delineation of such landforms and landform segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, onsite investigation is needed to define and locate the soils and miscellaneous areas.

Soil scientists make many field observations in the process of producing a soil map. The frequency of observation is dependent upon several factors, including scale of mapping, intensity of mapping, design of map units, complexity of the landscape, and experience of the soil scientist. Observations are made to test and refine the soil-landscape model and predictions and to verify the classification of the soils at specific locations. Once the soil-landscape model is refined, a significantly smaller number of measurements of individual soil properties are made and recorded. These measurements may include field measurements, such as those for color, depth to bedrock, and texture, and laboratory measurements, such as those for content of sand, silt, clay, salt, and other components. Properties of each soil typically vary from one point to another across the landscape.

Observations for map unit components are aggregated to develop ranges of characteristics for the components. The aggregated values are presented. Direct measurements do not exist for every property presented for every map unit component. Values for some properties are estimated from combinations of other properties.

While a soil survey is in progress, samples of some of the soils in the area generally are collected for laboratory analyses and for engineering tests. Soil scientists interpret the data from these analyses and tests as well as the field-observed characteristics and the soil properties to determine the expected behavior of the soils under different uses. Interpretations for all of the soils are field tested through observation of the soils in different uses and under different levels of management. Some interpretations are modified to fit local conditions, and some new interpretations are developed to meet local needs. Data are assembled from other sources, such as research information, production records, and field experience of specialists. For example, data on crop yields under defined levels of management are assembled from farm records and from field or plot experiments on the same kinds of soil.

Predictions about soil behavior are based not only on soil properties but also on such variables as climate and biological activity. Soil conditions are predictable over long periods of time, but they are not predictable from year to year. For example, soil scientists can predict with a fairly high degree of accuracy that a given soil will have a high water table within certain depths in most years, but they cannot predict that a high water table will always be at a specific level in the soil on a specific date.

After soil scientists located and identified the significant natural bodies of soil in the survey area, they drew the boundaries of these bodies on aerial photographs and

## Custom Soil Resource Report

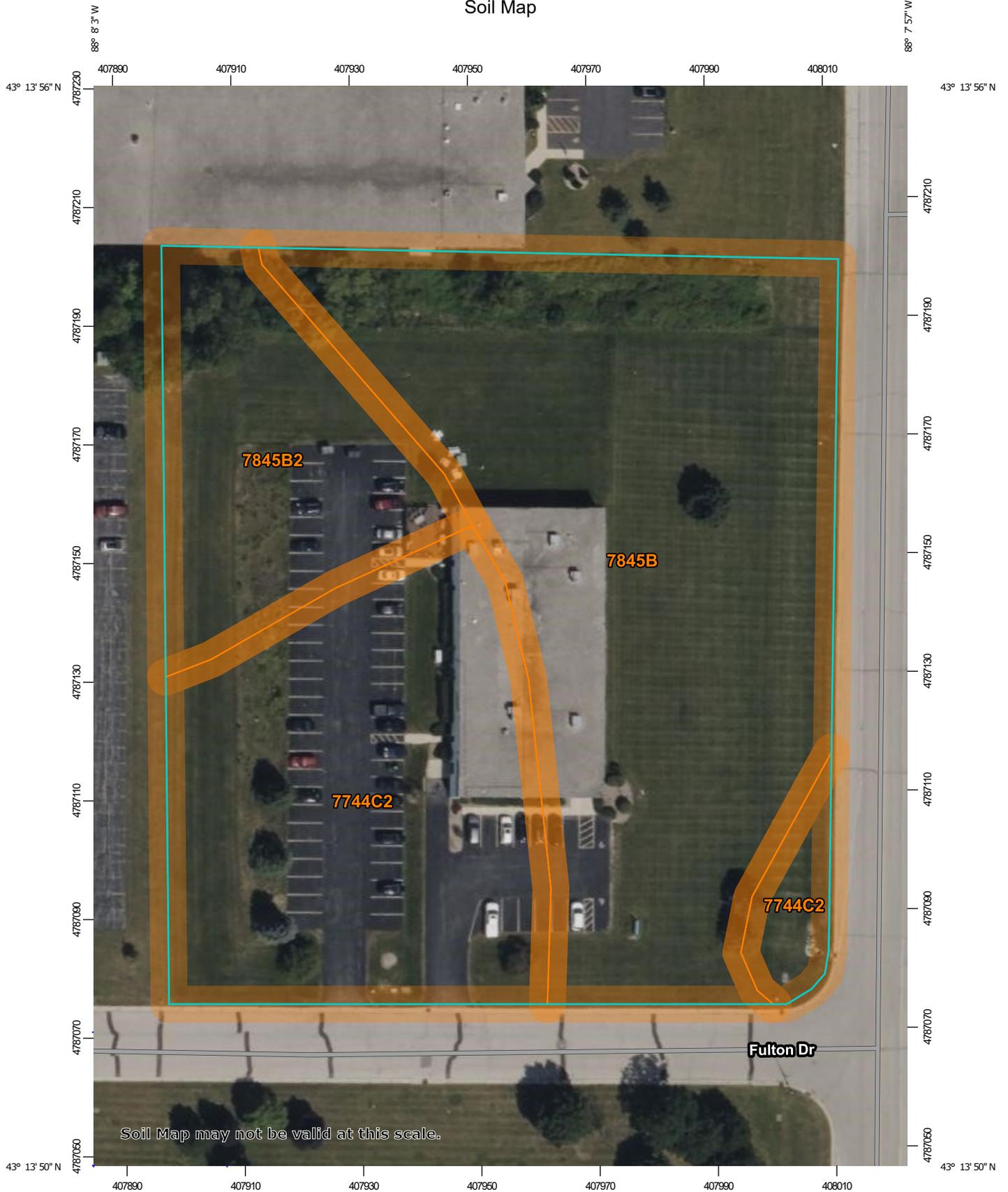
identified each as a specific map unit. Aerial photographs show trees, buildings, fields, roads, and rivers, all of which help in locating boundaries accurately.

# Soil Map

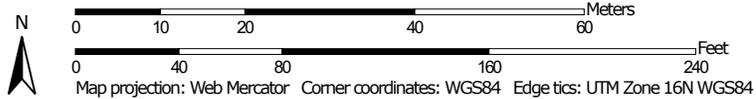
---

The soil map section includes the soil map for the defined area of interest, a list of soil map units on the map and extent of each map unit, and cartographic symbols displayed on the map. Also presented are various metadata about data used to produce the map, and a description of each soil map unit.

# Custom Soil Resource Report Soil Map



Map Scale: 1:887 if printed on A portrait (8.5" x 11") sheet.



### MAP LEGEND

**Area of Interest (AOI)**

 Area of Interest (AOI)

**Soils**

 Soil Map Unit Polygons

 Soil Map Unit Lines

 Soil Map Unit Points

**Special Point Features**

-  Blowout
-  Borrow Pit
-  Clay Spot
-  Closed Depression
-  Gravel Pit
-  Gravelly Spot
-  Landfill
-  Lava Flow
-  Marsh or swamp
-  Mine or Quarry
-  Miscellaneous Water
-  Perennial Water
-  Rock Outcrop
-  Saline Spot
-  Sandy Spot
-  Severely Eroded Spot
-  Sinkhole
-  Slide or Slip
-  Sodic Spot

-  Spoil Area
-  Stony Spot
-  Very Stony Spot
-  Wet Spot
-  Other
-  Special Line Features

**Water Features**

 Streams and Canals

**Transportation**

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

**Background**

 Aerial Photography

### MAP INFORMATION

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

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 25, Sep 10, 2025

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

Date(s) aerial images were photographed: Aug 4, 2022—Sep 13, 2022

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

## Map Unit Legend

Map Unit Symbol	Map Unit Name	Acres in AOI	Percent of AOI
7744C2	Hochheim loam, 6 to 12 percent slopes, eroded	1.2	32.9%
7845B	Theresa silt loam, 2 to 6 percent slopes	1.8	51.2%
7845B2	Theresa silt loam, 2 to 6 percent slopes, eroded	0.6	15.9%
<b>Totals for Area of Interest</b>		<b>3.5</b>	<b>100.0%</b>

## Map Unit Descriptions

The map units delineated on the detailed soil maps in a soil survey represent the soils or miscellaneous areas in the survey area. The map unit descriptions, along with the maps, can be used to determine the composition and properties of a unit.

A map unit delineation on a soil map represents an area dominated by one or more major kinds of soil or miscellaneous areas. A map unit is identified and named according to the taxonomic classification of the dominant soils. Within a taxonomic class there are precisely defined limits for the properties of the soils. On the landscape, however, the soils are natural phenomena, and they have the characteristic variability of all natural phenomena. Thus, the range of some observed properties may extend beyond the limits defined for a taxonomic class. Areas of soils of a single taxonomic class rarely, if ever, can be mapped without including areas of other taxonomic classes. Consequently, every map unit is made up of the soils or miscellaneous areas for which it is named and some minor components that belong to taxonomic classes other than those of the major soils.

Most minor soils have properties similar to those of the dominant soil or soils in the map unit, and thus they do not affect use and management. These are called noncontrasting, or similar, components. They may or may not be mentioned in a particular map unit description. Other minor components, however, have properties and behavioral characteristics divergent enough to affect use or to require different management. These are called contrasting, or dissimilar, components. They generally are in small areas and could not be mapped separately because of the scale used. Some small areas of strongly contrasting soils or miscellaneous areas are identified by a special symbol on the maps. If included in the database for a given area, the contrasting minor components are identified in the map unit descriptions along with some characteristics of each. A few areas of minor components may not have been observed, and consequently they are not mentioned in the descriptions, especially where the pattern was so complex that it was impractical to make enough observations to identify all the soils and miscellaneous areas on the landscape.

The presence of minor components in a map unit in no way diminishes the usefulness or accuracy of the data. The objective of mapping is not to delineate pure taxonomic classes but rather to separate the landscape into landforms or

## Custom Soil Resource Report

landform segments that have similar use and management requirements. The delineation of such segments on the map provides sufficient information for the development of resource plans. If intensive use of small areas is planned, however, onsite investigation is needed to define and locate the soils and miscellaneous areas.

An identifying symbol precedes the map unit name in the map unit descriptions. Each description includes general facts about the unit and gives important soil properties and qualities.

Soils that have profiles that are almost alike make up a *soil series*. Except for differences in texture of the surface layer, all the soils of a series have major horizons that are similar in composition, thickness, and arrangement.

Soils of one series can differ in texture of the surface layer, slope, stoniness, salinity, degree of erosion, and other characteristics that affect their use. On the basis of such differences, a soil series is divided into *soil phases*. Most of the areas shown on the detailed soil maps are phases of soil series. The name of a soil phase commonly indicates a feature that affects use or management. For example, Alpha silt loam, 0 to 2 percent slopes, is a phase of the Alpha series.

Some map units are made up of two or more major soils or miscellaneous areas. These map units are complexes, associations, or undifferentiated groups.

A *complex* consists of two or more soils or miscellaneous areas in such an intricate pattern or in such small areas that they cannot be shown separately on the maps. The pattern and proportion of the soils or miscellaneous areas are somewhat similar in all areas. Alpha-Beta complex, 0 to 6 percent slopes, is an example.

An *association* is made up of two or more geographically associated soils or miscellaneous areas that are shown as one unit on the maps. Because of present or anticipated uses of the map units in the survey area, it was not considered practical or necessary to map the soils or miscellaneous areas separately. The pattern and relative proportion of the soils or miscellaneous areas are somewhat similar. Alpha-Beta association, 0 to 2 percent slopes, is an example.

An *undifferentiated group* is made up of two or more soils or miscellaneous areas that could be mapped individually but are mapped as one unit because similar interpretations can be made for use and management. The pattern and proportion of the soils or miscellaneous areas in a mapped area are not uniform. An area can be made up of only one of the major soils or miscellaneous areas, or it can be made up of all of them. Alpha and Beta soils, 0 to 2 percent slopes, is an example.

Some surveys include *miscellaneous areas*. Such areas have little or no soil material and support little or no vegetation. Rock outcrop is an example.

## Washington County, Wisconsin

### 7744C2—Hochheim loam, 6 to 12 percent slopes, eroded

#### Map Unit Setting

*National map unit symbol:* 2t03r

*Elevation:* 900 to 1,340 feet

*Mean annual precipitation:* 31 to 33 inches

*Mean annual air temperature:* 43 to 46 degrees F

*Frost-free period:* 135 to 175 days

*Farmland classification:* Farmland of statewide importance

#### Map Unit Composition

*Hochheim, eroded, and similar soils:* 90 percent

*Minor components:* 10 percent

*Estimates are based on observations, descriptions, and transects of the mapunit.*

#### Description of Hochheim, Eroded

##### Setting

*Landform:* Drumlins

*Landform position (two-dimensional):* Shoulder, summit

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Parent material:* Loamy till and/or calcareous, dense loamy till

##### Typical profile

*Ap - 0 to 7 inches:* loam

*Bt - 7 to 16 inches:* clay loam

*C - 16 to 33 inches:* gravelly sandy loam

*Cd - 33 to 79 inches:* gravelly sandy loam

##### Properties and qualities

*Slope:* 6 to 12 percent

*Depth to restrictive feature:* 20 to 40 inches to densic material

*Drainage class:* Well drained

*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)

*Depth to water table:* More than 80 inches

*Frequency of flooding:* None

*Frequency of ponding:* None

*Calcium carbonate, maximum content:* 60 percent

*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)

*Available water supply, 0 to 60 inches:* Low (about 4.4 inches)

##### Interpretive groups

*Land capability classification (irrigated):* None specified

*Land capability classification (nonirrigated):* 4e

*Hydrologic Soil Group:* D

*Ecological site:* F095XB007WI - Loamy Upland with Carbonates

*Forage suitability group:* Mod AWC, adequately drained (G095BY005WI)

*Other vegetative classification:* Mod AWC, adequately drained (G095BY005WI)

*Hydric soil rating:* No

## Minor Components

### Theresa

*Percent of map unit:* 5 percent  
*Landform:* Drumlins  
*Landform position (two-dimensional):* Summit  
*Landform position (three-dimensional):* Crest  
*Down-slope shape:* Convex  
*Across-slope shape:* Convex  
*Ecological site:* F095XB007WI - Loamy Upland with Carbonates  
*Hydric soil rating:* No

### Hochheim

*Percent of map unit:* 5 percent  
*Landform:* Drumlins  
*Landform position (two-dimensional):* Backslope, shoulder  
*Landform position (three-dimensional):* Head slope, side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Ecological site:* F095XB006WI - Shallow Upland  
*Hydric soil rating:* No

## 7845B—Theresa silt loam, 2 to 6 percent slopes

### Map Unit Setting

*National map unit symbol:* 2szd9  
*Elevation:* 700 to 1,240 feet  
*Mean annual precipitation:* 31 to 35 inches  
*Mean annual air temperature:* 45 to 48 degrees F  
*Frost-free period:* 140 to 180 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Theresa and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Theresa

#### Setting

*Landform:* Drumlins  
*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Loess over loamy till and/or calcareous, dense loamy till

#### Typical profile

*Ap - 0 to 8 inches:* silt loam  
*BE - 8 to 14 inches:* silt loam

## Custom Soil Resource Report

*Bt1 - 14 to 18 inches:* silty clay loam  
*2Bt2 - 18 to 34 inches:* clay loam  
*2Cd - 34 to 79 inches:* loam

### Properties and qualities

*Slope:* 2 to 6 percent  
*Depth to restrictive feature:* 32 to 35 inches to densic material  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 60 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 5.9 inches)

### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Ecological site:* F095XB007WI - Loamy Upland with Carbonates  
*Forage suitability group:* Mod AWC, adequately drained with limitations (G095BY006WI)  
*Other vegetative classification:* Mod AWC, adequately drained with limitations (G095BY006WI)  
*Hydric soil rating:* No

### Minor Components

#### Hochheim

*Percent of map unit:* 10 percent  
*Landform:* Drumlins  
*Landform position (two-dimensional):* Shoulder, summit  
*Landform position (three-dimensional):* Side slope, crest  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Ecological site:* F095XB006WI - Shallow Upland  
*Hydric soil rating:* No

#### Lamartine

*Percent of map unit:* 5 percent  
*Landform:* Drumlins  
*Landform position (two-dimensional):* Footslope  
*Landform position (three-dimensional):* Base slope  
*Down-slope shape:* Concave  
*Across-slope shape:* Linear  
*Ecological site:* F095XB005WI - Moist Loamy or Clayey Lowland  
*Hydric soil rating:* No

## 7845B2—Theresa silt loam, 2 to 6 percent slopes, eroded

### Map Unit Setting

*National map unit symbol:* 2szd7  
*Elevation:* 660 to 1,290 feet  
*Mean annual precipitation:* 31 to 35 inches  
*Mean annual air temperature:* 45 to 48 degrees F  
*Frost-free period:* 150 to 195 days  
*Farmland classification:* All areas are prime farmland

### Map Unit Composition

*Theresa, eroded, and similar soils:* 85 percent  
*Minor components:* 15 percent  
*Estimates are based on observations, descriptions, and transects of the mapunit.*

### Description of Theresa, Eroded

#### Setting

*Landform:* Drumlins  
*Landform position (two-dimensional):* Summit, backslope  
*Landform position (three-dimensional):* Side slope  
*Down-slope shape:* Convex  
*Across-slope shape:* Linear  
*Parent material:* Loess over loamy till and/or calcareous, dense loamy till

#### Typical profile

*Ap - 0 to 8 inches:* silt loam  
*BE - 8 to 11 inches:* silt loam  
*Bt1 - 11 to 16 inches:* silty clay loam  
*2Bt2 - 16 to 35 inches:* gravelly clay loam  
*2Cd - 35 to 79 inches:* gravelly sandy loam

#### Properties and qualities

*Slope:* 2 to 6 percent  
*Depth to restrictive feature:* 24 to 40 inches to densic material  
*Drainage class:* Well drained  
*Capacity of the most limiting layer to transmit water (Ksat):* Moderately low to moderately high (0.06 to 0.20 in/hr)  
*Depth to water table:* More than 80 inches  
*Frequency of flooding:* None  
*Frequency of ponding:* None  
*Calcium carbonate, maximum content:* 60 percent  
*Maximum salinity:* Nonsaline to very slightly saline (0.0 to 2.0 mmhos/cm)  
*Available water supply, 0 to 60 inches:* Low (about 5.7 inches)

#### Interpretive groups

*Land capability classification (irrigated):* None specified  
*Land capability classification (nonirrigated):* 2e  
*Hydrologic Soil Group:* C  
*Ecological site:* F095XB007WI - Loamy Upland with Carbonates

## Custom Soil Resource Report

*Forage suitability group:* Mod AWC, adequately drained with limitations  
(G095BY006WI)

*Other vegetative classification:* Mod AWC, adequately drained with limitations  
(G095BY006WI)

*Hydric soil rating:* No

### Minor Components

#### **Hochheim, eroded**

*Percent of map unit:* 10 percent

*Landform:* Drumlins

*Landform position (two-dimensional):* Shoulder, summit

*Landform position (three-dimensional):* Side slope, crest

*Down-slope shape:* Convex

*Across-slope shape:* Linear

*Ecological site:* F095XB006WI - Shallow Upland

*Hydric soil rating:* No

#### **Lamartine**

*Percent of map unit:* 5 percent

*Landform:* Drumlins

*Landform position (two-dimensional):* Footslope

*Landform position (three-dimensional):* Base slope

*Down-slope shape:* Concave

*Across-slope shape:* Linear

*Ecological site:* F095XB005WI - Moist Loamy or Clayey Lowland

*Hydric soil rating:* No

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## Custom Soil Resource Report

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## **RAINFALL INFORMATION**

NOAA ATLAS 14 POINT PRECIPITATION FREQUENCY ESTIMATES



**NOAA Atlas 14, Volume 8, Version 2**  
**Location name: Germantown, Wisconsin, USA\***  
**Latitude: 43.2318°, Longitude: -88.1376°**  
**Elevation: 920 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 & aerals](#)

**PF tabular**

<b>PDS-based point precipitation frequency estimates with 90% confidence intervals (in inches)<sup>1</sup></b>										
<b>Duration</b>	<b>Average recurrence interval (years)</b>									
	<b>1</b>	<b>2</b>	<b>5</b>	<b>10</b>	<b>25</b>	<b>50</b>	<b>100</b>	<b>200</b>	<b>500</b>	<b>1000</b>
<b>5-min</b>	<b>0.334</b> (0.260-0.415)	<b>0.404</b> (0.314-0.502)	<b>0.515</b> (0.399-0.640)	<b>0.603</b> (0.466-0.753)	<b>0.721</b> (0.541-0.911)	<b>0.808</b> (0.597-1.03)	<b>0.893</b> (0.643-1.15)	<b>0.975</b> (0.682-1.28)	<b>1.08</b> (0.734-1.44)	<b>1.15</b> (0.773-1.56)
<b>10-min</b>	<b>0.489</b> (0.381-0.608)	<b>0.591</b> (0.460-0.735)	<b>0.753</b> (0.585-0.937)	<b>0.883</b> (0.683-1.10)	<b>1.06</b> (0.792-1.33)	<b>1.18</b> (0.874-1.51)	<b>1.31</b> (0.942-1.69)	<b>1.43</b> (0.998-1.88)	<b>1.58</b> (1.07-2.11)	<b>1.69</b> (1.13-2.29)
<b>15-min</b>	<b>0.597</b> (0.465-0.741)	<b>0.721</b> (0.561-0.896)	<b>0.919</b> (0.713-1.14)	<b>1.08</b> (0.832-1.34)	<b>1.29</b> (0.965-1.63)	<b>1.44</b> (1.07-1.84)	<b>1.59</b> (1.15-2.06)	<b>1.74</b> (1.22-2.29)	<b>1.93</b> (1.31-2.58)	<b>2.06</b> (1.38-2.79)
<b>30-min</b>	<b>0.814</b> (0.633-1.01)	<b>0.988</b> (0.768-1.23)	<b>1.26</b> (0.982-1.57)	<b>1.49</b> (1.15-1.86)	<b>1.78</b> (1.34-2.25)	<b>2.00</b> (1.48-2.55)	<b>2.21</b> (1.59-2.86)	<b>2.42</b> (1.69-3.18)	<b>2.68</b> (1.82-3.58)	<b>2.87</b> (1.92-3.89)
<b>60-min</b>	<b>1.05</b> (0.815-1.30)	<b>1.26</b> (0.983-1.57)	<b>1.62</b> (1.26-2.02)	<b>1.92</b> (1.49-2.40)	<b>2.34</b> (1.77-2.98)	<b>2.67</b> (1.98-3.42)	<b>3.00</b> (2.17-3.90)	<b>3.34</b> (2.34-4.41)	<b>3.79</b> (2.58-5.09)	<b>4.13</b> (2.77-5.60)
<b>2-hr</b>	<b>1.28</b> (1.01-1.58)	<b>1.54</b> (1.21-1.90)	<b>1.98</b> (1.56-2.44)	<b>2.36</b> (1.84-2.91)	<b>2.90</b> (2.22-3.67)	<b>3.33</b> (2.50-4.25)	<b>3.78</b> (2.77-4.89)	<b>4.25</b> (3.02-5.59)	<b>4.89</b> (3.37-6.54)	<b>5.40</b> (3.64-7.26)
<b>3-hr</b>	<b>1.44</b> (1.14-1.76)	<b>1.71</b> (1.36-2.10)	<b>2.19</b> (1.73-2.68)	<b>2.62</b> (2.06-3.22)	<b>3.25</b> (2.52-4.12)	<b>3.78</b> (2.86-4.81)	<b>4.33</b> (3.20-5.60)	<b>4.93</b> (3.53-6.47)	<b>5.77</b> (4.00-7.69)	<b>6.44</b> (4.36-8.62)
<b>6-hr</b>	<b>1.74</b> (1.40-2.11)	<b>2.02</b> (1.62-2.44)	<b>2.53</b> (2.03-3.07)	<b>3.02</b> (2.41-3.67)	<b>3.77</b> (2.98-4.78)	<b>4.42</b> (3.41-5.62)	<b>5.13</b> (3.84-6.61)	<b>5.91</b> (4.28-7.73)	<b>7.03</b> (4.94-9.34)	<b>7.95</b> (5.43-10.6)
<b>12-hr</b>	<b>2.07</b> (1.68-2.48)	<b>2.34</b> (1.90-2.80)	<b>2.86</b> (2.32-3.43)	<b>3.37</b> (2.72-4.05)	<b>4.18</b> (3.35-5.26)	<b>4.90</b> (3.82-6.18)	<b>5.69</b> (4.32-7.28)	<b>6.58</b> (4.82-8.55)	<b>7.87</b> (5.58-10.4)	<b>8.94</b> (6.15-11.8)
<b>24-hr</b>	<b>2.36</b> (1.95-2.80)	<b>2.67</b> (2.20-3.17)	<b>3.26</b> (2.67-3.87)	<b>3.82</b> (3.12-4.56)	<b>4.72</b> (3.82-5.87)	<b>5.50</b> (4.34-6.87)	<b>6.37</b> (4.88-8.07)	<b>7.33</b> (5.42-9.43)	<b>8.72</b> (6.23-11.4)	<b>9.87</b> (6.85-12.9)
<b>2-day</b>	<b>2.64</b> (2.20-3.10)	<b>3.04</b> (2.54-3.57)	<b>3.78</b> (3.14-4.44)	<b>4.46</b> (3.69-5.26)	<b>5.50</b> (4.48-6.74)	<b>6.38</b> (5.07-7.86)	<b>7.34</b> (5.66-9.18)	<b>8.38</b> (6.24-10.7)	<b>9.87</b> (7.10-12.8)	<b>11.1</b> (7.75-14.4)
<b>3-day</b>	<b>2.90</b> (2.44-3.39)	<b>3.32</b> (2.79-3.87)	<b>4.07</b> (3.41-4.76)	<b>4.77</b> (3.98-5.60)	<b>5.84</b> (4.79-7.12)	<b>6.76</b> (5.41-8.27)	<b>7.74</b> (6.01-9.63)	<b>8.82</b> (6.60-11.2)	<b>10.4</b> (7.49-13.4)	<b>11.6</b> (8.17-15.0)
<b>4-day</b>	<b>3.13</b> (2.65-3.64)	<b>3.55</b> (3.00-4.13)	<b>4.32</b> (3.64-5.03)	<b>5.03</b> (4.22-5.88)	<b>6.12</b> (5.04-7.42)	<b>7.05</b> (5.67-8.59)	<b>8.06</b> (6.28-9.98)	<b>9.15</b> (6.88-11.5)	<b>10.7</b> (7.77-13.8)	<b>12.0</b> (8.45-15.4)
<b>7-day</b>	<b>3.67</b> (3.14-4.23)	<b>4.17</b> (3.56-4.80)	<b>5.04</b> (4.29-5.82)	<b>5.82</b> (4.94-6.74)	<b>7.00</b> (5.80-8.37)	<b>7.97</b> (6.45-9.60)	<b>9.01</b> (7.07-11.0)	<b>10.1</b> (7.65-12.6)	<b>11.7</b> (8.52-14.9)	<b>13.0</b> (9.19-16.6)
<b>10-day</b>	<b>4.16</b> (3.58-4.77)	<b>4.72</b> (4.06-5.41)	<b>5.68</b> (4.87-6.52)	<b>6.53</b> (5.57-7.52)	<b>7.76</b> (6.46-9.20)	<b>8.77</b> (7.13-10.5)	<b>9.82</b> (7.73-11.9)	<b>10.9</b> (8.29-13.5)	<b>12.5</b> (9.13-15.8)	<b>13.7</b> (9.77-17.5)
<b>20-day</b>	<b>5.68</b> (4.95-6.43)	<b>6.36</b> (5.55-7.21)	<b>7.50</b> (6.52-8.52)	<b>8.46</b> (7.31-9.64)	<b>9.80</b> (8.22-11.4)	<b>10.9</b> (8.90-12.8)	<b>11.9</b> (9.47-14.3)	<b>13.0</b> (9.94-15.9)	<b>14.5</b> (10.7-18.1)	<b>15.6</b> (11.2-19.7)
<b>30-day</b>	<b>7.01</b> (6.17-7.89)	<b>7.82</b> (6.87-8.81)	<b>9.12</b> (7.99-10.3)	<b>10.2</b> (8.87-11.5)	<b>11.6</b> (9.79-13.4)	<b>12.7</b> (10.5-14.8)	<b>13.8</b> (11.0-16.4)	<b>14.9</b> (11.4-18.0)	<b>16.3</b> (12.0-20.1)	<b>17.3</b> (12.5-21.7)
<b>45-day</b>	<b>8.75</b> (7.76-9.79)	<b>9.75</b> (8.64-10.9)	<b>11.3</b> (10.0-12.7)	<b>12.6</b> (11.0-14.1)	<b>14.2</b> (12.0-16.2)	<b>15.3</b> (12.7-17.7)	<b>16.4</b> (13.2-19.3)	<b>17.5</b> (13.5-21.0)	<b>18.8</b> (13.9-23.1)	<b>19.7</b> (14.3-24.6)
<b>60-day</b>	<b>10.3</b> (9.16-11.4)	<b>11.5</b> (10.2-12.8)	<b>13.3</b> (11.8-14.9)	<b>14.7</b> (13.0-16.5)	<b>16.5</b> (14.0-18.7)	<b>17.8</b> (14.8-20.4)	<b>18.9</b> (15.2-22.1)	<b>20.0</b> (15.4-23.8)	<b>21.1</b> (15.7-25.8)	<b>21.9</b> (15.9-27.3)

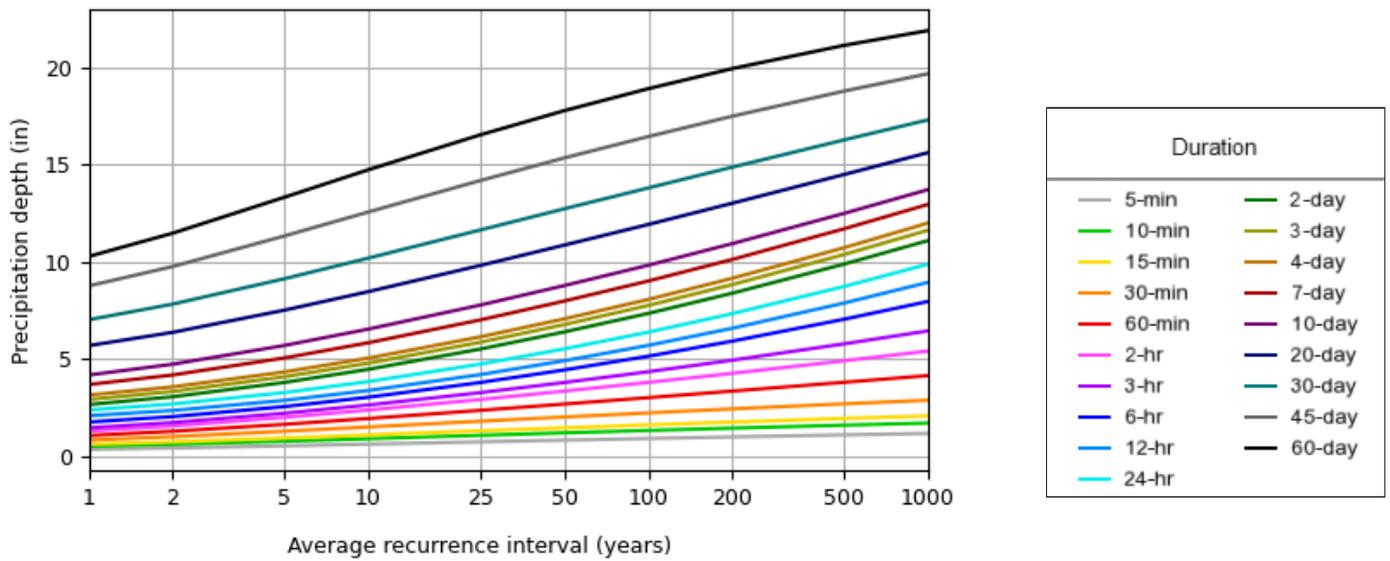
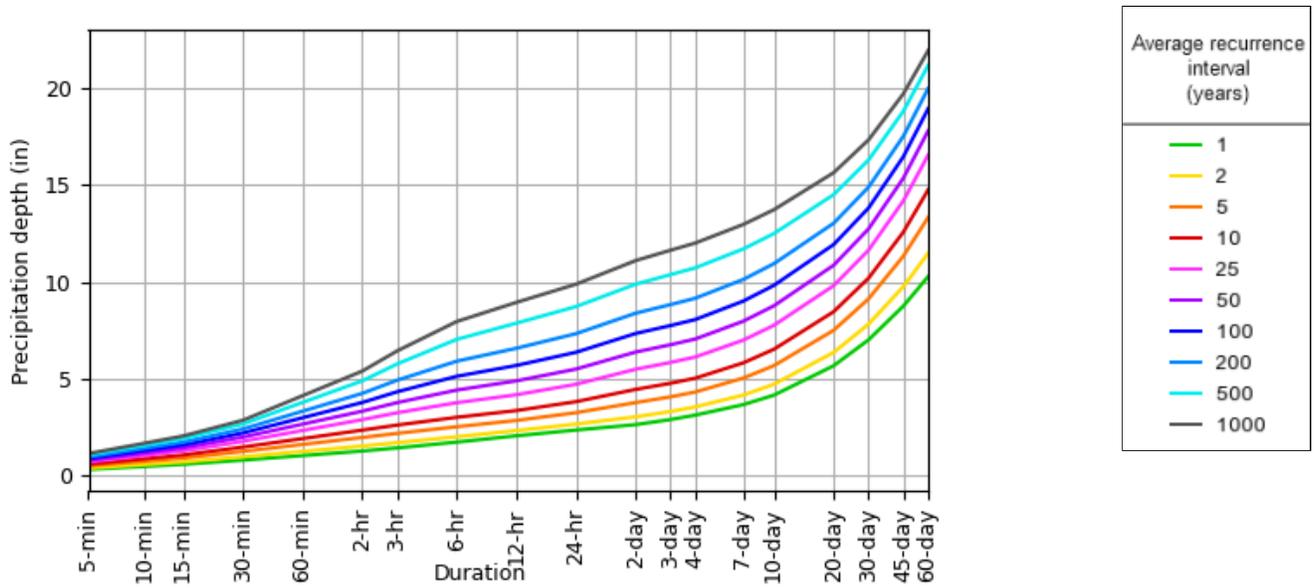
<sup>1</sup> Precipitation frequency (PF) estimates in this table are based on frequency analysis of partial duration series (PDS). Numbers in parenthesis are PF estimates at lower and upper bounds of the 90% confidence interval. The probability that precipitation frequency estimates (for a given duration 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**

PDS-based depth-duration-frequency (DDF) curves

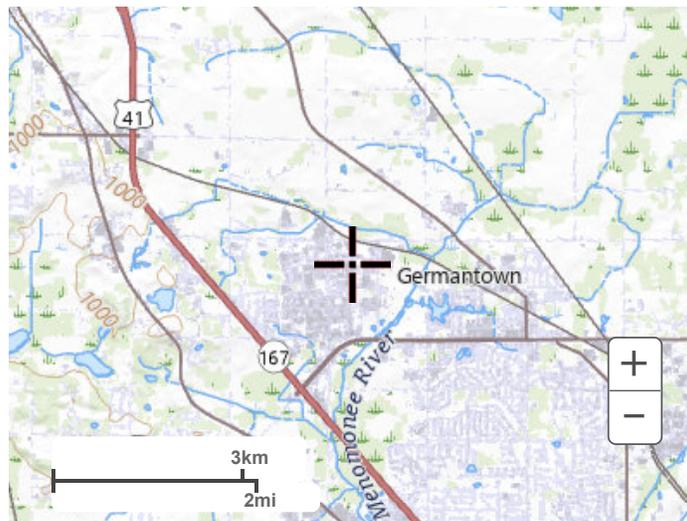
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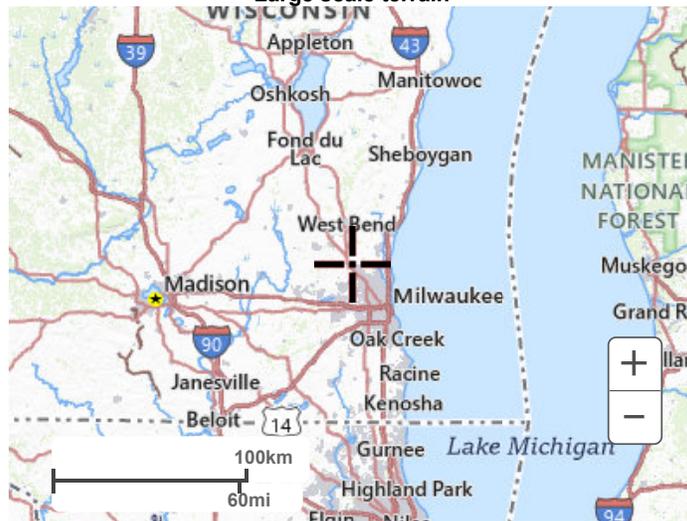
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**Maps & aerials**

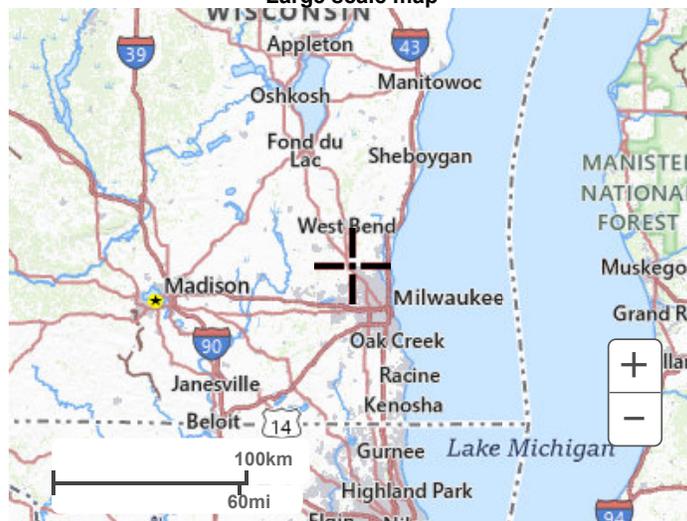
**Small scale terrain**



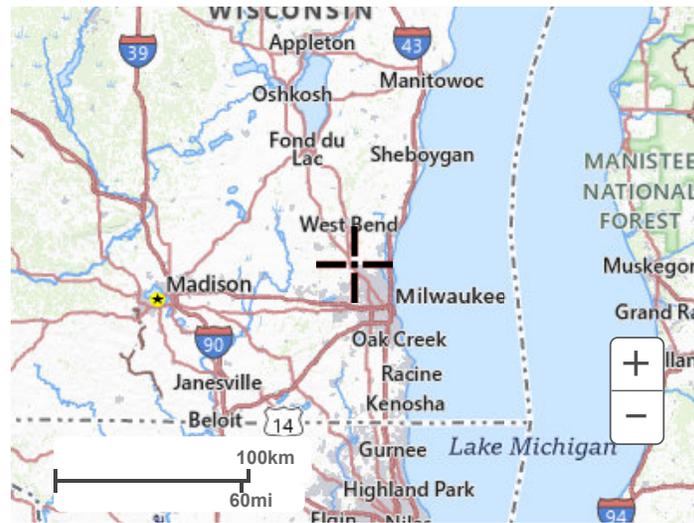
Large scale terrain



Large scale map



Large scale aerial



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[National Oceanic and Atmospheric Administration](#)  
[National Weather Service](#)  
[National Water Center](#)  
1325 East West Highway  
Silver Spring, MD 20910  
Questions?: [HDSC.Questions@noaa.gov](mailto:HDSC.Questions@noaa.gov)

[Disclaimer](#)

## **GEOTECH INFORMATION**

INTERTEK GEOTECHNICAL EXPLORATION AND EVALUATION



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

January 20, 2026

Abacus Architects  
640 N Vel R Phillips Ave, Suite 210  
Milwaukee, WI 53203

Attn: Mr. Keith Solum  
Principal Project Architect

Re: Geotechnical Exploration and Evaluation  
Proposed Basic Metals Addition  
W180N11711 N River Lane  
Germantown, Wisconsin  
PSI Project No 00523594

Dear Mr. Solum:

The geotechnical exploration and 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.**

Ilyas Ahmed  
Staff Engineer

James M. Becco, P.E.  
Principal Consultant



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### **APPENDIX (in order of appearance)**

- Figure 1 – Boring Location Plan
- Soil Boring Logs
- General Notes

## **INTRODUCTION**

### General

This report presents the results of the geotechnical exploration and evaluation for the proposed Basic Metals Addition project located in Germantown, Wisconsin. The work was performed for Abacus Architects, at the request of Mr. Keith Solum.

### Purpose

The purpose of this study was to evaluate the subsurface conditions at specific boring locations on the site, and to establish parameters for use by the design engineers and architects in preparing the foundation, floor slab, and pavement designs for the proposed project.

### Scope

The scope of services included the subsurface exploration, an evaluation 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, location, and depth of the borings 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 PSI Proposal No. 465784, dated December 8, 2025. This report has been prepared on behalf of, and exclusively for the use of Abacus Architects. 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 located at W180N11711 N River Lane in Germantown, Wisconsin. The new addition is planned to the west side of the existing building. At the time of exploration, the site was occupied by a building with associated pavements, grass areas, and trees. The project site is surrounded by Fulton Drive to the south, N River Lane to the east, commercial properties to the west, and another Basic Metal Facility to the north. A review of aerial photos of various years between 2000 to 2025 on Google Earth indicates that the site has remained relatively similar in appearance to that described herein throughout the series of photos. The subject site is depicted on the enclosed Boring Location Plans (Figure 1).

The topography of the site is slightly rolling, with an elevation difference at the borings of about 6 feet (EL. 885 to EL. 879), generally sloping down to the south.

## Project Description

The project is understood to consist of a new addition with associated paved parking and drive areas. The addition will be to the north and east sides of the existing building. It will be a single story, slab-on-grade structure with a total footprint of about 41,472 square feet. A loading dock is planned on the south side of the addition. It is indicated that maximum column loads will not exceed 160 kips (sustained load) and 150 kips (transient load). The maximum uniform floor load will not exceed 1,000 psf. No other details were provided.

A finished first floor elevation (FFE) of EL. 882.6 was provided by the client. Based on the elevations at the building borings B-1 through B-4 of EL. 885 to EL. 879, it is estimated that cuts of up to about 2.5 feet and fills of up to about 3.5 feet may be required. However, this will also be dependent on the subgrade preparation criteria, to be discussed in a later section.

The new pavements are estimated to consist of hot mix asphalt (HMA) and/or Portland cement concrete (PCC). The project will consist of standard duty pavement (employee parking and light delivery) on the east side and heavy-duty pavement (heavy truck) on the south side of proposed addition. The following traffic volumes for pavements have been provided by the client.

- Semi-trucks per day (total weight of 80,000 lbs): 8 total trips (Heavy duty)
- Passenger cars per day: 25 (Standard duty)
- Smaller box delivery trucks per day: 2 (Standard duty)

When additional information regarding the project becomes available, and/or if any of the information discussed herein differs from current plans or changes as design progresses, PSI must be informed so that any necessary revisions to this report can be made.

## **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 standard laboratory testing.

### Field Exploration

Five (5) soil borings were performed for this project. B-1 through B-4 were performed in the building area to a planned depth of about 20 feet below existing grade. B-5 was performed in a planned pavement area to a depth of about 5 feet below existing grade. The number, depth, and approximate location of the soil borings was provided by the client. The borings were located in the field by PSI utilizing a handheld consumer grade GPS device. The locations are estimated to be accurate to within several feet. The surface elevations shown on the logs were estimated by interpolation of a 1-foot contour map of the property, provided by the client. The

elevations are estimated to be accurate to within about 1 foot. The approximate locations of the borings performed are shown on the Boring Location Plan (Figure 1), which is provided in the Appendix of this report.

The soil test borings were performed with an all-terrain vehicle (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 procedures in general accordance with ASTM D-1586 procedures. Samples were collected at 2.5-foot intervals to 10 feet, and then at 5-foot intervals thereafter to the end of the borings. As an exception, the pavement boring samples were collected at 2 feet continuously. 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, or (4) successive increments for pavement boring, 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 soil 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 were visually classified in general accordance with the Unified Soil Classification System (ASTM D-2488-75). A description of the subsurface conditions encountered at each boring location is shown on the enclosed Soil Boring Logs. After completion of the borings, the auger holes were backfilled to the ground surface with bentonite or auger cuttings dependent upon depth. In addition, the surface at B-4 was patched with cold asphalt.

A copy of the Soil Boring Logs and Boring Location Plan (Figure 1) 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 an uncontrolled strain loading rate and/or 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 an approximate boundary between the various soil classifications. It must be recognized that the soil descriptions are considered representative estimates for the specific test hole location, but those 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

The surficial materials present at the borings (excluding B-4) consisted of about 5 to 8 inches of lean clay classified as topsoil fill. The surficial materials present at B-4 consisted of about 2.75 inches of asphalt, followed by 9.5 inches of crushed stone base. Underlying the surface materials at the borings were fill and possible fill soils consisting of lean clay, fine to medium sand, silt and gravel to depths of about 3 to 8 feet (EL. 882 to EL. 872) below existing grade. Beneath the fill and possible fill were natural soils consisting of lean clay, gravel, and fine to medium sand to the maximum depth explored. Possible cobbles and/or boulders were encountered at B-1, B-2, and B-3 to depths ranging from 5.5 to 8 feet (EL. 879.5 to EL. 872) below existing grade.

The natural cohesive soils were in a very stiff consistency with an unconfined compressive strength of 2.7 tons per square foot (tsf). The natural granular soils were generally medium dense to extremely dense in relative density with N-values ranging from 20 blows per foot (bpf) to 50+ blows per inch of penetration. The fill/possible fill granular soils were generally medium dense in relative density with an N-value ranging from 13 to 18 blows per foot (bpf).

The fill and possible fill were classified as such based on their varied visual characteristics and composition. However, it must be recognized that in the absence of foreign substances and/or debris within the soil samples obtained, it is often difficult to distinguish between natural soils and clean soil fill.

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 upon completion of drilling and removal of the augers. No groundwater was observed within the borings during auger advancement or upon completion of drilling and removal of the augers.

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 further evaluate groundwater levels on this site.

## **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 be used for support of the proposed addition. However, fill and possible fill soils were present at the building borings to depths of about 3 to 8 feet (EL. 882 to EL. 872) below existing grade. Existing fill soils are not recommended for foundation support due to the potential for variable strength and support characteristics. The proposed structure can be supported by means of conventional spread footings extended through the existing fill to bear on suitable natural soils, or upon newly placed and compacted structural fill (or lean concrete mix) used to replace the existing materials. About 2.5 to 6.5 feet of overexcavation may be necessary below frost depth (with deeper undercuts for interior footings) in some areas of the planned building. However, some variation should be expected.

Very dense to extremely dense granular soils and possible cobbles and/or boulders were encountered within B-1, B-2, and B-3 at depths of about 5.5 to 8 feet (EL. 879.5 to EL. 872.5). Substantial difficulty digging and longer excavation times for conventional excavating, and substantial difficulty with the installation of bracing systems may be experienced.

The existing fill and natural soils can generally be utilized for support of the floor slabs and pavements after proper subgrade preparation. However, some over-excavation of unsuitable soils may be necessary. A discussion of the building foundation and pavement design parameters, as well as the support conditions for the floor slab and pavement are included in later sections.

### Site Preparation

The presence of organic topsoil and vegetation in the subgrade can adversely affect the serviceability of structural fills, foundations, floor slabs, pavements, and other structures placed upon them. Approximately 5 to 8 inches of topsoil fill were present on the surface at most of the borings. However, some variation should be expected. All topsoil, vegetation, trees, roots and

other organic matter must be stripped from the areas of footings, floor slabs, pavements, sidewalks, and other structures. The existing pavement must also be removed from the proposed addition area.

Backfill adjacent to the existing foundation walls, and within any existing utility trenches, must be evaluated by a representative of the soil engineer to determine its suitability to support new fill, floor slabs, and footings. Some removal of loose or unsuitable soils may be necessary. Existing utilities or portions of the existing structure that extend into the planned new development areas must be completely removed or rerouted, as necessary, and the area properly backfilled.

After stripping the topsoil and cutting any high areas of the site to the planned finished grade, and prior to the placement of new fill which may be placed to raise grades, surface subgrades must be thoroughly proofrolled to detect unstable, yielding soils. This should consist of overlapping passes in a perpendicular grid pattern, with a fully loaded tandem-axle dump truck, or other equipment of similar size and weight suitable for the surface conditions. Proofrolling should be performed in consultation with the geotechnical engineer at the time of construction. Substantial and widespread subgrade instability, possibly requiring deep undercutting, can occur within highly moisture sensitive silty and clayey soils (such as were encountered in the borings), especially in wet or cold weather, or during thawing conditions. It is generally recommended that earthwork be carried out during relatively warm, dry weather. Any soft, wet, or otherwise unstable 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 clayey and some silty 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. Long delays and substantial difficulty with subgrade stabilization may be experienced if the soils are wet, or are otherwise at high moisture contents at the time of construction. It is recommended that construction roads be installed to reduce disturbance to the highly 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 foundation and pavement subgrade soils is reduced.

If site grades are raised in excess of 2 feet, the first lift of new fill must be placed so as to extend a minimum lateral distance of 5 feet beyond the planned top building pad dimension (for fills less than 5 feet in thickness), or for a distance equal to at least 1 foot laterally beyond the top pad dimension 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 back up to the planned top perimeter

dimension of the pad. Similarly, where undercutting of unsuitable soils is performed beneath footings, floor slabs, or other structural areas, it is recommended that the removal extend laterally beyond the perimeter of the structure at least 0.5 feet for every 1 foot of removal below the planned bearing depth. 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 well graded granular soil. 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 extremely difficult to compact when placed at moisture contents beyond a few percent of the optimum moisture content. 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-1557 (Modified Proctor). Silt, clay, and wet granular soils are not suitable for reuse as compacted fill in trenches, or adjacent to foundation stem walls or retaining walls. Importing of suitable granular backfill soils is likely to be required.

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

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.

### Foundation Evaluation

The proposed addition can be supported by a conventional spread foundation system, bearing on suitable naturally occurring soils or within structural fill, prepared as discussed in a previous section. Based upon the planned finished first floor elevation of EL. 882.6, interior and exterior

footings will bear at about EL. 881.1 and EL. 878.6, respectively. Fill and possible fill soils were present at building borings B-1 through B-4 to depths of about 3 to 8 feet (EL. 882 to EL. 872) below existing grade. Existing fill soils are not recommended for foundation support due to the potential for variable strength and support characteristics. The proposed structure can be supported by means of conventional spread footings extended through the existing fill to bear on suitable natural soils, or upon newly placed and compacted structural fill (or lean concrete mix) used to replace the existing materials. About 2.5 to 6.5 feet and 5 to 9 feet of overexcavation may be necessary below frost depth and interior footings, respectively, in some areas of the planned building. Conventional spread footings bearing upon suitable natural soils, or upon compacted structural fill or lean concrete mix used to replace unsuitable materials, may be designed for a net allowable soil pressure of 4,000 psf. Some undercutting of soft, wet, or otherwise unsuitable natural soils may be necessary.

The suitability of the existing soils for support of the proposed foundation must 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.

In lieu of the use of compacted structural fill, lean concrete mix can be used to replace the unsuitable soils. The foundation excavations should be about 4 inches wider than the proposed footing width and must extend to suitable natural bearing soils. The concrete must be placed immediately after excavation to avoid intrusion of soil into the excavation. The concrete should contain sufficient aggregate and cement to attain a 28-day compressive strength of at least 1000 psi. Some sloughing or caving of the overlying soils may be experienced. Should this occur during concrete placement, the area must be removed and recast. Additionally, should caving become extensive (such as can more typically occur within granular or soft clay soil), it may be necessary to substantially widen excavations to avoid soil intrusion into the concrete. This may result in the use of additional concrete quantities significantly in excess of preconstruction budget estimates.

Where new foundations are planned adjacent to existing foundations or to each other, the effects of overlapping soil stresses must be considered. The net allowable soil bearing pressure recommended above must not be exceeded. It should be noted that backfill materials may be encountered within existing utility trenches and adjacent to existing foundation walls. Overexcavation of unsuitable trench backfill and replacement with structural fill may be necessary for proper foundation support. All foundations must bear upon suitable natural soils or properly placed and compacted structural fill.

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 local practice) below the finished 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 at least 18 inches below the floor slab, provided they bear on suitable natural soils or engineered fills. All footings 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 24 inches, and continuous footings have a minimum width of 18 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.

#### Floor Slab and Pavement Subgrades

Prior to constructing the surface 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 high silt and clay content 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 to ensure 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 can be undercut to such depths determined necessary in the field to reach stable material, and the area backfilled with well graded granular soil, placed and compacted as recommended in the Site Preparation section of this report. If relatively thick zones or areas of extensive yielding are observed, and they 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 slab(s) may be designed utilizing an estimated modulus of subgrade reaction of 125 pci based on the presence of a suitable and stable subgrade, prepared as discussed in this report. However, this is based on common range values obtained from 1 ft. x 1 ft. plate load tests on specific soil types. Depending on how the slab load is applied, the value may need to be modified for larger areas using the following:

Modulus of Subgrade Reaction  $k_s = \left(\frac{k}{B}\right)$  for cohesive soil  
 $k_s = k \left(\frac{B+1}{2B}\right)^2$  for cohesionless soil

where:  $k_s$  = coefficient of vertical subgrade reaction for loaded area  
 $k$  = coefficient of vertical subgrade reaction for a 1x1 foot square area  
 $B$  = width of area loaded, in feet

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 the floor slab. This must be a minimum of six (6) inches in thickness and properly compacted. In moisture sensitive areas, a vapor retarder 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 retarder 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 should 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). It is recommended that appropriate construction methods and curing procedures be used to minimize shrinkage and curling of the floor slabs.

### Exterior/Unheated Area Slabs

Based on the borings, entry slabs, sidewalks, aprons, and other slabs in exterior or unheated areas will bear upon silty or clayey soils. Such materials 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 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 underdrain 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 generally be used for support of utility lines. However, some undercutting of soft, wet, or otherwise unsuitable soils, in conjunction with the placement of crushed stone or other suitable granular backfill may be necessary. Some 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. 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 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 may be required.

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 95% of the maximum dry density as determined by Modified Proctor (ASTM D1557).

Based upon the use of a free draining granular crushed stone backfill ( $\phi=30$ ;  $\gamma_m = 130$  pcf), an equivalent fluid pressure of 43 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 must be used. These values are exclusive of traffic and other surcharge loads near the walls, which must be factored into the design. 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 level backfill. 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.

## **CONSTRUCTION CONSIDERATIONS**

### Groundwater Control

Groundwater observations were made during the drilling operations and in the open boreholes upon completion of drilling and removal of the augers. No groundwater was observed within the borings during auger advancement or upon completion of drilling and removal of the augers.

On the basis of the observations, no major difficulty with groundwater is expected to be experienced in typical shallow foundation and utility excavations. For low volume perched zones, a filtered sump pump should suffice for control. However, for rising groundwater levels, or for large volume perched zones, prolonged dewatering with a series of sump pumps may be necessary to facilitate construction.

Discharge water from roof drains should be directed away from the building, and the site grading direct runoff to catch basins, so that the potential for the softening of the foundation and pavement subgrade soils is reduced.

While no groundwater was encountered at the time the borings were drilled, seasonal variations, site drainage conditions, soil permeability, and other factors can cause groundwater levels to rise and/or perched zones to be present in the upper soils at varying times of the year.

### Excavations and Site Drainage

Sloping, shoring or bracing of the excavation sidewalls will be necessary to facilitate construction and to protect life and property. Sloughing 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.

Very dense to extremely dense granular soils and possible cobbles and/or boulders were encountered within B-1, B-2, and B-3 at depths of about 5.5 to 8 feet (EL. 879.5 to EL. 872.5). Substantial difficulty digging and longer excavation times for conventional excavating, and substantial difficulty with the installation of bracing systems are likely to be experienced. Refusal or near refusal conditions may also occur. If it is desired to evaluate potential longer digging times and excavating difficulty within the overburden soils, additional subsurface exploration with backhoe test pits is recommended as part of design and construction planning.

All excavations must be performed with caution and utilize methods which will prevent undermining or destabilization of buildings, utilities, pavements, or other structures. New building foundations should be stepped to match the bearing elevation of the existing building

foundations and bear on suitable natural soil or structural fill. The use of a properly designed shoring and bracing, sheet piling, or underpinning system must be utilized as necessary to adequately protect 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. In addition, monitoring such structures must be performed from the time of commencement and extending through completion of the installation activities.

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. 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.

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.

### Seismic Design Considerations

Based on local experience; and the results of the soil test borings, it is recommended that Site Class D, in accordance with Table 20.3-1 of ASCE 7-16, be used in design.

The site latitude and longitude are 43.231360° N and 88.133853° W. Using the USGS Seismic Design Maps (<https://seismicmaps.org>); and the requirements of International Building Code (IBC) 2021 and Minimum Design Loads for Buildings and Other Structures (ASCE 7-16), the following are mapped acceleration parameters for this site.

Mapped MCE Spectral Response Acceleration		Site Amplification Factor		Numeric Seismic Design Value		Site Modified Spectral Acceleration		PGA (Peak Ground Acceleration)	F <sub>PGA</sub> (Site Application Factor at PGA)	PGA <sub>M</sub> (Site Modified Peak Ground Acceleration)
*S <sub>s</sub>	0.071	*F <sub>a</sub>	1.6	*S <sub>Ds</sub>	0.075	S <sub>Ms</sub>	0.113	0.034	1.6	0.054
**S <sub>1</sub>	0.046	**F <sub>v</sub>	2.4	**S <sub>D1</sub>	0.074	S <sub>M1</sub>	0.111			

\*0.2 second time period  
 \*\* 1.0 second time period

### PAVEMENT DESIGN RECOMMENDATIONS

Pavements for this project are understood to consist of asphalt and/or concrete for standard duty and heavy-duty pavement. Traffic loading for pavements, as provided by the client, is estimated to consist of an average of 8 semi-trucks per day, 25 passenger vehicles per day, and 2 smaller box delivery trucks per day. Based on the traffic data provided, estimated minimum 20-year design ESAL values of about 24,000 and 275,000 for HMA, and about 25,000 and 480,000 for PCC, were determined for the standard duty and heavy-duty pavement sections, respectively.

The near surface pavement subgrade soils encountered at the borings consisted of lean clay fill with an estimated visual classification of A-6 by the AASHTO soil classification method. These soils are generally rated as poor for pavement subgrade support due to their high frost susceptibility, poor drainage characteristics, and higher 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.

The existing asphalt and aggregate base section are not considered suitable for reuse as new pavement. However, the existing asphalt pavement and base materials may be suitable, when properly pulverized, for use as engineered fill or possibly for base material and evaluation of the pulverized pavement material suitability should be made at the time of construction.

Evaluation of the visual soil classification has been made in estimating pertinent subgrade design coefficients as described in the Wisconsin Soils Manual for Pavement Design. Based on the soils encountered, and with proper subgrade preparation and drainage, the following pavement subgrade design parameters are recommended for the pavement section design. However, if soils with support characteristics different from the lean clay materials are encountered or are used to raise grades in new pavement areas, revised coefficients will need to be provided.

**Pavement Subgrade Design Coefficients**

<b>Soil Parameter</b>	<b>Value</b>
AASHTO Soil Classification	A-6
Drainage	Poor
Shrink-Swell Potential	Medium to High
Frost Index	F-3
Design Group Index	14
Soil Support Value	4.0
Estimated CBR Value	3
Estimated Resilient Modulus (Mr)	2800
Estimated Subgrade Modulus (k)	125

During construction, the surficial subgrade soils can become wet, softened and disturbed from rainfall and construction equipment. Therefore, prior to placing the pavement base materials, the subgrade must be proofrolled as outlined previously. Particular attention should be given to high traffic areas that have become rutted and areas of backfilled trenches. Localized wet, soft, or unstable areas can be undercut to such depths determined necessary in the field to reach stable materials. The granular base course should consist of well-graded crushed stone meeting the requirements from the State of Wisconsin DOT Standard Specifications for construction for dense graded base. If relatively large or thick zones of extensive yielding are observed, and normal discing and recompaction procedures cannot stabilize them, undercutting and replacement with crushed stone and geotextile fabric (if needed) may be required in these areas. Preparation and evaluation of the pavement subgrade must be performed as outlined in the Site Preparation section of this report. Generally, construction traffic loading is more severe than the design traffic after construction. Therefore, the subgrade, base and pavement materials must be protected from heavy construction traffic during construction.

The recommended minimum pavement section was determined utilizing the WinPAS pavement design software. This program embodies the methodology of the 1993 AASHTO Guide for the Design of Pavement Structures. The following design factors were used in developing the recommended pavement sections.

- Design Life: 20 years
- Design Traffic (Heavy Duty): 480,000 ESALs (rigid); 275,000 ESALs (flexible)
- Design Traffic (Standard Duty): 25,000 ESALs (rigid); 24,000 ESALs (flexible)
- Modulus of Subgrade Reaction (k): 125 pci
- Resilient Modulus (Mr): 2800
- Reliability: 85%
- Initial Serviceability: 4.5 (rigid); 4.2 (flexible)
- Terminal Serviceability: 2.0
- Standard Deviation: 0.35 (rigid), 0.45 (flexible)
- Load Transfer Coefficient : 3.2
- Concrete Modulus of Rupture: 600 psi

- Structural Coefficient Hot Mix Asphalt: 0.44
- Structural Coefficient Aggregate Base: 0.14

The following table presents the recommended thickness for flexible and rigid pavement structures on a properly prepared clay subgrade, along with their recommended structural coefficients.

Recommended Flexible Pavement Section				
Pavement Material	Structural Layer Coefficient	Standard Duty Thickness (inches)	Heavy Duty Thickness (inches)	WDOT Specification
Hot-Mix Asphalt	0.44	4	5	WisDOT 360
Crushed Aggregate Base (1¼" DG Crushed Stone)	0.14	8	12	WisDOT 305

Recommended Rigid Pavement Section				
Pavement Material	Structural Layer Coefficient	Standard Duty Thickness (inches)	Heavy Duty Thickness (inches)	WDOT Specification
Portland Cement Concrete	4000 psi	5	7	WisDOT 415
Crushed Aggregate Base (1¼" DG Crushed Stone)	0.14	6	6	WisDOT 305

The asphaltic base and surface course should be placed and provided in accordance with Section 455/460 of the State of Wisconsin Standard Specification for Highway and Structure Construction. The crushed aggregate base course should be provided and placed in accordance with Section 301 and 305 of the Standard Specification.

The Portland Cement Concrete pavement construction materials and procedures should be in accordance with Section 415 and Section 305 (for concrete and base course, respectively) of the Standard Specification.

The thickness designs shown above are based on the traffic loading provided to PSI; the assumption that all subgrade materials, natural or fill, have minimum strength characteristics equal to or greater than the expected clay soils; the subgrade being properly prepared as outlined in this report; and the pavement being properly drained to prevent softening and erosion of the subgrade. Actual service life will be dependent upon deterioration caused by weather conditions and pavement use. All pavement materials and construction must be in accordance with the guidelines of the State of Wisconsin Standard Specification for Highway and Structure construction. If design traffic loading is found to be different from that discussed

above; or if the soils encountered at planned subgrade vary from the anticipated clay fill soils; new pavement section designs may be necessary.

It should be recognized that all pavements require regular maintenance and occasional repairs to keep the pavements in a serviceable condition. Maintenance is necessary to reduce the effects of pavement stress caused by changes in temperature and moisture, repetitive traffic loadings, and movement of the subgrade soils. As pavement distress is observed, it should be repaired as quickly as possible. Timely sealing of joints and cracks is essential to help reduce the potential for water to enter the pavement section and cause rapid deterioration of the pavement during freeze-thaw cycles. Unrepaired areas will generally lead to more severe and widespread distress, and eventually, pavement disintegration. Therefore, annual maintenance should include sealing of cracks and joints, and maintenance of proper surface drainage to avoid ponding water on or near the pavements. Periodic pavement condition surveys of the pavement can also be implemented to evaluate the need for other surface maintenance, and treatments or repairs that may be needed to obtain the design service life.

The subject site is located in an area that experiences annual freezing cycles and the subgrade soils encountered have been classified as moderately to highly susceptible to frost action when 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 underdrains be placed within the subgrade, just below the granular base, to help reduce the potential for trapping water within the aggregate base layer. Sufficient drain tiles extending radially outward an adequate distance from each interior catch basin must be installed. In addition, drain tiles should extend along curb lines, up the slope from curb inlets. The drain tile should be directly connected to the storm sewer manholes or catch basins (if permissible by local municipal or other applicable code). The drain tile should consist of perforated PVC pipe of adequate diameter placed beneath the base layer, extending a sufficient distance into the subgrade. The pipe should be surrounded by appropriately sized clean stone, with the pipe and stone being wrapped with a geotextile filter fabric to reduce the potential for soils to migrate into and obstruct the pipe.

## **GENERAL COMMENTS**

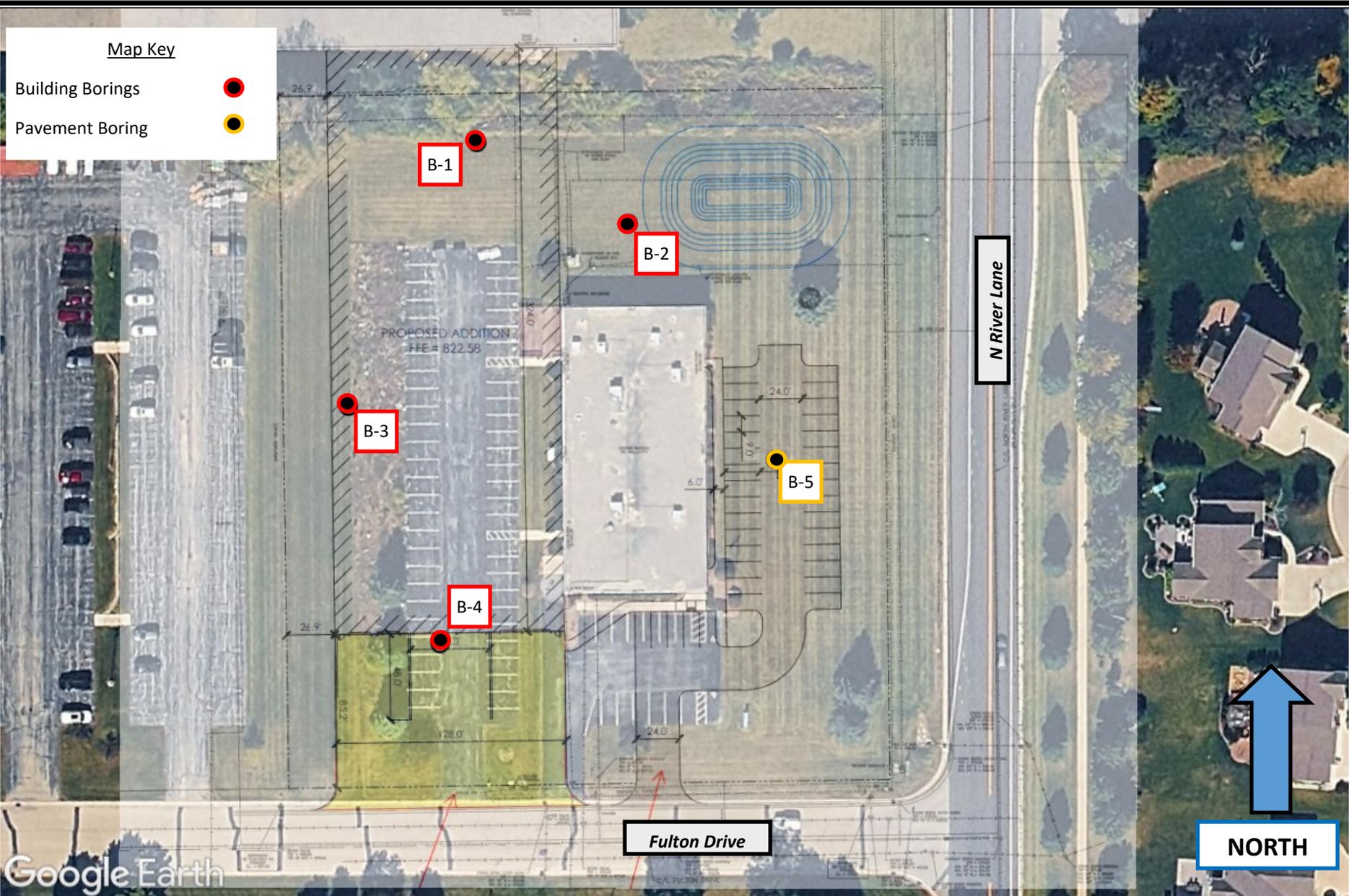
This geotechnical exploration and subgrade evaluation have been prepared to aid in the evaluation of the soil conditions on this site. The recommendations presented herein are based on the available soil information and the preliminary project information provided. Any changes in the planned project activities should be brought to the attention of the soil engineer to determine if modifications in the recommendations are required. The final design plans and specifications should also be reviewed by the soil engineer to determine that the recommendations presented herein have been interpreted and implemented as intended.

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 soil engineer, to test and evaluate the subgrade stability, bearing capacities, and the selection, placement and compaction of controlled fills.

## **Appendix**

Figure 1– Boring Location Plan  
Soil Boring Logs  
General Notes



Proposed Basic Metals Addition  
 W180N11711 N River Ln  
 Germantown, WI

SCALE: 1 inch = 80 feet (approx.)

DATE: 01/14/2026

**FIGURE 1: BORING LOCATION PLAN**

PROJECT NUMBER: 00523594

**DATE STARTED:** 12/23/25  
**DATE COMPLETED:** 12/23/25  
**COMPLETION DEPTH:** 20.0 ft  
**BENCHMARK:** N/A  
**ELEVATION:** 880 ft  
**LATITUDE:**  
**LONGITUDE:**  
**STATION:** N/A    **OFFSET:** N/A  
**REMARKS:**

**DRILL COMPANY:** PSI, Inc.  
**DRILLER:** RB    **LOGGED BY:** AW  
**DRILL RIG:** Mobile Drill B-57  
**DRILLING METHOD:** Hollow Stem Auger  
**SAMPLING METHOD:** 2-in SS  
**HAMMER TYPE:** Automatic  
**EFFICIENCY:** N/A  
**REVIEWED BY:**

# BORING B-1

**Water**  
 ∇ While Drilling    Not Observed  
 ▼ Upon Completion    Not Observed  
 ∇ 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, %	STRENGTH, tsf	Additional Remarks
0	0					Topsoil Fill, Dark Brown Lean Clay with Sand, Trace Roots, Very Moist (8"± Thick)	TPSL				
				1	10	Fill, Brown Lean Clay with Sand and Gravel, Moist	FILL	6-6-9 N=15			
				2	8	Possible Fill, Very Dark Greenish Brown Lean Clay with Sand and Gravel, Moist	POSS FILL	5-4-7 N=11			
875	5			2	3	Possible Fill, Light Brown Fine-Medium Sand with Gravel, Damp	POSS FILL	6-6-7 N=13			
				4	12	Light Brown Gravel with Sand, Possible Cobbles and/or Boulders, Damp		15-22-43 N=65			
870	10										
				5	5		GP	21-34-50/5"			
865	15										
				6	2			50/4"			
860	20					End of Boring at 20 Feet Cave In at 10 Feet					



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

**PROJECT NO.:** 00523594  
**PROJECT:** Basic Metals Addition  
**LOCATION:** W180N11711 N River Ln  
 Germantown, WI

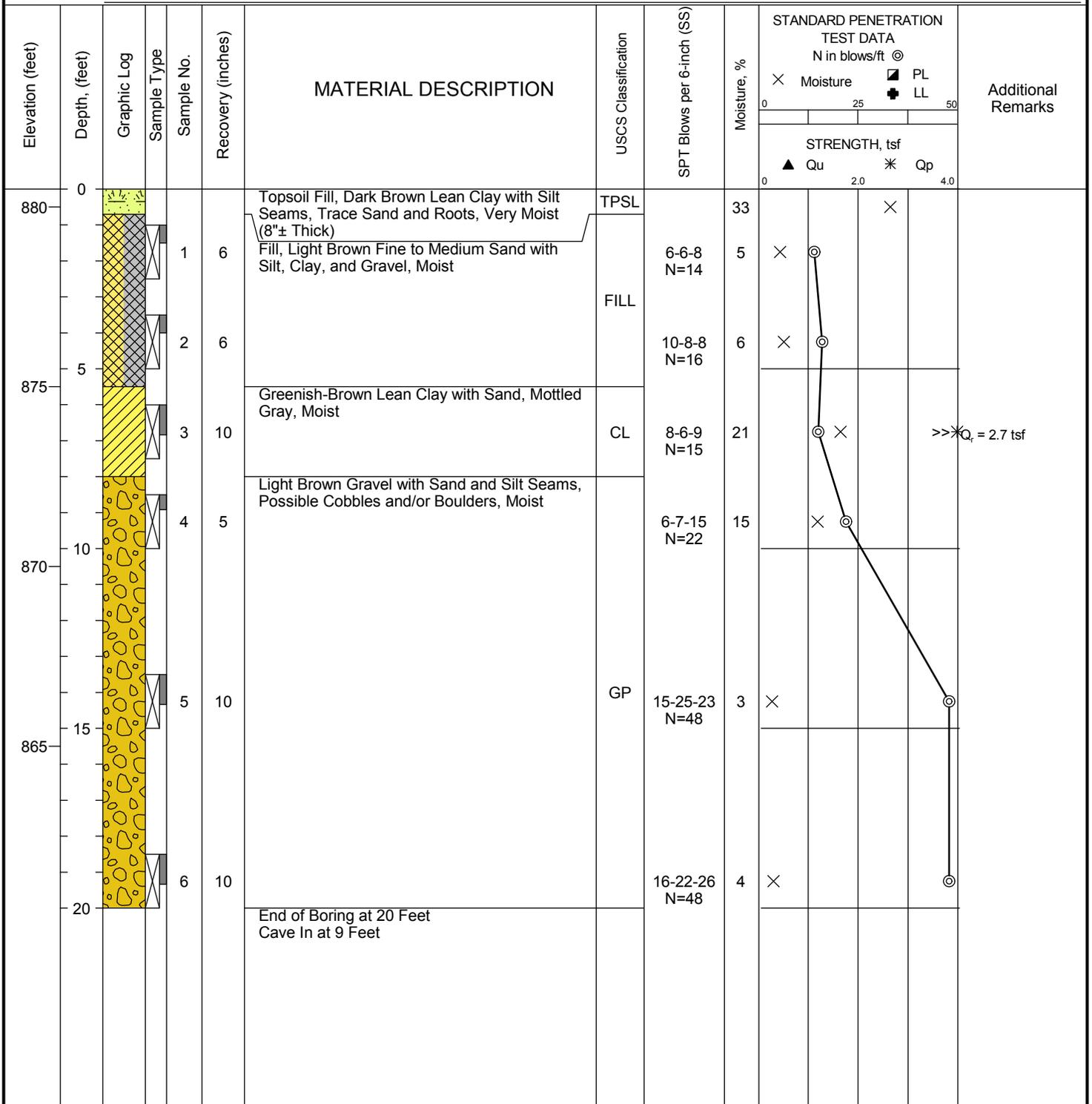
**DATE STARTED:** 12/23/25  
**DATE COMPLETED:** 12/23/25  
**COMPLETION DEPTH:** 20.0 ft  
**BENCHMARK:** N/A  
**ELEVATION:** 880.5 ft  
**LATITUDE:**  
**LONGITUDE:**  
**STATION:** N/A    **OFFSET:** N/A  
**REMARKS:**

**DRILL COMPANY:** PSI, Inc.  
**DRILLER:** RB    **LOGGED BY:** AW  
**DRILL RIG:** Mobile Drill B-57  
**DRILLING METHOD:** Hollow Stem Auger  
**SAMPLING METHOD:** 2-in SS  
**HAMMER TYPE:** Automatic  
**EFFICIENCY:** N/A  
**REVIEWED BY:**

## BORING B-2

<b>Water</b>	▽	While Drilling	Not Observed
	▼	Upon Completion	Not Observed
	▽	Delay	N/A

**BORING LOCATION:**



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 821 Corporate Court, Suite 100  
 Waukesha, WI 53189  
 Telephone: (262) 521-2125

**PROJECT NO.:** 00523594  
**PROJECT:** Basic Metals Addition  
**LOCATION:** W180N11711 N River Ln  
 Germantown, WI

**DATE STARTED:** 12/23/25  
**DATE COMPLETED:** 12/23/25  
**COMPLETION DEPTH:** 20.0 ft  
**BENCHMARK:** N/A  
**ELEVATION:** 885 ft  
**LATITUDE:**  
**LONGITUDE:**  
**STATION:** N/A    **OFFSET:** N/A  
**REMARKS:**

**DRILL COMPANY:** PSI, Inc.  
**DRILLER:** RB    **LOGGED BY:** AW  
**DRILL RIG:** Mobile Drill B-57  
**DRILLING METHOD:** Hollow Stem Auger  
**SAMPLING METHOD:** 2-in SS  
**HAMMER TYPE:** Automatic  
**EFFICIENCY:** N/A  
**REVIEWED BY:**

## BORING B-3

<b>Water</b>	▽	While Drilling	Not Observed
	▼	Upon Completion	Not Observed
	▽	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, %	STRENGTH, tsf	Additional Remarks
885	0					Topsoil Fill, Very Dark Brown Lean Clay with Roots, Very Moist (5"± Thick) Possible Fill, Brown Fine to Medium Sand with Silt and Gravel, Moist	TPSL	38			
				1	4		POSS FILL	12-7-11 N=18	4	×	⊙
				2	12		SP-SM	13-13-12 N=25	5	×	⊙
880	5			3	14	Light Brown Gravel with Sand and Silt, Possible Cobbles and/or Boulders, Moist		15-16-11 N=27	4	×	⊙
				4	8			8-50/5"	7	×	>>⊙
875	10			5	5		GP	31-50/2"	3	×	>>⊙
870	15			6	3			43-50/1"	3	×	>>⊙
865	20					End of Boring at 20 Feet Cave In at 11 Feet					



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**PROJECT NO.:** 00523594  
**PROJECT:** Basic Metals Addition  
**LOCATION:** W180N11711 N River Ln  
 Germantown, WI

**DATE STARTED:** 12/23/25  
**DATE COMPLETED:** 12/23/25  
**COMPLETION DEPTH:** 20.0 ft  
**BENCHMARK:** N/A  
**ELEVATION:** 879 ft  
**LATITUDE:**  
**LONGITUDE:**  
**STATION:** N/A    **OFFSET:** N/A  
**REMARKS:**

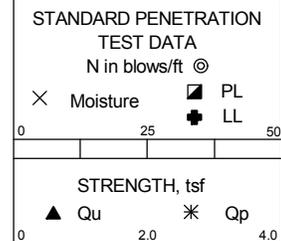
**DRILL COMPANY:** PSI, Inc.  
**DRILLER:** RB    **LOGGED BY:** AW  
**DRILL RIG:** Mobile Drill B-57  
**DRILLING METHOD:** Hollow Stem Auger  
**SAMPLING METHOD:** 2-in SS  
**HAMMER TYPE:** Automatic  
**EFFICIENCY:** N/A  
**REVIEWED BY:**

# BORING B-4

**Water**  
 ∇ While Drilling    Not Observed  
 ▼ Upon Completion    Not Observed  
 ▽ 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, %	STRENGTH, tsf	Additional Remarks
0	0	Asphalt				Asphalt (2.75"± Thick)	ASPH				
	1	Base, Dense Graded Crushed Stone, Moist (9.5"± Thick)		1	5	Base, Dense Graded Crushed Stone, Moist (9.5"± Thick)	BASE	6-4-6 N=10	8		
	2	Fill, Brown Lean Clay with Sand and Gravel, Moist		2	10	Fill, Brown Lean Clay with Sand and Gravel, Moist	FILL	5-9-11 N=20	5		
875	5	Light Brown Fine to Medium Sand with Gravel, Damp		3	12	Light Brown Fine to Medium Sand with Gravel, Damp	SP	7-12-21 N=33	3		
	10		4	12	13-20-15 N=35			2			
870	15			5	14	Light Brown Fine Sand with Gravel and Silt Seams, Very Moist	SP-SM	11-13-9 N=22	2		
865	20		6	12	10-11-11 N=22			12			
860						End of Boring at 20 Feet Cave In at 9 Feet					



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**PROJECT NO.:** 00523594  
**PROJECT:** Basic Metals Addition  
**LOCATION:** W180N11711 N River Ln  
 Germantown, WI

**DATE STARTED:** 12/23/25  
**DATE COMPLETED:** 12/23/25  
**COMPLETION DEPTH:** 5.0 ft  
**BENCHMARK:** N/A  
**ELEVATION:** 880 ft  
**LATITUDE:**  
**LONGITUDE:**  
**STATION:** N/A    **OFFSET:** N/A  
**REMARKS:**

**DRILL COMPANY:** PSI, Inc.  
**DRILLER:** RB    **LOGGED BY:** AW  
**DRILL RIG:** Mobile Drill B-57  
**DRILLING METHOD:** Hollow Stem Auger  
**SAMPLING METHOD:** 2-in SS  
**HAMMER TYPE:** Automatic  
**EFFICIENCY:** N/A  
**REVIEWED BY:**

## BORING B-5

<b>Water</b>	▽	While Drilling	Not Observed
	▼	Upon Completion	Not Observed
	▽	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)	STANDARD PENETRATION TEST DATA N in blows/ft ⊙ Moisture: % X ⊙ PL + LL STRENGTH, tsf ▲ Qu * Qp	Additional Remarks
0		[Graphic Log: Topsoil Fill, Very Dark Brown Lean Clay with Roots, Very Moist (8"± Thick)]				Topsoil Fill, Very Dark Brown Lean Clay with Roots, Very Moist (8"± Thick)	TPSL		55	>>X
		[Graphic Log: Possible Fill, Dark Brown Lean Clay with Sand and Gravel, Moist]		1	12	Possible Fill, Dark Brown Lean Clay with Sand and Gravel, Moist	POSS FILL	2-2-3-4 N=5	24	⊙ X
		[Graphic Log: Brown Lean Clay with Sand and Gravel, Moist]		2	16	Brown Lean Clay with Sand and Gravel, Moist	CL	7-7-9-12 N=16	13	X ⊙
875	5	[Graphic Log: End of Boring at 5 Feet Cave In at 3 Feet]				End of Boring at 5 Feet Cave In at 3 Feet				



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**PROJECT:** Basic Metals Addition  
**LOCATION:** W180N11711 N River Ln  
 Germantown, WI

## 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.	☒ SS: Split-Spoon - 1 3/8" I.D., 2" O.D., except where noted.
HSA: Hollow Stem Auger - typically 3 1/4" or 4 1/4" I.D. openings, except where noted.	■ ST: Shelby Tube - 3" O.D., except where noted.
M.R.: Mud Rotary - Uses a rotary head with Bentonite or Polymer Slurry	▮ RC: Rock Core
R.C.: Diamond Bit Core Sampler	⬇ TC: Texas Cone
H.A.: Hand Auger	☞ BS: Bulk Sample
P.A.: Power Auger - Handheld motorized auger	☑ 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 <sub>60</sub> : A "N" penetration value corrected to an equivalent 60% hammer energy transfer efficiency (ETR)
Q <sub>u</sub> : Unconfined compressive strength, TSF
Q <sub>p</sub> : 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

<u>Relative Density</u>	<u>N - Blows/foot</u>
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

<u>Description</u>	<u>Criteria</u>
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

<u>Component</u>	<u>Size Range</u>
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

<u>Description</u>	<u>Criteria</u>
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

<u>Descriptive Term</u>	<u>% Dry Weight</u>
Trace:	< 5%
With:	5% to 12%
Modifier:	>12%

## GENERAL NOTES

(Continued)

### CONSISTENCY OF FINE-GRAINED SOILS

<u>Q<sub>u</sub> - TSF</u>	<u>N - Blows/foot</u>	<u>Consistency</u>
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

<u>Description</u>	<u>Criteria</u>
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

<u>Descriptive Term</u>	<u>% Dry Weight</u>
Trace:	< 15%
With:	15% to 30%
Modifier:	>30%

### STRUCTURE DESCRIPTION

<u>Description</u>	<u>Criteria</u>	<u>Description</u>	<u>Criteria</u>
Stratified:	Alternating layers of varying material or color with layers at least ¼-inch (6 mm) thick	Blocky:	Cohesive soil that can be broken down into small angular lumps which resist further breakdown
Laminated:	Alternating layers of varying material or color with layers less than ¼-inch (6 mm) thick	Lensed:	Inclusion of small pockets of different soils
Fissured:	Breaks along definite planes of fracture with little resistance to fracturing	Layer:	Inclusion greater than 3 inches thick (75 mm)
Slickensided:	Fracture planes appear polished or glossy, sometimes striated	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

<u>Q<sub>u</sub> - TSF</u>	<u>Consistency</u>
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

<u>Description</u>	<u>Criteria</u>
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

<u>Voids</u>	<u>Void Diameter</u>
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)

<u>Component</u>	<u>Size Range</u>
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

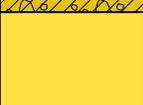
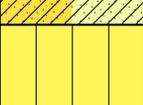
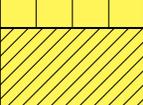
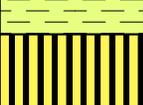
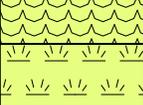
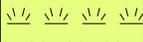
<u>Rock Mass Description</u>	<u>RQD Value</u>
Excellent	90 - 100
Good	75 - 90
Fair	50 - 75
Poor	25 - 50
Very Poor	Less than 25

### 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.

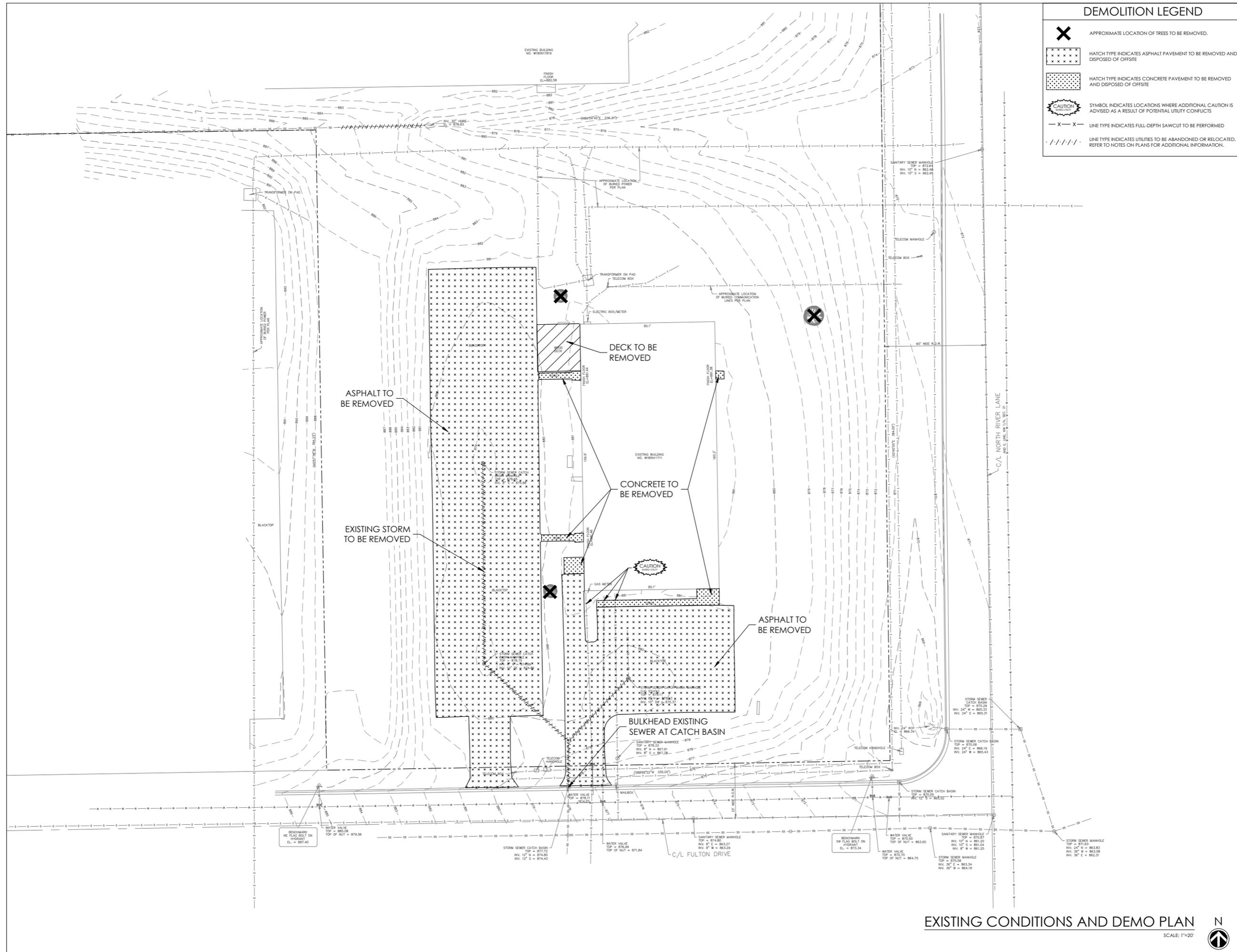
# SOIL CLASSIFICATION CHART

NOTE: DUAL SYMBOLS ARE USED TO INDICATE BORDERLINE SOIL CLASSIFICATIONS

MAJOR DIVISIONS			SYMBOLS		TYPICAL DESCRIPTIONS	
			GRAPH	LETTER		
COARSE GRAINED SOILS  MORE THAN 50% OF MATERIAL IS LARGER THAN NO. 200 SIEVE SIZE	GRAVEL AND GRAVELLY SOILS  CLEAN GRAVELS  (LITTLE OR NO FINES)			<b>GW</b>	WELL-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
				<b>GP</b>	POORLY-GRADED GRAVELS, GRAVEL - SAND MIXTURES, LITTLE OR NO FINES	
				<b>GM</b>	SILTY GRAVELS, GRAVEL - SAND - SILT MIXTURES	
	MORE THAN 50% OF COARSE FRACTION RETAINED ON NO. 4 SIEVE	GRAVELS WITH FINES  (APPRECIABLE AMOUNT OF FINES)			<b>GC</b>	CLAYEY GRAVELS, GRAVEL - SAND - CLAY MIXTURES
					<b>SW</b>	WELL-GRADED SANDS, GRAVELLY SANDS, LITTLE OR NO FINES
					<b>SP</b>	POORLY-GRADED SANDS, GRAVELLY SAND, LITTLE OR NO FINES
	SAND AND SANDY SOILS  CLEAN SANDS  (LITTLE OR NO FINES)				<b>SM</b>	SILTY SANDS, SAND - SILT MIXTURES
					<b>SC</b>	CLAYEY SANDS, SAND - CLAY MIXTURES
					<b>ML</b>	INORGANIC SILTS AND VERY FINE SANDS, ROCK FLOUR, SILTY OR CLAYEY FINE SANDS OR CLAYEY SILTS WITH SLIGHT PLASTICITY
	FINE GRAINED SOILS  MORE THAN 50% OF MATERIAL IS SMALLER THAN NO. 200 SIEVE SIZE	SILTS AND CLAYS  LIQUID LIMIT LESS THAN 50			<b>CL</b>	INORGANIC CLAYS OF LOW TO MEDIUM PLASTICITY, GRAVELLY CLAYS, SANDY CLAYS, SILTY CLAYS, LEAN CLAYS
				<b>OL</b>	ORGANIC SILTS AND ORGANIC SILTY CLAYS OF LOW PLASTICITY	
				<b>MH</b>	INORGANIC SILTS, MICACEOUS OR DIATOMACEOUS FINE SAND OR SILTY SOILS	
SILTS AND CLAYS  LIQUID LIMIT GREATER THAN 50					<b>CH</b>	INORGANIC CLAYS OF HIGH PLASTICITY
					<b>OH</b>	ORGANIC CLAYS OF MEDIUM TO HIGH PLASTICITY, ORGANIC SILTS
					<b>PT</b>	PEAT, HUMUS, SWAMP SOILS WITH HIGH ORGANIC CONTENTS
HIGHLY ORGANIC SOILS						

**CIVIL PLAN SET**

- 1 EXISTING CONDITIONS AND DEMO PLAN
- 2 SITE PLAN
- 3 GRADING PLAN
- 4 EROSION CONTROL PLAN
- 5 UTILITY PLAN
- 6 DETAILS



### DEMOLITION LEGEND

- APPROXIMATE LOCATION OF TREES TO BE REMOVED.
- HATCH TYPE INDICATES ASPHALT PAVEMENT TO BE REMOVED AND DISPOSED OFF-SITE
- HATCH TYPE INDICATES CONCRETE PAVEMENT TO BE REMOVED AND DISPOSED OFF-SITE
- SYMBOL INDICATES LOCATIONS WHERE ADDITIONAL CAUTION IS ADVISED AS A RESULT OF POTENTIAL UTILITY CONFLICTS
- LINE TYPE INDICATES FULL-DEPTH SAWCUT TO BE PERFORMED
- LINE TYPE INDICATES UTILITIES TO BE ABANDONED OR RELOCATED. REFER TO NOTES ON PLANS FOR ADDITIONAL INFORMATION.



REVISIONS:	
DATE	ISSUE

NOTICE TO BIDDERS  
 BIDDERS SHALL REVIEW ALL DRAWINGS AND SPECIFICATION SECTIONS TO DETERMINE THE IMPACT OF OTHER SECTIONS OF WORK ON THEIR OWN WORK.  
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ISSUE DATE: 02/09/2024  
 NEW CONSTRUCTION/EXPANSION  
**BASIC METALS II**  
 BASIC METALS INC., W180N11819 N RIVER LN, GERMANTOWN, WI, 53022  
 1135A MICHIGAN AVE. SHEBOYGAN, WI 53081 | (202) 452-4444 | 640 N VIL R. PHILIPS AVE. SUITE 210 MILWAUKEE, WI 53203

DRAWN BY: JMN  
 CHECKED BY: JRV

EXISTING CONDITIONS AND DEMO PLAN

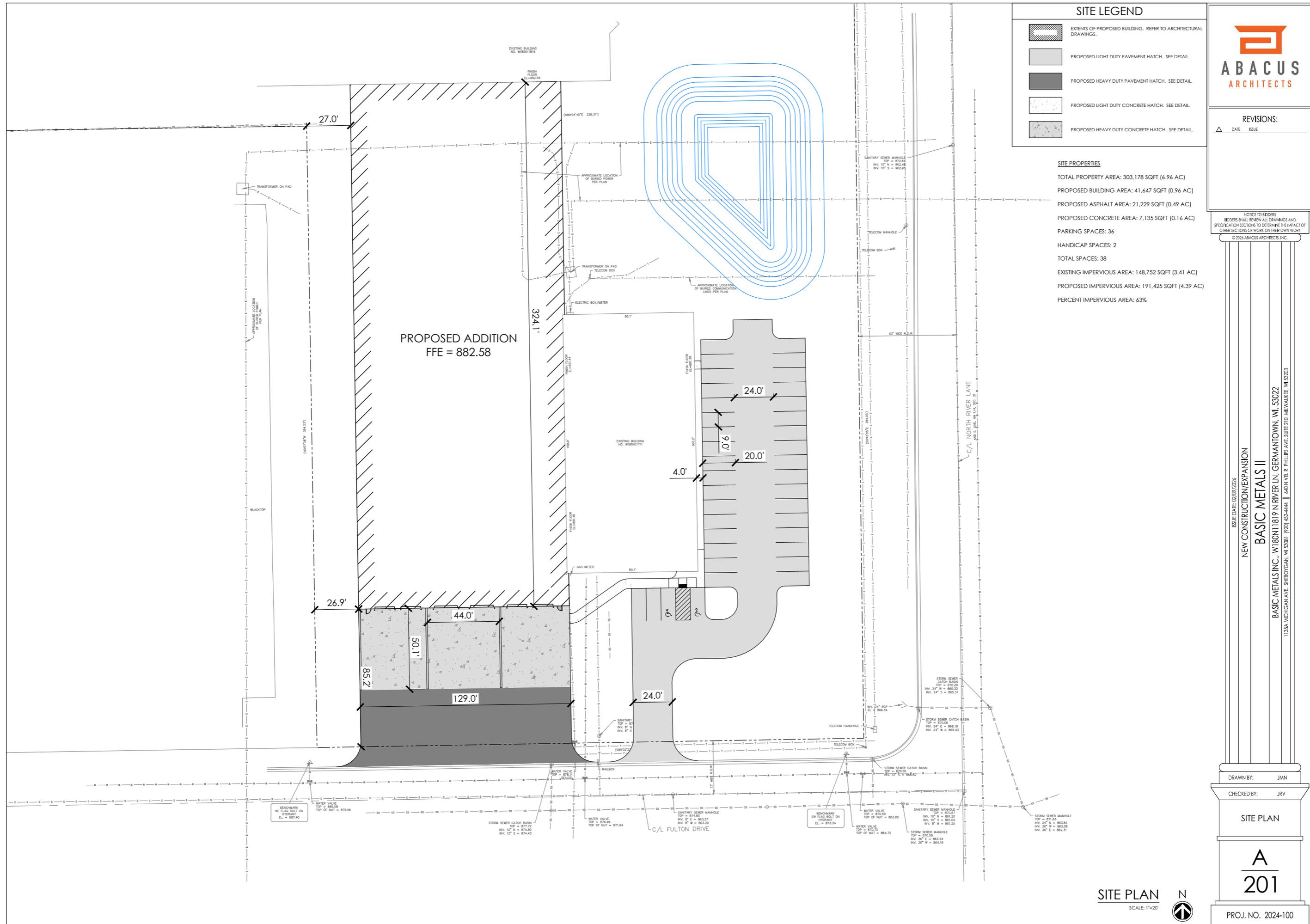
**A**  
**200**

PROJ. NO. 2024-100

EXISTING CONDITIONS AND DEMO PLAN

SCALE: 1"=20'





**REVISIONS:**

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DRAWN BY: JMN  
 CHECKED BY: JRV

**SITE PLAN**

**A**  
**201**

PROJ. NO. 2024-100

**SITE PLAN**  
 SCALE: 1"=20'



GRADING LEGEND

- PROPOSED CONTOUR
- EXISTING CONTOUR
- PROPOSED SPOT ELEVATION
- MATCH EXISTING ELEVATION
- PROPOSED TOP OF CURB ELEVATION
- PROPOSED BOTTOM OF CURB ELEVATION

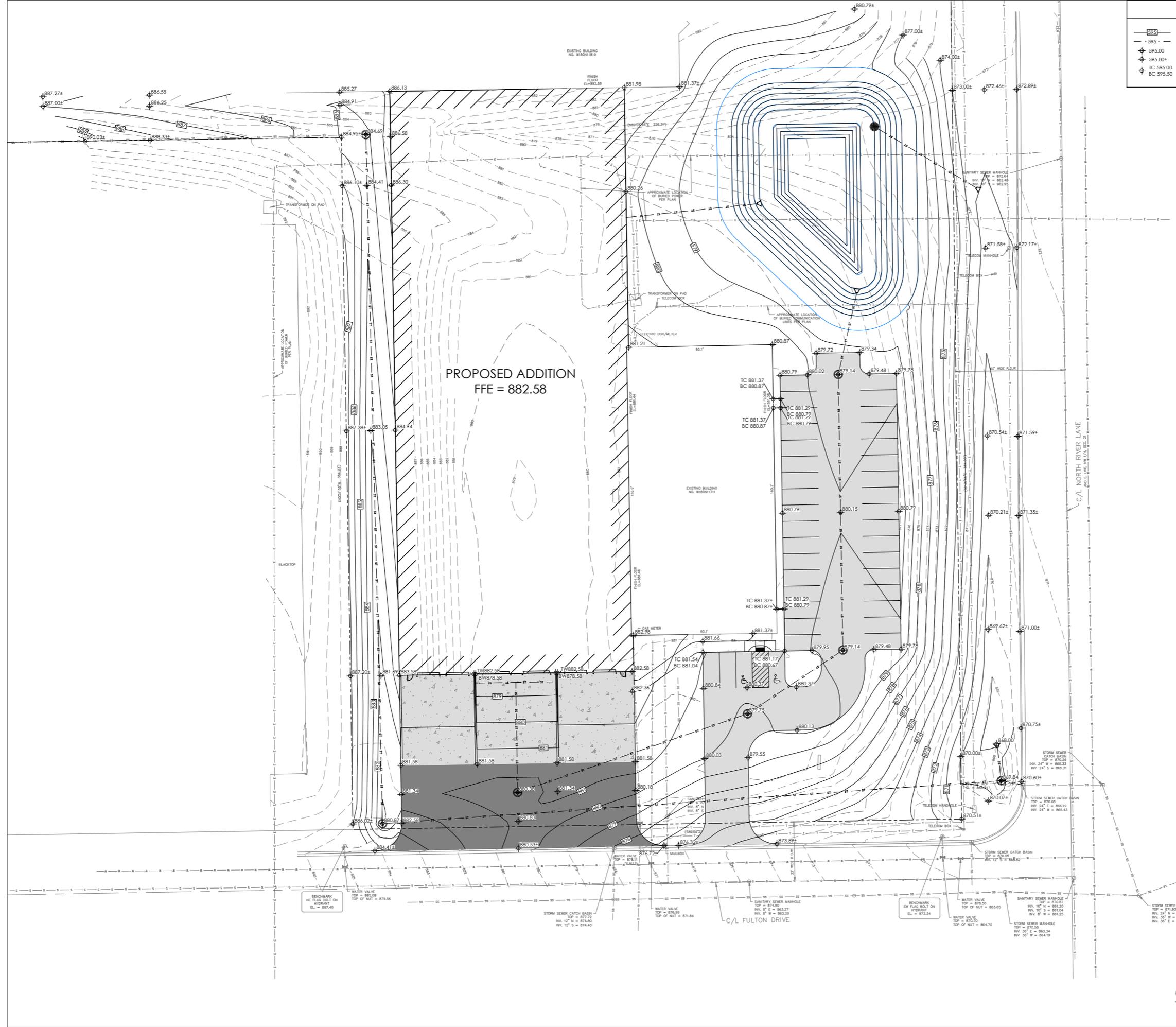


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PROPOSED ADDITION  
 FFE = 882.58



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 CHECKED BY: JRV

GRADING PLAN

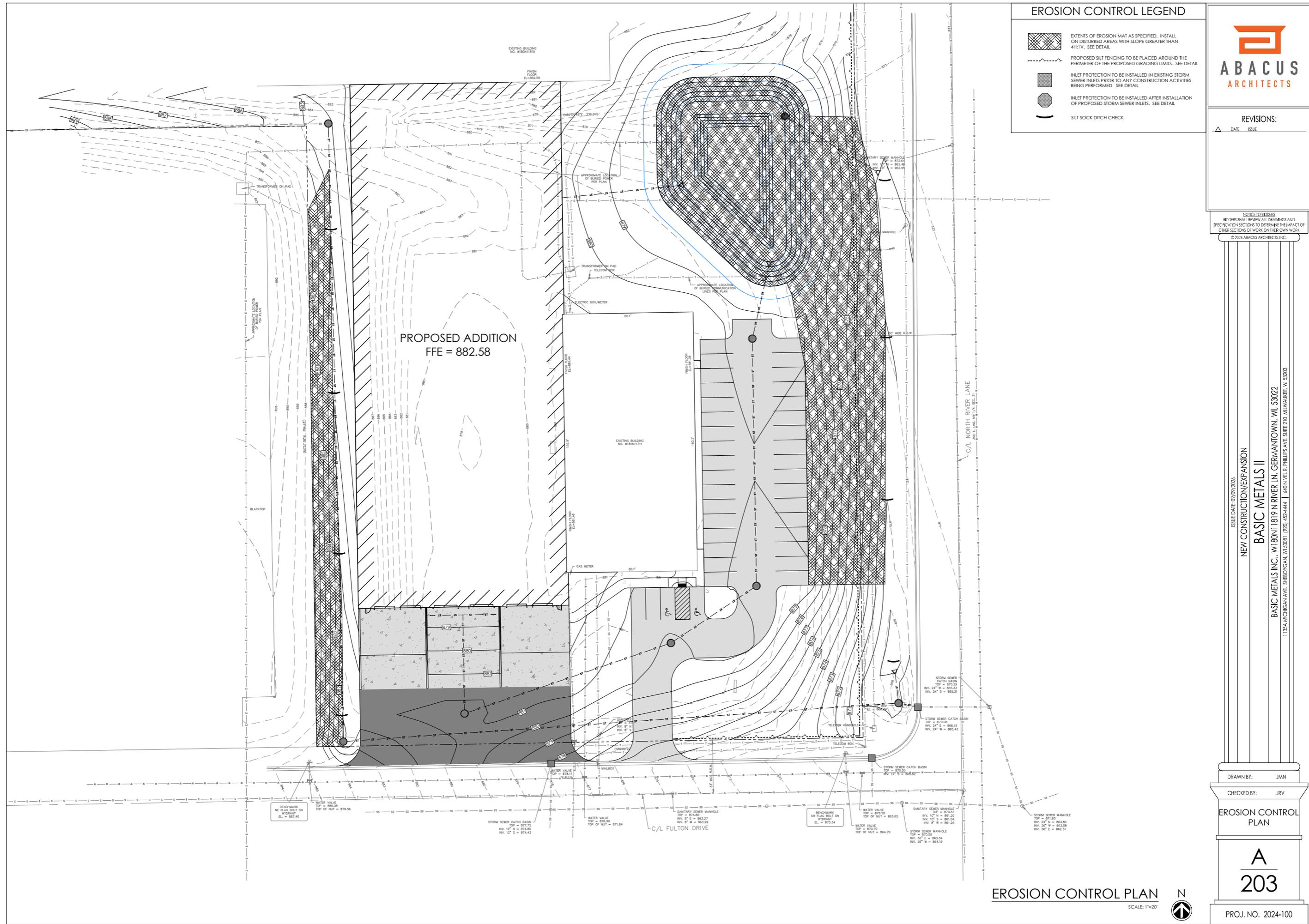
A  
 202

PROJ. NO. 2024-100

GRADING PLAN

SCALE: 1"=20'





### EROSION CONTROL LEGEND

- EXTENTS OF EROSION MAT AS SPECIFIED. INSTALL ON DISTURBED AREAS WITH SLOPE GREATER THAN 4H:1V. SEE DETAIL.
- PROPOSED SILT FENCING TO BE PLACED AROUND THE PERIMETER OF THE PROPOSED GRADING LIMITS. SEE DETAIL.
- INLET PROTECTION TO BE INSTALLED IN EXISTING STORM SEWER INLETS PRIOR TO ANY CONSTRUCTION ACTIVITIES BEING PERFORMED. SEE DETAIL.
- INLET PROTECTION TO BE INSTALLED AFTER INSTALLATION OF PROPOSED STORM SEWER INLETS. SEE DETAIL.
- SILT SOCK DITCH CHECK

**ABACUS**  
ARCHITECTS

REVISIONS:

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1135A MICHIGAN AVE, SHEBOYGAN, WI 53081 | (202) 452-4444 | 640 N VEL R. PHILIPS AVE, SUITE 210, MILWAUKEE, WI 53203

DRAWN BY: JMN  
CHECKED BY: JRV

**EROSION CONTROL PLAN**

**A**  
**203**

PROJ. NO. 2024-100

**EROSION CONTROL PLAN**  
SCALE: 1"=20'

REVISIONS:

DATE	ISSUE

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ISSUE DATE: 02/09/2024  
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**BASIC METALS II**

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1135A MICHIGAN AVE, SHEBOYGAN, WI 53081 | (920) 452-4444 | 640' N VEL. R. PHILIPS AVE. SUITE 210, MILWAUKEE, WI 53203

DRAWN BY: JMN

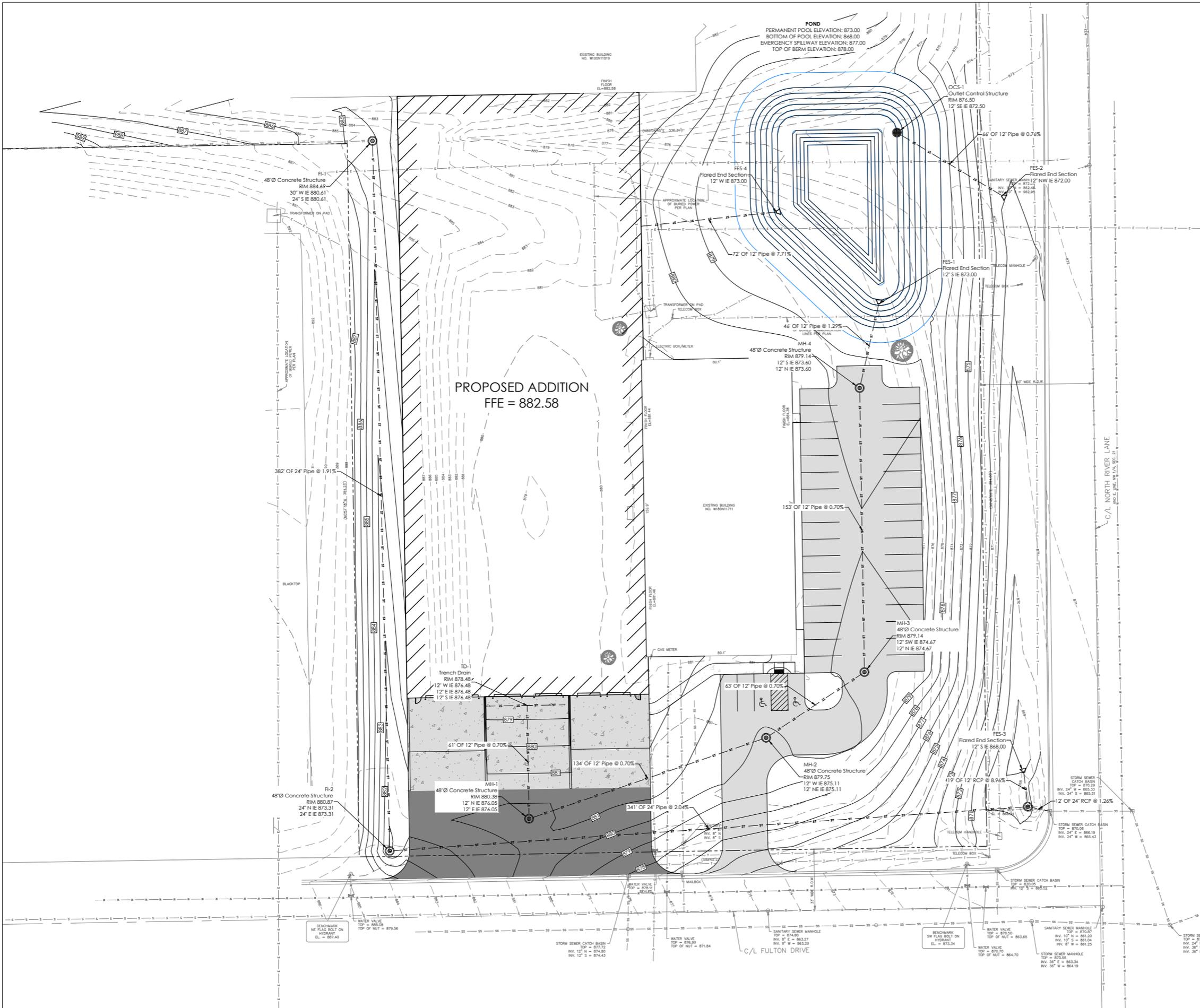
CHECKED BY: JRV

UTILITY PLAN

**A**  
**204**

PROJ. NO. 2024-100

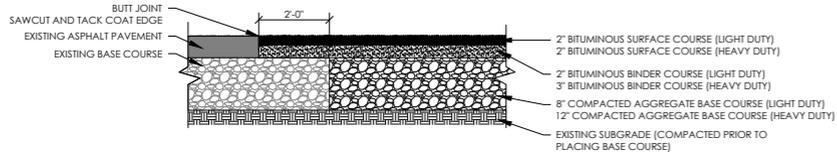
UTILITY PLAN  
SCALE: 1"=20'



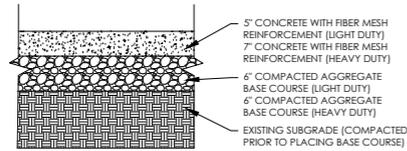
REVISIONS:

DATE	ISSUE

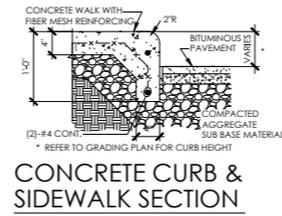
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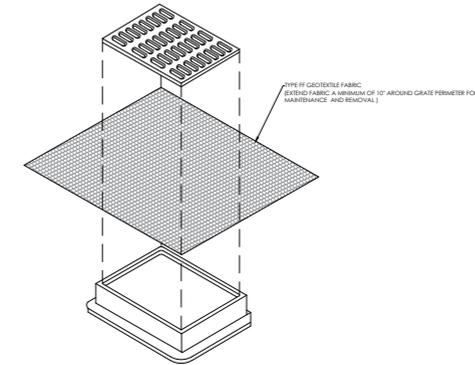
ASPHALT PAVEMENT CROSS SECTION



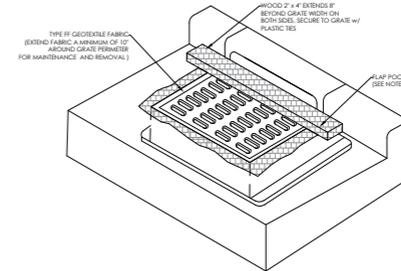
CONCRETE PAVEMENT CROSS SECTION



CONCRETE CURB & SIDEWALK SECTION

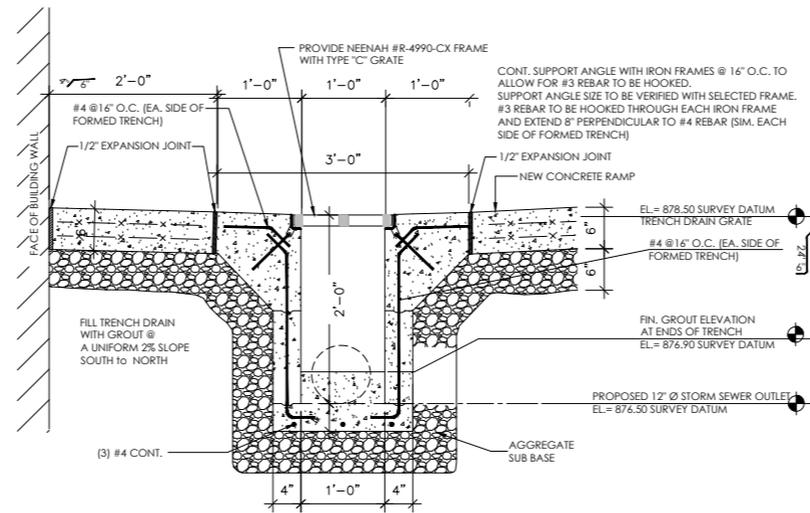


INLET PROTECTION TYPE "B"

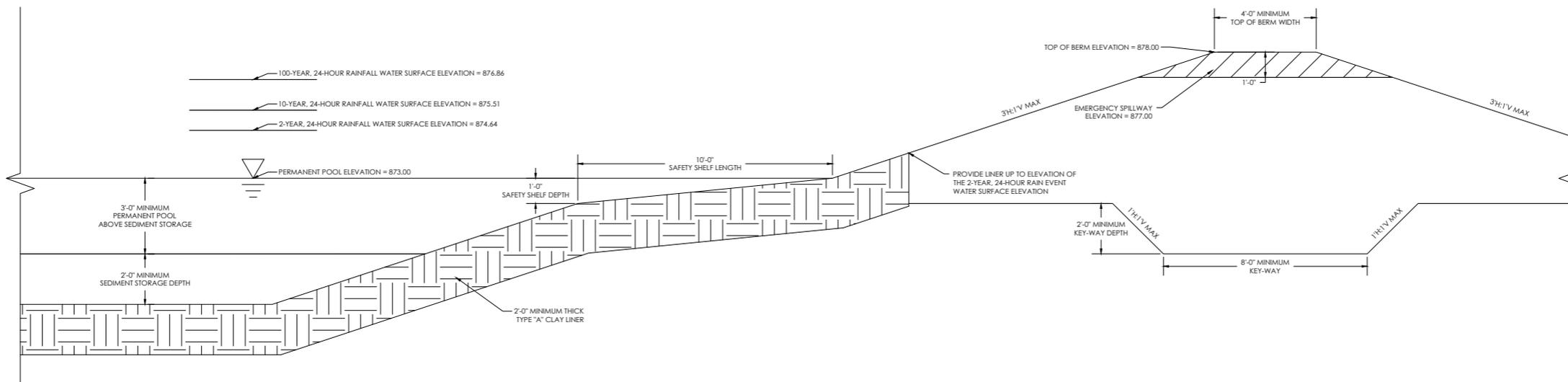


INLET PROTECTION TYPE "C"

MAINTENANCE NOTES:  
1. WHEN REMOVING OR MAINTAINING INLET PROTECTION, CARE SHALL BE TAKEN SO THAT THE SEDIMENT TRAPPED IN THE FABRIC DOES NOT FALL INTO THE STRUCTURE. MATERIAL THAT HAS FALLEN INTO THE INLET SHALL BE IMMEDIATELY REMOVED.



TRENCH DRAIN SECTION



WET DETENTION POND CROSS SECTION

DETAILS

ISSUE DATE: 02/09/2024  
NEW CONSTRUCTION/EXPANSION

BASIC METALS II

BASIC METALS INC., W180N11819 N RIVER LN, GERMANTOWN, WI, 53022

1135A MICHIGAN AVE. SHEBOYGAN, WI 53081 | (920) 452-4444 | 6401 N VEL R. PHILIPS AVE. SUITE 210, MILWAUKEE, WI 53203

DRAWN BY: JMN

CHECKED BY: JRV

DETAILS

A  
205

PROJ. NO. 2024-100



January 30, 2026

DONTOF LLC  
PO BOX 757  
GERMANTOWN, WI 53022

RE: W180N11711 RIVER LN GERMANTOWN, WI 53022 and Intent to Release Easement Documents 538388, 527509 and 547756

To Whom It May Concern:

Recorded easement Document No. 547756 will be released in full and the portions of easement Documents No. 538388 and No. 527509 that are located on Certified Survey Map No. 3352, Lot 1, will be released (partial release of these easements) when facilities in these easements have been relocated and a new easement executed and returned to me at We Energies to cover the new location of facilities.

If you have any questions, please call me at 262-502-6817.

Sincerely,

A handwritten signature in black ink that reads "Barb Schaefer".

Barb Schaefer  
Right of Way Agent – Contractor  
We Energies  
W140N9100 Lilly Road  
Menomonee Falls, WI 53051  
262-502-6817



Item No. 1  
 I.D.O. No. 385547-1A  
 Date 3/8/88

Work Order No. \_\_\_\_\_  
 EXHIBIT "A" ATTACHED

OVERHEAD FACILITIES TO BE INCLUDED ON EASEMENT  
 Poles   
 Wires   
 Anchors and Guy Wires   
 Space Poles   
S95-C1

UNDERGROUND FACILITIES TO BE INCLUDED ON EASEMENT  
 Conduit   
 Cables   
 Manholes   
 Concrete Slab(s)   
 Transformer(s)   
 Secondary Power Pedestal(s)   
 Switch-Join Unit(s)

OWNER'S NAME: VILLAGE OF GERMANTOWN, a Municipal Corporation

DESCRIPTION OF PREMISES: Strip of lands 15' in width being a part of the grantor's premises in the SW 1/4 and SW 1/4 of the NW 1/4 of Section 21, T. 9 N., R. 20 E. in the Village of Germantown, Washington County, Wisconsin.

(S.D.  933 Q.C.D.  Other MAR 12, 89  
 Volume Page 115 Document No. 5077410  
 Fee Image  
 COMMENTS: \$1.00 SENT 3/20/88

SIGNED: Doyle A. Findlay

This title information to be attached to blue copy of I.D.O. retained in Real Estate Office files.

**WE Wisconsin Electric POWER COMPANY**  
 W154 MP168 Water St., Menomonone Falls, WI 53051  
 March 10, 1988 251-7000

Ms. Jane Unke, Village Clerk  
 Germantown Village Hall  
 N122 W17177 Fond du Lac Avenue  
 Germantown, WI 53022

Dear Ms. Unke:

Enclosed is an easement needed by Wisconsin Electric Power Company to extend electric service to and across your property known as part of the Germantown Industrial Park in the Southeast 1/4 and Southwest 1/4 of the Northwest 1/4 of Section 21, Township 9 North, Range 20 East, in the Village of Germantown.

Please secure the necessary signatures and return the easement to me as quickly as possible so that I can record the document before any lots are sold off.

Also enclosed is a list of instructions for the proper execution of said easement document.

Please call me at 251-7000 if you should have any questions concerning this matter. Thank you for your time and consideration in this matter.

Sincerely,  
Doyle A. Findlay  
 Douglas A. Findlay  
 Right-of-Way Agent  
 Real Estate Department

rms  
 enclosures

A subsidiary of Wisconsin Energy Corporation

**WE Wisconsin Electric POWER COMPANY**  
 W154 MP168 Water St., Menomonone Falls, WI 53051  
 March 10, 1988 251-7000

Ms. Jane Unke, Village Clerk  
 Germantown Village Hall  
 N122 W17177 Fond du Lac Avenue  
 Germantown, WI 53022

Dear Ms. Unke:

Enclosed is an easement in duplicate which when properly executed will grant easement rights on your property at:

the Germantown Industrial Park

Listed below are instructions to help you in executing this document.

- 1) Original only of this document need be returned as the duplicate is for your files.
- 2) The document must be signed by any two authorized officers of the corporation.
- 3) The corporate seal must be affixed to the document.
- 4) The signatures should be witnessed by two (2) witnesses in the space provided.
- 5) A notary public must certify to the signatures and affix his or her seal to the document.
- 6) A self-addressed stamped envelope is attached for your convenience in returning the executed easement to me.
- 7) Upon receipt of the document, I will mail you the \$1.00 legal consideration.

Please check if you have any underground obstructions in the area of our proposed work and return this sheet with the easement.

YES, Underground Obstructions  
 NO Underground Obstructions

After you have reviewed this, if you have any questions, please feel free to contact me at 251-7000.

Thank you.

Doyle A. Findlay  
 Right of Way Department

ATTACHMENT

A subsidiary of Wisconsin Energy Corporation

**WE Wisconsin Electric POWER COMPANY**  
 W154 MP168 Water St., Menomonone Falls, WI 53051  
 March 10, 1988 251-7000

Ms. Jane Unke, Village Clerk  
 Germantown Village Hall  
 N122 W17177 Fond du Lac Avenue  
 Germantown, WI 53022

Dear Ms. Unke:

Enclosed is Draft No. \_\_\_\_\_ in the amount of \_\_\_\_\_  
 Enclosed is \$1.00.

The above payment is the legal consideration referred to in the easement you signed granting

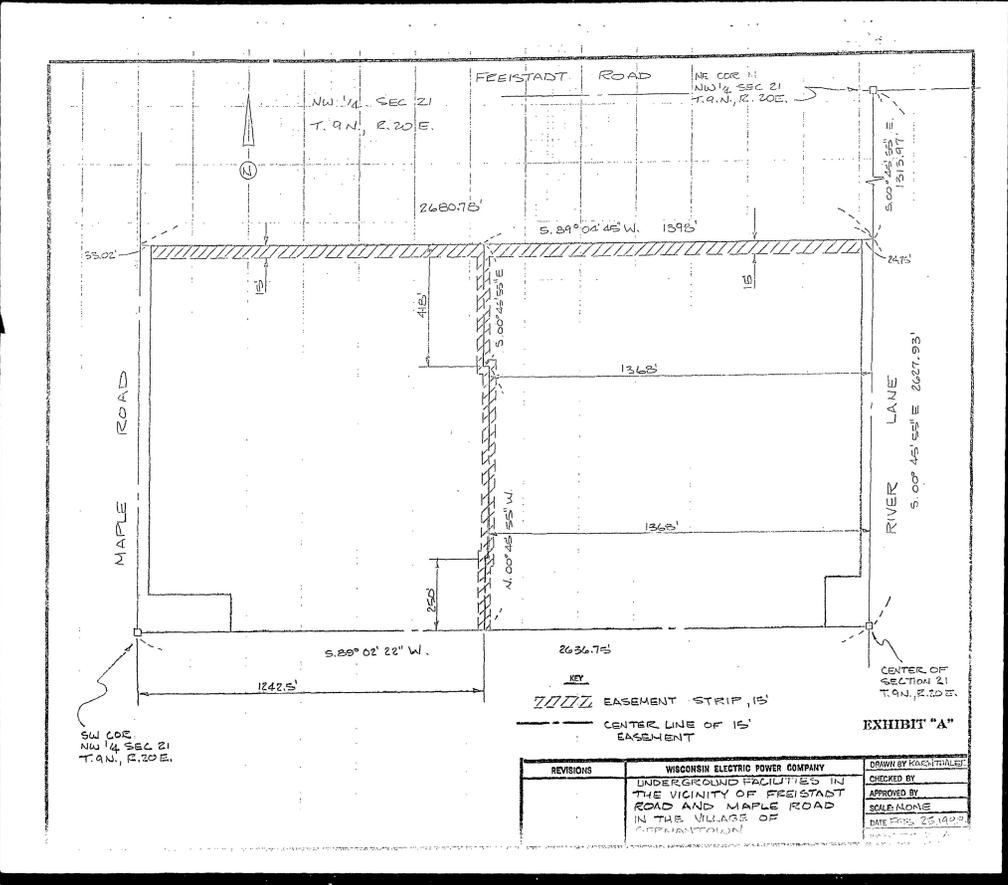
Wisconsin Electric Power Company  
 Wisconsin Bell, Inc.

easement rights for construction, operation and maintenance of facilities on your premises.

Thank you for your cooperation in this matter.

Very truly yours,  
Doyle A. Findlay  
 Douglas A. Findlay  
 Real Estate Department  
 Enclosure

A subsidiary of Wisconsin Energy Corporation



STATEMENT OF REPRESENTATIVE OF VENDOR  
 I, the undersigned, being duly sworn, depose and say that the above described easement was duly granted to the Wisconsin Electric Power Company by the grantor, and that the same is a true and correct copy of the original as recorded in the office of the Register of Deeds for the County of Washington, Wisconsin, and that the same is a true and correct copy of the original as recorded in the office of the Register of Deeds for the County of Washington, Wisconsin, and that the same is a true and correct copy of the original as recorded in the office of the Register of Deeds for the County of Washington, Wisconsin.

