PLAN COMMISSION MEETING AGENDA

August 17, 2026 at 6:00 PM

Kronenwetter Municipal Center - 1582 Kronenwetter Drive Board Room (Lower Level)

1. **CALL MEETING TO ORDER**
   - **A.** Pledge of Allegiance
   - **B.** Roll Call
2. **PUBLIC COMMENT**
   Please be advised per State Statute Section 19.84(2), information will be received from the public. It is the policy of this Village that Public Comment will take no longer than 15 minutes with a three-minute time period, per person, with time extension per the Chief Presiding Officer's discretion. Be further advised that there may be limited discussion on the information received, however, no action will be taken under public comments.
3. **REPORTS AND DISCUSSIONS**
   - **C.** Community Development Director Report
4. **OLD BUSINESS - DISCUSSION AND POSSIBLE ACTION**
   - **D.** Twin Home Zero Lot Line Ordinance
   - **E.** Conditional Use Permit Knetter Pond
5. **NEW BUSINESS- DISCUSSION AND POSSIBLE ACTION**
   - **F.** Marathon County Garage Site Plan
   - **G.** Septic Tank Ordinance
   - **H.** Land Use and Zoning Appeals Process
   - **I.** Future Review of Zoning and Subdivisions Codes
6. **NEXT MEETING: September 21, 2026**
7. **CONSIDERATION OF ITEMS FOR FUTURE AGENDA**
8. **ADJOURNMENT**

NOTE: Requests from persons with disabilities who need assistance to participate in this meeting or hearing should be made at least 24 hours in advance to the Village Clerk's office at (715) 693-4200 during business hours.

Posted: 08/13/2026 Kronenwetter Municipal Center and www.kronenwetter.org
Faxed: WAOW, WSAU, City Pages, Mosinee Times | Emailed: Wausau Daily Herald, WSAW, WAOW, Mosinee Times, Wausau Pilot and Review, City Pages

Community Development/Planning and Zoning Director Report

August 17, 2026

Nathan Sandwick, Community Development/Planning and Zoning Director

Greetings Plan Commission members,

I am pleased to be your new Community Development Director for the Village of Kronenwetter, having started this month. I look forward to collaborating with you all to help advance the Village's plans and development goals. Through onboarding I've appreciated help from Village staff bringing me up to speed on several current planning activities and development opportunities, several of which are noted here.

- One-year Data Center Moratorium Resolution passed 8/10/2026 refers the matter to the Plan Commission and Utility Committee for study, public engagement, and recommendations as part of ongoing zoning code rewrite efforts.
- Enforcement of nuisance violations
- Land use and zoning appeals processes
- Proposed Green Tree subdivision
- Making introductions to prospective collaborators
- Responding to inquiries (permitting questions, zoning, TID prospects, available properties)
- Context for agenda item on "Conditional Use Permit Knetter Pond": The public hearing occurred on July 20th, 2026. Discussion by Plan Commission continued on July 27th. The commission called for a legal opinion on any issues given that Kronenwetter Dr. passes through the lot.
- In preparation for agenda item on "Future Review and Updates of Zoning and Subdivision Codes", plan commission members will get a printed copy of ordinances 460 (Subdivision of Land) and 520 (Zoning) for reference. Village of Kronenwetter ordinances are also available online at Code of Ordinances | Kronenwetter, Marathon Co, WI | Municode Library (https://library.municode.com/wi/kronenwetter,_marathon_co/codes/code_of_ordinances)
- Several materials are included in your packet to support discussion of "Land use and Zoning Appeals Process". Ordinance 520-121(F) directs appeals concerning Conditional Use Permit decisions to the Village Board of Trustees.

REPORT TO Plan Commission

ITEM NAME:	§ 520-20. - Residential land use types.
MEETING DATE:	July 20, 2026
PRESENTING COMMITTEE:	Planning Commission
COMMITTEE CONTACT:	
STAFF CONTACT:	Greg Ulman
PREPARED BY:	Peter Wegner

ISSUE: Staff received inquiries regarding the concept of Zero-Lot-Line Residences. A zero-lot-line residence is a piece of residential real estate in which the structure comes up to, or very near to, the edge of the property line. Some of the advantages are they cost less than homes with larger lots. They offer greater privacy than a condo since they share less or no walls. They maximize the use of available space and reduce maintenance responsibilities. Being in close proximity or sharing a common wall with your neighbors gives a sense of community, as residents are more likely to interact and develop closer relationships.

On 10/21/2024, the Planning Commission reviewed example language and diagrams from other municipalities. As a result, Staff was directed to draft ordinance language. On 1/20/2025, the Planning Commission reviewed proposed language and directed staff to schedule a public hearing. On 2/17/2025, the Planning Commission held a public hearing and directed staff to forward an ordinance amendment to the Village Board for review and approval. On 2/24/2025, the Village Board considered Ordinance Amendment NO.: 25-03. The Amendment failed 5:2.

OBJECTIVES: Review language to allow Zero-Lot-Line Residences.

RECOMMENDED ACTION: To direct staff how to proceed.

ATTACHMENTS (describe briefly): Proposed ordinance language previously presented to the PC and VB 520-20 - Residential land use types.

Proposed Zero-Lot-Line Structures Ordinance Language

Public Hearing Draft

ARTICLE IV. - LAND USE DESCRIPTIONS AND STANDARDS

§ 520-20. - Residential land use types.

B. Two-family residence.

(1) A two-family residence is a single structure containing two separate dwelling units, each unit having a private individual exterior access, and with no shared internal access within the building. Two-family residences can be constructed as attached side-by-side units each with a ground floor and roof (duplex), or as a two-story structure with one unit above the other (flats). Where side by side, both dwelling units must share the same lot; the individual units may not be on separate lots as a "zero lot line" structure.

(2) Performance standards:

(a) Each two-family residence constructed after June 20, 2016, shall meet the performance standards in subsection A(2)(a) through (f) above, except where otherwise allowed by conditional use permit.

(b) The structure must be in compliance with the Wisconsin Uniform Dwelling Code (UDC).

(c) Where side by side, a building-code-required, fire-rated wall must separate the two dwelling units from the lowest level to flush against the underside of the roof.

(d) Individual sanitary sewer and public water laterals and utility meters are required for each dwelling unit.

(e) The minimum gross floor area of each dwelling unit shall be 700 square feet, exclusive of attached garages, carports, and open decks/porches.

(f) Each unit within each new two-family residence shall be served by a separate driveway, or minimum driveway width for any shared driveway shall be not less than 30 feet at the front lot line.

(g) Minimum required off-street parking: two outdoor spaces per dwelling unit, such as in a driveway, plus spaces in garage(s). All motor vehicles shall be parked on a hard surface as defined in section 520-138, or on a graveled surface if such surface was legally established before January 1, 2015.

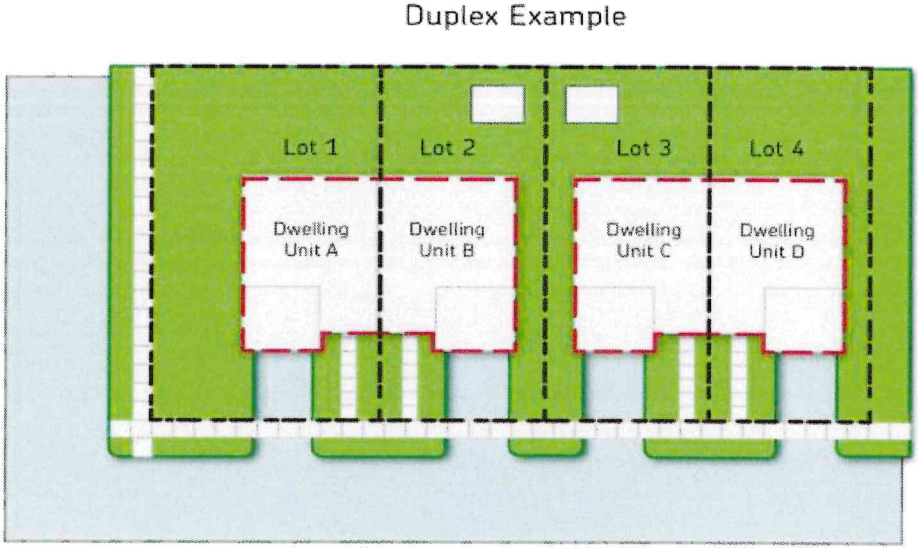
(h) Zero Lot Line Structures (see Figure 520-20C). For buildings containing two separate dwelling units constructed side-by-side, with each unit located on a

separate lot, having a private individual exterior access, and no shared internal access within the building, the following additional standards shall apply:

1. The duplex shall meet the front, side, and rear setbacks required for the applicable zoning district, except that the shared wall shall have no minimum setback requirement.

2. The builder shall provide, with the zoning permit or building permit application, an agreement or covenant specifying maintenance standards for the common wall, maintenance and replacement standards for exterior surfaces of the building to maintain a neat and harmonious appearance over time, maintenance standards for any other common features, and restrictions against construction of detached single family residences on any of the affected lots in the event either or all sides of the zero lot line construction dwelling are destroyed. Such agreement or covenant shall also provide that it may not be terminated, amended or otherwise altered without the approval of the Village Board. Such agreement shall be subject to Zoning Administrator approval, and then recorded by the builder against all affected properties prior to occupancy of the dwelling as a zero-lot line structure.

Figure 520-20C: Example of Zero Lot Line Structure



~~(h)~~ (i) For single-family detached residences utilizing driveways greater than 660 feet in length:

1. A turnout near the driveway's midpoint shall be required. In those instances where a driveway exceeds 1,320 feet in length, turnouts shall be provided no more than 660 feet apart.

2. A turnout shall also be provided within 100 feet of the structure.

3. The minimum turning radius shall be 45 feet.

4. A typical cross-section shall be submitted with the building permit application. A typical driveway cross-section example is depicted in figure 520-20A.

5. The driveway shall be constructed to be 14 feet wide at all points.

6. The driveway shall not exceed an eight percent grade.

7. The driveway shall be constructed with an adequate base to support 55,000 pounds during any weather.

a. This requirement can be met by having a certified engineer design a driveway and create a typical cross-section for that driveway. The design of any driveway will need to be stamped and/or signed by that engineer to certify the driveway will be constructed to meet this weight standard. A typical cross-section example is depicted in figure 520-20A.

b. This requirement can also be met by constructing the driveway to the standards outlined in figure 520-20B. A cross-section detailing the driveway construction will need to be submitted and certified that it will be constructed to satisfy the code requirements. Base course thickness is based on soil drainage class.

Figure 520-20A: Typical Driveway Cross-Section

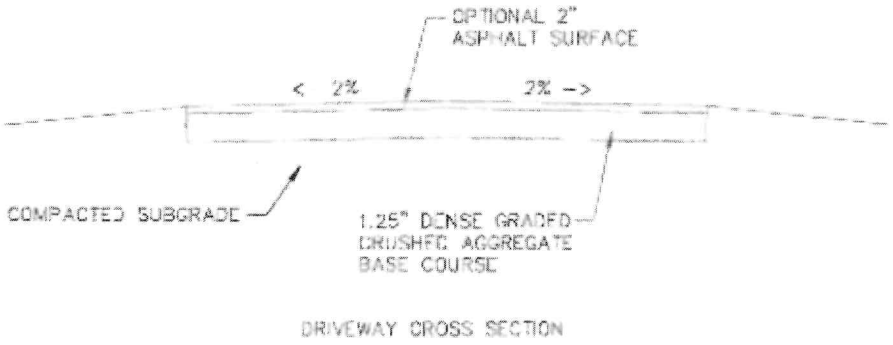


Figure 520-20B: Village of Kronenwetter Minimum Long Driveway Standards that Satisfy the Weight Standard During Any Weather

MINIMUM STANDARDS

MINIMUM BASE COURSE THICKNESS

EXISTING SUBGRADE SOIL TYPES	WITH 2" ASPHALT SURFACE	WITHOUT 2" ASPHALT SURFACE
WELL DRAINED	6"	8"
POORLY-DRAINED	8"	10"

DRIVEWAYS NOT ALLOWED OVER PEAT, ORGANIC SILT, ORGANIC CLAY

KRONENWETTER LONG
DRIVEWAY STANDARDS

well-drained and poorly-drained soils will be determined through the Natural Resources Conservation Service Web Soil Survey. Excessively drained, somewhat excessively drained, well-drained, and moderately well drained will be classified as 'well-drained soils'. Somewhat poorly drained, poorly drained, very poorly drained, and subaqueous will be classified as 'poorly-drained soils'. If any part of the proposed driveway extends through a poorly-drained soil classification, the entirety of the driveway shall be constructed to the poorly-drained minimum driveway standard

8. The driveway shall maintain an overhead clearance of 15 feet and five feet of cleared brush on each side of the driveway.

9. Bridges and culverts shall be designed to support at least 55,000 pounds and should provide a minimum of 14 feet of unrestricted width and height.

~~(i)~~ (j) For single-family detached residences utilizing private roads accessing three or more lots: Approval from the village public works director shall be required to ensure the roadway will meet village standards for a typical rural road section, except for the public right-of-way requirement. The width of the travel surface shall be 22 feet, with a three-foot shoulder on each side. Property owners shall sign a private roadway maintenance agreement.

ARTICLE XVI. – DEFINITIONS

§ 520-138. - Definitions.

Zero Lot Line Structure: A structure that is built over the property line, where walls separating occupancy units follow lot lines, such as a zero-lot line duplex.

VILLAGE OF KRONENWETTER
Marathon County, Wisconsin
An Ordinance Amending the Code of the Village of Kronenwetter
ORDINANCE NO.: 25-03 Chapter 520 - ZONING
Amending ARTICLE IV. - LAND USE DESCRIPTIONS AND STANDARDS
§ 520-20. - Residential land use types.

WHEREAS, the Village of Kronenwetter Planning Commission has recommended the Village Board adopt language to allow Zero-Lot-Line Residences

NOW, THEREFORE, BE ORDAINED by the Village of Kronenwetter Village Board, as follows:

Proposed Amendments to Chapter 520 - ZONING ARTICLE IV. - LAND USE DESCRIPTIONS AND STANDARDS

§ 520-20. - Residential land use types.

B. Two-family residence.

(1) A two-family residence is a single structure containing two separate dwelling units, each unit having private individual exterior access, and with no shared internal access within the building. Two-family residences can be constructed as attached side-by-side units each with a ground floor and roof (duplex), or as a two-story structure with one unit above the other (flats). Where side by side, both dwelling units must share the same lot; the individual units may not be on separate lots as a "zero lot line" structure.

(2) Performance standards:

(a) Each two-family residence constructed after June 20, 2016, shall meet the performance standards in subsection A(2)(a) through (f) above, except where otherwise allowed by conditional use permit.

(b) The structure must be in compliance with the Wisconsin Uniform Dwelling Code (UDC).

(c) Where side by side, a building-code-required, fire-rated wall must separate the two dwelling units from the lowest level to flush against the underside of the roof.

(d) Individual sanitary sewer and public water laterals and utility meters are required for each dwelling unit.

(e) The minimum gross floor area of each dwelling unit shall be 700 square feet, exclusive of attached garages, carports, and open decks/porches.

(f) Each unit within each new two-family residence shall be served by a separate driveway, or minimum driveway width for any shared driveway shall be not less than 30 feet at the front lot line.

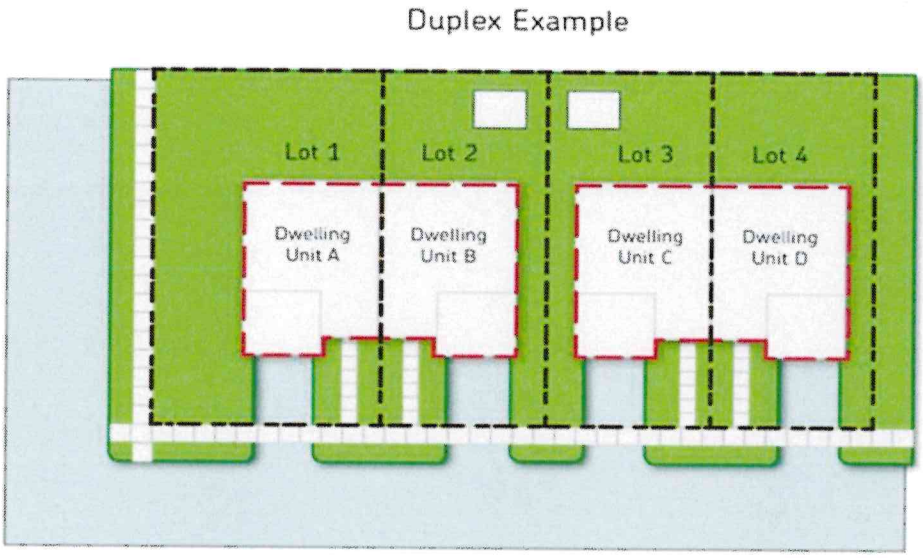
(g) Minimum required off-street parking: two outdoor spaces per dwelling unit, such as in a driveway, plus spaces in garage(s). All motor vehicles shall be parked on a hard surface as defined in section 520-138, or on a graveled surface if such surface was legally established before January 1, 2015.

(h) Zero Lot Line Structures (see Figure 520-20C). For buildings containing two separate dwelling units constructed side-by-side, with each unit located on a separate lot, having a private individual exterior access, and no shared internal access within the building, the following additional standards shall apply:

1. The duplex shall meet the front, side, and rear setbacks required for the applicable zoning district, except that the shared wall shall have no minimum setback requirement.

2. The builder shall provide, with the zoning permit or building permit application, an agreement or covenant specifying maintenance standards for the common wall, maintenance and replacement standards for exterior surfaces of the building to maintain a neat and harmonious appearance over time, maintenance standards for any common sewer lateral and any other common features, and restrictions against construction of detached single family residences on any of the affected lots in the event either or all sides of the zero lot line construction dwelling are destroyed. Such agreement or covenant shall also provide that it may not be terminated, amended or otherwise altered without the approval of the Village Board. Such agreement shall be subject to Zoning Administrator approval, and then recorded by the builder against all affected properties prior to occupancy of the dwelling as a zero-lot line structure.

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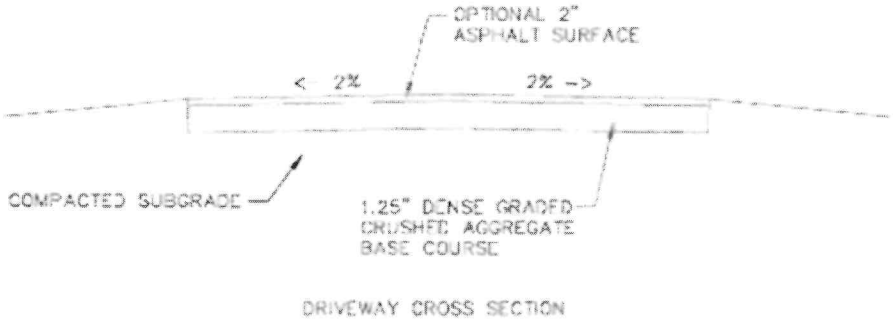
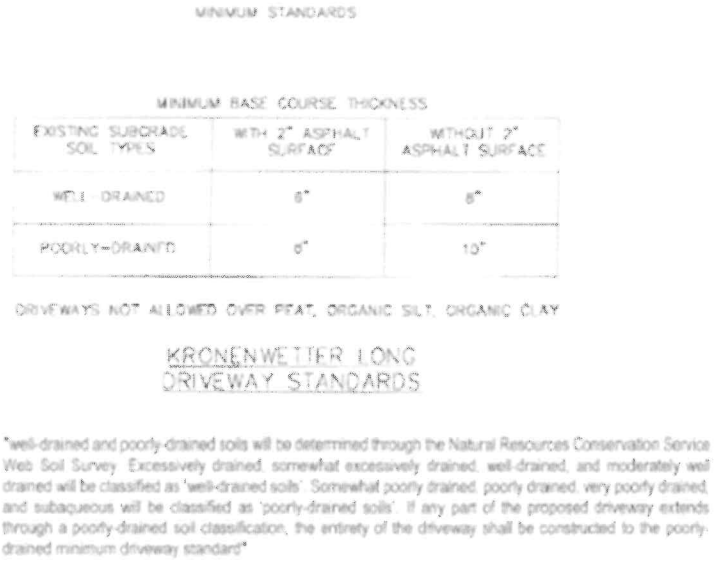


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KRONENWETTER LONG DRIVEWAY STANDARDS

"well-drained and poorly-drained soils will be determined through the Natural Resources Conservation Service Web Soil Survey. Excessively drained, somewhat excessively drained, well-drained, and moderately well drained will be classified as 'well-drained soils'. Somewhat poorly drained, poorly drained, very poorly drained, and subaqueous will be classified as 'poorly-drained soils'. If any part of the proposed driveway extends through a poorly-drained soil classification, the entirety of the driveway shall be constructed to the poorly-drained minimum driveway standard"

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ATTACHMENT 3 RURAL LOT DIMENSIONS

Figure V (1): Rural, Open Space and Residential District Lot Dimension and Intensity Standards

Zoning District	Minimum Lot Area	Minimum Lot Width (ft)[(a)]	Minimum Public Street Frontage (ft)	Maximum Total Building Coverage	Maximum Accessory Structure Floor Area (sf) (c)	Minimum Landscape Surface Ratio (LSR)
AR Agriculture and Residential	20 acres	600	200	N/A	10,000	N/A
RR-5 Rural Residential 5 Acres	5.0 acres	300	100	20%	5,000	N/A
RR-2 Rural Residential 2 Acres	2.0 acres	150	80	20%	3,000	N/A
PR Parks and Recreation	N/A	N/A	N/A	10%	N/A	50%
SF Single Family	20,000 square feet	100	50	30%	2,510 x lot area in acres (d)	50%
2F Two-Family Residential (b&e)	20,000 square feet	100	40	40%	2,510 x lot area in acres (d)	40%
MF Multifamily Residential (e&f)	5,000 square feet/dwelling unit	100	40	40%	10% of lot area	30%
MH Mobile Home	5,000 square feet/home (g)	50	N/A	40%	350	30%

NOTES:

(a) The minimum lot width shall be measured at the front of the building.

(b) For zero lot line structures, each lot shall have a minimum lot area of 10,000 square feet per unit and must be a at lease 40 feet in width within two family residential zoning districts.

(c) Maximum accessory structure floor area may be increased by site plan approval under § 520-124 and per the standards in § 520-27. B.

(d) The floor area shall not exceed 2,510 square feet, with a maximum of three accessory structures allowed on the same zoning lot over one acre and a maximum of two accessory structures allowed on the same zoning lot under one acre.

(e) Single-family detached residences within the 2F District shall comply with the SF District requirements.

(f) Single-family detached residences within the MF District shall comply with the SF District requirements. Two family residences within the MF District shall comply with the 2F District requirements.

(g) Total area of each mobile home community shall be a minimum of 10 acres.

(Ord. No. 16-07, 6-20-2016; Ord. No. 17-07, 4-11-2017; Ord. No. 17-20, 9-26-2017)

ATTACHMENT 4 RURAL SETBACK STANDARDS

Figure V (2): Rural, Open Space and Residential District Setback and Height Standards

Zoning District	Minimum Setbacks (ft)[b]								Minimum Principal Building Separation (ft)	Maximum Building Height			
	Principal Residential Building including Attached Garage				Detached Accessory Building[a]		Hard or Gravel Surface[d]			Principal Building		Accessory Building	
	Front[a]	Street Side[a]	Interior Side	Rear	Interior Side[c]	Rear	Interior Side or rear	Front or Street[a]		Feet	Floors	Feet	Floors
AR	50	30	20	40	12	12	0	0	10	35	2.5	35	2.5
RR-5	50	30	20	25	12	12	6	10	15	35	2.5	35	2.5
RR-2	50	30	20	25	12	12	6	10	15	35	2.5	35	2.5
PR	30	30	12	20	12	12	6	10	30	35	2.5	25	2
SF	50	25	12	12	5	5	6	10	20	35	2.5	15	1
2F (e)	30	30	8	12	5	5	6	10	20	35	2.5	15	1
MF (f)	30	30	8	12	5	5	6	10	20	40	3	15	1
MH	20(g)	20(g)	8	12	5	5	6	10	10	20	1	15	1

NOTES:

(a) See section 520-27. B for standards related to detached accessory buildings located within front yard areas, minimum separation requirements associated with detached accessory buildings, and other standards associated with detached accessory structures.

(b) Additional setbacks may be required along zoning district boundaries for buffer yards, if required for the land use under article IV or section 520-79.C (4).

(c) Minimum streetside yard setbacks are equal to the minimum streetside setback for the principal structure.

(d) Includes all gravel and hard surfaces as defined in section 520-138, along with recreational vehicles. This setback excludes intrusions required for driveway entrances and permitted or required for cross-access driveways and pedestrian ways; shared driveways; and shared parking lots.

(e) Single-family detached residences shall comply with the requirements for the SF District. No interior side yard setbacks for zero lot line structures.

(f) Single-family detached residences shall comply with the requirements of the SF District. Two-family residences shall comply with the requirements of the 2F District.

(g) A minimum one-hundred-foot-wide buffer must be provided around the perimeter of each mobile home community.

(Ord. No. 16-07, 6-20-2016)

PASSED and ADOPTED this 10TH day of February 2025

By: _____
Chris Voll, Village President

(SEAL)

ATTEST:

_____
Jennifer Poyer, Interim Clerk

PART II: - GENERAL LEGISLATION
Chapter 520 - ZONING
- FIGURES
ATTACHMENT 3 RURAL LOT DIMENSIONS

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PR Parks and Recreation	N/A	N/A	N/A	10%	N/A	50%
SF Single Family	20,000 square feet	100	50	30%	2,510 x lot area in acres[~~c~~ d]	50%
2F Two-Family Residential [~~d~~ b & e]	20,000 square feet	100	40	40%	2,510 x lot area in acres[~~c~~ d]	40%
MF Multifamily Residential [e f]	5,000 square feet/dwelling unit	100	40	40%	10% of lot area	30%
MH Mobile Home	5,000 square feet/home[~~(f)~~ (g)]	50	N/A	40%	350	30%

NOTES:

(a) The minimum lot width shall be measured at the front of the building.

(b) For zero lot line structures, each lot shall have a minimum lot area of 10,000 square feet per unit and must be of at least 40 feet in width within two family residential zoning districts.

~~(b)~~(c) Maximum accessory structure floor area may be increased by site plan approval under § 520-124 and per the standards in § 520-27.B.

~~(c)~~(d) The floor area shall not exceed 2,510 square feet, with a maximum of three accessory structures allowed on the same zoning lot over one acre and a maximum of two accessory structures allowed on the same zoning lot under one acre.

~~(d)~~(e) Single-family detached residences within the 2F District shall comply with the SF District requirements.

~~(e)~~(f) Single-family detached residences within the MF District shall comply with the SF District requirements. Two-family residences within the MF District shall comply with the 2F District requirements.

~~(f)~~(g) Total area of each mobile home community shall be a minimum of 10 acres.

(Ord. No. 16-07, 6-20-2016; Ord. No. 17-07, 4-11-2017; Ord. No. 17-20, 9-26-2017)

ATTACHMENT 4 RURAL SETBACK STANDARDS

Figure V(2): Rural, Open Space and Residential District Setback and Height Standards

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	Principal Residential Building including Attached Garage				Detached Accessory Building[a]		Hard or Gravel Surface[d]			Principal Building	
	Front[a]	Street Side[a]	Interior Side	Rear	Interior Side[c]	Rear	Interior Side or Rear	Front or Street[a]		Feet	Floors
AR	50	30	20	40	12	12	0	0	10	35	2.5
RR-5	50	30	20	25	12	12	6	10	15	35	2.5
RR-2	50	30	20	25	12	12	6	10	15	35	2.5
PR	30	30	12	20	12	12	6	10	30	35	2.5
SF	50	25	12	12	5	5	6	10	20	35	2.5
2F(e)	30	30	8	12	5	5	6	10	20	35	2.5
MF(f)	30	30	8	12	5	5	6	10	20	40	3
MH	20(g)	20(g)	8	12	5	5	6	10	10	20	1

NOTES:

(a) See section 520-27.B for standards related to detached accessory buildings located within front yard areas, minimum separation requirements associated with detached accessory buildings, and other standards associated with detached accessory structures.

(b) Additional setbacks may be required along zoning district boundaries for buffer yards, if required for the particular land use under article IV or section 520-79.C(4).

(c) Minimum streetside yard setbacks are equal to the minimum streetside setback for the principal structure.

(d) Includes all gravel and hard surfaces as defined in section 520-138, along with recreational vehicles. This setback excludes intrusions required for driveway entrances and permitted or required for cross-access driveways and pedestrian ways; shared driveways; and shared parking lots.

(e) Single-family detached residences shall comply with the requirements for the SF District. No interior side yard setbacks for zero lot line structures.

(f) Single-family detached residences shall comply with the requirements of the SF District. Two-family residences shall comply with the requirements for the 2F District.

(g) A minimum one-hundred-foot-wide buffer must be provided around the perimeter of each mobile home community.

(Ord. No. 16-07, 6-20-2016)

PART II: - GENERAL LEGISLATION
Chapter 520 - ZONING
- FIGURES
ATTACHMENT 4 RURAL SETBACK STANDARDS

village of Kronenwetter

Report to Planning Commission

Agenda Item: Zach Knetter, 1868 Mantee Drive, Kronenwetter, WI 54455. Conditional Use Permit Application for a Pond on parcel 145-2707-112-0998, Kronenwetter Drive, Kronenwetter, WI 54455.
Meeting Date: July 20, 2026
Referring Body: Plan Commission
Committee Contact: Dan Lesniak
Staff Contact: Kim Coyle & Greg Ulman
Report Prepared by: Kim Coyle

AGENDA ITEM: Zach Knetter, 1868 Mantee Drive, Kronenwetter, WI 54455 requests a Conditional Use Permit for a Pond on parcel 145-2707-112-0998, Kronenwetter Drive, Kronenwetter, WI 54455.

OBJECTIVE(S): To review the Conditional Use Permit and related documents for a Residential Business to install a pond on this property.

HISTORY/BACKGROUND: Zach Knetter, 1868 Mantee Drive, Kronenwetter, WI 54455 requests a Conditional Use Permit for a Pond on parcel 145-2707-112-0998, Kronenwetter Drive, Kronenwetter, WI 54455.

RECOMMENDED ACTION: The Plan Commission may approve the conditional use as originally proposed, may approve the proposed conditional use with conditions or modifications, or may deny approval of the proposed conditional use and include reasons for denial.

G. Review criteria for conditional use permit. Each requested conditional use permit shall meet the following criteria (achieve "yes" answers) to be approved:

(1) Is the proposed conditional use in harmony with the comprehensive plan, this chapter, and any other plan, program, or ordinance adopted by the village?

(2) The proposed conditional use does not, in its proposed location and as depicted on the required site plan, result in a substantial or undue adverse impact on nearby property, the character of the neighborhood, environmental factors, traffic factors, parking, public improvements, public property or rights-of-way, or other matters affecting the public health, safety, or general welfare, either as they now exist or as they may in the future be developed as a result of the implementation of the provisions of this chapter, the comprehensive plan, or any other plan, program, map, or ordinance adopted by the village?

(3) Does the proposed conditional use maintain the desired consistency of land uses, land use intensities, and land use impacts as related to the environs of the subject property?

(4) Is the proposed conditional use located in an area that will be adequately served by, and will not impose an undue burden on, any of the improvements, facilities, utilities, or services provided by public agencies serving the subject property?

(5) Do the potential public benefits of the proposed conditional use outweigh potential adverse impacts of the proposed conditional use, after taking into consideration the appl proposal and any requirements recommended by the applicant to ameliorate such impacts?

Note: See Staff's Report for comments as it relates to each of the criteria mentioned above.

2017 Act 67

- requires that standards governing conditional uses be "reasonable and, to the extent practicable, measurable…
- prohibits a community from basing a conditional use permit decision on "personal preferences or speculation."
- instructs that, where an applicant "meets or agrees to meet all of the requirements and conditions specified" in the ordinance or imposed by the decision-maker, the conditional use permit must be granted.

ATTACHMENTS: Conditional Use Permit application and Staff Report.

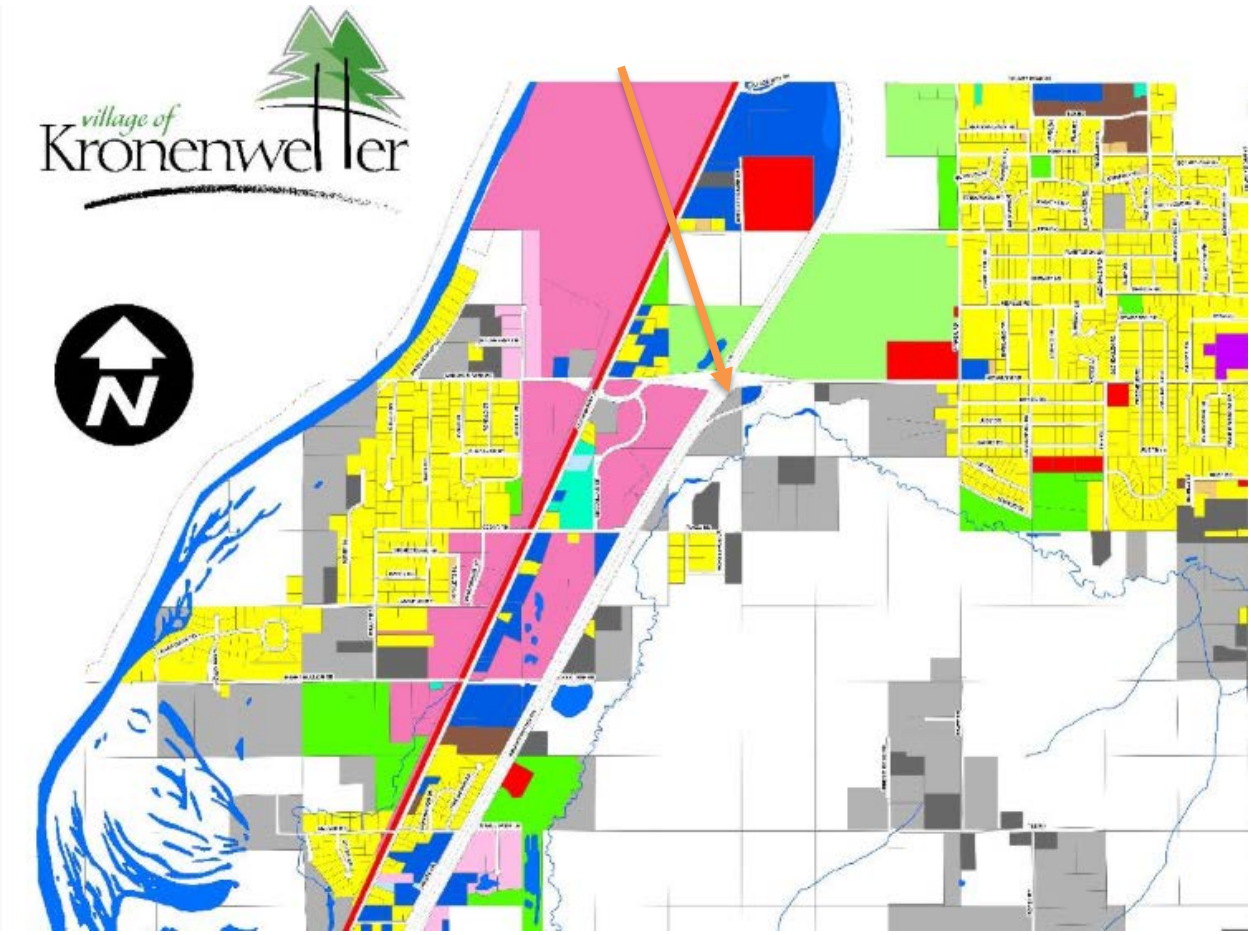
ZACH KNETTER, CONDITIONAL USE PERMIT APPLICATION FOR A POND ON PARCEL 145-2707-112-2707, KRONENWETTER DRIVE, KRONENWETTER, WI 54455.

STAFF REPORT FOR PLAN COMMISSION

PUBLIC HEARINGS/ MEETINGS: Plan Commission Public Hearing: 6:00 p.m. July 20, 2026

APPLICANT: Zach Knetter
1868 Mantee Drive
Kronenwetter, WI 54455.

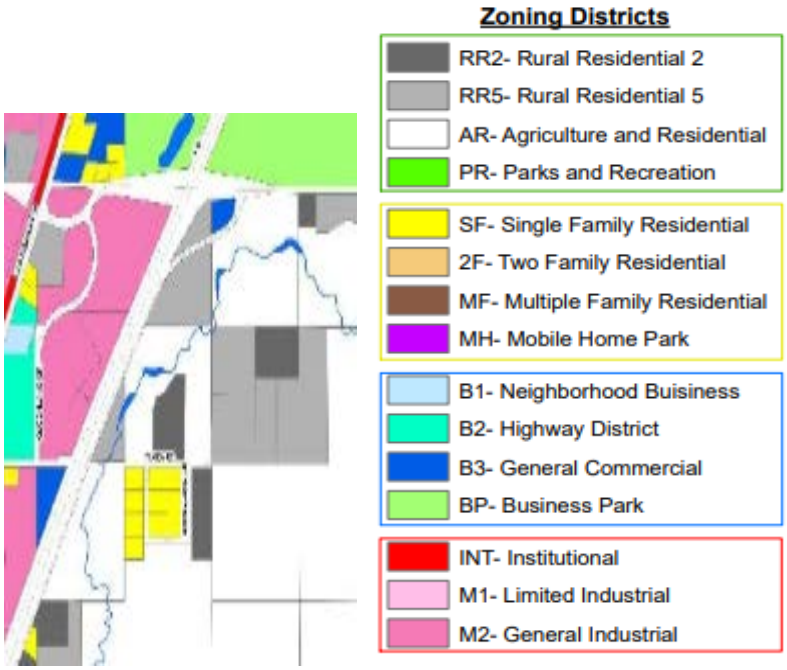
LOCATION OF REQUEST: Kronenwetter Drive, Kronenwetter, WI 54455. *(See Map 1)*



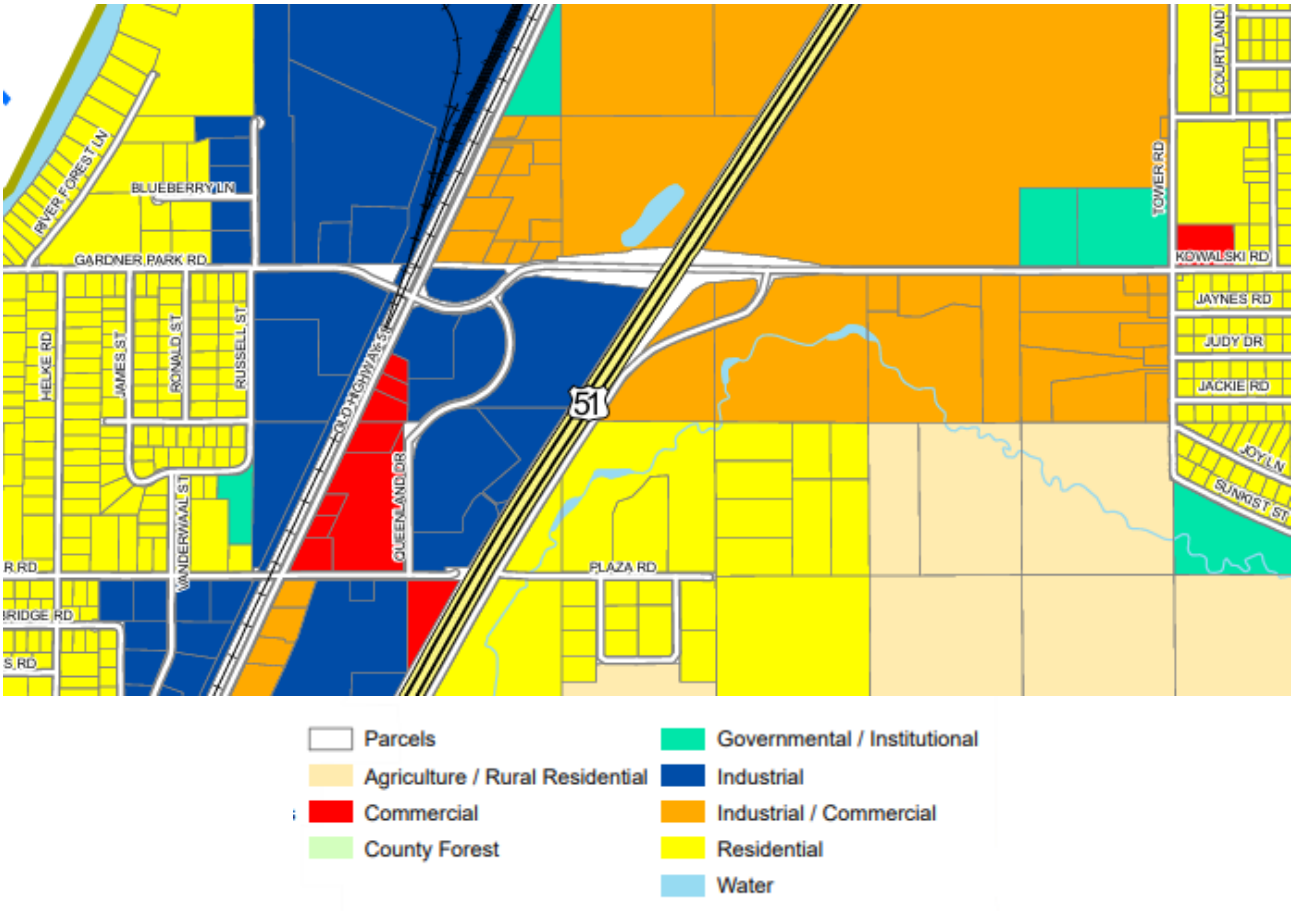
Map 1: Location Map
(Source Data: Village of Kronenwetter Zoning Map)



Map 2: Aerial Photo
(Source Data: Marathon County GIS)



Map 3: Zoning Map
(Source Data: Village of Kronenwetter)



Map 4: Future Land Use Map
(Source Data: Village of Kronenwetter)

LEGAL DESCRIPTION OF PROPERTY: SEC 11-27-07 PT OF NW 1/4 NW 1/4 THAT PT DESD IN VOL 105 OF REC PG 533 A/D/A PT LYG NLY OF BULL JR CREEK & SELY OF HWY "51" FRTG RD EX CSM VOL 18 PG 67 (#4899) (DOC #887228) (RD) EX CSM VOL 22 PG 28 (#5950) (DOC #927831) (RD) EX DOC #1493895 (RD)

ZONING: RR5 – Rural Residential 5

ACREAGE: 15.4700 acres

LEGAL NOTIFICATION: A legal advertisement was published in the Wausau Daily Herald on Monday, July 6, 2026, and Monday, July 12, 2026. Notice of the zoning change request was sent by regular mail to adjacent property owners within 500 feet of the subject property on June 30, 2026.

PROPOSED CONDITIONAL USE: CONDITIONAL USE PERMIT for a POND.

DEVELOPMENT PATTERN (AND ZONING):	Subject Property:	RR5
	North:	PR
	South:	AR
	East:	AR
	West:	M2

INTRODUCTION

Zach Knetter requests a Conditional Use Permit for a POND. The proposed conditional use consists of building a pond on this lot. Future plans are to build a house and workshop on this lot. The lot currently has goats that are on the lot full-time.

RECOMMENDED MOTION

The Plan Commission may approve the conditional use as originally proposed, may approve the proposed conditional use with conditions or modifications, or may deny approval of the proposed conditional use and include reasons for denial.

Each requested conditional use permit shall meet the following criteria (achieve "yes" answers) to be approved. Below you find Staff's comments as it relates to each.

2017 Act 67

- requires that standards governing conditional uses be "reasonable and, to the extent practicable, measurable…
- prohibits a community from basing a conditional use permit decision on "personal preferences or speculation."
- instructs that, where an applicant "meets or agrees to meet all of the requirements and conditions specified" in the ordinance or imposed by the decision-maker, the conditional use permit must be granted.
-

FINDINGS OF FACT CONDITIONAL USE

1. Is the proposed conditional use in harmony with the Comprehensive Plan, this chapter, and any other plan, program, or ordinance adopted by the Village?

The proposed Conditional Use Permit for a Pond is located on property zoned RR5. The proposed use is allowed with the issuance of a Conditional Use Permit with in RR5 – Rural Residential 5 Zoning District. The Future Land Use Map has this parcel zoned Industrial/Commercial. This type of business would be permitted use in a Commercial/Industrial Zoning District. This property is in the flood fringe which means the portion of a floodplain that lies outside the regulatory floodway but is still subject to inundation during a base flood.

2. The proposed conditional use does not, in its proposed location and as depicted on the required site plan, result in a substantial or undue adverse impact on nearby property, the character of the neighborhood, environmental factors, traffic factors, parking, public improvements, public property or rights-of-way, or other matters affecting the public health, safety, or general welfare, either as they now exist or as they may in the future be developed as a result of the implementation of the provisions of this chapter, the Comprehensive Plan, or any other plan, program, map, or ordinance adopted by the Village?

By meeting the requirements of the Zoning Ordinance § 520-20. - Residential land use types. F. Residential business. The proposed conditional use will not be injurious to the use and enjoyment of other property in the immediate vicinity nor substantially diminish and impair property values within the area.

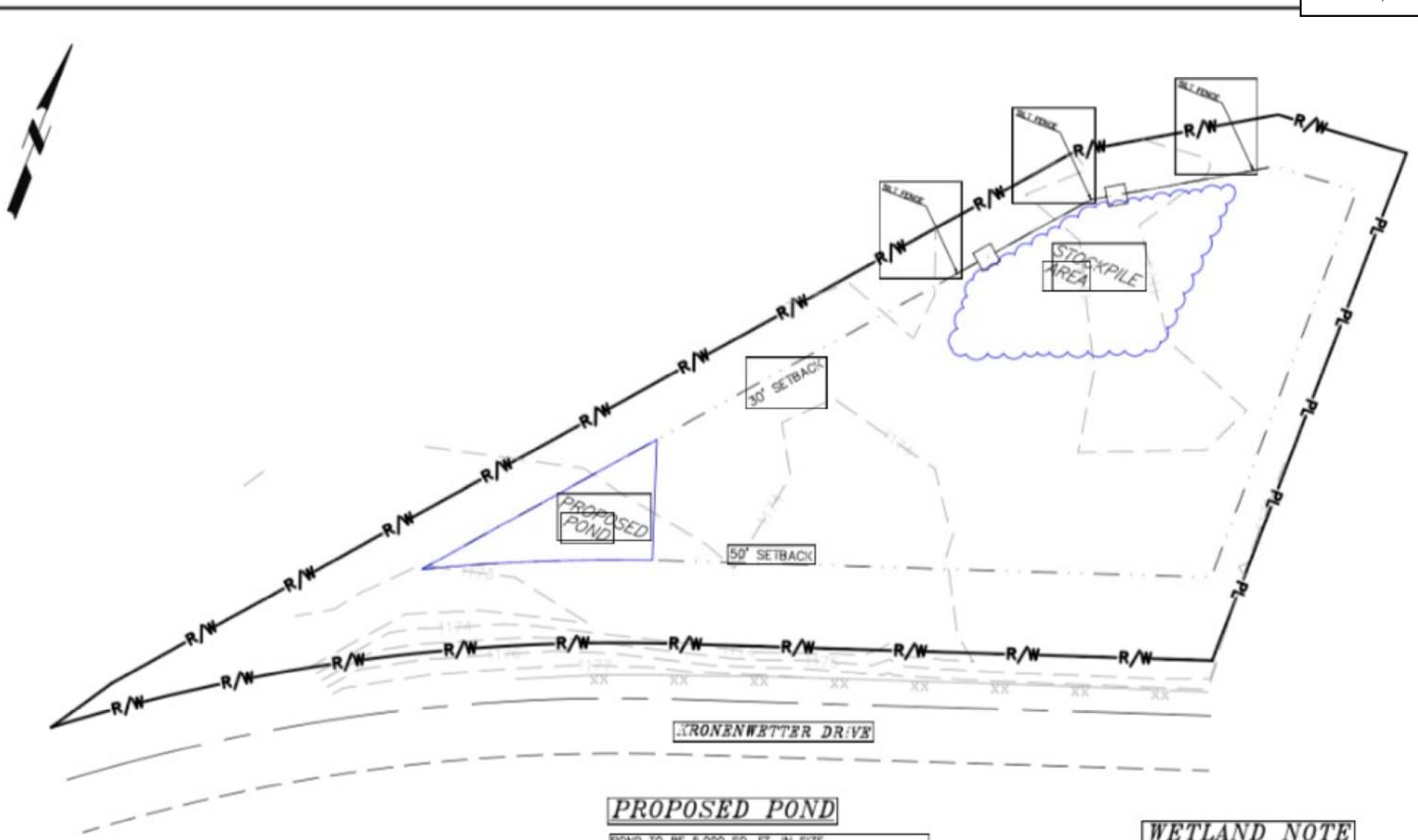
3. Does the proposed conditional use maintain the desired consistency of land uses, land use intensities, and land use impacts as related to the environs of the subject property?

The parcel is zoned RR5 and is surrounded by M2, PR and AR zoned properties. The conditional use will not impede the normal and orderly development and improvement of the surrounding properties for uses permitted in these zoning districts. All materials, equipment and operations will be inside a well insulted building. There will be no visible alterations made to the property or buildings. As a result, the land use, land use intensity and land use impacts remain unchanged.

4. Is the proposed conditional use located in an area that will be adequately served by, and will not impose an undue burden on, any of the improvements, facilities, utilities, or services provided by public agencies serving the subject property?

No other improvements, facilities, utilities or services are required.

5. Do the potential public benefits of the proposed conditional use outweigh potential adverse impacts of the proposed conditional use, after taking into consideration the applicant's proposal and any requirements recommended by the applicant to ameliorate such impacts?
The proposed Pond will have no adverse impacts.



PROPOSED POND

POND TO BE 5,000 SQ. FT. IN SIZE.
WITH APPROXIMATELY 3,000 CUBIC YARDS OF FILL TO BE PLACE ON REMAIN PARCEL. LOCATIONS TO BE DETERMINED

WETLAND NOTE

1. NO WETLAND ON SITE PER WDNR ON-SITE VISIT.

STAMP/SIGNATURE:

REVISIONS		
BY	DATE	DESCRIPTION

TITLE PAGE:
PROPOSED POND LOCATION

PROJECT: ZACH/ABBI KNETTER PROPERTY

LOCATION: VILLAGE OF KRONENWETTER
MARATHON COUNTY, WISCONSIN

VREELAND ASSOCIATES LAND SURVEYORS & ENGINEERS
6108 DAWN STREET WESTON, WI. 54476
PHONE NO.: (715) 241-0947
EMAIL: dustin@vreelandassociates.us
WEBSITE: www.vreelandlandsurveying.com

PREPARED FOR:
ZACH/ABBI KNETTER

PLAN DATE:
MARCH 15, 2025

1" = 4

SHEET 1

Pond Conditional Use Permit Application

Application Fee: $350

A conditional use permit is required for any excavation activity that will result in a pond in the Village. There are also additional permits required by the County and State of Wisconsin.

Plan Commission Meetings are held on the 3rd Monday of each month. Village Board Meetings on conditional use applications typically take place on the 4th Monday of each month.

Although not required, it is recommended that the applicant attend these meetings.

village of Kronenwetter
1582 Kronenwetter Drive
Kronenwetter, WI 54455
715-693-4200
www.kronenwetter.org

1. Applicant Name Zach Knetter Phone Number 715-573-3701
   Address 1868 Mantee Drive
   Email 95liftedcherokee@gmail.com
2. Owner Name Same as above Phone Number _____
   Address _____
   Email _____
3. Parcel ID#(s) 14527071120998
4. Legal description of the site Part of the NW1/4 of the NW1/4 of Section 11, T27N, R7E
   Village of Kronenwetter, Marathon County, WI as described in Deed document number 1898643
5. Total area to be affected by this project. Include areas for stockpiling, processing, conservation practices and any roads to be reclaimed 10,000 Check one: ☑ Square Feet OR ☐ Acres
6. Description of the proposed mining operation including type of material extracted and processing methods to be used in mining the site pond will be dug on the property on the north side of Kronenwetter Drive
   the material will spread out on the property on the north side of Kronenwetter Drive
7. Check one: ☑ Observed OR ☐ Estimated elevation of groundwater >20
   Reference depth to a permanent on-site reference point (bench mark).
8. Estimated volume of materials to be extracted 3000 cubic yards. (Include only the volume to be extracted in the time period covered by this application.)
9. Estimated timetable for beginning and ending of operations on the site including any phases or stages
   July 2026 to July 2027

10. Measures to be taken to screen the operation from view of surrounding land uses or an explanation of why such measures are not needed There are not neighbors and the pond will be surrounded by right of way.

11. Are any temporary erosion control measures used during excavation? Check one: ☑ Yes OR ☐ No
(If yes, the measures to be used must be shown on the plan. If not, explain why none are needed.)
Silt Fence will surround the digging area.

12. Description of anticipated topography, water impoundments, artificial lakes, and future land use of the site upon completion of reclamation. pond and rest of the property for future home

13. In addition, the following drawings or documents must be attached to this application. All maps must be drawn at a scale of no less than one (1) inch equals two hundred (200) feet.

A. Copy of the lease or proof of ownership.
B. Copies of County and/or State permits or approval.
C. A map of the site as it presently exists. The map shall include:
   1. Property boundaries and the location of all structures on or adjacent to the site and the purpose for which each structure and the adjoining land is used.
   2. Contours of the affected land at intervals no larger than two (2) feet.
   3. The location and names of all streams and roads on or within three hundred (300) feet of the site.
   4. Boundaries of previous excavations on the site, and the location and description of boundary stakes for the proposed site. The stakes shall be referenced to a permanent reference point. The area stakes shall include all stockpiling and storage areas.
D. If the site is to be mined in phases, four copies of an operation plan which shall include the following:
   1. A plan view and description of sequential phases of mining including haulage ways, storage areas and processing areas.
   2. If necessary, attach a plan showing temporary erosion control measures.

To the best of my knowledge, I certify that the information provided on this application and accompanying documents are true and accurate. I also understand that submitting this application authorizes the Zoning Administrator or his/her designee to enter onto the property for the purposed outlined in the Nonmetallic Mining Reclamation Ordinance.

Applicant's Signature

Zachery D. Knetter
Print Applicant's Name

07/09/2026
Date

July 24, 2026

Project Narrative

Project: Marathon County Highway Commission – New Garage
2312 Old Highway 51
Kronenwetter, WI 54455

Marathon County Highway Commission is requesting conditional use permit and site plan review and approval for a new highway garage located at 2312 Old Highway 51 (parcels 14527070220958; 14527070220957; 14527070220968; 14527070220969; 14527070220973; 14527070220975; 14527070220971; 14527070220970) in the Village of Kronenwetter. The parcels are currently being combined via Certified Survey Map and the full property is currently in the process of rezoning to M-2. A highway facility requires a conditional use permit in the M-2 district. The Village Future Land Use Designation is Industrial / Commercial.

The 25-acre project site is bordered by a parking lot owned by Wisconsin Public Service to the north, the improved rural asphalt roadway of Gate of Heaven Drive to the south, and the unimproved Gate of Heaven Drive right-of-way to the east, beyond which are wooded lands and a cemetery. Much of the project site consists of vacant open fields. The southernmost approximately 220 feet of the site was previously occupied by four single-family residential properties, and an additional single-family residence was located along Old Highway 51; all have recently been demolished by the property owner. Limited wooded areas remain along portions of the site perimeter, including along the northern and southern property boundaries.

The proposed development will consist of three buildings and associated site improvements, including vehicle parking and maneuvering areas, vehicle staging areas, a truck scale, fueling area and waste enclosure. Proposed site data includes a ratio of 19.89% building floor area, 52.85% pavement and 27.26% landscape/open space. Stormwater runoff from the proposed development will be directed to a proposed bioretention area located at the south end of the site. The proposed area of land disturbance is 25 acres.

The property will be transformed into a development that is aesthetically pleasing with high-quality exterior materials on the building along with landscaping designed to ensure species resiliency and complimentary style. Site lighting will be provided in a fashion that provides appropriate foot candles for safety with cut-off fixtures for minimal light trespass and directed inward toward the development. Exterior materials are represented in the attached elevations and will consist of acid washed and sand blasted precast, utility bricks, galvanized steel siding, and concealed fastener metal panel system.

The proposed development will serve as a County Highway Department maintenance and operations facility supporting roadway maintenance, snow and ice control operations, fleet storage and maintenance, material storage, brine production, and employee training activities. The facility is anticipated to accommodate approximately 55 employees on the largest shift, with additional attendance during occasional training events. The site has been planned to accommodate potential future expansion as County operational needs evolve.

The proposed development meets the conditional use criteria as described below.

Is the proposed conditional use in harmony with the Comprehensive Plan, this chapter, and any other plan, program, or ordinance adopted by the Village?

- The proposed development is consistent with the Village Future Land Use Designation of Industrial / Commercial for the project site. The development will comply with all applicable Village ordinances, regulations, and design standards.

The proposed conditional use does not, in its proposed location and as depicted on the required site plan, result in a substantial or undue adverse impact on nearby property, the character of the neighborhood, environmental factors, traffic factors, parking, public improvement, public property or rights-of-way, or other matters affecting the public health, safety, or general welfare, either as they now exist or as they may in the future be developed as a result of the implementation of the provisions of this chapter, the Comprehensive Plan, or other plan, program, map or ordinance adopted by the Village?

- The facility has been designed to minimize impacts on surrounding properties and public infrastructure. The proposed development incorporates appropriate setbacks, landscaping, stormwater management, parking, access control, and operational areas to reduce visual, noise, and traffic impacts. Traffic generated by the facility is anticipated to be manageable and compatible with surrounding roadways. The development will meet applicable environmental and engineering requirements and will not create an undue burden on neighboring properties or public facilities.

Does the proposed conditional use maintain the desired consistency of land uses, land use intensities, and land use impacts as related to the environs of the subject property?

- The proposed facility is compatible with the existing land uses in the surrounding area. The intensity of development is appropriate for a governmental operations facility and is designed to function efficiently while mitigating impacts through site design, screening, and operational controls.

Is the proposed conditional use located in an area that will be adequately served by, and will not impose an undue burden on, any of the improvements, facilities, utilities, or services provided by public agencies serving the subject property?

- Municipal sanitary sewer and water are available to the site along with dry utilities. Stormwater runoff from the proposed development will be directed to a proposed bioretention area located at the south end of the site. No undue burden will be imposed on public facilities.

Does the potential public benefits of the proposed conditional use outweigh potential adverse impacts of the proposed conditionals use, after taking into consideration the applicant’s proposal and any requirements recommended by the applicant to ameliorate such impacts?

- The public benefits of the proposed County Highway Facility substantially outweigh any potential adverse impacts. The facility will improve the County's ability to maintain roadways, respond to emergencies, manage snow and ice operations, and provide efficient transportation infrastructure services.

Site Plan Application & Submittal Requirement

village of Kronenwetter
1582 Kronenwetter Drive
Kronenwetter, WI 54455
715-693-4200
www.kronenwetter.org

Application Fees

Minor Site Plan Amendment: $150
Site Plans less than 5,000 SF of Building Area: $500
Site Plans greater than 5,000 SF of Building Area: $1,000

Completed applications shall be submitted to the Village Clerk 45 days prior to the Planning Commission meeting date on which they will be considered. It is pertinent that the relevant sections of the zoning ordinance be reviewed for regulations and other information, which may be required for submittal depending on the type of application.

1. Project Name Marathon County Highway Garage Submittal Date 07/24/26
2. Owner Marathon County Telephone 715-261-6980
   Address 1100 Lakeview Drive, Wausau, WI 54403
3. Applicant is (check one) ☑ Owner ☐ Agent ☐ Other _____
   (If Applicant is not the owner, provide letter of Authorization from Owner)
4. Project Applicant / Contact Person Marathon County - Troy Torgerson
   Phone # 715-261-6980 Fax # _____
   Address 1100 Lakeview Drive, Door 43, Wausau, WI 54403
   Email Address troy.torgerson@marathoncounty.gov
   Contact Person: Grant Duchac, P.E. grant.duchac@excelengineer.com
5. Is property to be subdivided within an existing subdivision? No
   If so, what is the existing subdivision name? _____
6. Location and legal description of property (by government lot, section, township, range and county)
   Part of the Southwest 1/4 of the Northwest 1/4, and part of the Northwest 1/4 and the Southeast 1/4 of Section 2, Township 27 North, Range 7 East, Village of Kronenwetter, Marath
7. Total acreage of property 25.25
8. Frontage width of parcel 1,302.75 feet
9. Parcel Identification Number (PIN) 14527070220958; 14527070220957; 14527070220968; 14527070220969; 14527070220973; 14527070220975; 14527070220971; 14527070220970
10. Existing Zoning of the property Rezone to M-2 in progress
11. Type of Parcel ☑ Commercial ☐ Multi-Family ☐ Industrial ☐ PUD ☐ Other
12. Current Zoning/Use

	Zoning	Land Use
North:	B3	General Commercial
South:	AR	Agricultural and Residential
East:	INT	Institutional
West:	M2	General Industrial

CHECKLIST

☒ Plans and written submittals. The following is a description of the plans, documents and written submittals required for the various permits by this chapter. Applications shall be submitted on forms provided by the Village Clerk, along with applicable fees as per the fee schedule. All plans and documents must be 11 inches by 17 inches reproducible, except one set of originals at D-size scale. A description of the intended uses, described in reasonable detail, shall include the following:

a. Zoning. Existing zoning district(s) and proposed zoning district(s) (if different).
b. Land use plan designation. The designated type of use shown for the site on the Village Land Use Map.
c. Current land uses. Present land uses on the subject property.
d. Proposed land uses. Proposed land uses for the subject property.
e. Projected use. Projected number of residents, employees, and daily visitors.
f. Proposed development. The amount of dwelling units, floor area, impervious surface area, and landscape surface area, and resulting site density floor area ratio, impervious surface area ratio, and landscape surface area ratio.
g. Operations. The operational considerations relating to hours of operation, projected normal and peak water usage, sanitary sewer or septic loading, and traffic generation.
h. Building material. The exterior building and fencing material types and colors.
i. Expansion. Any possible future expansion and related implications.
j. Other information. Any other information pertinent to adequate understanding by the Plan Commission of the intended use and its relation to nearby properties.

☒ Small location map. A map of the subject property showing all lands for which the use is proposed, and all other lands within 200 feet of the boundaries of the subject property. The location map shall clearly indicate the current zoning of the subject property and adjacent properties and show any other jurisdiction(s) that maintain control over the property. The location map shall be at a scale that is not less than one inch equals 800 feet, as well as a location map copy on a sheet no larger than 11 inches by 17 inches, showing the subject property and illustrating its relationship to the nearest street intersection.

☒ Scale Site Plan: A site plan of the subject property as proposed for development. A site plan shall be submitted at scale (and a reduction at 11" x 17") that includes:

a. A title block which indicates the name, address and phone/fax number(s) of the current property owner and/or agent(s) (developer, architect, engineer, planner) for project;
b. The date of the original plan and the latest date of revision to the plan;
c. A north arrow and a graphic scale. Said scale shall not be smaller than one inch equals one hundred (100) feet;
d. A legal description of the subject property;
e. All property lines and existing and proposed right-of-way lines with bearings and dimensions clearly labeled;
f. All existing and proposed easement lines and dimensions with a key provided and explained on the margins of the plan as to ownership and purpose;
g. All required building setback lines;
h. All existing and proposed buildings, structures, and paved areas, including building entrances, walks, drives, decks, patios, fences, utility poles, drainage facilities, and walls;
i. The location and dimensions of all access points onto public streets:
j. The location and dimensions of all on-site parking (and off-site parking provision if they are to be employed), including a summary of the number and size of parking stalls provided versus the number required by this Ordinance;
k. The location and dimensions of all loading and service areas on the subject property and labels indicating the dimensions of such areas;

l. The location of all outdoor storage areas and screening devices;
m. The location, type, height, size and lighting of all signage on the subject property:
n. The location, height, design/type, illumination power and orientation of exterior lighting on the subject property;
o. The location and type of any permanently protected green space areas;
p. The location of existing and proposed drainage facilities;
q. In the legend, data for the subject property: (Lot Area, Floor Area, Floor Area Ratio, Impervious Surface Area, Impervious Surface Ratio, and Building Height.)

☒ Detailed Landscape Plan: At the same scale as the site plan (and a reduction at 11" x 17'), showing the location of all required buffer yards and landscaped areas and existing and proposed landscape point fencing and berm options for meeting said requirements.

a. The individual plant locations, species, and size shall be shown.
b. Screening such as: fencing types and berm heights shall be shown by size and height.

☒ Grading Plan: At the same scale as the site plan (and a reduction at 11" x 17") showing existing and proposed grades, including retaining walls and related devices and erosion control measures. It will include:

a. Existing and proposed contours at a minimum of 2-foot contours;
b. Existing and proposed spot elevations at corners of structures and significant changes in grade;
c. Flow lines of all drainages.

☒ Elevation Drawings: Side views of proposed buildings, structures, or proposed remodeling of existing buildings showing finished exterior treatment shall also be submitted, with adequate labels provided to clearly depict exterior materials, texture, color and overall appearance. Perspective renderings of the proposed project and/or photo of similar structures may be submitted, but not in lieu of adequate drawing showing the actual intended appearance of the buildings.

☒ Erosion Control Plan: At the same scale as the site plan (and a reduction at 11" x I7") showing all erosion control measures:

a. Location and description of soil types which have been rated severe for erosion limitations by the U.S. Soil Conservation Service;
b. Elevation and extent of all proposed grading;
c. Plans and specifications for erosion control devices, such as: retaining walls, cribbing, planting, anti- erosion devices, and other protective measures;
d. Drainage areas of the site, upstream and downstream culverts or other restrictions;
e. Plans (written or drawn) for removal, re-contouring, or other disposition of sediment basins or other temporary devices;
f. Plans prepared as per *Wisconsin Construction Site Best Management Practices Handbook,* prepared by the Wisconsin Department of Natural Resources.

☒ Storm Water Management: The storage and controlled release of excess storm water must be shown along with calculations indicating the development does not exceed the peak discharge of storm water runoff as occurring under the predevelopment existing conditions of the parcel, based upon a ten (10) year storm event. Where site detention is required for runoff control, the detention facilities shall safely pass the runoff of a one hundred (100) year storm through an emergency outlet.

Note: Applicant must be the landowner or his/her designee. Tenants, agents, designers, contractors, atto... etc. shall not sign application unless Power of Attorney is submitted with the application.

Troy Torgerson
Printed Name of Applicant

Signature of Applicant

FOR OFFICE USE ONLY:

Application Received _____ Check #_____

Plan Commission:

Meeting Date_____ Recommendation: Approved / Denied

Village Board:

Meeting Date_____ Decision: Approved / Denied

Standard Erosion Control Pla...

for 1- & 2-Family Dwelling Construction Sites

According to Chapters Comm 20 & 21 of the Wisconsin Uniform Dwelling Code, soil erosion control information needs to be included on the plot plan which is submitted and approved prior to the issuance of building permits for 1- & 2-family dwelling units in those jurisdictions where the soil erosion control provisions of the Uniform Dwelling Code are enforced. This Standard Erosion Control Plan is provided to assist in meeting this requirement.

Instructions:

1. Complete this plan by filling in requested information, completing the site diagram and marking appropriate boxes on the inside of this form.
2. In completing the site diagram, give consideration to potential erosion that may occur before, during, and after grading. Water runoff patterns can change significantly as a site is reshaped.
3. Submit this plan at the time of building permit application.

PROJECT LOCATION 2312 Old Hwy 51

BUILDER Miron Construction Co., Inc OWNER Marathon County

WORKSHEET COMPLETED BY Excel Engineering Inc DATE 07/24/26

SITE DIAGRAM **Scale: 1 inch = ____feet**

SEE CIVIL PLAN SET

Please indicate north by completing the arrow.

N

EROSION CONTROL PLAN LEGEND

- PROPERTY LINE
- EXISTING DRAINAGE
- TD TEMPORARY DIVERSION
- FINISHED DRAINAGE
- LIMITS OF GRADING
- SILT FENCE
- STRAW BALES
- GRAVEL
- 1 VEGETATION SPECIFICATION
- TREE PRESERVATION
- STOCKPILED SOIL

EROSION CONTROL PLAN CHECKLIST

Check (✔) appropriate boxes below, and complete the site diagram with necessary information.

COMPLETED	NOT APPLICABLE	
☒		North arrow, scale, and site boundary. Indicate and name adjacent streets or roadways.
☒	☐	Location of existing drainageways, streams, rivers, lakes, wetlands or wells.
☒		Location of storm sewer inlets.
☒		Location of existing and proposed buildings and paved areas.
☒		The disturbed area on the lot.
☒		Approximate gradient and direction of slopes before grading operations.
☒		Approximate gradient and direction of slopes after grading operations.
☒	☐	Overland runoff (sheet flow) coming onto the site from adjacent areas.

Erosion Control Practices

☒	☐	Location of temporary soil storage piles. Note: Soil storage piles should be placed behind a sediment fence, a 10 foot wide vegetative strip, or should be covered with a tarp or more than 25 feet from any downslope road or drainageway.
☒		Location of access drive(s). Note: Access drive should have 2 to 3 inch aggregate stone laid at least 7 feet wide and 6 inches thick. Drives should extend from the roadway 50 feet or to the house foundation (whichever is less).
☒	☐	Location of sediment controls (filter fabric fence, straw bale fence or 10-foot-wide vegetative strip) that will prevent eroded soil from leaving the site.
☒	☐	Location of sediment barriers around on-site storm sewer inlets.
☒	☐	Location of diversions. Note: Although not specifically required by code, it is recommended that concentrated flow (drainageways) be diverted (re-directed) around disturbed areas. Overland runoff (sheet flow)from adjacent areas greater than 10,000 sq. ft. should also be diverted around disturbed areas.
☒	☐	Location of practices that will be applied to control erosion on steep slopes (greater than 12% grade). Note: Such practices include maintaining existing vegetation, placement of additional sediment fences, diversions, and re-vegetation by sodding or seeding with use of erosion control mats.
☒	☐	Location of practices that will control erosion on areas of concentrated runoff flow. Note: Unstabilized drainageways, ditches, diversions, and inlets should be protected from erosion through use of such practices as in-channel fabric or straw bale barriers, erosion control mats, staked sod, and rock rip-rap. When used, a given in-channel barrier should not receive drainage from more than two acres of unpaved area, or one acre of paved area. In-channel practices should not be installed in perennial streams (streams with year round flow).
☐	☒	Location of other planned practices not already noted.

Indicate management strategy by checking (✔) the appropriate box.

Management Strategies

COMPLETED	NOT APPLICABLE	
☒	☐	Temporary stabilization of disturbed areas. Note: It is recommended that disturbed areas and soil piles left inactive for extended periods of time be stabilized by seeding (between April 1 and September 15), or by other cover, such as tarping or mulching.
☒		Permanent stabilization of site by re-vegetation or other means as soon as possible (lawn establishment). • Indicate re-vegetation method: ☒ Seed ☐ Sod ☐ Other _____ • Expected date of permanent re-vegetation: Within 3 days of final grading • Re-vegetation responsibility of: ☒ Builder ☐ Owner/Buyer • Is temporary seeding or mulching planned if site is not seeded by Sept. 15 or sodded by Nov. 15? ☒ Yes ☐ No
☒	☐	Use of downspout and/or sump pump outlet extensions. Note: It is recommended that flow from downspouts and sump pump outlets be routed through plastic drainage pipe to stable areas such as established sod or pavement.
☒	☐	Trapping sediment during de-watering operations. Note: Sediment-laden discharge water from pumping operations should be ponded behind a sediment barrier until most of the sediment settles out.
☒		Proper disposal of building material waste so that pollutants and debris are not carried off-site by wind or water.
☒		Maintenance of erosion control practices. • Sediment will be removed from behind sediment fences and barriers before it reaches a depth that is equal to half the height o f the barrier. • Breaks and gaps in sediment fences and barriers will be repaired immediately. Decomposing straw bales will be replaced (typical bale life is three months). • All sediment that moves off-site due to construction activity will be cleaned up before the end of the same workday. • All sediment that moves off-site due to storm events will be cleaned up before the end of the next workday. • Access drives will be maintained throughout construction. • All installed erosion control practices will be maintained until the disturbed areas they protect are stabilized.

EROSION CONTROL REGULATIONS

Erosion control and stormwater regulations can be complex. Local, state and, in some cases, federal regulations may apply. Before construction make sure you have the appropriate permits.

LOCAL ORDINANCES

Check with your county, city, village, or town for any local erosion control ordinances including shoreland zoning requirements. Except for new 1- & 2-family dwellings, local ordinances may be more strict than state regulations. They may also require erosion control on construction projects not affected by state or federal regulations.

UNIFORM DWELLING CODE (DEPT. OF COMMERCE)

CONTROLS REQUIRED

- Silt fences, straw bales, or other approved perimeter measures along downslope sides and side slopes.
- Access drive.
- Straw bales, filter fabric fences or other barriers to protect on-site sewer inlets.
- Additional controls if needed for steep slopes or other special conditions.

FOR MORE INFORMATION, CONTACT:

- Local building inspector
- Department of Commerce, Safety and Buildings Division, P.O. Box 7970, Madison, Wis. 53707-7970, (608) 267-5113.

STORMWATER PERMIT (DEPT. OF NATURAL RESOURCES)

CONTROLS REQUIRED

- Erosion control measures specified in the *Wisconsin Construction Site Best Management Practice Handbook*.
- Measures to control storm water after construction.

FOR MORE INFORMATION, CONTACT

- Department of Natural Resources, Storm Water Permits, P.O. 7921, Madison, WI 53707-7921, (608) 267-7694.

For more assistance on plan preparation, refer to the Wisconsin Uniform Dwelling Code, the DNR *Wisconsin Construction Site Best Management Handbook,* and UW–Extension publication *Erosion Control for Home Builders*. The *Wisconsin Uniform Dwelling Code* and the *Wisconsin Construction Site Best Management Handbook* are available through the State of Wisconsin Document Sales, (608) 266-3358.

Erosion Control for Home Builders (GWQ001) can be ordered through Extension Publications, (608) 262-3346 or the Department of Commerce, (608) 267-4405. A PDF version of *Erosion Control for Home Builders* (GWQ001) and *Standard Erosion Control Plan* are also available at http://clean-water.uwex.edu/pubs/sheets

This publication is available from county UW-Extension offices or from Extension Publications, 45 N. Charter St., Madison, WI 53715. (608) 262-3346 or toll-free (877) 947-7827. A publication of the University of Wisconsin–Extension in cooperation with the Wisconsin Department of Natural Resources and the Wisconsin Department of Commerce.

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GWQ001A Standard Erosion Control Plan for 1 & 2 Family Dwelling Construction Sites

DNR WT-458-96 R-03-02-2M-10-S Editing and design by the Environmental Resources Center, University of Wisconsin–Extension.

Printed on recycled paper

EXISTING ZONING:
B3 - GENERAL COMMERCIAL

EXISTING ZONING:
M2 - GENERAL INDUSTRIAL AND
INT - INSTITUTIONAL

EXISTING ZONING:
INT - INSTITUTIONAL

LOT 1 OF PROPOSED CSM
PROPOSED ZONING:
M2 - GENERAL INDUSTRIAL

EXISTING ZONING:
B3 - GENERAL COMMERCIAL,
SF - SINGLE FAMILY RES,
2F - TWO FAMILY RES,
RR2 - RURAL RESIDENTIAL 2

EXISTING ZONING:
AR - AGRICULTURAL AND
RESIDENTIAL

EXISTING ZONING:
PR - PARKS AND RECREATION

PARCEL 1 CSM #10740
EXISTING ZONING:
SF - SINGLE FAMILY RESIDENTIAL

LOT 2
CSM #19921
DOC. #1905841
OWNED BY OTHERS

LOTS 1 & 2
CSM #10740
VOL. 44, PG. 182
OWNED BY OTHERS

UNPLATTED LANDS
OWNED BY OTHERS

PARCEL 3
CSM 63-26

LOT 1
CSM 65-350

PLAT OF SURVEY

VACATED

S89°47'57"E
12.10'
594.54'
606.64'
1179.18'
414.27'
764.91'
S01°26'05"E
1193.43'
N89°50'12"W
N25°19'33"E
236.88'
260.27'
347.62'
179.74'
278.23'
S01°02'14"W
602.73'
659.96'
776.84'
298.95'
129.38'

LOCATION MAP





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Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION
Miron
Building Excellence
Miron Construction Co., Inc.
1471 McMahon Drive
Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:
MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

PRELIMINARY DATES
JULY 23, 2026

NOT FOR CONSTRUCTION

JOB NUMBER
250008600

SHEET NUMBER
Loc

SCALE: 1"= 60'
60' 0 60' 120'
NORTH

LOCATION MAP

Conditional Use Permit Application

Application Fee: $350 Regular Meeting / $500 Special Meeting

A conditional use is a unique use which, because of its distinct characteristics, cannot be classified in any particular district or districts, without consideration, in each case, of the impact of that use upon neighboring land and of the public need for the particular use at the particular location.

Plan Commission Meetings are held on the 3rd Monday of each month. Although not required, it is recommended that the applicant attend these meetings.

village of Kronenwetter
1582 Kronenwetter Drive
Kronenwetter, WI 54455
715-693-4200
www.kronenwetter.org

Applicant Information

1. Applicant Name Marathon County - Troy Torgerson Phone Number 715-261-6980
   Address 1100 Lakeview Drive, Wausau, WI 54403
   Email troy.torgerson@marathoncounty.gov
2. Owner Name Marathon County Phone Number 715-261-6980
   Address 1100 Lakeview Drive, Wausau, WI 54403
   Email troy.torgerson@marathoncounty.gov
3. Prepared By Company Name Excel Engineering, Inc Name Grant Duchac, P.E.
   Address 100 Camelot Dr, Fond du Lac, WI 54935
   Phone Number 920-322-1681 Email grant.duchac@excelengineer.com

Property Information

4. Property Address 2312 Old Hwy 51
   14527070220958; 14527070220957; 14527070220968; 14527070220969; 14527070220973; 14527070220975; 14527070220971; 14527070220970
5. Parcel Identification # (PIN) _____ 6. Parcel Acreage 25.25 acres
7. Legal Description (attach additional sheet if necessary) See attached
8. Conditional Use request from § 520-22 of the Zoning Ordinance to allow Highway Facility

9. Generally describe the current zoning and land uses of the subject property and surrounding properties:

Subject Property	Vacant	Zoning	Rezone to M-2 in progress
North	General Commercial	Zoning	B3
South	Agricultural and Residential	Zoning	AR
East	Institutional	Zoning	INT
West	General Industrial	Zoning	M2

Required Attachments

Attach a written statement of the proposed conditional use describing the type of activities, buildings, and structures proposed for the subject property and their general locations.

Attach a site plan of the subject property, with any alterations as may be proposed to accommodate the conditional use.

Attach a written justification for the proposed conditional use consisting of the reasons why the applicant believes the proposed conditional use is appropriate, particularly as evidenced by compliance with the approval criteria:

- Is the proposed conditional use in harmony with the Comprehensive Plan, this chapter, and any other plan, program, or ordinance adopted by the Village?
- The proposed conditional use does not, in its proposed location and as depicted on the required site plan, result in a substantial or undue adverse impact on nearby property, the character of the neighborhood, environmental factors, traffic factors, parking, public improvement, public property or rights-of-way, or other matters affecting the public health, safety, or general welfare, either as they now exist or as they may in the future be developed as a result of the implementation of the provisions of this chapter, the Comprehensive Plan, or other plan, program, map or ordinance adopted by the Village?
- Does the proposed conditional use maintain the desired consistency of land uses, land use intensities, and land use impacts as related to the environs of the subject property?
- Is the proposed conditional use located in an area that will be adequately served by, and will not impose an undue burden on, any of the improvements, facilities, utilities, or services provided by public agencies serving the subject property?
- Dose the potential public benefits of the proposed conditional use outweigh potential adverse impacts of the proposed conditionals use, after taking into consideration the applicant's proposal and any requirements recommended by the applicant to ameliorate such impacts?

Applicant Acknowledgement

To the best of my knowledge, I certify that the information provided on this application and accompanying documents are true and accurate. I also understand that submitting this application authorizes the Zoning Administrator or his/her designee to enter onto the property for the purposed outlined operation.

Troy Torgerson — 7/22/2026

Applicant — Date

Marathon County — 7/22/2026

Owner — Date

Excel Engineering Inc — 07/22/26

Prepared By — Date

FOR OFFICE USE ONLY:

Application Received _____ Check #_____

Plan Commission:

Meeting Date_____ Recommendation: Approved / Denied

Renewal Recommendation: 1 year 2 year 3 year 4 year 5 year

Conditions (see attached)

Village of Kronenwetter Site Address Application

Date: 07/24/26 **Applicant Name**: Marathon County **Phone**: 715-261-6980

troy.torgerson@marathoncounty.gov

Owner Name (if different): _____ **Email**: grant.duchac@excelengineer.com * for notification of new address

Mailing Address (to send property address): 1100 Lakeview Drive, **City**: Wausau **ST**: WI **Zip**: 54403

Current Pin ID#'s -
CSM in progress to combine
14527070220958; 14527070220957; 14527070220968; 14527070220969;
14527070220973; 14527070220975; 14527070220971; 14527070220970

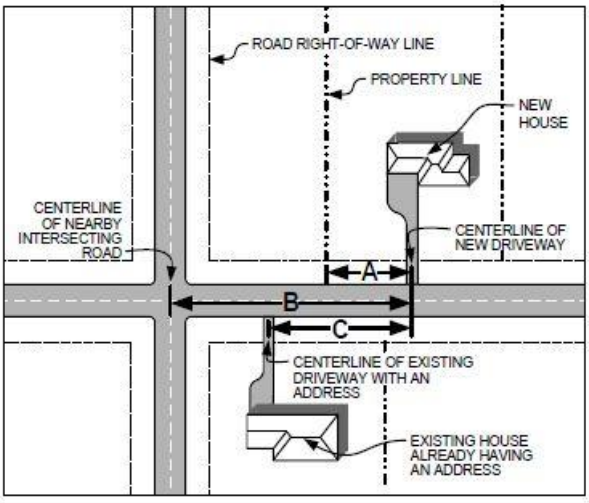
Pin ID # (from tax statement, 3 digits, 4 digits, 3 digits, 4 digits): __ __ __ – __ __ __ __ – __ __ __ – __ __ __ __ *required field*

The drawing to the right illustrates three types of measurements, **any one of which is a measurement that** can be used to assign a new address.

"**A**" is the measurement from the centerline of a new driveway to a property line on the property.

"**B**" is the measurement from the centerline of a new driveway to the centerline of a nearby intersecting road.

"**C**" is the measurement from the centerline of a new driveway to the centerline of the driveway of an existing residence (or other structure) that already has an assigned address.



Please read carefully.

INACCURATE INFORMATION MAY RESULT IN SITE ADDRESS CHANGES.

Applicant must submit a **detailed drawing showing proposed /present driveway and building location, if applicable, in relation to A, B, or C. Include actual distances (not guesses) from property lines, road intersection, or the closest neighbor's driveway which is addressed. The more accurate the provided information the easier and quicker it will be to provide you with an accurate site address. Applicants may use the reverse of this page to create a **scaled plan**. Parcel mapping and aerial photographs are available at Conservation, Planning and Zoning Department or on the County on-line mapping webpage:

Road Name that the new/existing driveway will access: Old Hwy 51

A. The driveway is 338 feet from the (check one) (North) South East West property line.

B. The driveway is 1036 feet from intersection of Gate of Heaven Dr. Road Name

C. Driveway location for new address is 893 Feet (check one) North (South) East West of Address 2400 Located on Old Hwy 51 Road Name

OFFICE USE ONLY:

New Property Address: _____

City _____ State _____ ZIP _____

Issued By: _____ Date _____

EXCEL
ARCHITECTS • ENGINEERS • SURVEYORS

100 Camelot Drive Fond du Lac, WI 54935
Office: 920.926.9800 Fax: 920.926.9801
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LETTER OF TRANSMITTAL

Village of Kronenwetter
1582 Kronenwetter Dr
Kronenwetter, WI 54455

JOB NUMBER: 250008600 July 24, 2026
ATTN: James Davel - jdavel@kronenwetter.gov
Greg Ulman - gulman@kronenwetter.gov
REGARDING: Marathon County New Highway Garage
CUP, SPR & Erosion Control Submittal

WE ARE SENDING YOU THE ATTACHED

VIA:	FORMAT	ELECTRONIC FILES
☐ Mail ☒ Next Day UPS	☐ 8 ½ x 11 Plans	☐ .dwg Autocad
☐ Website	☒ 11 x 17 Plans	☐ .rvt Revit
☒ Email ☐ DELIVERED	☐ Half size Plans	☒ .pdf files
☐ UPS ☐ PICKED UP	☒ Full size Plans	☐ Other
	☐ Zip Drive/CD	

COPIES	DATE	FORMAT	DESCRIPTION
1			CUP Application
1			SPR Application
1			Erosion Control Application
1			Site Address Application
1	07/23/26	102550	$1,350 Fee ($1,000 SPR + $350 CUP) payable to Village of Kronenwetter
1	07/23/26	102551	$500 Erosion Control Fee payable to Village of Kronenwetter
1			Project Narrative
1		11x17	Small Location Map
1			Sealed SWM Report
1		FULL	Sealed Civil Plans (C0.1-C3.2), Floor Plan, Elevations
1		11x17	Sealed Civil Plans (C0.1-C3.2), Floor Plan, Elevations
1		11x17	Site Address Map

THESE ARE TRANSMITTED as checked below:

☒ For approval ☐ FOR BIDS DUE ON ☐ Returned for corrections
☐ For your use ☐ Approved as submitted ☐ For review and comment
☐ As requested ☐ Approved as noted

REMARKS: Please accept the enclosed submittal documents for the Plan Commission meeting on August 17th. Please advise if this request also requires Village Board approval. Please contact me with any questions and if you require any additional information at this time. Thank you.

SIGNED: _____
Grant Duchac, P.E., Project Manager – Civil

COPY TO :
Troy Torgerson – Marathon County
Ned Derksen, Bryan Chacon, Katie De Marco, Adam Drazkowski, Lisa Van Handel – Excel

WE ARE SENDING YOU:

☒ Same as above	☐ LOT Only	☐ Other		
		VIA: ☐ Fax ☐ Next Day UPS a.m. ☐ MAIL ☐ Next Day UPS p.m. ☒ Email ☐ DELIVERED ☐ UPS ☐ PICKED UP	**FORMAT** ☐ 8 ½ x 11 Plans ☐ 11 x 17 Plans ☐ Half size Plans ☐ Full size Plans ☐ Zip Drive/CD	**ELECTRONIC FILES** ☐ .dwg Autocad ☐ .rvt Revit ☒ .pdf files ☐ Other



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PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:

MARATHON COUNTY HIGHWAY COMMISSION

OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

PRELIMINARY DATES
JULY 23, 2026

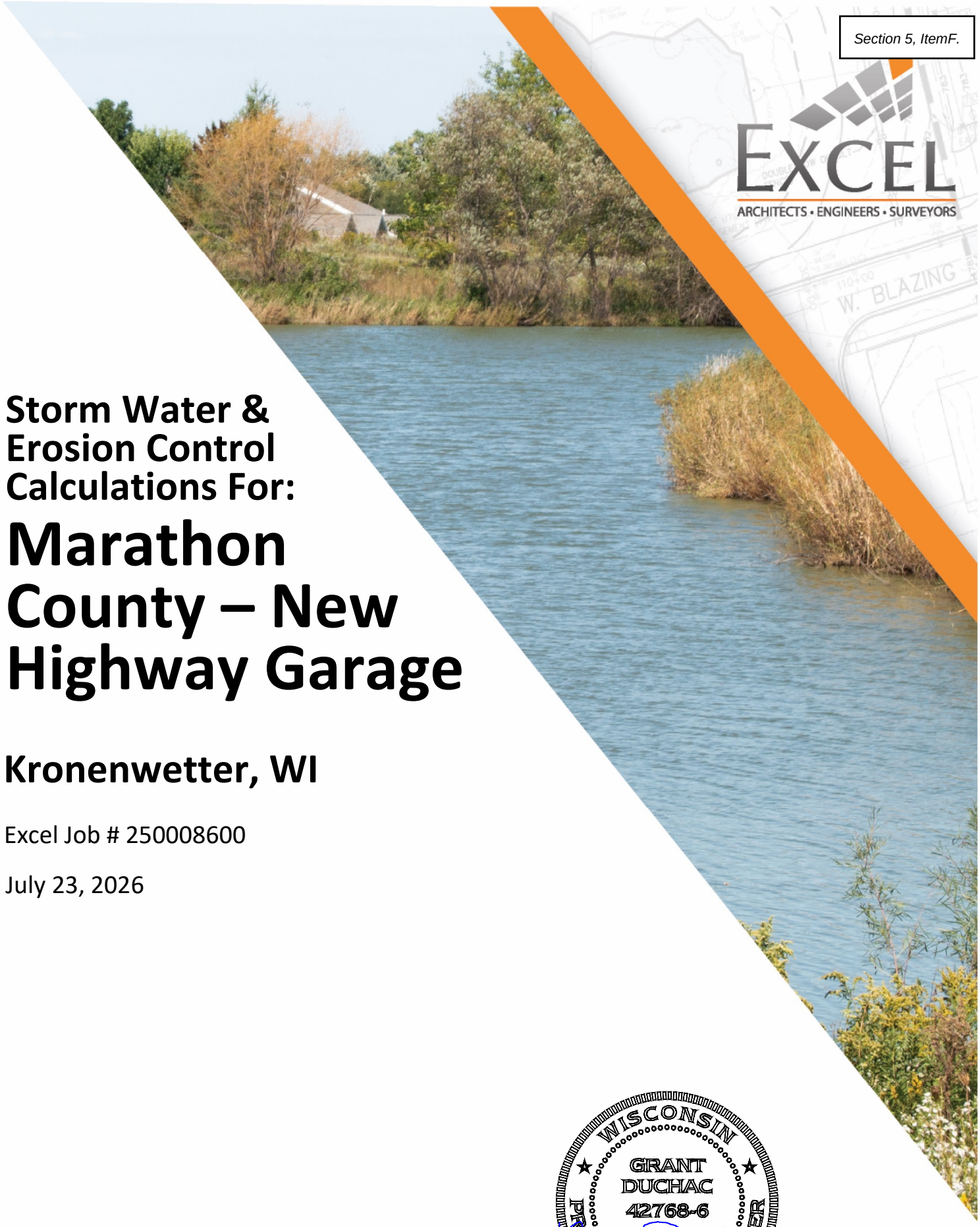
NOT FOR CONSTRUCTION

JOB NUMBER
250008600

SHEET NUMBER
Address

SCALE: 1"= 100'
100' 0 100' 200'
NORTH

SITE ADDRESS EXHIBIT



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Storm Water & Erosion Control Calculations For:

Marathon County – New Highway Garage

Kronenwetter, WI

Excel Job # 250008600

July 23, 2026

WISCONSIN
GRANT DUCHAC
42768-6
FOND DU LAC WISCONSIN
PROFESSIONAL ENGINEER

07/24/2026

Grant Duchac, P.E.
100 Camelot Drive • Fond du Lac, WI 54935
920-926-9800 • www.excelengineer.com

Table of Contents

0.1 Existing Conditions ____ 3
0.2 Proposed Project Overview ____ 3
1.0 Design Criteria ____ 4
1.1 Soils ____ 4
1.2 Rainfall Data ____ 4
2.0 Stormwater Management Requirements ____ 5
2.1 Peak Discharge ____ 5
2.2 Stormwater Quality ____ 6
2.3 Infiltration ____ 8
3.0 Storm Sewer Design ____ 9
3.1 Emergency Overflow Route ____ 9
4.0 Erosion Control ____ 9
5.0 Floodplain Compensation ____ 9

Appendices

Appendix A: Pre-Development Basin Area(s)
Appendix B: Post Development Basin Area(s)
Appendix C: Peak Discharge Calculations
Appendix D: Web Soil Survey Map
Appendix E: Geotechnical Report & Stormwater Soil Evaluation
Appendix F: Storm Sewer Basin Map
Appendix G: Storm Sewer TR-55 Calculations
Appendix H: Storm Sewer Manning's Spreadsheet
Appendix I: SLAMM Input/ Output Information
Appendix J: Flood Plain Compensation Calculations
Appendix K: USLE Map and Calculations
Appendix L: Post Construction Operation and Maintenance Plan

Introduction

0.1 Existing Conditions

The proposed development site is located on the east side of Old Highway 51 in the Village of Kronenwetter, Wisconsin. The project site is bordered by a parking lot owned by Wisconsin Public Service to the north, the improved rural asphalt roadway of Gate of Heaven Drive to the south, and the unimproved Gate of Heaven Drive right-of-way to the east, beyond which are wooded lands and a cemetery

Much of the project site consists of vacant open fields. The southernmost approximately 220 feet of the site was previously occupied by four single-family residential properties, and an additional single-family residence was located along Old Highway 51; all have recently been demolished by the property owner. Limited wooded areas remain along portions of the site perimeter, including along the northern and southern property boundaries.

The southern portion of the site is located within FEMA Flood Zone AE**,** as shown on the effective Flood Insurance Rate Map (FIRM) dated January 13, 2023. The Base Flood Elevation (BFE) for this portion of the site is 1,173.5 feet. Proposed development within this area will be designed to comply with all applicable floodplain regulations.

The majority of the relatively flat project site drains south toward shallow depressional areas, where runoff infiltrates into the native sandy soils. A portion of the site also drains west toward shallow depressions located along the Old Highway 51 right-of-way, where runoff similarly infiltrates into the native sandy soils. There are no defined roadside ditches along Gate of Heaven Drive, and only minimal ditch definition exists along Old Highway 51. Consequently, there is no defined drainage outfall from the site. As a result, runoff is retained on-site and infiltrates into the native sandy soils, with no existing surface drainage outlet from the property.

Existing site conditions are shown in Appendix A.

- Property Area: 25.25 acres

0.2 Proposed Project Overview

The proposed development will consist of three buildings and associated site improvements, including vehicle parking and maneuvering areas, vehicle staging areas, a truck scale, and a fueling area. Stormwater runoff from the proposed development will be directed to a proposed bioretention area located at the south end of the site.

Due to limited relief available for stormwater discharge from the site, the proposed stormwater management plan utilizes a large bioretention area to provide stormwater treatment, reduce peak runoff rates, and provide flood storage volume compensation. Proposed grassed swales

will provide pretreatment of runoff prior to discharge to the bioretention area. The bioretention area will satisfy applicable local and State of Wisconsin stormwater management requirements.

The proposed site can be seen in Appendix B.

- Disturbed Area: 25 acres

1.0 Design Criteria

1.1 Soils

Soil characteristics were determined using Web Soil Survey. See Table 1 for a summary of the soils and hydrologic ratings indicated by Web Soil Survey and Appendix D for the Web Soil Survey map.

Table 1: Web Soil Survey

MAP SYMBOL	SOIL TYPE	HYDROLOGIC RATING
3383B	Mahtomedi loamy sand	A

A total of forty-four (44) soil borings were completed across the project site. The borings encountered subsurface soils consisting primarily of fine sand with minimal silt content. The complete geotechnical investigation, including the boring logs, is provided in Appendix E.

1.2 Rainfall Data

NOAA Atlas 14, Village of Kronenwetter rainfall depths with a type II distribution were used for stormwater calculations.

Table 2: NOAA Atlas 14 24-hour Rainfall Depth

DESIGN STORM	RAINFALL DEPTH (INCHES)
1-YEAR	2.27
2-YEAR	2.60
10-YEAR	3.72
25-YEAR	4.49
100-YEAR	5.82

2.0 Stormwater Management Requirements

2.1 Peak Discharge

Village of Kronenwetter- Maintain or reduce the 1-yr, 2-yr, 10-yr, and 25-yr, 24-hour post development peak runoff discharge rates to the 1-yr, 2-yr, 10-yr, and 25-yr, 24-hour predevelopment peak runoff discharge rates respectively.

Wisconsin DNR- Maintain or reduce the 1-yr and 2-yr, 24-hour post development peak runoff discharge rates to the 1-yr and 2-yr, 24-hour predevelopment peak runoff discharge rates respectively.

Table 3: Maximum Predevelopment Curve Numbers

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

A large bioretention basin will be used to reduce peak flows to predevelopment flows.

Table 4: Runoff Summary

	PREDEVELOPMENT	POST DEVELOPMENT		
DESIGN STORM	Peak Discharge (cfs)	To Bioretention basin (cfs)	Bioretention Pond discharge (cfs)	Difference Post to Pre
1 YR-24 HR	0.00	36.34	0.00	-0.00
2 YR-24 HR	0.00	47.03	0.00	-0.00
10 YR-24HR	0.00	86.13	0.00	-0.00
25 YR-24HR	0.21	114.38	0.00	-0.21
100 YR-24HR	1.20	164.28	0.00	-1.20

Table 5: Bioretention Summary

DESIGN STORM	POND RELEASE RATE (CFS)	STORAGE VOLUME (C.F.)	MAXIMUM ELEVATION (FT)
1 YR-24 HR	0.00	26,852	1,164.72
2 YR-24 HR	0.00	37,976	1,165.00
10 YR-24 HR	0.00	82,515	1,165.97
25 YR-24 HR	0.00	117,464	1,166.62
100 YR-24HR	0.00	184,139	1,167.66

Table 6: 100yr-24hr storm Bioretention summary

POND	EMERGENCY SPILLWAY ELEVATION (FT)	CALCULATED POND ELEVATION (FT)	POND DISCHARGE IN (CFS)	DISCHARGE EXIT POINT
	1,172.10	1,167.66	0.00	Infiltration

Table 4 shows that post development release rates will be less than predevelopment release rates for all design storms. See the construction plans for pond design and Appendix C for peak discharge calculations.

Therefore, peak discharge requirements are met.

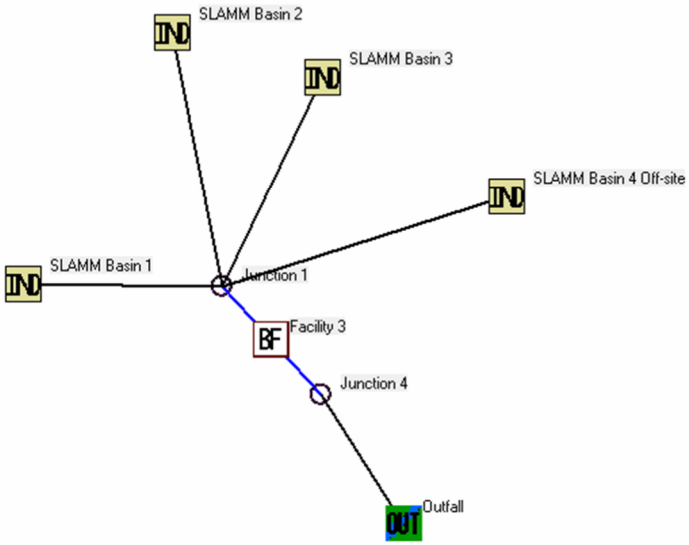
2.2 Stormwater Quality

Wisconsin DNR and Village of Kronenwetter- The site is considered a new development project and will be required to remove 80% of total suspended solids (TSS) from site runoff.

See Table 7 for a summary of stormwater quality requirements.

Table 7: Stormwater Quality Summary

TSS REMOVAL REQUIRED (LBS)	TSS REMOVAL PROVIDED (LBS)
5,426	6,783



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	804794		0.26	135.0	6783	
Outfall Total with Controls	0	100.00 %	0.00	0	0	100.00 %

Current File Output: Annualized Total After Outfall Controls: 0 Years in Model Run: 0.99 0

Pollutant	Concentration - No Controls	Concentration - With Controls	Concentration Units	Pollutant Yield - No Controls	Pollutant Yield - With Controls	Pollutant Yield Units	Percent Yield Reduction
Particulate Solids	135.0	0	mg/L	6783	0	lbs	100.00 %
Particulate Phosphorus	0.1650	0	mg/L	8.291	0	lbs	100.00 %

Print Output Summary to .csv File
Print Output Summary to Text File
Print Output Summary to Printer

Total Area Modeled (ac): 30.370

A biofilter will clog. Review biofilter control practice summary tab to determine which biofilter it is.

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	0.26	Poor
With Controls	0.00	Good

A bioretention basin will be used to treat stormwater drainage from the site. SLAMM analysis was used to determine the quantity of suspended solids that will be removed by the proposed bioretention area. The proposed site will create 6,783 lbs of TSS and the proposed bioretention basins will reduce TSS to 000.0 lbs, which results in an 100.00% reduction in TSS release.

Since the proposed bioretention basin removes 100% of suspended solids, the removal rate is greater than the required 80%.

Therefore, stormwater quality requirements have been met.

2.3 Infiltration

Village of Kronenwetter requirements- Infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 60% of the pre-development infiltration volume, based on an average annual rainfall. However, no more than 2% of the post-construction site is required as an effective infiltration area.

Wisconsin DNR requirements- Infiltrate sufficient runoff volume so that the post-development infiltration volume shall be at least 60% of the pre-development infiltration volume, based on an average annual rainfall. However, no more than 2% of the post-construction site is required as an effective infiltration area.

Site Proposed Infiltration – Although the proposed development is classified as a Type 2 Transportation Facility and stormwater infiltration from vehicle storage and loading areas would typically be prohibited under NR 151.124(3)(a)2, NR 151.124(3)(a)3, and Section 270-22.C.(3)(c)1.b of the Village of Kronenwetter Stormwater Management Ordinance, the site has no available surface drainage outlet. As a result, the proposed stormwater management plan utilizes grass swales as pretreatment to a large bioretention basin that will provide treatment of stormwater runoff prior to infiltration into the native sandy soils. This approach provides effective water quality treatment while preserving the site's existing hydrologic conditions and accommodating the lack of a feasible discharge location.

Area provided:
Grassed Biofiltration = 34,587 sf of surface area

The proposed development encompasses 1,103,518 square feet**,** resulting in a maximum required infiltration area of 22,070 square feet. Soil borings completed across the site consistently encountered fine sand with minimal silt content. Based on the Wisconsin DNR Evaluation for Infiltration Standard (1002), the site soils have an estimated infiltration rate of 3.60 in/hr**.**

Hydraulic modeling indicates that the maximum water surface elevation within the bioretention basin during the 100-year storm is Elevation 1,167.66 feet, occurring approximately 13.78 hours

into the event. This corresponds to a maximum ponding depth of 2.94 feet (35.3 inches) above the basin bottom. At an infiltration rate of 3.60 in/hr, this ponded depth would infiltrate in approximately 10 hours. Therefore, even under the 100-year storm event, the bioretention basin is expected to completely drain within 24 hours, satisfying the Wisconsin DNR maximum drawdown requirement.

Therefore, Infiltration requirements are met.

3.0 Storm Sewer Design

All storm sewer has been sized for the 100-yr 24-hour post development rainfall event.

See Appendix F, Appendix G, and Appendix H for pipe drainage areas and pipe sizing calculations.

3.1 Emergency Overflow Route

The ultimate emergency overflow route for the site is through a low point located on the south side of the bioretention basin to the right-of-way of Gate of Heaven Drive.

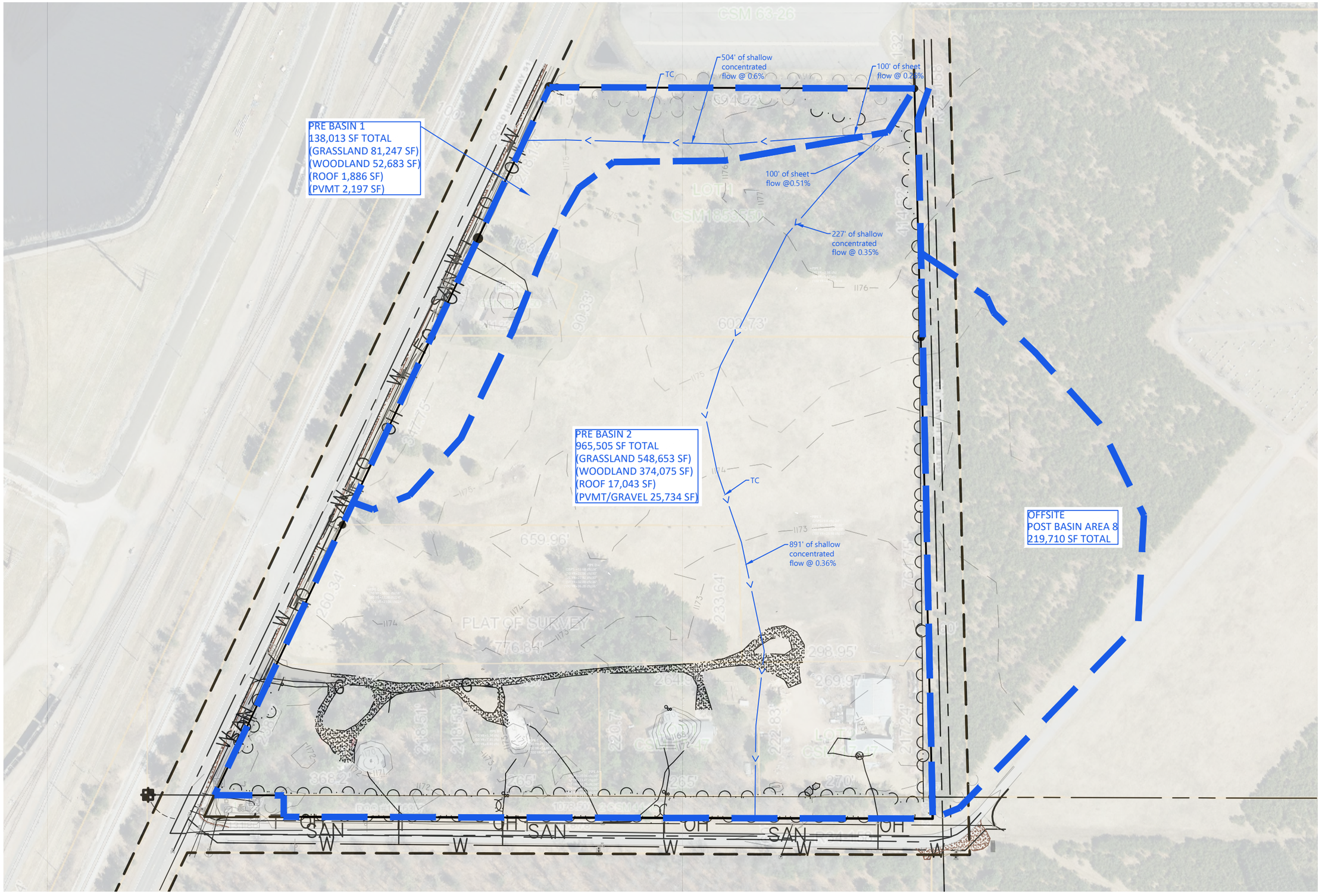
4.0 Erosion Control

The erosion control specifications, construction sequence, site stabilization notes, seeding notes, and dewatering notes will be included on sheet C0.2 of the construction plan set.

5.0 Floodplain Compensation

The calculations provided in Appendix J demonstrate that the post-development conditions will provide a greater volume of floodplain storage than exists under pre-development conditions per the village floodplain code. The calculated pre-developed on-site floodplain is 10,479 cu.yds. or 282,933 cu.ft. of storage between the Base Flood Elevation (BFE) of 1,173.5 feet and the existing ground elevations. Floodplain storage compensation will be provided within the proposed bioretention basin between the calculated 100-year water surface elevation and the Base Flood Elevation (BFE) of 1,173.5 feet. The available storage between the calculated 100-year water surface and the spillway elevation of 1,172.1 feet in the bioretention basin is 494,086 cu.ft., or 211,153 cu.ft. more than the existing on-site floodplain storage. This storage does not include additional storage above the spillway and additional floodplain storage compensation that is also provided within the proposed grassed drainage ditches that convey runoff to the bioretention basin. As a result, the proposed development will provide a net increase in floodplain storage, with no loss of flood storage capacity.

Appendix A: Pre-Development Basin Area(s)



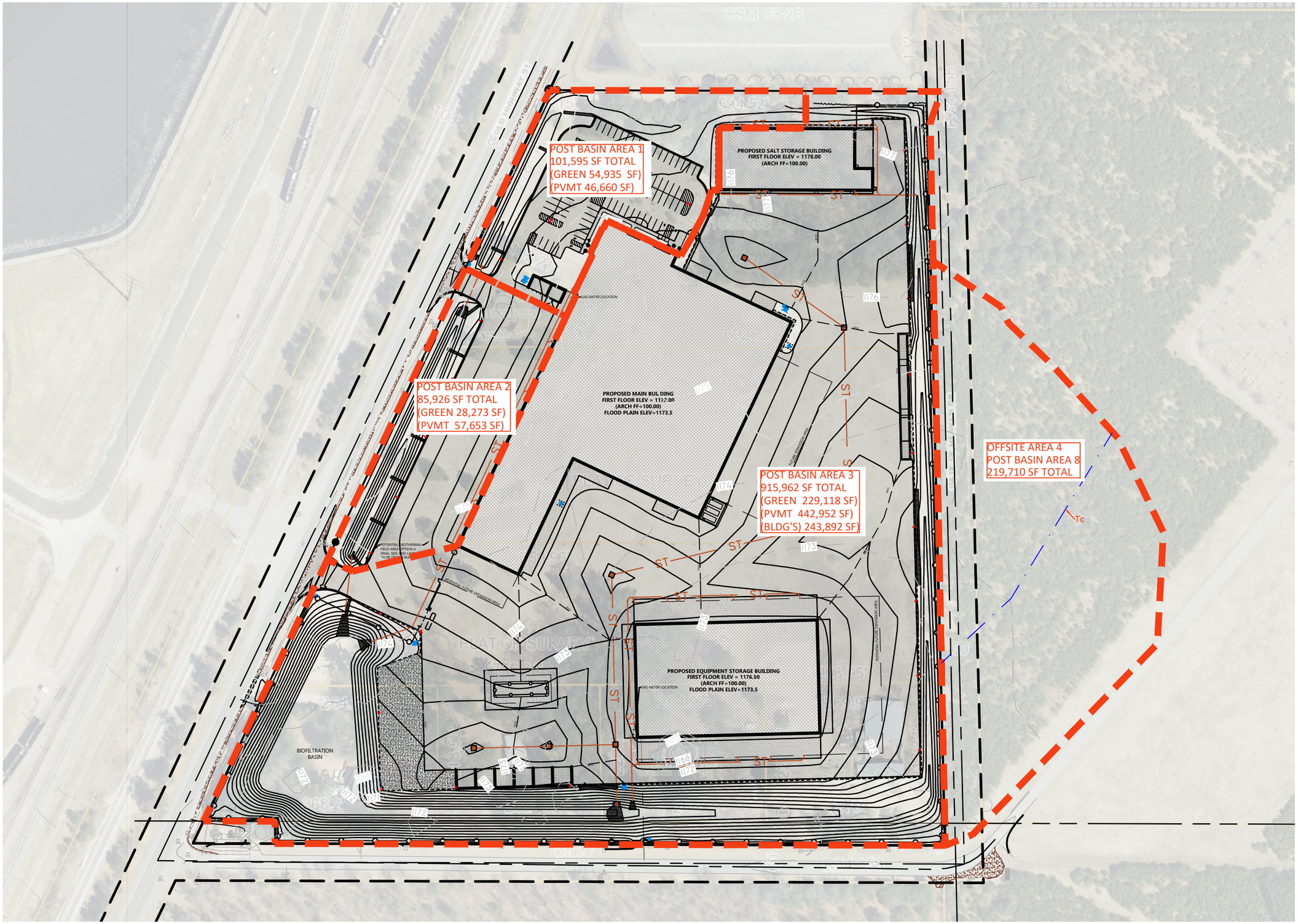
NORTH

SCALE: 1"= 150' (AT 11"X17" SHEET SIZE)

150' 0 150' 300'

PRE-DEVELOPMENT BASIN ARE

Appendix B: Post Development Basin Area(s)



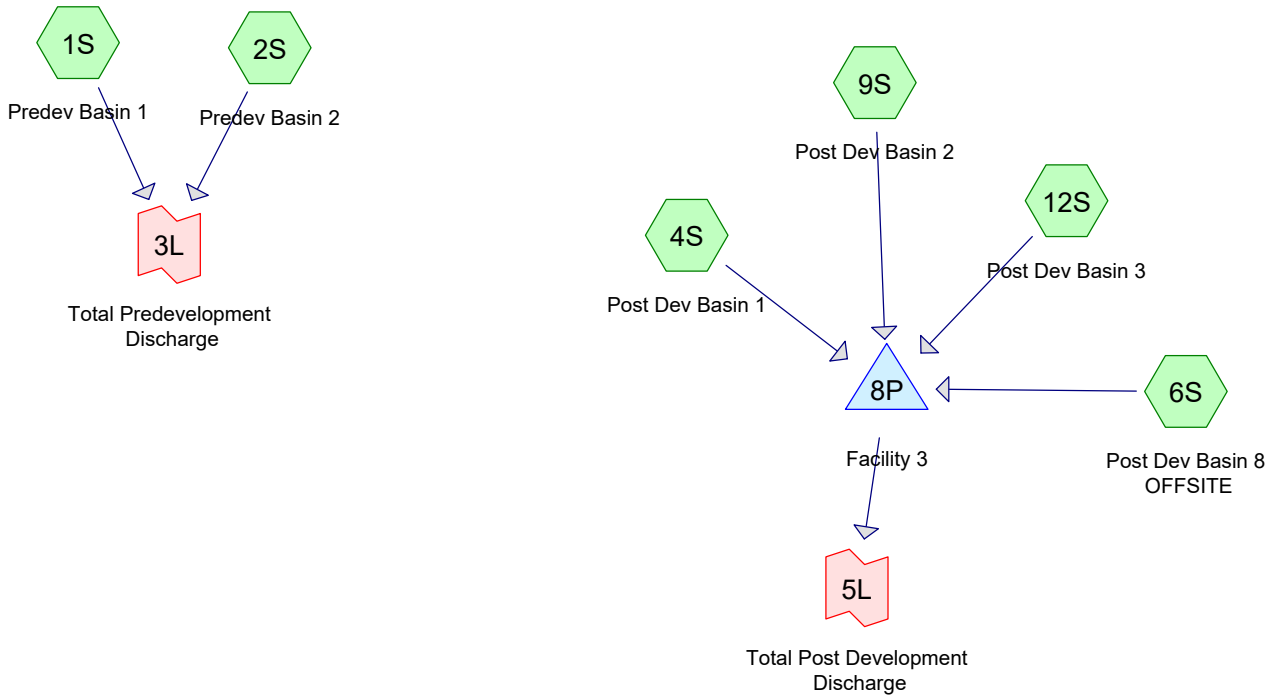
SCALE: 1"= 150' (AT 11"X17" SHEET SIZE)

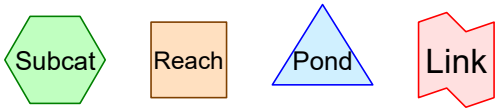
150' 0 150' 300'

NORTH

POST-DEVELOPMENT BASIN AREA

Appendix C: Peak Discharge Calculations





Routing Diagram for 250008600-Peak Discharge
Prepared by Excel Engineering, Printed 7/21/2026
HydroCAD® 10.20-8a s/n 01178 © 2025 HydroCAD Software Solutions LLC

Rainfall Events Listing

Event#	Event Name	Storm Type	Curve	Mode	Duration (hours)	B/B	Depth (inches)	AMC
1	1-yr	Type II 24-hr		Default	24.00	1	2.27	2
2	2-yr	Type II 24-hr		Default	24.00	1	2.60	2
3	10-yr	Type II 24-hr		Default	24.00	1	3.72	2
4	25-yr	Type II 24-hr		Default	24.00	1	4.49	2
5	100-yr	Type II 24-hr		Default	24.00	1	5.82	2

Area Listing (all nodes)

Area (acres)	CN	Description (subcatchment-numbers)
12.214	39	>75% Grass cover, Good, HSG A (4S, 6S, 9S, 12S)
0.591	98	Asphalt/Concrete Pavement (2S)
0.050	98	Driveway (1S)
14.461	39	Grassland (1S, 2S)
12.563	98	Pavement (4S, 9S, 12S)
0.435	98	Roofs (1S, 2S)
5.599	98	Unconnected roofs, HSG A (12S)
9.797	30	Woodland (1S, 2S)
55.710	**58**	**TOTAL AREA**

Soil Listing (all nodes)

Area (acres)	Soil Group	Subcatchment Numbers
17.813	HSG A	4S, 6S, 9S, 12S
0.000	HSG B	
0.000	HSG C	
0.000	HSG D	
37.897	Other	1S, 2S, 4S, 9S, 12S
55.710		**TOTAL AREA**

Summary for Subcatchment 1S: Predev Basin 1

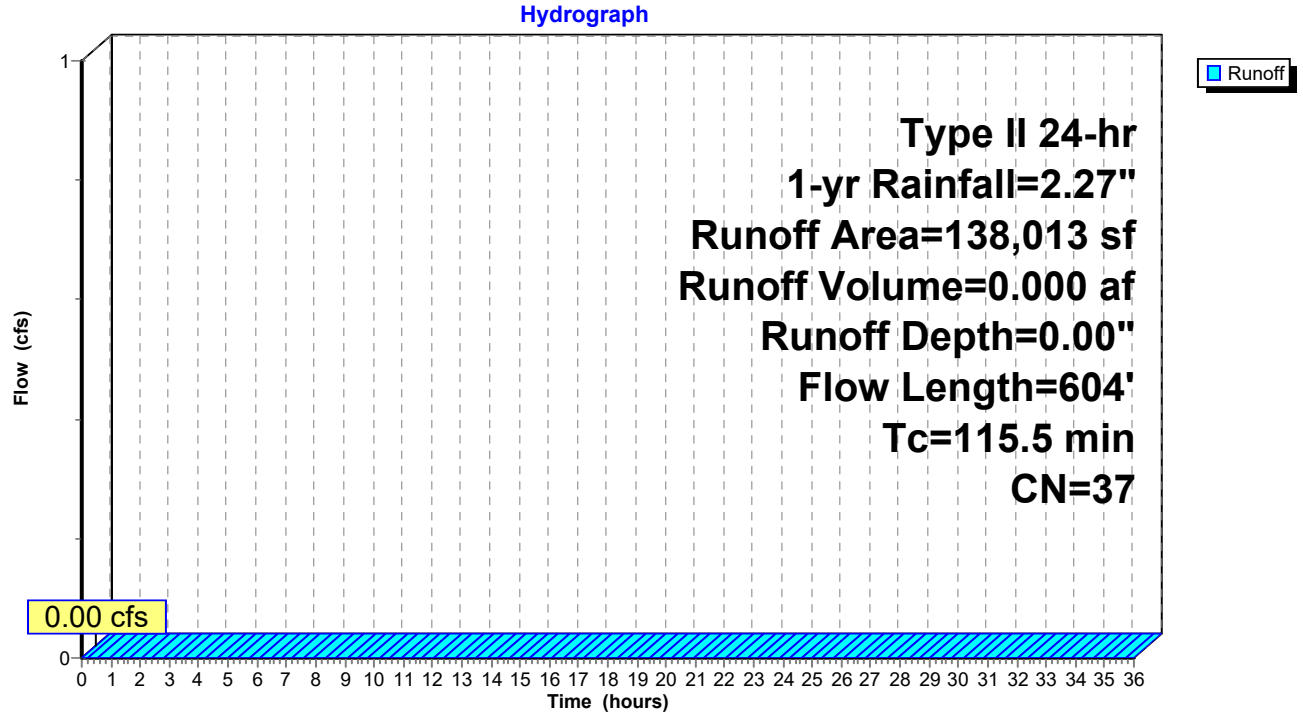
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 3L : Total Predevelopment Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.27"

	Area (sf)	CN	Description
*	81,247	39	Grassland
*	52,683	30	Woodland
*	1,886	98	Roofs
*	2,197	98	Driveway
	138,013	37	Weighted Average
	133,930		97.04% Pervious Area
	4,083		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
93.8	100	0.0026	0.02		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.60"
21.7	504	0.0060	0.39		**Shallow Concentrated Flow, Shallow Concentrated Flow** Woodland Kv= 5.0 fps
115.5	604	Total			

Subcatchment 1S: Predev Basin 1



Summary for Subcatchment 2S: Predev Basin 2

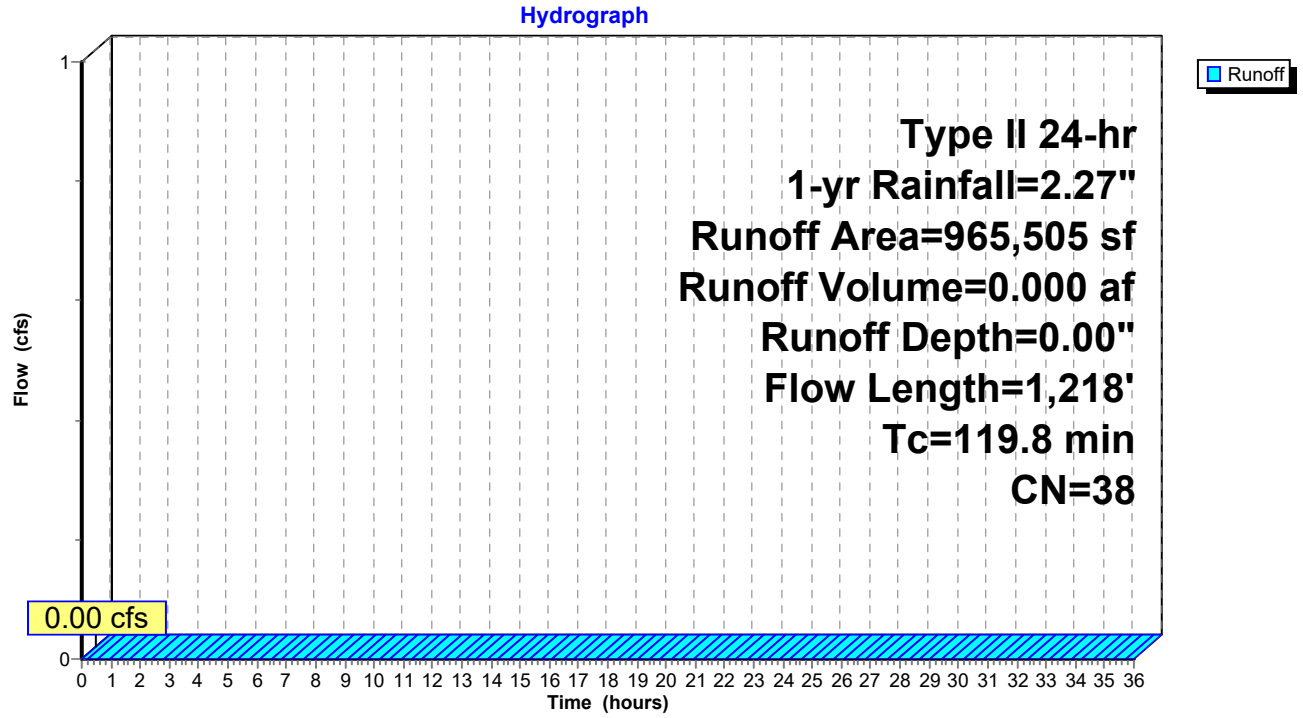
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 3L : Total Predevelopment Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.27"

	Area (sf)	CN	Description
*	374,075	30	Woodland
*	548,653	39	Grassland
*	17,043	98	Roofs
*	25,734	98	Asphalt/Concrete Pavement
	965,505	38	Weighted Average
	922,728		95.57% Pervious Area
	42,777		4.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.6	100	0.0051	0.02		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.60"
12.8	227	0.0035	0.30		**Shallow Concentrated Flow, Shallow Concentrated Flow - Wood** Woodland Kv= 5.0 fps
35.4	891	0.0036	0.42		**Shallow Concentrated Flow, Shallow Concentrated Flow - Grass** Short Grass Pasture Kv= 7.0 fps
119.8	1,218	Total			

Subcatchment 2S: Predev Basin 2



Summary for Subcatchment 4S: Post Dev Basin 1

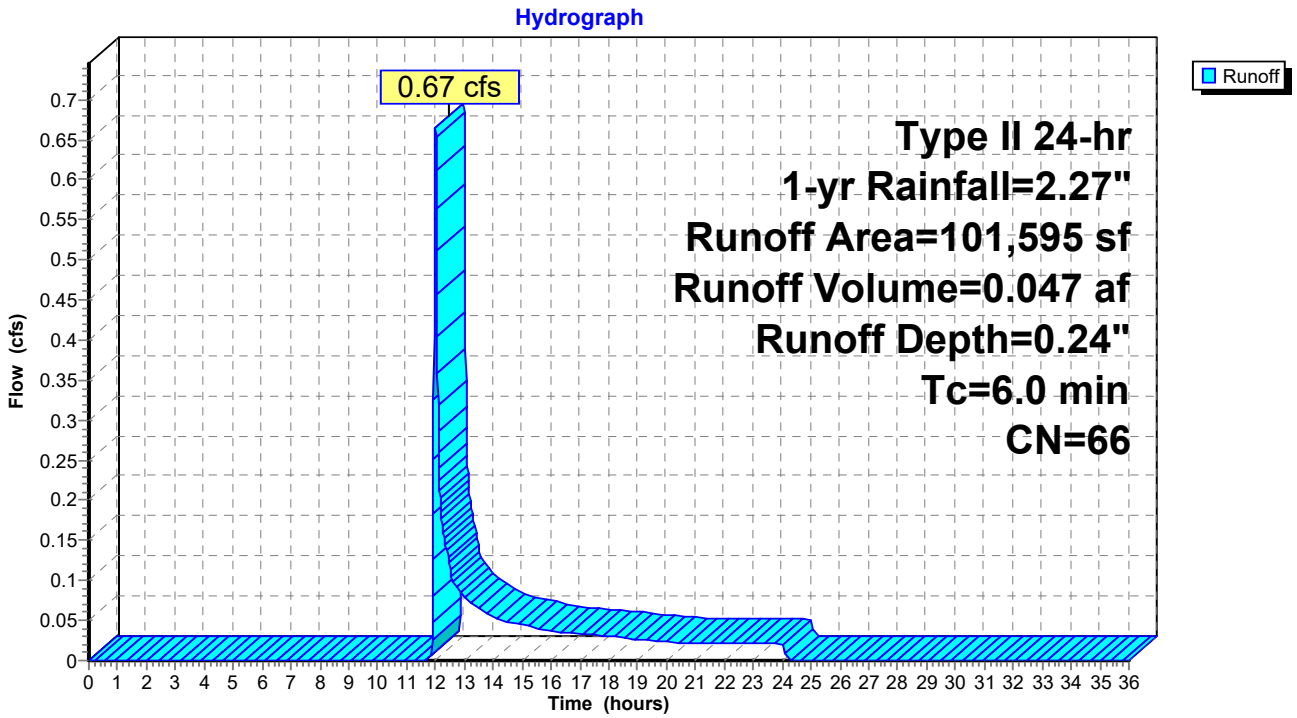
Runoff = 0.67 cfs @ 12.01 hrs, Volume= 0.047 af, Depth= 0.24"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.27"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	46,660	98	Pavement
	54,935	39	>75% Grass cover, Good, HSG A
	101,595	66	Weighted Average
	54,935		54.07% Pervious Area
	46,660		45.93% Impervious Area

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

Subcatchment 4S: Post Dev Basin 1



Summary for Subcatchment 6S: Post Dev Basin 8 OFFSITE

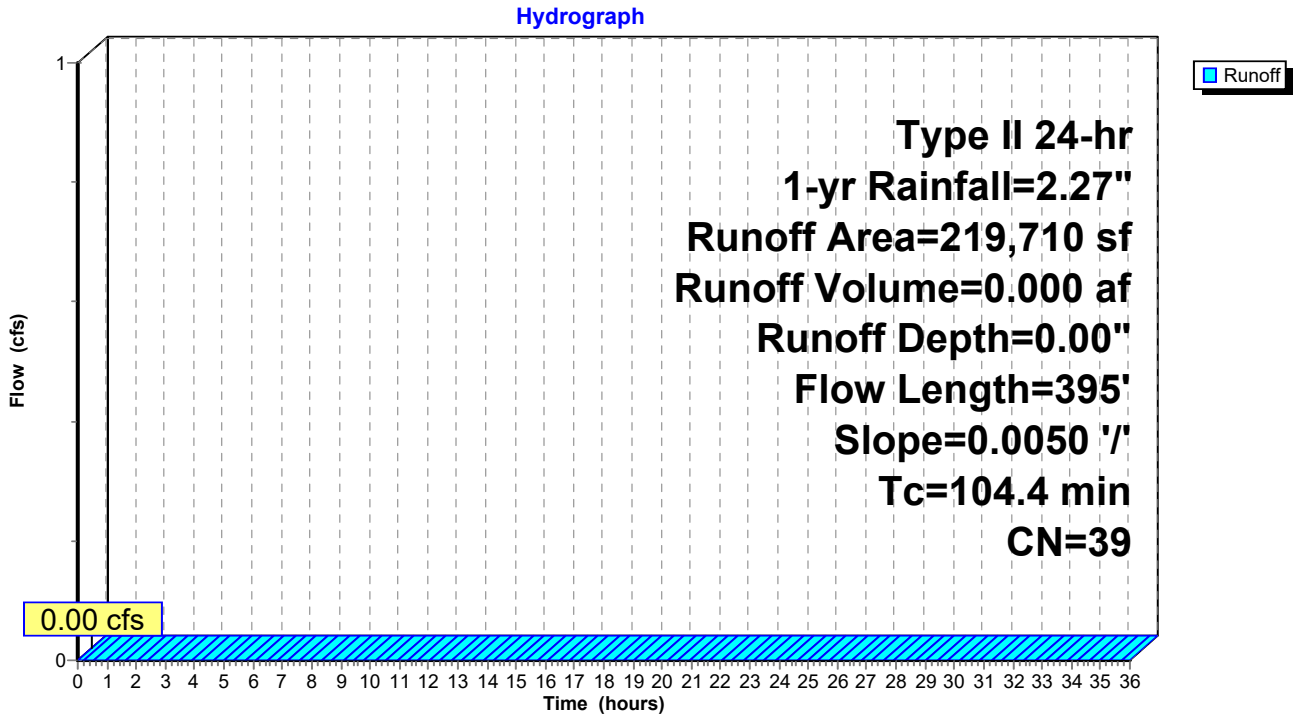
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.27"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	0	98	Pavement
	219,710	39	>75% Grass cover, Good, HSG A
	219,710	39	Weighted Average
	219,710		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
99.9	300	0.0050	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.60"
4.5	95	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
104.4	395	Total			

Subcatchment 6S: Post Dev Basin 8 OFFSITE



Summary for Subcatchment 9S: Post Dev Basin 2

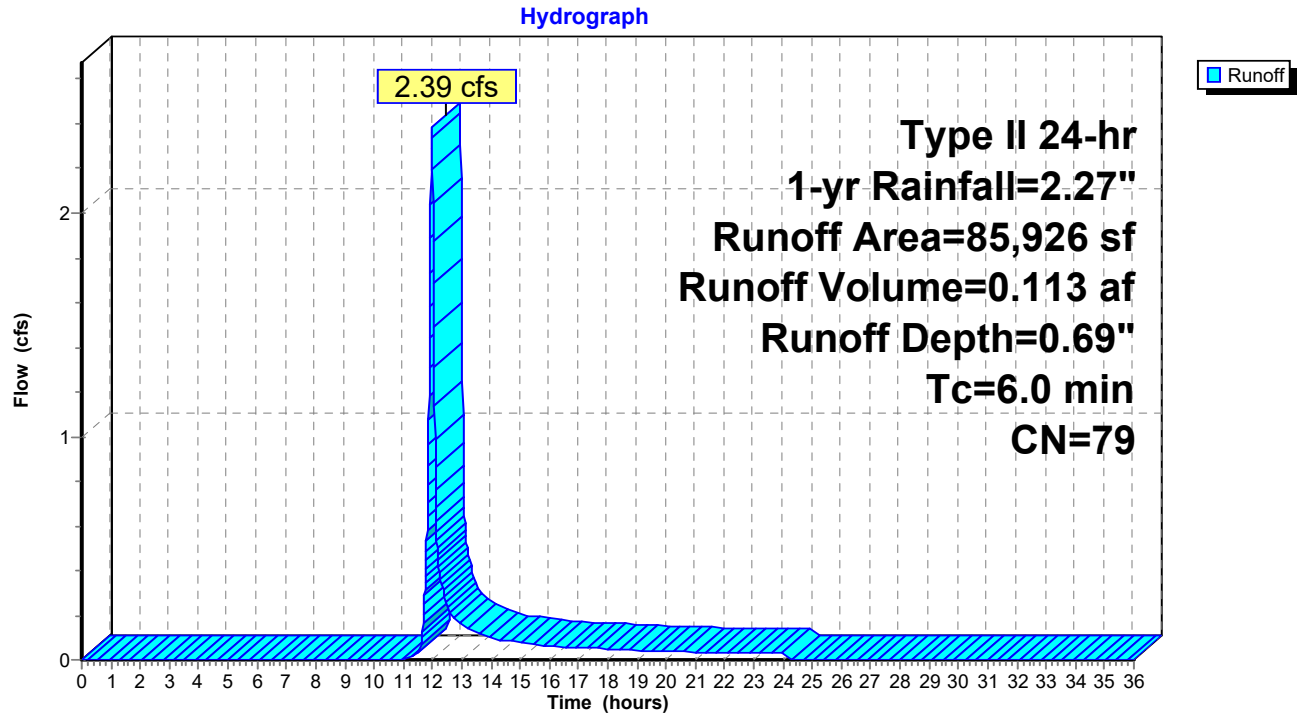
Runoff = 2.39 cfs @ 11.98 hrs, Volume= 0.113 af, Depth= 0.69"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.27"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	57,653	98	Pavement
	28,273	39	>75% Grass cover, Good, HSG A
*	0	96	Gravel
	85,926	79	Weighted Average
	28,273		32.90% Pervious Area
	57,653		67.10% Impervious Area

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

Subcatchment 9S: Post Dev Basin 2



Summary for Subcatchment 12S: Post Dev Basin 3

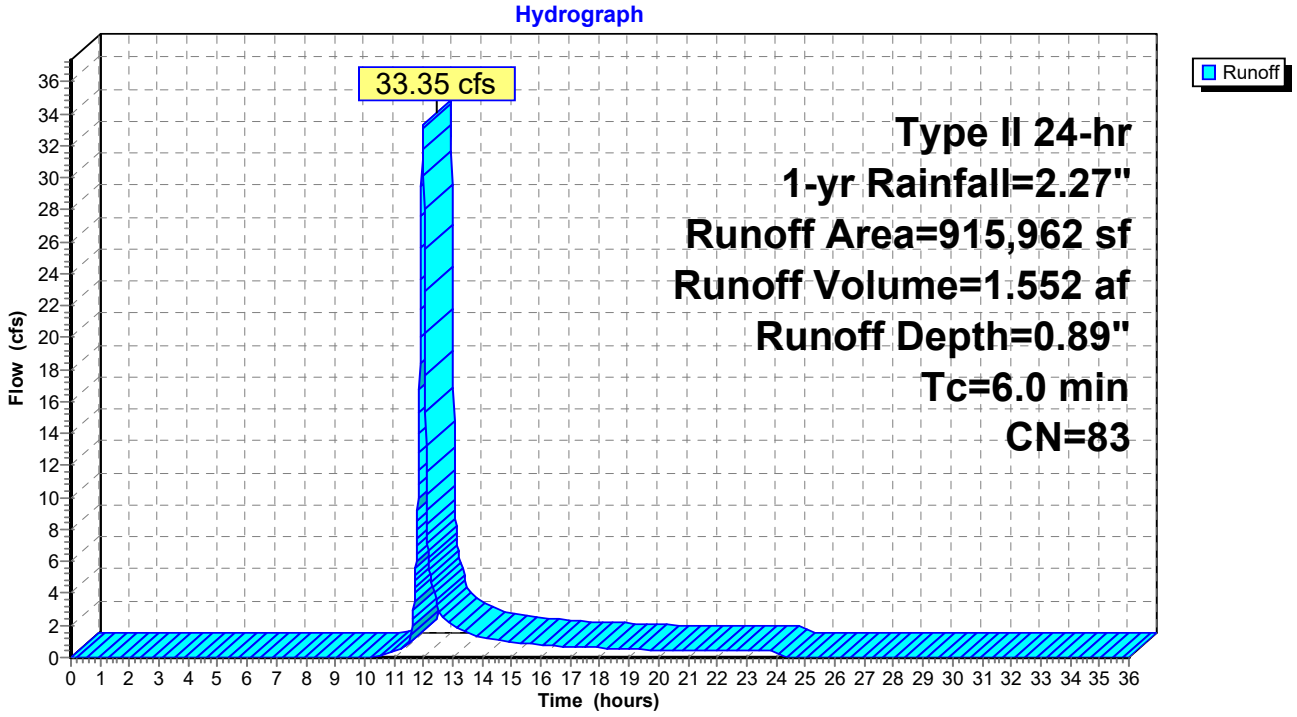
Runoff = 33.35 cfs @ 11.98 hrs, Volume= 1.552 af, Depth= 0.89"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 1-yr Rainfall=2.27"

	Area (sf)	CN	Description
	243,892	98	Unconnected roofs, HSG A
*	442,952	98	Pavement
	229,118	39	>75% Grass cover, Good, HSG A
*	0	96	Gravel
	915,962	83	Weighted Average
	229,118		25.01% Pervious Area
	686,844		74.99% Impervious Area
	243,892		35.51% Unconnected

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

Subcatchment 12S: Post Dev Basin 3



Summary for Pond 8P: Facility 3

Inflow Area = 30.376 ac, 59.79% Impervious, Inflow Depth = 0.68" for 1-yr event
Inflow = 36.34 cfs @ 11.98 hrs, Volume= 1.711 af
Outflow = 3.31 cfs @ 12.53 hrs, Volume= 1.711 af, Atten= 91%, Lag= 33.3 min
Discarded = 3.31 cfs @ 12.53 hrs, Volume= 1.711 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : Total Post Development Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,164.72' @ 12.53 hrs Surf.Area= 39,748 sf Storage= 26,852 cf

Plug-Flow detention time= 64.5 min calculated for 1.711 af (100% of inflow)
Center-of-Mass det. time= 64.5 min (915.0 - 850.5)

Volume	Invert	Avail.Storage	Storage Description
#1	1,164.00'	880,194 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

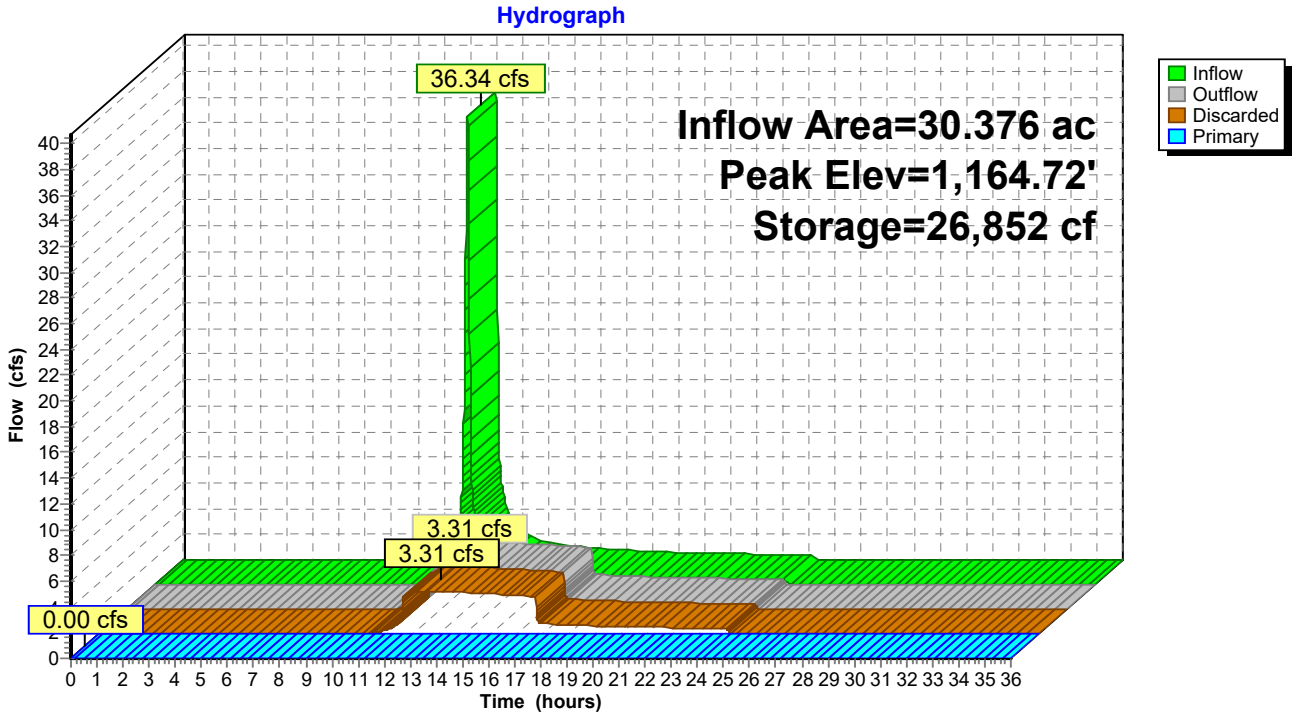
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,164.00	34,587	0	0
1,165.00	41,730	38,159	38,159
1,166.00	50,355	46,043	84,201
1,167.00	62,117	56,236	140,437
1,168.00	75,751	68,934	209,371
1,169.00	90,953	83,352	292,723
1,170.00	108,072	99,513	392,236
1,171.00	128,981	118,527	510,762
1,172.00	173,543	151,262	662,024
1,173.00	262,797	218,170	880,194

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,164.00'	**3.600 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	1,172.10'	**15.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=3.31 cfs @ 12.53 hrs HW=1,164.72' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 3.31 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,164.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: Facility 3

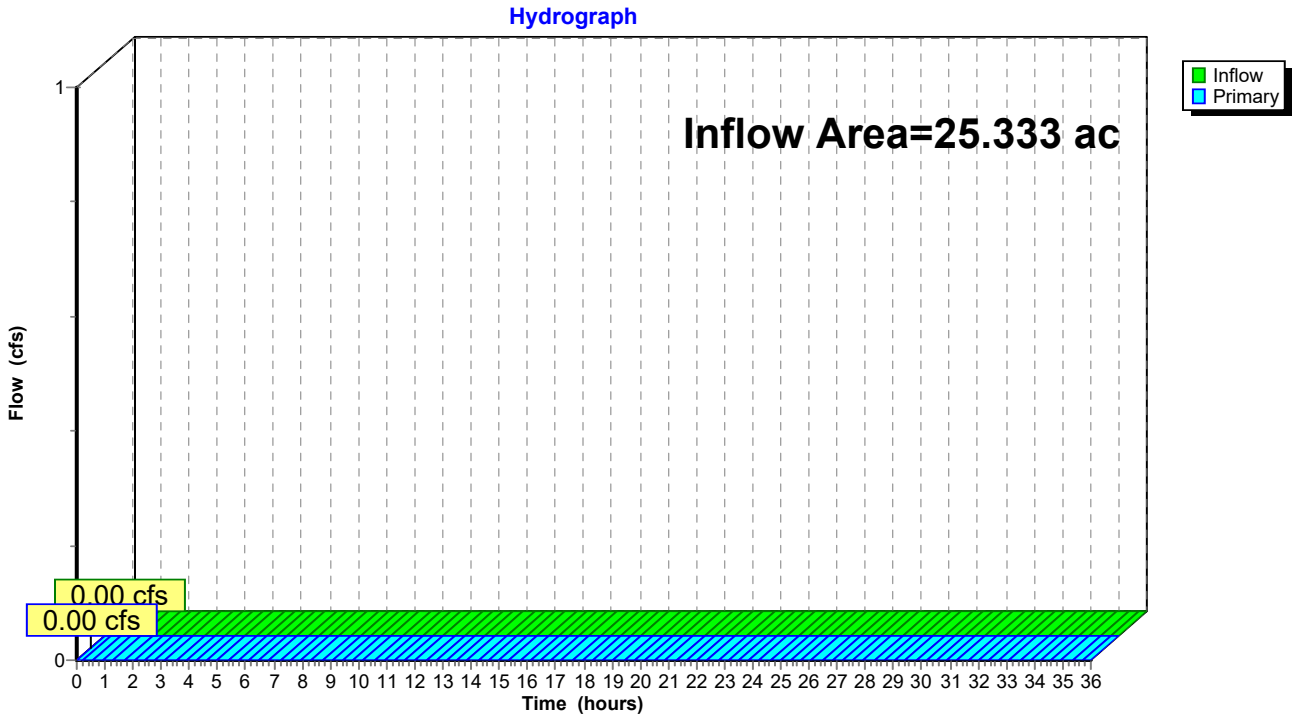


Summary for Link 3L: Total Predevelopment Discharge

Inflow Area = 25.333 ac, 4.25% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 3L: Total Predevelopment Discharge

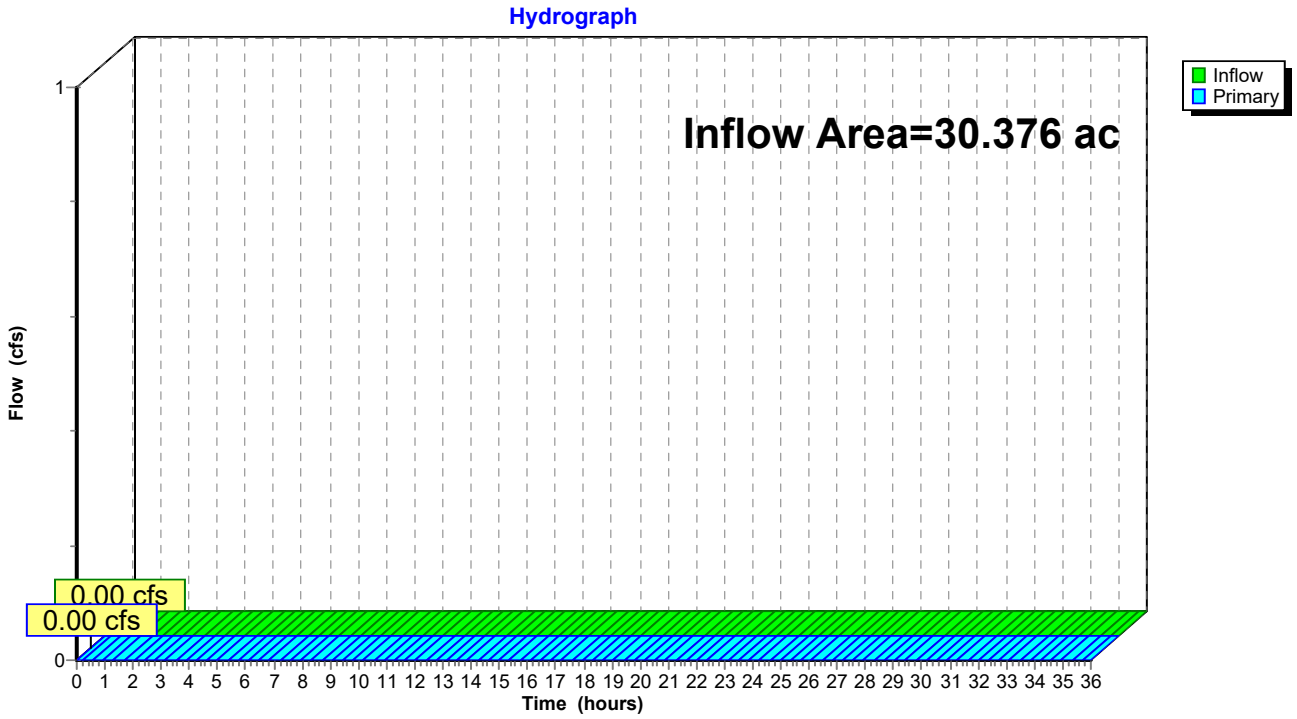


Summary for Link 5L: Total Post Development Discharge

Inflow Area = 30.376 ac, 59.79% Impervious, Inflow Depth = 0.00" for 1-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Total Post Development Discharge



Summary for Subcatchment 1S: Predev Basin 1

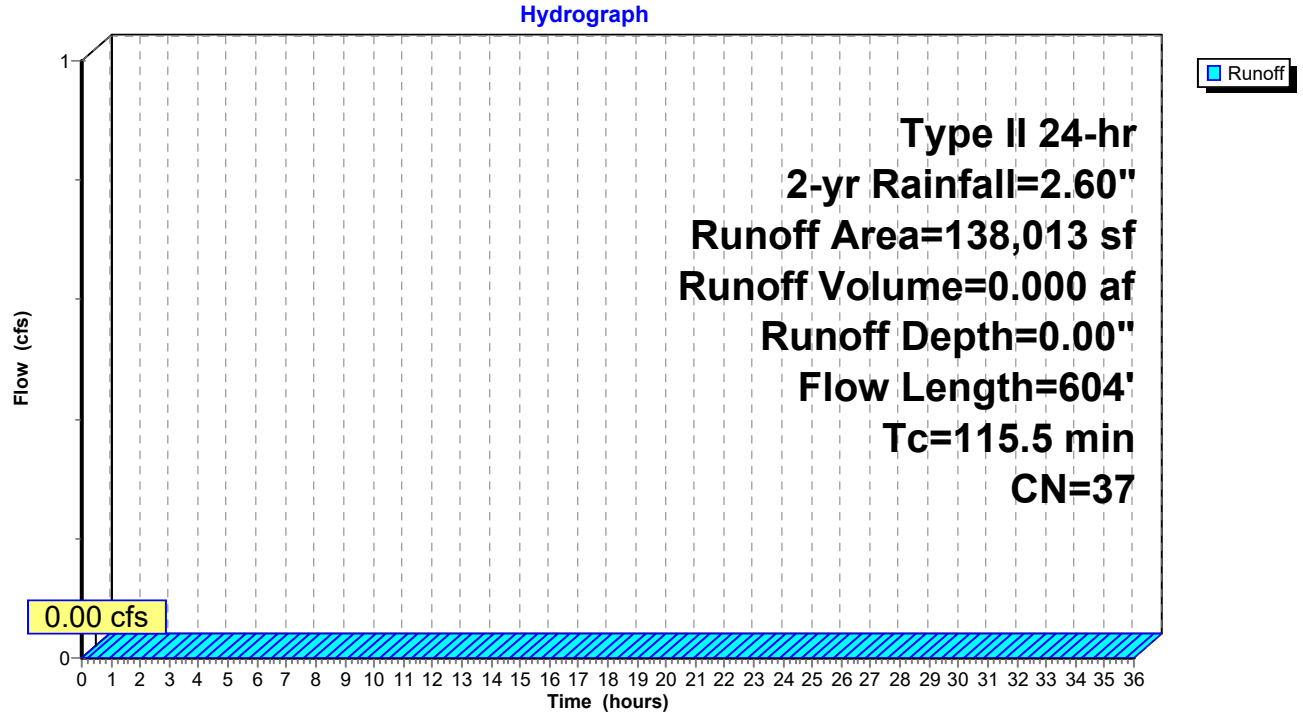
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 3L : Total Predevelopment Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.60"

	Area (sf)	CN	Description
*	81,247	39	Grassland
*	52,683	30	Woodland
*	1,886	98	Roofs
*	2,197	98	Driveway
	138,013	37	Weighted Average
	133,930		97.04% Pervious Area
	4,083		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
93.8	100	0.0026	0.02		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.60"
21.7	504	0.0060	0.39		**Shallow Concentrated Flow, Shallow Concentrated Flow** Woodland Kv= 5.0 fps
115.5	604	Total			

Subcatchment 1S: Predev Basin 1



Summary for Subcatchment 2S: Predev Basin 2

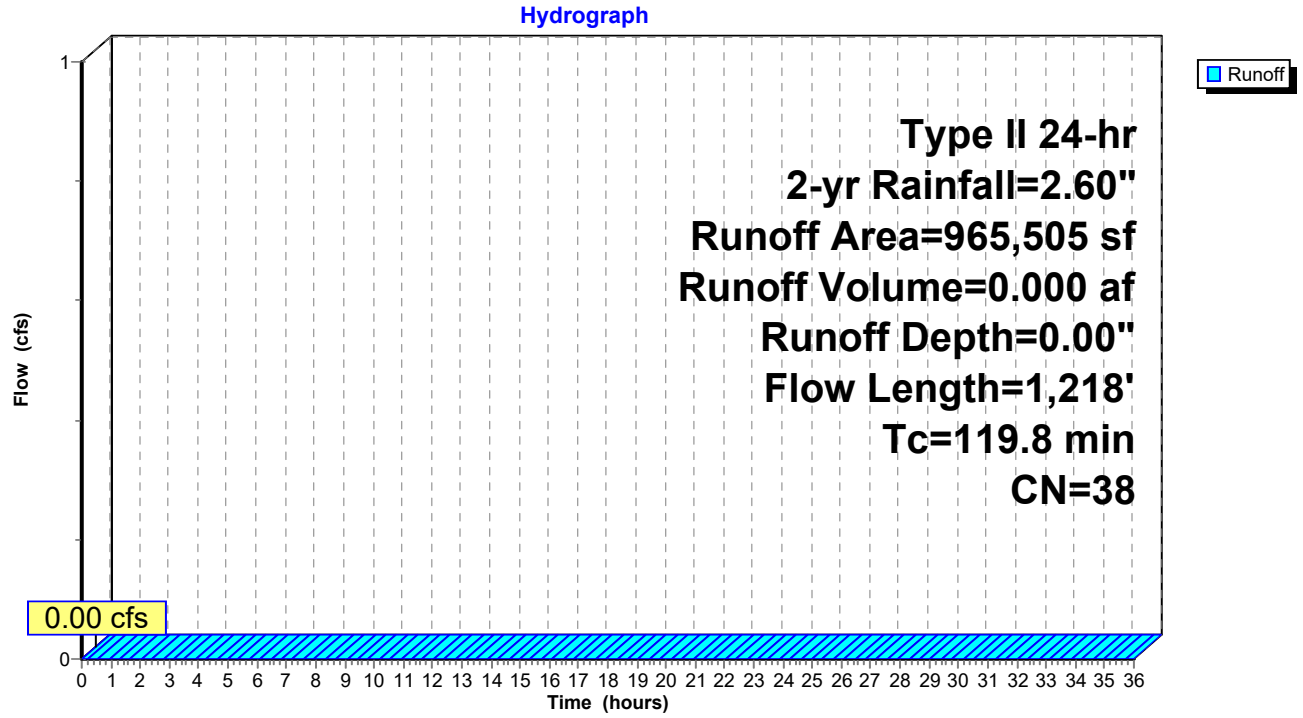
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Link 3L : Total Predevelopment Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.60"

	Area (sf)	CN	Description
*	374,075	30	Woodland
*	548,653	39	Grassland
*	17,043	98	Roofs
*	25,734	98	Asphalt/Concrete Pavement
	965,505	38	Weighted Average
	922,728		95.57% Pervious Area
	42,777		4.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.6	100	0.0051	0.02		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.60"
12.8	227	0.0035	0.30		**Shallow Concentrated Flow, Shallow Concentrated Flow - Wood** Woodland Kv= 5.0 fps
35.4	891	0.0036	0.42		**Shallow Concentrated Flow, Shallow Concentrated Flow - Grass** Short Grass Pasture Kv= 7.0 fps
119.8	1,218	Total			

Subcatchment 2S: Predev Basin 2



Summary for Subcatchment 4S: Post Dev Basin 1

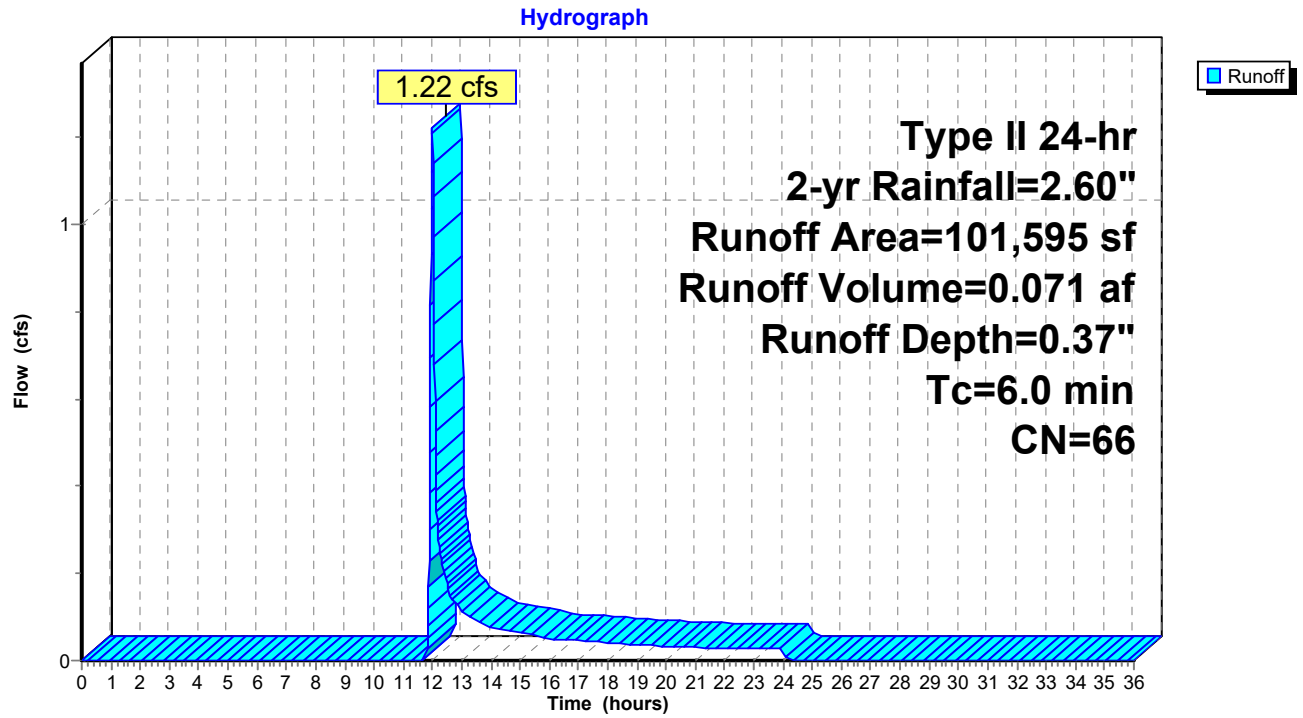
Runoff = 1.22 cfs @ 12.00 hrs, Volume= 0.071 af, Depth= 0.37"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.60"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	46,660	98	Pavement
	54,935	39	>75% Grass cover, Good, HSG A
	101,595	66	Weighted Average
	54,935		54.07% Pervious Area
	46,660		45.93% Impervious Area

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

Subcatchment 4S: Post Dev Basin 1



Summary for Subcatchment 6S: Post Dev Basin 8 OFFSITE

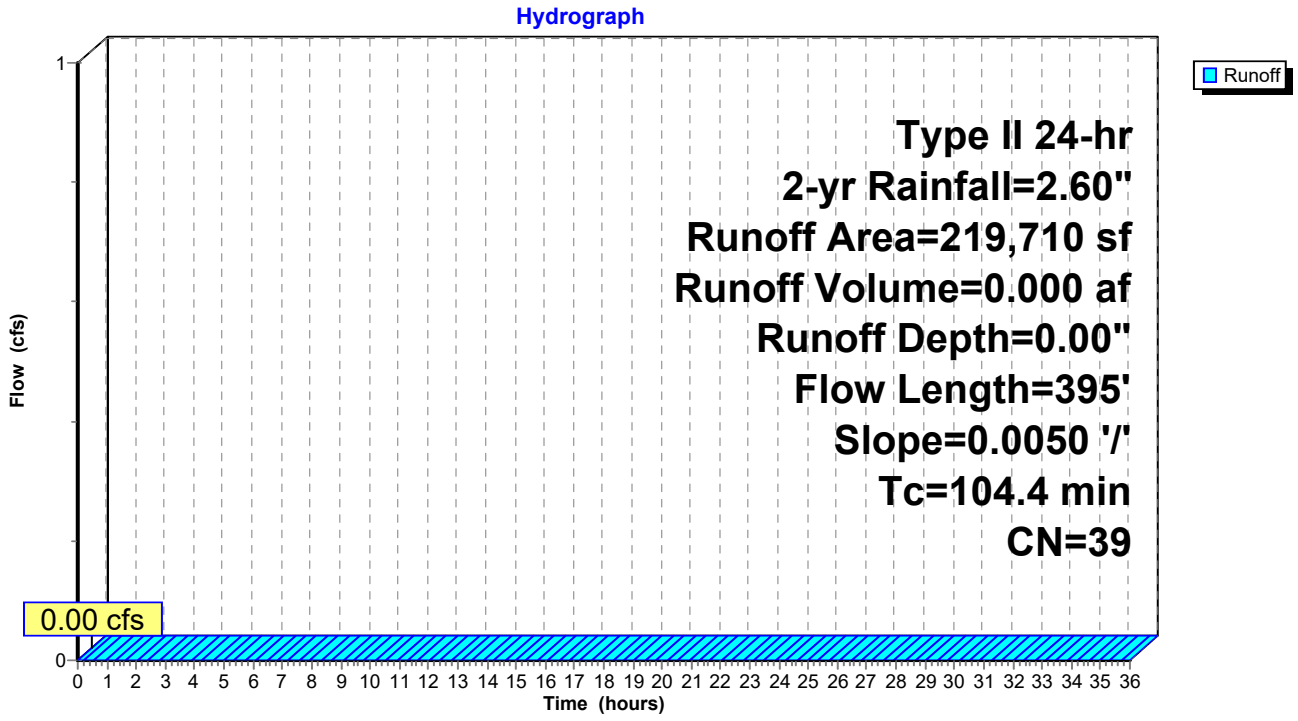
Runoff = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Depth= 0.00"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.60"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	0	98	Pavement
	219,710	39	>75% Grass cover, Good, HSG A
	219,710	39	Weighted Average
	219,710		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
99.9	300	0.0050	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.60"
4.5	95	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
104.4	395	Total			

Subcatchment 6S: Post Dev Basin 8 OFFSITE



Summary for Subcatchment 9S: Post Dev Basin 2

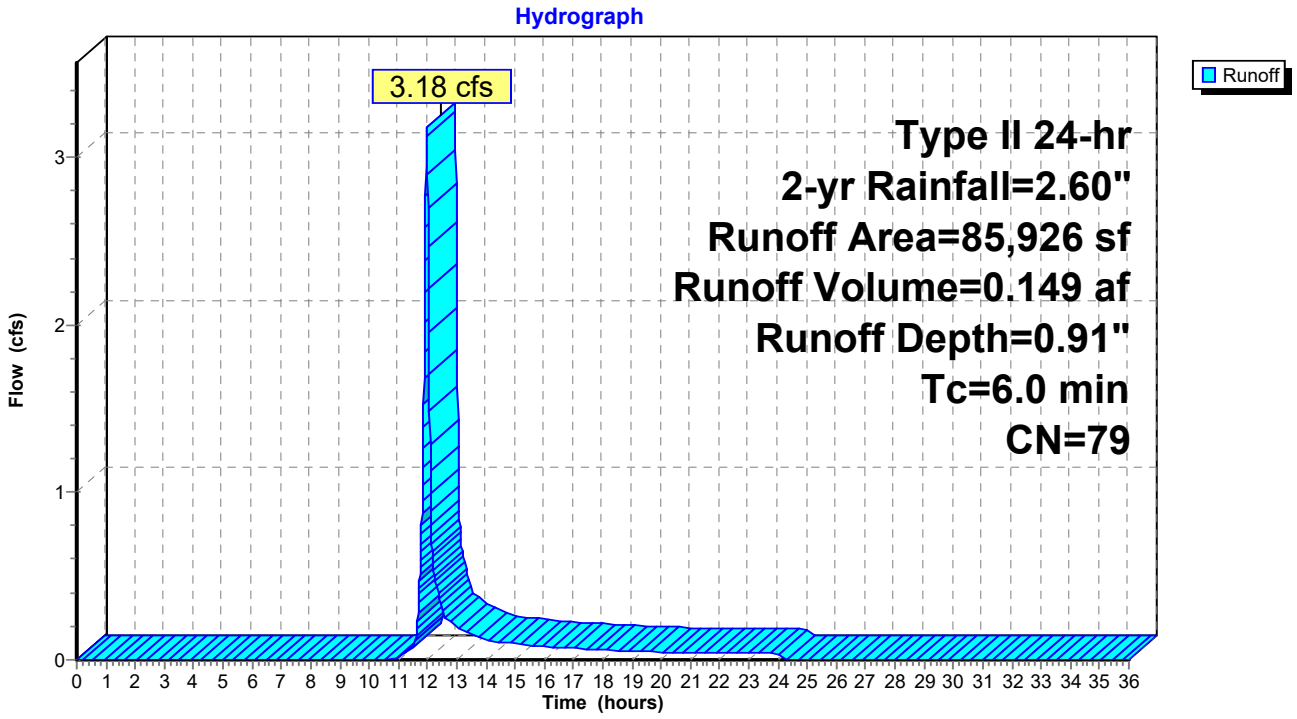
Runoff = 3.18 cfs @ 11.98 hrs, Volume= 0.149 af, Depth= 0.91"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.60"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	57,653	98	Pavement
	28,273	39	>75% Grass cover, Good, HSG A
*	0	96	Gravel
	85,926	79	Weighted Average
	28,273		32.90% Pervious Area
	57,653		67.10% Impervious Area

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

Subcatchment 9S: Post Dev Basin 2



Summary for Subcatchment 12S: Post Dev Basin 3

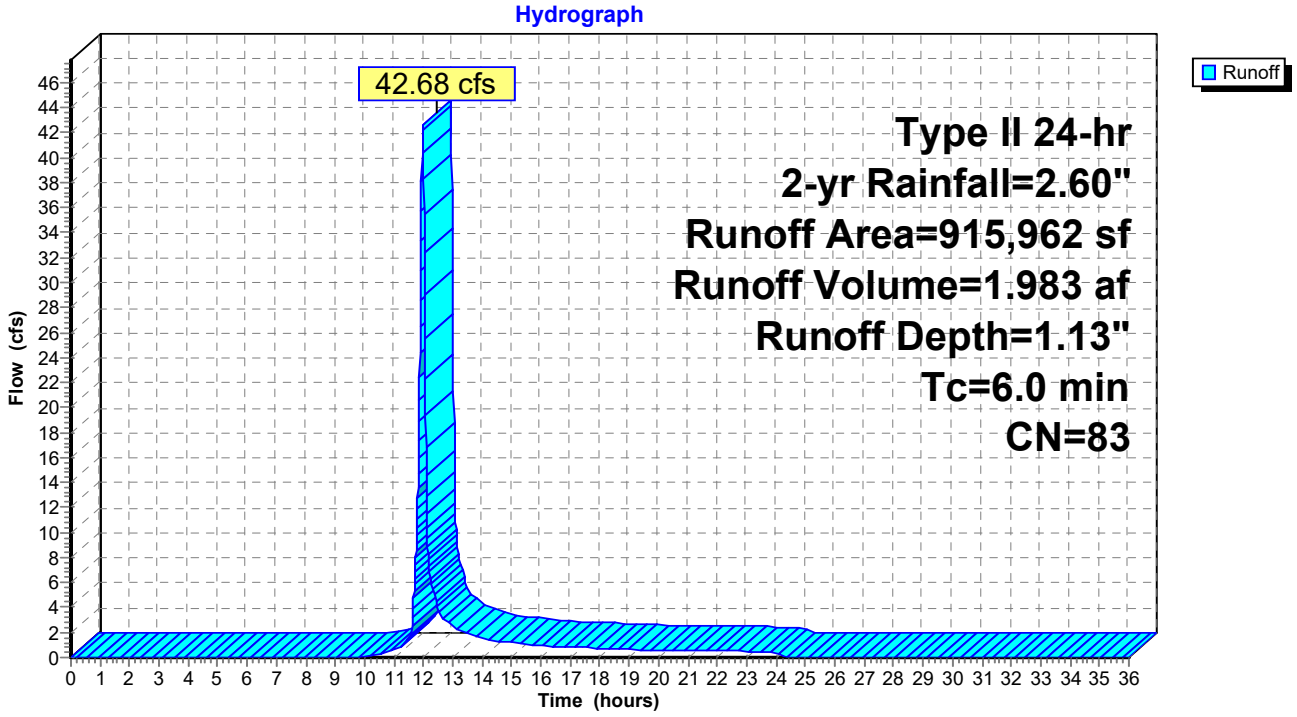
Runoff = 42.68 cfs @ 11.98 hrs, Volume= 1.983 af, Depth= 1.13"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 2-yr Rainfall=2.60"

	Area (sf)	CN	Description
	243,892	98	Unconnected roofs, HSG A
*	442,952	98	Pavement
	229,118	39	>75% Grass cover, Good, HSG A
*	0	96	Gravel
	915,962	83	Weighted Average
	229,118		25.01% Pervious Area
	686,844		74.99% Impervious Area
	243,892		35.51% Unconnected

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

Subcatchment 12S: Post Dev Basin 3



Summary for Pond 8P: Facility 3

Inflow Area = 30.376 ac, 59.79% Impervious, Inflow Depth = 0.87" for 2-yr event
Inflow = 47.03 cfs @ 11.98 hrs, Volume= 2.203 af
Outflow = 3.47 cfs @ 12.67 hrs, Volume= 2.203 af, Atten= 93%, Lag= 41.4 min
Discarded = 3.47 cfs @ 12.67 hrs, Volume= 2.203 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : Total Post Development Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,165.00' @ 12.67 hrs Surf.Area= 41,699 sf Storage= 37,976 cf

Plug-Flow detention time= 94.6 min calculated for 2.203 af (100% of inflow)
Center-of-Mass det. time= 94.6 min (937.8 - 843.2)

Volume	Invert	Avail.Storage	Storage Description
#1	1,164.00'	880,194 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

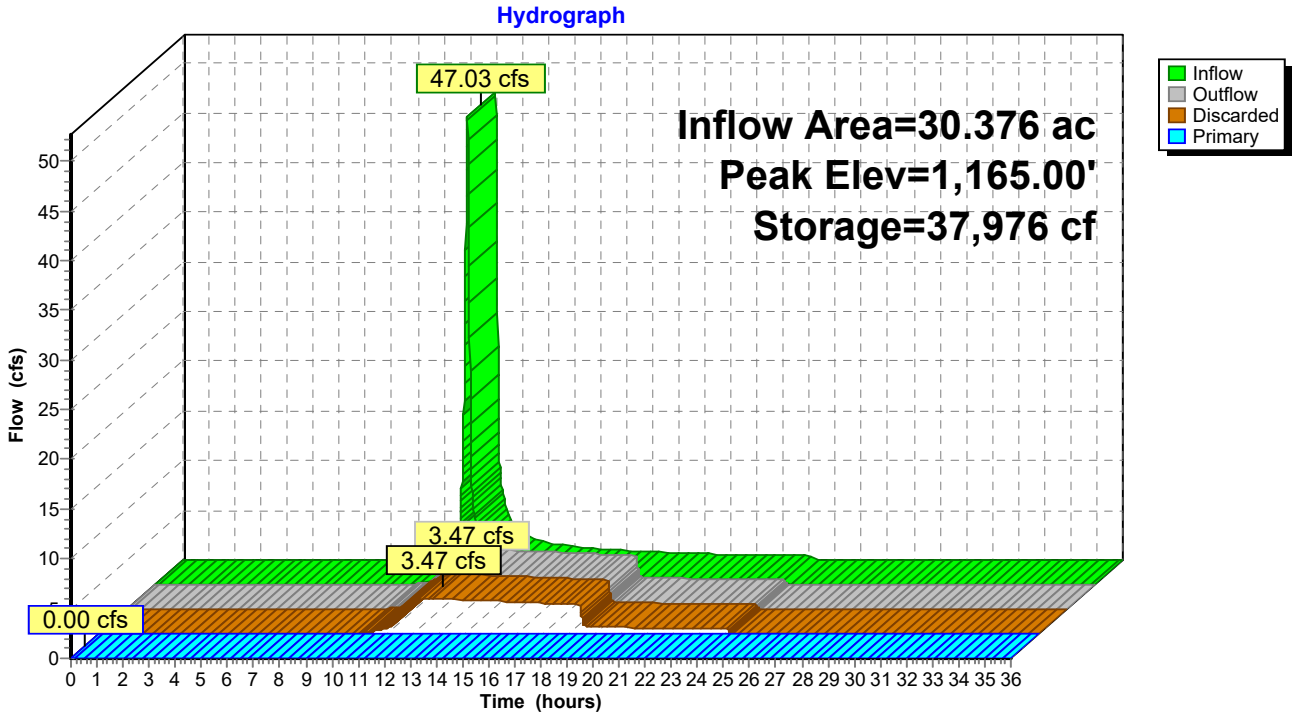
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,164.00	34,587	0	0
1,165.00	41,730	38,159	38,159
1,166.00	50,355	46,043	84,201
1,167.00	62,117	56,236	140,437
1,168.00	75,751	68,934	209,371
1,169.00	90,953	83,352	292,723
1,170.00	108,072	99,513	392,236
1,171.00	128,981	118,527	510,762
1,172.00	173,543	151,262	662,024
1,173.00	262,797	218,170	880,194

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,164.00'	**3.600 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	1,172.10'	**15.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=3.47 cfs @ 12.67 hrs HW=1,165.00' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 3.47 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,164.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: Facility 3

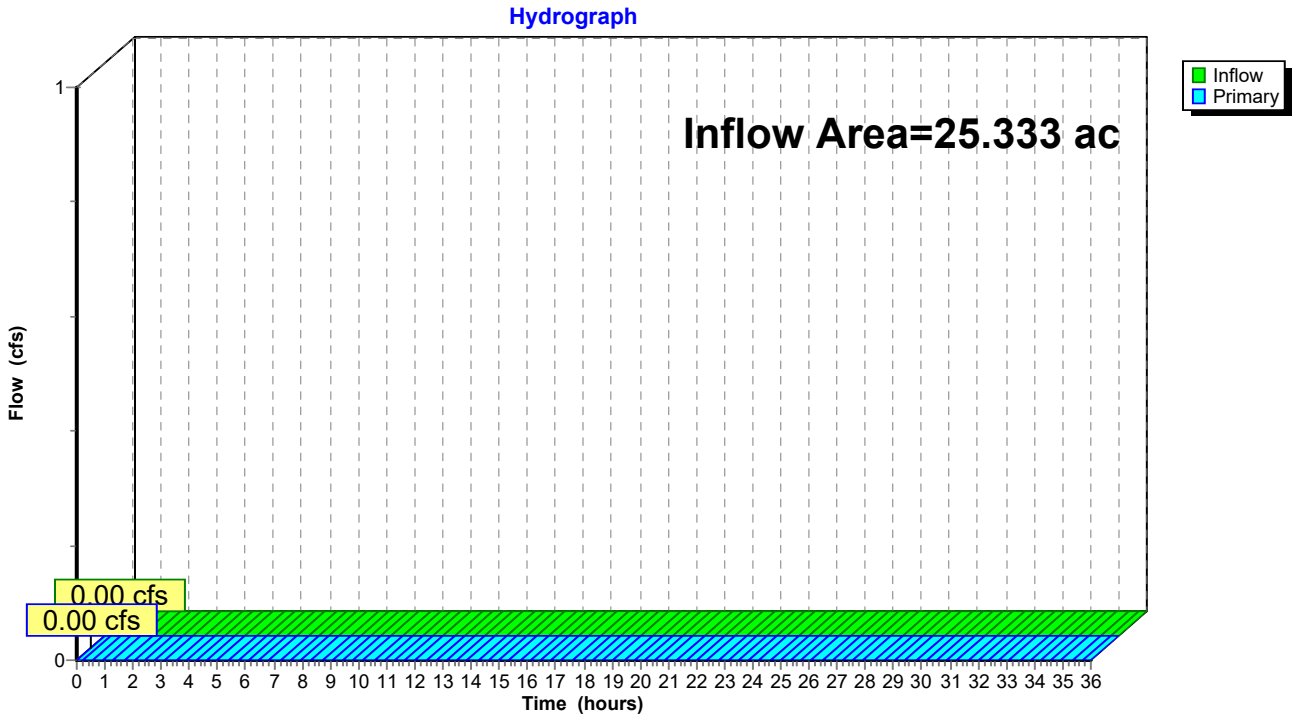


Summary for Link 3L: Total Predevelopment Discharge

Inflow Area = 25.333 ac, 4.25% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 3L: Total Predevelopment Discharge

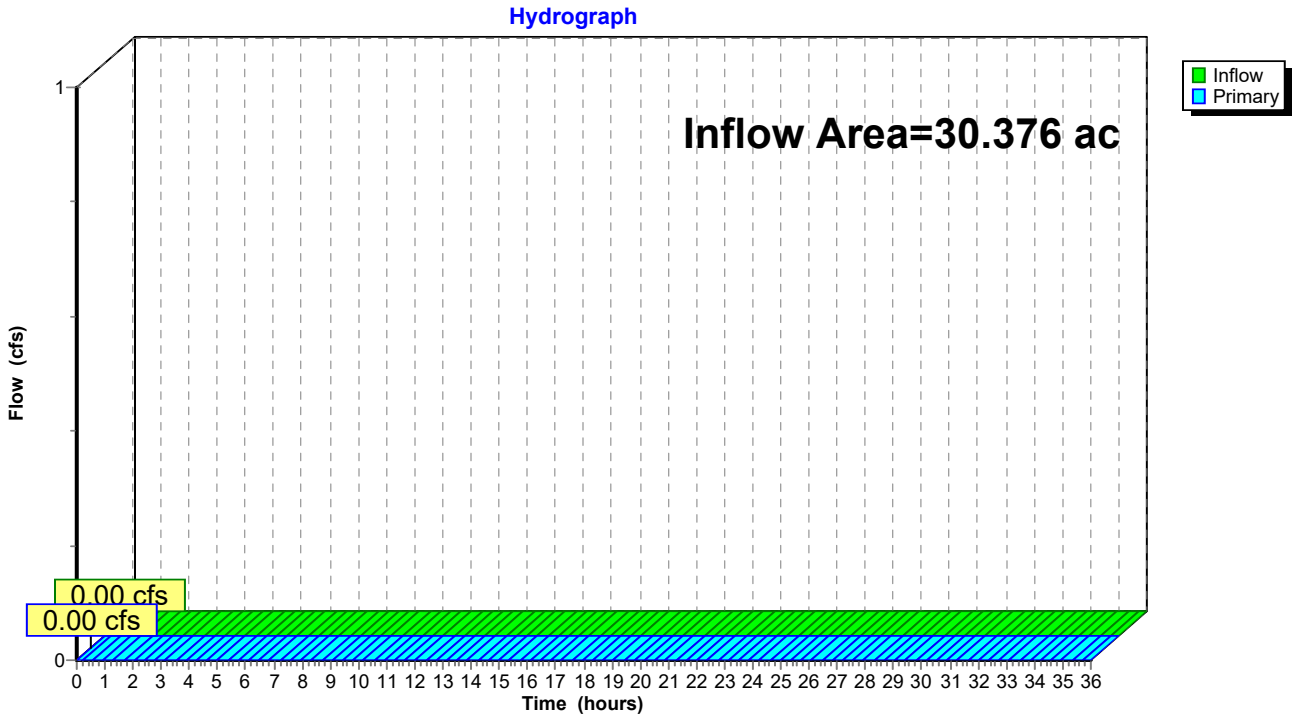


Summary for Link 5L: Total Post Development Discharge

Inflow Area = 30.376 ac, 59.79% Impervious, Inflow Depth = 0.00" for 2-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Total Post Development Discharge



Summary for Subcatchment 1S: Predev Basin 1

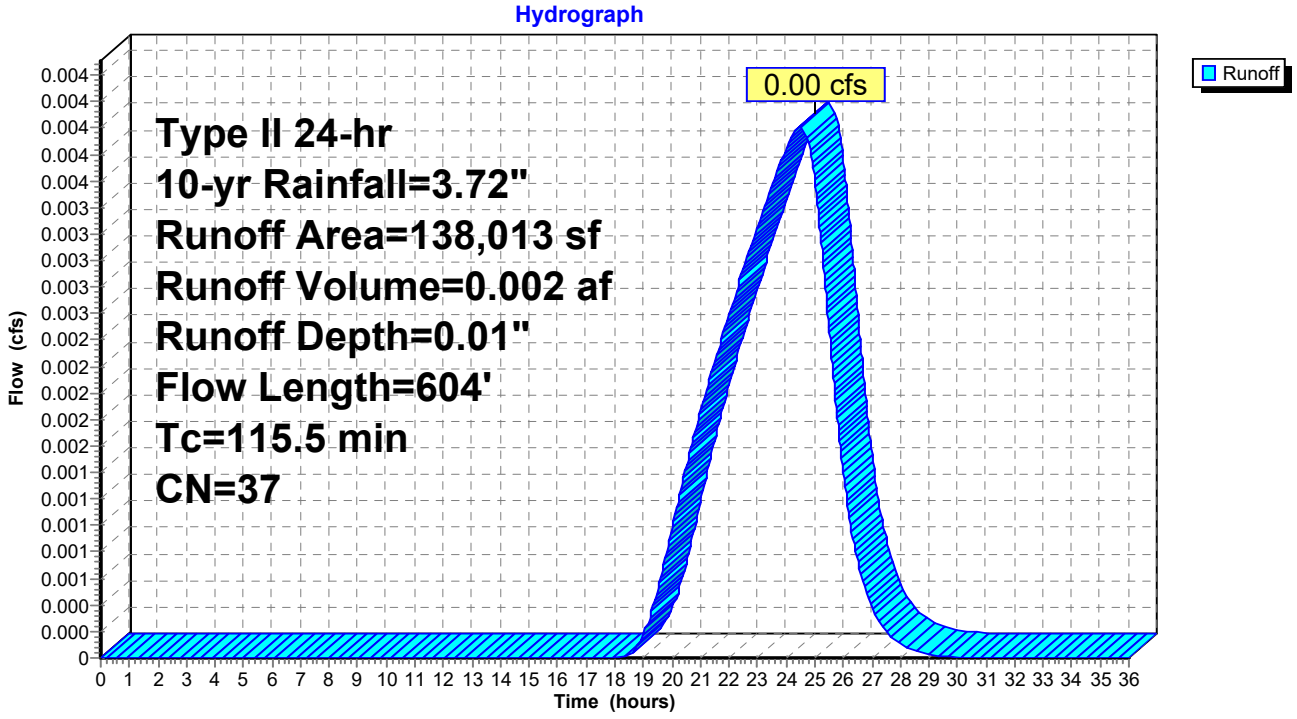
Runoff = 0.00 cfs @ 24.51 hrs, Volume= 0.002 af, Depth= 0.01"
Routed to Link 3L : Total Predevelopment Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.72"

	Area (sf)	CN	Description
*	81,247	39	Grassland
*	52,683	30	Woodland
*	1,886	98	Roofs
*	2,197	98	Driveway
	138,013	37	Weighted Average
	133,930		97.04% Pervious Area
	4,083		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
93.8	100	0.0026	0.02		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.60"
21.7	504	0.0060	0.39		**Shallow Concentrated Flow, Shallow Concentrated Flow** Woodland Kv= 5.0 fps
115.5	604	Total			

Subcatchment 1S: Predev Basin 1



Summary for Subcatchment 2S: Predev Basin 2

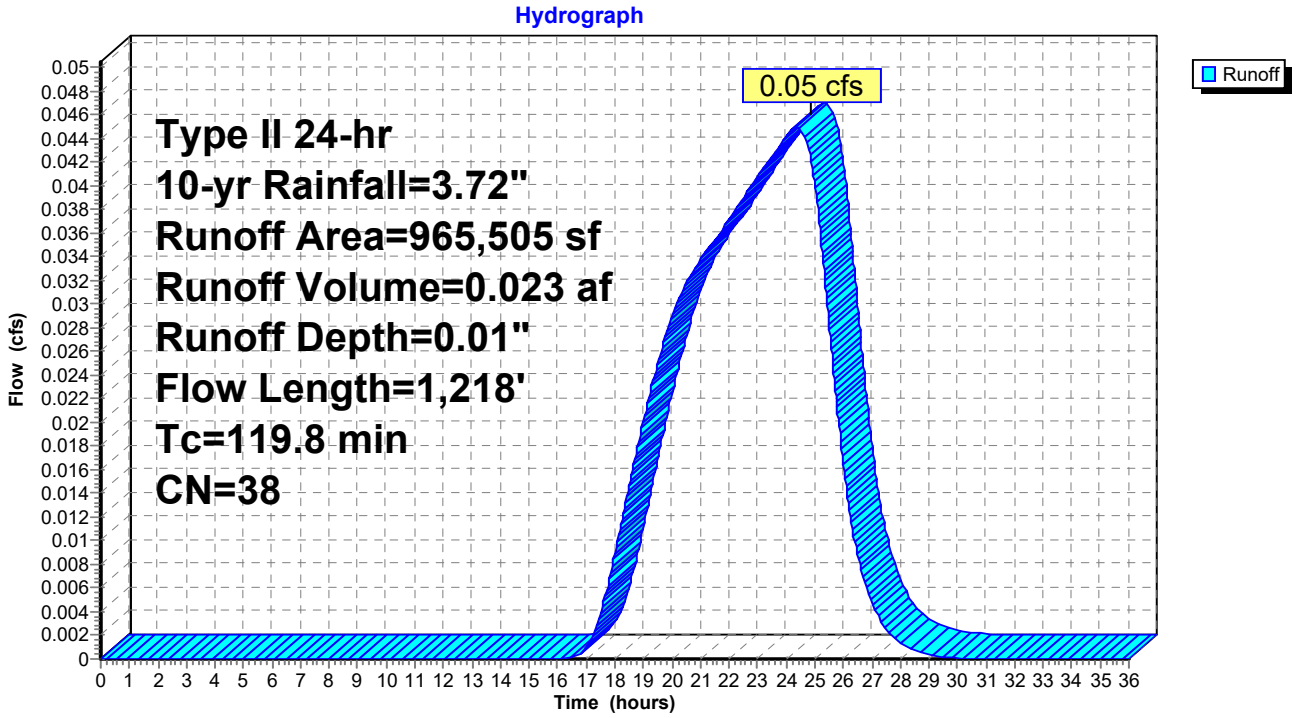
Runoff = 0.05 cfs @ 24.36 hrs, Volume= 0.023 af, Depth= 0.01"
Routed to Link 3L : Total Predevelopment Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.72"

	Area (sf)	CN	Description
*	374,075	30	Woodland
*	548,653	39	Grassland
*	17,043	98	Roofs
*	25,734	98	Asphalt/Concrete Pavement
	965,505	38	Weighted Average
	922,728		95.57% Pervious Area
	42,777		4.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.6	100	0.0051	0.02		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.60"
12.8	227	0.0035	0.30		**Shallow Concentrated Flow, Shallow Concentrated Flow - Wood** Woodland Kv= 5.0 fps
35.4	891	0.0036	0.42		**Shallow Concentrated Flow, Shallow Concentrated Flow - Grass** Short Grass Pasture Kv= 7.0 fps
119.8	1,218	Total			

Subcatchment 2S: Predev Basin 2



Summary for Subcatchment 4S: Post Dev Basin 1

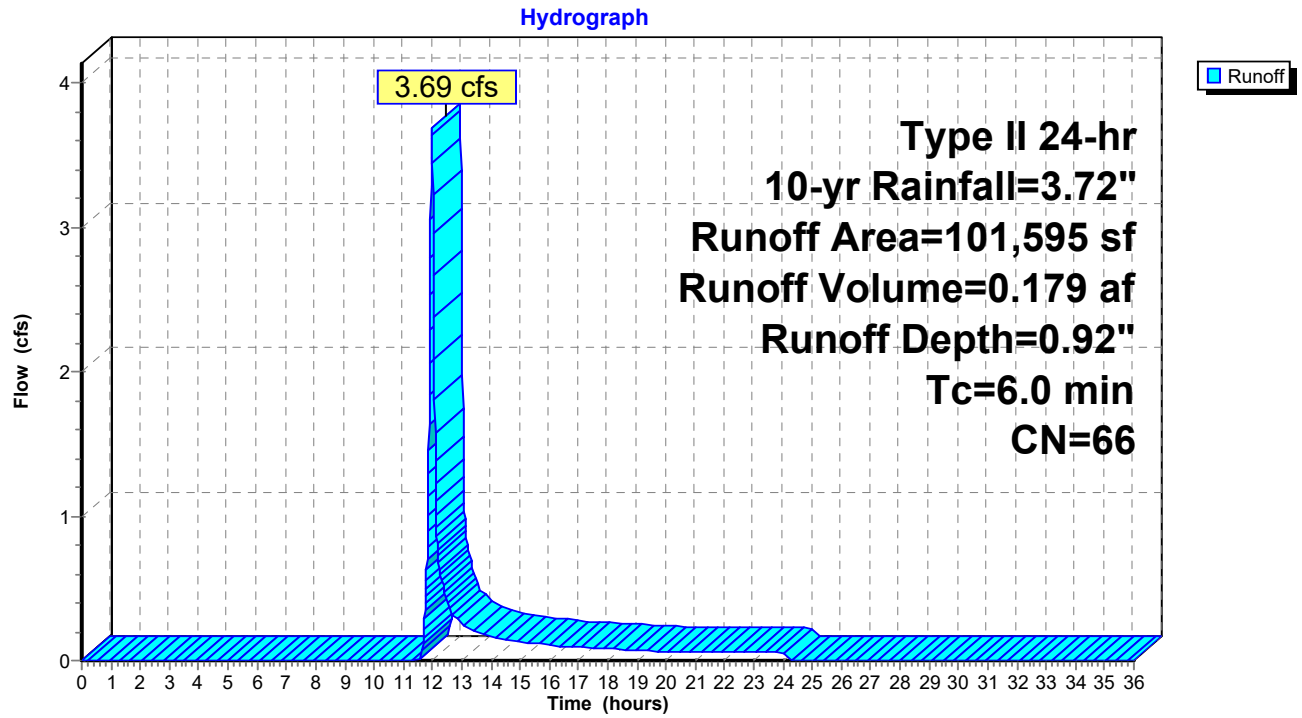
Runoff = 3.69 cfs @ 11.98 hrs, Volume= 0.179 af, Depth= 0.92"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.72"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	46,660	98	Pavement
	54,935	39	>75% Grass cover, Good, HSG A
	101,595	66	Weighted Average
	54,935		54.07% Pervious Area
	46,660		45.93% Impervious Area

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

Subcatchment 4S: Post Dev Basin 1



Summary for Subcatchment 6S: Post Dev Basin 8 OFFSITE

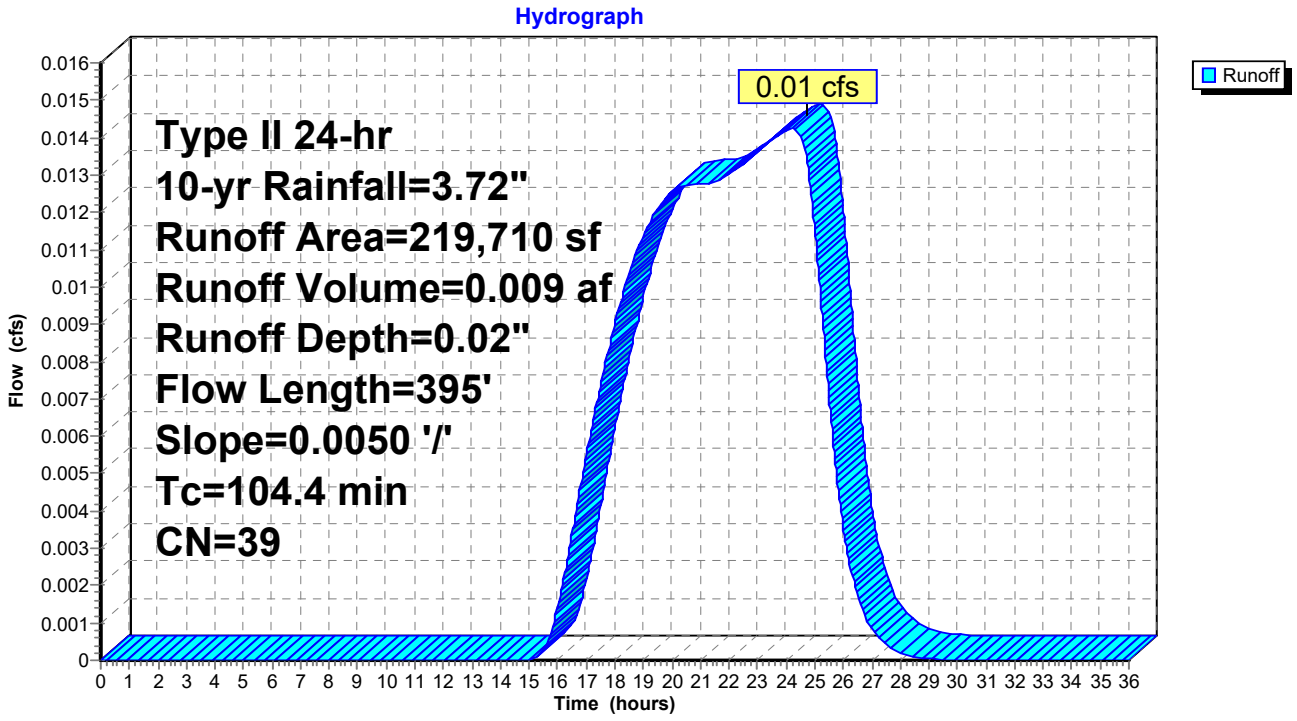
Runoff = 0.01 cfs @ 24.24 hrs, Volume= 0.009 af, Depth= 0.02"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.72"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	0	98	Pavement
	219,710	39	>75% Grass cover, Good, HSG A
	219,710	39	Weighted Average
	219,710		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
99.9	300	0.0050	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.60"
4.5	95	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
104.4	395	Total			

Subcatchment 6S: Post Dev Basin 8 OFFSITE



Summary for Subcatchment 9S: Post Dev Basin 2

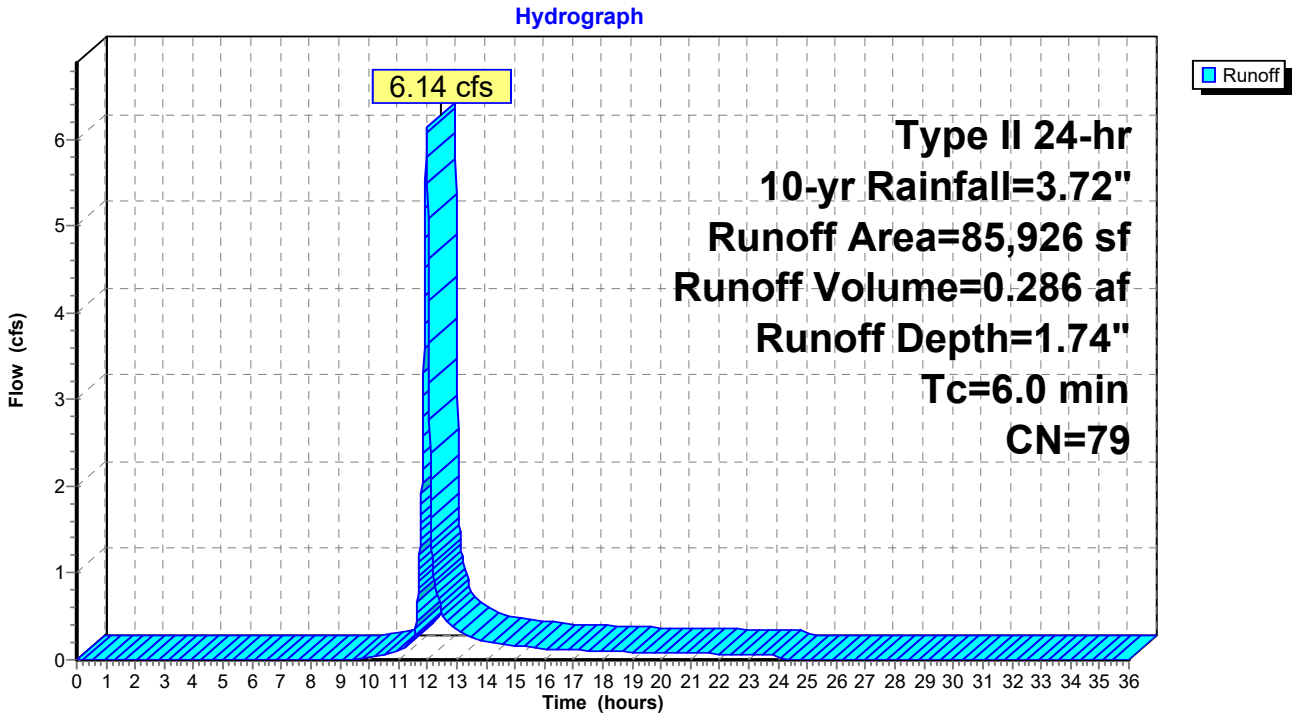
Runoff = 6.14 cfs @ 11.98 hrs, Volume= 0.286 af, Depth= 1.74"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.72"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	57,653	98	Pavement
	28,273	39	>75% Grass cover, Good, HSG A
*	0	96	Gravel
	85,926	79	Weighted Average
	28,273		32.90% Pervious Area
	57,653		67.10% Impervious Area

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

Subcatchment 9S: Post Dev Basin 2



Summary for Subcatchment 12S: Post Dev Basin 3

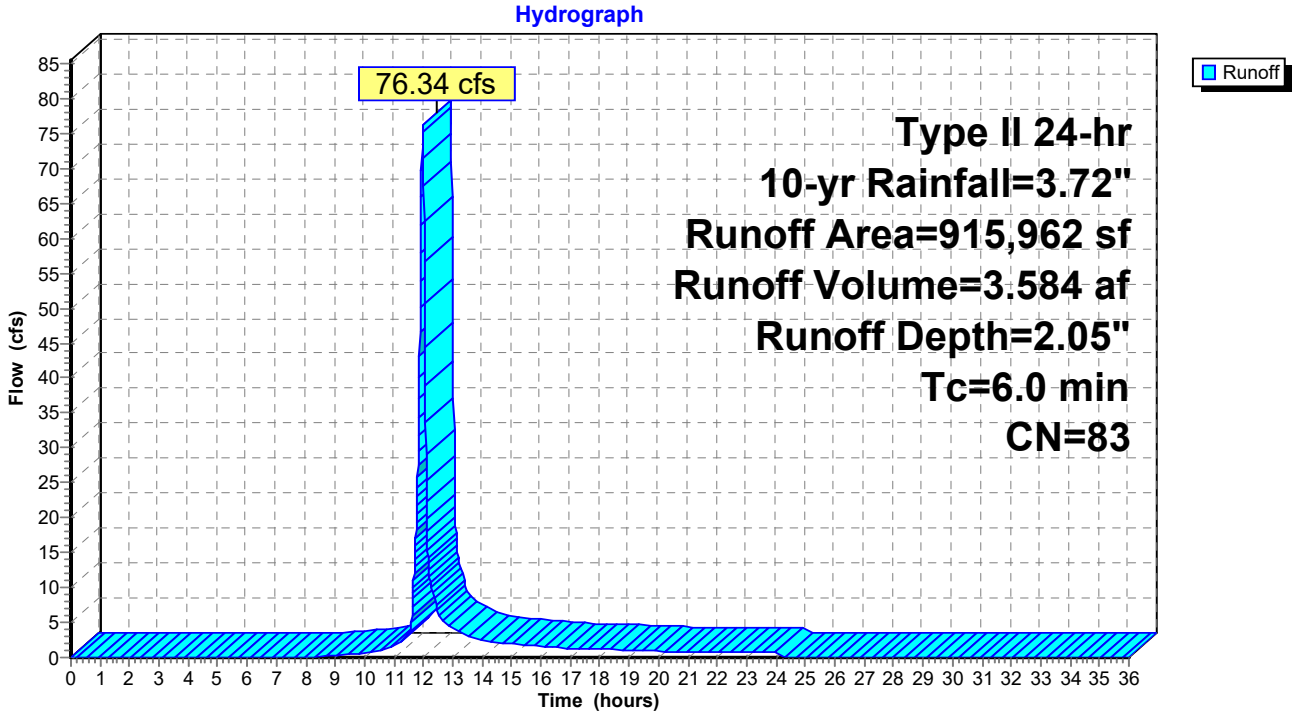
Runoff = 76.34 cfs @ 11.97 hrs, Volume= 3.584 af, Depth= 2.05"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 10-yr Rainfall=3.72"

	Area (sf)	CN	Description
	243,892	98	Unconnected roofs, HSG A
*	442,952	98	Pavement
	229,118	39	>75% Grass cover, Good, HSG A
*	0	96	Gravel
	915,962	83	Weighted Average
	229,118		25.01% Pervious Area
	686,844		74.99% Impervious Area
	243,892		35.51% Unconnected

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

Subcatchment 12S: Post Dev Basin 3



Summary for Pond 8P: Facility 3

Inflow Area = 30.376 ac, 59.79% Impervious, Inflow Depth = 1.60" for 10-yr event
Inflow = 86.13 cfs @ 11.97 hrs, Volume= 4.058 af
Outflow = 4.17 cfs @ 13.21 hrs, Volume= 4.058 af, Atten= 95%, Lag= 74.0 min
Discarded = 4.17 cfs @ 13.21 hrs, Volume= 4.058 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : Total Post Development Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,165.97' @ 13.21 hrs Surf.Area= 50,065 sf Storage= 82,515 cf

Plug-Flow detention time= 201.5 min calculated for 4.057 af (100% of inflow)
Center-of-Mass det. time= 201.4 min (1,028.6 - 827.1)

Volume	Invert	Avail.Storage	Storage Description
#1	1,164.00'	880,194 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

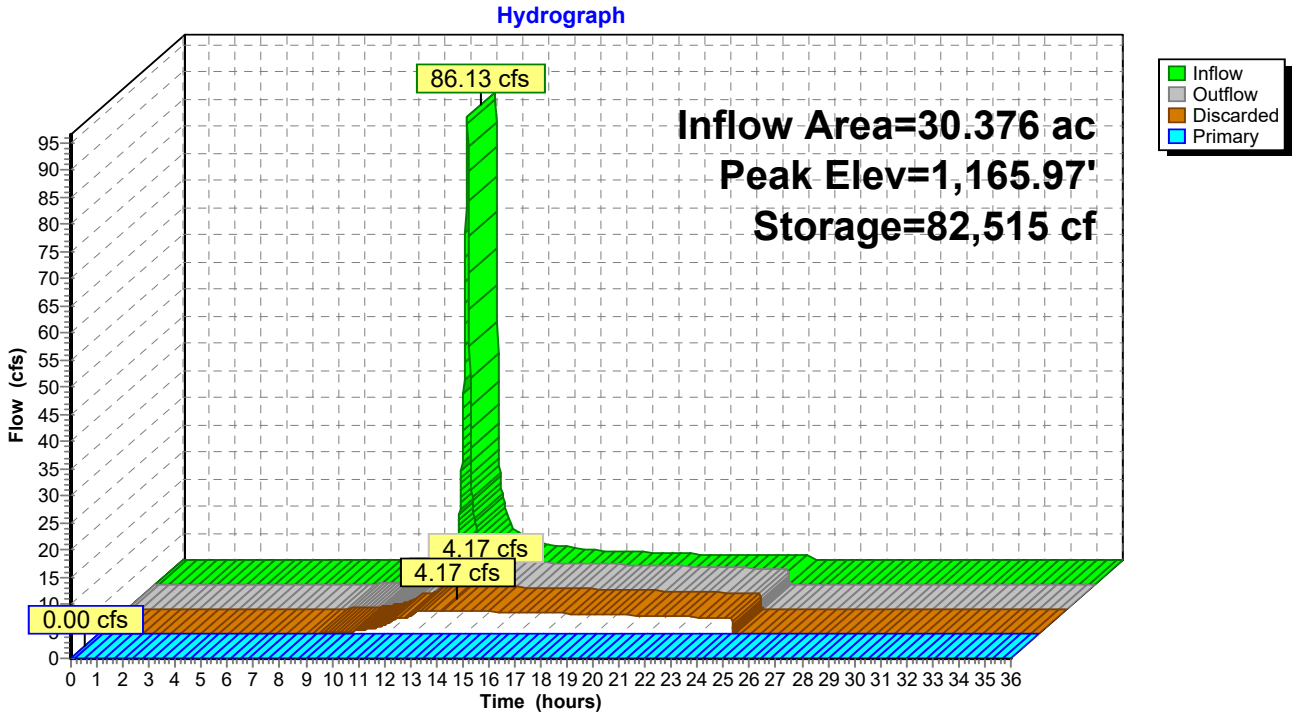
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,164.00	34,587	0	0
1,165.00	41,730	38,159	38,159
1,166.00	50,355	46,043	84,201
1,167.00	62,117	56,236	140,437
1,168.00	75,751	68,934	209,371
1,169.00	90,953	83,352	292,723
1,170.00	108,072	99,513	392,236
1,171.00	128,981	118,527	510,762
1,172.00	173,543	151,262	662,024
1,173.00	262,797	218,170	880,194

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,164.00'	**3.600 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	1,172.10'	**15.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=4.17 cfs @ 13.21 hrs HW=1,165.97' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 4.17 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,164.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: Facility 3

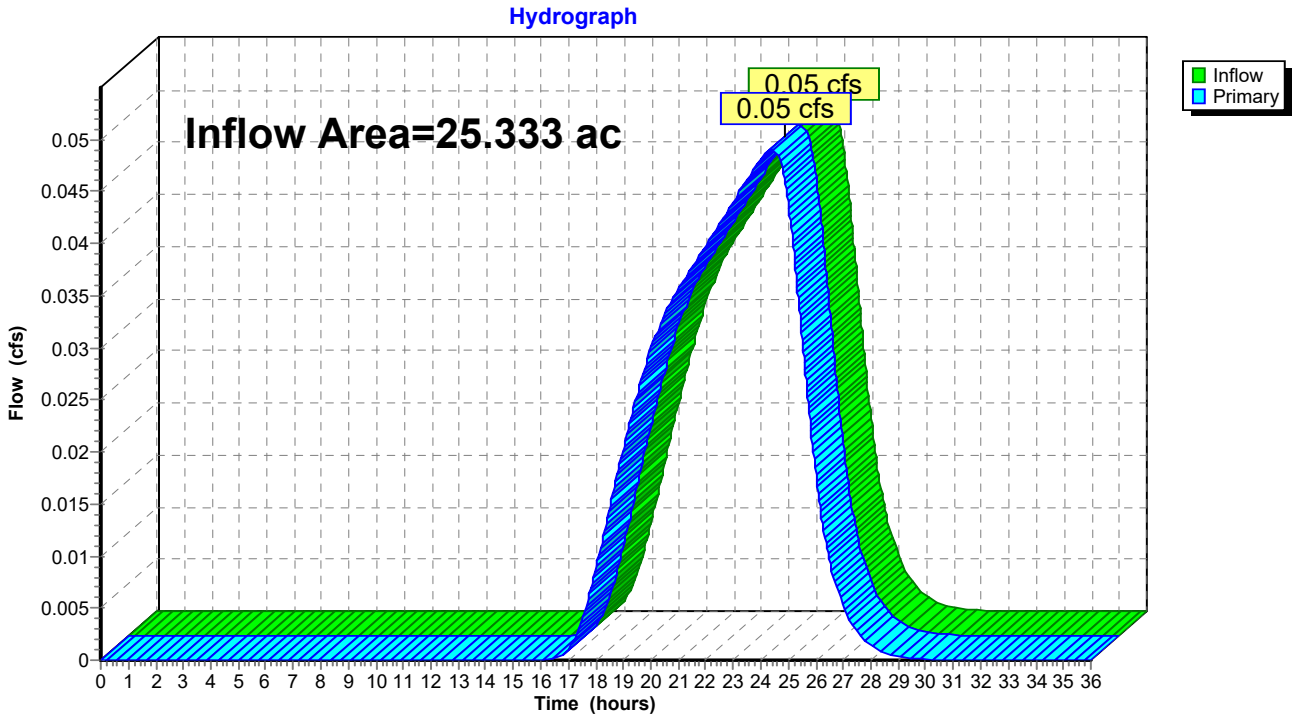


Summary for Link 3L: Total Predevelopment Discharge

Inflow Area = 25.333 ac, 4.25% Impervious, Inflow Depth = 0.01" for 10-yr event
Inflow = 0.05 cfs @ 24.36 hrs, Volume= 0.024 af
Primary = 0.05 cfs @ 24.36 hrs, Volume= 0.024 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 3L: Total Predevelopment Discharge

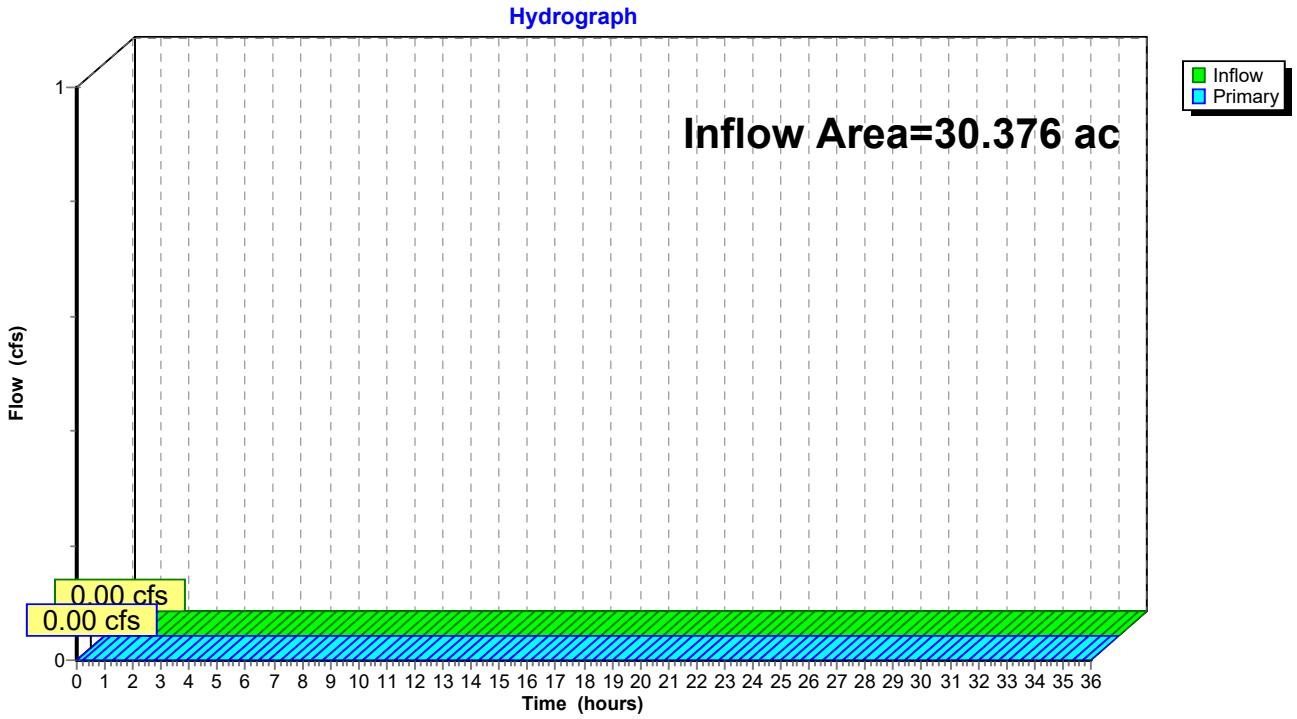


Summary for Link 5L: Total Post Development Discharge

Inflow Area = 30.376 ac, 59.79% Impervious, Inflow Depth = 0.00" for 10-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Total Post Development Discharge



Summary for Subcatchment 1S: Predev Basin 1

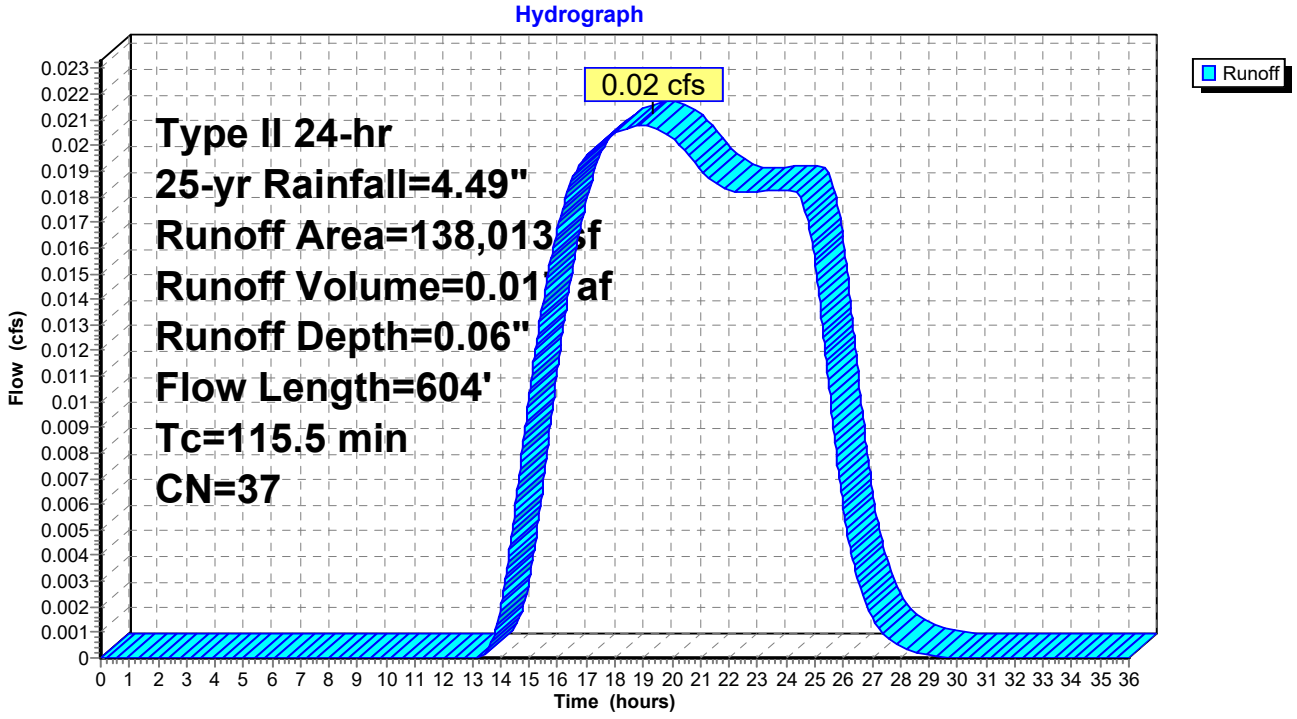
Runoff = 0.02 cfs @ 18.87 hrs, Volume= 0.017 af, Depth= 0.06"
Routed to Link 3L : Total Predevelopment Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr Rainfall=4.49"

	Area (sf)	CN	Description
*	81,247	39	Grassland
*	52,683	30	Woodland
*	1,886	98	Roofs
*	2,197	98	Driveway
	138,013	37	Weighted Average
	133,930		97.04% Pervious Area
	4,083		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
93.8	100	0.0026	0.02		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.60"
21.7	504	0.0060	0.39		**Shallow Concentrated Flow, Shallow Concentrated Flow** Woodland Kv= 5.0 fps
115.5	604	Total			

Subcatchment 1S: Predev Basin 1



Summary for Subcatchment 2S: Predev Basin 2

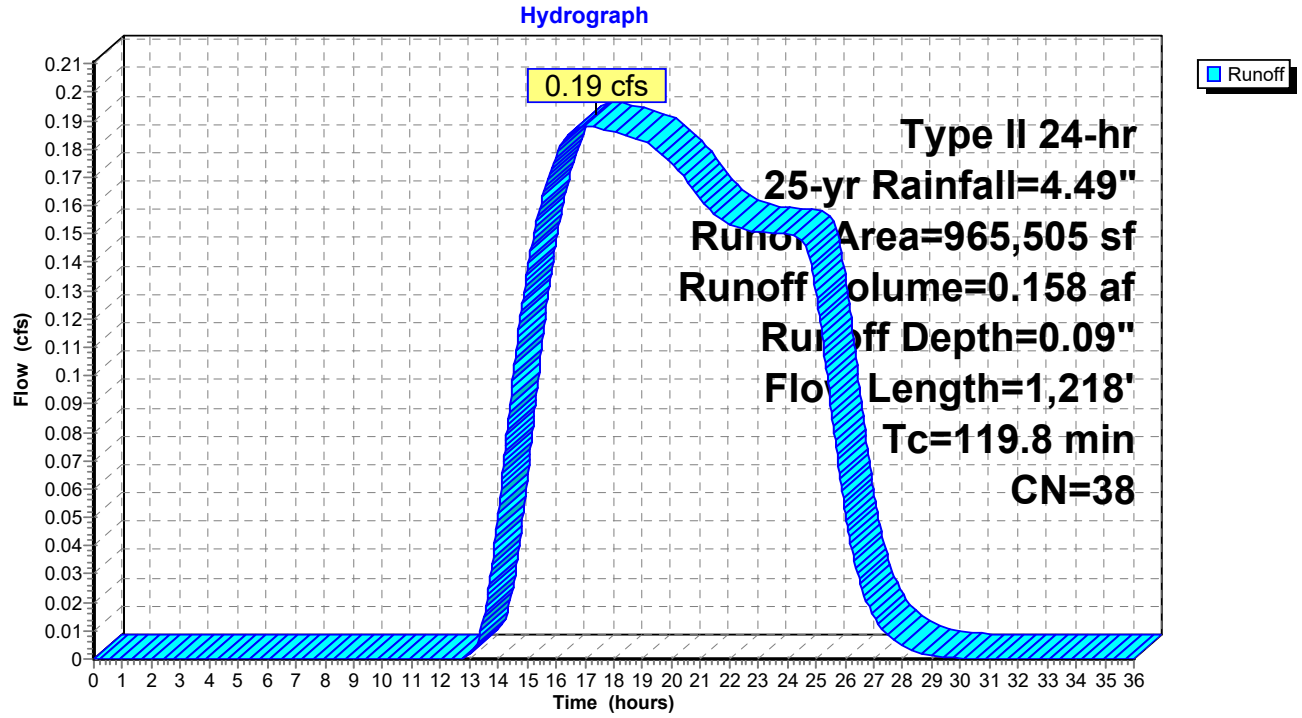
Runoff = 0.19 cfs @ 16.91 hrs, Volume= 0.158 af, Depth= 0.09"
Routed to Link 3L : Total Predevelopment Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr Rainfall=4.49"

	Area (sf)	CN	Description
*	374,075	30	Woodland
*	548,653	39	Grassland
*	17,043	98	Roofs
*	25,734	98	Asphalt/Concrete Pavement
	965,505	38	Weighted Average
	922,728		95.57% Pervious Area
	42,777		4.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.6	100	0.0051	0.02		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.60"
12.8	227	0.0035	0.30		**Shallow Concentrated Flow, Shallow Concentrated Flow - Wood** Woodland Kv= 5.0 fps
35.4	891	0.0036	0.42		**Shallow Concentrated Flow, Shallow Concentrated Flow - Grass** Short Grass Pasture Kv= 7.0 fps
119.8	1,218	Total			

Subcatchment 2S: Predev Basin 2



Summary for Subcatchment 4S: Post Dev Basin 1

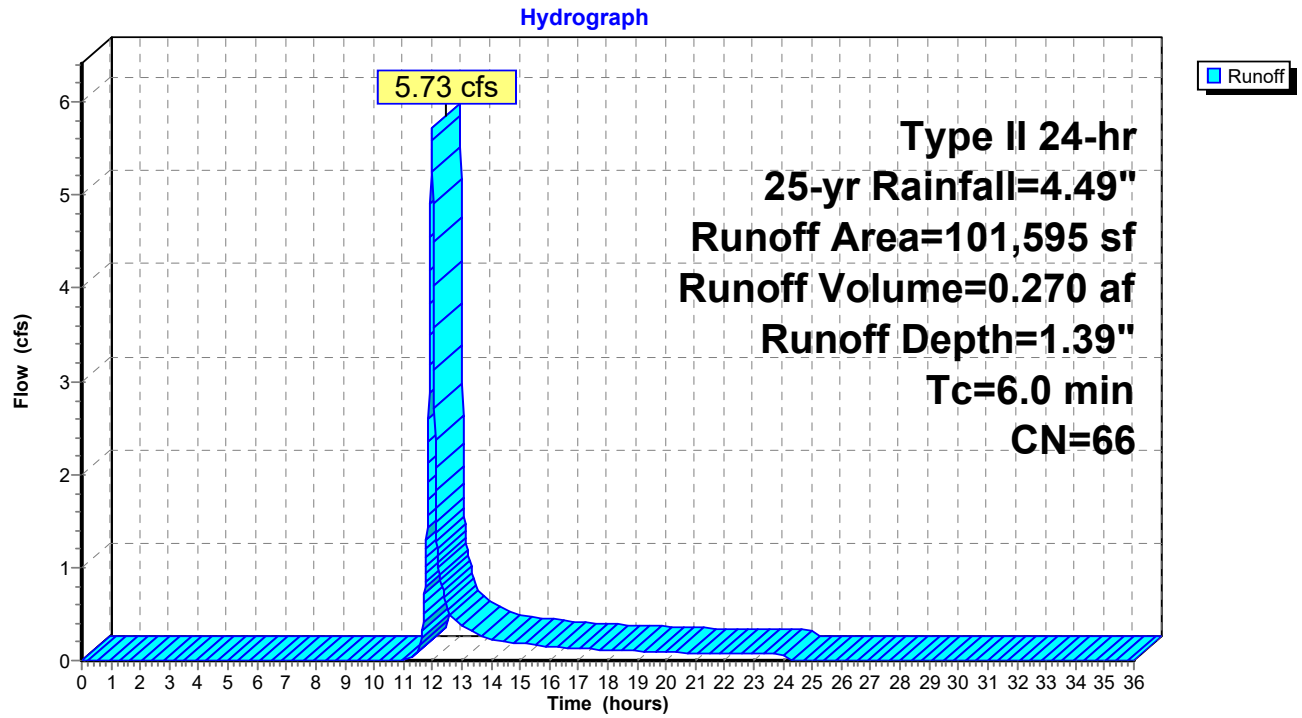
Runoff = 5.73 cfs @ 11.98 hrs, Volume= 0.270 af, Depth= 1.39"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr Rainfall=4.49"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	46,660	98	Pavement
	54,935	39	>75% Grass cover, Good, HSG A
	101,595	66	Weighted Average
	54,935		54.07% Pervious Area
	46,660		45.93% Impervious Area

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

Subcatchment 4S: Post Dev Basin 1



Summary for Subcatchment 6S: Post Dev Basin 8 OFFSITE

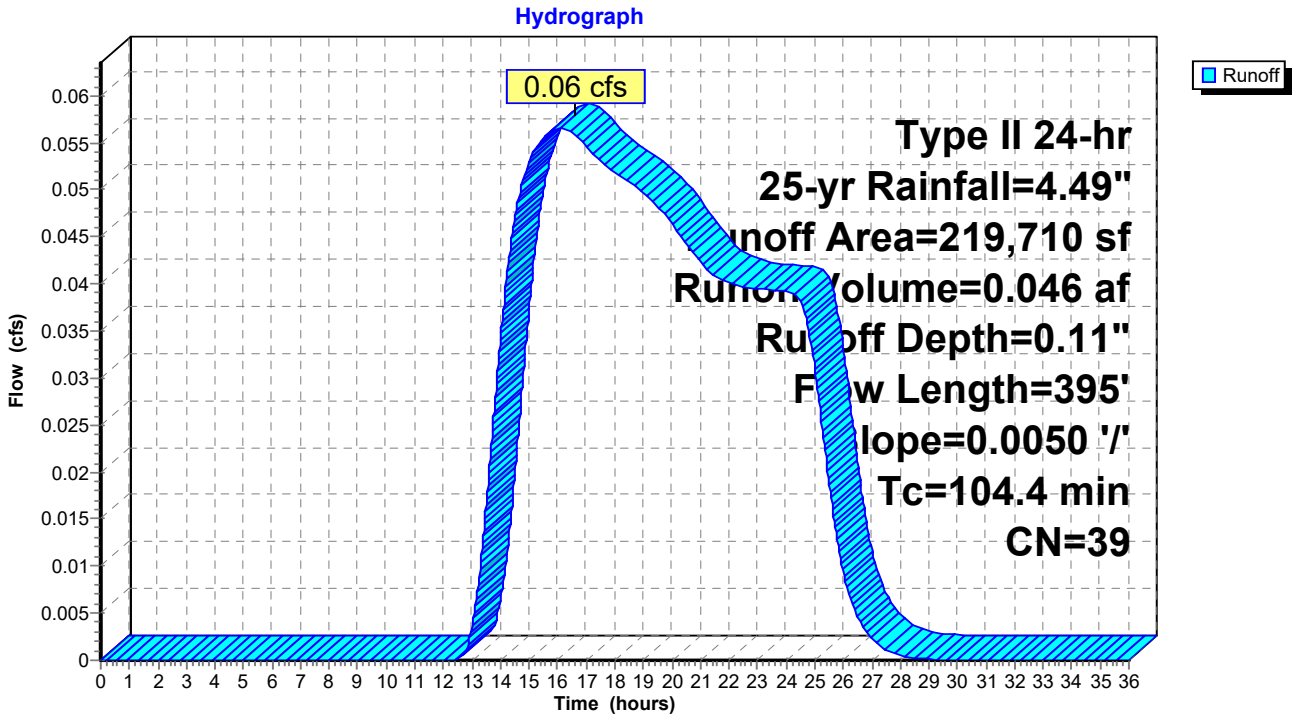
Runoff = 0.06 cfs @ 16.12 hrs, Volume= 0.046 af, Depth= 0.11"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr Rainfall=4.49"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	0	98	Pavement
	219,710	39	>75% Grass cover, Good, HSG A
	219,710	39	Weighted Average
	219,710		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
99.9	300	0.0050	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.60"
4.5	95	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
104.4	395	Total			

Subcatchment 6S: Post Dev Basin 8 OFFSITE



Summary for Subcatchment 9S: Post Dev Basin 2

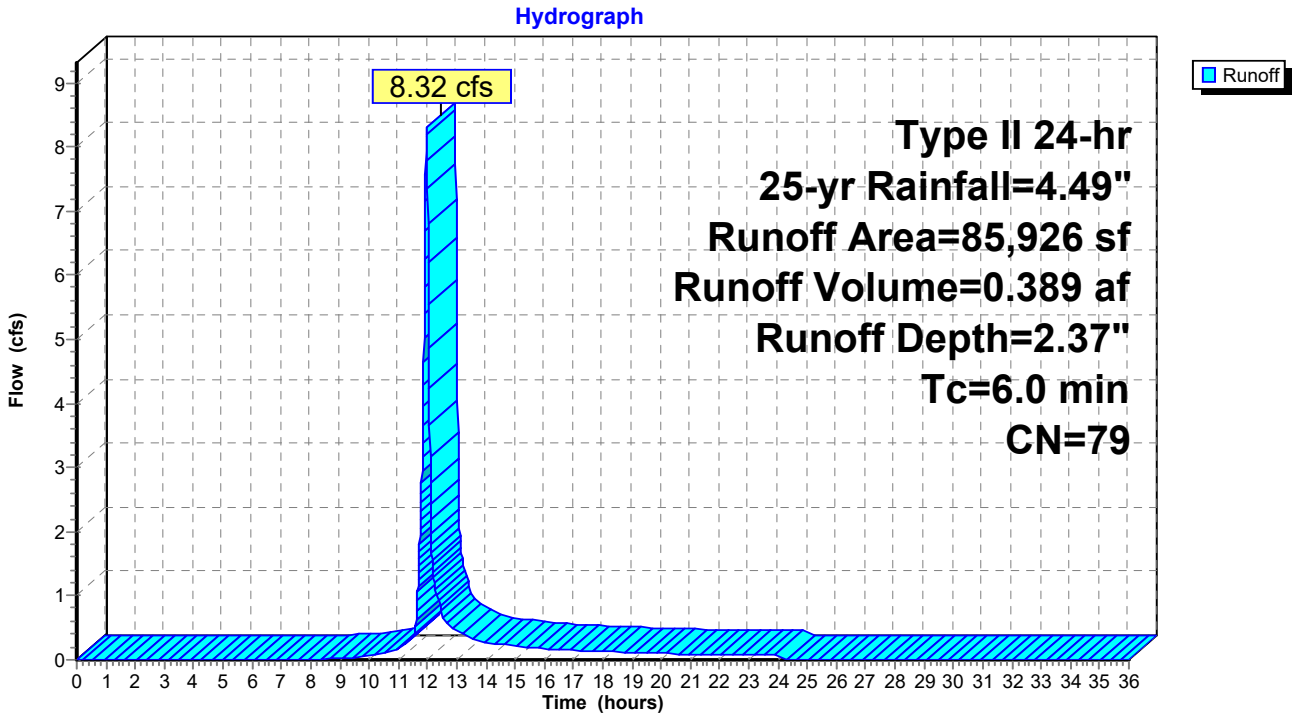
Runoff = 8.32 cfs @ 11.97 hrs, Volume= 0.389 af, Depth= 2.37"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr Rainfall=4.49"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	57,653	98	Pavement
	28,273	39	>75% Grass cover, Good, HSG A
*	0	96	Gravel
	85,926	79	Weighted Average
	28,273		32.90% Pervious Area
	57,653		67.10% Impervious Area

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

Subcatchment 9S: Post Dev Basin 2



Summary for Subcatchment 12S: Post Dev Basin 3

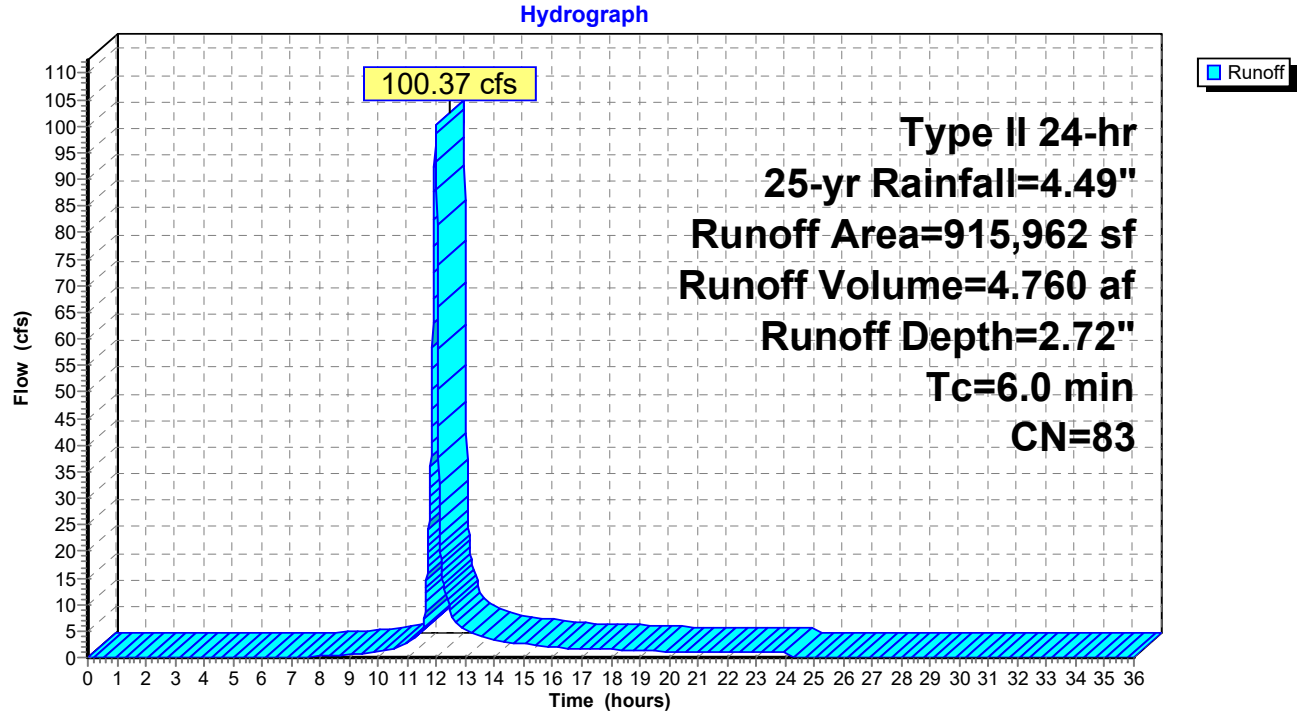
Runoff = 100.37 cfs @ 11.97 hrs, Volume= 4.760 af, Depth= 2.72"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 25-yr Rainfall=4.49"

	Area (sf)	CN	Description
	243,892	98	Unconnected roofs, HSG A
*	442,952	98	Pavement
	229,118	39	>75% Grass cover, Good, HSG A
*	0	96	Gravel
	915,962	83	Weighted Average
	229,118		25.01% Pervious Area
	686,844		74.99% Impervious Area
	243,892		35.51% Unconnected

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

Subcatchment 12S: Post Dev Basin 3



Summary for Pond 8P: Facility 3

Inflow Area = 30.376 ac, 59.79% Impervious, Inflow Depth = 2.16" for 25-yr event
Inflow = 114.38 cfs @ 11.97 hrs, Volume= 5.466 af
Outflow = 4.80 cfs @ 13.44 hrs, Volume= 5.466 af, Atten= 96%, Lag= 87.8 min
Discarded = 4.80 cfs @ 13.44 hrs, Volume= 5.466 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : Total Post Development Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,166.62' @ 13.44 hrs Surf.Area= 57,603 sf Storage= 117,464 cf

Plug-Flow detention time= 266.3 min calculated for 5.464 af (100% of inflow)
Center-of-Mass det. time= 266.2 min (1,087.0 - 820.8)

Volume	Invert	Avail.Storage	Storage Description
#1	1,164.00'	880,194 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

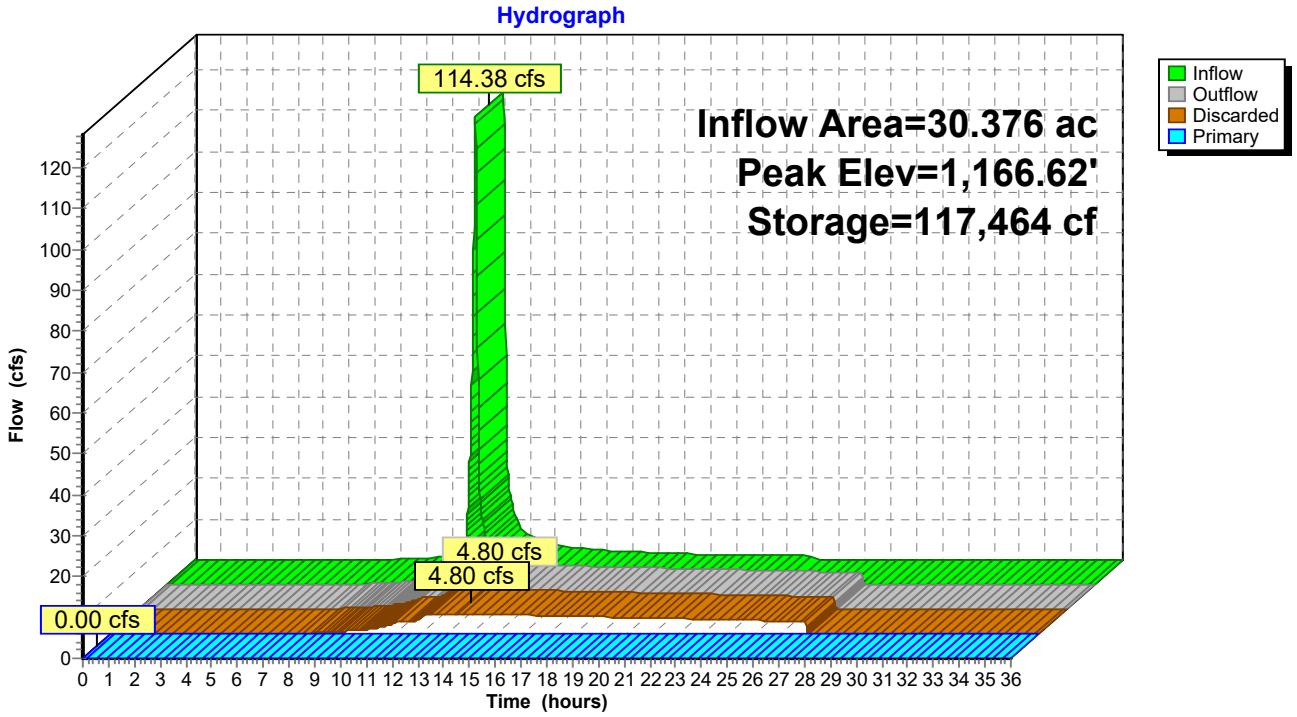
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,164.00	34,587	0	0
1,165.00	41,730	38,159	38,159
1,166.00	50,355	46,043	84,201
1,167.00	62,117	56,236	140,437
1,168.00	75,751	68,934	209,371
1,169.00	90,953	83,352	292,723
1,170.00	108,072	99,513	392,236
1,171.00	128,981	118,527	510,762
1,172.00	173,543	151,262	662,024
1,173.00	262,797	218,170	880,194

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,164.00'	**3.600 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	1,172.10'	**15.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=4.80 cfs @ 13.44 hrs HW=1,166.62' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 4.80 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,164.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: Facility 3

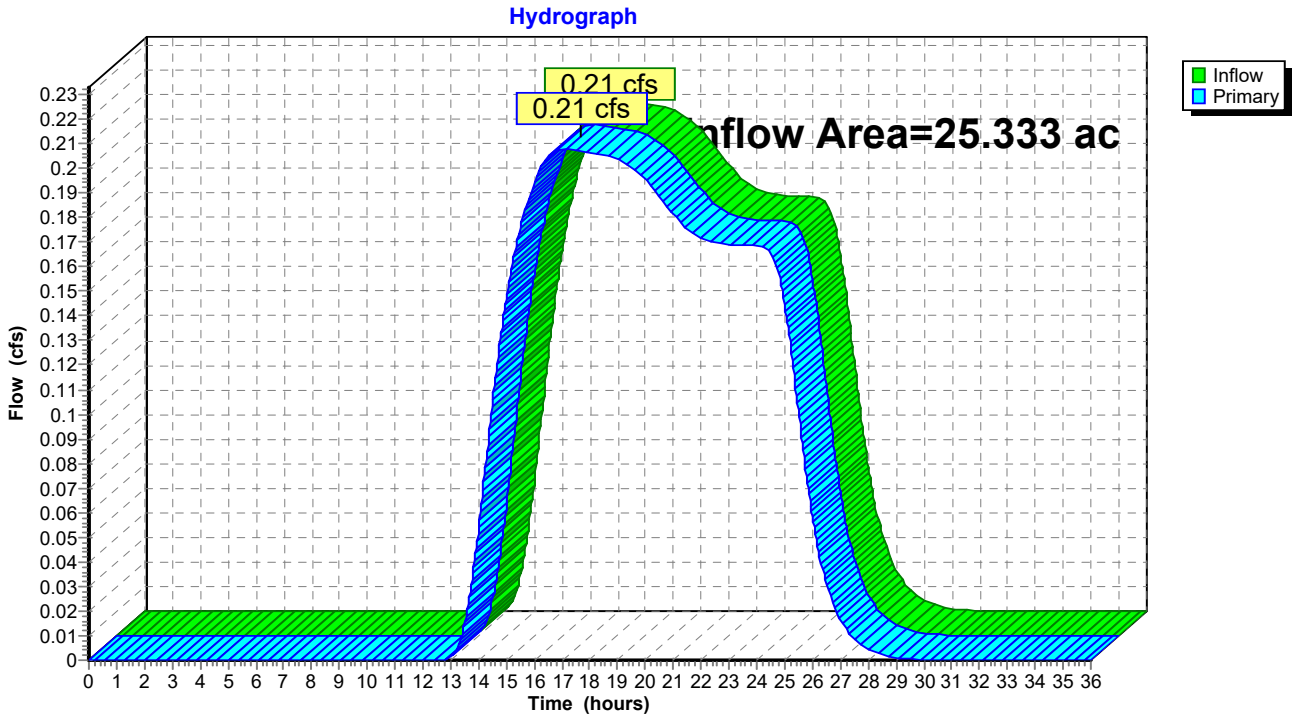


Summary for Link 3L: Total Predevelopment Discharge

Inflow Area = 25.333 ac, 4.25% Impervious, Inflow Depth = 0.08" for 25-yr event
Inflow = 0.21 cfs @ 17.17 hrs, Volume= 0.176 af
Primary = 0.21 cfs @ 17.17 hrs, Volume= 0.176 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 3L: Total Predevelopment Discharge

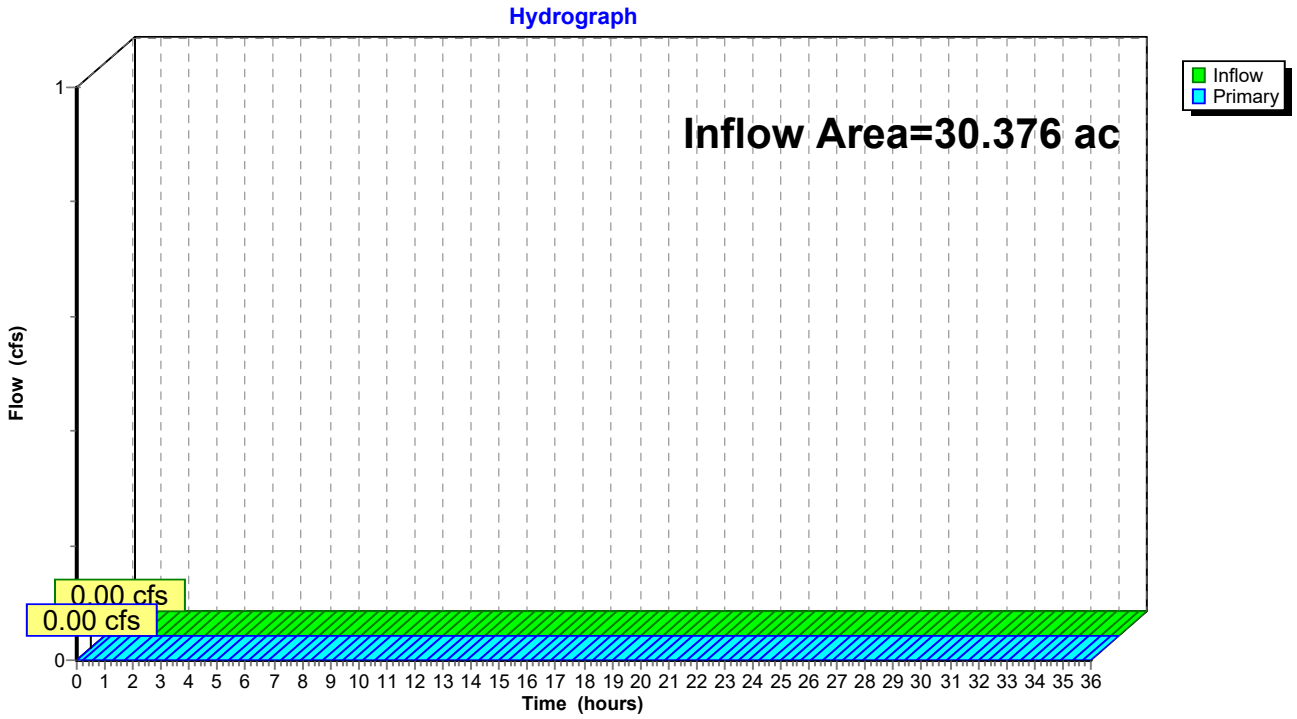


Summary for Link 5L: Total Post Development Discharge

Inflow Area = 30.376 ac, 59.79% Impervious, Inflow Depth = 0.00" for 25-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Total Post Development Discharge



Summary for Subcatchment 1S: Predev Basin 1

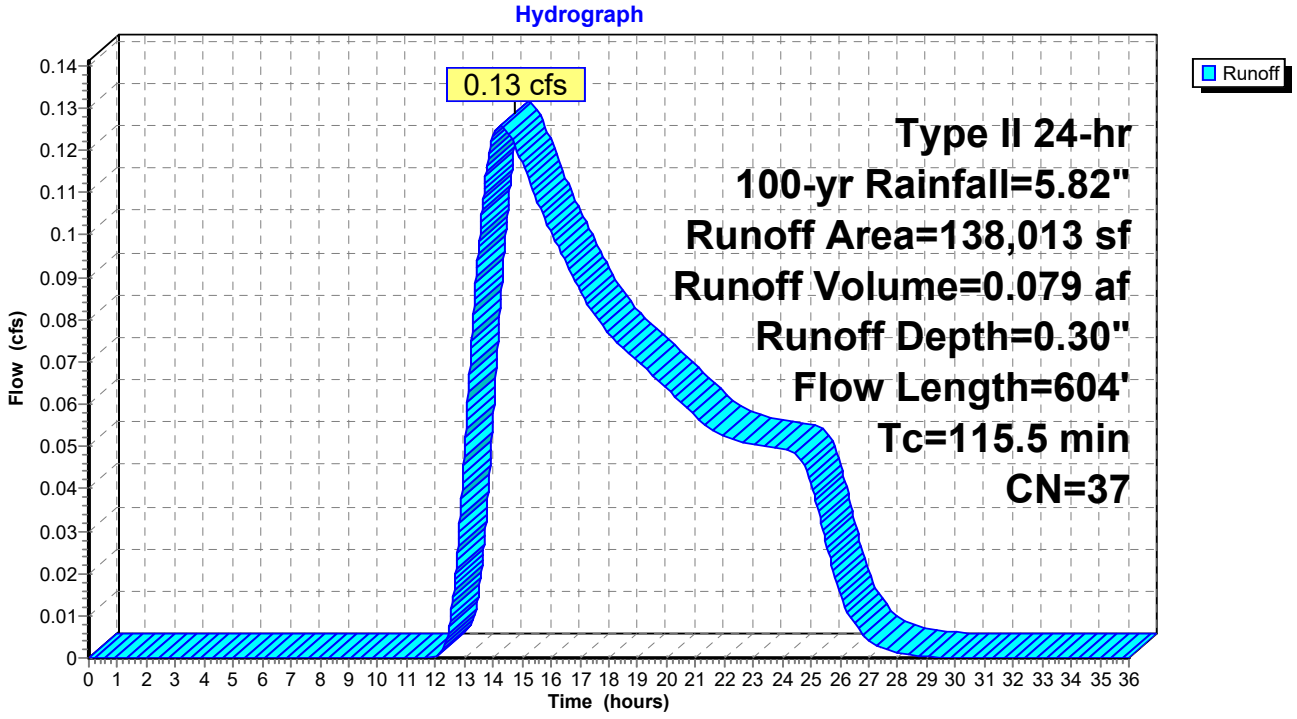
Runoff = 0.13 cfs @ 14.25 hrs, Volume= 0.079 af, Depth= 0.30"
Routed to Link 3L : Total Predevelopment Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.82"

	Area (sf)	CN	Description
*	81,247	39	Grassland
*	52,683	30	Woodland
*	1,886	98	Roofs
*	2,197	98	Driveway
	138,013	37	Weighted Average
	133,930		97.04% Pervious Area
	4,083		2.96% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
93.8	100	0.0026	0.02		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.60"
21.7	504	0.0060	0.39		**Shallow Concentrated Flow, Shallow Concentrated Flow** Woodland Kv= 5.0 fps
115.5	604	Total			

Subcatchment 1S: Predev Basin 1



Summary for Subcatchment 2S: Predev Basin 2

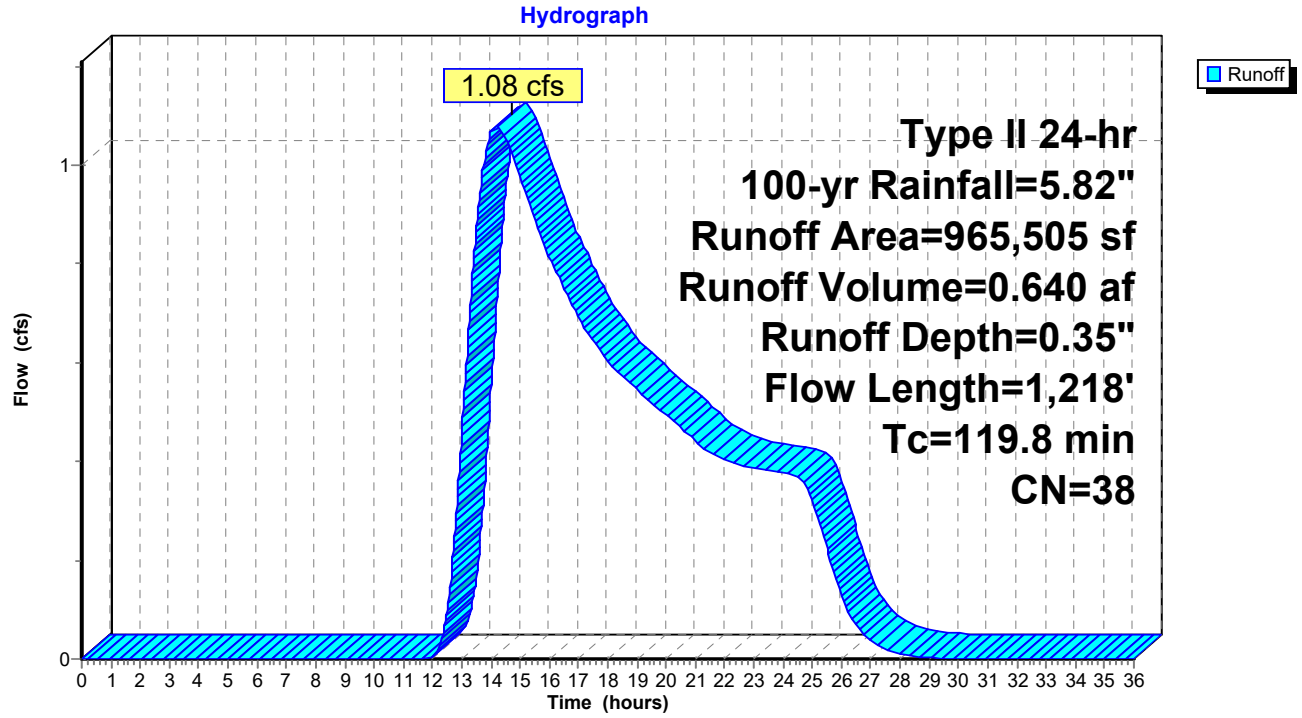
Runoff = 1.08 cfs @ 14.24 hrs, Volume= 0.640 af, Depth= 0.35"
Routed to Link 3L : Total Predevelopment Discharge

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.82"

	Area (sf)	CN	Description
*	374,075	30	Woodland
*	548,653	39	Grassland
*	17,043	98	Roofs
*	25,734	98	Asphalt/Concrete Pavement
	965,505	38	Weighted Average
	922,728		95.57% Pervious Area
	42,777		4.43% Impervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
71.6	100	0.0051	0.02		**Sheet Flow, Sheet Flow** Woods: Dense underbrush n= 0.800 P2= 2.60"
12.8	227	0.0035	0.30		**Shallow Concentrated Flow, Shallow Concentrated Flow - Wood** Woodland Kv= 5.0 fps
35.4	891	0.0036	0.42		**Shallow Concentrated Flow, Shallow Concentrated Flow - Grass** Short Grass Pasture Kv= 7.0 fps
119.8	1,218	Total			

Subcatchment 2S: Predev Basin 2



Summary for Subcatchment 4S: Post Dev Basin 1

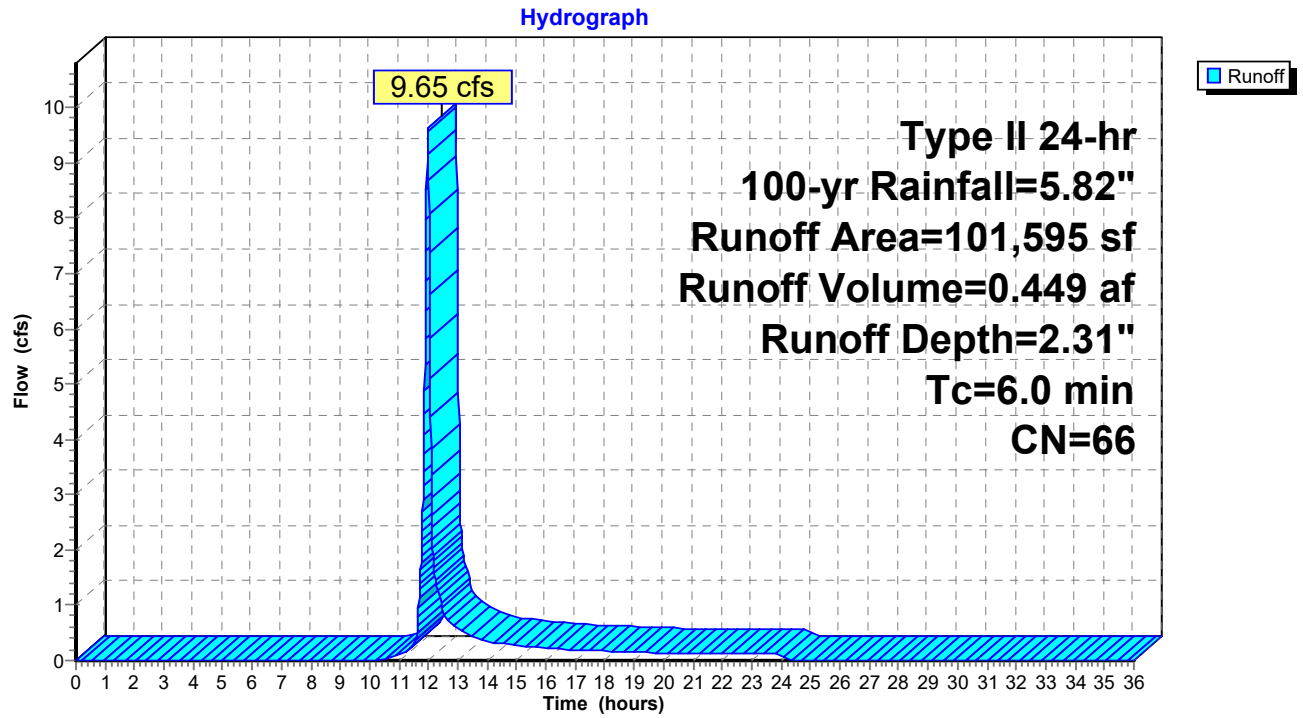
Runoff = 9.65 cfs @ 11.98 hrs, Volume= 0.449 af, Depth= 2.31"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.82"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	46,660	98	Pavement
	54,935	39	>75% Grass cover, Good, HSG A
	101,595	66	Weighted Average
	54,935		54.07% Pervious Area
	46,660		45.93% Impervious Area

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

Subcatchment 4S: Post Dev Basin 1



Summary for Subcatchment 6S: Post Dev Basin 8 OFFSITE

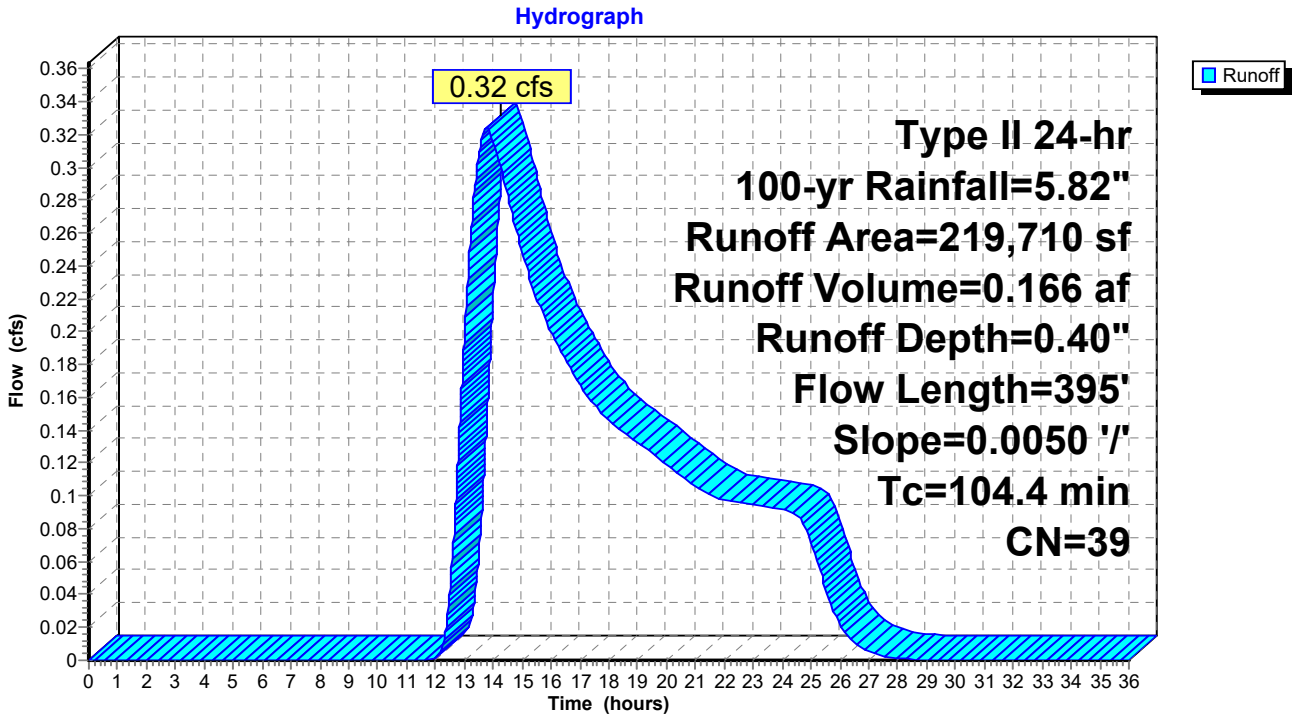
Runoff = 0.32 cfs @ 13.80 hrs, Volume= 0.166 af, Depth= 0.40"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.82"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	0	98	Pavement
	219,710	39	>75% Grass cover, Good, HSG A
	219,710	39	Weighted Average
	219,710		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
99.9	300	0.0050	0.05		**Sheet Flow,** Woods: Light underbrush n= 0.400 P2= 2.60"
4.5	95	0.0050	0.35		**Shallow Concentrated Flow,** Woodland Kv= 5.0 fps
104.4	395	Total			

Subcatchment 6S: Post Dev Basin 8 OFFSITE



Summary for Subcatchment 9S: Post Dev Basin 2

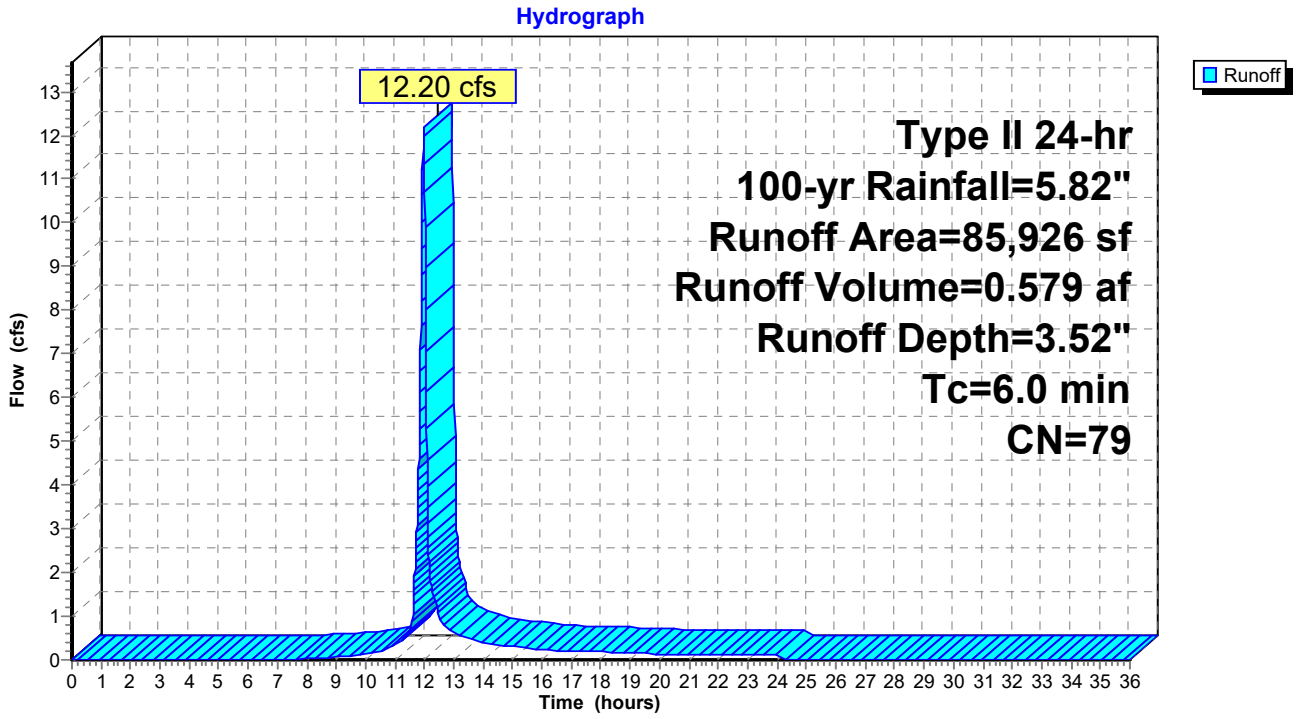
Runoff = 12.20 cfs @ 11.97 hrs, Volume= 0.579 af, Depth= 3.52"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.82"

	Area (sf)	CN	Description
	0	98	Unconnected roofs, HSG A
*	57,653	98	Pavement
	28,273	39	>75% Grass cover, Good, HSG A
*	0	96	Gravel
	85,926	79	Weighted Average
	28,273		32.90% Pervious Area
	57,653		67.10% Impervious Area

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

Subcatchment 9S: Post Dev Basin 2



Summary for Subcatchment 12S: Post Dev Basin 3

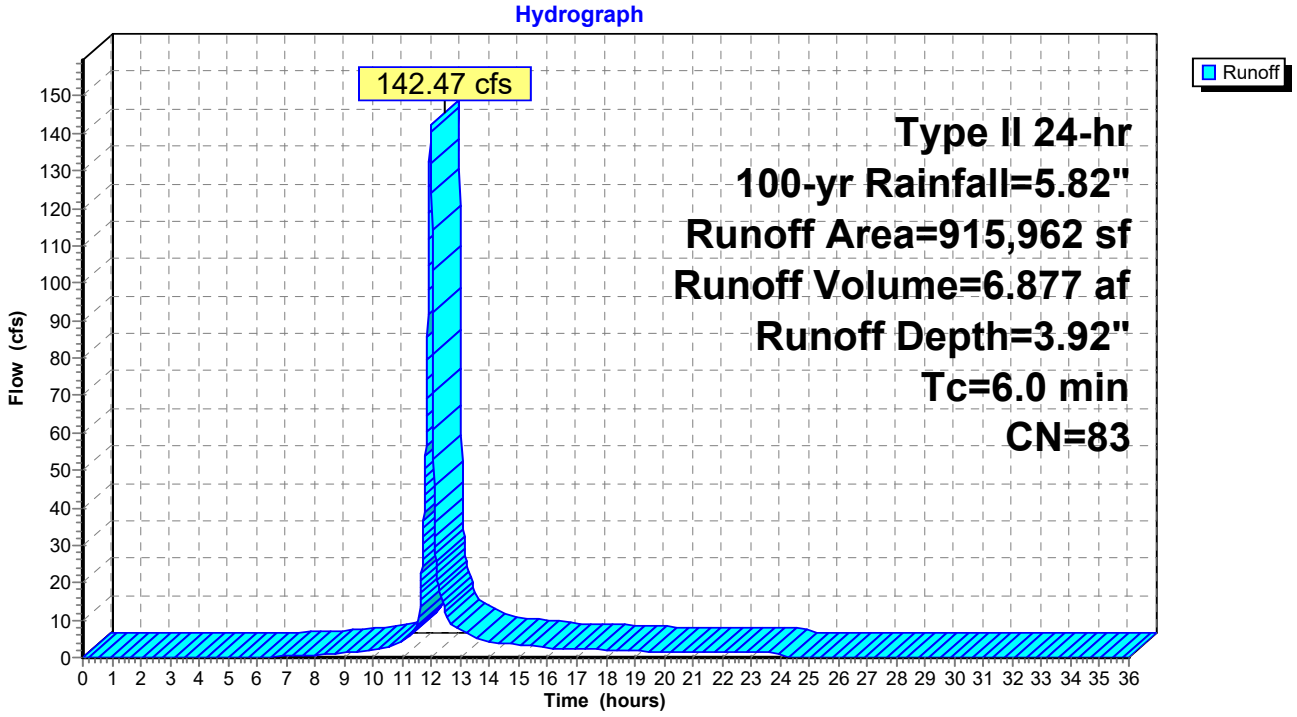
Runoff = 142.47 cfs @ 11.97 hrs, Volume= 6.877 af, Depth= 3.92"
Routed to Pond 8P : Facility 3

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Type II 24-hr 100-yr Rainfall=5.82"

	Area (sf)	CN	Description
	243,892	98	Unconnected roofs, HSG A
*	442,952	98	Pavement
	229,118	39	>75% Grass cover, Good, HSG A
*	0	96	Gravel
	915,962	83	Weighted Average
	229,118		25.01% Pervious Area
	686,844		74.99% Impervious Area
	243,892		35.51% Unconnected

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

Subcatchment 12S: Post Dev Basin 3



Summary for Pond 8P: Facility 3

Inflow Area = 30.376 ac, 59.79% Impervious, Inflow Depth = 3.19" for 100-yr event
Inflow = 164.28 cfs @ 11.97 hrs, Volume= 8.070 af
Outflow = 5.92 cfs @ 13.78 hrs, Volume= 8.070 af, Atten= 96%, Lag= 108.5 min
Discarded = 5.92 cfs @ 13.78 hrs, Volume= 8.070 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Routed to Link 5L : Total Post Development Discharge

Routing by Dyn-Stor-Ind method, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs
Peak Elev= 1,167.66' @ 13.78 hrs Surf.Area= 71,065 sf Storage= 184,139 cf

Plug-Flow detention time= 355.1 min calculated for 8.070 af (100% of inflow)
Center-of-Mass det. time= 355.1 min (1,167.7 - 812.7)

Volume	Invert	Avail.Storage	Storage Description
#1	1,164.00'	880,194 cf	**Custom Stage Data (Prismatic)** Listed below (Recalc)

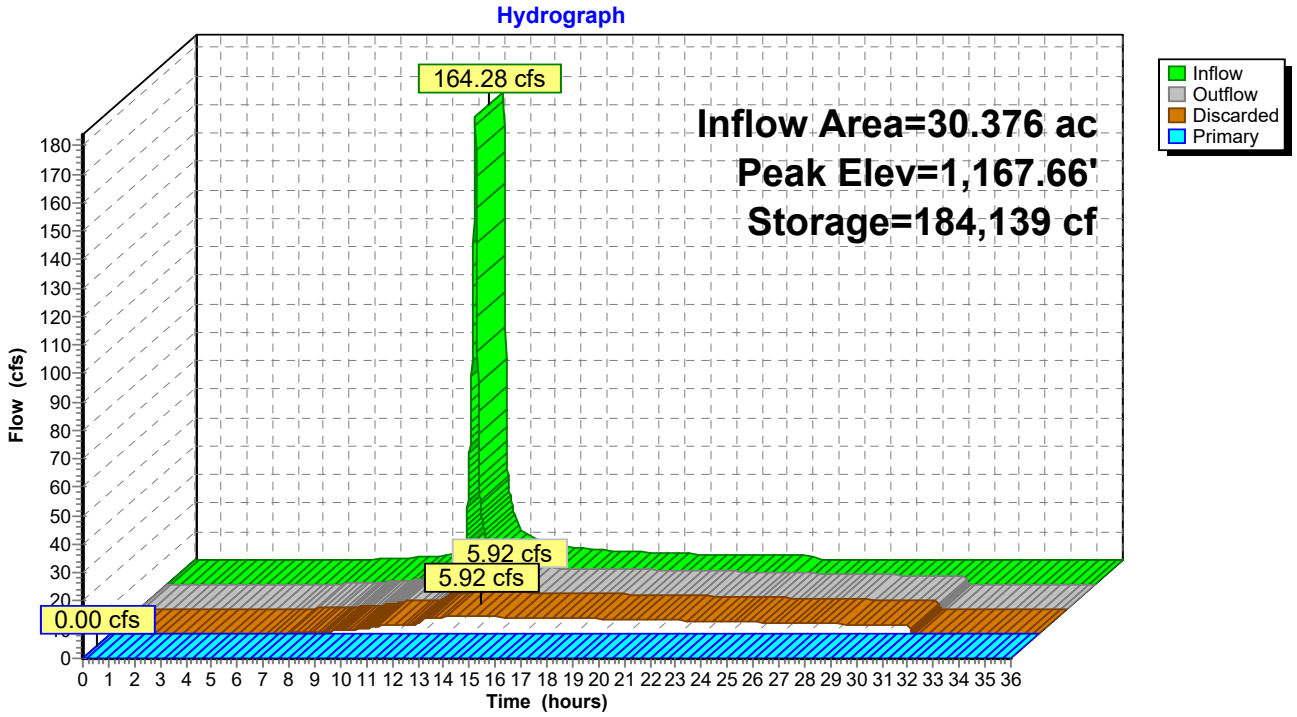
Elevation (feet)	Surf.Area (sq-ft)	Inc.Store (cubic-feet)	Cum.Store (cubic-feet)
1,164.00	34,587	0	0
1,165.00	41,730	38,159	38,159
1,166.00	50,355	46,043	84,201
1,167.00	62,117	56,236	140,437
1,168.00	75,751	68,934	209,371
1,169.00	90,953	83,352	292,723
1,170.00	108,072	99,513	392,236
1,171.00	128,981	118,527	510,762
1,172.00	173,543	151,262	662,024
1,173.00	262,797	218,170	880,194

Device	Routing	Invert	Outlet Devices
#1	Discarded	1,164.00'	**3.600 in/hr Exfiltration over Surface area** Phase-In= 0.01'
#2	Primary	1,172.10'	**15.0' long x 4.0' breadth Broad-Crested Rectangular Weir** Head (feet) 0.20 0.40 0.60 0.80 1.00 1.20 1.40 1.60 1.80 2.00 2.50 3.00 3.50 4.00 4.50 5.00 5.50 Coef. (English) 2.38 2.54 2.69 2.68 2.67 2.67 2.65 2.66 2.66 2.68 2.72 2.73 2.76 2.79 2.88 3.07 3.32

Discarded OutFlow Max=5.92 cfs @ 13.78 hrs HW=1,167.66' (Free Discharge)
↑**1=Exfiltration** (Exfiltration Controls 5.92 cfs)

Primary OutFlow Max=0.00 cfs @ 0.00 hrs HW=1,164.00' TW=0.00' (Dynamic Tailwater)
↑**2=Broad-Crested Rectangular Weir** (Controls 0.00 cfs)

Pond 8P: Facility 3

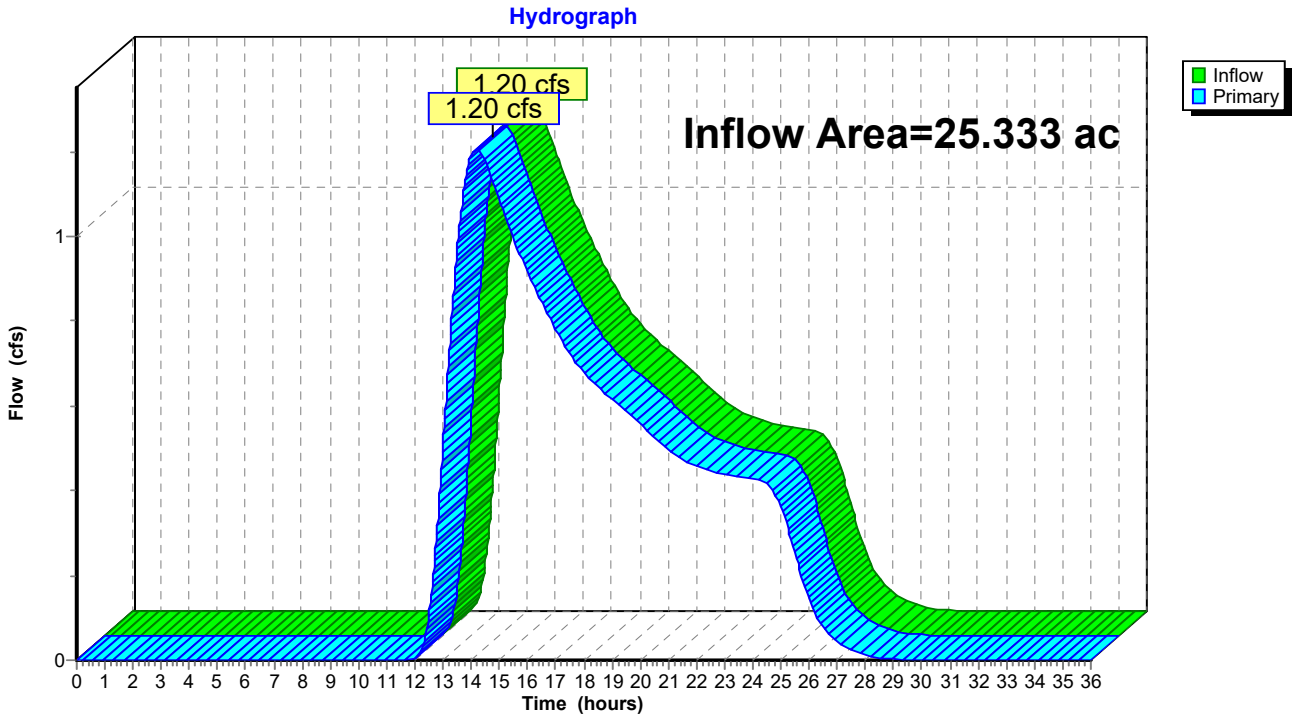


Summary for Link 3L: Total Predevelopment Discharge

Inflow Area = 25.333 ac, 4.25% Impervious, Inflow Depth = 0.34" for 100-yr event
Inflow = 1.20 cfs @ 14.24 hrs, Volume= 0.719 af
Primary = 1.20 cfs @ 14.24 hrs, Volume= 0.719 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 3L: Total Predevelopment Discharge

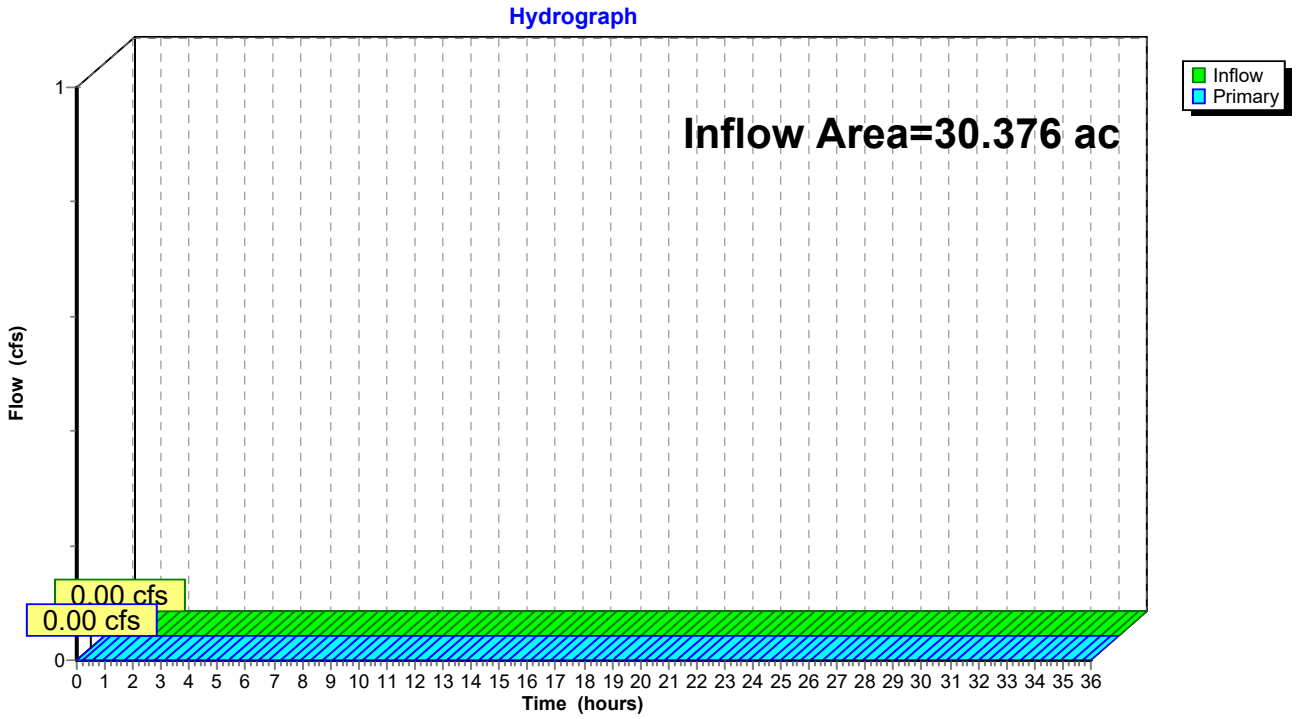


Summary for Link 5L: Total Post Development Discharge

Inflow Area = 30.376 ac, 59.79% Impervious, Inflow Depth = 0.00" for 100-yr event
Inflow = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af
Primary = 0.00 cfs @ 0.00 hrs, Volume= 0.000 af, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-36.00 hrs, dt= 0.01 hrs

Link 5L: Total Post Development Discharge



Events for Subcatchment 1S: Predev Basin 1

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.27	0.00	0.000	0.00
2-yr	2.60	0.00	0.000	0.00
10-yr	3.72	0.00	0.002	0.01
25-yr	4.49	0.02	0.017	0.06
100-yr	**5.82**	**0.13**	**0.079**	**0.30**

Events for Subcatchment 2S: Predev Basin 2

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.27	0.00	0.000	0.00
2-yr	2.60	0.00	0.000	0.00
10-yr	3.72	0.05	0.023	0.01
25-yr	4.49	0.19	0.158	0.09
100-yr	**5.82**	**1.08**	**0.640**	**0.35**

Events for Subcatchment 4S: Post Dev Basin 1

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.27	0.67	0.047	0.24
2-yr	2.60	1.22	0.071	0.37
10-yr	3.72	3.69	0.179	0.92
25-yr	4.49	5.73	0.270	1.39
100-yr	**5.82**	**9.65**	**0.449**	**2.31**

Events for Subcatchment 6S: Post Dev Basin 8 OFFSITE

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.27	0.00	0.000	0.00
2-yr	2.60	0.00	0.000	0.00
10-yr	3.72	0.01	0.009	0.02
25-yr	4.49	0.06	0.046	0.11
100-yr	**5.82**	**0.32**	**0.166**	**0.40**

Events for Subcatchment 9S: Post Dev Basin 2

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.27	2.39	0.113	0.69
2-yr	2.60	3.18	0.149	0.91
10-yr	3.72	6.14	0.286	1.74
25-yr	4.49	8.32	0.389	2.37
100-yr	**5.82**	**12.20**	**0.579**	**3.52**

Events for Subcatchment 12S: Post Dev Basin 3

Event	Rainfall (inches)	Runoff (cfs)	Volume (acre-feet)	Depth (inches)
1-yr	2.27	33.35	1.552	0.89
2-yr	2.60	42.68	1.983	1.13
10-yr	3.72	76.34	3.584	2.05
25-yr	4.49	100.37	4.760	2.72
100-yr	**5.82**	**142.47**	**6.877**	**3.92**

Events for Pond 8P: Facility 3

Event	Inflow (cfs)	Outflow (cfs)	Discarded (cfs)	Primary (cfs)	Elevation (feet)	Storage (cubic-feet)
1-yr	36.34	3.31	3.31	**0.00**	1,164.72	26,852
2-yr	47.03	3.47	3.47	0.00	1,165.00	37,976
10-yr	86.13	4.17	4.17	0.00	1,165.97	82,515
25-yr	114.38	4.80	4.80	0.00	1,166.62	117,464
100-yr	**164.28**	**5.92**	**5.92**	0.00	**1,167.66**	**184,139**

Events for Link 3L: Total Predevelopment Discharge

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-yr	0.00	0.00	**0.00**
2-yr	0.00	0.00	0.00
10-yr	0.05	0.05	0.00
25-yr	0.21	0.21	0.00
100-yr	**1.20**	**1.20**	0.00

Events for Link 5L: Total Post Development Discharge

Event	Inflow (cfs)	Primary (cfs)	Elevation (feet)
1-yr	**0.00**	**0.00**	**0.00**
2-yr	0.00	0.00	0.00
10-yr	0.00	0.00	0.00
25-yr	0.00	0.00	0.00
100-yr	0.00	0.00	0.00

250008600-Peak Discharge
Prepared by Excel Engineering
HydroCAD® 10.20-8a s/n 01178 © 2025 HydroCAD Software Solutions LLC

Table of Contents
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TABLE OF CONTENTS

Project Reports
1 Routing Diagram
2 Rainfall Events Listing
3 Area Listing (all nodes)
4 Soil Listing (all nodes)

1-yr Event
5 Subcat 1S: Predev Basin 1
6 Subcat 2S: Predev Basin 2
7 Subcat 4S: Post Dev Basin 1
8 Subcat 6S: Post Dev Basin 8 OFFSITE
9 Subcat 9S: Post Dev Basin 2
10 Subcat 12S: Post Dev Basin 3
11 Pond 8P: Facility 3
13 Link 3L: Total Predevelopment Discharge
14 Link 5L: Total Post Development Discharge

2-yr Event
15 Subcat 1S: Predev Basin 1
16 Subcat 2S: Predev Basin 2
17 Subcat 4S: Post Dev Basin 1
18 Subcat 6S: Post Dev Basin 8 OFFSITE
19 Subcat 9S: Post Dev Basin 2
20 Subcat 12S: Post Dev Basin 3
21 Pond 8P: Facility 3
23 Link 3L: Total Predevelopment Discharge
24 Link 5L: Total Post Development Discharge

10-yr Event
25 Subcat 1S: Predev Basin 1
26 Subcat 2S: Predev Basin 2
27 Subcat 4S: Post Dev Basin 1
28 Subcat 6S: Post Dev Basin 8 OFFSITE
29 Subcat 9S: Post Dev Basin 2
30 Subcat 12S: Post Dev Basin 3
31 Pond 8P: Facility 3
33 Link 3L: Total Predevelopment Discharge
34 Link 5L: Total Post Development Discharge

25-yr Event
35 Subcat 1S: Predev Basin 1
36 Subcat 2S: Predev Basin 2
37 Subcat 4S: Post Dev Basin 1
38 Subcat 6S: Post Dev Basin 8 OFFSITE
39 Subcat 9S: Post Dev Basin 2
40 Subcat 12S: Post Dev Basin 3
41 Pond 8P: Facility 3
43 Link 3L: Total Predevelopment Discharge
44 Link 5L: Total Post Development Discharge

100-yr Event
45 Subcat 1S: Predev Basin 1
46 Subcat 2S: Predev Basin 2
47 Subcat 4S: Post Dev Basin 1
48 Subcat 6S: Post Dev Basin 8 OFFSITE
49 Subcat 9S: Post Dev Basin 2
50 Subcat 12S: Post Dev Basin 3
51 Pond 8P: Facility 3
53 Link 3L: Total Predevelopment Discharge
54 Link 5L: Total Post Development Discharge

Multi-Event Tables
55 Subcat 1S: Predev Basin 1
56 Subcat 2S: Predev Basin 2
57 Subcat 4S: Post Dev Basin 1
58 Subcat 6S: Post Dev Basin 8 OFFSITE
59 Subcat 9S: Post Dev Basin 2
60 Subcat 12S: Post Dev Basin 3
61 Pond 8P: Facility 3
62 Link 3L: Total Predevelopment Discharge
63 Link 5L: Total Post Development Discharge

Appendix D: Web Soil Survey Map

United States Department of Agriculture

NRCS

Natural Resources Conservation Service

A product of the National Cooperative Soil Survey, a joint effort of the United States Department of Agriculture and other Federal agencies, State agencies including the Agricultural Experiment Stations, and local participants

Custom Soil Resource Report for Marathon County, Wisconsin

Marathon County - New Highway Garage



Preface

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).

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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Contents

Preface..... 2
Soil Map..... 5
Soil Map.....6
Legend.....7
Map Unit Legend..... 8
Map Unit Descriptions..... 8
Marathon County, Wisconsin..... 10
3383B—Mahtomedi loamy sand, 0 to 6 percent slopes.....10
Soil Information for All Uses.....12
Soil Properties and Qualities..... 12
Soil Qualities and Features.....12
Hydrologic Soil Group (Marathon County - New Highway Garage)..... 12
References.....17

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: 1:3,330 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

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

MAP LEGEND

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

Soils
- Soil 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 1:20,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
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: Marathon County, Wisconsin
Survey Area Data: Version 23, 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: Jun 7, 2023—Jun 8, 2023

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
3383B	Mahtomedi loamy sand, 0 to 6 percent slopes	30.6	100.0%
Totals for Area of Interest		**30.6**	**100.0%**

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 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.

Marathon County, Wisconsin

3383B—Mahtomedi loamy sand, 0 to 6 percent slopes

Map Unit Setting

National map unit symbol: ggwn
Elevation: 600 to 1,950 feet
Mean annual precipitation: 22 to 36 inches
Mean annual air temperature: 36 to 48 degrees F
Frost-free period: 80 to 170 days
Farmland classification: Not prime farmland

Map Unit Composition

Mahtomedi and similar soils: 90 percent
Minor components: 10 percent
Estimates are based on observations, descriptions, and transects of the mapunit.

Description of Mahtomedi

Setting

Landform: Outwash plains, stream terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Parent material: Sandy outwash

Typical profile

Ap - 0 to 8 inches: loamy sand
Bw1 - 8 to 18 inches: sand
Bw2 - 18 to 24 inches: sand
C - 24 to 60 inches: sand

Properties and qualities

Slope: 0 to 6 percent
Depth to restrictive feature: More than 80 inches
Drainage class: Excessively drained
Runoff class: Very low
Capacity of the most limiting layer to transmit water (Ksat): High to very high (5.95 to 19.98 in/hr)
Depth to water table: More than 80 inches
Frequency of flooding: None
Frequency of ponding: None
Calcium carbonate, maximum content: 15 percent
Available water supply, 0 to 60 inches: Low (about 4.4 inches)

Interpretive groups

Land capability classification (irrigated): None specified
Land capability classification (nonirrigated): 4s
Hydrologic Soil Group: A
Ecological site: F090BY019WI - Dry Sandy Upland
Forage suitability group: Low AWC, adequately drained (G090AY002WI)
Other vegetative classification: Pinus strobus - Quercus spp. / Gaultheria procumbens - Ceanothus americanus , Eastern White Pine - Oak spp. / Wintergreen - New Jersey Tea (PQGCe), Pinus strobus - Acer rubrum /

Vaccinium angustifolium - Amphicarpa bracteata , Eastern White Pine - Red Maple / Low Sweet Blueberry - Hog-peanut (PArVAm), Low AWC, adequately drained (G090AY002WI)

Hydric soil rating: No

Minor Components

Mahtomedi, moderately well drained

Percent of map unit: 5 percent
Landform: Depressions, outwash plains, stream terraces
Landform position (two-dimensional): Toeslope, summit
Landform position (three-dimensional): Tread
Down-slope shape: Concave, linear
Across-slope shape: Concave, linear
Ecological site: F090BY019WI - Dry Sandy Upland
Other vegetative classification: Low AWC, adequately drained (G090AY002WI)
Hydric soil rating: No

Chetek

Percent of map unit: 3 percent
Landform: Outwash plains, stream terraces
Landform position (two-dimensional): Summit
Landform position (three-dimensional): Tread
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F090BY021WI - Dry Loamy Upland
Other vegetative classification: Low AWC, adequately drained (G090AY002WI)
Hydric soil rating: No

Graycalm

Percent of map unit: 2 percent
Landform: Recessionial moraines, lake plains, outwash plains
Landform position (two-dimensional): Summit
Down-slope shape: Convex
Across-slope shape: Convex
Ecological site: F090AY019WI - Dry Sandy Upland
Other vegetative classification: Low AWC, adequately drained (G090AY002WI), Pinus strobus - Acer rubrum / Vaccinium angustifolium - Amphicarpa bracteata , Eastern White Pine - Red Maple / Low Sweet Blueberry - Hog-peanut (PArVAm)
Hydric soil rating: No

Soil Information for All Uses

Soil Properties and Qualities

The Soil Properties and Qualities section includes various soil properties and qualities displayed as thematic maps with a summary table for the soil map units in the selected area of interest. A single value or rating for each map unit is generated by aggregating the interpretive ratings of individual map unit components. This aggregation process is defined for each property or quality.

Soil Qualities and Features

Soil qualities are behavior and performance attributes that are not directly measured, but are inferred from observations of dynamic conditions and from soil properties. Example soil qualities include natural drainage, and frost action. Soil features are attributes that are not directly part of the soil. Example soil features include slope and depth to restrictive layer. These features can greatly impact the use and management of the soil.

Hydrologic Soil Group (Marathon County - New Highway Garage)

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

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

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

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

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

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

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

Custom Soil Resource Report
Map—Hydrologic Soil Group (Marathon County - New Highway Garage)



Map Scale: 1:3,330 if printed on A landscape (11" x 8.5") sheet.

N

Meters
0 45 90 180 270

Feet
0 150 300 600 900

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

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:20,000.

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

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

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

Source of Map: Natural Resources Conservation Service
Web Soil Survey URL:
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: Marathon County, Wisconsin
Survey Area Data: Version 23, 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: Jun 7, 2023—Jun 8, 2023

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.

Table—Hydrologic Soil Group (Marathon County - New Highway Garage)

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
3383B	Mahtomedi loamy sand, 0 to 6 percent slopes	A	30.6	100.0%
Totals for Area of Interest			**30.6**	**100.0%**

Rating Options—Hydrologic Soil Group (Marathon County - New Highway Garage)

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

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Appendix E: Geotechnical Report & Stormwater Soil Evaluation

Point of Beginning

GEOTECHNICAL ENGINEERING REPORT

MARATHON COUNTY HWY SHOP FACILITY

VILLAGE OF KRONENWETTER, WISCONSIN

APRIL 2, 2026 | PROJECT NO. 25.2082

Marathon County Department of
Facilities and Capital Management
1100 Lakeview Drive, Door 43
Wausau, WI 54403

STEVENS POINT OFFICE 4941 KIRSCHLING COURT, STEVENS POINT, WI 54481
GREEN BAY OFFICE 1497 6TH STREET - SUITE C, GREEN BAY, WI 54304
SUN PRAIRIE OFFICE 1261 W MAIN STREET - SUITE 102, SUN PRAIRIE, WI 53590
EMAIL INFO@POBINC.COM • **CALL** 715.344.9999 • **VISIT** POBINC.COM

DRILL

Point of Beginning

4941 Kirschling Court, Stevens Point, WI 54481
1497 6th Street - Suite C, Green Bay, WI 54304
1261 W Main Street - Suite 102, Sun Prairie, WI 53590

April 2, 2026

Marathon County Department of
Facilities and Capital Management
Attn: Troy Torgerson
1100 Lakeview Drive, Door 43
Wausau, WI 54403

RE: Marathon County Hwy Shop Facility – Village of Kronenwetter, Wisconsin

Dear Mr. Torgerson:

We appreciate the opportunity to perform the subsurface exploration and provide this geotechnical engineering report for the above-referenced project.

This report has been prepared in accordance with our understanding of the project requirements and within the scope of our geotechnical services.

We trust the information and recommendations presented will assist in the design and development of the project. Please contact us if further clarification or additional services are needed.

Sincerely,

Michael Frede

Michael Frede, P.E.
Director of Geotechnical Engineering

Enclosure

Contents

EXECUTIVE SUMMARY 5
PROJECT DESCRIPTION 5
STRUCTURAL CONSIDERATIONS 5
CIVIL CONSIDERATIONS 5
CONSTRUCTION CONSIDERATIONS 6
PROJECT DESCRIPTION 7
SITE DESCRIPTION 7
SCOPE OF SERVICES 8
SUBSURFACE EXPLORATION 8
ADDITIONAL FIELD TESTING 8
LABORATORY TESTING 8
SUBSURFACE CONDITIONS 9
SOIL CONDITIONS 9
BEDROCK CONDITIONS 10
GROUNDWATER CONDITIONS 10
ANALYSIS AND RECOMMENDATIONS 11
STRUCTURAL CONSIDERATIONS 11
Foundation Design 11
Seismic Design 12
Floor Slab Design 12
Retaining Wall Design 12
CIVIL CONSIDERATIONS 14
Pavement Design 14
Stormwater Management Design 15
CONSTRUCTION CONSIDERATIONS 15
Subgrade Preparation 15

Engineered Fill and Backfill 16
Foundation Evaluation 16
Groundwater Management 17
Surface Water Management 17
Excavation Safety 17
GENERAL QUALIFICATIONS 18
APPENDICES 19

EXECUTIVE SUMMARY

This report summarizes the results of our geotechnical engineering services associated with the proposed new Marathon County highway shop facility to be constructed in the Village of Kronenwetter, Wisconsin.

PROJECT DESCRIPTION

The project consists of constructing the following:

- Main Building
  - One Story with Mezzanines
  - Slab-on-Grade Floor
- Equipment Storage Building
  - One Story
  - Slab-on-Grade Floor
- Salt Storage Building
  - Slab-on-Grade Floor
- Ancillary Facilities
- Asphalt and Concrete Pavements
- Stormwater Management Systems

STRUCTURAL CONSIDERATIONS

- The buildings can be supported by conventional, shallow foundation systems designed using an allowable bearing capacity of 2,500 psf.
  - A higher value can be used if additional soil improvement is implemented.
- The building floor slabs and equipment pads can be designed using a subgrade modulus value of 70 pci.
  - A higher value can be used if additional soil improvement is implemented.
- Retaining walls design parameters for the existing soils and aggregate backfill are provided.

CIVIL CONSIDERATIONS

- Minimum pavement sections should consist of the following:
  - Asphalt Pavement
    - Traffic Class I = 4 inches of asphalt over 10 inches of base course.
    - Traffic Class II = 5 inches of asphalt over 12 inches of base course.
  - Portland Cement Concrete (PCC) Pavement
    - Non-Traffic Areas = 5 inches of PCC over 6 inches of base course.
    - Heavy Truck = 7 inches of PCC over 6 inches of base course.
  - Geotextile fabric between the base course materials and prepared subgrade.
- The stormwater management systems can be designed using an infiltration rate of 3.60 inches per hour (in/hr) based on Table 2 standards.
  - Field infiltration testing could be conducted to possibly increase the design infiltration rate.

CONSTRUCTION CONSIDERATIONS

- Soil improvements should be planned below structural elements and pavements.
    - Undocumented fills exist in the project area that could cause excessive settlements of structural elements and pavements.
    - Low-strength native soils exist that could cause excessive settlements of structural elements and pavements.
- The soils at the estimated foundation bearing elevations exhibit variable strengths that can produce differential settlements if not considered in the structural design.
- Clean sand (small quantities of fines) soil exists that will pose construction challenges.
- Cobbles exist within the soil profile that could cause construction challenges for excavations.
- The property has a development history, and efforts should be taken during site grading to identify any structural elements that need to be removed.

PROJECT DESCRIPTION

Marathon County is preparing to construct a new highway shop facility in Kronenwetter, Wisconsin. The location of the project is illustrated in Figure 1 in Appendix A.

The proposed development plan consists of the following:

- Main Building
  - One Story with Mezzanines
    - The structure is planned to be supported by conventional, shallow, column and wall spread footings.
    - Slab-on-Grade Floor
    - The floor elevation was not provided but estimated to be about 1175 feet.
- Equipment Storage Building
  - One Story
    - The structure is planned to be supported by conventional, shallow, column and wall spread footings.
    - Slab-on-Grade Floor
    - The floor elevation was not provided but estimated to be about 1173 feet.
- Salt Storage Building
  - One Story
    - The structure is planned to be supported by conventional, shallow, wall spread footings.
    - Slab-on-Grade Floor
    - The floor elevation was not provided but estimated to be about 1176 feet.
- Ancillary Facilities
- Asphalt and Concrete Pavements
- Stormwater Management Systems
- The development concept is illustrated in Figure 2 in Appendix A and described in greater detail in relevant sections of the Request for Proposals included in Appendix E.

SITE DESCRIPTION

The development area includes eight parcels located at the northeast corner of Old Hwy 51 and Gate of Heaven Drive in the Village of Kronenwetter, Marathon County, Wisconsin.

- The project area is illustrated on Figure 3 (Project Topographic Survey).
- The project area totals 24.5 acres.
- Five of the parcels are currently developed, with most of the land currently undeveloped.
  - Additional structures may have existed within the project boundaries.
- The ground surface is relatively flat, sloping downward from the northeast corner to the south with an elevation difference of about 4 feet. (1777 feet to 1173 feet).

SCOPE OF SERVICES

SUBSURFACE EXPLORATION

The drilling program consisted of forty-four borings:

- Three borings (B-1, B-2, and B-3) drilled to depths of 20 feet within the salt storage building footprint.
- Fifteen borings (B-4 through B-18) drilled to depths of 20 feet within the main building footprint.
- One boring (B-19) drilled to a depth of 20 feet at the fuel island.
- One boring (B-20) drilled to a depth of 20 feet at the truck scale.
- Nine borings (B-21 through B-29) drilled to depths of 20 feet within the equipment storage building footprint.
- Eight borings (P-1 through B-8) drilled to depths of 10 feet in the pavement areas.
- Seven borings (SW-1 through SW-7) drilled to depths of 10 feet in the stormwater areas.
- The boring locations are illustrated on the Boring Location Diagram (Figure 2) in Appendix A.
- The ground surface at the boring locations were measured by a Point of Beginning field crew.
- The drilling and sampling procedures are described in Appendix D.

ADDITIONAL FIELD TESTING

- None

LABORATORY TESTING

The laboratory testing program consisted of the following:

- All samples were visually examined and classified based on their physical characteristics as defined by the Unified Soil Classification System (USCS).
    - The boring logs are included in Appendix B.
    - The USCS summary is included in Appendix B.
- The samples from the stormwater areas were classified according to the US Department of Agriculture (USDA) soil classification system for stormwater management design.
    - The classifications are presented on the *Soil and Site Evaluation – Stormwater Infiltration* form included in Appendix B.
- Water content testing on all samples.
    - The laboratory test results are presented on the boring logs.
- Sieve analysis testing on four samples from the stormwater areas.
    - The laboratory test results are presented on the boring logs.
    - The full sieve analysis reports are included in Appendix C.
    - The P200 (percent passing the no. 200 sieve) results are presented on the boring logs.
- Typical laboratory procedures are described in Appendix D.

SUBSURFACE CONDITIONS

SOIL CONDITIONS

The subsurface conditions encountered at the boring locations are summarized below. For detailed descriptions of the geologic conditions encountered at the boring locations, please refer to the attached logs in Appendix B. The general geologic profiles are also illustrated on five cross sections (Figures 4 through 8) in Appendix A. The size of the project and typical geologic variability between boring locations warrants considering all soil conditions when designing the various structural and civil elements of the development.

General Soil Conditions

- Surface Material
  - Topsoil at all boring locations except two (SW-6 and SW-7).
    - 0 to 18 inches
    - The average was 10.7 inches
- Undocumented Fill Soil
  - Undocumented fills were encountered at six boring locations (B-18, B-28, P-5, P-8, SW-6, and SW-7) to depths of about 1.5 to 9 feet.
    - The fills consisted of sand, with minimal fines (silt), soil layers.
    - The fills are "undocumented" because no reports were provided to indicate they were placed and compacted sufficiently to support structural elements.
    - The fills were likely placed when the property was originally developed and generated from on-site grading activities.
    - Deeper fill soils could exist in other areas within the property, including former building areas.
- Native Coarse-Grained (Sand) Soils
  - Layers of mostly fine sand, with minimal fines (silt), were encountered at all sample locations.
  - The medium and coarse sand content varied in the layers.
  - The fine gravel content varied in the sand layers.

Physical Soil Characteristics

- Undocumented Fill Soils
  - Ten sand fill samples were collected.
    - The samples exhibited very loose to medium dense relative densities.
      - The N-values ranged from 2 to 11.
        - The overall average was 5.
        - Three samples (30%) were less than 4 (very loose).
        - One sample (10%) exceeded 10 (medium dense).
    - The moisture content of the samples ranged from 2.2% to 11.2%.
      - The average was 5.7%.
      - Typically, moisture contents are considered high if they are above 15% in sand soils.

        - The samples were all described as slightly moist and moist.
- Native Coarse-Grained Soils
    - Two hundred and twenty-four native sand samples were collected.
        - The samples exhibited very loose to dense relative densities.
            - The N-values ranged from 2 to sampler refusal (50 blows for less than 6 inches of penetration).
                - The overall average was 14.
                - Three samples (1%) were less than 4 (very loose).
                    - These samples were collected in the top 3 feet of the soil profile.
                    - Very loose soils reflect allowable bearing capacities less than 1,000 psf.
                - Forty samples (18%) were less than 10 (loose).
                    - 80% of these samples were collected in the top 5 feet of the soil profile.
                    - Loose soils reflect allowable bearing capacities less than 2,000 psf.
                - Three samples (1%) were greater than 30 (dense and very dense).
                    - These samples encountered cobbles.
        - The moisture content of the samples ranged from 1.2% to 7.2%.
            - The average was 3.1%.
            - Typically, moisture contents are considered high if they are above 15% in sand soils.
            - The samples were all described as slightly moist and moist.

BEDROCK CONDITIONS

- No bedrock was encountered.
- A review of the State of Wisconsin well logs in the immediate vicinity of the project area indicated that bedrock exists at a depth greater than 90 feet.

GROUNDWATER CONDITIONS

- No perched water or groundwater was encountered at the boring locations.
- Fluctuations in the groundwater table elevation occur with variations in precipitation, evapotranspiration, surface runoff, etc.

ANALYSIS AND RECOMMENDATIONS

There are five primary issues that should be considered when planning this project.

- Soil improvements should be planned to address low-strength soils below structural elements and pavements.
    - Undocumented fills exist in the project area that can be a concern, potentially causing excessive total and/or differential settlements.
    - Low-strength (very loose and loose sand) native soils exist in the shallower portions of the soil profile.
    - Refer to Figures 4 through 8) in Appendix B for the location of undocumented fills and low-strength native soils within the soil profile.
    - The most cost-effective soil improvement method is likely the removal and replacement of unsuitable soils during mass grading operations.
- The soils at the estimated foundation bearing elevations exhibit variable strengths (refer to Figures 4 through 6).
    - The footings are expected to bear upon variable-strength native soils and engineered fill.
    - Variable bearing soils can produce differential settlements if not considered in the structural design.
- Clean sand (small quantities of fines) soil exists that will pose construction challenges.
- Cobbles exist within the soil profile that could pose construction challenges for excavations.
- The property has a development history, and efforts should be taken during site grading to identify any structural elements that need to be removed.

STRUCTURAL CONSIDERATIONS

Foundation Design

- Net Allowable Bearing Capacity = 2,500 psf
    - Equivalent N-value = 10
    - The above allowable bearing capacity is conservative due to the variable strength bearing conditions.
    - The above allowable bearing capacity assumes soil improvement within the building areas occurs due to the presence of undocumented fill and low-strength native soils.
        - The most likely method of soil improvement is over-excavation and replacement.
        - The depth of over-excavation is estimated to be 0 to 7 feet (possibly deeper in unexplored areas), with an average of 1.5 feet.
    - A higher value could be utilized if additional soil improvement is implemented.
    - This recommendation is based on the assumptions illustrated in Figures 4 through 6.
- Estimated Settlement (Properly Designed and Constructed)
    - Total = less than 1 inch
    - Differential = less than ¾ inch
- Design Safety Factor = 3
- Minimum Foundation Dimensions

  - Columns: 30 inches
  - Continuous: 18 inches
- Sliding Resistance (allowable coefficient of friction) = 0.35
- Minimum Footing Depth
  - Perimeter Footings and Interior Footings in Unheated Areas = 48 inches below exterior grade.
  - Exterior footings can bear at shallower depths by following ASCE 32-01 (American Society of Civil Engineers, Design and Construction of Frost-Protected Shallow Foundations, 2001).
  - Interior Footings (not subject to frost) can bear directly beneath the floor slab.

Seismic Design

- Seismic Site Classification = D
- The soil conditions present at the property, and knowledge of the general geologic profile in the area, were utilized in determining the Seismic Design Category (SDC) for structures.
- The Site Class was determined based on the expected average properties of the soil within 100 feet of the surface.
- Additional seismic classification notes are provided in Appendix D.

Floor Slab Design

- Subgrade Modulus = 70 pci
  - This value is conservative due to the variable strength bearing conditions.
    - A higher value could be utilized if additional soil improvement is planned.
  - This value assumes that the slab bears on a minimum 2 feet of improved soil or engineered fill.
- Floor Slab Support = 6 inches of base course meeting material specifications of WisDOT Section 310, Open Graded Base Course
- These recommendations can also be utilized for equipment pads.

Retaining Wall Design

- Assuming the adjacent soils consist of native fine sand soils, the following values are appropriate:

Retaining Wall Design Parameters	
Soil Unit Weight	100 pcf
Angle of Internal Friction	27°
Soil Cohesion	0 psf
Earth Pressure Coefficient	
At Rest Design Parameters	0.55
Active Design Parameters	0.37
Passive Design Parameters	2.70

- If backfill envelopes are sloped more than 45° and the backfill consists of crushed aggregate, the following values are appropriate.

Retaining Wall Design Parameters	
Soil Unit Weight	140 pcf
Angle of Internal Friction	42°
Soil Cohesion	0 psf
Earth Pressure Coefficient	
At Rest Design Parameters	0.29
Active Design Parameters	0.17
Passive Design Parameters	5.83

- An active earth pressure condition will develop for walls that are free to rotate at least 0.001 times the height of the wall.
- An at-rest condition will develop for walls that will be restrained.
- A passive condition will develop for walls that rotate towards the soil.
    - A minimum safety factor of 2.0 is recommended in passive earth pressure calculations.
- The upper 2 feet of soil in frost protected areas and 4 feet of soil in other areas should be ignored.
- All retaining walls will be vertical.
- The excavations adjacent to the walls will range from a vertical cut to a 30^0 slope.
- Clean, free-draining crushed aggregate fill (P200 <6%) is used as backfill within 2 feet behind the walls.
- The backfill condition at the ground surface is level.
- The retaining wall design should also consider surface and subgrade surcharge loading.
- Special attention should be paid during placement of backfill against below-grade and retaining walls.
    - Inadequate placement and compaction of backfill will result in at- grade structural elements and slab/pavement settlement and distress.
    - To achieve a balance between minimizing excessive pressures against the walls during construction and reducing the settlement of the wall backfill, the granular backfill should be compacted using vibratory methods and confirmed with field observations.
    - Where backfill supports structural elements, sidewalks, or pavements, the upper 4 feet should be compacted to 95% of the maximum dry density (Modified Proctor).
    - Lifts of 4 to 6 inches can be effective in achieving compaction requirements.
    - Drainage should be provided behind the walls to prevent the buildup of hydrostatic pressures.
    - Drainage pipes should be installed along the perimeter of below-grade walls that are exposed to the elements, slightly above the footings, and allowed to drain either by gravity or to a sump pit and pump system.
        - The drainage pipes (4-inch slotted) should be surrounded by a minimum of 6 inches of drainage aggregate.
        - A filter should be installed either between the soil and stone backfill or on the tubing (filter sock).
        - The drainpipes should be interconnected at 15 to 20 feet spacings. Water stops should be used in all construction and expansion joints.

        - Cleanouts should be provided for the drainage pipes and the system checked periodically to confirm it is functioning properly.
    - A relatively impermeable barrier at the ground surface is recommended, such as a minimum 2-foot-thick clay cap or Bituminous or Portland cement concrete (e.g., walkways and drives) to minimize surface water infiltration into backfill against walls.
        - The impermeable barrier should slope away from the structure at a minimum 2 percent grade.

CIVIL CONSIDERATIONS

Pavement Design

- Undocumented fills and shallow, low-strength native soils exist in the project area.
    - Therefore, greater than normal distress, faster deterioration, overall reduced service life, and increased maintenance are anticipated.
- To reduce the potential for localized settlements and provide more consistent subgrade support, a geotextile fabric (e.g., SKAPS W315) should be placed below the base course materials in areas subjected to traffic loads.
- The Wisconsin Asphalt Pavement Association (WAPA) Design Guide should be utilized to design the new asphalt surface pavements.
- Asphalt Pavement
    - The Wisconsin Asphalt Pavement Association (WAPA) Design Guide should be utilized to design the new asphalt surface pavements.
    - Hot Mix Asphalt (HMA) and base course materials should be placed and compacted following the project requirements and guidelines of WisDOT Standard Specifications for Highway and Structure Construction, section 460.3.
    - It has been assumed that Traffic Class I is suitable for areas that are mainly used by light passenger vehicles and Traffic Class II for medium-loaded areas.
    - The minimum pavement section should consist of the following:

Material	*Traffic Class I*	*Traffic Class II*	*WisDOT Specification*
Asphalt Surface Course	2 inches	2 inches	Section 460
Asphalt Binder Course	2 inches	3 inches	Section 460
Dense Graded Base Course	10 inches	12 inches	Section 305

- Portland Cement Concrete (PCC) Pavement
    - Surface PCC pavements that are not subjected to vehicle traffic should be a minimum of 5 inches with a minimum of 6-inches of dense graded aggregate base course.
    - PCC Pavement sections that experience heavy truck traffic, equipment or truck parking areas, entrances and exit aprons, or trash-dumpster loading zones should consist of a minimum

thickness of 7 inches over a minimum of 6-inch-thick crushed dense graded aggregate base course.
    - The reinforcement details for PCC layers and final pavement sections should be designed by the project design engineer.
- The pavement sections above are not intended to support on-going construction traffic.
- The pavement recommendations assume the subgrade is prepared as described in this report.
    - Additional corrective action may be warranted at the time of construction, depending on the site conditions.

Stormwater Management Design

- Stormwater management system design parameters are based on the soils encountered at SW-1 through SW-7.
    - The classifications for the boring samples are presented on the *Soil and Site Evaluation – Stormwater Infiltration* form in Appendix E.
    - The infiltration rate for the predominant soil ("Sand") is 3.60 inches per hour (in/hr) based on Table 2 standards.
    - Field infiltration testing could be conducted to possibly increase the infiltration rate.

CONSTRUCTION CONSIDERATIONS

Subgrade Preparation

- All organic, loose, wet, disturbed, or otherwise unsuitable surface soils should be stripped from structural and engineered fill areas prior to any construction activities.
- Large structural areas should be proof-rolled to identify low-strength or disturbed areas that need to be removed or improved.
- Clean sand soils will be sensitive to disturbances from construction activity that can cause significant reduction in soil strength and support capabilities.
    - Care should be taken during construction to protect these soils from disturbance from equipment.
- Placing a working subbase layer of 3-inch crushed stone or utilizing a cement stabilization program could be beneficial in areas subjected to construction traffic and to reduce the potential need to strip disturbed soils.
- Cobbles may be encountered in excavations that could cause construction challenges.
- The property has a development history, and efforts should be taken during site grading to identify any buried structural elements and utilities.
    - Buried structural elements from former buildings, associated backfill materials, and utilities could be present in the project area.
    - Efforts should be taken during site grading to identify any existing elements and undocumented fills.
    - Existing foundations should be removed to a depth of at least 4 feet below proposed foundations.

- Existing concrete slabs below a depth of 4 feet should be removed or broken into minimum 1-foot pieces to avoid water pooling.
- Utilities should be properly abandoned.
- Care should also be taken to minimize disturbance of existing native soil that would require additional subgrade restoration.

Engineered Fill and Backfill

- Engineered (compacted and tested) Fill
  - Inorganic Materials
  - Free of Deleterious Debris
  - Non-Frozen
  - Maximum 3 inches in Size
  - Placed in 8 to 10-inch Loose Lifts
  - Minimum Compaction
    - Structural Areas= 95 percent of the Maximum Dry Density (Modified Proctor)
    - Non-Structural Areas = 90 percent of the Maximum Dry Density (Modified Proctor)
  - Moisture Content = 3± percent of the Optimum Moisture
  - Placed on Tested and Passing Subgrade Soils
  - Testing Frequency (where not specified by local ordinance)
    - One test per lift for every 2,500 square feet of compacted fill in building areas.
    - One test per lift for every 5,000 square feet of compacted fill in pavement areas.
    - One test per 100 linear feet of compacted utility trench backfill.
- Imported Fill
  - Fine-Grained Soil (Clay)
    - Suitable for mass grading only.
    - Silt soil should not be used.
  - Coarse-Grained Soil (Sand, Gravel)
    - Suitable for utility and foundation backfill and mass grading.
  - Processed (Crushed and Screened) Aggregate
    - Suitable for all applications.
- On-site soil can be reused as engineered fill if they meet the specifications in this report.

Foundation Evaluation

- To manage the risk of excessive total or differential settlements, any low-strength soils below foundations should be removed or improved.
  - Soil strengths can be determined in the footing excavations with the use of a Dynamic Cone Penetrometer (DCP), converting the values to allowable bearing capacities.
- Exposed foundation and subgrade soils should be observed, tested, and documented by a representative of the geotechnical engineer.
  - All excavations should be evaluated to confirm the exposed materials are consistent with those identified in this report.

        - If unanticipated conditions are encountered, the geotechnical engineer should be notified immediately.
    - The base of all foundation excavations should be free of water and loose soil, prior to placing concrete.
    - Concrete should be placed soon after excavating to reduce bearing soil disturbance.
    - Care should be taken to prevent wetting or drying of the bearing materials during construction.
    - Excessively wet or dry material or any loose/disturbed material in the bottom of the footing excavations should be removed/reconditioned before foundation concrete is placed.
    - Sensitive soils exposed at the surface of footing excavations may require surficial compaction with hand-held dynamic compaction equipment prior to placing structural fill, steel, and/or concrete.
    - Should surficial compaction not be adequate, construction of a working surface consisting of either crushed aggregate or a lean concrete mud mat may be required prior to the placement of reinforcing steel and construction of foundations.
    - If unsuitable bearing soils are observed at the base of the planned footing excavation, the excavation should be extended deeper to suitable soils, and the footings could bear directly on these soils at the lower level or on lean concrete backfill placed in the excavations.
        - The lean concrete replacement zone can be the same width as the footing width.
    - Alternatively, over-excavation for structural fill placement below footings should be conducted as shown below.
        - The over-excavation should be backfilled up to the footing base elevation with crushed aggregate meeting the requirements of WisDOT Section 305 placed, as recommended in the Earthwork section

Groundwater Management

- Excavations will likely not encounter perched water or groundwater.

Surface Water Management

- Surface water should not be allowed to collect in excavations or on prepared subgrades during or after construction.
- Areas should be sloped to facilitate removal of collected surface runoff.
- Positive site drainage should be provided to reduce infiltration of surface water around the perimeter of structures and within pavement areas.

Excavation Safety

- Excavation walls may need to be sloped or braced for stability and safety reasons.
- The Owner and Contractor should be aware of, and become familiar with, applicable local, state, and federal safety regulations, including current OSHA Excavation and Trench Safety Standards.
- Construction-site safety generally is the responsibility of the Contractor, who should also be responsible for the means, methods, and sequencing of construction operations.

- The Contractor should be aware that slope height, slope inclination, or excavation depths should in no case exceed those specified in local, state, or federal safety regulations, (e.g., OSHA Health and Safety Standards for Excavations, 29 CFR Part 1926), or successor regulations.
- The soils encountered in the borings are Type C when applying the OSHA regulations.
- OSHA regulations are strictly enforced, and if they are not followed, the Owner, Contractor, and/or earthwork Subcontractor(s) could be liable for substantial penalties.

GENERAL QUALIFICATIONS

- Our services for this project are intended for the sole benefit and exclusive use of our client and for the specific application to the project described and are provided in accordance with generally accepted geotechnical engineering practices, with no third-party beneficiaries intended. Any use or reliance of the information by third parties is done solely at their own risk. No warranties, either expressed or implied, are intended or made.
- The findings, analysis, and recommendations presented in this report are based on our understanding of the project, a reasonable geotechnical scope approved by the client, and our engineering judgment.
- Should the details of the project change, Point of Beginning should be notified and provided with the opportunity to review the applicability of the collected information and modify our recommendations, as needed.
- The nature and extent of geologic variations may not become evident during or after construction. If the actual site subsurface conditions differ from the inferred conditions described in this report, the recommendations in this report may need to be revised.
- The recommendations in this report are only valid for the exact and specific locations at which field investigation or laboratory testing was completed. All other areas and regions of the site that are not evaluated will be at the risk of the individual or entity using this Report.
- Site characteristics as provided are for design purposes and not to estimate construction costs. Any party charged with estimating construction costs should seek their own site characterization for specific purposes to obtain the specific level of detail necessary for costing.
- Site safety, excavation support, and dewatering requirements/design are the responsibility of others.
- Construction and site development activities have the potential to affect adjacent properties. Such impacts can include damage due to vibration, modification of groundwater/surface water flow during construction, foundation movement due to undermining or subsidence from excavation, and noise or air-quality concerns. Evaluation of these items on nearby properties are commonly associated with contractor means and methods and are not addressed in this report. The owner and contractor should consider a preconstruction/precondition survey of surrounding developments.

APPENDICES

APPENDIX A
Diagrams

APPENDIX B
Geologic Information

APPENDIX C
Laboratory Reports

APPENDIX D
General Notes & Procedures

APPENDIX E
Additional Documents

APPENDEX A

FIGURE 1 – PROJECT LOCATION DIAGRAM

FIGURE 2 – PROJECT TOPOGRAPHIC SURVEY

FIGURE 3 – BORING LOCATION DIAGRAM

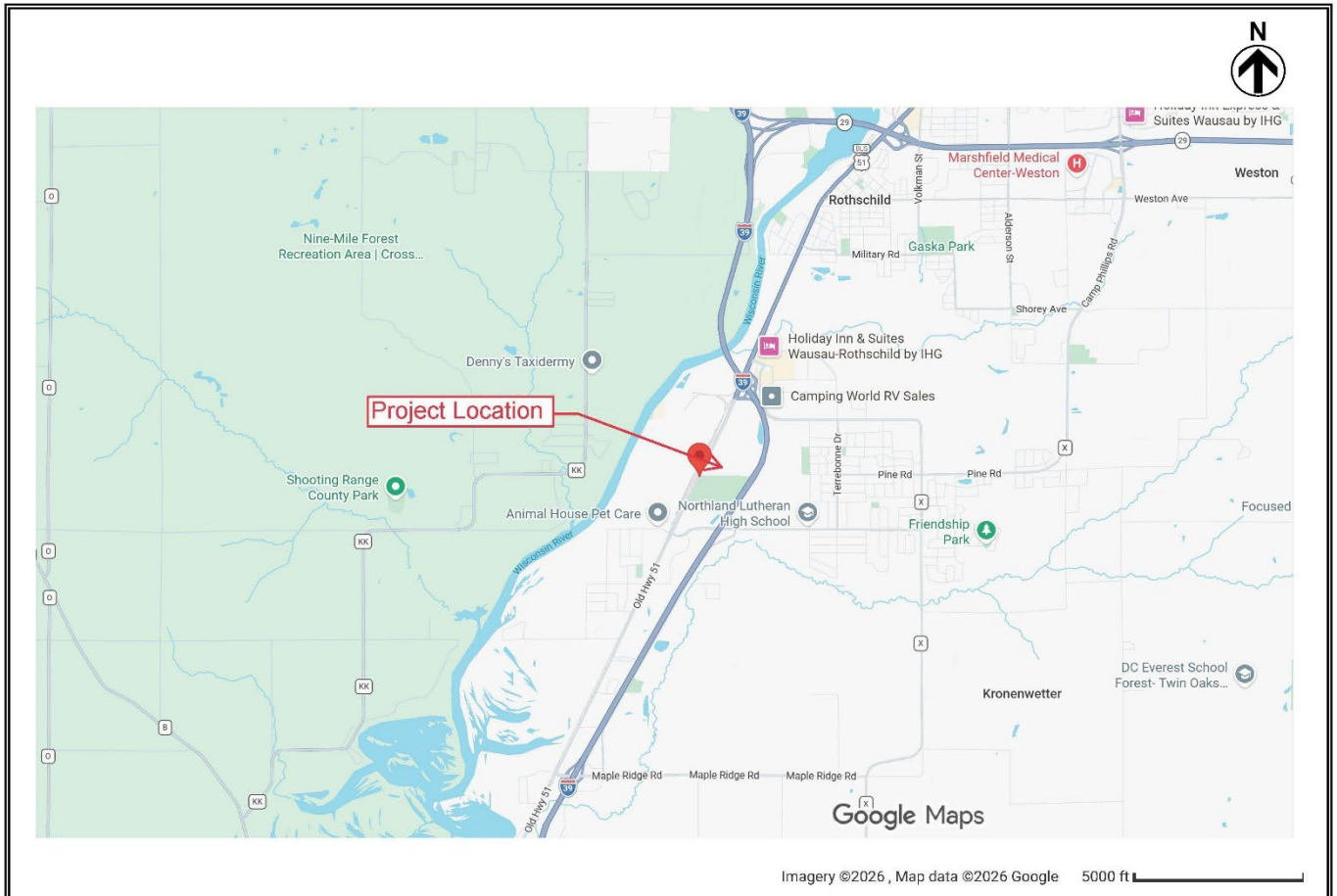
FIGURE 4 – NORTH BUILDING AREA - GEOLOGIC CROSS SECTION

FIGURE 5 – CENTER BUILDING AREA - GEOLOGIC CROSS SECTION

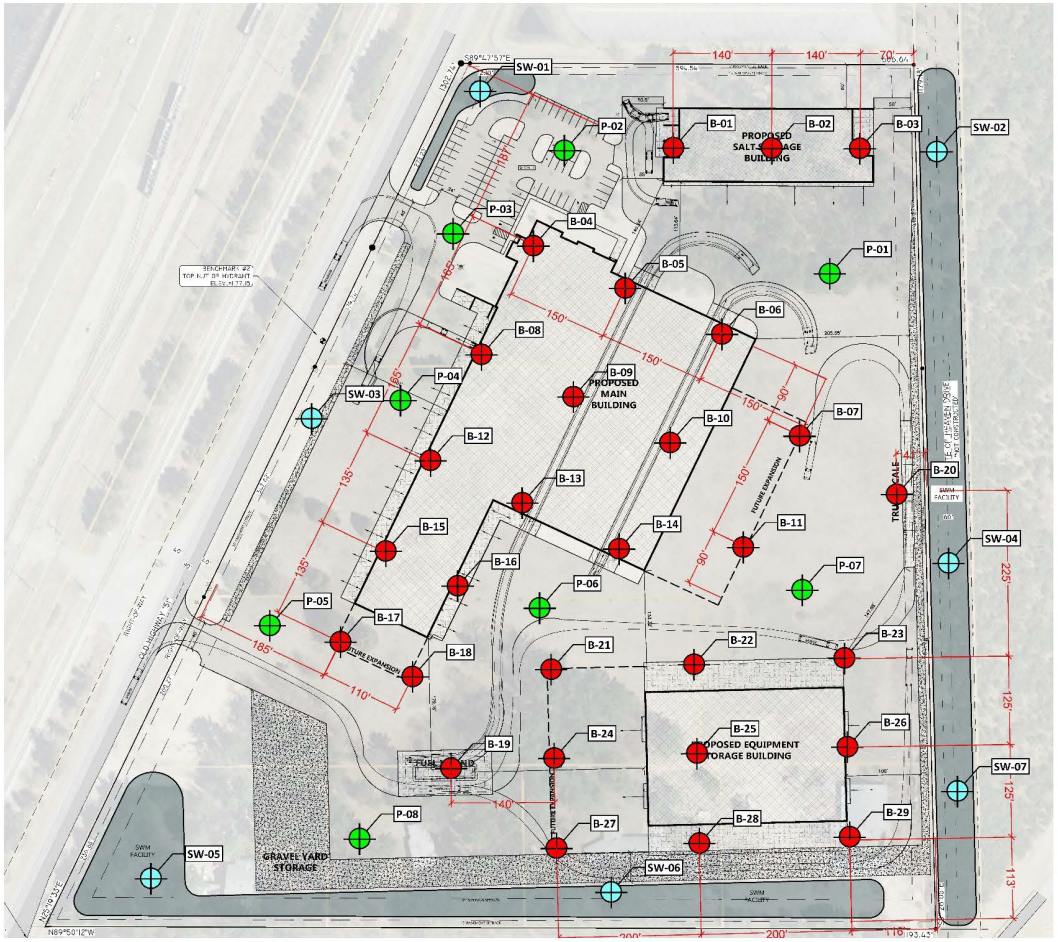
FIGURE 6 – SOUTH BUILDING AREA - GEOLOGIC CROSS SECTION

FIGURE 7 – PAVEMENT AREAS - GEOLOGIC CROSS SECTION

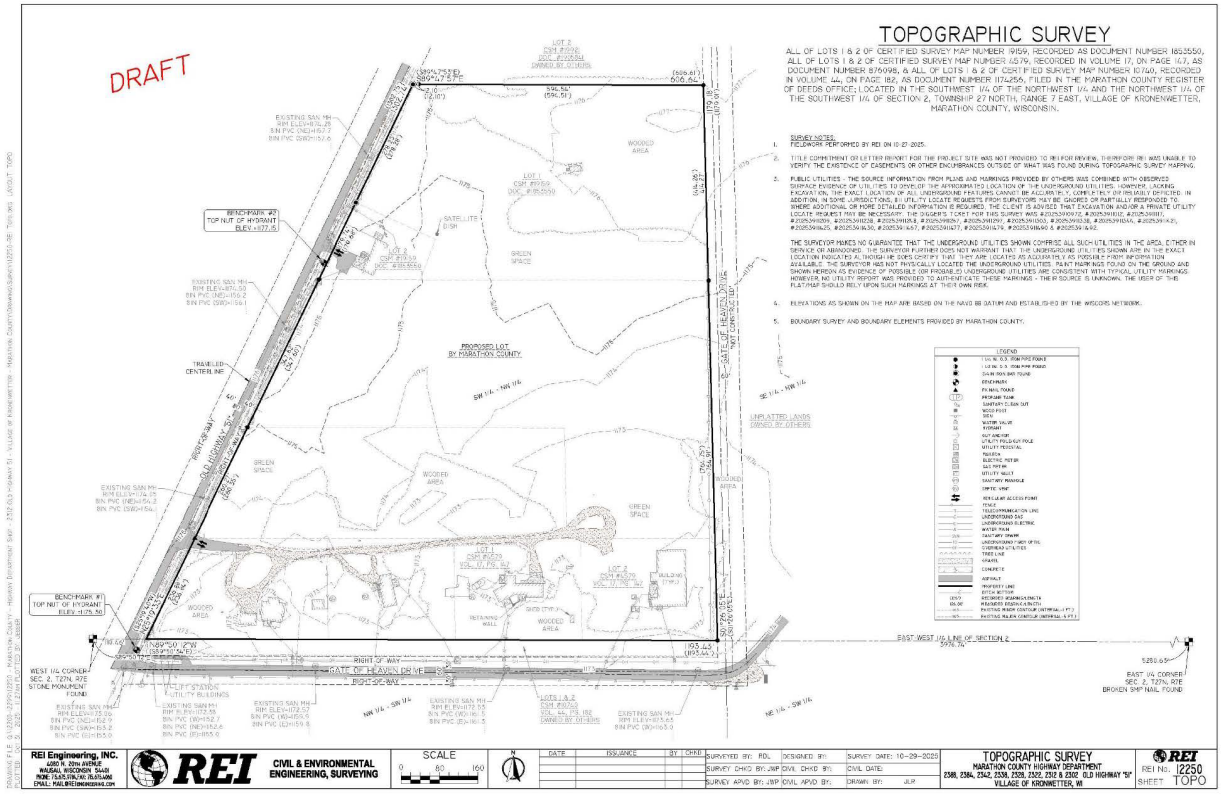
FIGURE 8 – STORMWATER AREAS - GEOLOGIC CROSS SECTION



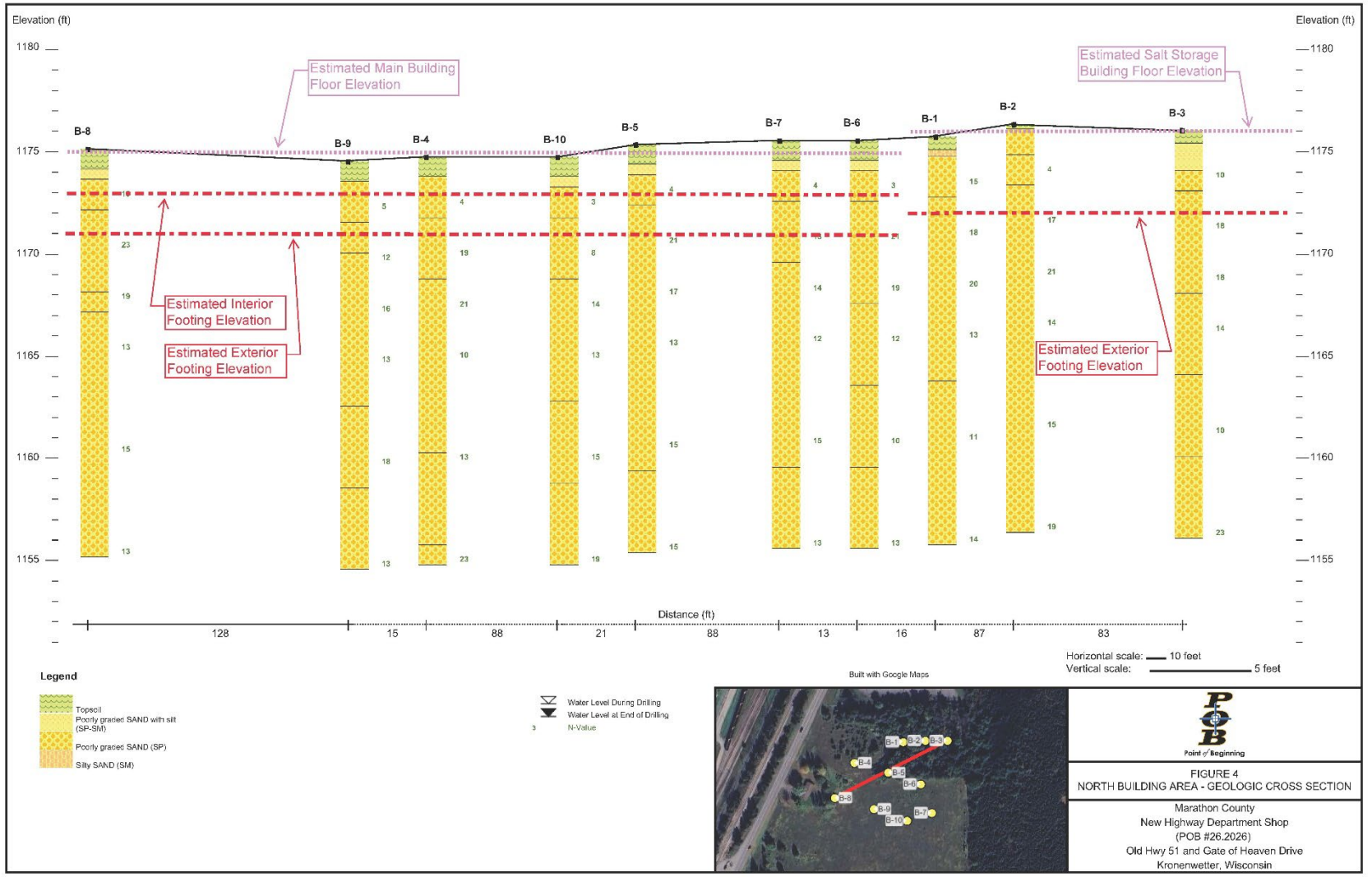
Project Name:	Marathon County Highway Shop Facility	**Project No.:**	26.2026	**FIGURE 1 Project Location Diagram**
Project Location:	Old Hwy 51 & Gate of Heaven Drive Kronenwetter, Wisconsin Marathon County	**Date:** **Drawn By:** **Scale:**	3/13/26 MDF See Scale Above	



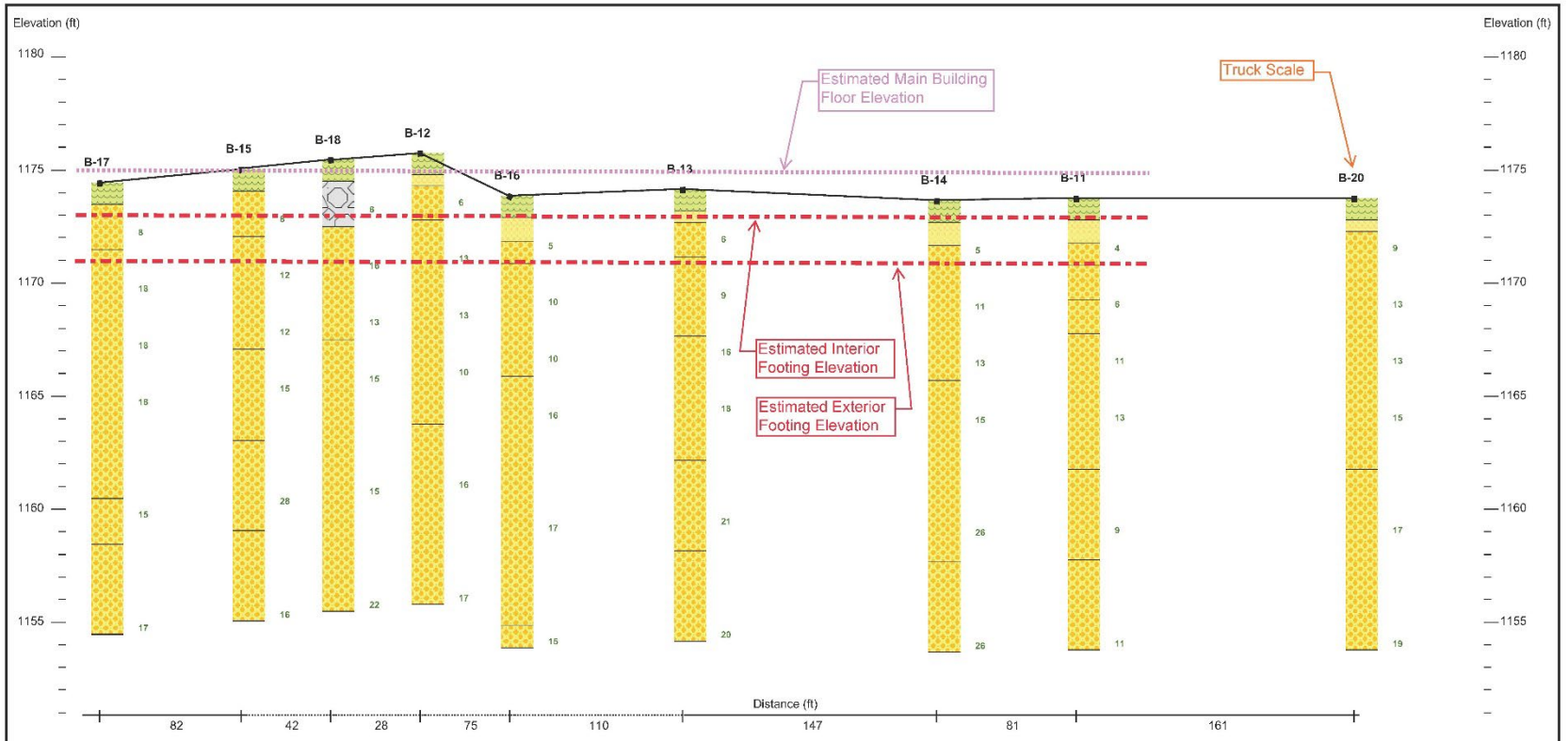
Project Name:	Marathon County Highway Shop Facility	**Project No.:**	26.2026	**FIGURE 2** **Boring Location Diagram**
Project Location:	Old Hwy 51 & Gate of Heaven Drive Kronenwetter, Wisconsin Marathon County	**Date:** **Drawn By:** **Scale:**	3/13/26 MDF See Scale Above	

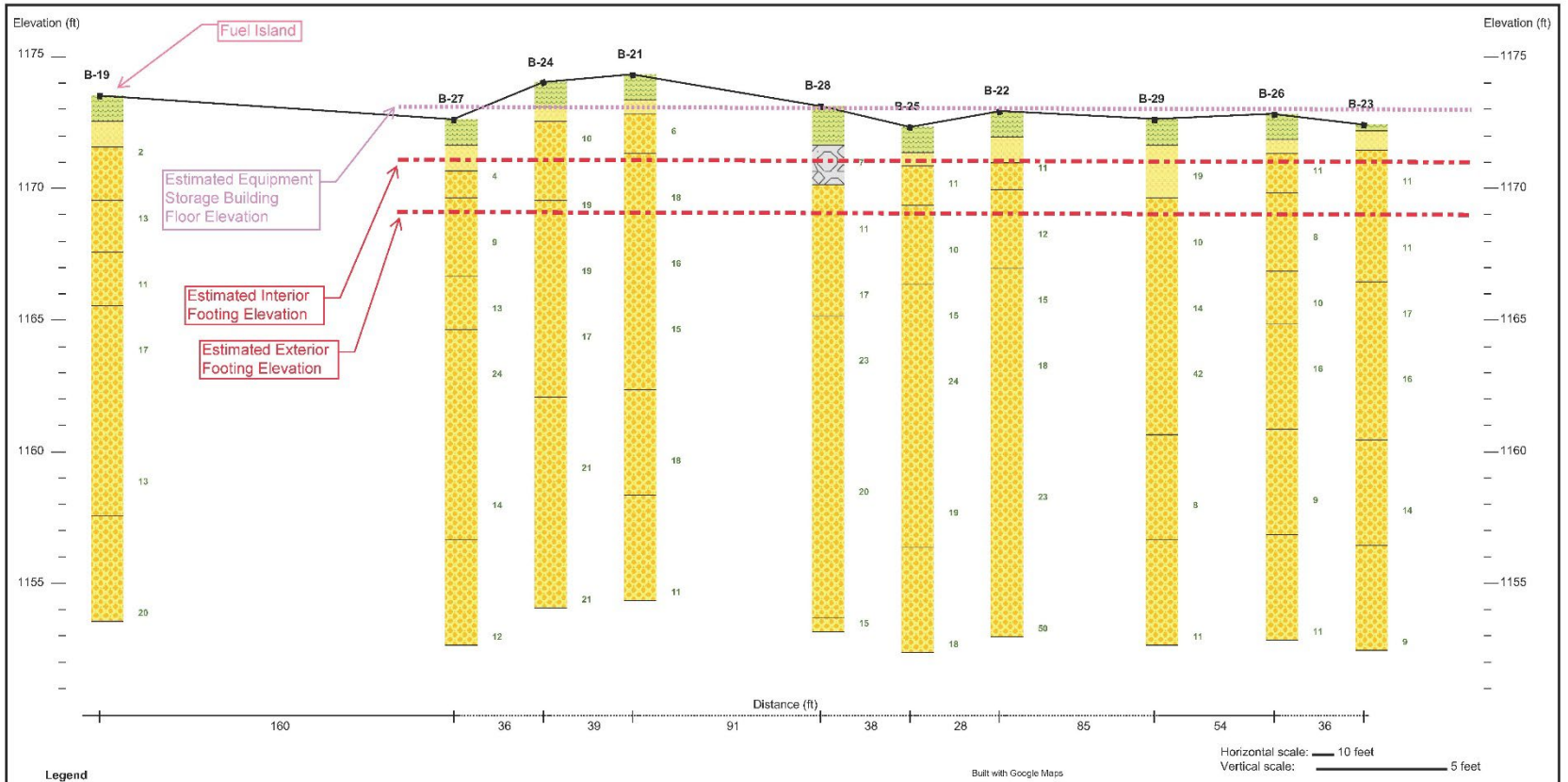


Project Name:	Marathon County Highway Shop Facility	**Project No.:**	26.2026	**FIGURE 3** **Project Topographic Survey**
Project Location:	Old Hwy 51 & Gate of Heaven Drive Kronenwetter, Wisconsin Marathon County	**Date:**	3/13/26	
		Drawn By:	MDF	
		Scale:	See Scale Above	

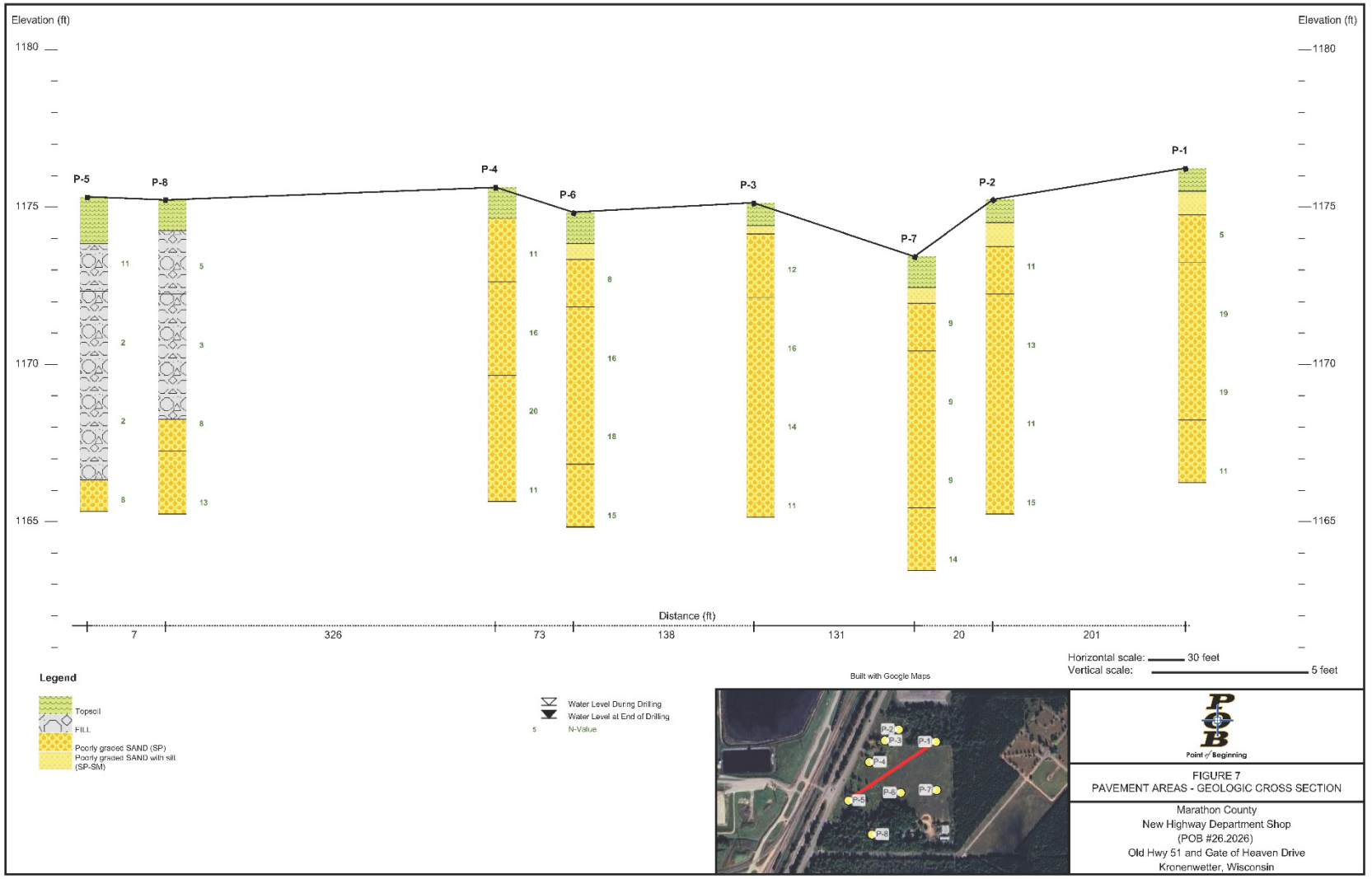

Elevation (ft)
1180
1175
1170
1165
1160
1155
Estimated Main Building Floor Elevation
Estimated Salt Storage Building Floor Elevation
Estimated Interior Footing Elevation
Estimated Exterior Footing Elevation
Estimated Exterior Footing Elevation
B-8
B-9
B-4
B-10
B-5
B-7
B-6
B-1
B-2
B-3
Distance (ft)
128
15
88
21
88
13
16
87
83
Horizontal scale: 10 feet
Vertical scale: 5 feet
Legend
Topsoil
Poorly graded SAND with silt (SP-SM)
Poorly graded SAND (SP)
Silty SAND (SM)
Water Level During Drilling
Water Level at End of Drilling
N-Value
Built with Google Maps
Point of Beginning
FIGURE 4
NORTH BUILDING AREA - GEOLOGIC CROSS SECTION
Marathon County
New Highway Department Shop
(POB #26.2026)
Old Hwy 51 and Gate of Heaven Drive
Kronenwetter, Wisconsin

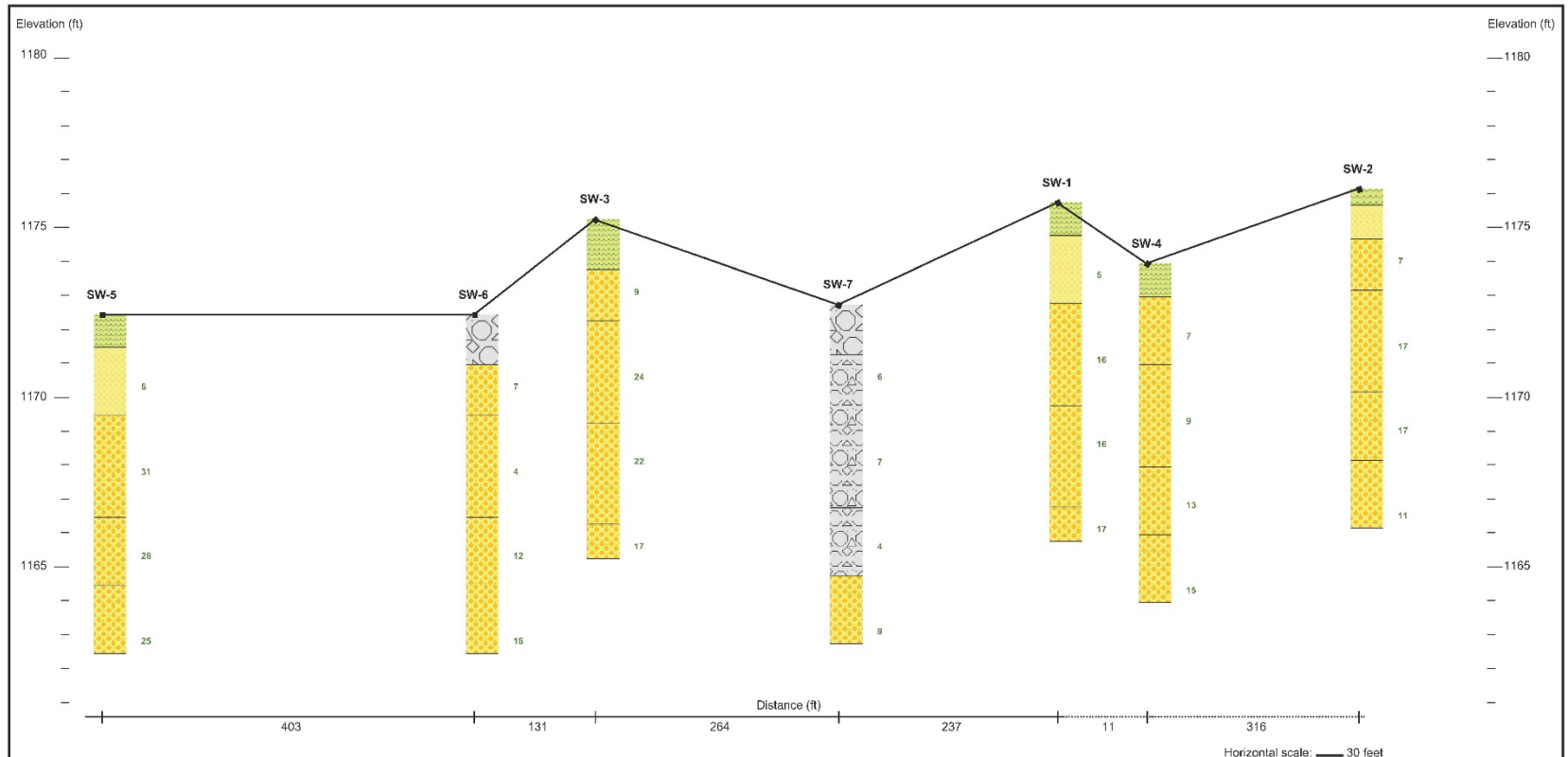
Point of Beginning




Elevation (ft)
Elevation (ft)
Fuel Island
Estimated Equipment Storage Building Floor Elevation
Estimated Interior Footing Elevation
Estimated Exterior Footing Elevation
B-19
B-27
B-24
B-21
B-28
B-25
B-22
B-29
B-26
B-23
1175
1170
1165
1160
1155
Distance (ft)
160
36
39
91
38
28
85
54
36
Horizontal scale: 10 feet
Vertical scale: 5 feet
Legend
Topsoil
Poorly graded SAND with silt (SP-SM)
Poorly graded SAND (SP)
FILL
Water Level During Drilling
Water Level at End of Drilling
N-Value
Built with Google Maps
B-19
B-21
B-22
B-23
B-24
B-25
B-26
B-27
B-28
B-29
Point of Beginning
FIGURE 6
SOUTH BUILDING AREA - GEOLOGIC CROSS SECTION
Marathon County
New Highway Department Shop
(POB #26.2026)
Old Hwy 51 and Gate of Heaven Drive
Kronenwetter, Wisconsin

Point of Beginning




Elevation (ft)
1180
1175
1170
1165
SW-5
SW-6
SW-3
SW-7
SW-1
SW-4
SW-2
Distance (ft)
403
131
264
237
11
316
Horizontal scale: 30 feet
Vertical scale: 5 feet
Legend
Topsoil
Poorly graded SAND with silt (SP-SM)
Poorly graded SAND (SP)
FILL
Water Level During Drilling
Water Level at End of Drilling
N-Value
Built with Google Maps
FIGURE 8
STORMWATER AREAS - GEOLOGIC CROSS SECTION
Marathon County
New Highway Department Shop
(POB #26.2026)
Old Hwy 51 and Gate of Heaven Drive
Kronenwetter, Wisconsin

APPENDIX B

BORING LOGS

Building Areas

- **Salt Storage Building (B-1, B-2, and B-3)**
- **Main Building (B-4 through B-18)**
- **Fuel Island (B-19)**
- **Truck Scale (B-20)**
- **Equipment Storage Building (B-21 through B-29)**

Pavement Areas (P-1 through P-8)

Stormwater Areas (SW-1 through SW-7)

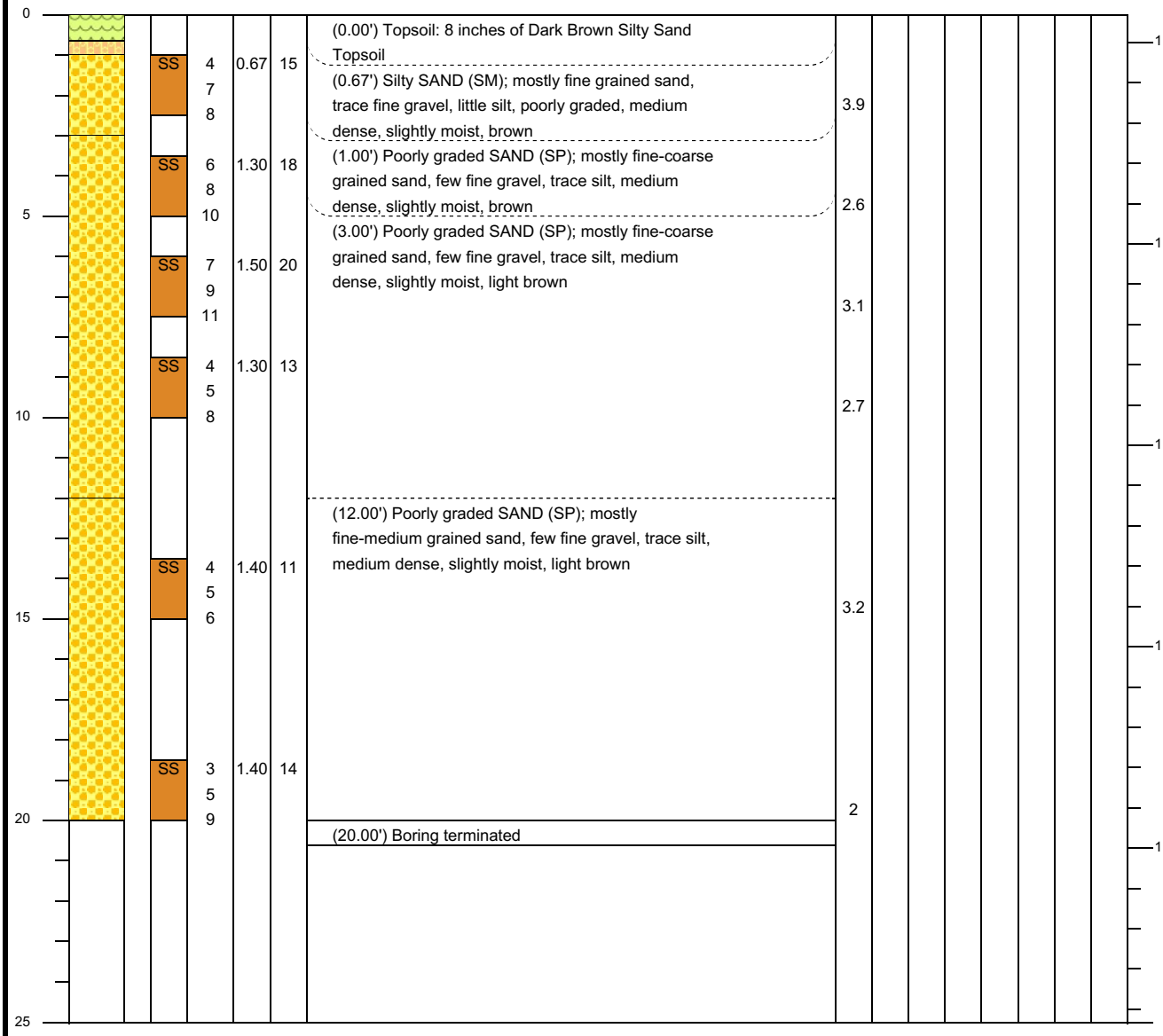
LEGEND

USCS

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-1**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/11/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/11/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.7**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85394, -89.64567**



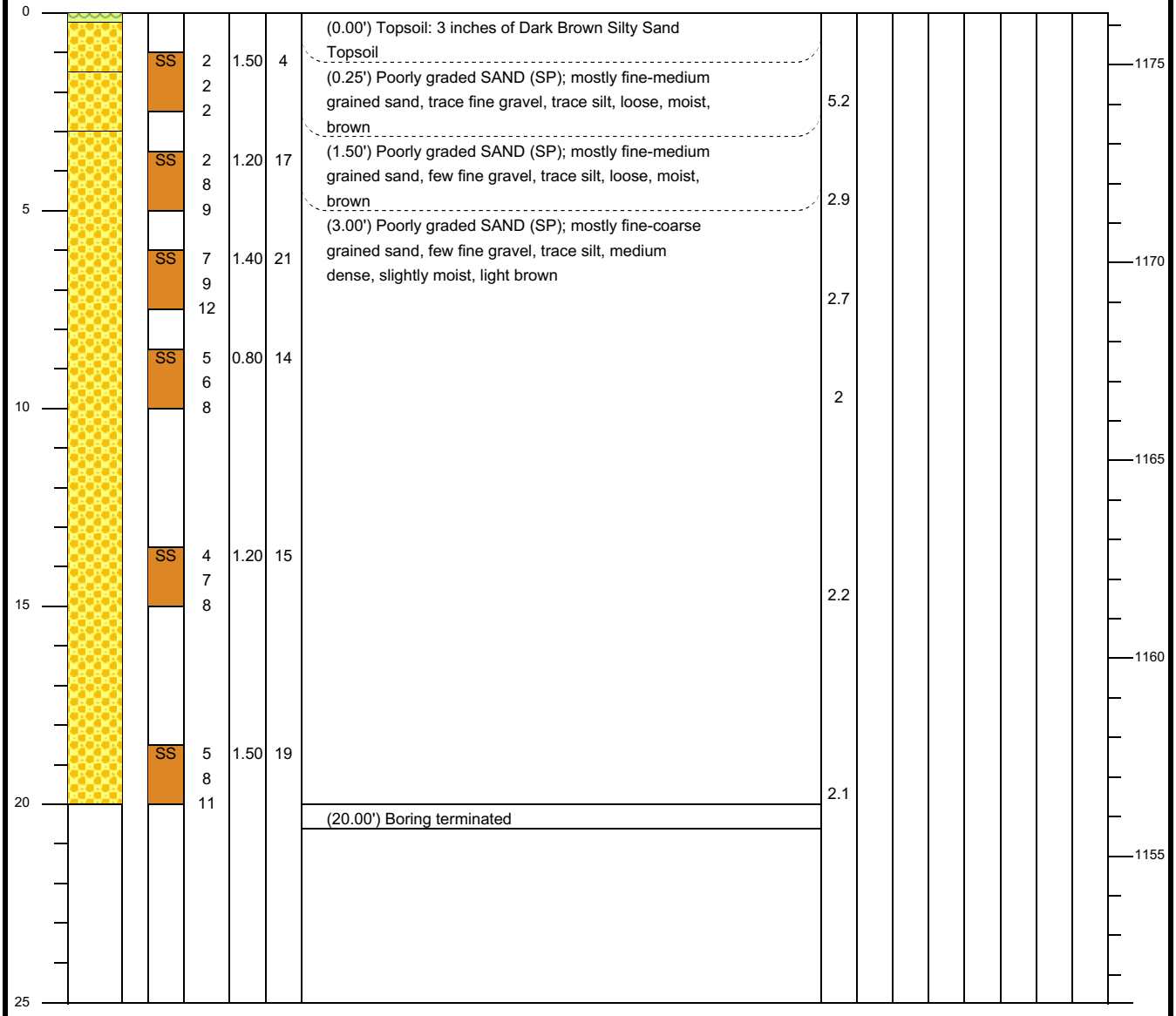
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 8 inches of Dark Brown Silty Sand Topsoil									1175
			SS	4 7 8	0.67	15	(0.67') Silty SAND (SM); mostly fine grained sand, trace fine gravel, little silt, poorly graded, medium dense, slightly moist, brown	3.9								
			SS	6 8 10	1.30	18	(1.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine gravel, trace silt, medium dense, slightly moist, brown	2.6								1170
5			SS	7 9 11	1.50	20	(3.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine gravel, trace silt, medium dense, slightly moist, light brown	3.1								
			SS	4 5 8	1.30	13		2.7								
10																1165
			SS	4 5 6	1.40	11	(12.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine gravel, trace silt, medium dense, slightly moist, light brown	3.2								
15																1160
			SS	3 5 9	1.40	14		2								
20							(20.00') Boring terminated									1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-2**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/11/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/11/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1176.3**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85395, -89.64530**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 3 inches of Dark Brown Silty Sand Topsoil									1176
			SS	2 2 2	1.50	4	(0.25') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, moist, brown	5.2								
			SS	2 8 9	1.20	17	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine gravel, trace silt, loose, moist, brown	2.9								
5			SS	7 9 12	1.40	21	(3.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine gravel, trace silt, medium dense, slightly moist, light brown	2.7								1170
			SS	5 6 8	0.80	14		2								
10																1165
			SS	4 7 8	1.20	15		2.2								
15																1160
			SS	5 8 11	1.50	19		2.1								
20							(20.00') Boring terminated									1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-3**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/11/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/11/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1176**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85395, -89.64494**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 7 inches of Dark Brown Silty Sand Topsoil									1176
			SS	4 4 6	1.50	10	(0.67') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, trace fine gravel, few silt, medium dense, slightly moist, brown	4.6								1175
			SS	4 9 9	1.10	18	(2.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine gravel, trace silt, medium dense, slightly moist, brown	2.1								
5			SS	4 8 10	1.20	18	(3.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.7								1170
			SS	3 6 8	1.20	14	(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine gravel, trace silt, medium dense, slightly moist, light brown	2.2								
10																1165
			SS	4 5 5	1.30	10	(12.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	2.3								
15							(16.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown									1160
			SS	6 11 12	0.25	23		2.8								
20							(20.00') Boring terminated									1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-4**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/11/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/11/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1174.7**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85369, -89.64647**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	2 1 3	1.40	4	(0.00') Topsoil: 10 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, brown	3.2								1174.7
			SS	6 9 10	1.30	19	(3.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.1								
5			SS	5 10 11	1.40	21	(6.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	2.8								1170
			SS	4 4 6	1.10	10		2.8								
10																1165
			SS	3 6 7	1.10	13	(14.50') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.4								
15																1160
			SS	2 10 13	1.40	23	(19.00') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	3.4								
20							(20.00') Boring terminated									1155
																1150
25																

NOTES:

Point of Beginning

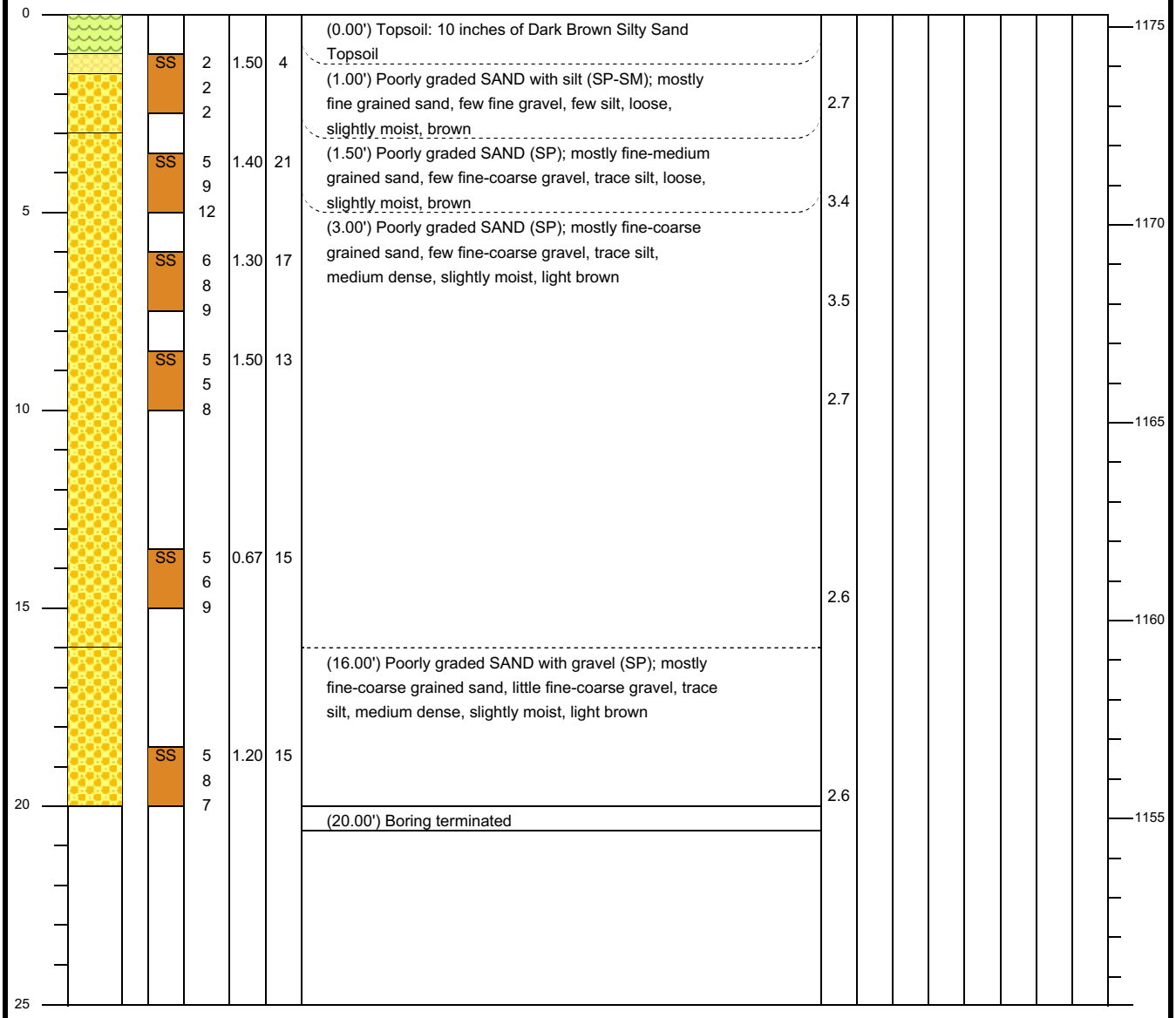
Client:	**Marathon County**
Project:	**New Highway Department Shop, (POB #26.2026)**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**

BORING

Boring No. B-5

Page: 1 of 1

Drilling Start Date:	**3/11/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/11/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.3**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85358, -89.64592**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	2 2 2	1.50	4	(0.00') Topsoil: 10 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine gravel, few silt, loose, slightly moist, brown	2.7								1175
5			SS	5 9 12	1.40	21	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, brown (3.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.4								1170
			SS	6 8 9	1.30	17		3.5								
10			SS	5 5 8	1.50	13		2.7								1165
			SS	5 6 9	0.67	15		2.6								
15							(16.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown									1160
			SS	5 8 7	1.20	15		2.6								
20							(20.00') Boring terminated									1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-6**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/11/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/11/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.5**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85344, -89.64538**

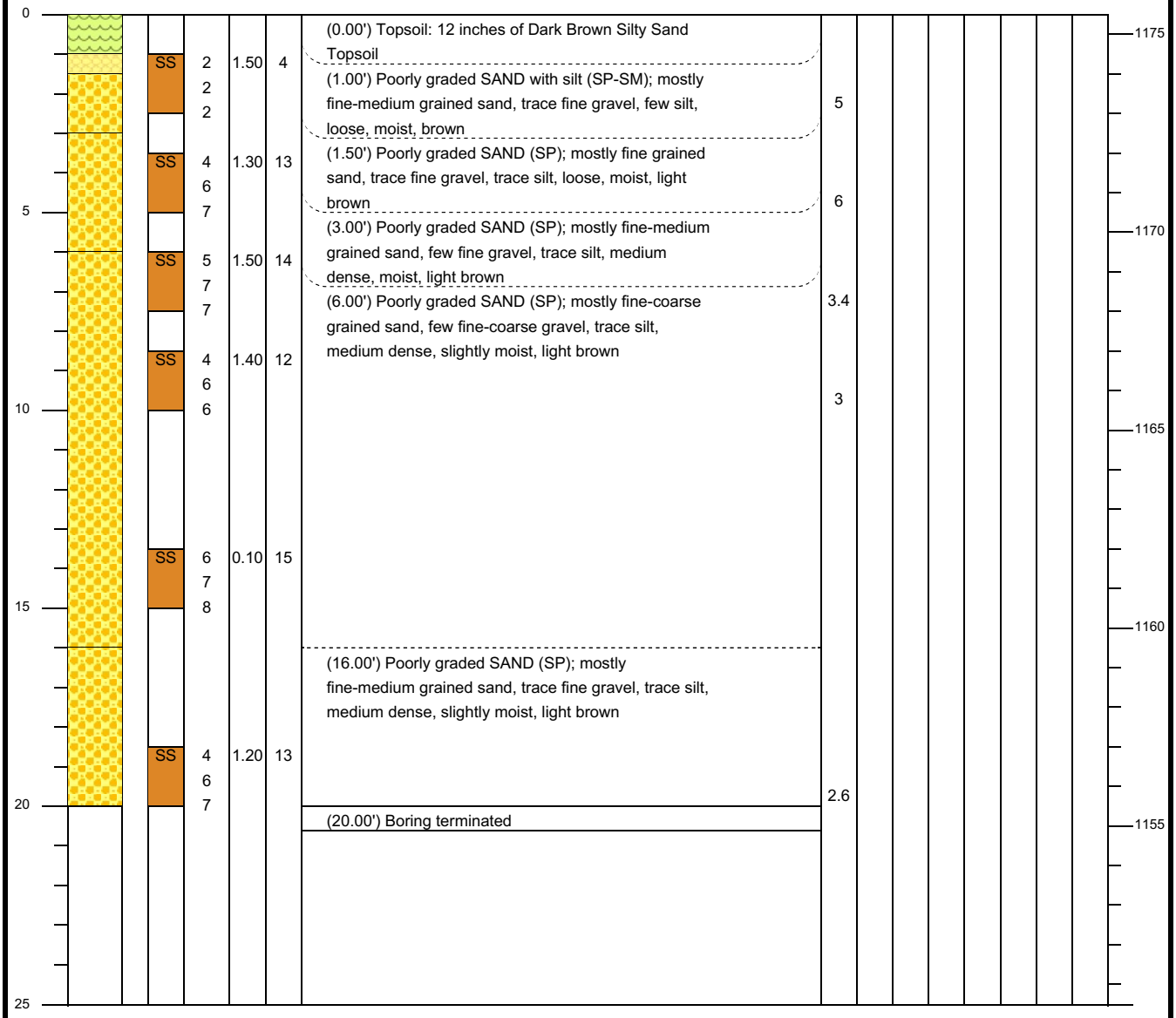
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 12 inches of Dark Brown Silty Sand Topsoil									1175
			SS	1 1 2	1.50	3	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, trace fine gravel, few silt, very loose, slightly moist, brown	3.7								
			SS	6 10 11	1.10	21	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine gravel, trace silt, very loose, slightly moist, brown	2.1								
5			SS	5 9 10	1.30	19	(3.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3								1170
			SS	4 5 7	1.40	12	(8.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	3.2								
10																1165
			SS	3 4 6	1.30	10	(12.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.7								
15																1160
			SS	4 6 7	0.80	13	(16.00') Poorly graded SAND with gravel (SP); mostly medium-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, brown	2.6								
20							(20.00') Boring terminated									1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-7**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/12/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/12/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.5**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85311, -89.64520**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 12 inches of Dark Brown Silty Sand Topsoil									1175
			SS	2 2 2	1.50	4	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, trace fine gravel, few silt, loose, moist, brown	5								
			SS	4 6 7	1.30	13	(1.50') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, loose, moist, light brown	6								
5			SS	5 7 7	1.50	14	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine gravel, trace silt, medium dense, moist, light brown									1170
			SS	4 6 6	1.40	12	(6.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.4 3								
10																1165
			SS	6 7 8	0.10	15										
15																1160
							(16.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown									
			SS	4 6 7	1.20	13		2.6								
20							(20.00') Boring terminated									1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-8**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.1**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85328, -89.64680**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 11.5 inches of Dark Brown Silty Sand Topsoil									1175
			SS	4 4 6	1.50	10	(1.00') Poorly graded SAND with silt and gravel (SP-SM); mostly fine grained sand, little fine-coarse gravel, few silt, medium dense, slightly moist, brown	4.6								
			SS	6 10 13	1.20	23	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, brown	2.6								
5																1170
			SS	6 9 10	1.40	19	(3.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.1								
			SS	5 6 7	1.30	13	(7.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	2.6								
10							(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown									1165
			SS	7 7 8	0.80	15		2.5								
15																1160
			SS	6 7 6	1.20	13		2.8								
20							(20.00') Boring terminated									1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-9**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/12/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/12/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1174.5**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85315, -89.64615**

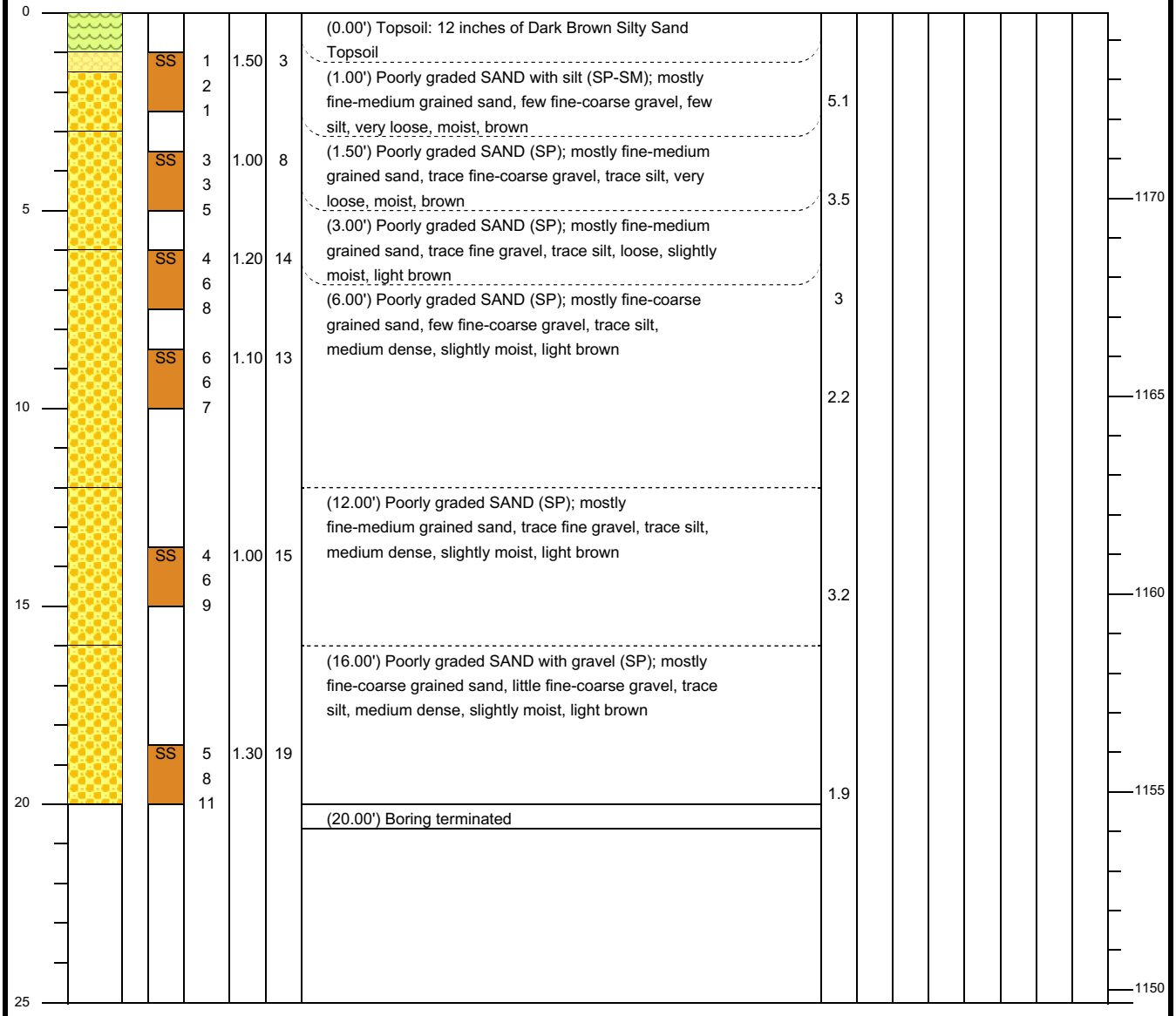
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	2 2 3	1.50	5	(0.00') Topsoil: 13 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, brown	3.1								1174.5
			SS	2 5 7	1.50	12	(3.00') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	3.3								
5			SS	4 7 9	1.30	16	(4.50') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.8								1170
			SS	3 6 7	1.40	13		2.7								
10																1165
			SS	6 8 10	1.40	18	(12.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.9								
15																1160
			SS	4 5 8	1.30	13	(16.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.5								
20							(20.00') Boring terminated									1155
																1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-10**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/12/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/12/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1174.7**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85302, -89.64561**



DEPTH (ft)	Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	ELEVATION (ft)
0					(0.00') Topsoil: 12 inches of Dark Brown Silty Sand Topsoil		
	SS	1 2 1	1.50	3	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, very loose, moist, brown	5.1	
	SS	3 3 5	1.00	8	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine-coarse gravel, trace silt, very loose, moist, brown	3.5	1170
5	SS	4 6 8	1.20	14	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown	3	
	SS	6 6 7	1.10	13	(6.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.2	1165
10							
	SS	4 6 9	1.00	15	(12.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	3.2	1160
15							
	SS	5 8 11	1.30	19	(16.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	1.9	1155
20					(20.00') Boring terminated		
							1150
25							

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-11**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/12/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/12/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1173.7**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85260, -89.64541**

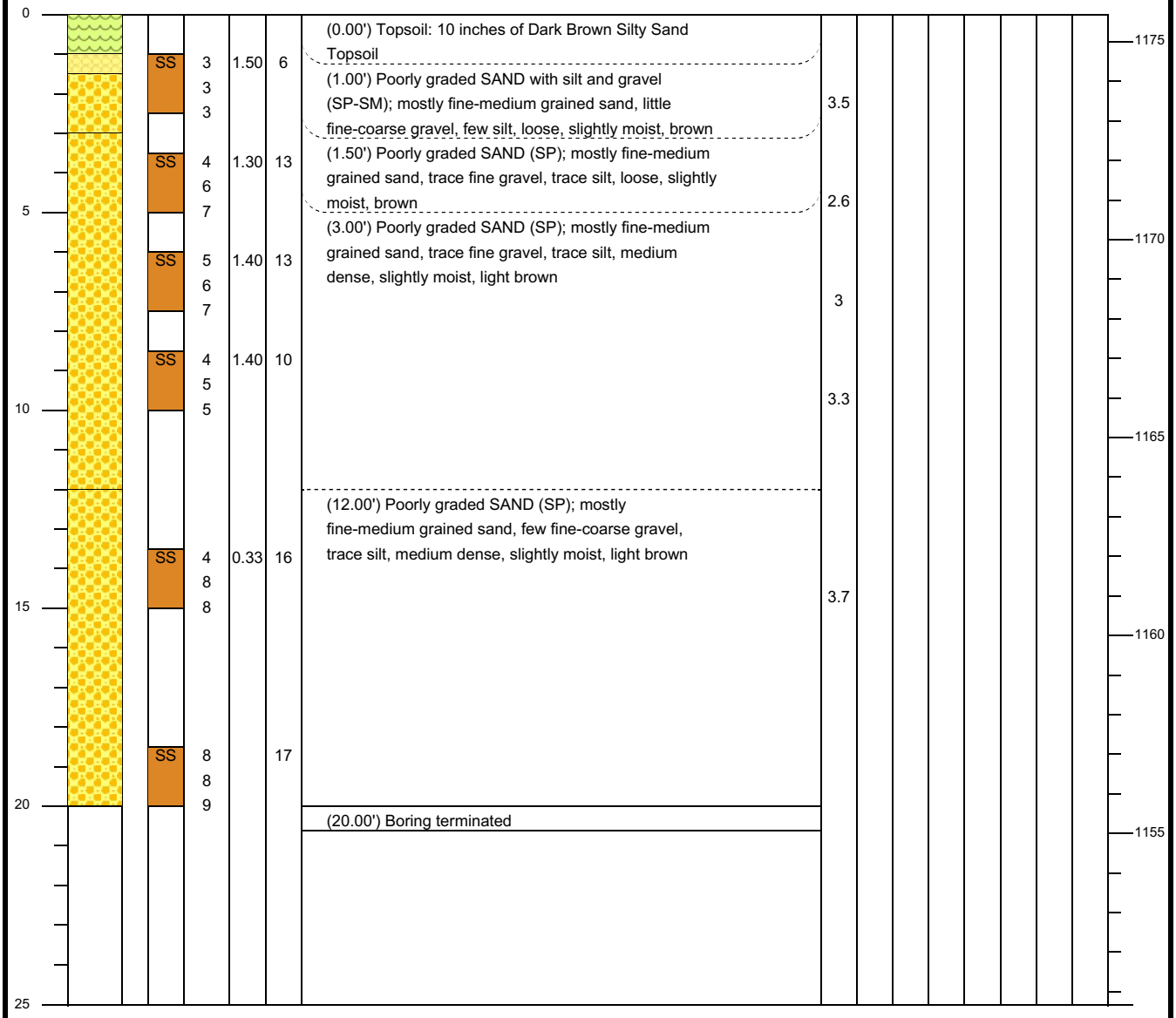
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	1 2 2	1.50	4	(0.00') Topsoil: 12.5 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, brown	2.7								
			SS	1 2 4	1.40	6	(2.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown	3.5								1170
5			SS	4 4 7	1.50	11	(3.00') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown (4.50') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, light brown	3								
			SS	4 6 7	1.30	13	(6.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.8								1165
10																
			SS	4 4 5	1.30	9	(12.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown									1160
15								3.1								
			SS	6 6 5	0.50	11	(16.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown									1155
20							(20.00') Boring terminated	2.5								
																1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-12**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.7**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85293, -89.64720**



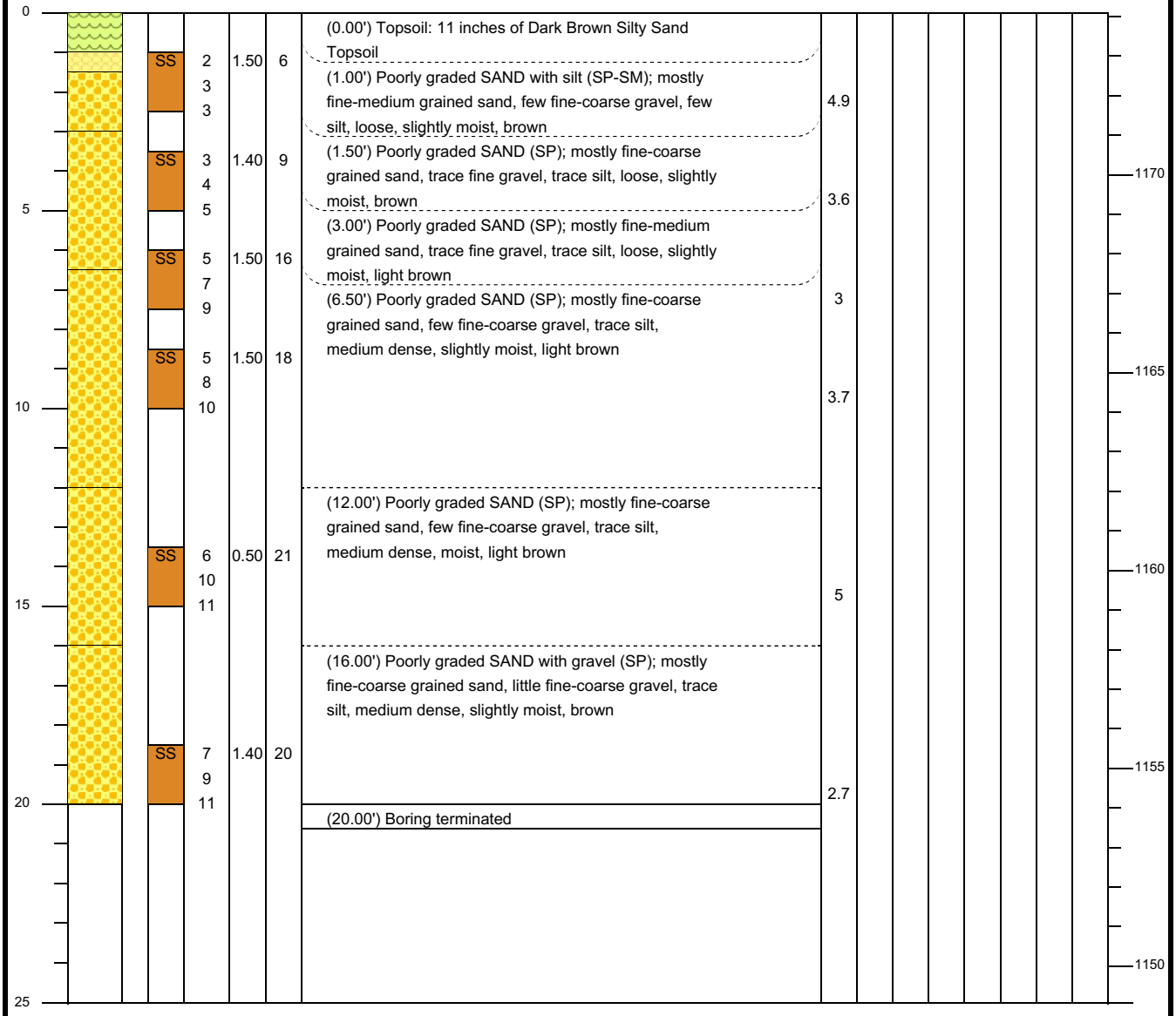
DEPTH (ft)	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0					(0.00') Topsoil: 10 inches of Dark Brown Silty Sand Topsoil									1175
	SS	3 3 3	1.50	6	(1.00') Poorly graded SAND with silt and gravel (SP-SM); mostly fine-medium grained sand, little fine-coarse gravel, few silt, loose, slightly moist, brown	3.5								
	SS	4 6 7	1.30	13	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, brown	2.6								
5	SS	5 6 7	1.40	13	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	3								1170
	SS	4 5 5	1.40	10		3.3								
10														1165
	SS	4 8 8	0.33	16	(12.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.7								
15														1160
	SS	8 8 9		17										
20					(20.00') Boring terminated									1155
25														

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-13**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1174.1**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85284, -89.64642**



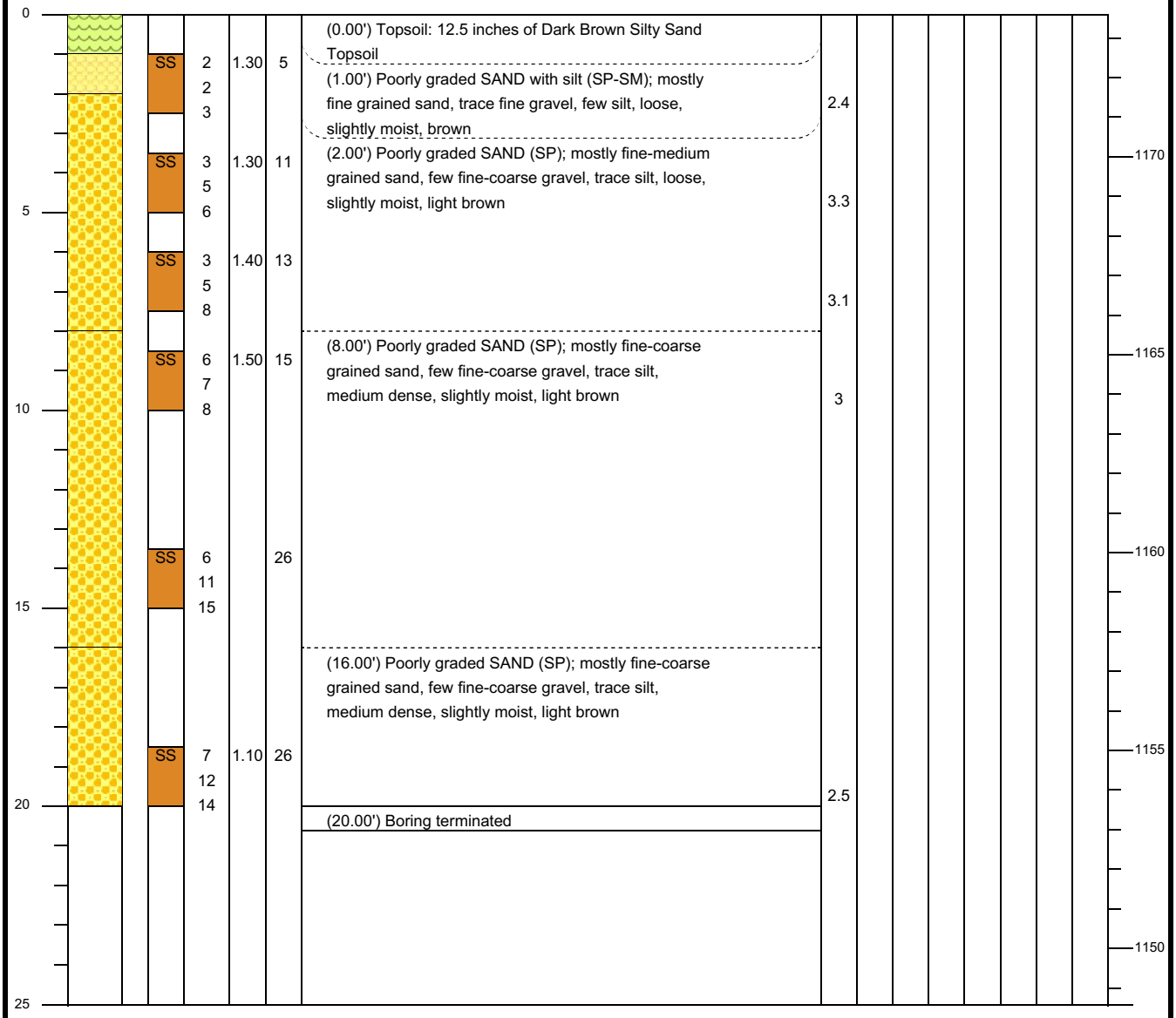
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 11 inches of Dark Brown Silty Sand Topsoil									1174.1
			SS	2 3 3	1.50	6	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, loose, slightly moist, brown	4.9								
			SS	3 4 5	1.40	9	(1.50') Poorly graded SAND (SP); mostly fine-coarse grained sand, trace fine gravel, trace silt, loose, slightly moist, brown	3.6								1170
5			SS	5 7 9	1.50	16	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown	3								
			SS	5 8 10	1.50	18	(6.50') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.7								1165
10																
			SS	6 10 11	0.50	21	(12.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, moist, light brown	5								1160
15																
			SS	7 9 11	1.40	20	(16.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, brown	2.7								1155
20							(20.00') Boring terminated									1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-14**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1173.6**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85274, -89.64579**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	2 2 3	1.30	5	(0.00') Topsoil: 12.5 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, trace fine gravel, few silt, loose, slightly moist, brown	2.4								1173.6
5			SS	3 5 6	1.30	11	(2.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, light brown	3.3								1170
			SS	3 5 8	1.40	13		3.1								
10			SS	6 7 8	1.50	15	(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3								1165
15			SS	6 11 15		26										1160
20			SS	7 12 14	1.10	26	(16.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown (20.00') Boring terminated	2.5								1155
25																1150

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-15**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85260, -89.64735**

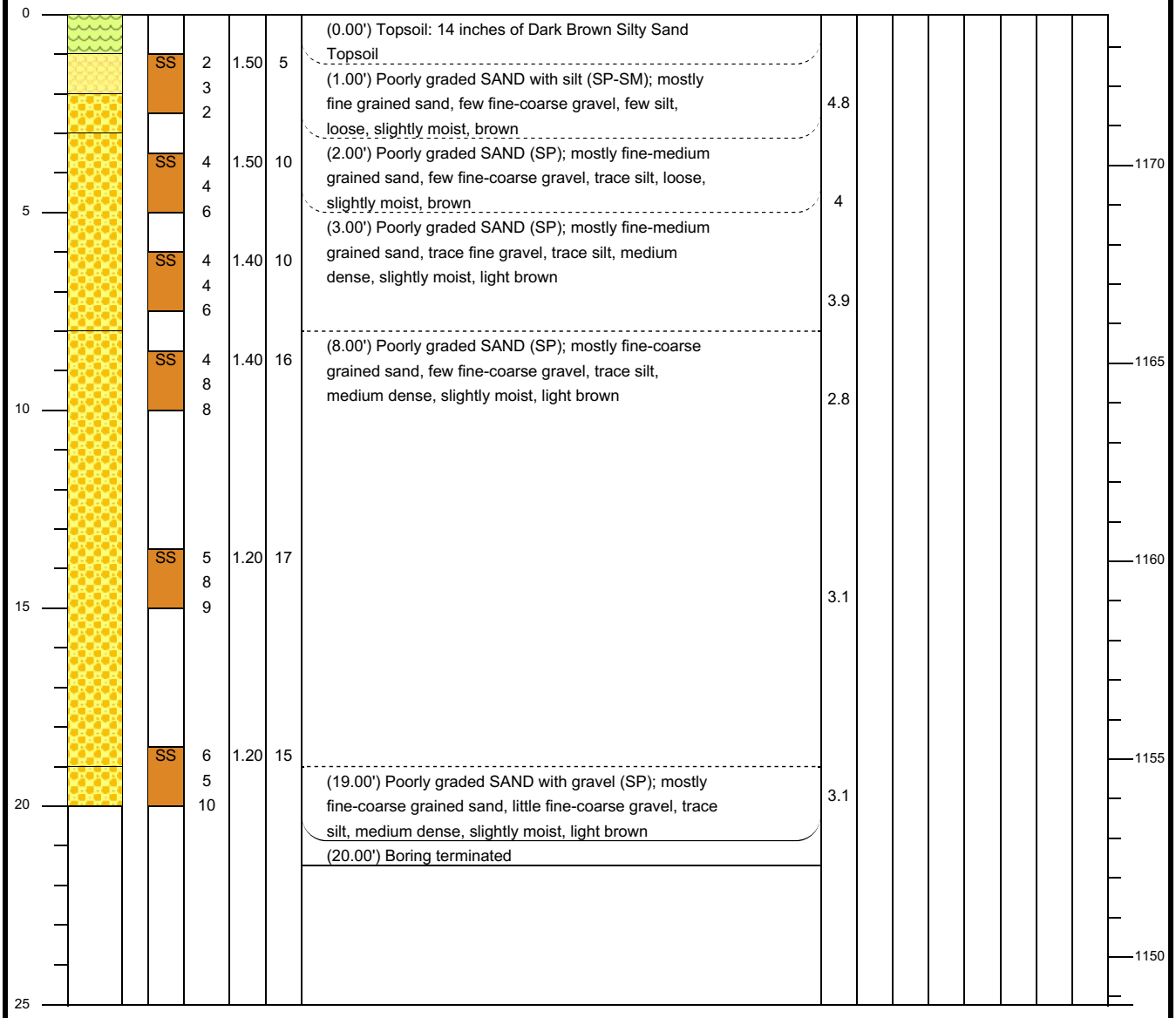
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 12.5 inches of Dark Silty Sand Topsoil									1175
			SS	4 4 4	1.50	8	(1.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, brown	4.3								
			SS	5 6 6	1.40	12	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	4.8								
5			SS	4 5 7	1.40	12		3.5								1170
			SS	5 7 8	1.20	15	(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.4								
10																1165
			SS	9 14 14	0.50	28	(12.00') Poorly graded SAND with gravel (SP); mostly fine-medium grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.5								
15																1160
			SS	10 8 8	0.80	16	(16.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.1								
20							(20.00') Boring terminated									1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-16**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1173.8**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85243, -89.64670**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 14 inches of Dark Brown Silty Sand Topsoil									1173.8
			SS	2 3 2	1.50	5	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine-coarse gravel, few silt, loose, slightly moist, brown	4.8								1172.8
			SS	4 4 6	1.50	10	(2.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, brown	4								1170
5			SS	4 4 6	1.40	10	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	3.9								1167
			SS	4 8 8	1.40	16	(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.8								1165
10																
			SS	5 8 9	1.20	17		3.1								1160
15																
			SS	6 5 10	1.20	15										1155
20							(19.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.1								1153
							(20.00') Boring terminated									1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No. B-17**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page: 1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1174.4**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85235, -89.64758**

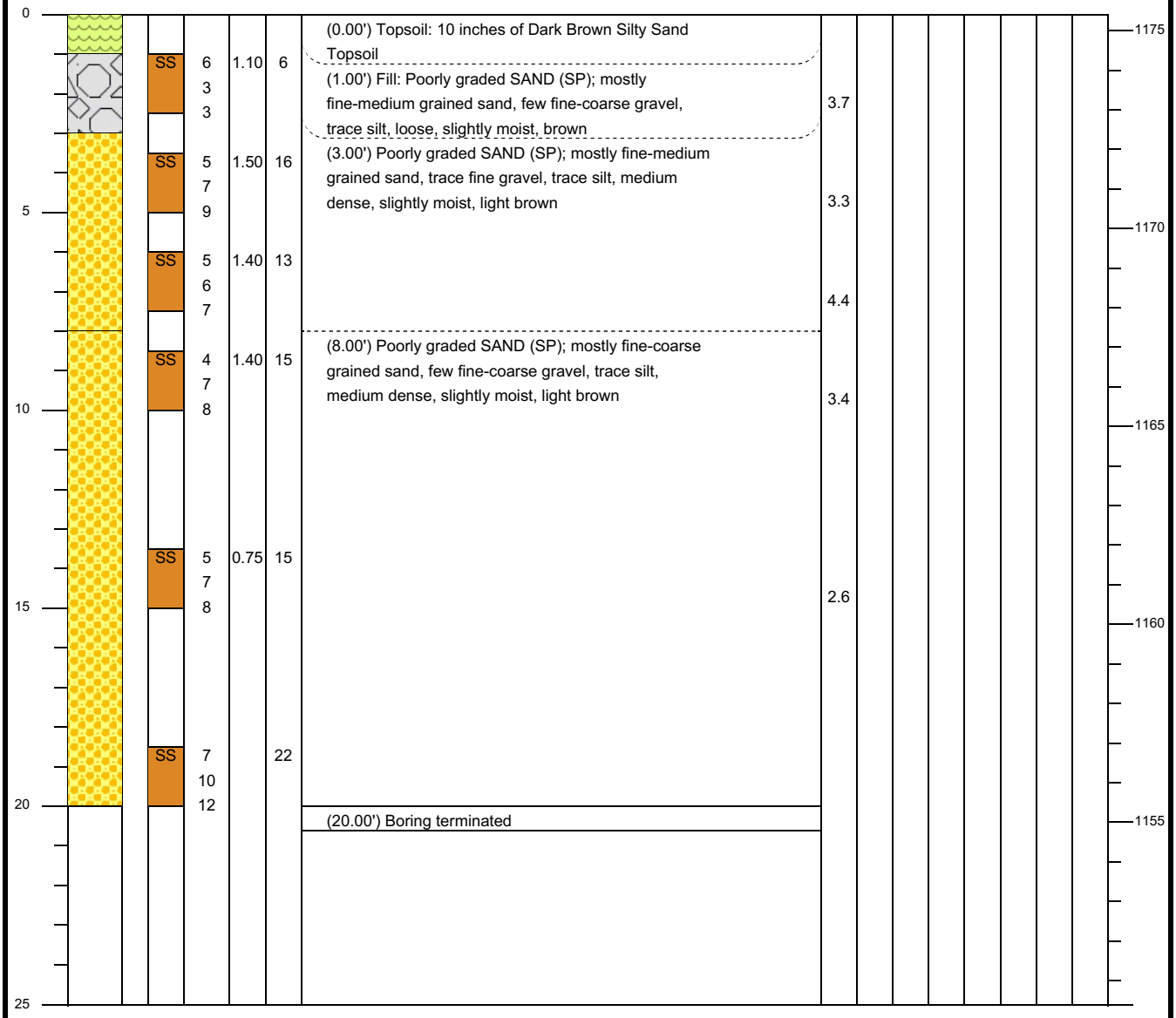
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 13 inches of Dark Brown Silty Sand Topsoil									1174.4
			SS	5 4 4	1.30	8	(1.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, brown	4.7								
			SS	6 8 10	1.40	18	(3.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.5								1170
5			SS	5 8 10	1.40	18		2.2								
			SS	5 7 9	1.30	16		3.1								1165
10																
			SS	5 7 8	1.10	15	(14.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	2.5								1160
15							(16.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown									
			SS	7 8 9	1.30	17		3.2								1155
20							(20.00') Boring terminated									
25																1150

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-18**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.4**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85222, -89.64703**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	6 3 3	1.10	6	(0.00') Topsoil: 10 inches of Dark Brown Silty Sand Topsoil (1.00') Fill: Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, brown	3.7								1175
5			SS	5 7 9	1.50	16	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	3.3								1170
			SS	5 6 7	1.40	13		4.4								
10			SS	4 7 8	1.40	15	(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.4								1165
15			SS	5 7 8	0.75	15		2.6								1160
20			SS	7 10 12		22	(20.00') Boring terminated									1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-19**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1173.5**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85185, -89.64714**

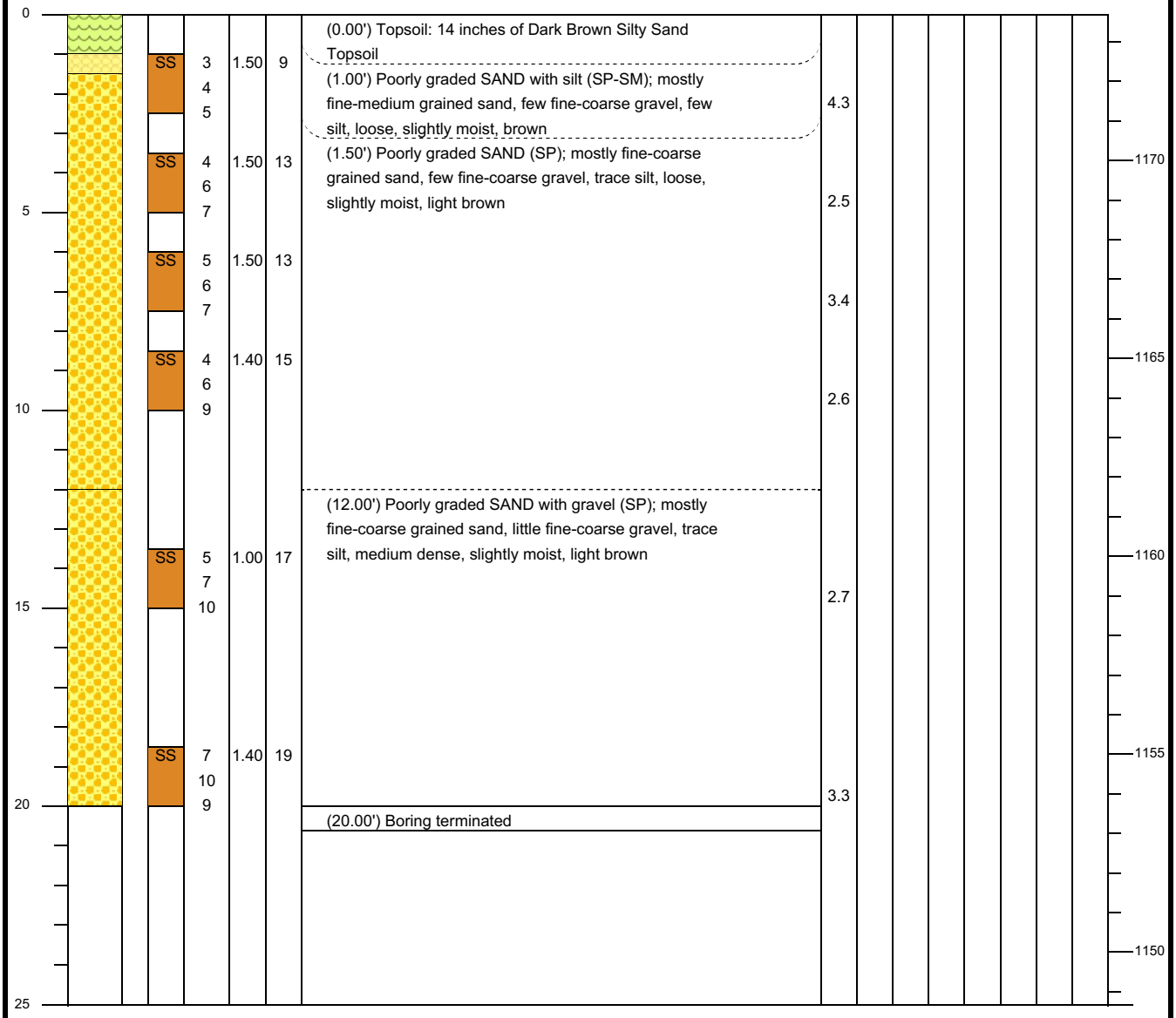
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 10 inches of Dark Brown Silty Sand Topsoil									
			SS	2 1 1	1.50	2	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, trace fine gravel, few silt, very loose, moist, brown	6.6								
			SS	4 6 7	1.30	13	(2.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, very loose, moist, brown	4.2								1170
5			SS	4 5 6	1.50	11	(4.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, brown									
			SS	5 8 9	1.20	17	(6.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, moist, light brown	5								1165
10							(8.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.6								
			SS	6 6 7	1.10	13										1160
15								2.3								
							(16.00') Poorly graded SAND with gravel (SP); mostly fine-medium grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, brown									
			SS	7 9 11	0.67	20										1155
20								2.7								
							(20.00') Boring terminated									1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No. B-20**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page: 1 of 1**

Drilling Start Date:	**3/12/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/12/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1173.7**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85289, -89.64488**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	3 4 5	1.50	9	(0.00') Topsoil: 14 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, loose, slightly moist, brown	4.3								
5			SS	4 6 7	1.50	13	(1.50') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, light brown	2.5								1170
			SS	5 6 7	1.50	13		3.4								
10			SS	4 6 9	1.40	15		2.6								1165
			SS	5 7 10	1.00	17	(12.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.7								1160
15																
			SS	7 10 9	1.40	19		3.3								1155
20							(20.00') Boring terminated									
																1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-21**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1174.3**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85220, -89.64633**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	2 3 3	1.50	6	(0.00') Topsoil: 11 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, trace fine gravel, few silt, loose, slightly moist, brown	2.7								1174
			SS	5 8 10	1.40	18	(1.50') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown	2.2								
5			SS	4 7 9	1.50	16	(3.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.3								1170
			SS	5 7 8	1.30	15		3.1								
10																1165
			SS	5 8 10	0.80	18	(12.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.3								
15																1160
			SS	3 5 6	1.30	11	(16.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	2.5								
20							(20.00') Boring terminated									1155
																1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-22**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1172.9**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85221, -89.64571**

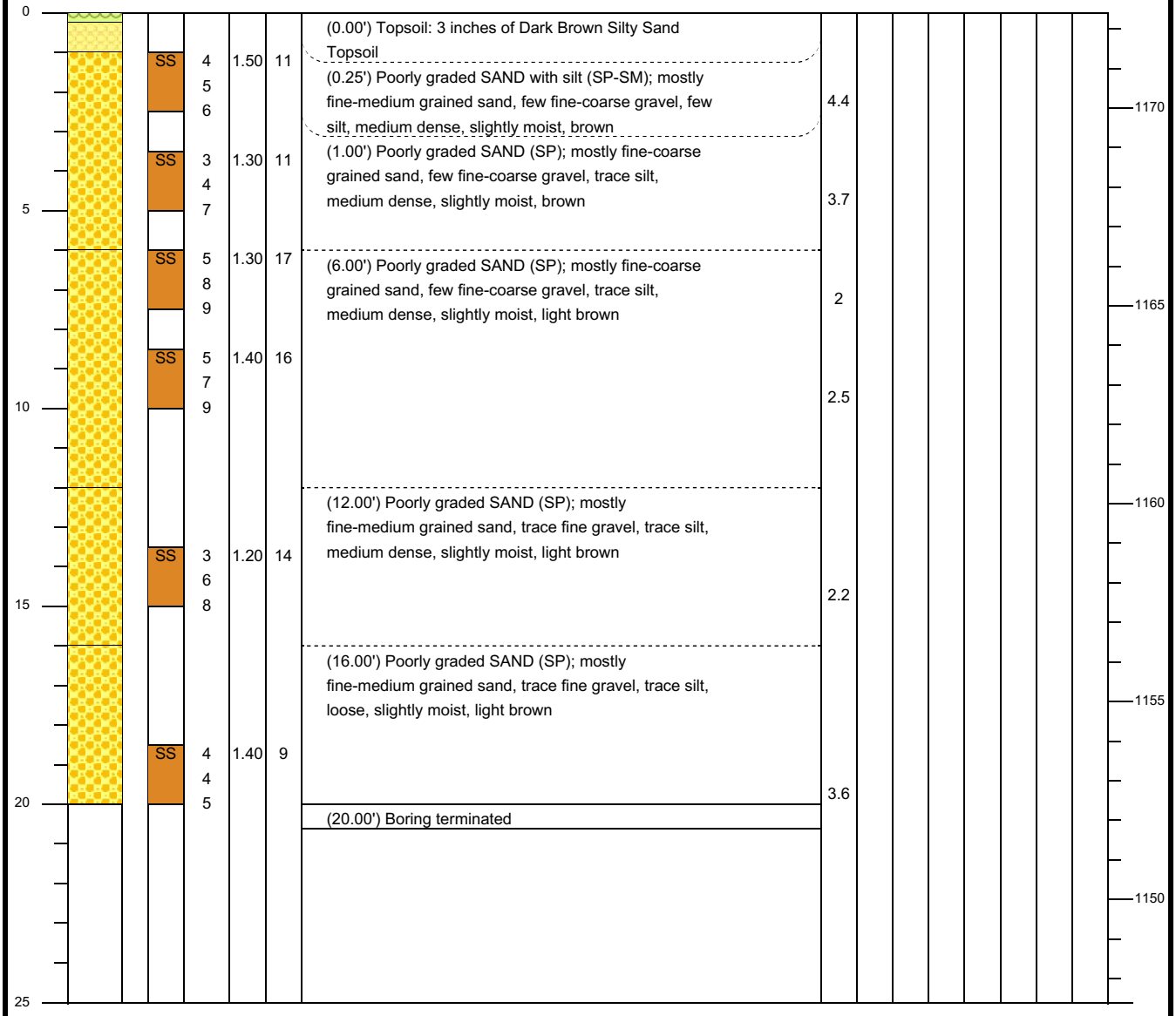
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	3 4 7	1.50	11	(0.00') Topsoil: 11.5 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, trace fine gravel, few silt, medium dense, slightly moist, brown	2.5								1170
			SS	3 5 7	1.10	12	(2.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, brown	3.3								
5			SS	5 7 8	1.30	15	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	3.2								1165
			SS	5 9 9	1.30	18	(6.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.2								
10																1160
			SS	5 9 14	1.00	23		2.9								
15																1155
			SS	50			(18.5') Cobble @18.5 feet									
20							(20.00') Boring terminated									1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-23**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1172.4**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85223, -89.64502**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 3 inches of Dark Brown Silty Sand Topsoil									1172.4
			SS	4 5 6	1.50	11	(0.25') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, medium dense, slightly moist, brown	4.4								
			SS	3 4 7	1.30	11	(1.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, brown	3.7								
5			SS	5 8 9	1.30	17	(6.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2								1165
			SS	5 7 9	1.40	16		2.5								
10																
			SS	3 6 8	1.20	14	(12.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	2.2								1160
15							(16.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown									1155
			SS	4 4 5	1.40	9		3.6								
20							(20.00') Boring terminated									1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**
Project:	**New Highway Department Shop, (POB #26.2026)**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**

BORING

Boring No. B-24

Page: 1 of 1

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1174**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85185, -89.64636**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 12.5 inches of Dark Brown Silty Sand Topsoil									1174
			SS	5 5 5	1.50	10	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine-coarse gravel, few silt, medium dense, slightly moist, brown	4.7								
			SS	6 9 10	1.40	19	(1.50') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	3.4								1170
5			SS	5 9 10	1.50	19	(4.50') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, few silt, medium dense, slightly moist, light brown	2.7								
			SS	5 8 9	1.50	17		1.9								1165
10																
			SS	5 8 13	1.20	21	(12.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3								1160
15																
			SS	7 9 12	1.40	21		1.7								1155
20							(20.00') Boring terminated									
																1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-25**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1172.3**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85187, -89.64570**

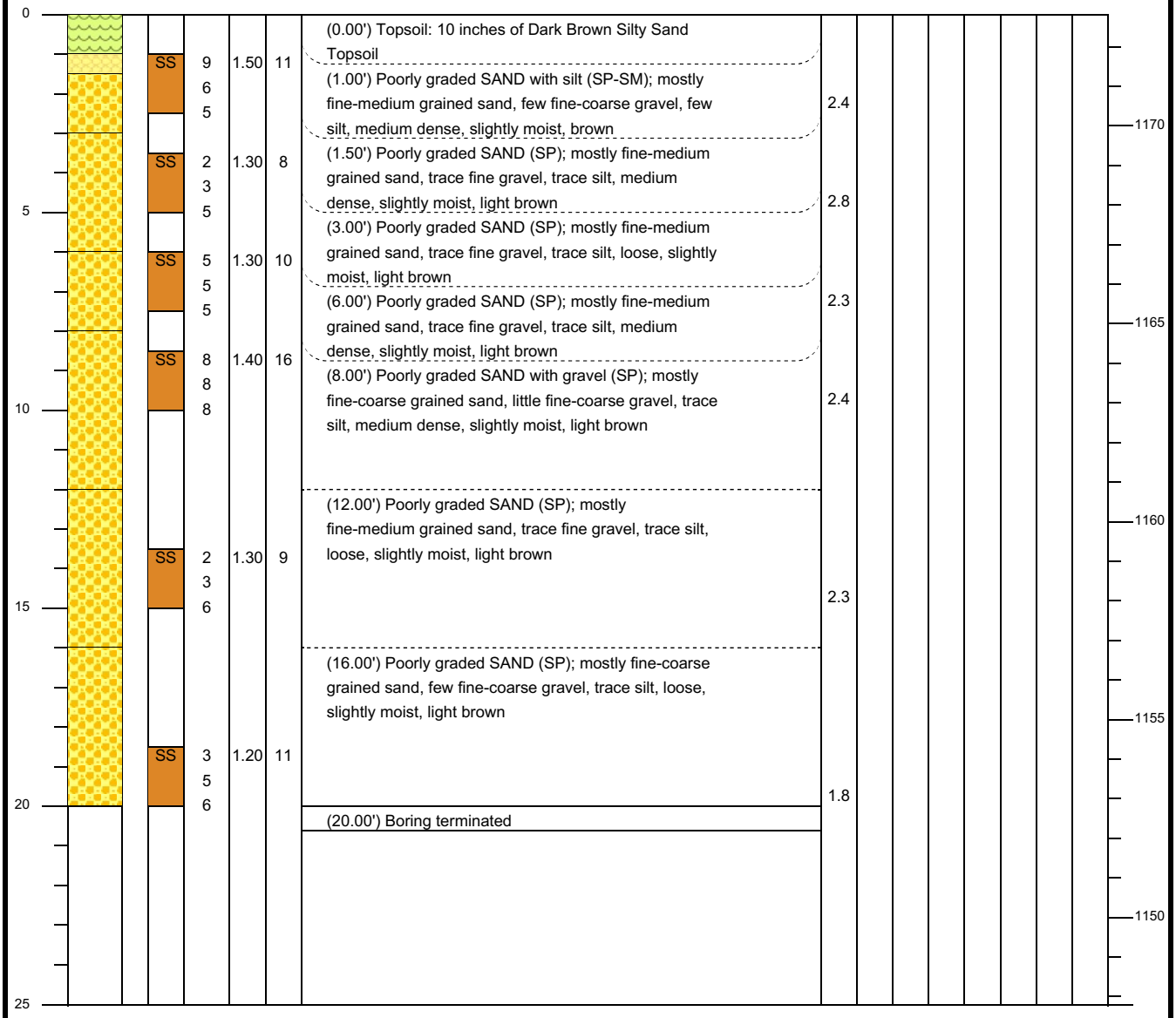
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	4 5 6	1.40	11	(0.00') Topsoil: 11 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine-coarse gravel, few silt, medium dense, slightly moist, brown	2.8								1170
			SS	3 5 5	1.40	10	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, brown	3.8								
5			SS	4 6 9	1.50	15	(3.00') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	3.8								1165
			SS	7 11 13	1.10	24	(6.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.3								
10																1160
			SS	7 9 10		19										
15																1155
			SS	5 7 11	1.20	18	(16.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.6								
20							(20.00') Boring terminated									1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-26**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1172.8**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85183, -89.64502**



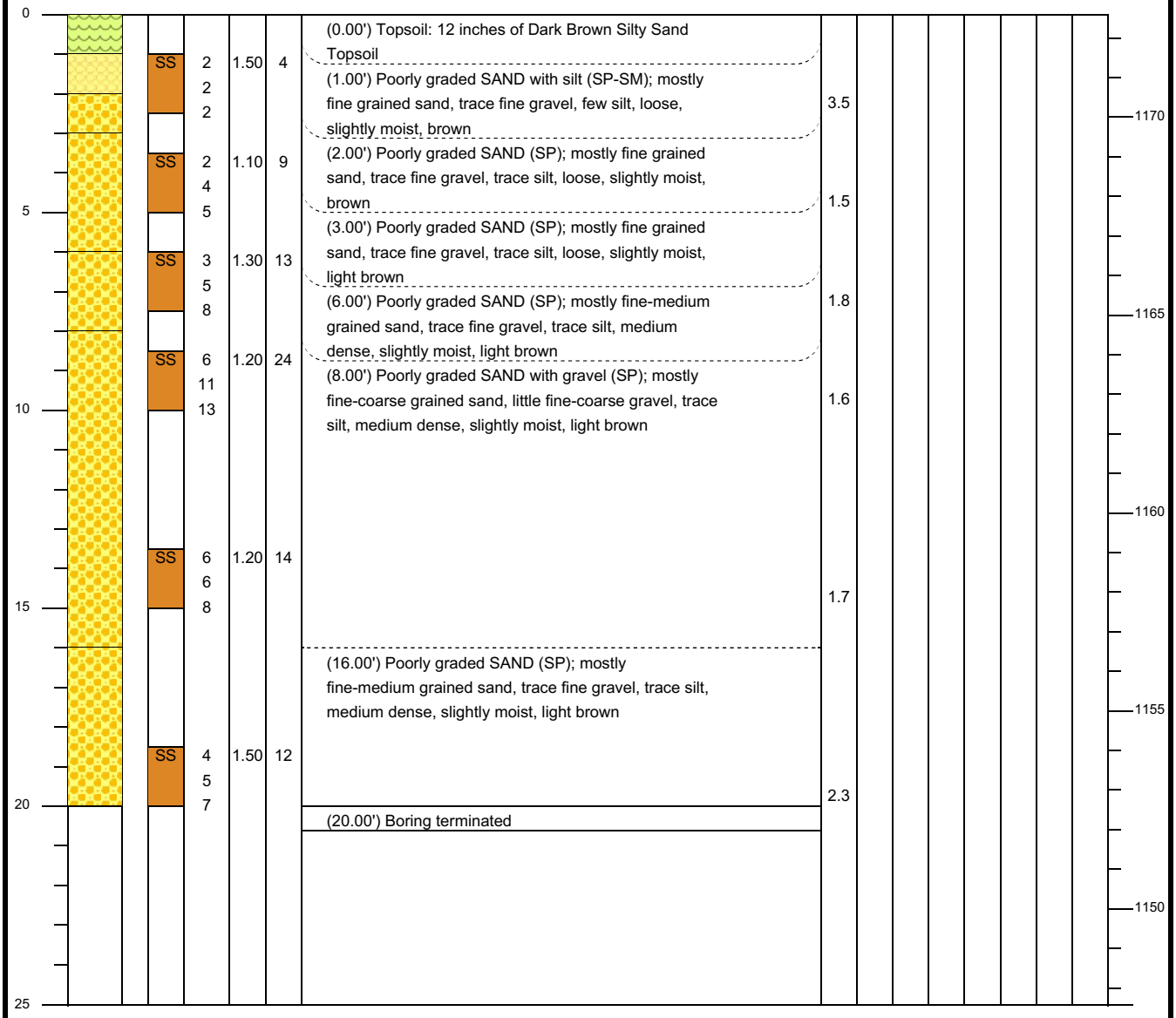
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 10 inches of Dark Brown Silty Sand Topsoil									1172.8
			SS	9 6 5	1.50	11	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, medium dense, slightly moist, brown	2.4								
			SS	2 3 5	1.30	8	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	2.8								1170
5			SS	5 5 5	1.30	10	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown	2.3								
			SS	8 8 8	1.40	16	(6.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	2.4								1165
10							(8.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown									
			SS	2 3 6	1.30	9	(12.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown	2.3								1160
15							(16.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, light brown									
			SS	3 5 6	1.20	11										1155
20							(20.00') Boring terminated	1.8								
																1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-27**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1172.6**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85145, -89.64636**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	2 2 2	1.50	4	(0.00') Topsoil: 12 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, trace fine gravel, few silt, loose, slightly moist, brown	3.5								1170
5			SS	2 4 5	1.10	9	(2.00') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, loose, slightly moist, brown	1.5								
			SS	3 5 8	1.30	13	(3.00') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown (6.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	1.8								1165
10			SS	6 11 13	1.20	24	(8.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	1.6								
			SS	6 6 8	1.20	14		1.7								1160
15							(16.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown									
			SS	4 5 7	1.50	12										1155
20							(20.00') Boring terminated	2.3								
																1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-28**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1173.1**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85142, -89.64569**

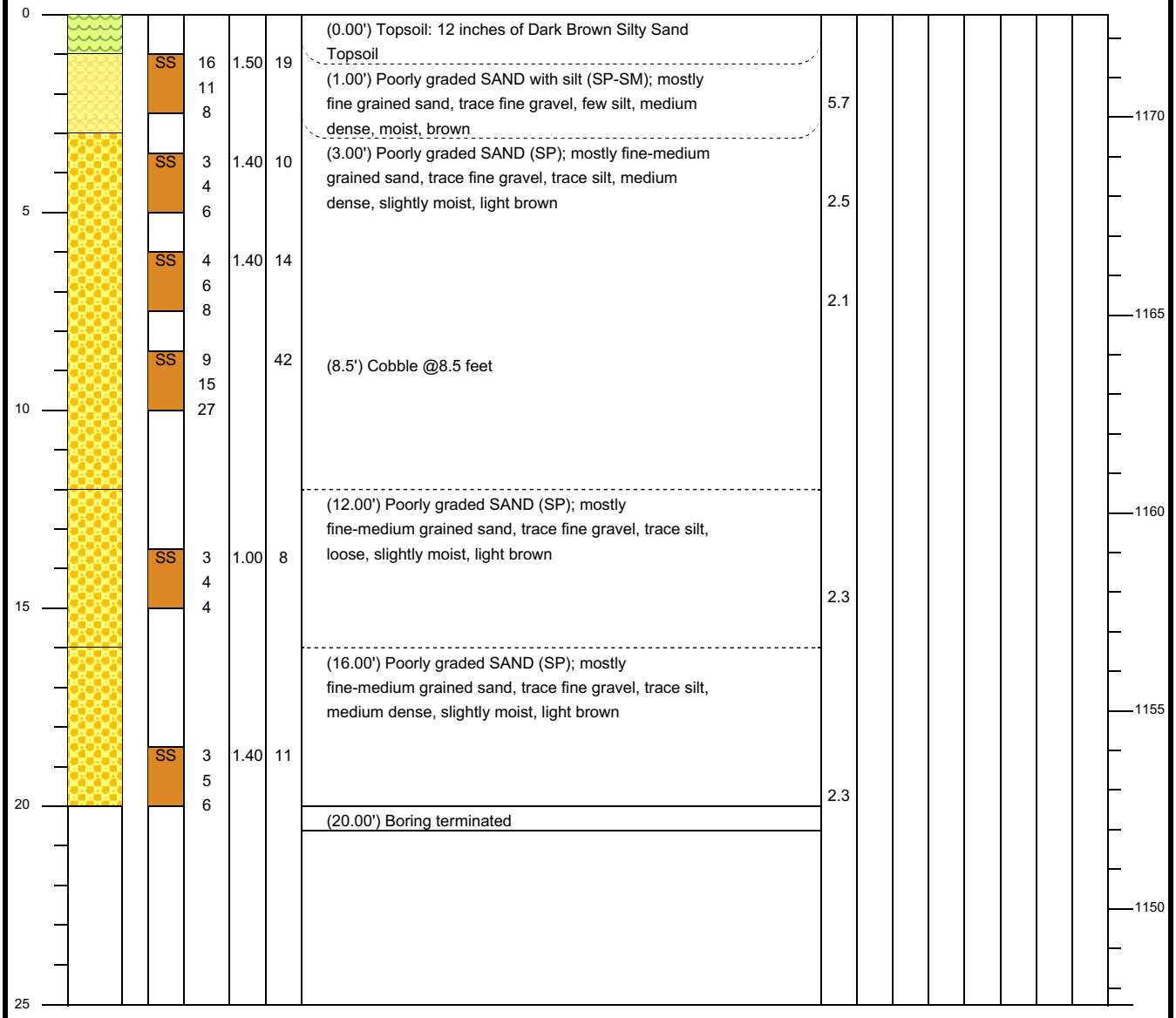
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	6 4 3	1.50	7	(0.00') Topsoil: 18 inches of Dark Brown Silty Sand Topsoil (1.50') Fill: Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine-coarse gravel, few silt, loose, moist, dark brown	10.6								1173
5			SS	2 4 7	1.20	11	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	1.2								1170
			SS	5 7 10	1.50	17		2								
10			SS	7 11 12	1.00	23	(8.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	1.8								1165
15			SS	6 8 12	1.10	20		2.2								1160
			SS	4 6 9	1.30	15		3.1								1155
20							(19.50') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown (20.00') Boring terminated									1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**B-29**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**20**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1172.6**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85145, -89.64510**



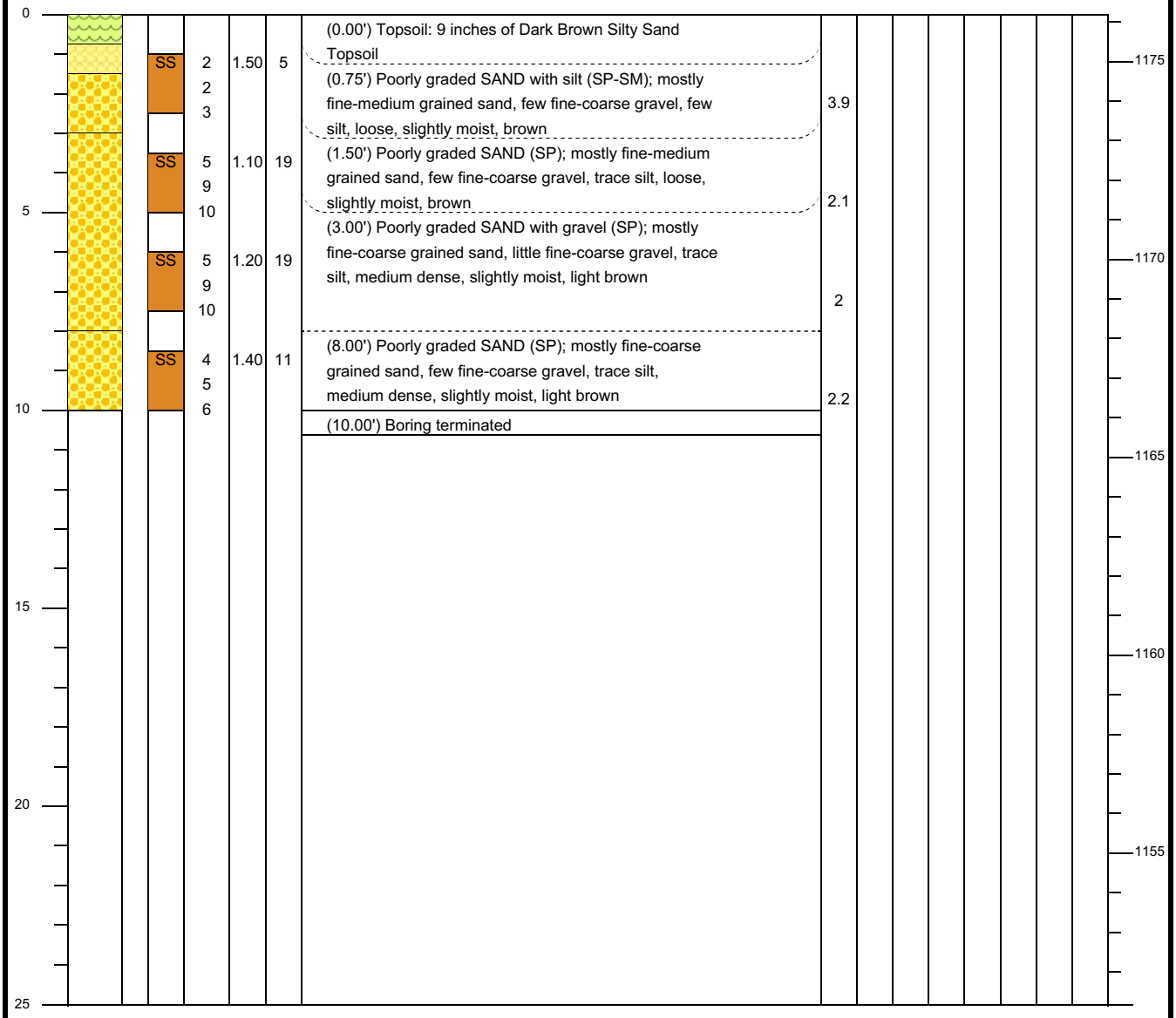
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	16 11 8	1.50	19	(0.00') Topsoil: 12 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, trace fine gravel, few silt, medium dense, moist, brown	5.7								1170
5			SS	3 4 6	1.40	10	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	2.5								
			SS	4 6 8	1.40	14		2.1								1165
10			SS	9 15 27		42	(8.5') Cobble @8.5 feet									
			SS	3 4 4	1.00	8	(12.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown	2.3								1160
15							(16.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown									1155
			SS	3 5 6	1.40	11		2.3								
20							(20.00') Boring terminated									1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**P-1**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/11/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/11/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1176.2**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85360, -89.64518**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 9 inches of Dark Brown Silty Sand Topsoil									1175
			SS	2 2 3	1.50	5	(0.75') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, loose, slightly moist, brown	3.9								
			SS	5 9 10	1.10	19	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, brown	2.1								
5			SS	5 9 10	1.20	19	(3.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2								1170
			SS	4 5 6	1.40	11	(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.2								
10							(10.00') Boring terminated									1165
15																1160
20																1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**P-2**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/11/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/11/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.2**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85389, -89.64639**

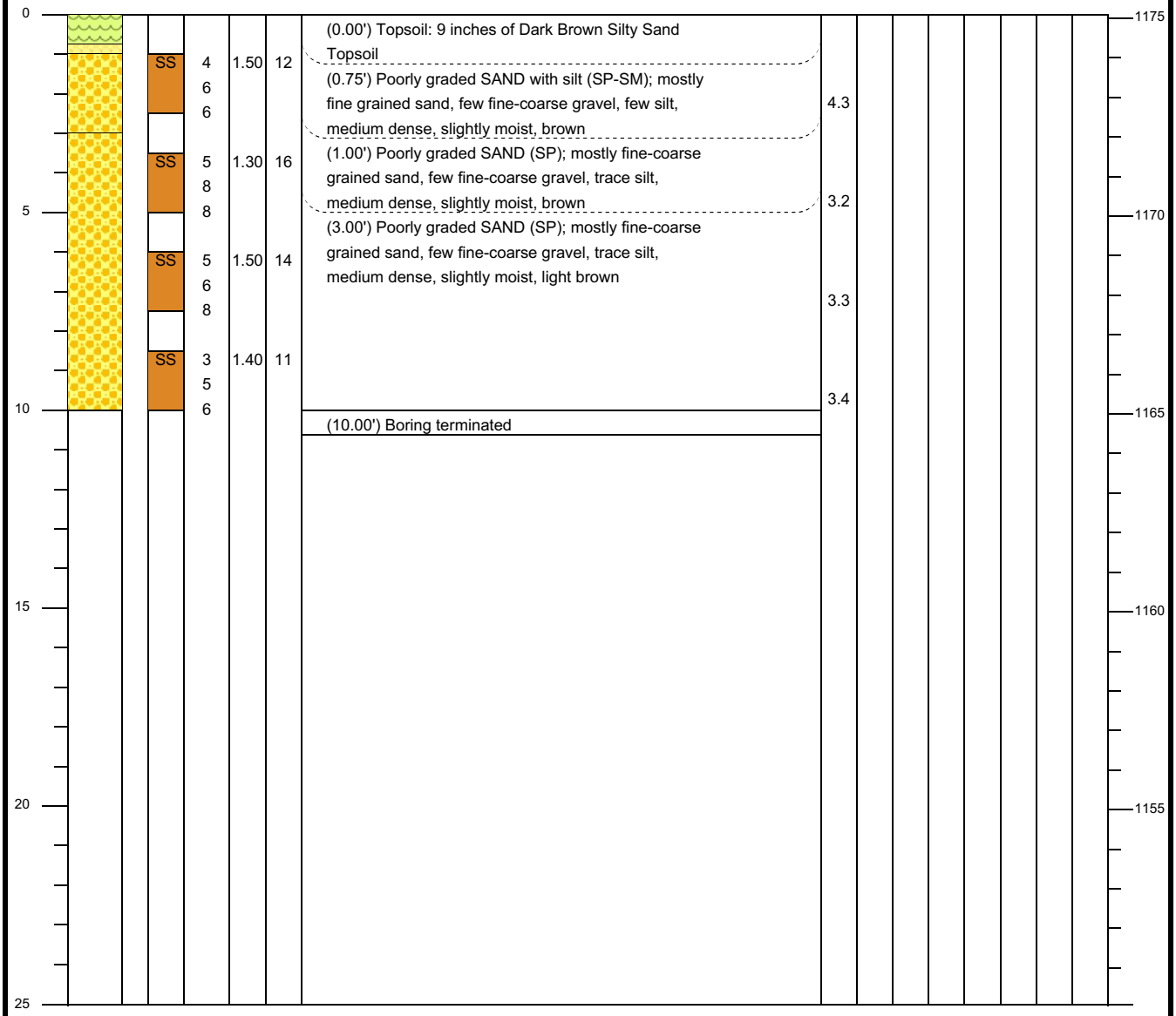
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 9 inches of Dark Brown Silty Sand Topsoil									1175
			SS	6 5 6	1.50	11	(0.75') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, medium dense, slightly moist, brown	3.7								
			SS	4 6 7	1.50	13	(1.50') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, brown	3.4								
5			SS	5 5 6	1.30	11	(3.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.4								1170
			SS	4 7 8	1.40	15		3.5								
10							(10.00') Boring terminated									1165
15																1160
20																1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**P-3**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/11/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/11/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.1**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85363, -89.64685**



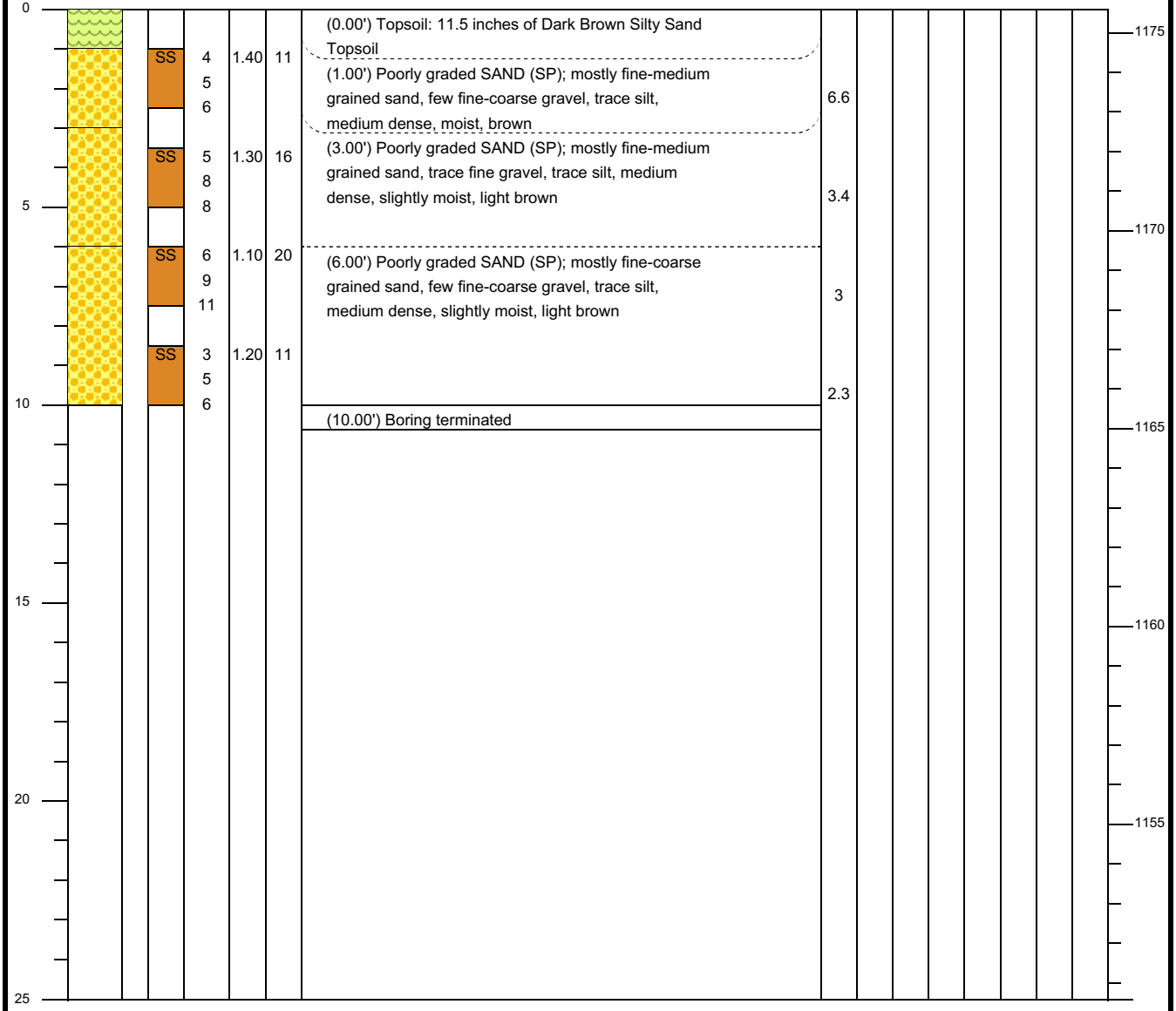
DEPTH (ft)	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	ELEVATION (ft)
0	(0.00') Topsoil: 9 inches of Dark Brown Silty Sand Topsoil		1175
	(0.75') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, few fine-coarse gravel, few silt, medium dense, slightly moist, brown	4.3	
5	(1.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, brown	3.2	1170
	(3.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3.3	
10		3.4	1165
	(10.00') Boring terminated		
15			1160
20			1155
25			

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**P-4**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.6**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85313, -89.64736**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 11.5 inches of Dark Brown Silty Sand Topsoil									1175
			SS	4 5 6	1.40	11	(1.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, medium dense, moist, brown	6.6								
5			SS	5 8 8	1.30	16	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	3.4								1170
			SS	6 9 11	1.10	20	(6.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	3								
10			SS	3 5 6	1.20	11	(10.00') Boring terminated	2.3								1165
15																1160
20																1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**P-5**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.3**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85223, -89.64806**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 18 inches of Dark Brown Silty Sand Topsoil									1175
			SS	4 5 6	1.50	11	(1.50') Fill: Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, brown	2.2								
			SS	2 1 1	0.20	2	(3.00') Fill: Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, very loose, slightly moist, brown	3.7								
5			SS	1 1 1	0.50	2		4.6								1170
			SS	2 3 5	0.67	8	(9.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, light brown	3.1								
10							(10.00') Boring terminated									1165
15																1160
20																1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**P-6**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1174.8**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85241, -89.64634**

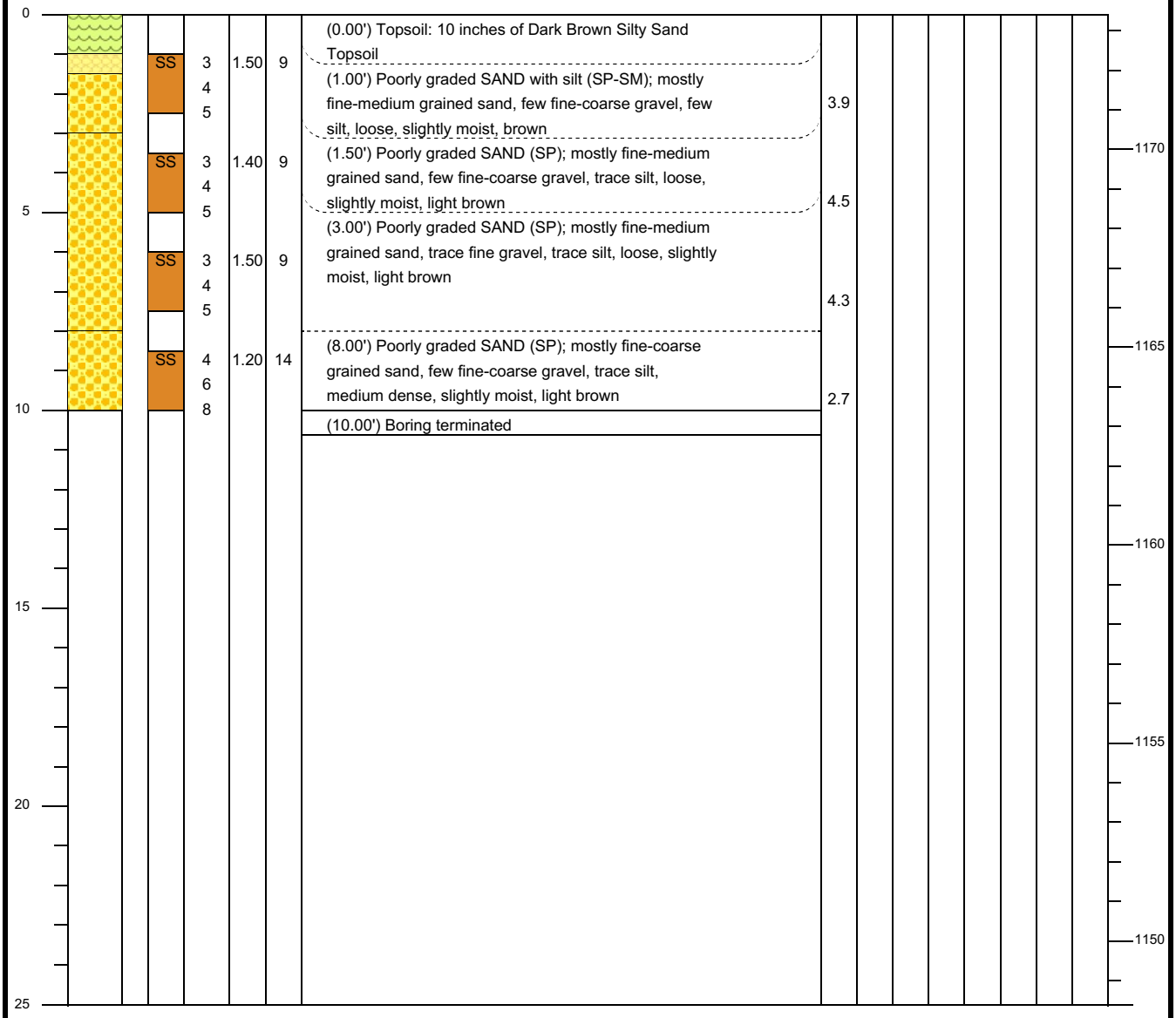
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	3 4 4	1.30	8	(0.00') Topsoil: 10.5 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, trace fine gravel, few silt, loose, slightly moist, brown	3.2								1174.8
			SS	5 8 8	1.20	16	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown	3.2								
5			SS	5 8 10	1.30	18	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	2.7								1170
			SS	5 7 8	1.40	15	(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	1.9								
10							(10.00') Boring terminated									1165
15																1160
20																1155
25																1150

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**P-7**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/12/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/12/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1173.4**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85248, -89.64515**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 10 inches of Dark Brown Silty Sand Topsoil									1173.4
			SS	3 4 5	1.50	9	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, loose, slightly moist, brown	3.9								
			SS	3 4 5	1.40	9	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, light brown	4.5								
5			SS	3 4 5	1.50	9	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown	4.3								1170
			SS	4 6 8	1.20	14	(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, light brown	2.7								1165
10							(10.00') Boring terminated									1160
15																1155
20																1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**P-8**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.2**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85144, -89.64728**

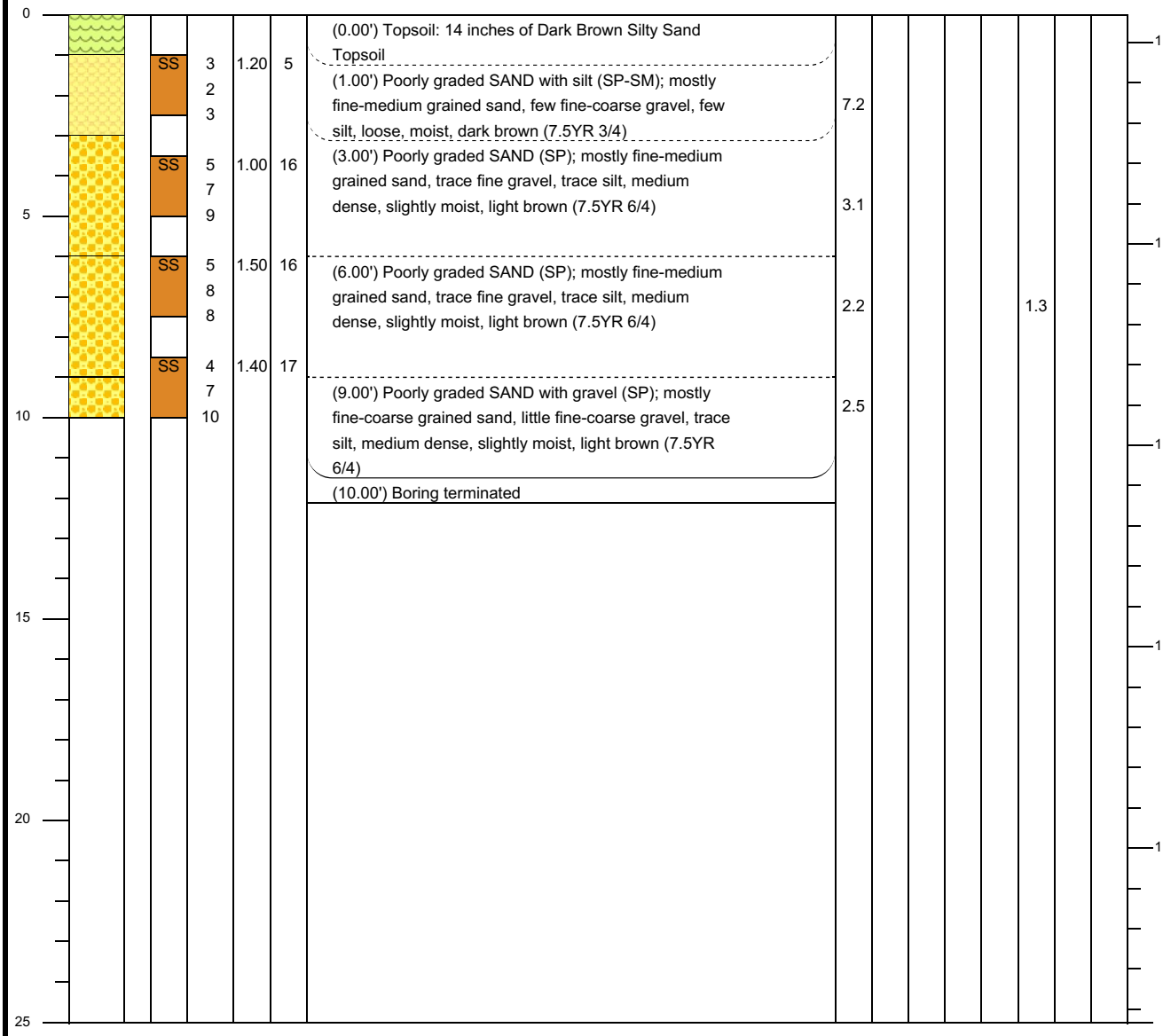
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 14 inches of Dark Brown Silty Sand Topsoil									1175
			SS	6 3 2	1.50	5	(1.00') Fill: Poorly graded SAND with silt (SP-SM); mostly fine grained sand, trace fine gravel, few silt, loose, moist, dark brown	6.7								
			SS	2 1 2	0.80	3	(3.00') Fill: Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, very loose, slightly moist, brown	2.3								
5			SS	2 2 6	1.20	8										1170
							(7.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown	1.3								
			SS	3 6 7	1.30	13	(8.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown	2.2								
10							(10.00') Boring terminated									1165
15																1160
20																1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**SW-1**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/11/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/11/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.7**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85418, -89.64684**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 14 inches of Dark Brown Silty Sand Topsoil									1175
			SS	3 2 3	1.20	5	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, loose, moist, dark brown (7.5YR 3/4)	7.2								
5			SS	5 7 9	1.00	16	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown (7.5YR 6/4)	3.1								1170
			SS	5 8 8	1.50	16	(6.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light brown (7.5YR 6/4)	2.2					1.3			
			SS	4 7 10	1.40	17	(9.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown (7.5YR 6/4)	2.5								
10							(10.00') Boring terminated									1165
15																1160
20																1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**SW-2**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/11/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/11/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1176.1**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85390, -89.64466**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 7 inches of Dark Brown Silty Sand Topsoil									1175
			SS	2 3 4	1.40	7	(0.50') Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, loose, slightly moist, brown (7.5YR 5/4)	4								
			SS	5 8 9	1.20	17	(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown (7.5YR 6/4)	3.8								
5			SS	6 8 9	1.20	17	(3.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown (7.5YR 6/4)	2.9								1170
			SS	3 4 7	1.40	11	(6.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown (7.5YR 6/4)	2.4								
10							(8.00') Poorly graded SAND with gravel (SP); mostly fine-coarse grained sand, little fine-coarse gravel, trace silt, medium dense, slightly moist, light brown (7.5YR 6/4)									1165
							(10.00') Boring terminated									
15																1160
20																1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**SW-3**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/10/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/10/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1175.2**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85294, -89.64783**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 16 inches of Dark Brown Silty Sand Topsoil									1175
			SS	3 4 5	1.50	9	(1.50') Poorly graded SAND with gravel (SP); mostly fine-medium grained sand, little fine-coarse gravel, trace silt, loose, slightly moist, strong brown (7.5YR 5/8)	4.1								
			SS	7 11 13	1.20	24	(3.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, yellowish brown (10YR 5/6)	3.1					2			
5			SS	6 10 12	1.40	22	(6.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, strong brown (7.5YR 5/6)	4.9								1170
			SS	5 7 10	1.50	17	(9.00') Poorly graded SAND (SP); mostly fine-medium grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, yellowish brown (10YR 5/6)	4								
10							(10.00') Boring terminated									1165
15																1160
20																1155
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**SW-4**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/12/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/12/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1173.9**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85267, -89.64465**

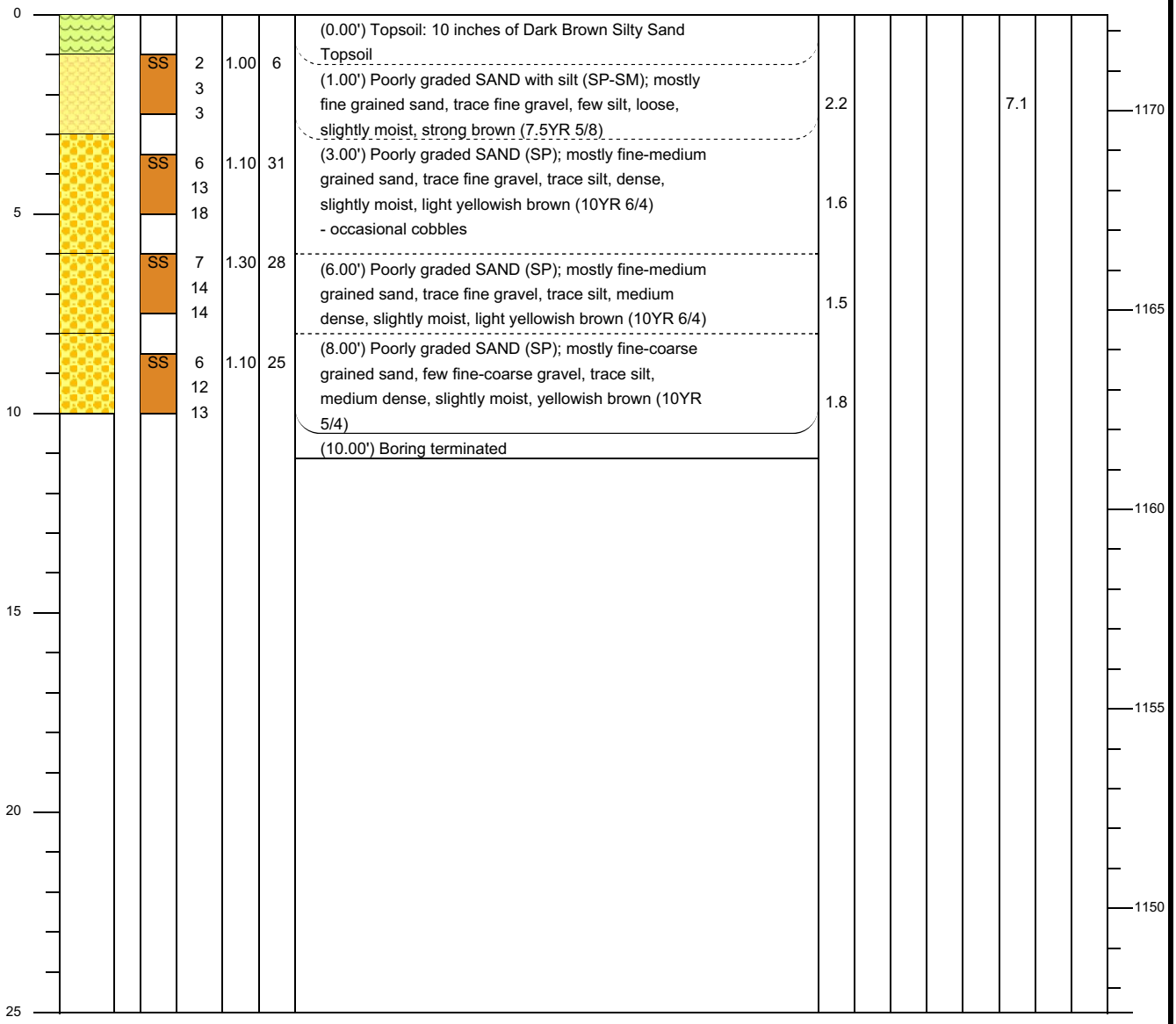
DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	2 3 4	1.50	7	(0.00') Topsoil: 12.5 inches of Dark Brown Silty Sand Topsoil (1.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, brown (7.5YR 5/4)	3.5								1173.9
5			SS	3 4 5	1.20	9	(3.00') Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, loose, slightly moist, light brown (7.5YR 6/4)	3.7								1170
			SS	4 6 7	1.50	13	(6.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, brown (7.5YR 5/4)	2.9								
10			SS	4 7 8	1.30	15	(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, brown (7.5YR 5/4)	3.5								1165
							(10.00') Boring terminated									
15																1160
20																1155
25																1150

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**SW-5**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1172.4**
Logged By:	**Michael Frede**	Location (Lat, Long):	**44.85126, -89.64838**



DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	COLLECT: Blow Counts	COLLECT: Recovery (ft)	COLLECT: N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0							(0.00') Topsoil: 10 inches of Dark Brown Silty Sand Topsoil									1172.4
			SS	2 3 3	1.00	6	(1.00') Poorly graded SAND with silt (SP-SM); mostly fine grained sand, trace fine gravel, few silt, loose, slightly moist, strong brown (7.5YR 5/8)	2.2					7.1			
5			SS	6 13 18	1.10	31	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, dense, slightly moist, light yellowish brown (10YR 6/4) - occasional cobbles	1.6								1170
			SS	7 14 14	1.30	28	(6.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light yellowish brown (10YR 6/4)	1.5								1165
10			SS	6 12 13	1.10	25	(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, medium dense, slightly moist, yellowish brown (10YR 5/4)	1.8								1160
							(10.00') Boring terminated									
15																1155
20																1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**SW-6**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1172.4**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85127, -89.64619**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	4 4 3	1.50	7	(0.00') Fill: Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, trace fine gravel, few silt, loose, slightly moist, dark brown (7.5YR 3/4)	3								1170
							(1.50') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, brownish yellow (10YR 6/6)									
5			SS	1 2 2	1.00	4	(3.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, loose, slightly moist, light yellowish brown (10YR 6/4)	2.2								
			SS	3 5 7	1.30	12	(6.00') Poorly graded SAND (SP); mostly fine-medium grained sand, trace fine gravel, trace silt, medium dense, slightly moist, light yellowish brown (10YR 6/4)	2.2								1165
			SS	5 7 9	1.20	16		2.9								
10							(10.00') Boring terminated									1160
15																1155
20																1150
25																

NOTES:

Point of Beginning

Client:	**Marathon County**	**BORING**	
Project:	**New Highway Department Shop, (POB #26.2026)**	**Boring No.**	**SW-7**
Address:	**Old Hwy 51 and Gate of Heaven Drive, Kronenwetter, WI**	**Page:**	**1 of 1**

Drilling Start Date:	**3/9/26**	Boring Depth (ft):	**10**
Drilling End Date:	**3/9/26**	Boring Diameter (in):	**3.25**
Drilling Company:	**POB**	Sampling Method(s):	**Split Spoon**
Drilling Method:	**Hollow Stem Auger**	DTW During Drilling (ft):	**N/A**
Drilling Equipment:	**Mobile B-57**	DTW After Drilling (ft):	**N/A**
Driller:	**Dakota Ciriacks**	Ground Surface Elev. (ft):	**1172.7**
Logged By:	**Neil Henriksen**	Location (Lat, Long):	**44.85166, -89.64458**

DEPTH (ft)	LITHOLOGY	WATER LEVEL	COLLECT: Sample Type	Blow Counts	Recovery (ft)	N Value RQD%	SOIL/ROCK VISUAL DESCRIPTION	Moisture Content (%)	Dry Density (pcf)	Liquid Limit	Plastic Limit	Plasticity Index (PI)	#200 Sieve (%)	Pocket Penetrometer (tsf)	Unconfined Compressive Strength (tsf)	ELEVATION (ft)
0			SS	3 3 3	1.50	6	(0.00') Fill: Poorly graded SAND (SP); mostly fine grained sand, trace fine gravel, trace silt, loose, moist, brown (7.5YR 4/3)	6.2								1172.7
							(1.50') Fill: Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, loose, moist, brown (7.5YR 4/3)									
			SS	4 3 4		7										1170
5			SS	1 2 2	0.50	4	(6.00') Fill: Poorly graded SAND with silt (SP-SM); mostly fine-medium grained sand, few fine-coarse gravel, few silt, loose, moist, brown (7.5YR 4/3)	11.2								1165
			SS	2 3 6	0.67	9	(8.00') Poorly graded SAND (SP); mostly fine-coarse grained sand, few fine-coarse gravel, trace silt, loose, slightly moist, dark yellowish brown (10YR 4/4)	3.2					1.8			
10							(10.00') Boring terminated									1160
15																1155
20																1150
25																

NOTES:

Point of Beginning

BORING AND WELL LOG LEGEND

SURFACE
- ASPHALT
- CONCRETE
- FILL
- TOPSOIL
- AIR
- ICE

USCS
- Well-graded GRAVEL (GW)
- Poorly graded GRAVEL (GP)
- Silty GRAVEL (GM)
- Clayey GRAVEL (GC)
- Silty, Clayey GRAVEL (GC-GM)
- Well-graded GRAVEL with silt (GW-GM)
- Poorly graded GRAVEL with silt (GP-GM)
- Well-graded GRAVEL with clay (GW-GC)
- Poorly graded GRAVEL with clay (GP-GC)
- Well-graded SAND (SW)
- Poorly graded SAND (SP)
- Silty SAND (SM)
- Clayey SAND (SC)
- Silty, Clayey SAND (SC-SM)
- Well-graded SAND with silt (SW-SM)
- Poorly graded SAND with silt (SP-SM)
- Well-graded SAND with clay (SW-SC)
- Poorly graded SAND with clay (SP-SC)
- SILT (ML)
- Lean CLAY (CL)
- Silty CLAY (CL-ML)
- Organic SOIL (OL)
- Elastic SILT (MH)
- Fat CLAY (CH)
- Organic SOIL (OH)
- Organic SOIL (OL/OH)
- PEAT (PT)
- BEDROCK
- WATER

Non-USCS
- Gravel
- Sand
- Silt
- Clayey silt
- Silt & clay
- Clay & silt
- Silty clay
- Clay
- Boulders
- Cobbles
- Peastone
- Glacial till
- Iron ore
- Wood
- Peat
- Partially Weathered Rock (PWR)
- Saprolite
- Ash
- Waste
- Mud
- Alluvium
- Colluvium
- Residuum

Soil/Rock Contact Lines
- Inferred
- Abrupt
- Gradational

Volume Descriptors
- Trace = <5%
- Few = 5-10%
- Little = 15-25%
- Some = 30-45%
- Mostly = >=50%

Water Levels
- Water Level During Drilling
- Water Level at End of Drilling/in Completed Well

Well/Boring Completion
- Cap
- Riser
- Screen
- End Plug
- Annular Seal
- Sanitary Seal (Bentonite Slurry/Chips/Pellets/Powder, Other)
- Filter Pack (Sand, Gravel, Other)
- Backfill

Sample Type
- GR — Grab
- EN — Encore
- SS — Split Spoon
- SH — Shelby Tube
- CO — Core Barrel
- DP — Direct Push
- ID — Lab Sample and ID

Rock
- IGNEOUS Rock
- METAMORPHIC Rock
- SEDIMENTARY Rock
- Agglomerate
- Andesite
- Basalt
- Diorite
- Gabbro
- Granite
- Rhyolite
- Tuff
- Volcanic breccia
- Gneiss
- Granulite
- Hornfels
- Marble
- Phyllite
- Quartzite
- Schist
- Serpentinite
- Skarn
- Slate
- Amphibolite
- Breccia
- Chalk
- Chert
- Claystone
- Coal
- Conglomerate
- Diatomite
- Dolomite
- Evaporite
- Graywacke
- Limestone
- Mudstone
- Sandstone
- Shale
- Siltstone

Major Component of Sample	Size Range	Description of Components Present in Sample	Percent of Dry Weight
Boulders	Over 8" (200 mm)	Trace	<5
Cobbles	8" to 3" (200 to 75 mm)	Few	5 - 10
Gravel	3" to #4 sieve (75 to 4.76 mm)	Little	15 - 25
Sand	#4 to #200 sieve (4.76 to 0.074 mm)	Some	30 - 45
Silt	Passing #200 sieve (0.074 to 0.005 mm)		
Clay	Smaller than 0.005 mm		

Consistency of Fine-Grained Soils

Unconfined Compressive Strength, Qu, tsf	Consistency
<0.25	Very Soft
0.25 - 0.49	Soft
0.50 - 0.99	Medium Stiff
1.00 - 1.99	Stiff
2.00 - 3.99	Very Stiff
>4.00	Hard

Relative Density of Coarse-Grained Soils

N, Blows per 12 inches	Relative Density
0 - 3	Very Loose
4 - 9	Loose
10 - 29	Medium Dense
30 - 49	Dense
50 - 80	Very Dense
>80	Extremely Dense

UNIFIED SOIL CLASSIFICATION AND SYMBOL CHART

COARSE-GRAINED SOILS (more than 50% of material is larger than No. 200 sieve size.)			
GRAVELS More than 50% of coarse fraction larger than No. 4 sieve size	Clean Gravels (Less than 5% fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines
		GP	Poorly-graded gravels, gravel-sand mixtures, little or no fines
	Gravels with fines (More than 12% fines)	GM	Silty gravels, gravel-sand-silt mixtures
		GC	Clayey gravels, gravel-sand-clay mixtures
SANDS 50% or more of coarse fraction smaller than No. 4 sieve size	Clean Sands (Less than 5% fines)	SW	Well-graded sands, gravelly sands, little or no fines
		SP	Poorly graded sands, gravelly sands, little or no fines
	Sands with fines (More than 12% fines)	SM	Silty sands, sand-silt mixtures
		SC	Clayey sands, sand-clay mixtures
FINE-GRAINED SOILS (50% or more of material is smaller than No. 200 sieve size.)			
SILTS AND CLAYS Liquid limit less than 50%		ML	Inorganic silts and very fine sands, rock flour, silty of clayey fine sands or clayey silts with slight plasticity
		CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays
		OL	Organic silts and organic silty clays of low plasticity
SILTS AND CLAYS Liquid limit 50% or greater		MH	Inorganic silts, micaceous or diatomaceous fine sandy or silty soils, elastic silts
		CH	Inorganic clays of high plasticity, fat clays
		OH	Organic clays of medium to high plasticity, organic silts
HIGHLY ORGANIC SOILS		PT	Peat and other highly organic soils

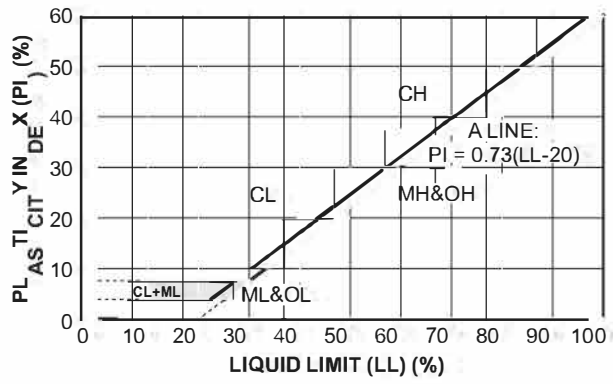
LABORATORY CLASSIFICATION CRITERIA

GW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
GP	Not meeting all gradation requirements for GW	
GM	Atterberg limits below "A" line or P.I. less than 4	Above "A" line with P.I. between 4 and 7 are borderline cases requiring use of dual symbols
GC	Atterberg limits above "A" line with P.I. greater than 7	
SW	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{D_{30}}{D_{10} \times D_{60}}$ between 1 and 3	
SP	Not meeting all gradation requirements for GW	
SM	Atterberg limits below "A" line or P.I. less than 4	Limits plotting in shaded zone with P.I. between 4 and 7 are borderline cases requiring use of dual symbols.
SC	Atterberg limits above "A" line with P.I. greater than 7	

Determine percentages of sand and gravel from grain-size curve. Depending on percentage of fines (fraction smaller than No. 200 sieve size), coarse-grained soils are classified as follows:

Less than 5 percent ..... GW, GP, SW, SP
More than 12 percent ..... GM, GC, SM, SC
5 to 12 percent ..... Borderline cases requiring dual symbols

PLASTICITY CHART



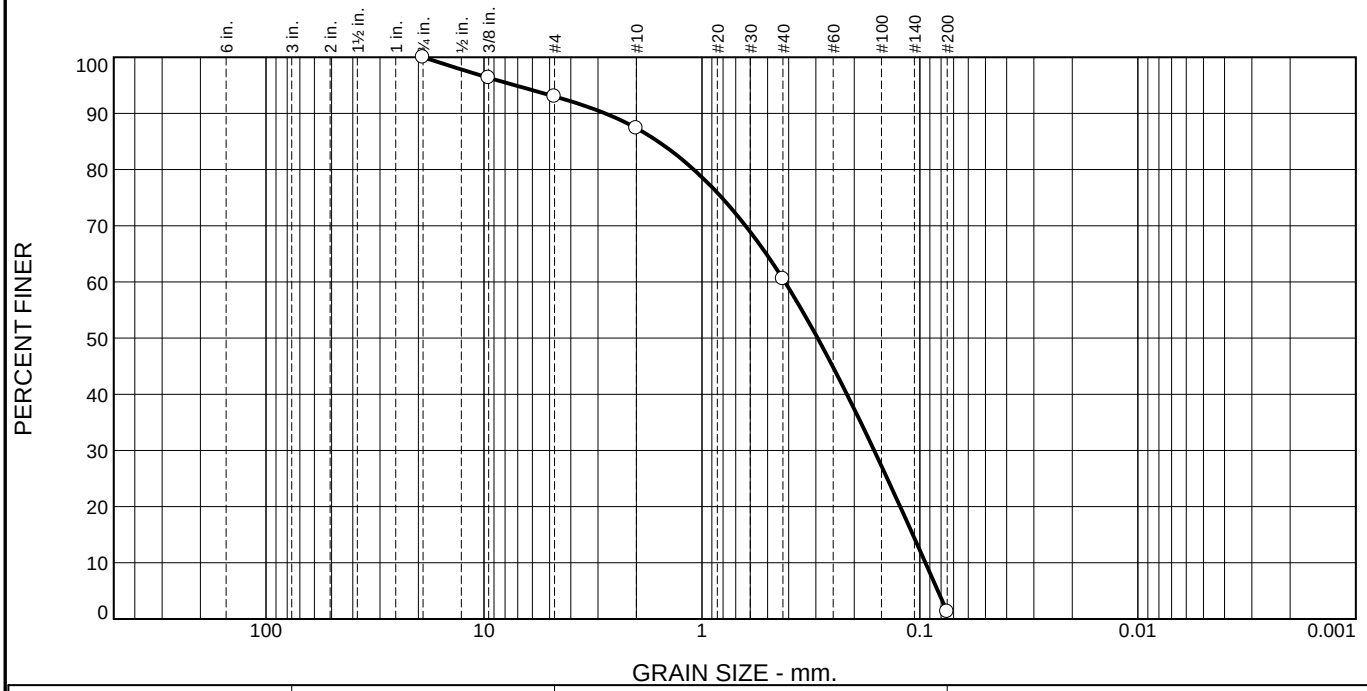
UNIFIED SOIL CLASSIFICATION SYSTEM

APPENDIX C

LABORATORY REPORTS

Sieve Analysis Reports

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	7.0	5.6	26.9	59.2	1.3	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/4	100.0		
3/8	96.4		
#4	93.0		
#10	87.4		
#40	60.5		
#200	1.3		

* (no specification provided)

Material Description

Brown Sand

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SP **AASHTO (M 145)=**

Coefficients

D_{90}= 2.7763 D_{85}= 1.5875 D_{60}= 0.4165
D_{50}= 0.2946 D_{30}= 0.1621 D_{15}= 0.1077
D_{10}= 0.0943 C_u= 4.42 C_c= 0.67

Remarks

Date Received: _____ **Date Tested:** 3/13/26

Tested By: NH

Checked By: _____

Title: _____

Source of Sample: SW-1 **Depth:** 6.0-7.5 **Date Sampled:** 3/11/26
Sample Number: S-3

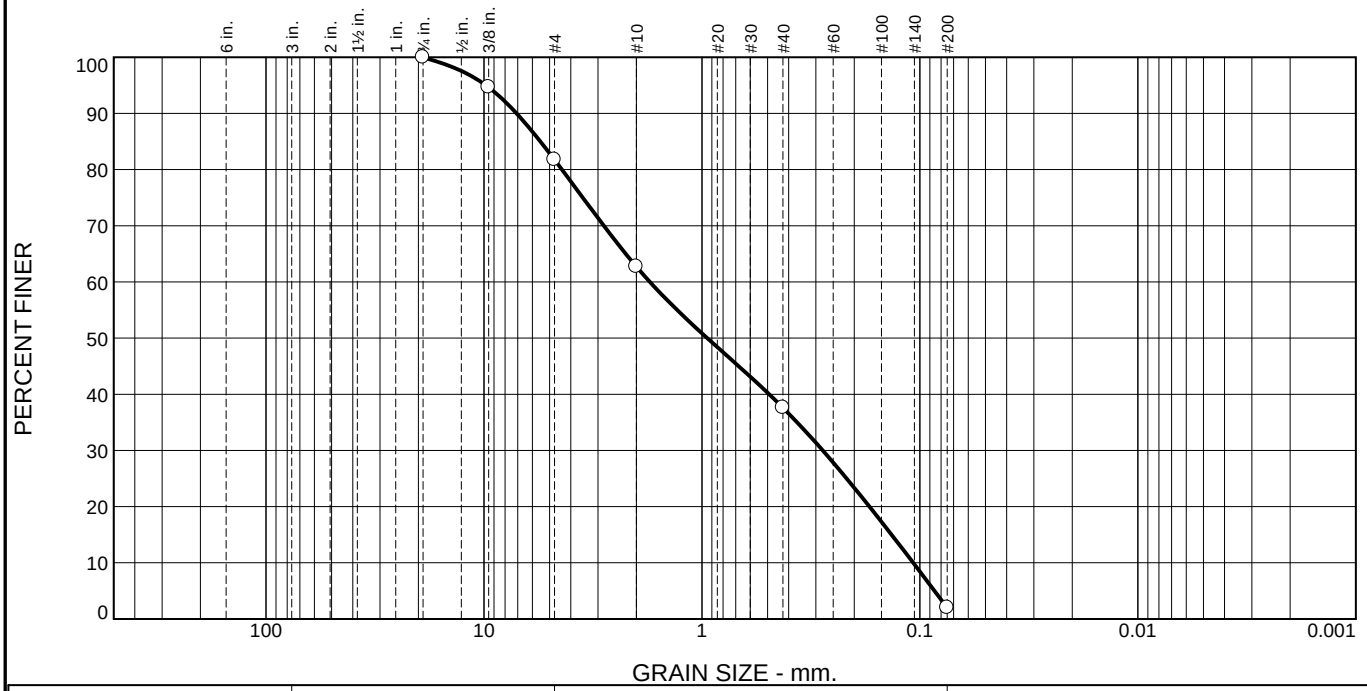
Point of Beginning, Inc.

Stevens Point, Wisconsin

Client: Marathon County
Project: New Highway Department Facilities

Project No: 26.2026

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	18.2	19.1	25.1	35.6	2.0	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/4	100.0		
3/8	94.7		
#4	81.8		
#10	62.7		
#40	37.6		
#200	2.0		

* (no specification provided)

Material Description

Brown Sand

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SP **AASHTO (M 145)=**

Coefficients

D_{90}= 7.0854 D_{85}= 5.5111 D_{60}= 1.7328
D_{50}= 0.9458 D_{30}= 0.2792 D_{15}= 0.1349
D_{10}= 0.1074 C_u= 16.14 C_c= 0.42

Remarks

Date Received: _____ **Date Tested:** 3/13/26

Tested By: NH

Checked By: _____

Title: _____

Source of Sample: SW-3 **Depth:** 3.5-5.0 **Date Sampled:** 3/10/26
Sample Number: S-2

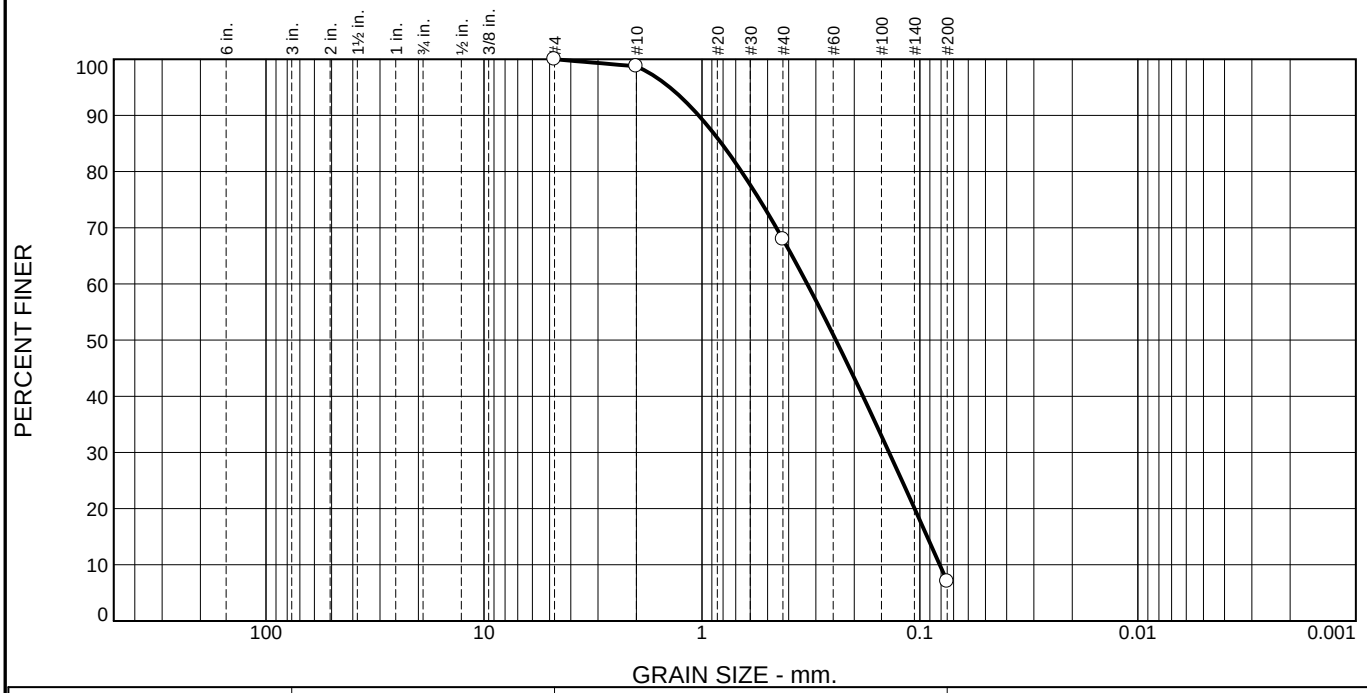
Point of Beginning, Inc.

Stevens Point, Wisconsin

Client: Marathon County
Project: New Highway Department Facilities

Project No: 26.2026

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	0.0	1.3	30.8	60.8	7.1	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
#4	100.0		
#10	98.7		
#40	67.9		
#200	7.1		

* (no specification provided)

Material Description

Brown Sand

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SP **AASHTO (M 145)=**

Coefficients

D_{90}= 1.0354 D_{85}= 0.8126 D_{60}= 0.3287
D_{50}= 0.2429 D_{30}= 0.1384 D_{15}= 0.0926
D_{10}= 0.0811 C_u= 4.05 C_c= 0.72

Remarks

Date Received: _____ **Date Tested:** 3/10/26

Tested By: NH

Checked By: _____

Title: _____

Source of Sample: SW-5 **Depth:** 1.0-2.5 **Date Sampled:** 3/9/26
Sample Number: S-1

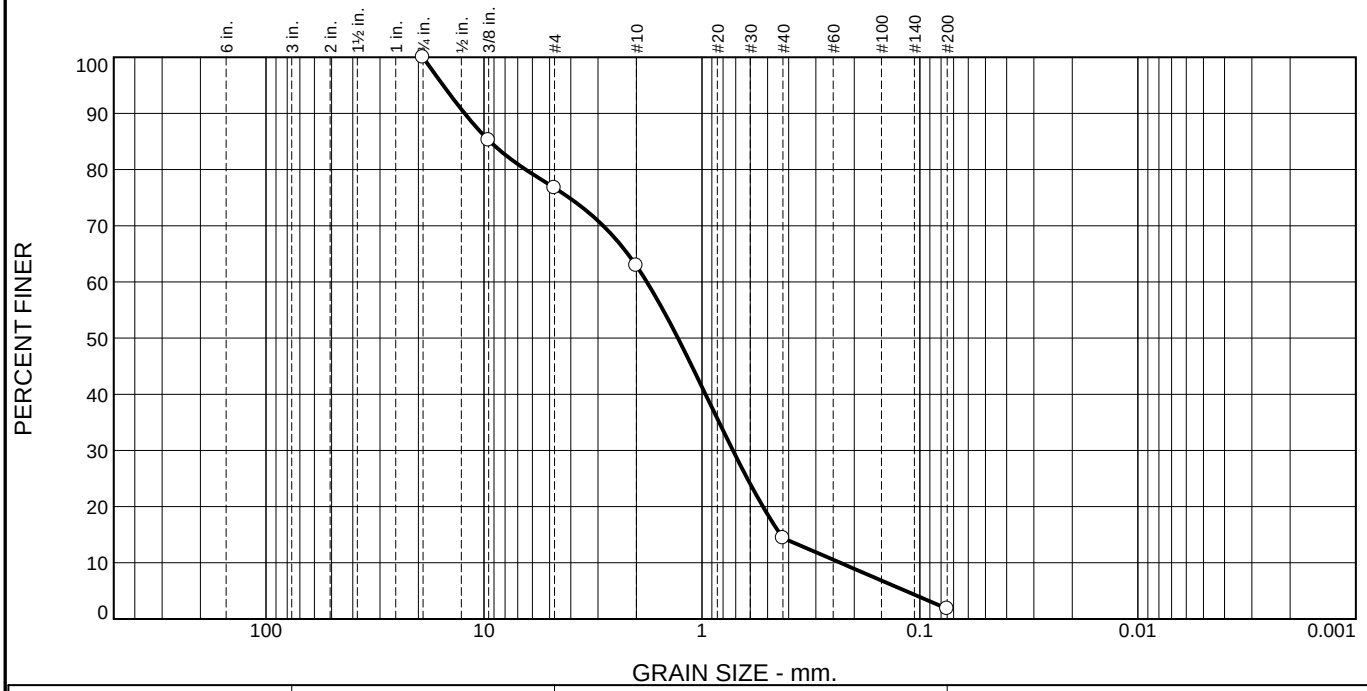
Point of Beginning, Inc.

Stevens Point, Wisconsin

Client: Marathon County
Project: New Highway Department Facilities

Project No: 26.2026

Particle Size Distribution Report



% +3"	% Gravel		% Sand			% Fines	
	Coarse	Fine	Coarse	Medium	Fine	Silt	Clay
0.0	0.0	23.3	13.8	48.5	12.6	1.8	

TEST RESULTS

Opening Size	Percent Finer	Spec.* (Percent)	Pass? (X=Fail)
3/4	100.0		
3/8	85.2		
#4	76.7		
#10	62.9		
#40	14.4		
#200	1.8		

* (no specification provided)

Material Description

Brown Sand

Atterberg Limits (ASTM D 4318)

PL= **LL=** **PI=**

Classification

USCS (D 2487)= SW **AASHTO (M 145)=**

Coefficients

D_{90}= 12.2681 D_{85}= 9.3865 D_{60}= 1.7888
D_{50}= 1.2892 D_{30}= 0.7207 D_{15}= 0.4357
D_{10}= 0.2318 C_u= 7.72 C_c= 1.25

Remarks

Date Received: _____ **Date Tested:** 3/10/26

Tested By: NH

Checked By: _____

Title: _____

Source of Sample: SW-7 **Depth:** 8.5-10.0 **Date Sampled:** 3/9/26
Sample Number: S-4

Point of Beginning, Inc.

Stevens Point, Wisconsin

Client: Marathon County
Project: New Highway Department Facilities

Project No: 26.2026

APPENDIX D

GENERAL NOTES & PROCEDURES

Drilling Procedures

Borings are drilled with a track- or truck-mounted rotary drill rig using one of a variety of drilling methods, depending on the soil conditions.

After each boring is completed, the open boreholes are either backfilled with the auger cuttings or bentonite chips, depending on government regulations or project specifications. The boreholes at the ground surface may also be capped with asphalt or concrete.

Hand-Auger Drilling (HA) - A fluted sampling device on the end of a T-Probe is advanced into the soil to the desired sample depth and then manually extracted to recover a disturbed sample. Sampling to depths greater than 3 to 5 feet can be difficult, depending on the soils encountered.

Solid-Stem Auger Drilling (AD) - Continuous flight augers are advanced to create a borehole. With solid-stem auger drilling, casing and drilling fluids are not used to maintain an open borehole. Therefore, this method is suitable in soils that will maintain an open borehole when the augers are removed. Typically, soil-stem drilling is not appropriate below the groundwater table. Soil samples can be collected at any interval.

Hollow-Stem Auger Drilling (HS) - Continuous flight augers are advanced by a truck- or track-mounted drill rig to create a borehole. Hollow-stem augers have open stems that allow a soil sampling tool to be used without removing the augers from the borehole. This drilling method is not appropriate below the groundwater table when sand soils are encountered.

Rotary Drilling (RD) - Various auger bits attached to drill rod, in conjunction with circulating drilling fluid, are used to advance the borehole. Surface casing is used to maintain borehole stability and to facilitate the circulation of the drilling fluid. The borehole will remain open due to the presence of dense drilling fluid (mud) when the auger bit and drill rod are removed. This drilling method is appropriate in soils that do not maintain an open borehole during drilling.

Diamond Core Drilling (DD) - A double-tube or triple-tube core barrel with a diamond bit is advanced through bedrock or cemented material to create an in-situ cylinder material that can be extracted. When the core barrel has proceeded to the desired core run length, the core sample is retained by a core catcher and retrieved.

Soil Sampling Procedures

Representative soil samples are collected during the drilling process using one of a variety of sampling methods. Typically, soil samples are obtained in the upper 10 feet of each boring and at intervals of 5 feet thereafter.

Field logs for each boring, which describe the method of borehole advancement, sampling methods, sample depths, and other observations regarding soil and groundwater conditions, are prepared at the time of drilling. The field logs are utilized by geotechnical staff as an aid in preparing the final boring logs.

Auger Sampling (AS) - Soil samples are obtained as cuttings from the auger flights as they are lifted from the borehole. Auger samples provide a general indication of subsurface conditions; however, they do not provide undisturbed samples, nor do they provide samples from specific depths. Due to the possible loss of soil components, or the mixing of soil components from various elevations, auger samples may not be representative of in-situ soil conditions.

Split-Barrel Sampling (SS) - ASTM Standard D-1586 - A 2-inch-O.D. split-barrel sampler is driven into the soil 18 inches by a 140-pound weight free-falling 30 inches. The first 6 inches of penetration is usually considered a seating drive. The Standard Penetration Resistance (SPT) value (N-Value) is the number of blows over the final 12 inches of driving. This value provides an indication of the in-place relative density of coarse-grained (sand and gravel) soils. The N-Value should be considered qualitative, since many variables can affect the results. A representative portion of the soil sample is recovered from the split-barrel sampler, placed in a sample jar, and delivered to a laboratory for further examination and possible testing. The ASTM standard is attached.

Shelby Tube Sampling Procedure (ST) - ASTM Standard D-1587 - A 2- or 3-inch-diameter thin-walled seamless steel tube having a sharp cutting edge is hydraulically pushed into the soil to obtain a relatively undisturbed sample. This procedure is generally used for fine-grained (clay and silt) soils. The Shelby tubes are carefully handled to minimize sample disturbance and delivered to a laboratory where the soil is extruded from the tube for further examination and possible testing. The ASTM standard is attached.

Miscellaneous Procedures

Soil Classification - The samples collected were evaluated in accordance with the Unified Soil Classification System (USCS). A summary of the USCS is included in Appendix B.

The descriptions presented on the boring logs are a representation of the subsurface conditions, based on visual soil classifications of soil samples and laboratory test results. The stratigraphic lines on the logs are approximate and the transition between the layers may be gradual rather than distinct.

Boring Location Layout - If the boring locations are not staked by the project civil engineer ahead of drilling, geotechnical staff will lay out the borings either by visibly referencing site features or utilizing handheld GPS equipment. The boring location accuracy, if not pre-staked, will be 10 feet.

Boring Surface Elevations - If the surface elevations at the boring locations are not provided by the project civil engineer, they will be obtained using a variety of methods, including topographic survey interpolation, the USGS website database, government GIS websites, or handheld GPS equipment. The accuracy of the surface elevations will be ½ foot if surveyed and 1 foot if interpolated from website/plan resources.

Subsurface Water Observation - Subsurface water (groundwater and perched water) observations will be recorded during drilling and at the completion of drilling. Any recorded observations will be approximate and accurate to 2 feet. Water level measurements refer only to those observed at the times and locations indicated and may vary with time.

Designation: D 1586 – 99

AMERICAN SOCIETY FOR TESTING AND MATERIALS
100 Barr Harbor Dr., West Conshohocken, PA 19428
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Standard Test Method for Penetration Test and Split-Barrel Sampling of Soils[1]

This standard is issued under the fixed designation D 1586; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope *

1.1 This test method describes the procedure, generally known as the Standard Penetration Test (SPT), for driving a split-barrel sampler to obtain a representative soil sample and a measure of the resistance of the soil to penetration of the sampler.

1.2 *This standard does not purport to address all of the safety problems, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.* For a specific precautionary statement, see 5.4.1.

1.3 The values stated in inch-pound units are to be regarded as the standard.

NOTE 1—Practice D 6066 can be used when testing loose sands below the water table for liquefaction studies or when a higher level of care is required when drilling these soils. This practice provides information on drilling methods, equipment variables, energy corrections, and blow-count normalization.

2. Referenced Documents

2.1 *ASTM Standards:*

D 2487 Practice for Classification of Soils for Engineering Purposes (Unified Soil Classification System)[2]

D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)[2]

D 4220 Practices for Preserving and Transporting Soil Samples[2]

D 4633 Test Method for Stress Wave Energy Measurement for Dynamic Penetrometer Testing Systems[2]

D 6066 Practice for Determining the Normalized Penetration Resistance Testing of Sands for Evaluation of Liquefaction Potential[3]

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *anvil*—that portion of the drive-weight assembly which the hammer strikes and through which the hammer energy passes into the drill rods.

3.1.2 *cathead*—the rotating drum or windlass in the rope-cathead lift system around which the operator wraps a rope to lift and drop the hammer by successively tightening and loosening the rope turns around the drum.

3.1.3 *drill rods*—rods used to transmit downward force and torque to the drill bit while drilling a borehole.

3.1.4 *drive-weight assembly*—a device consisting of the hammer, hammer fall guide, the anvil, and any hammer drop system.

3.1.5 *hammer*—that portion of the drive-weight assembly consisting of the 140 ± 2 lb (63.5 ± 1 kg) impact weight which is successively lifted and dropped to provide the energy that accomplishes the sampling and penetration.

3.1.6 *hammer drop system*—that portion of the drive-weight assembly by which the operator accomplishes the lifting and dropping of the hammer to produce the blow.

3.1.7 *hammer fall guide*—that part of the drive-weight assembly used to guide the fall of the hammer.

3.1.8 *N-value*—the blowcount representation of the penetration resistance of the soil. The *N*-value, reported in blows per foot, equals the sum of the number of blows required to drive the sampler over the depth interval of 6 to 18 in. (150 to 450 mm) (see 7.3).

3.1.9 Δ*N*—the number of blows obtained from each of the 6-in. (150-mm) intervals of sampler penetration (see 7.3).

3.1.10 *number of rope turns*—the total contact angle between the rope and the cathead at the beginning of the operator's rope slackening to drop the hammer, divided by 360° (see Fig. 1).

3.1.11 *sampling rods*—rods that connect the drive-weight assembly to the sampler. Drill rods are often used for this purpose.

3.1.12 *SPT*—abbreviation for standard penetration test, a term by which engineers commonly refer to this method.

4. Significance and Use

4.1 This test method provides a soil sample for identification purposes and for laboratory tests appropriate for soil obtained from a sampler that may produce large shear strain disturbance in the sample.

4.2 This test method is used extensively in a great variety of geotechnical exploration projects. Many local correlations and

[1] This method is under the jurisdiction of ASTM Committee D-18 on Soil and Rock and is the direct responsibility of Subcommittee D18.02 on Sampling and Related Field Testing for Soil Investigations.

Current edition approved Jan. 10, 1999. Published March 1999. Originally published as D 1586 – 58 T. Last previous edition D 1586 – 98.

[2] *Annual Book of ASTM Standards*, Vol 04.08.

[3] *Annual Book of ASTM Standards*, Vol 04.09.

***A Summary of Changes section appears at the end of this standard.**

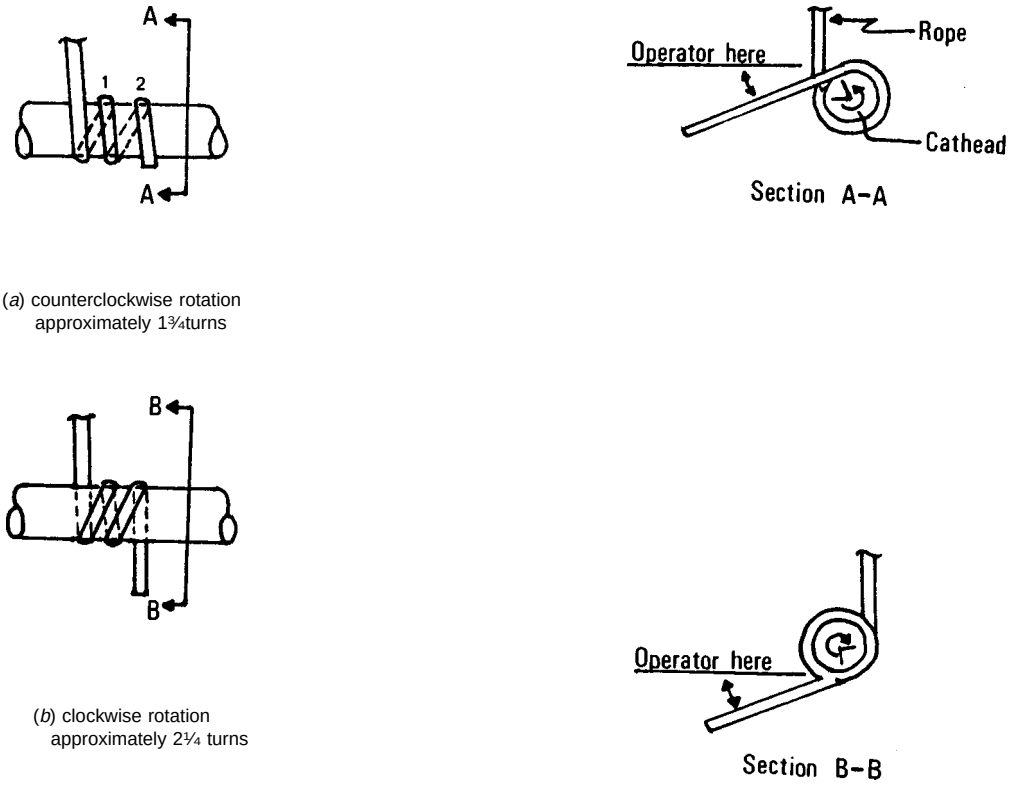


FIG. 1 Definitions of the Number of Rope Turns and the Angle for (*a*) Counterclockwise Rotation and (*b*) Clockwise Rotation of the Cathead

widely published correlations which relate SPT blowcount, or *N*-value, and the engineering behavior of earthworks and foundations are available.

5. Apparatus

5.1 *Drilling Equipment*—Any drilling equipment that provides at the time of sampling a suitably clean open hole before insertion of the sampler and ensures that the penetration test is performed on undisturbed soil shall be acceptable. The following pieces of equipment have proven to be suitable for advancing a borehole in some subsurface conditions.

5.1.1 *Drag, Chopping, and Fishtail Bits*, less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm) in diameter may be used in conjuction with open-hole rotary drilling or casing-advancement drilling methods. To avoid disturbance of the underlying soil, bottom discharge bits are not permitted; only side discharge bits are permitted.

5.1.2 *Roller-Cone Bits*, less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm) in diameter may be used in conjunction with open-hole rotary drilling or casing-advancement drilling methods if the drilling fluid discharge is deflected.

5.1.3 *Hollow-Stem Continuous Flight Augers*, with or without a center bit assembly, may be used to drill the boring. The inside diameter of the hollow-stem augers shall be less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm).

5.1.4 *Solid, Continuous Flight, Bucket and Hand Augers*, less than 6.5 in. (162 mm) and greater than 2.2 in. (56 mm) in diameter may be used if the soil on the side of the boring does not cave onto the sampler or sampling rods during sampling.

5.2 *Sampling Rods*—Flush-joint steel drill rods shall be used to connect the split-barrel sampler to the drive-weight assembly. The sampling rod shall have a stiffness (moment of inertia) equal to or greater than that of parallel wall "A" rod (a steel rod which has an outside diameter of 1⅝ in. (41.2 mm) and an inside diameter of 1⅛ in. (28.5 mm).

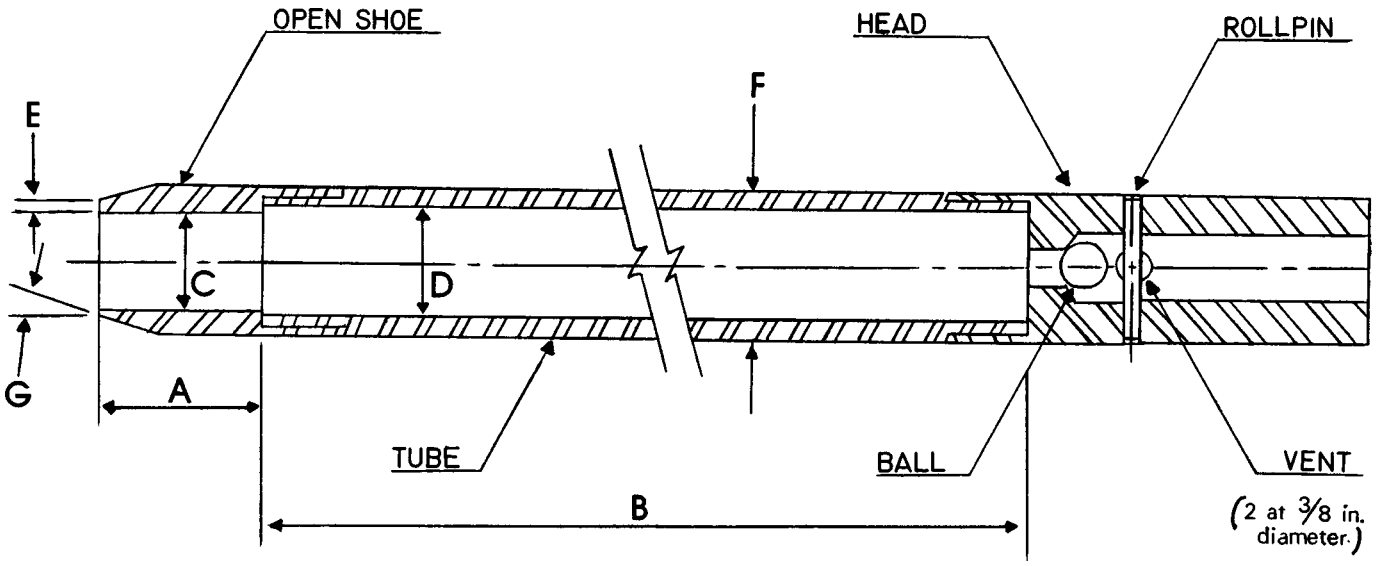
NOTE 2—Recent research and comparative testing indicates the type rod used, with stiffness ranging from "A" size rod to "N" size rod, will usually have a negligible effect on the *N*-values to depths of at least 100 ft (30 m).

5.3 *Split-Barrel Sampler*—The sampler shall be constructed with the dimensions indicated in Fig. 2. The driving shoe shall be of hardened steel and shall be replaced or repaired when it becomes dented or distorted. The use of liners to produce a constant inside diameter of 1⅜ in. (35 mm) is permitted, but shall be noted on the penetration record if used. The use of a sample retainer basket is permitted, and should also be noted on the penetration record if used.

NOTE 3—Both theory and available test data suggest that *N*-values may increase between 10 to 30 % when liners are used.

5.4 *Drive-Weight Assembly*:

5.4.1 *Hammer and Anvil*—The hammer shall weigh 140 ± 2 lb (63.5 ± 1 kg) and shall be a solid rigid metallic mass. The hammer shall strike the anvil and make steel on steel contact when it is dropped. A hammer fall guide permitting a free fall



A = 1.0 to 2.0 in. (25 to 50 mm)
B = 18.0 to 30.0 in. (0.457 to 0.762 m)
C = 1.375± 0.005 in. (34.93 ± 0.13 mm)
D = 1.50 ± 0.05 − 0.00 in. (38.1 ± 1.3 − 0.0 mm)
E = 0.10 ± 0.02 in. (2.54 ± 0.25 mm)
F = 2.00 ± 0.05 − 0.00 in. (50.8 ± 1.3 − 0.0 mm)
G = 16.0° to 23.0°

The 1½ in. (38 mm) inside diameter split barrel may be used with a 16-gage wall thickness split liner. The penetrating end of the drive shoe may be slightly rounded. Metal or plastic retainers may be used to retain soil samples.

FIG. 2 Split-Barrel Sampler

shall be used. Hammers used with the cathead and rope method shall have an unimpeded overlift capacity of at least 4 in. (100 mm). For safety reasons, the use of a hammer assembly with an internal anvil is encouraged.

NOTE 4—It is suggested that the hammer fall guide be permanently marked to enable the operator or inspector to judge the hammer drop height.

5.4.2 *Hammer Drop System*—Rope-cathead, trip, semi-automatic, or automatic hammer drop systems may be used, providing the lifting apparatus will not cause penetration of the sampler while re-engaging and lifting the hammer.

5.5 *Accessory Equipment*—Accessories such as labels, sample containers, data sheets, and groundwater level measuring devices shall be provided in accordance with the requirements of the project and other ASTM standards.

6. Drilling Procedure

6.1 The boring shall be advanced incrementally to permit intermittent or continuous sampling. Test intervals and locations are normally stipulated by the project engineer or geologist. Typically, the intervals selected are 5 ft (1.5 mm) or less in homogeneous strata with test and sampling locations at every change of strata.

6.2 Any drilling procedure that provides a suitably clean and stable hole before insertion of the sampler and assures that the penetration test is performed on essentially undisturbed soil shall be acceptable. Each of the following procedures have proven to be acceptable for some subsurface conditions. The subsurface conditions anticipated should be considered when selecting the drilling method to be used.

6.2.1 Open-hole rotary drilling method.

6.2.2 Continuous flight hollow-stem auger method.

6.2.3 Wash boring method.

6.2.4 Continuous flight solid auger method.

6.3 Several drilling methods produce unacceptable borings. The process of jetting through an open tube sampler and then sampling when the desired depth is reached shall not be permitted. The continuous flight solid auger method shall not be used for advancing the boring below a water table or below the upper confining bed of a confined non-cohesive stratum that is under artesian pressure. Casing may not be advanced below the sampling elevation prior to sampling. Advancing a boring with bottom discharge bits is not permissible. It is not permissible to advance the boring for subsequent insertion of the sampler solely by means of previous sampling with the SPT sampler.

6.4 The drilling fluid level within the boring or hollow-stem augers shall be maintained at or above the in situ groundwater level at all times during drilling, removal of drill rods, and sampling.

7. Sampling and Testing Procedure

7.1 After the boring has been advanced to the desired sampling elevation and excessive cuttings have been removed, prepare for the test with the following sequence of operations.

7.1.1 Attach the split-barrel sampler to the sampling rods and lower into the borehole. Do not allow the sampler to drop onto the soil to be sampled.

7.1.2 Position the hammer above and attach the anvil to the top of the sampling rods. This may be done before the sampling

rods and sampler are lowered into the borehole.

7.1.3 Rest the dead weight of the sampler, rods, anvil, and drive weight on the bottom of the boring and apply a seating blow. If excessive cuttings are encountered at the bottom of the boring, remove the sampler and sampling rods from the boring and remove the cuttings.

7.1.4 Mark the drill rods in three successive 6-in. (0.15-m) increments so that the advance of the sampler under the impact of the hammer can be easily observed for each 6-in. (0.15-m) increment.

7.2 Drive the sampler with blows from the 140-lb (63.5-kg) hammer and count the number of blows applied in each 6-in. (0.15-m) increment until one of the following occurs:

7.2.1 A total of 50 blows have been applied during any one of the three 6-in. (0.15-m) increments described in 7.1.4.

7.2.2 A total of 100 blows have been applied.

7.2.3 There is no observed advance of the sampler during the application of 10 successive blows of the hammer.

7.2.4 The sampler is advanced the complete 18 in. (0.45 m) without the limiting blow counts occurring as described in 7.2.1, 7.2.2, or 7.2.3.

7.3 Record the number of blows required to effect each 6 in. (0.15 m) of penetration or fraction thereof. The first 6 in. is considered to be a seating drive. The sum of the number of blows required for the second and third 6 in. of penetration is termed the "standard penetration resistance," or the "*N*-value." If the sampler is driven less than 18 in. (0.45 m), as permitted in 7.2.1, 7.2.2, or 7.2.3, the number of blows per each complete 6-in. (0.15-m) increment and per each partial increment shall be recorded on the boring log. For partial increments, the depth of penetration shall be reported to the nearest 1 in. (25 mm), in addition to the number of blows. If the sampler advances below the bottom of the boring under the static weight of the drill rods or the weight of the drill rods plus the static weight of the hammer, this information should be noted on the boring log.

7.4 The raising and dropping of the 140-lb (63.5-kg) hammer shall be accomplished using either of the following two methods:

7.4.1 By using a trip, automatic, or semi-automatic hammer drop system which lifts the 140-lb (63.5-kg) hammer and allows it to drop 30 ± 1.0 in. (0.76 m ± 25 mm) unimpeded.

7.4.2 By using a cathead to pull a rope attached to the hammer. When the cathead and rope method is used the system and operation shall conform to the following:

7.4.2.1 The cathead shall be essentially free of rust, oil, or grease and have a diameter in the range of 6 to 10 in. (150 to 250 mm).

7.4.2.2 The cathead should be operated at a minimum speed of rotation of 100 RPM, or the approximate speed of rotation shall be reported on the boring log.

7.4.2.3 No more than 2¼ rope turns on the cathead may be used during the performance of the penetration test, as shown in Fig. 1.

NOTE 5—The operator should generally use either 1¾ or 2¼ rope turns, depending upon whether or not the rope comes off the top (1¾ turns) or the bottom (2¼ turns) of the cathead. It is generally known and accepted that 2¾or more rope turns considerably impedes the fall of the hammer and should not be used to perform the test. The cathead rope should be maintained in a relatively dry, clean, and unfrayed condition.

7.4.2.4 For each hammer blow, a 30-in. (0.76-m) lift and drop shall be employed by the operator. The operation of pulling and throwing the rope shall be performed rhythmically without holding the rope at the top of the stroke.

7.5 Bring the sampler to the surface and open. Record the percent recovery or the length of sample recovered. Describe the soil samples recovered as to composition, color, stratification, and condition, then place one or more representative portions of the sample into sealable moisture-proof containers (jars) without ramming or distorting any apparent stratification. Seal each container to prevent evaporation of soil moisture. Affix labels to the containers bearing job designation, boring number, sample depth, and the blow count per 6-in. (0.15-m) increment. Protect the samples against extreme temperature changes. If there is a soil change within the sampler, make a jar for each stratum and note its location in the sampler barrel.

8. Report

8.1 Drilling information shall be recorded in the field and shall include the following:

8.1.1 Name and location of job,

8.1.2 Names of crew,

8.1.3 Type and make of drilling machine,

8.1.4 Weather conditions,

8.1.5 Date and time of start and finish of boring,

8.1.6 Boring number and location (station and coordinates, if available and applicable),

8.1.7 Surface elevation, if available,

8.1.8 Method of advancing and cleaning the boring,

8.1.9 Method of keeping boring open,

8.1.10 Depth of water surface and drilling depth at the time of a noted loss of drilling fluid, and time and date when reading or notation was made,

8.1.11 Location of strata changes,

8.1.12 Size of casing, depth of cased portion of boring,

8.1.13 Equipment and method of driving sampler,

8.1.14 Type sampler and length and inside diameter of barrel (note use of liners),

8.1.15 Size, type, and section length of the sampling rods, and

8.1.16 Remarks.

8.2 Data obtained for each sample shall be recorded in the field and shall include the following:

8.2.1 Sample depth and, if utilized, the sample number,

8.2.2 Description of soil,

8.2.3 Strata changes within sample,

8.2.4 Sampler penetration and recovery lengths, and

8.2.5 Number of blows per 6-in. (0.15-m) or partial increment.

9. Precision and Bias

9.1 *Precision*—A valid estimate of test precision has not been determined because it is too costly to conduct the necessary inter-laboratory (field) tests. Subcommittee D18.02 welcomes proposals to allow development of a valid precision statement.

9.2 *Bias*—Because there is no reference material for this test method, there can be no bias statement.

9.3 Variations in *N*-values of 100 % or more have been

observed when using different standard penetration test apparatus and drillers for adjacent borings in the same soil formation. Current opinion, based on field experience, indicates that when using the same apparatus and driller, *N*-values in the same soil can be reproduced with a coefficient of variation of about 10 %.

9.4 The use of faulty equipment, such as an extremely massive or damaged anvil, a rusty cathead, a low speed cathead, an old, oily rope, or massive or poorly lubricated rope sheaves can significantly contribute to differences in *N*-values obtained between operator-drill rig systems.

9.5 The variability in *N*-values produced by different drill rigs and operators may be reduced by measuring that part of the hammer energy delivered into the drill rods from the sampler and adjusting *N* on the basis of comparative energies. A method for energy measurement and *N*-value adjustment is given in Test Method D 4633.

10. Keywords

10.1 blow count; in-situ test; penetration resistance; split-barrel sampling; standard penetration test

SUMMARY OF CHANGES

(1) Added note to Section 1, Scope. The note refers to a related standard, Practice D 6066.

(2) Added Practice D 6066 to Section 2 on Referenced Documents.

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This standard is subject to revision at any time by the responsible technical committee and must be reviewed every five years and if not revised, either reapproved or withdrawn. Your comments are invited either for revision of this standard or for additional standards and should be addressed to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend. If you feel that your comments have not received a fair hearing you should make your views known to the ASTM Committee on Standards, 100 Barr Harbor Drive, West Conshohocken, PA 19428.

Designation: D 1587 – 00

Standard Practice for Thin-Walled Tube Sampling of Soils for Geotechnical Purposes[1]

This standard is issued under the fixed designation D 1587; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ε) indicates an editorial change since the last revision or reapproval.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope *

1.1 This practice covers a procedure for using a thin-walled metal tube to recover relatively undisturbed soil samples suitable for laboratory tests of engineering properties, such as strength, compressibility, permeability, and density. Thin-walled tubes used in piston, plug, or rotary-type samplers should comply with Section 6.3 of this practice which describes the thin-walled tubes.

NOTE 1—This practice does not apply to liners used within the samplers.

1.2 This Practice is limited to soils that can be penetrated by the thin-walled tube. This sampling method is not recommended for sampling soils containing gravel or larger size soil particles cemented or very hard soils. Other soil samplers may be used for sampling these soil types. Such samplers include driven split barrel samplers and soil coring devices (D 1586, D 3550, and D 6151). For information on appropriate use of other soil samplers refer to D 6169.

1.3 This practice is often used in conjunction with fluid rotary drilling (D 1452D 5783) or hollow-stem augers (D 6151). Subsurface geotechnical explorations should be reported in accordance with practice (D 5434). This practice discusses some aspects of sample preservation after the sampling event. For information on preservation and transportation process of soil samples, consult Practice D 4220. This practice does not address environmental sampling; consult D 6169 and D 6232for information on sampling for environmental investigations.

1.4 The values stated in inch-pound units are to be regarded as the standard. The SI values given in parentheses are provided for information purposes only. The tubing tolerances presented in Table 2 are from sources available in North America. Use of metric equivalent is acceptable as long as thickness and proportions are similar to those required in this standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

1.6 This practice offers a set of instructions for performing one or more specific operations. This document cannot replace education or experience and should be used in conjunction with professional judgment. Not all aspects of this practice may be applicable in all circumstances. This ASTM standard is not intended to represent or replace the standard of care by which the adequacy of a given professional service must be judged, nor should this document be applied without consideration of a project's many unique aspects. The word "Standard" in the title of this document means only that the document has been approved through the ASTM consensus process.

2. Referenced Documents

2.1 *ASTM Standards:*

D 653 Standard Terminology Relating to Soil, Rock, and Contained Fluids[2]

D 1452 Practice for Soil Investigation and Sampling by Auger Borings[2]

D 1586 Penetration Resistance and Split Barrel Sampling of Soils[2]

D 2488 Practice for Description and Identification of Soils (Visual-Manual Procedure)[2]

D 3550 Practice for Ring-Lined Barrel Sampling of Soils[2]

D 3740 Minimum Requirements for Agencies Engaged in the Testing and/or Inspection of Soil and Rock as Used in Engineering Design and Construction[2]

D 4220 Practices for Preserving and Transporting Soil Samples[2]

D 5434 Guide for Field Logging of Subsurface Explorations of Soil and Rock[3]

D 5783 Guide for Use of Rotary Drilling with Water-Based Drilling Fluid for Geoenvironmental Exploration and the Installation of Subsurface Water-Quality Monitoring Devices[3]

D 6151 Practice for Using Hollow-Stem Augers for Geotechnical Exploration and Soil Sampling[3]

D 6169 Guide for Selection of Soil and Rock Sampling

[1] This practice is under the jurisdiction of ASTM Committee D18 on Soil and Rock and is the direct responsibility of Subcommittee D18.02 on Sampling and Related Field Testing for Soil Investigations.

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[2] *Annual Book of ASTM Standards,* Vol 04.08.

[3] *Annual Book of ASTM Standards,* Vol 04.09.

***A Summary of Changes section appears at the end of this standard.**

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TABLE 1 Suitable Thin-Walled Steel Sample Tubes[A]

Outside diameter (D_o):			
in.	2	3	5
mm	50.8	76.2	127
Wall thickness:			
Bwg	18	16	11
in.	0.049	0.065	0.120
mm	1.24	1.65	3.05
Tube length:			
in.	36	36	54
m	0.91	0.91	1.45
Inside clearance ratio, %	<1	<1	<1

[A] The three diameters recommended in Table 1 are indicated for purposes of standardization, and are not intended to indicate that sampling tubes of intermediate or larger diameters are not acceptable. Lengths of tubes shown are illustrative. Proper lengths to be determined as suited to field conditions.

TABLE 2 Dimensional Tolerances for Thin-Walled Tubes

Nominal Tube Diameters from Table 1[A] Tolerances						
Size Outside Diameter	2 in.	50.8 mm	3 in.	76.2 mm	5 in.	127 mm
Outside diameter, D_o	+0.007 -0.000	+0.179 -0.000	+0.010 -0.000	+0.254 -0.000	+0.015 -0.000	0.381 -0.000
Inside diameter, D_i	+0.000 -0.007	+0.000 -0.179	+0.000 -0.010	+0.000 -0.254	+0.000 -0.015	+0.000 -0.381
Wall thickness	±0.007	±0.179	±0.010	±0.254	±0.015	±0.381
Ovality	0.015	0.381	0.020	0.508	0.030	0.762
Straightness	0.030/ft	2.50/m	0.030/ft	2.50/m	0.030/ft	2.50/m

[A] Intermediate or larger diameters should be proportional. Specify only two of the first three tolerances; that is, D_o and D_i, or D_o and Wall thickness, or D_i and Wall thickness.

Devices Used With Drill Rigs for Environmental Investigations[3]

D 6232 Guide for Selection of Sampling Equipment for Waste and Contaminated Media Data Collection Activities[4]

3. Terminology

3.1 *Definitions:*

3.1.1 For common definitions of terms in this standard, refer to Terminology D 653.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *inside clearance ratio, %*—the ratio of the difference in the inside diameter of the tube, D_i, minus the inside diameter of the cutting edge, D_e, to the inside diameter of the tube, D_i expressed as a percentage (see Fig. 1).

3.2.2 *ovality*—the cross section of the tube that deviates from a perfect circle.

4. Summary of Practice

4.1 A relatively undisturbed sample is obtained by pressing a thin-walled metal tube into the in-situ soil at the bottom of a boring, removing the soil-filled tube, and applying seals to the soil surfaces to prevent soil movement and moisture gain or loss.

5. Significance and Use

5.1 This practice, or Practice D 3550 with thin wall shoe, is used when it is necessary to obtain a relatively undisturbed specimen suitable for laboratory tests of engineering properties or other tests that might be influenced by soil disturbance.

NOTE 2—The quality of the result produced by this standard is dependent on the competence of the personnel performing it, and the suitability of the equipment and facilities used. Agencies that meet the criteria of Practice D 3740 are generally considered capable of competent and objective sampling. Users of this practice. are cautioned that compliance with Practice D 3740 does not in itself assure reliable results. Reliable results depend on many factors; Practice D 5740 provides a means of evaluating some of those factors.

6. Apparatus

6.1 *Drilling Equipment*—When sampling in a boring, any drilling equipment may be used that provides a reasonably clean hole; that minimizes disturbance of the soil to be sampled; and that does not hinder the penetration of the thin-walled sampler. Open borehole diameter and the inside diameter of driven casing or hollow stem auger shall not exceed 3.5 times the outside diameter of the thin-walled tube.

6.2 *Sampler Insertion Equipment*, shall be adequate to provide a relatively rapid continuous penetration force. For hard formations it may be necessary, although not recommended, to drive the thin-walled tube sampler.

6.3 *Thin-Walled Tubes*, should be manufactured to the dimensions as shown in Fig. 1. They should have an outside diameter of 2 to 5 in. (50 to 130 mm) and be made of metal having adequate strength for the type of soil to be sampled. Tubes shall be clean and free of all surface irregularities including projecting weld seams. Other diameters may be used but the tube dimensions should be proportional to the tube designs presented here.

6.3.1 *Length of Tubes*—See Table 1 and 7.4.1.

6.3.2 *Tolerances*, shall be within the limits shown in Table 2.

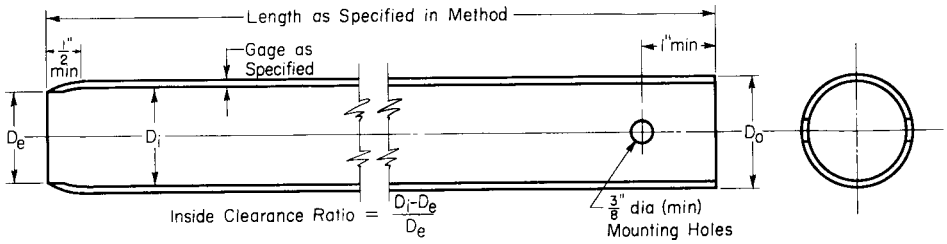
6.3.3 *Inside Clearance Ratio*, should be not greater than 1 % unless specified otherwise for the type of soil to be sampled. Generally, the inside clearance ratio used should increase with the increase in plasticity of the soil being sampled, except for sensitive soils or where local experience indicates otherwise. See 3.2.1 and Fig. 1 for definition of inside clearance ratio.

6.3.4 *Corrosion Protection*—Corrosion, whether from galvanic or chemical reaction, can damage or destroy both the thin-walled tube and the sample. Severity of damage is a function of time as well as interaction between the sample and the tube. Thin-walled tubes should have some form of protective coating, unless the soil is to be extruded less than 3 days. The type of coating to be used may vary depending upon the material to be sampled. Plating of the tubes or alternate base metals may be specified. Galvanized tubes are often used when long term storage is required. Coatings may include a light coat of lubricating oil, lacquer, epoxy, Teflon, zinc oxide, and others.

NOTE 3—Most coating materials are not resistant to scratching by soils that contain sands. Consideration should be given for prompt testing of the sample because chemical reactions between the metal and the soil sample con occur with time.

6.4 *Sampler Head*, serves to couple the thin-walled tube to the insertion equipment and, together with the thin-walled tube,

[4] *Annual Book of ASTM Standards*, Vol 11.04.



NOTE 1—Minimum of two mounting holes on opposite sides for D_o smaller than 4 in. (101.6 mm).
NOTE 2—Minimum of four mounting holes equally spaced for D_o 4 in. (101.6 mm) and larger.
NOTE 3—Tube held with hardened screws or other suitable means.
NOTE 4—2-in (50.8 mm) outside-diameter tubes are specified with an 18-gage wall thickness to comply with area ratio criteria accepted for "undisturbed samples." Users are advised that such tubing is difficult to locate and can be extremely expensive in small quantities. Sixteen-gage tubes are generally readily available.

Metric Equivalent Conversions

in.	mm
⅜	9.53
½	12.7
1	25.4
2	50.8
3	76.2
4	101.6
5	127

FIG. 1 Thin-Walled Tube for Sampling

comprises the thin-walled tube sampler. The sampler head shall contain a venting area and suitable check valve with the venting area to the outside equal to or greater than the area through the check valve. In some special cases, a check valve may not be required but venting is required to avoid sample compression. Attachment of the head to the tube shall be concentric and coaxial to assure uniform application of force to the tube by the sampler insertion equipment.

7. Procedure

7.1 Remove loose material from the center of a casing or hollow stem auger as carefully as possible to avoid disturbance of the material to be sampled. If groundwater is encountered, maintain the liquid level in the borehole at or above ground water level during the drilling and sampling operation.

7.2 Bottom discharge bits are not permitted. Side discharge bits may be used, with caution. Jetting through an open-tube sampler to clean out the borehole to sampling elevation is not permitted.

NOTE 4—Roller bits are available in downward-jetting and diffused-jet configurations. Downward-jetting configuration rock bits are not acceptable. Diffuse-jet configurations are generally acceptable.

7.3 Lower the sampling apparatus so that the sample tube's bottom rests on the bottom of the hole and record depth to the bottom of the sample tube to the nearest 0.1-ft (.03 m)

7.3.1 Keep the sampling apparatus plumb during lowering, thereby preventing the cutting edge of the tube from scraping the wall of the borehole.

7.4 Advance the sampler without rotation by a continuous relatively rapid downward motion and record length of advancement to the nearest 1 in. (25 mm).

7.4.1 Determine the length of advance by the resistance and condition of the soil formation, but the length shall never exceed 5 to 10 diameters of the tube in sands and 10 to 15 diameters of the tube in clays. In no case shall a length of advance be greater than the sample-tube length minus an allowance for the sampler head and a minimum of 3-in. (75 mm) for sludge and end cuttings.

NOTE 5—The mass of sample, laboratory handling capabilities, transportation problems, and commercial availability of tubes will generally limit maximum practical lengths to those shown in Table 1.

7.5 When the soil formation is too hard for push-type insertion, the tube may be driven or Practice D 3550 may be used. If driving methods are used, the data regarding weight and fall of the hammer and penetration achieved must be shown in the report. Additionally, that tube must be prominently labeled a "driven sample."

7.6 Withdraw the sampler from the soil formation as carefully as possible in order to minimize disturbance of the sample. The tube can be slowly rotated to shear the material at the end of the tube, and to relieve water and/or suction pressures and improve recovery. Where the soil formation is soft, a delay before withdraw of the sampler (typically 5 to 30 minutes) may improve sample recovery.

8. Sample Measurement, Sealing and Labeling

8.1 Upon removal of the tube, remove the drill cuttings in the upper end of the tube and measure the length of the soil sample recovered to the nearest 0.25 in. (5 mm) in the tube. Seal the upper end of the tube. Remove at least 1 in. (25 mm) of material from the lower end of the tube. Use this material for soil description in accordance with Practice D 2488. Measure the overall sample length. Seal the lower end of the tube. Alternatively, after measurement, the tube may be sealed without removal of soil from the ends of the tube.

8.1.1 Tubes sealed over the ends, as opposed to those sealed

with expanding packers, should be provided with spacers or appropriate packing materials, or both prior to sealing the tube ends to provide proper confinement. Packing materials must be nonabsorbent and must maintain their properties to provide the same degree of sample support with time.

8.1.2 Depending on the requirements of the investigation, field extrusion and packaging of extruded soil samples can be performed. This allows for physical examination and classification of the sample. Samples are extruded in special hydraulic jacks equipped with properly sized platens to extrude the core in a continuous smooth speed. In some cases, further extrusion may cause sample disturbance reducing suitability for testing of engineering properties. In other cases, if damage is not significant, cores can be extruded and preserved for testing (D 4220). Bent or damaged tubes should be cut off before extruding.

8.2 Prepare and immediately affix labels or apply markings as necessary to identify the sample (see Section 9). Assure that the markings or labels are adequate to survive transportation and storage.

NOTE 6—Top end of the tube should be labeled "top".

9. Field Log

9.1 Record the information that may be required for preparing field logs in general accordance to ASTM D 5434 "Guide for Field Logging of Subsurface Explorations of Soil and Rock". This guide is used for logging explorations by drilling and sampling. Some examples of the information required include;

9.1.1 Name and location of the project,

9.1.2 Boring number,

9.1.3 Log of the soil conditions,

9.1.4 Surface elevation or reference to a datum to the nearest foot (0.5 m) or better,

9.1.5 Location of the boring,

9.1.6 Method of making the borehole,

9.1.7 Name of the drilling foreman and company, and

9.1.8 Name of the drilling inspector(s).

9.1.9 Date and time of boring-start and finish,

9.1.10 Depth to groundwater level: date and time measured,

9.2 Recording the appropriate sampling information is required as follows:

9.2.1 Depth to top of sample to the nearest 0.1 ft. (.03 m) and number of sample,

9.2.2 Description of thin-walled tube sampler: size, type of metal, type of coating,

9.2.3 Method of sampler insertion: push or drive,

9.2.4 Method of drilling, size of hole, casing, and drilling fluid used,

9.2.5 Soil description in accordance with Practice D 2488,

9.2.6 Length of sampler advance (push), and

9.2.7 Recovery: length of sample obtained.

10. Keywords

10.1 geologic investigations; sampling; soil exploration; soil investigations; subsurface investigations; undisturbed

SUMMARY OF CHANGES

In accordance with committee D18 policy, this section identifies the location of changes to this standard since the last edition, 1994, which may impact the use of this standard.

(1) Editorial corrections to various sections based on comments received from Committee Balloting

(2) Added D 6232 to Section 2.

(3) Changed Note 7 to Section 8.1.2.

(4) Renumbered Note 8.

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APPENDIX E

ADDITIONAL DOCUMENTS

Pages from the Request for Proposals

Soil and Site Evaluation – Stormwater Infiltration Form

1. INTRODUCTION AND HISTORY

Marathon County Facilities and Capital Management is requesting proposals from qualified firms for Geotech services for the construction of a new highway department shop, located at 2312 Old Highway 51, Kronenwetter, WI 54455. The proposed project will include multiple buildings of varying construction types, a fuel island, multiple exterior storage bunkers, loading dock, and truck scale. Most of the exterior vehicle parking will be located near the offices of the main building with the remainder of the interior vehicle and equipment parking located at the tempered storage building and throughout the site.

Building 1 (Main Building ~ 140,000 S.F.) consists of a one-story office (16,000 S.F.) w/mezzanine, one-story repair garage w/mezzanine, and one-story parking garage. The office portion will be steel structure conventionally framed with slab will be on grade with frost wall (no basement). Mezzanine will be built with precast plank with concrete topping, supported with load-bearing CMU below. Roof will be flat profile with steel beam and structure. Exterior walls are composed of bypassing light gauge steel studs with stone veneer and large office windows.

The one-story repair garage (50,000 S.F.) will be built with load-bearing precast walls with spread footing foundation (no basement). Mezzanine will be built with precast plank with concrete topping, supported with load-bearing CMU. Roof will be a flat profile with steel beam structure and small portion with precast plank roof. The parking garage (74,000 S.F.) will be built with load-bearing precast walls with spread footing foundation. Roof will be a flat profile with steel beam structure.

Building 2 (Tempered Storage - 67,500 S.F.) consists of a one-story pre-engineered storage building with 35’ overhangs on both eave edges.; roof will be gabled with metal panel roof. Floor slab will be on grade with frost wall (no basement). It is intended to house heavy machinery and other heavy-duty equipment and has been laid out to allow for future additions. One half of the building will be heated and the other half is ambient temperature. Out buildings on the site will consist of an above ground fuel island station, salt storage building with multiple exterior storage bunkers and 8~10 brine tanks, vehicle scale, pad generator and electrical transformer, and multiple infiltration ponds.

Marathon County Highway Department is actively grubbing the site of vegetation and razing existing residential structures. Coordinate soil boring locations and access directly with Marathon County

2. SCOPE OF WORK

Structural Requirements

Borings for Design of Building Structure (B-X)

The proposed Main Building area encompasses the borings at locations B-04 through B-18 with future addition areas at boring locations B-07 and B-11. Recessed loading docks with retaining walls are located near boring B-08. The proposed Salt Storage Building area encompasses the borings at locations B-01 through B-03. The proposed Equipment Storage Building area encompasses the borings at locations B-21 through B-29 with future addition areas at boring locations B-21, B-24, and B-27. The proposed Truck Scale is located at boring B-20 and the proposed fuel island/canopy is located at boring B-19.

Foundation Loads
Testing and report should be based on these estimated maximum building loads:

- Interior building column: 350 kips
- Perimeter building column: 175 kips
- Structural exterior wall: 15 kip/ft
- Structural interior wall: 15 kip/ft
- Slab on grade
    - Area load: 1,200 psf
    - Forklift axle load: 20 kips
    - AASHTO HS-20 loads 32 kip/axle

Report Requirements
The report should include the following in addition to general site and foundation recommendations:

- Soil classification
    - Description and general historical geological information
    - Identification per the Unified Soil Classification System
- Soil design values for structural design
    - Net allowable soil bearing capacity
    - Subgrade modulus for foundations/slabs
    - Coefficient of friction or cohesion to resist sliding
    - Equivalent lateral soil pressures for below grade walls (active, at-rest and passive)
- Other
    - Provide estimates on expected total and differential foundation settlements
    - Seismic site classification A through F (itemize cost if field test is required)

Civil Requirements

Borings (C-X)
Borings SW-1 through SW-7 are for possible ditch and infiltration pond areas and are for determining soil infiltration feasibility. Information and testing for these borings shall be done in accordance with DNR Guidelines, Chapter 1002.

The proposed borings P-1 through P-8 are for possible paved areas.

Report Requirements
The report should include the following in addition to general site and foundation recommendations:

- Pavement recommendation
- Ground water elevation and flood plain elevation
- Recommendations for below grade drainage systems
- Recommendations for dewatering during and post construction

Boring depths

Borings shall extend the following minimum depth below proposed finish floor or existing grade, whichever is deeper:

- Structural Borings
    - Building Structure (B-X) 20’-0”
- Civil Borings
    - Pavement (P-X) 10’-0”

- Storm Water (SW-X) 10’-0”
- Infiltration (I-X) N/A

If inconsistent soil profiles are discovered by your drilling crew, please call Excel Engineering, Inc. while the crew is still on site to discuss and obtain authorization to do additional borings or depth.

Wisconsin Department of Safety and Professional Services
Division of Industry Services
4822 Madison Yards Way
PO Box 7302
Madison, WI 53707

P
We
Email: dsps@wisconsin.gov

Program: Plumbing
Web: https://dsps.wi.gov/Pages/Programs/Plumbing

Soil and Site Evaluation – Stormwater Infiltration

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

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

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

PLEASE PRINT ALL INFORMATION

COUNTY: MARATHON

PARCEL ID: 145-2707-022-0968

PROPERTY OWNER: MARATHON COUNTY

PROPERTY OWNER'S MAILING ADDRESS: 500 FOREST ST

CITY, STATE, ZIP CODE: WAUSAU, WI 54403

PHONE:

PROPERTY LOCATION

Govt. Lot ____, SW ¼, NW ¼, S 2, T 27 N, R 7 E

Lot #, Block #, Subd. Name or CSM #: _____

Municipality: KRONENWETTER

☐ City ☐ Village ☐ Town

Nearest Road: OLD HWY 51

Drainage area _____ ☐sq. ft. ☐acres

Test site suitable for (check all that apply):

☐Site not suitable ☐Bioretention

☐Reuse ☐Subsurface Dispersal System

☐Irrigation ☐Other _____

HYDRAULIC APPLICATION TEST METHOD

☐ Morphological Evaluation

☐ Double Ring Infiltrometer

☐ Other: (specify)

_____

SOIL MOISTURE

Date of soil borings: 3/9/26 - 3/12/26

USDA-NRCS WETS VALUE:

☐ Dry = 1

☐ Normal = 2

☐ Wet = 3

SW-1 #OBS. ☐ Pit ☐ Boring Ground Surface Elevation 1175.7 ft. Elevation of Limiting Factor NA ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
A	0-14			TOPSOIL						
B	14-36	7.5YR 3/4		S	0, F-VC, GR	M, L	G, W	5-10	5-10	3.60
C1	36-108	7.5YR 6/4		S	0, F-C	M, L	G, W	0-5	0-5	3.60
C2	108-120	7.5YR 6/4		S	0, F-VC, GR	M, L	G, W	15-25	0-5	3.60

Comments:

SW-2 ____ #OBS. ☐ Pit ■ Boring Ground Surface Elevation 1176.1 ft. Elevation of Limiting Factor N

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
A	0-7			TOPSOIL						
B	7-18	7.5YR 5/4		S	0, F-VC, GR	M, L	G, W	5-10	5-10	3.60
C1	18-36	7.5YR 6/4		S	0, F-C, GR	M, L	G, W	0-5	0-5	3.60
C2	36-120	7.5YR 6/4		S	0, F-VC, GR	M, L	G, W	15-25	0-5	3.60

Comments:

SW-3 ____ #OBS. ☐ Pit ■ Boring Ground Surface Elevation 1175.2 ft. Elevation of Limiting Factor NA ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
A	0-16			TOPSOIL						
B	16-36	7.5YR 5/8		S	0, F-VC, GR	M, L	G, W	15-25	0-5	3.60
C1	36-72	10YR 5/6		S	0, F-VC, GR	M, L	G, W	5-10	0-5	3.60
C2	72-108	7.5YR 5/6		S	0, F-C, GR	M, L	G, W	0-5	0-5	3.60
C3	108-120	10YR 5/6		S	0, F-VC, GR	M, L	G, W	5-10	0-5	3.60

Comments:

SW-4 ____ #OBS. ☐ Pit ■ Boring Ground Surface Elevation 1173.9 ft. Elevation of Limiting Factor NA ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
A	0-13			TOPSOIL						
B	13-36	7.5YR 5/4		S	0, F-C, GR	M, L	G, W	0-5	0-5	3.60
C1	36-72	7.5YR 5/4		S	0, F-M, GR	M, L	G, W	0-5	0-5	3.60
C2	72-120	7.5YR 5/4		S	0, F-VC, GR	M, L	G, W	5-10	0-5	3.60

Comments:

SW-5 ____ #OBS. ☐ Pit ■ Boring Ground Surface Elevation 1172.4 ft. Elevation of Limiting Factor N

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
A	0-10			TOPSOIL						
B	10-36	7.5YR 5/8		S	0, F-M, GR	M, L	G, W	0-5	5-10	3.60
C1	36-84	10YR 6/4		S	0, F-C, GR	M, L	G, W	0-5	0-5	3.60
C2	84-120	10YR 654		S	0, F-VC, GR	M, L	G, W	5-10	0-5	3.60

Comments:

SW-6 ____ #OBS. ☐ Pit ■ Boring Ground Surface Elevation 1172.4 ft. Elevation of Limiting Factor NA ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
FILL	0-18	7.5YR 3/4		S	0, F-C, GR	M, L	G, W	0-5	5-10	3.60
B	18-36	10YR 6/6		S	0, F-C, GR	M, L	G, W	0-5	0-5	3.60
C	36-120	10YR 6/4		S	0, F-C, GR	M, L	G, W	0-5	0-5	3.60

Comments:

SW-7 ____ #OBS. ☐ Pit ■ Boring Ground Surface Elevation 1172.7 ft. Elevation of Limiting Factor NA ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.
FILL1	0-18	7.5YR 4/3		S	0, F-M, GR	M, L	G, W	0-5	0-5	3.60
FILL2	18-84	7.5YR 4/3		S	0, F-C, GR	M, L	G, W	5-10	5-10	3.60
C	84-120	10YR 4/4		S	0, F-VC, GR	M, L	G, W	5-10	0-5	3.60

Comments:

____ #OBS. ☐ Pit ☐ Boring Ground Surface Elevation _____ ft. Elevation of Limiting Factor _____ ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.

Comments:

____ #OBS. ☐ Pit ☐ Boring Ground Surface Elevation _____ ft. Elevation of Limiting Factor _____ ft.

Horizon	Depth in.	Dominant Color Munsell	Redox Description Qu. Sz. Cont. Color	Texture	Structure Gr. Sz. Sh.	Consistence	Boundary	% Rock Frags.	% Fines	Hydraulic App. Rate Inches/Hr.

Comments:

Overall Site Comments:

MICHAEL FREDE, P.E. — Name (Please Print)

Michael Frede — Signature

25897-6 — Credential Number

4941 KIRSCHLING CT., STEVENS POINT, WI — Address

3/926 - 3/12/26 — Date Evaluation Conducted

715-344-9999 — Phone Number

Appendix F: Storm Sewer Basin Map



STORM SEWER BASIN MAP

Appendix G: Storm Sewer TR-55 Calculations

10 - Year

Summary Report **1**
Hydrograph Reports **2**
Hydrograph No. 1, SCS Runoff, Storm Basin A 2
Hydrograph No. 2, SCS Runoff, Storm Basin B 3
Hydrograph No. 3, SCS Runoff, Storm Basin C 4
Hydrograph No. 4, SCS Runoff, Storm Basin D 5
Hydrograph No. 5, SCS Runoff, Storm Basin E 6
Hydrograph No. 6, SCS Runoff, Storm Basin F 7
Hydrograph No. 7, SCS Runoff, Storm Basin G 8

100 - Year

Summary Report **9**
Hydrograph Reports **10**
Hydrograph No. 1, SCS Runoff, Storm Basin A 10
Hydrograph No. 2, SCS Runoff, Storm Basin B 11
Hydrograph No. 3, SCS Runoff, Storm Basin C 12
Hydrograph No. 4, SCS Runoff, Storm Basin D 13
Hydrograph No. 5, SCS Runoff, Storm Basin E 14
Hydrograph No. 6, SCS Runoff, Storm Basin F 15
Hydrograph No. 7, SCS Runoff, Storm Basin G 16

Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	5.338	2	716	12,574	------	------	------	Storm Basin A
2	SCS Runoff	5.388	2	716	12,693	------	------	------	Storm Basin B
3	SCS Runoff	6.546	2	716	15,422	------	------	------	Storm Basin C
4	SCS Runoff	12.54	2	716	29,538	------	------	------	Storm Basin D
5	SCS Runoff	3.978	2	716	9,372	------	------	------	Storm Basin E
6	SCS Runoff	6.202	2	716	12,531	------	------	------	Storm Basin F
7	SCS Runoff	3.823	2	718	7,704	------	------	------	Storm Basin G

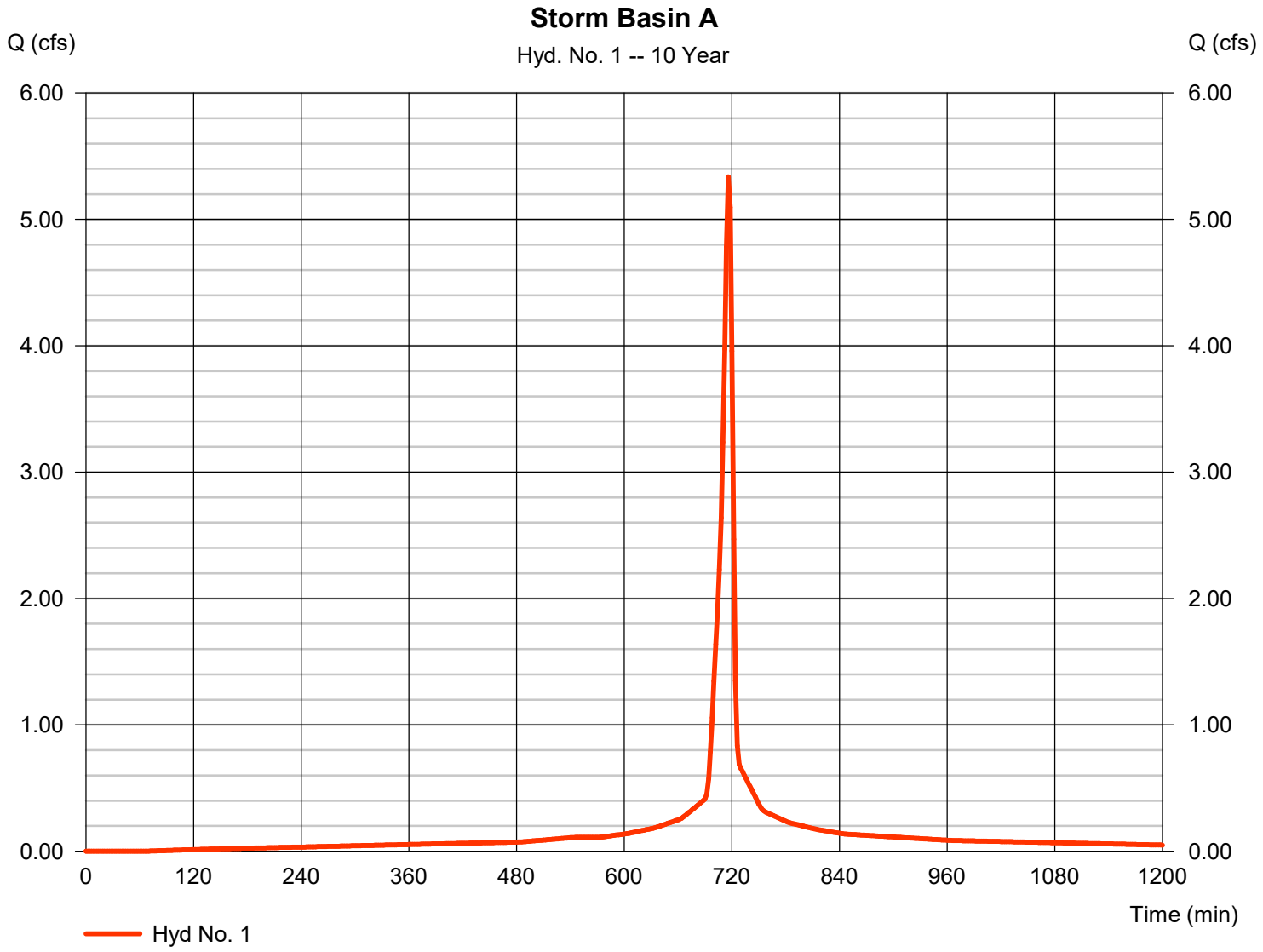
Hydrograph Report

Hyd. No. 1

Storm Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 5.338 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 12,574 cuft
Drainage area	= 1.060 ac	Curve number	= 98*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.060 x 98)] / 1.060



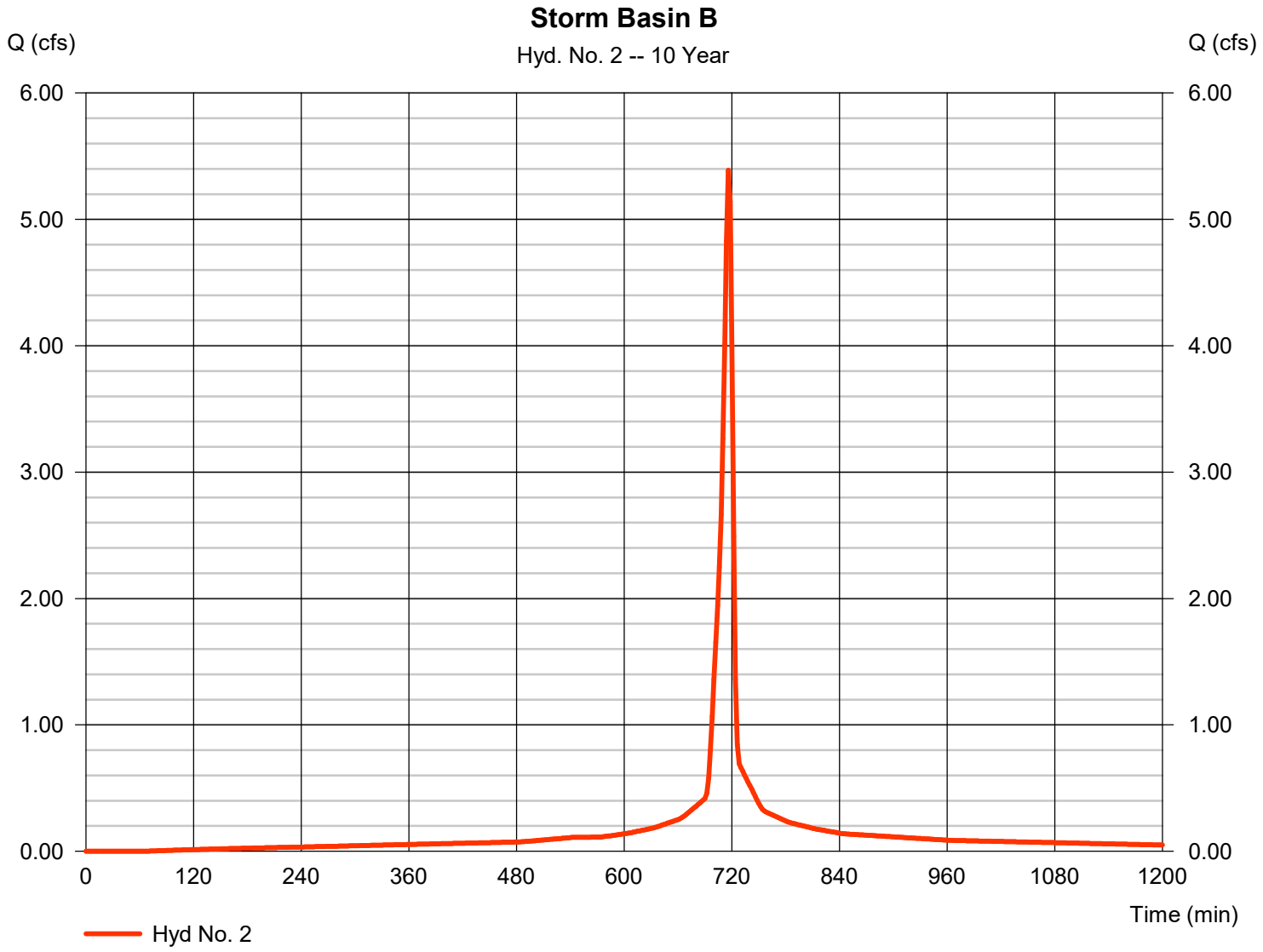
Hydrograph Report

Hyd. No. 2

Storm Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 5.388 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 12,693 cuft
Drainage area	= 1.070 ac	Curve number	= 98*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.070 x 98)] / 1.070



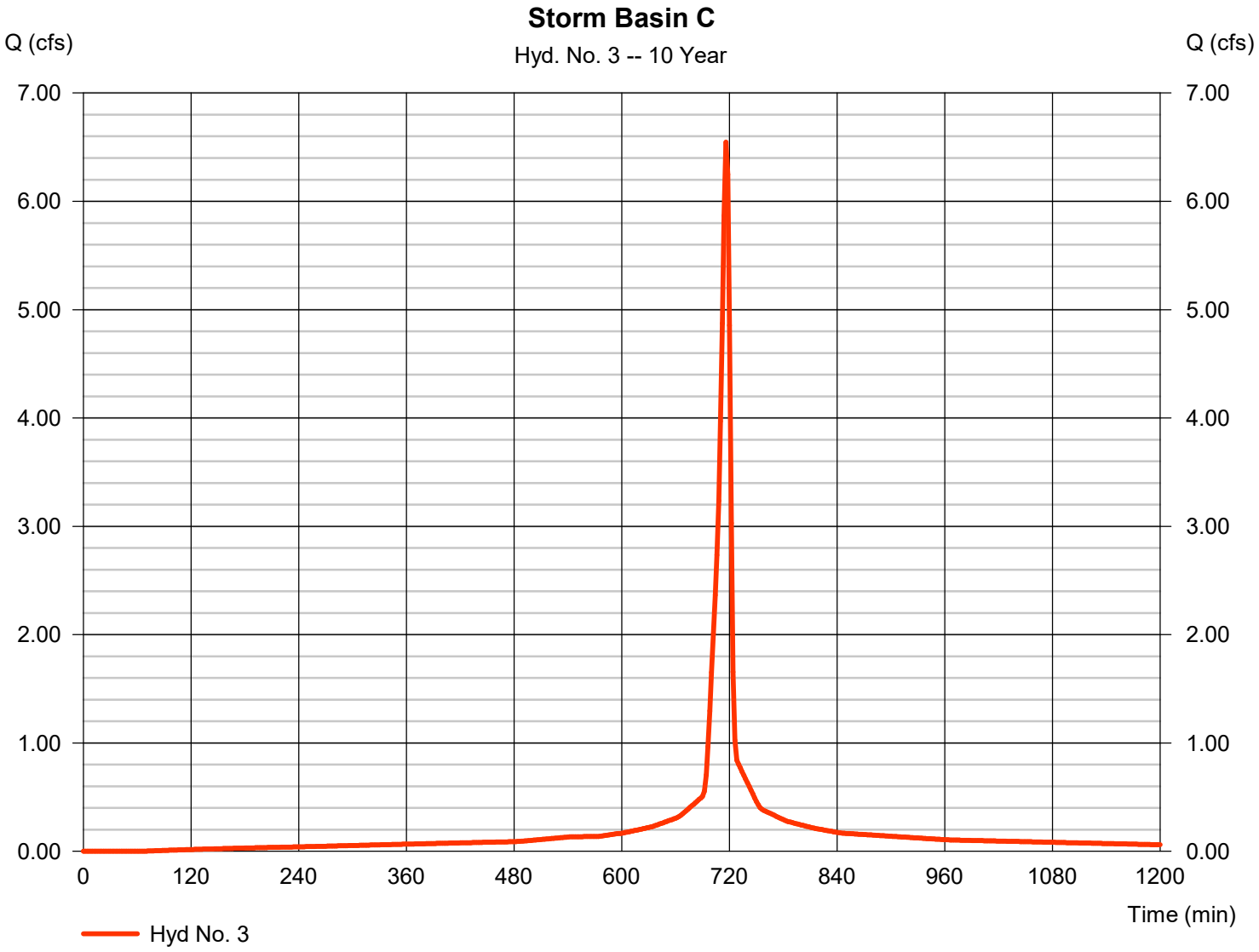
Hydrograph Report

Hyd. No. 3

Storm Basin C

Hydrograph type	= SCS Runoff	Peak discharge	= 6.546 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 15,422 cuft
Drainage area	= 1.300 ac	Curve number	= 98*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 98)] / 1.300



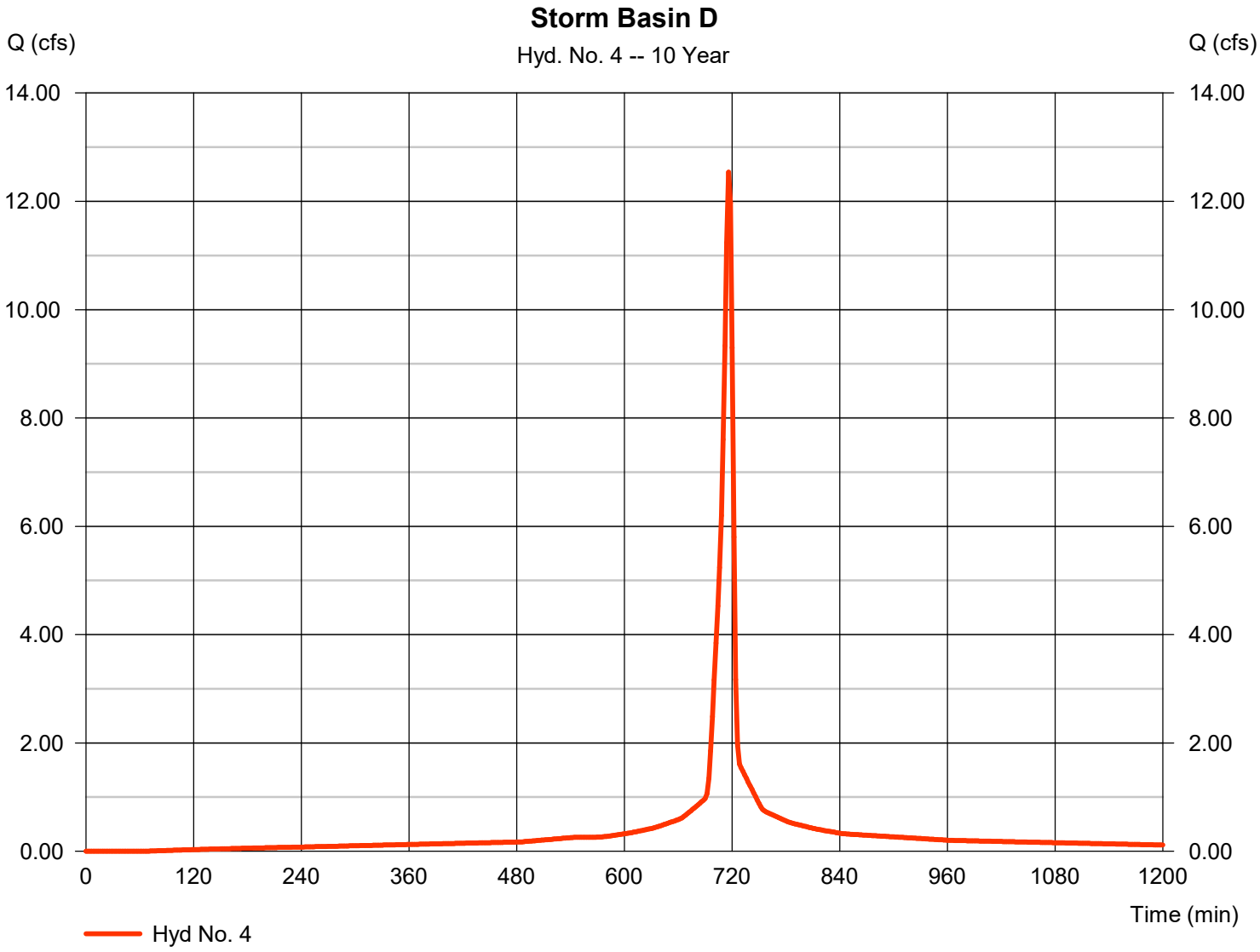
Hydrograph Report

Hyd. No. 4

Storm Basin D

Hydrograph type	= SCS Runoff	Peak discharge	= 12.54 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 29,538 cuft
Drainage area	= 2.490 ac	Curve number	= 98*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(2.490 x 98)] / 2.490



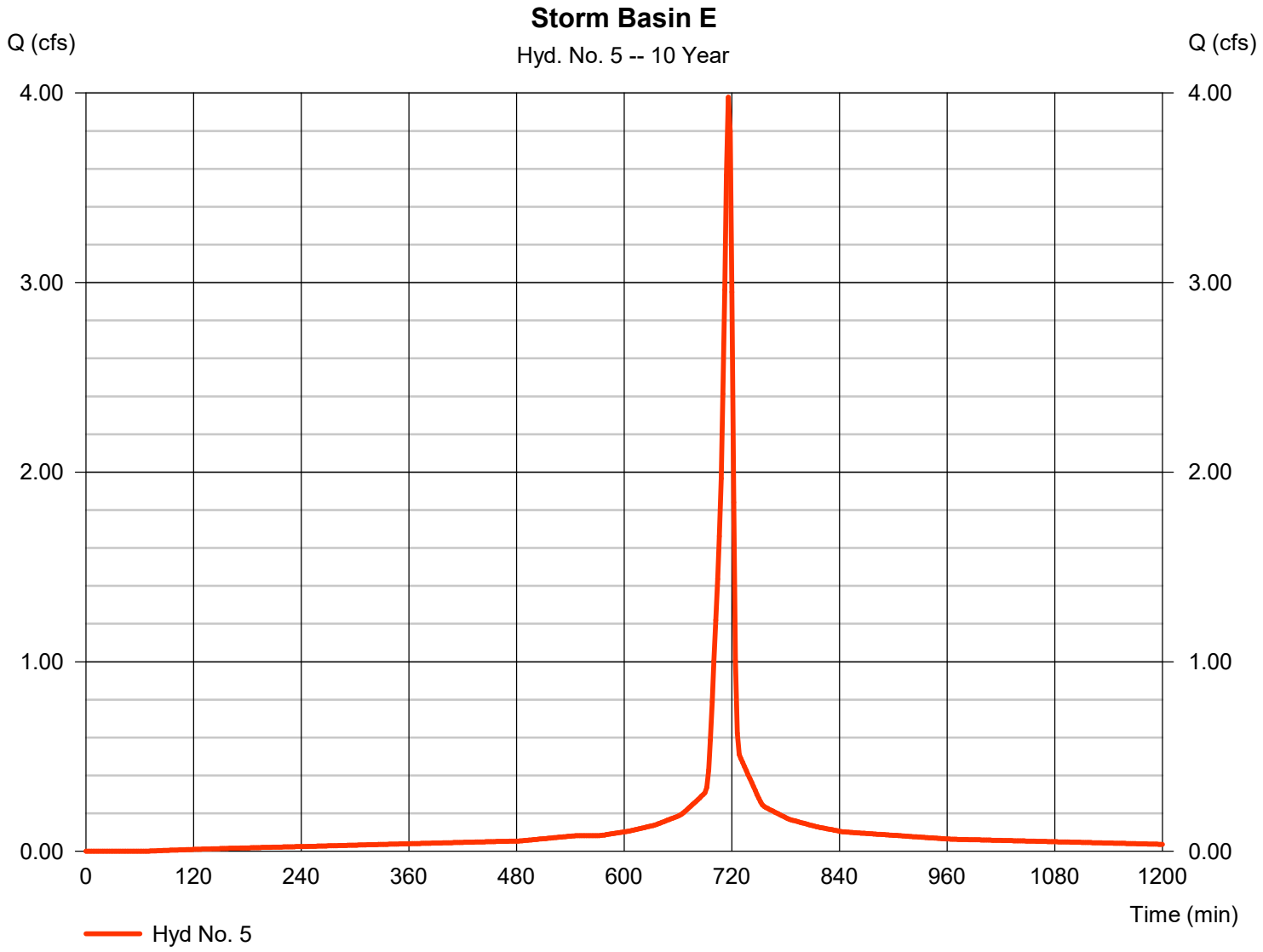
Hydrograph Report

Hyd. No. 5

Storm Basin E

Hydrograph type	= SCS Runoff	Peak discharge	= 3.978 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 9,372 cuft
Drainage area	= 0.790 ac	Curve number	= 98*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.790 x 98)] / 0.790



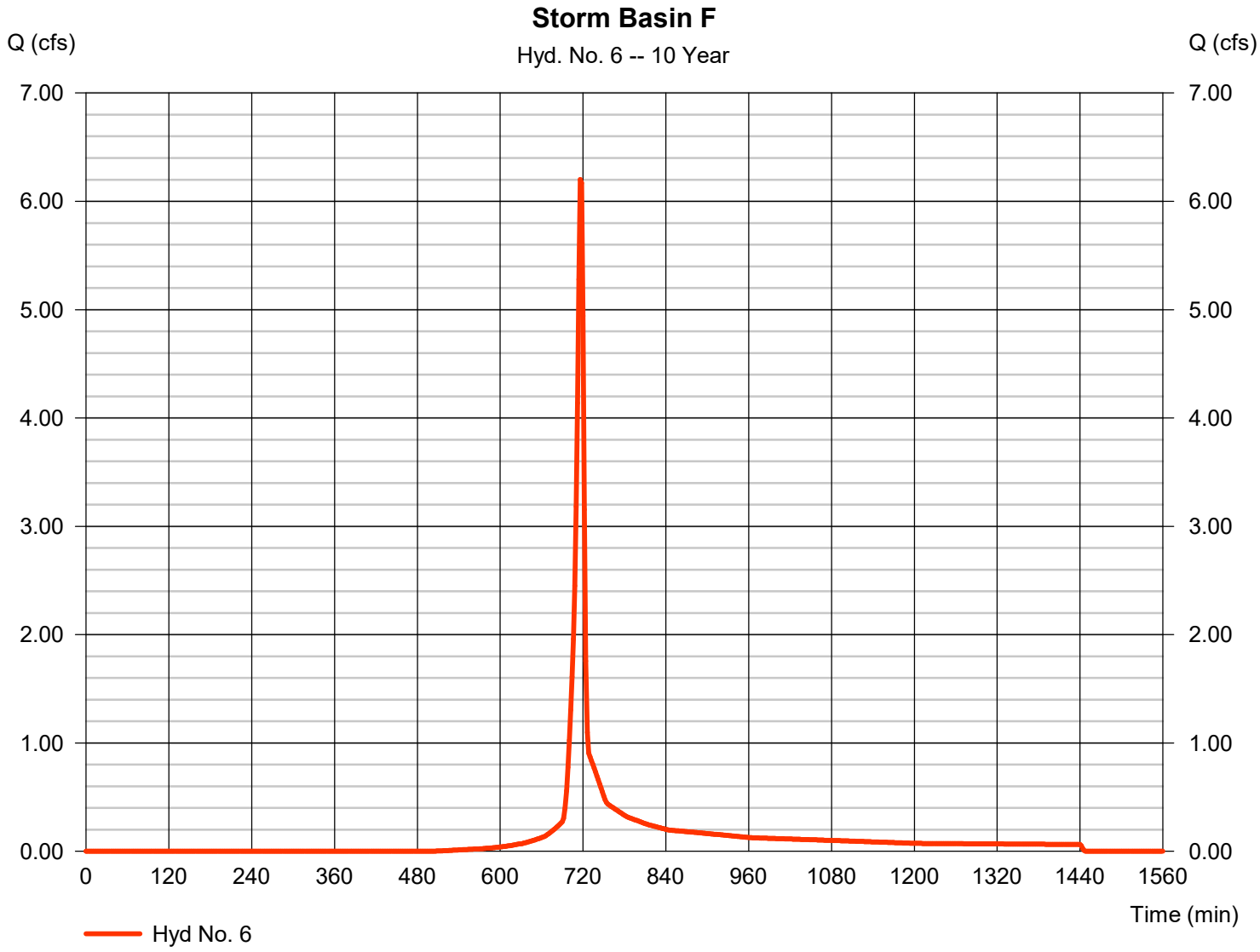
Hydrograph Report

Hyd. No. 6

Storm Basin F

Hydrograph type	= SCS Runoff	Peak discharge	= 6.202 cfs
Storm frequency	= 10 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 12,531 cuft
Drainage area	= 1.950 ac	Curve number	= 81*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.400 x 98) + (0.550 x 39)] / 1.950



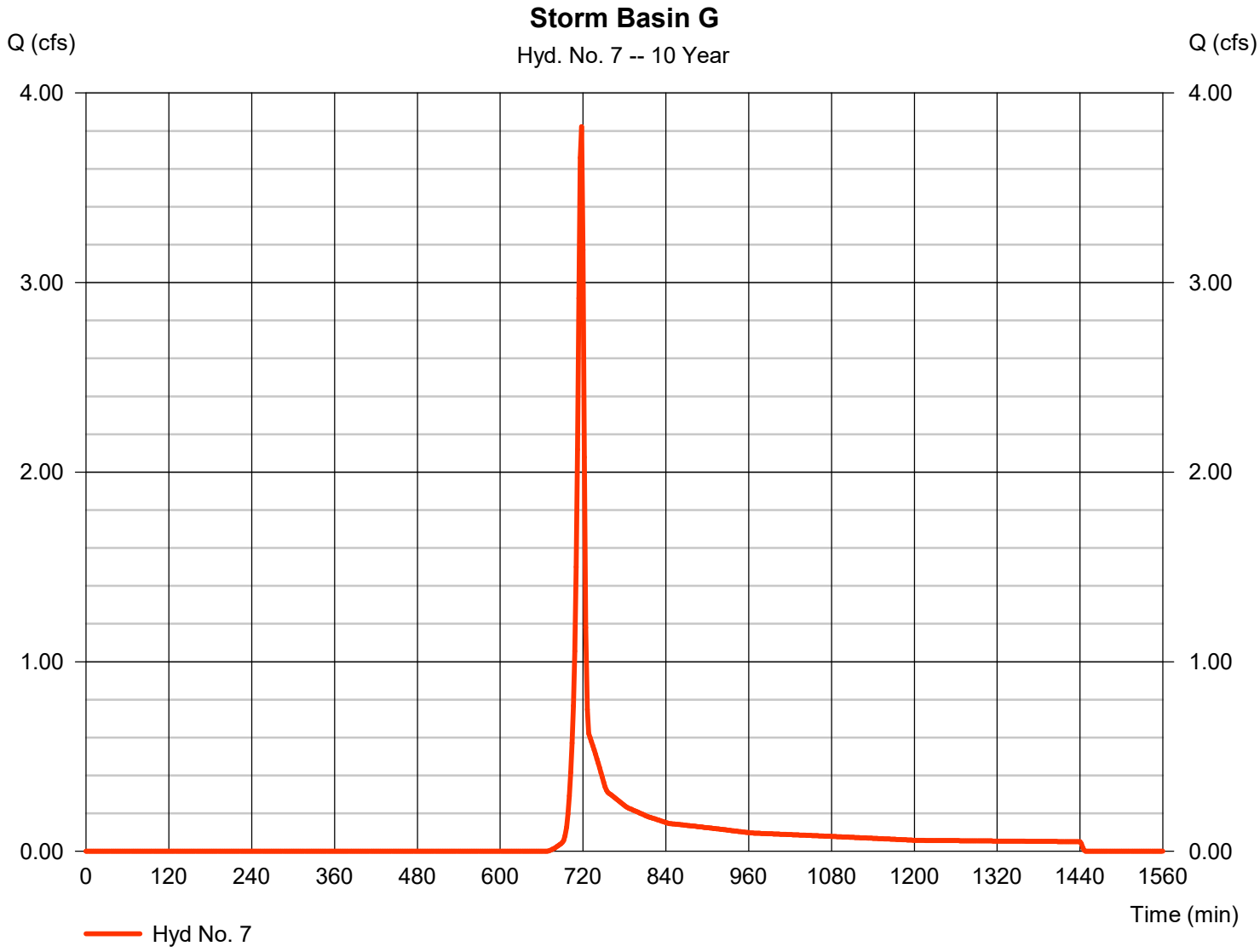
Hydrograph Report

Hyd. No. 7

Storm Basin G

Hydrograph type	= SCS Runoff	Peak discharge	= 3.823 cfs
Storm frequency	= 10 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 7,704 cuft
Drainage area	= 2.080 ac	Curve number	= 69*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 3.72 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.070 x 98) + (1.010 x 39)] / 2.080



Hydrograph Summary Report

Hydraflow Hydrographs Extension for Autodesk® Civil 3D® by Autodesk, Inc. v2021

Hyd. No.	Hydrograph type (origin)	Peak flow (cfs)	Time interval (min)	Time to Peak (min)	Hyd. volume (cuft)	Inflow hyd(s)	Maximum elevation (ft)	Total strge used (cuft)	Hydrograph Description
1	SCS Runoff	8.396	2	716	20,136	------	------	------	Storm Basin A
2	SCS Runoff	8.475	2	716	20,326	------	------	------	Storm Basin B
3	SCS Runoff	10.30	2	716	24,695	------	------	------	Storm Basin C
4	SCS Runoff	19.72	2	716	47,301	------	------	------	Storm Basin D
5	SCS Runoff	6.257	2	716	15,007	------	------	------	Storm Basin E
6	SCS Runoff	12.00	2	716	24,687	------	------	------	Storm Basin F
7	SCS Runoff	9.062	2	718	18,211	------	------	------	Storm Basin G

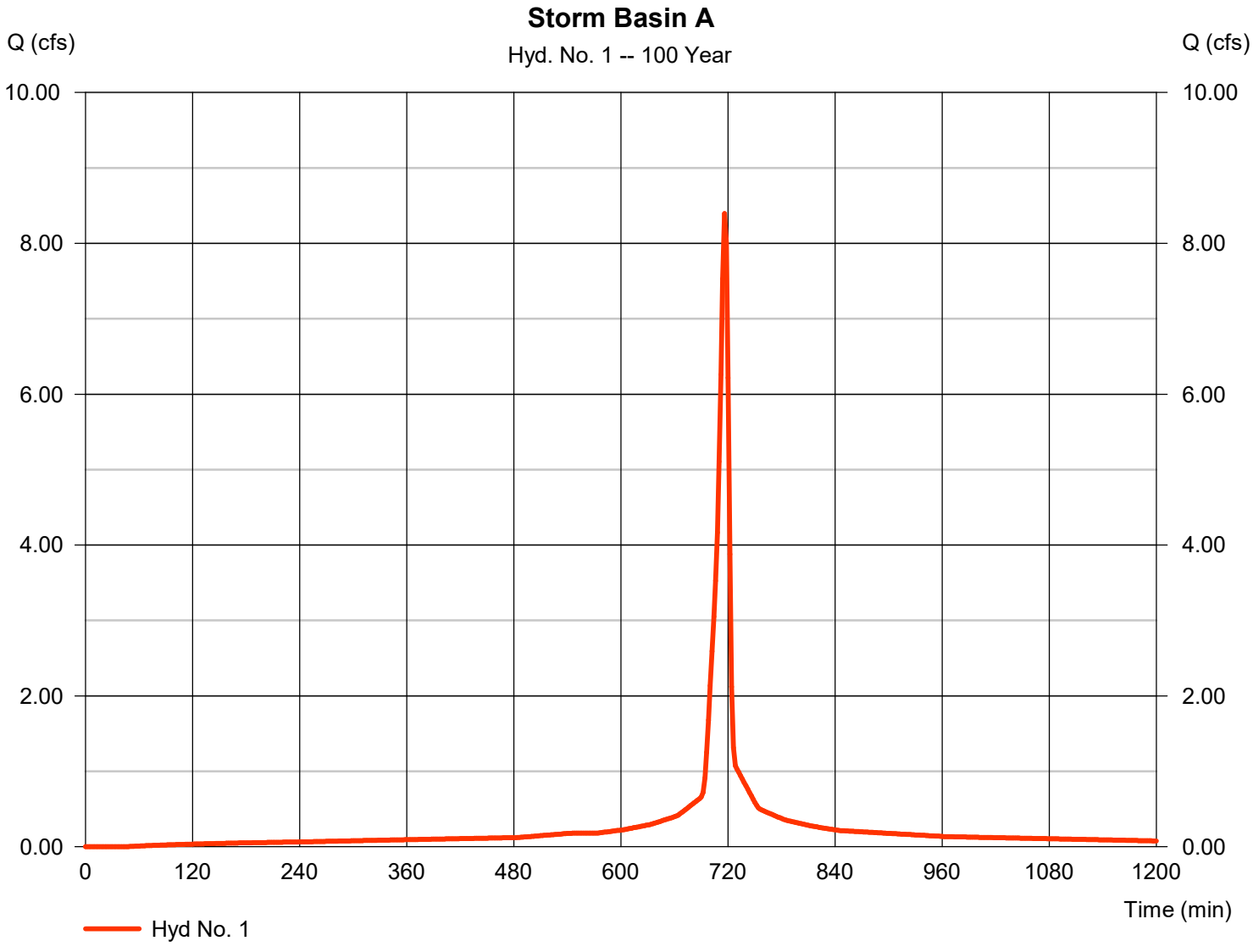
Hydrograph Report

Hyd. No. 1

Storm Basin A

Hydrograph type	= SCS Runoff	Peak discharge	= 8.396 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 20,136 cuft
Drainage area	= 1.060 ac	Curve number	= 98*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.82 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.060 x 98)] / 1.060



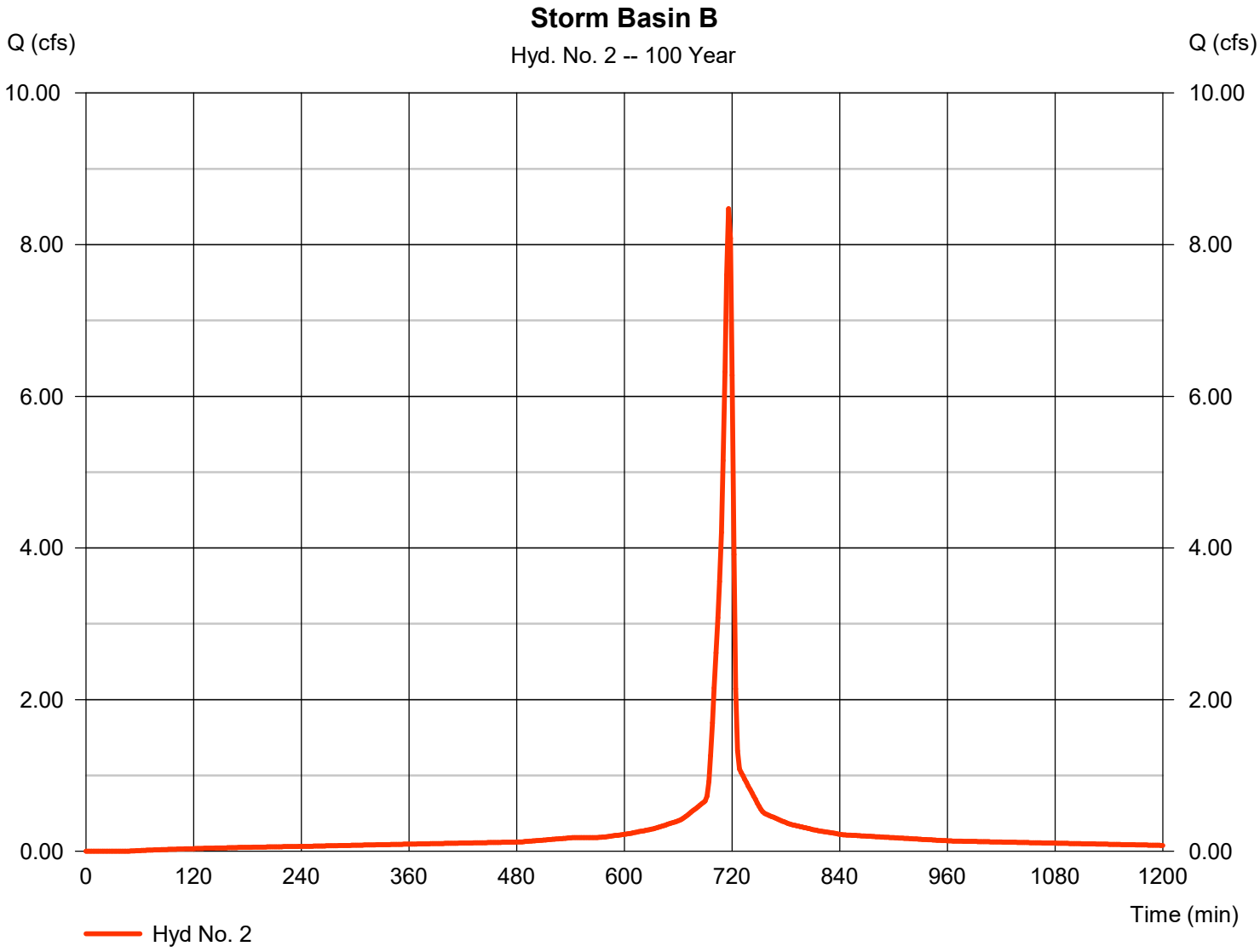
Hydrograph Report

Hyd. No. 2

Storm Basin B

Hydrograph type	= SCS Runoff	Peak discharge	= 8.475 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 20,326 cuft
Drainage area	= 1.070 ac	Curve number	= 98*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.82 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.070 x 98)] / 1.070



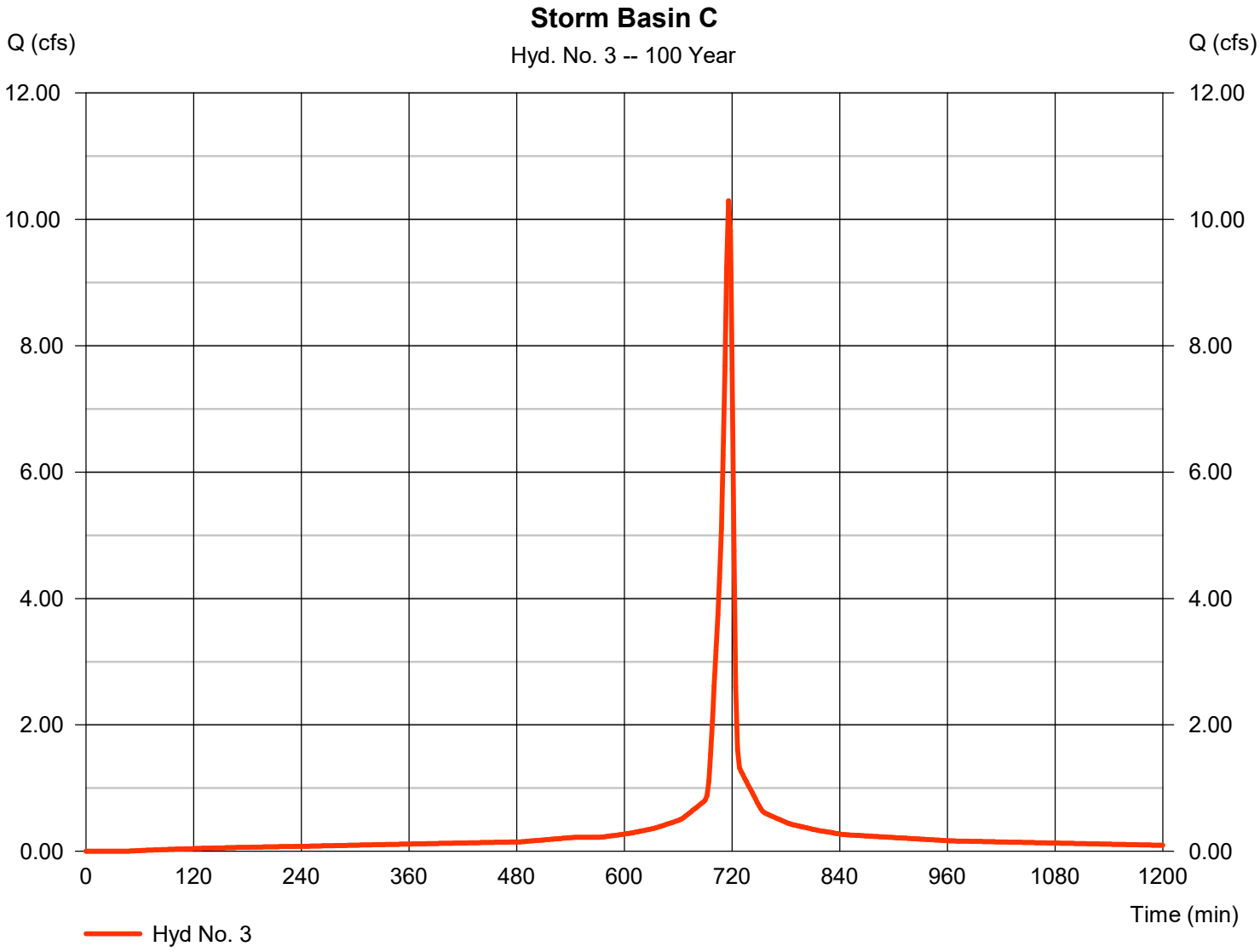
Hydrograph Report

Hyd. No. 3

Storm Basin C

Hydrograph type	= SCS Runoff	Peak discharge	= 10.30 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 24,695 cuft
Drainage area	= 1.300 ac	Curve number	= 98*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.82 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.300 x 98)] / 1.300



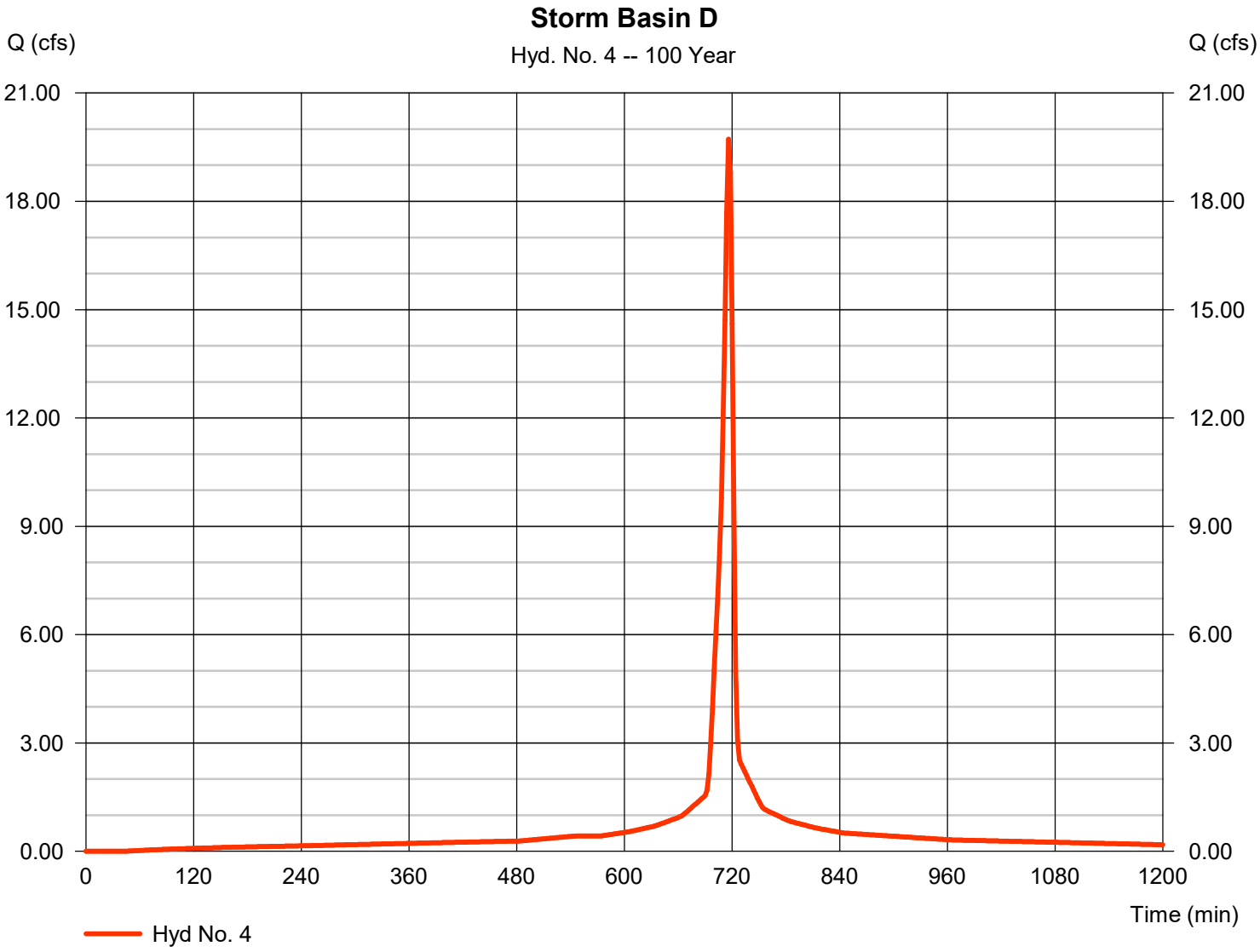
Hydrograph Report

Hyd. No. 4

Storm Basin D

Hydrograph type	=	SCS Runoff	Peak discharge	=	19.72 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	47,301 cuft
Drainage area	=	2.490 ac	Curve number	=	98*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.82 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(2.490 x 98)] / 2.490



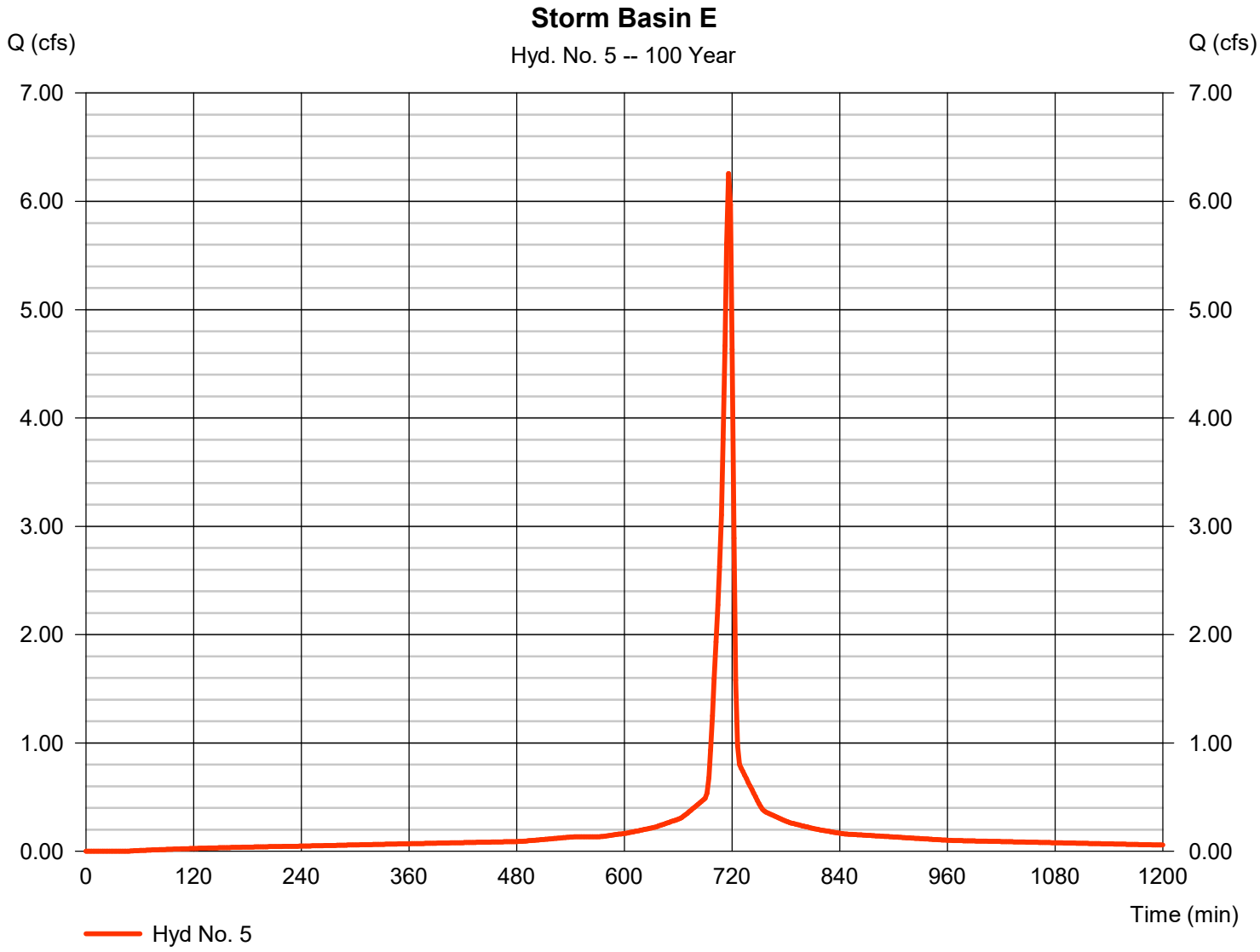
Hydrograph Report

Hyd. No. 5

Storm Basin E

Hydrograph type	= SCS Runoff	Peak discharge	= 6.257 cfs
Storm frequency	= 100 yrs	Time to peak	= 716 min
Time interval	= 2 min	Hyd. volume	= 15,007 cuft
Drainage area	= 0.790 ac	Curve number	= 98*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.82 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(0.790 x 98)] / 0.790



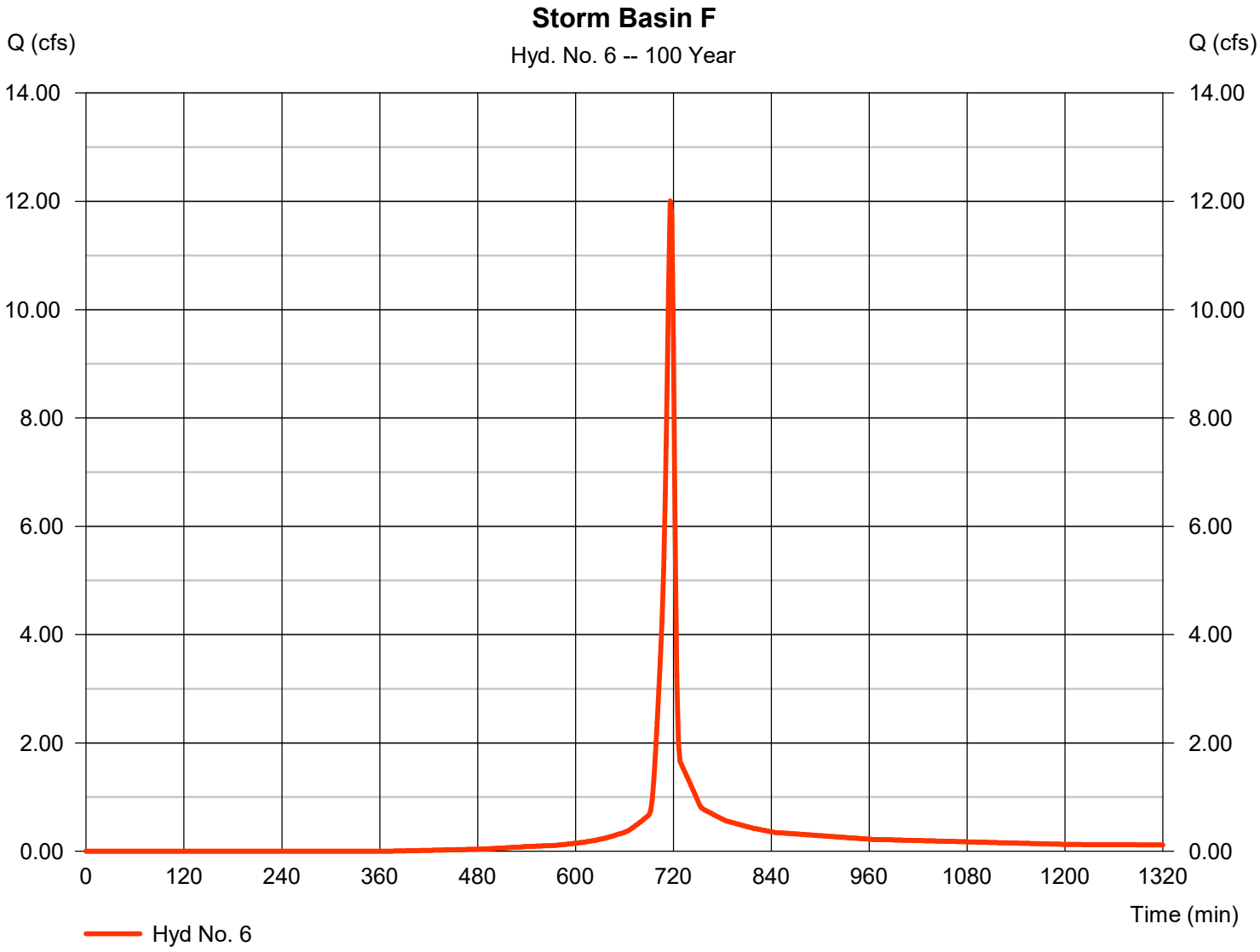
Hydrograph Report

Hyd. No. 6

Storm Basin F

Hydrograph type	=	SCS Runoff	Peak discharge	=	12.00 cfs
Storm frequency	=	100 yrs	Time to peak	=	716 min
Time interval	=	2 min	Hyd. volume	=	24,687 cuft
Drainage area	=	1.950 ac	Curve number	=	81*
Basin Slope	=	0.0 %	Hydraulic length	=	0 ft
Tc method	=	User	Time of conc. (Tc)	=	6.00 min
Total precip.	=	5.82 in	Distribution	=	Type II
Storm duration	=	24 hrs	Shape factor	=	484

* Composite (Area/CN) = [(1.400 x 98) + (0.550 x 39)] / 1.950



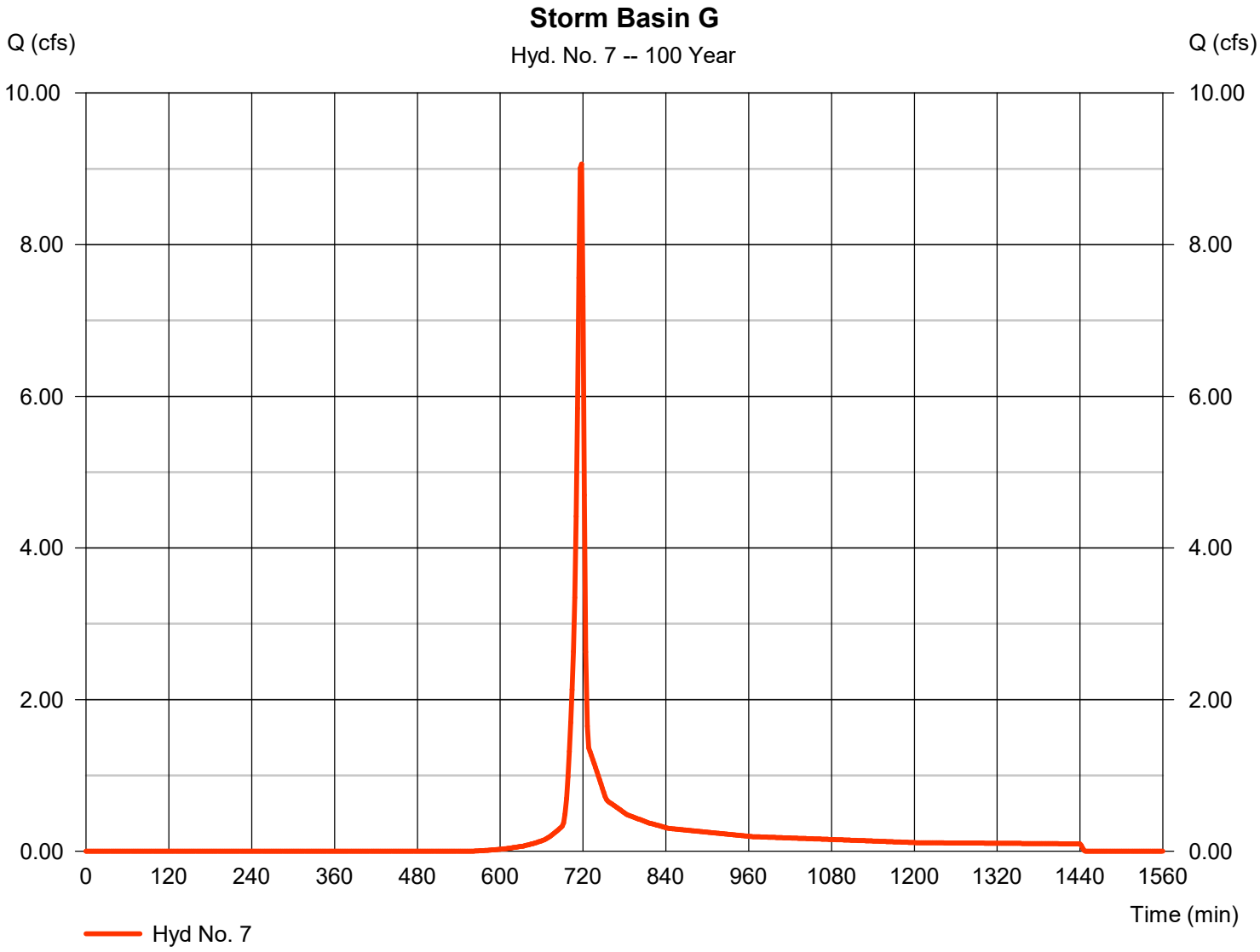
Hydrograph Report

Hyd. No. 7

Storm Basin G

Hydrograph type	= SCS Runoff	Peak discharge	= 9.062 cfs
Storm frequency	= 100 yrs	Time to peak	= 718 min
Time interval	= 2 min	Hyd. volume	= 18,211 cuft
Drainage area	= 2.080 ac	Curve number	= 69*
Basin Slope	= 0.0 %	Hydraulic length	= 0 ft
Tc method	= User	Time of conc. (Tc)	= 6.00 min
Total precip.	= 5.82 in	Distribution	= Type II
Storm duration	= 24 hrs	Shape factor	= 484

* Composite (Area/CN) = [(1.070 x 98) + (1.010 x 39)] / 2.080



Appendix H: Storm Sewer Manning's Spreadsheet

Excel Engineering Project No. 250008600 Project Name Marathon County Highway Garage

Pipe Data					Pipe Capacity (100-yr, 24-hr)				
Pipe ID	Diameter (FT)	Pipe Qty.	Slope (FT/FT)	Manning's n	Basin ID	Total Flow (cfs)	Total Flow (gpm)	Full Flow Capacity (cfs)	Full Flow Capacity (gpm)
A	3.5	1	0.003	0.012	A,B,C,D,E	53.15	23,853	59.86	26,865
B	1.5	1	0.006	0.012	A	8.40	3,768	8.84	3,967
C	2	1	0.005	0.012	A,B	16.87	7,572	17.38	7,798
D	3	1	0.003	0.012	C,D,E	36.28	16,281	39.68	17,810
E	2.5	1	0.004	0.012	D,E	25.98	11,658	28.18	12,647
F	1.5	1	0.004	0.012	E	6.26	2,808	7.22	3,239
G	2	1	0.008	0.012	F,G	21.06	9,453	21.98	9,864
H	1.5	1	0.006	0.012	G	9.06	4,067	9.13	4,097

Full Flow Capacity based off Manning's Equation

$$Q = \frac{1.49}{n} R^{2/3} S^{1/2} a$$

Where:

Q = Full Flow Capacity of Pipe (cfs)
n = manning's roughness coefficient
R = hydraulic radius (ft) (D/4)
s = hydraulic gradient, slope (ft/ft)
a = flow area (sq. ft.)

Typical Manning's n

HDPE	0.012
PVC	0.012
Concrete	0.013
CMP	0.024

*Total Flow calculated via TR-55 hydrologic calculations. Reference Storm Pipe Basin Map & TR-55 Calculations

Appendix I: SLAMM Input/ Output Information

Data file name: \\job-files\2025 Job Files\250008600 Marathon County - New Highway Garage\250008604 Civil\storm water report and calc\08600.
WinSLAMM Version 10.5.0
Rain file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WisReg - Green Bay WI 1969.ran
Particulate Solids Concentration file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_SL06 Dec06.rsvx
Residential Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\Freeway Dec06.std
Apply Street Delivery Files to Adjust the After Event Load Street Dirt Mass Balance: False
Pollutant Relative Concentration file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_GEO03.ppdx
Source Area PSD and Peak to Average Flow Ratio File: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/02/69 Study period ending date: 12/28/69
Start of Winter Season: 11/25 End of Winter Season: 03/29
Date: 07-21-2026 Time: 16:01:50
Site information:

LU# 1 - Industrial: SLAMM Basin 1 Total area (ac): 2.330
13 - Paved Parking 1: 1.030 ac. Disconnected Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP
31 - Sidewalks 1: 0.050 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
45 - Large Landscaped Areas 1: 1.250 ac. Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 2 - Industrial: SLAMM Basin 2 Total area (ac): 1.970
13 - Paved Parking 1: 1.320 ac. Disconnected Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP
45 - Large Landscaped Areas 1: 0.650 ac. Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 3 - Industrial: SLAMM Basin 3 Total area (ac): 21.030
1 - Roofs 1: 5.600 ac. Pitched Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
13 - Paved Parking 1: 6.470 ac. Connected PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz
14 - Paved Parking 2: 3.700 ac. Disconnected Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP
45 - Large Landscaped Areas 1: 5.260 ac. Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

LU# 4 - Industrial: SLAMM Basin 4 Off-site Total area (ac): 5.040
45 - Large Landscaped Areas 1: 5.040 ac. Normal Sandy PSD File: C:\WinSLAMM Files\NURP.cpz Source Area PSD File: C:\WinSLAMM Files\NURP.cpz

Control Practice 1: Biofilter CP# 1 (DS) - Facility 3
1. Top area (square feet) = 107885
2. Bottom aea (square feet) = 34587
3. Depth (ft): 11
4. Biofilter width (ft) - for Cost Purposes Only: 10
5. Infiltration rate (in/hr) = 3.6
6. Random infiltration rate generation? No
7. Infiltration rate fraction (side): 0.01
8. Infiltration rate fraction (bottom): 1
9. Depth of biofilter that is rock filled (ft) 0
10. Porosity of rock filled volume = 0
11. Engineered soil infiltration rate: 3.6
12. Engineered soil depth (ft) = 2
13. Engineered soil porosity = 0.27
14. Percent solids reduction due to flow through engineered soil = 80
15. Biofilter peak to average flow ratio = 3.8
16. Number of biofiltration control devices = 1
17. Particle size distribution file: Not needed - calculated by program
18. Initial water surface elevation (ft): 0
Soil Data Soil Type Fraction in Eng. Soil
User-Defined Media Type 1.000
Biofilter Outlet/Discharge Characteristics:
Outlet type: Broad Crested Weir
1. Weir crest length (ft): 15
2. Weir crest width (ft): 4
3. Height of datum to bottom of weir opening: 10.1

SLAMM for Windows Version 10.5.0
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Data file name: \\job-files\2025 Job Files\250008600 Marathon County - New Highway Garage\250008604 Civil\storm water report and calculations\SLAMM\250008600.
WinSLAMM Version 10.5.0
Rain file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WisReg - Green Bay WI 1969.ran
Particulate Solids Concentration file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\v10.1 WI_AVG01.pscx
Runoff Coefficient file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_SL06 Dec06.rsvx
Pollutant Relative Concentration file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_GEO03.ppdx
Residential Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Res and Other Urban Dec06.std
Institutional Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Commercial Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Industrial Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Com Inst Indust Dec06.std
Other Urban Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\WI_Res and Other Urban Dec06.std
Freeway Street Delivery file name: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter 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: J:\Programs\civil\WinSLAMM\v10.5.0\Parameter Files\NURP Source Area PSD Files.csv
Cost Data file name:
Seed for random number generator: -42
Study period starting date: 01/02/69 Study period ending date: 12/28/69
Start of Winter Season: 11/25 End of Winter Season: 03/29
Model Run Start Date: 01/02/69 Model Run End Date: 12/28/69
Date of run: 07-21-2026 Time of run: 15:59:44
Total Area Modeled (acres): 30.370
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:	804794	-	135.0	6783	-
Outfall Total with Controls:	0	100.00%	0	0	100.00%
Annualized Total After Outfall Controls:	0			0	

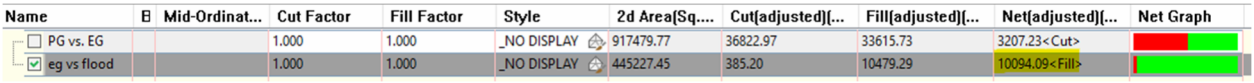
Pollutant	Conc. No Controls	Conc. With Controls	Conc. Units	Pollutant Yield No Controls	Pollutant Yield With Controls	Pol. Yield Units	Percent Reduction
Particulate Solids	135.0	0	mg/L	6783	0	lbs	100.00 %
Particulate Phosphorus	0.1650	0	mg/L	8.291	0	lbs	100.00 %

Biofilter # 1 is expected to clog in 10.5 years.. Percent Solids Reduction due to Engineered Media = 80

Appendix J: Flood Plain Compensation Calculations

Existing floodplain storage calculated between floodplain elevation of 1,173.5 and the existing ground surface:

- 10,094 cu.yds.



Name	B	Mid-Ordinat...	Cut Factor	Fill Factor	Style	2d Area[Sq....	Cut[adjusted][...	Fill[adjusted][...	Net[adjusted][...	Net Graph
PG vs. EG			1.000	1.000	_NO DISPLAY	917479.77	36822.97	33615.73	3207.23<Cut>	
eg vs flood			1.000	1.000	_NO DISPLAY	445227.45	385.20	10479.29	10094.09<Fill>	

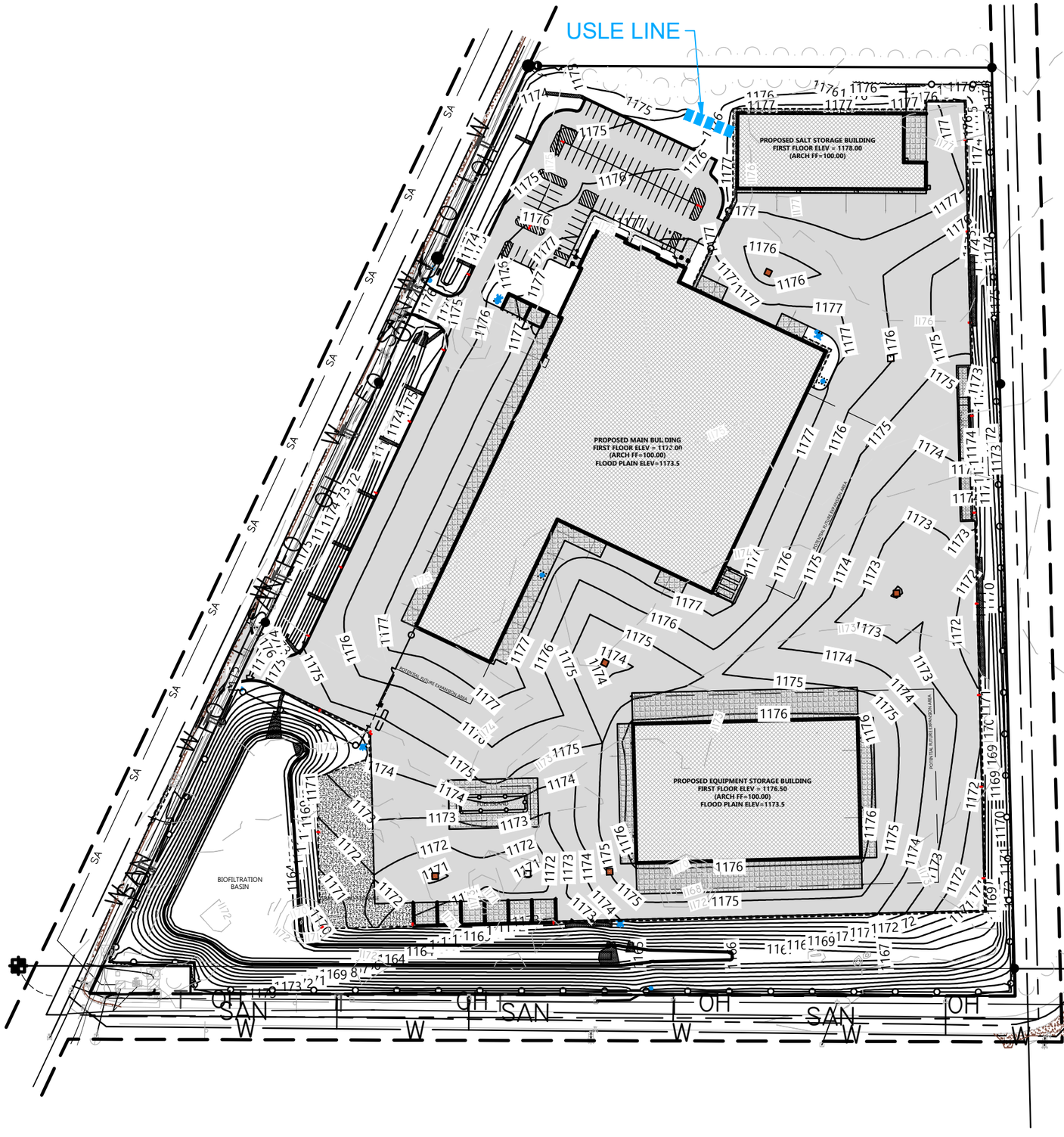
Bioretention basin available volume between calculated 100-yr storm elevation and spillway:

- 494,086 cu.ft.

Elevation (ft)	Contour Area (sf)	Volume (cf)	Sum of Volumes (cf)	Volume (ac-ft)	Sum of Volumes (ac-ft)
1167.66	69277	-na-	-na-	-na-	-na-
1168	75751	24646.54	24646.54	0.5658	0.5658
1169	90953	83236.15	107882.69	1.9108	2.4766
1170	108072	99389.47	207272.16	2.2817	4.7583
1171	128981	118372.39	325644.55	2.7175	7.4758
1172	173843	150854.93	476499.49	3.4632	10.9389
1172.1	177904	17586.94	494086.43	0.4037	11.3427

Volumes based on V= (1/3 * (Elev2-Elev1) * (Area1 + Area2 + sqrt(Area1 * Area2))

Appendix K: USLE Map and Calculations



Soil Loss & Sediment Discharge Calculation Tool

for use on Construction Sites in the State of Wisconsin

WDNR Version 2.1 (12-05-2024)

WISCONSIN DEPT. OF NATURAL RESOURCES

YEAR 1

Developer:

Project: Marathon County Highway Garage

Date: 07/21/26

County: Marathon

Version 2.1

Activity (1)	Begin Date (2)	End Date (3)	Period % R (4)	Annual R Factor (5)	Sub Soil Texture (6)	Soil Erodibility K Factor (7)	Slope (%) (8)	Slope Length (ft) (9)	LS Factor (10)	Land Cover C Factor (11)	Soil loss A (tons/acre) (12)	SDF (13)	Sediment Control Practice (14)	Sediment Discharge (t/ac) (15)
Bare Ground	04/05/27	10/03/27	86.9%	130	Sand	0.15	3.5%	66	0.29	1.00	5.0	0.967	Silt Fence	2.9
Seed with Mulch or Er	10/03/27	04/03/28	12.8%	130	Sand	0.15	3.5%	66	0.29	0.10	0.1	0.967	Silt Fence	0.0
End	04/03/28	-----	-----	-----	--------	-----	3.5%	66	0.29	------	-----	0.000		0.0
		-----	-----	-----	--------	-----	3.5%	66	0.29	-----	-----	0.000		0.0
		-----	-----	-----	--------	-----	3.5%	0	-----	-----	-----	0.000		0.0
		-----	-----	-----	--------	-----	0.0%	0	-----	-----	-----	0.000		0.0
										TOTAL	5.0		TOTAL	2.9
													% Reduction Required	NONE

Notes:

See Help Page for further descriptions of variables and items in drop-down boxes.
The last land disturbing activity on each sheet must be 'End'. This is either 12 months from the start of construction or final stabilization.
For periods of construction that exceed 12 months, please demonstrate that 5 tons/acre/year is not exceeded in any given 12 month period.

NOTE: THIS TOOL ONLY ADDRESSED SOIL EROSION DUE TO SHEET FLOW. MEASURES TO CONTROL CHANNEL EROSION MAY ALSO BE REQUIRED TO MEET SEDIMENT DISCHARGE REQUIREMENTS.

Recommended Permanent Seeding Dates:

4/15-6/1 and Thaw-6/30	8/1-8/21	Turf, introduced grasses and legumes	Native Grasses, forbs, and legumes

Designed By:	KD
Date	7/23/2026

USLE MAP

NORTH

SCALE: 1"= 150' (AT 11"X17" SHEET SIZE)

150' 0 150' 300'

Appendix L: Post Construction Operation and Maintenance Plan

The owner of the property affected shall inspect and maintain the following stormwater management systems frequently, especially after heavy rainfalls, but at least on an annual basis unless otherwise specified.	
STORMWATER FACILITY	**TYPE OF ACTION**
1. Lawn and Landscaped Areas	All lawn areas shall be kept clear of any materials that block the flow of stormwater. Rills and small gullies shall immediately be filled and seeded or have sod placed in them. The lawn shall be kept mowed, tree seedlings shall be removed, and litter shall be removed from landscaped areas.
2. Swales	All grassed swales showing signs of erosion, scour, or channelization shall be repaired, reinforced, and revegetated immediately. All swales shall be repaired to the original plan requirements. Mowing shall take place no less than twice per year at a height of no less than three inches. Grasses shall not be allowed to grow to a height that permits branching or bending. Mowing shall only take place when the ground is dry and able to support machinery.
3. Rip Rap	All rip rap showing signs of erosion or scour shall be repaired, reinforced, and revegetated immediately. Rip rap should be kept clean of vegetation and sediment. All rip rap shall be repaired to the construction plan requirements.
4. Catch Basin/Curb Inlet Grates	The grate openings to these structures must be cleared of any clogging or the blocking of stormwater flow from getting into the stormwater conveyance system of any kind.
5. Bio-Retention Infiltration Basin	Inspections shall occur at minimum every 3 months. Inspections shall include the spreader, overflow spillway, and the condition of vegetation. To maintain vegetation, the first mowing of newly planted seed shall occur once it reaches a height of 10 to 12 inches. Mowing shall reduce the height of plants to 5 to 6 inches. After establishment, if burning cannot be accommodated, mowing shall occur once in the fall after November 1st. Mowing shall reduce the height of plants to 5 to 6 inches. If burning can take place, beginning the second year, burning shall occur in the early spring prior to May 1st, or in late fall after November 1st. Burning shall be done two consecutive years and then up to three years can pass before the next burning. Under no circumstances shall burning occur every other year. If standing water is observed over 50% of the basin floor 3 days after rainfall, the basin is considered clogged. If this ever occurs, remove the top 2 to 3 inches, chisel plow and add topsoil and compost. If deep tilling is used, the basin shall be drained and soils dried to a depth of 8 inches. Replant with turf grass. If clogging again occurs, the basin shall be replanted with prairie style vegetation. During winter conditions,

	all draw down devices in the pond shall be opened to discourage the infiltration of high levels of chlorides. For enclosed basins, the use of chloride deicers shall be limited in the upland areas of the basin. Trash shall be removed as quickly as possible once observed.
6. Record of Maintenance	The operation and maintenance plan shall remain onsite and be available for inspection when requested by WDNR. When requested, the owner shall make available for inspection all maintenance records to the department or agent for the life of the system.

PROPOSED FACILITIES FOR:

MARATHON COUNTY HIGHWAY

KRONENWETTER, WI

PROJECT INFORMATION

SITE INFORMATION:

PROPERTY AREA: 1,099,758 S.F. (25.25 ACRES).
LOT 1 OF PROPOSED CSM

EXISTING ZONING: B3 - GENERAL COMMERCIAL, SF - SINGLE FAMILY RES, 2F - TWO FAMILY RES, RR2 - RURAL RESIDENTIAL 2

PROPOSED ZONING: M2 GENERAL INDUSTRIAL (CONDITIONAL USE FOR HWY FACILITY)

PROPOSED USE: COUNTY HIGHWAY GARAGE FACILITY

AREA OF SITE DISTURBANCE: 25 ACRES

SETBACKS:
BUILDING: FRONT(WEST & SOUTH) = 40'
SIDE(NORTH) = 15'
REAR(EAST) = 30'
PAVEMENT: FRONT(WEST & SOUTH) = 10'
SIDE(NORTH) = 5'
REAR(EAST) = 5'

PROPOSED BUILDING HEIGHT: 36' (MAX. HT. ALLOWED: 60' PRIMARY, 35' ACCESSORY)

PARKING REQUIRED: 1 SPACE PER EMPLOYEE LARGEST SHIFT (55 SPACES REQ.)
1 SPACE PER 500 GFA (14 SPACES REQ.)

PARKING PROVIDED: 92 SPACES (4 H.C. ACCESSIBLE)

HANDICAP STALLS REQUIRED: 4, HANDICAP STALLS PROVIDED: 4

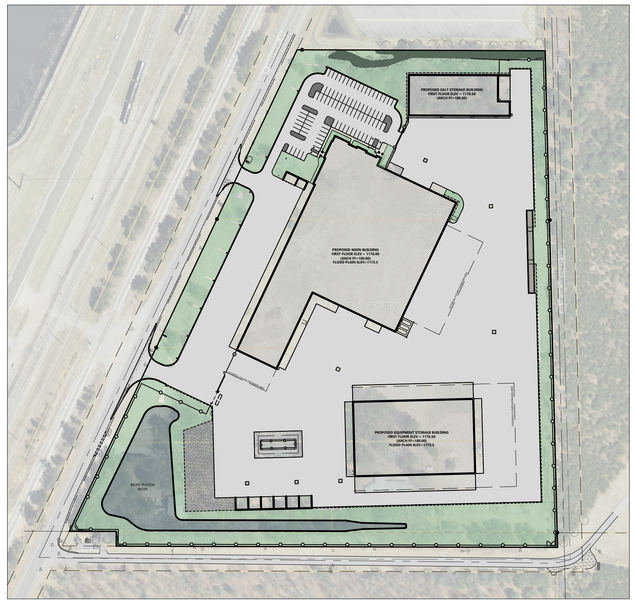
LANDSCAPE REQUIREMENTS: MIN. LANDSCAPE SURFACE RATIO: 10%

EXISTING SITE DATA

	AREA (AC)	AREA (SF)	RATIO
BUILDING FLOOR AREA	0.43	18,929	1.7%
PAVEMENT (ASP. & CONC.)	0.64	27,931	2.5%
TOTAL IMPERVIOUS	1.08	46,860	4.3%
LANDSCAPE/ OPEN SPACE	24.17	1,052,898	95.7%
PROJECT SITE	25.25	1,099,758	100.0%

PROPOSED SITE DATA

	AREA (AC)	AREA (SF)	RATIO
BUILDING FLOOR AREA	5.02	218,726	19.9%
PAVEMENT (ASP. & CONC.)	13.34	581,256	52.9%
TOTAL IMPERVIOUS	18.37	799,982	72.7%
LANDSCAPE/ OPEN SPACE	6.88	299,776	27.3%
PROJECT SITE	25.25	1,099,758	100.0%



SITE PLAN OVERVIEW

SCALE: 1"= 150'

NORTH

150' 0 150' 300'

LEGEND

NOTE: ALL SYMBOLS SHOWN MAY NOT APPEAR ON DRAWINGS.

SYM.	IDENTIFICATION	SYM.	IDENTIFICATION
SPOT ELEVATIONS			
000.00	PROPOSED SPOT ELEVATIONS (FLOW LINE OF CURB UNLESS OTHERWISE SPECIFIED)	000.00TC 000.00FL	PROPOSED SPOT ELEVATIONS (TOP OF CURB, FLOWLINE OF CURB)
000.00EG	EXISTING GRADE SPOT ELEVATIONS		
000.00BG 000.00FG	PROPOSED SPOT ELEVATIONS (REFERENCE R-WALL DETAIL) BG-FINISHED SURFACE GRADE AT BACK OF WALL FG-FINISHED SURFACE GRADE AT FRONT OF WALL	000.00TW 000.00BW	PROPOSED SPOT ELEVATIONS (TOP OF WALK, BOTTOM OF WALK @ FLOWLINE)
EXISTING SITE SYMBOLS			
	EXISTING SIGN		EXISTING UTILITY POLE
	EXISTING HANDICAP PARKING STALL		EXISTING UTILITY POLE WITH GUY WIRE
	EXISTING WATER VALVE IN BOX		EXISTING STREET LIGHT
	EXISTING WATER VALVE IN MANHOLE		EXISTING TELEPHONE PEDESTAL
	EXISTING WATER SERVICE VALVE		EXISTING ELECTRIC PEDESTAL
	EXISTING WELL		EXISTING ELECTRIC BOX
	EXISTING STORM CATCH BASIN		EXISTING FLOOD LIGHT
	EXISTING STORM CURB INLET		EXISTING TELEPHONE MANHOLE
	EXISTING SQUARE CATCH BASIN		EXISTING CABLE TV PEDESTAL
	EXISTING LIGHT POLE		EXISTING GAS VALVE
	1-1/4" REBAR SET WEIGHING 4.30 LB/FT.		EXISTING HEDGE
	3/4" REBAR SET WEIGHING 1.50 LB/FT.		EXISTING WOODED AREA
	1-1/4" REBAR FOUND		EXISTING MARSH AREA
	3/4" REBAR FOUND		EXISTING DECIDUOUS TREE WITH TRUNK DIAMETER
	2" IRON PIPE FOUND		EXISTING CONIFEROUS TREE
	1" IRON PIPE FOUND		EXISTING SHRUB
	SECTION CORNER		EXISTING STUMP
PROPOSED SITE SYMBOLS			
	PROPOSED SIGN		PROPOSED STORM FIELD INLET - ST FI
	PROPOSED HANDICAP PARKING STALL		PROPOSED LIGHT POLE
	PROPOSED WATER VALVE IN BOX		PROPOSED DRAINAGE FLOW
	PROPOSED WATER VALVE IN MANHOLE		PROPOSED APRON END SECTION
	PROPOSED WATER SERVICE VALVE		SOIL BORING
	PROPOSED WELL		CENTER LINE
	PROPOSED STORM CATCH BASIN - ST CB	CO	PROPOSED CLEANOUT
	PROPOSED STORM CURB INLET - ST CI	DSG	PROPOSED DOWNSPOUT TO GRADE
	PROPOSED STORM LARGE GRATE CATCH BASIN - ST CB	DSR	PROPOSED DOWNSPOUT TO RISER
EXISTING LINETYPES			
	EXISTING CHAINLINK FENCE	POL	EXISTING POLISH SEWER AND MANHOLE
	EXISTING WOOD FENCE	P	EXISTING PROCESS SEWER AND MANHOLE
	EXISTING BARBED WIRE FENCE	CLW	EXISTING CLEAR WATER LINE
	EXISTING CURB AND GUTTER	FO	EXISTING UNDERGROUND FIBER OPTIC LINE
	EXISTING GUARD RAIL	E	EXISTING UNDERGROUND ELECTRIC CABLE
800	EXISTING GROUND CONTOUR	T	EXISTING UNDERGROUND TELEPHONE CABLE
ST	EXISTING STORM SEWER AND MANHOLE	G	EXISTING UNDERGROUND GAS LINE
SA	EXISTING SANITARY SEWER AND MANHOLE	OU	EXISTING OVERHEAD UTILITY LINE
	EXISTING WATER LINE AND HYDRANT		RAILROAD TRACKS
	INTERIOR PROPERTY LINE		RIGHT-OF-WAY LINE
PROPOSED LINETYPES			
	PROPOSED CHAINLINK FENCE	POL	PROPOSED POLISH SEWER AND MANHOLE
	PROPOSED WOOD FENCE	P	PROPOSED PROCESS SEWER AND MANHOLE
	PROPOSED BARBED WIRE FENCE	FP	PROPOSED FIRE PROTECTION WATER LINE
	PROPOSED CURB AND GUTTER	FO	PROPOSED UNDERGROUND FIBER OPTIC LINE
	PROPOSED GUARD RAIL	E	PROPOSED UNDERGROUND ELECTRIC CABLE
800	PROPOSED GROUND CONTOUR	T	PROPOSED UNDERGROUND TELEPHONE CABLE
ST	PROPOSED STORM SEWER AND MANHOLE - ST MH	G	PROPOSED UNDERGROUND GAS LINE
SA	PROPOSED SANITARY SEWER AND MANHOLE - SAN MH	OU	PROPOSED OVERHEAD UTILITY LINE
	PROPOSED WATER LINE AND HYDRANT		MATCHLINE
	PROPOSED PROPERTY LINE		GRADING/SEEDING LIMITS

PROJECT CONTACTS

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E-mail: grant.duchac@excelengineer.com

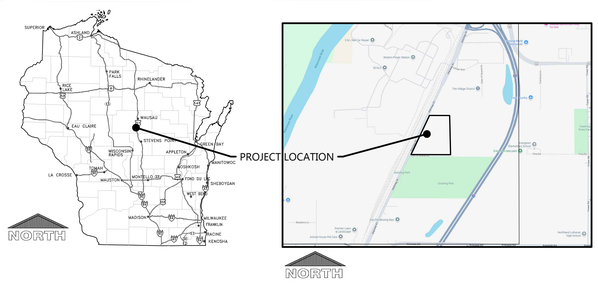
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VILLAGE DIRECTIOR OF PUBLIC WORKS:
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E-mail: gulman@kronenwetter.gov

LOCATION MAP



NTS

PROJECT NOTES

GENERAL PROJECT NOTES

1. ALL DRIVEWAYS AND CURB CUTS TO BE CONSTRUCTED ACCORDING TO LOCAL ORDINANCES. CONTRACTOR TO OBTAIN ALL NECESSARY PERMITS.
2. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL WORK IN ROW PERMITS.

TO OBTAIN LOCATION OF PARTICIPANTS' UNDERGROUND FACILITIES BEFORE YOU DIG IN WISCONSIN

CALL DIGGERS HOTLINE
1-800-242-8511

TOLL FREE TELEFAX (414) 259-0947
TDD (FOR THE HEARING IMPAIRED)
1-800 542-2289

WISCONSIN STATUTE 182.0175 (1974)
REQUIRES MINIMUM OF 3 WORK DAYS
NOTICE BEFORE YOU EXCAVATE

BENCHMARK NOTE:

BENCHMARKS SHOWN ON THIS PLAN ARE ON NAVD 88 DATUM.

SHEET INDEX

SHEETS BELOW INTENDED TO BE PRINTED IN: COLOR. REFER TO DIGITAL FORMAT DRAWINGS IF PRINTED GRAYSCALE TO ENSURE SCOPE CLARITY.

NUMBER	SHEET NAME / DESCRIPTION
C0.1	COVER SHEET
C0.2	SPECIFICATIONS
C1.0	EXISTING SITE AND DEMOLITION PLAN
C1.1	SITE PLAN
C1.2	OVERALL GRADING AND EROSION CONTROL PLAN
C1.2A	GRADING AND EROSION CONTROL PLAN NORTH
C1.2B	GRADING AND EROSION CONTROL PLAN SOUTH
C1.3	UTILITY PLAN
C1.4	LANDSCAPE AND RESTORATION PLAN
C1.4A	LANDSCAPE AND RESTORATION PLAN NORTH
C1.4B	LANDSCAPE AND RESTORATION PLAN SOUTH
C2.0	DETAILS
C2.1	DETAILS
C3.1	SITE PHOTOMETRIC PLAN & DETAILS
C3.2	SITE PHOTOMETRIC DETAILS

CIVIL COVER SHEET

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION
Miron
Building Excellence
Miron Construction Co., Inc.
1471 McMahon Drive
Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:
MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL
GRANT DUCHAC
42768-6
FOND DU LAC
WISCONSIN
PROFESSIONAL ENGINEER
07/24/2026

PRELIMINARY DATES
MAR. 27, 2026
APR. 15, 2026
JULY 14, 2026
JULY 23, 2026
NOT FOR CONSTRUCTION

JOB NUMBER
250008600

SHEET NUMBER
C0.1

CIVIL SPECIFICATIONS

DIVISION 31 EARTH WORK

31 10 00 SITE CLEARING (DEMOLITION)

A. CONTRACTOR SHALL CALL DIGGER'S HOT LINE AND CONDUCT A PRIVATE UTILITY LOCATE AS REQUIRED TO ENSURE THAT ALL UTILITIES HAVE BEEN LOCATED BEFORE STARTING SITE DEMOLITION. DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN PLAN AND FIELD CONDITIONS PRIOR TO CONSTRUCTION.
B. CONTRACTOR TO FIELD TELEVISE ALL EXISTING SANITARY AND STORM LATERALS THAT ARE SCHEDULED TO BE RE-USED AND/OR CONNECTED TO ON SITE AT TIME OF DEMOLITION. THE TELEVISING SHALL BE COMPLETED TO ENSURE THE EXISTING LATERAL(S) ARE FREE OF OBSTRUCTIONS AND IN SOUND STRUCTURAL CONDITION. TELEVISING OF THESE LATERAL(S) SHOULD BE COMPLETED AT BEGINNING OF CONSTRUCTION AND DESIGN ENGINEER SHALL BE NOTIFIED OF ANY PIPE OBSTRUCTIONS AND/OR STRUCTURAL DEFICIENCIES IMMEDIATELY AFTER COMPLETION OF FIELD TELEVISING.
C. DEMOLITION PLAN IS AN OVERVIEW OF DEMOLITION TO TAKE PLACE ON SITE. CONTRACTOR TO FIELD VERIFY EXISTING SITE CONDITIONS PRIOR TO BIDDING. CONTRACTOR SHALL REMOVE, REPLACE, OR DEMOLISH ALL ITEMS AS NEEDED DURING CONSTRUCTION.
D. CONTRACTOR TO PROTECT EXISTING IMPROVEMENTS THAT ARE SCHEDULED TO REMAIN. ANY DAMAGE TO EXISTING FACILITIES SHALL BE REPLACED AT CONTRACTORS EXPENSE.
E. ALL CONCRETE NOTED TO BE REMOVED SHALL BE REMOVED TO THE NEAREST CONTROL JOINT.

31 20 00 EARTH MOVING

A. CONTRACTOR SHALL CALL DIGGER'S HOT LINE AND CONDUCT A PRIVATE UTILITY LOCATE AS REQUIRED TO ENSURE THAT ALL UTILITIES HAVE BEEN LOCATED BEFORE STARTING EXCAVATION. DESIGN ENGINEER SHALL BE NOTIFIED OF ANY DISCREPANCIES BETWEEN PLAN AND FIELD CONDITIONS PRIOR TO CONSTRUCTION.
B. PROVIDE ALL LABOR, MATERIALS AND EQUIPMENT FOR ALL EXCAVATION, GRADING, FILL AND BACKFILL WORK AS REQUIRED TO COMPLETE THE GENERAL CONSTRUCTION WORK. ALL EXCAVATION AND BACKFILL FOR ELECTRICALS AND MECHANICALS ARE THE RESPONSIBILITY OF THE RESPECTIVE SUBCONTRACTORS INDICATED IN THE BID DOCUMENTS.
C. ALL ORGANIC TOPSOIL INSIDE THE BUILDING AREA, UNDER PAVED AREAS, AND AT SITE FILL AREAS SHALL BE REMOVED. PROOF ROLL SUBGRADES BEFORE PLACING FILL WITH HEAVY PNEUMATIC-TIRED EQUIPMENT, SUCH AS A FULLY LOADED DUMP TRUCK. TO IDENTIFY SOFT POCKETS AND AREAS OF EXCESS YIELDING. CONTRACTOR SHALL VERIFY TOPSOIL DEPTHS PRIOR TO CONSTRUCTION. THE CONTRACTOR SHALL REVIEW AND FOLLOW THE RECOMMENDATIONS OF THE GEOTECHNICAL REPORT AND ACCOUNT FOR EXISTING CONDITIONS PRIOR TO SUBMITTING BID FOR THE PROJECT. EXCESS MATERIALS SHALL BE REMOVED FROM THE SITE UNLESS OTHERWISE DIRECTED IN THE PLANS OR BY LOCAL ZONING REQUIREMENTS.
D. PLACE AND COMPACT FILL MATERIAL IN LAYERS TO REQUIRED ELEVATIONS. UNIFORMLY MOISTEN OR AERATE SUBGRADE AND EACH SUBSEQUENT FILL OR BACKFILL LAYER BEFORE COMPACTION AS RECOMMENDED TO ACHIEVE SPECIFIED DRY DENSITY. REMOVE AND REPLACE, OR SCARIFY AND AIR DRY, OTHERWISE SATISFACTORY SOIL MATERIAL THAT IS TOO WET TO COMPACT TO SPECIFIED DRY DENSITY.
E. PLACE BACKFILL AND FILL MATERIALS IN LAYERS NOT MORE THAN 8" IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HEAVY COMPACTION EQUIPMENT, AND NOT MORE THAN 4" IN LOOSE DEPTH FOR MATERIAL COMPACTED BY HAND-OPERATED TAMPERS.
F. COMPACT THE SOIL TO NOT LESS THAN THE FOLLOWING PERCENTAGES OF MAXIMUM DRY DENSITY ACCORDING TO ASTM D 698, STANDARD PROCTOR TEST. FILL MAY NOT BE PLACED ON FROZEN GROUND AND NO FROZEN MATERIALS MAY BE PLACED IN FILL. VERIFY THE MORE STRINGENT REQUIREMENTS WHEN COMPARING BETWEEN THE FOLLOWING AND THE GEOTECHNICAL REPORT.
   1. UNDER FOUNDATIONS - SUBGRADE, AND EACH LAYER OF BACKFILL OR FILL MATERIAL, TO NOT LESS THAN 98 PERCENT.
   2. UNDER INTERIOR OF SLAB-ON-GRADE WHERE GROUNDWATER IS MORE THAN 3 FEET BELOW THE SLAB - PLACE A DRAINAGE COURSE LAYER OF 3/4" CRUSHED STONE, WITH 5% TO 12% FINES, PER THICKNESS INDICATED ON FOUNDATION PLANS ON PREPARED SUBGRADE. COMPACT THE SUBGRADE AND DRAINAGE COURSE TO NOT LESS THAN 95 PERCENT.
   3. UNDER INTERIOR SLAB-ON-GRADE WHERE GROUNDWATER IS WITHIN 3 FEET OF THE SLAB SURFACE - PLACE A DRAINAGE COURSE LAYER OF CLEAN 3/4" CRUSHED STONE, WITH NO MORE THAN 5% FINES, PER THICKNESS INDICATED ON FOUNDATION PLANS ON PREPARED SUBGRADE. COMPACT THE SUBGRADE AND DRAINAGE COURSE TO NOT LESS THAN 95 PERCENT.
   4. UNDER EXTERIOR CONCRETE AND ASPHALT PAVEMENTS - COMPACT THE SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL TO NOT LESS THAN 95 PERCENT.
   5. UNDER WALKWAYS - COMPACT SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL TO NOT LESS THAN 95 PERCENT.
   6. UNDER LAWN OR UNPAVED AREAS - COMPACT SUBGRADE AND EACH LAYER OF BACKFILL OR FILL MATERIAL, TO NOT LESS THAN 85 PERCENT.
G. CONTRACTOR SHALL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO PERFORM FIELD TESTS AND INSPECTIONS. CONTRACTOR SHALL PROVIDE DOCUMENTATION OF PASSING DENSITY TESTING AND PROOF-ROLLING TO ENGINEER UPON COMPLETION. IT IS SUGGESTED THAT THE GEOTECHNICAL FIRM USED TO PREPARE THE SUBSURFACE SOIL INVESTIGATION BE ENGAGED FOR THE FIELD QUALITY CONTROL TESTS. THE GEOTECHNICAL REPORT WAS PREPARED BY POINT OF BEGINNING.
H. ALLOW THE TESTING AGENCY TO TEST AND INSPECT SUBGRADES AND EACH FILL OR BACKFILL LAYER. PROCEED WITH SUBSEQUENT EARTHWORK ONLY AFTER TEST RESULTS FOR PREVIOUSLY COMPLETED WORK COMPLY WITH REQUIREMENTS. PERFORM AT LEAST ONE TEST FOR EVERY 2000 SQUARE FEET OF PAVED AREA OR BUILDING SLAB, ONE TEST FOR EACH SPREAD FOOTING, AND ONE TEST FOR EVERY 50 LINEAR FEET OF WALL STRIP FOOTING.
I. WHEN THE TESTING AGENCY REPORTS THAT SUBGRADES, FILLS, OR BACKFILLS HAVE NOT ACHIEVED DEGREE OF COMPACTION SPECIFIED, SCARIFY AND MOISTEN OR AERATE, OR REMOVE AND REPLACE SOIL TO DEPTH REQUIRED; RECOMPACT AND RETEST UNTIL SPECIFIED COMPACTION IS OBTAINED.
J. THE BUILDING SITE SHALL BE GRADED TO PROVIDE DRAINAGE AWAY FROM THE BUILDING AS INDICATED ON THE PLANS. SITE EARTHWORK SHALL BE GRADED TO WITHIN 0.10' OF REQUIRED EARTHWORK ELEVATIONS ASSUMING POSITIVE DRAINAGE IS MAINTAINED IN ACCORDANCE WITH THE GRADING PLAN.

31 30 00 EROSION CONTROL/STORMWATER MANAGEMENT

A. THE EXCEL ENGINEERING DESIGN ENGINEER SHALL PREPARE A SITE SPECIFIC EROSION CONTROL AND A STORMWATER MANAGEMENT PLAN PURSUANT TO NR 216.46 AND NR 216.47. THE DESIGN ENGINEER SHALL ALSO FILE A CONSTRUCTION NOTICE OF INTENT WITH THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES PURSUANT TO NR 216.43 OR TO AN AUTHORIZED LOCAL PROGRAM PURSUANT TO NR 216.415 TO OBTAIN COVERAGE UNDER THE GENERAL WPDES STORM WATER PERMIT.
B. THE CONTRACTOR SHALL KEEP THE NOTICE OF INTENT PERMIT, APPROVED EROSION CONTROL AND STORMWATER MANAGEMENT PLANS, AND PLAN AMENDMENTS ON THE CONSTRUCTION SITE AT ALL TIMES PURSUANT TO NR 216.455 UNTIL PERMIT COVERAGE IS TERMINATED.
C. THE CONTRACTOR IS RESPONSIBLE FOR OBTAINING ALL LOCAL EROSION CONTROL PERMITS.
D. THE CONTRACTOR SHALL BE RESPONSIBLE FOR MEETING THE MONITORING, MAINTENANCE, AND REPORTING REQUIREMENTS OF NR 216.48. INSPECTIONS OF IMPLEMENTED EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES MUST AT A MINIMUM BE INSPECTED EVERY 7 CALENDAR DAYS OR EVERY 14 DAYS AND WITHIN 24 HOURS OF THE END OF A RAIN EVENT OF 0.5" OR MORE. A RAIN EVENT MAY BE CONSIDERED TO BE THE TOTAL AMOUNT OF PRECIPITATION RECORDED IN ANY CONTINUOUS 24-HOUR PERIOD. THE CONTRACTOR SHALL REPAIR OR REPLACE EROSION AND SEDIMENT CONTROL AS NECESSARY WITHIN 24 HOURS OF AN INSPECTION OR AFTER A DEPARTMENT NOTIFICATION WHERE REPAIR OR REPLACEMENT IS REQUESTED.
E. THE CONTRACTOR SHALL MAINTAIN, AT THE CONSTRUCTION SITE OR AVAILABLE VIA AN INTERNET WEBSITE, WEEKLY WRITTEN REPORTS OF ALL INSPECTIONS CONDUCTED. WISCONSIN DNR CONSTRUCTION SITE INSPECTION REPORT FORM 3400-187 SHALL BE USED. WEEKLY INSPECTION REPORTS SHALL INCLUDE ALL OF THE FOLLOWING:
   1. THE DATE, TIME, AND LOCATION OF THE CONSTRUCTION SITE INSPECTION.
   2. THE NAME OF THE INDIVIDUAL WHO PERFORMED THE INSPECTION.
   3. AN ASSESSMENT OF THE CONDITION OF THE EROSION AND SEDIMENT CONTROLS.
   4. A DESCRIPTION OF ANY EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICE IMPLEMENTATION AND MAINTENANCE PERFORMED.
   5. A DESCRIPTION OF THE PRESENT PHASE OF LAND DISTURBING CONSTRUCTION ACTIVITY AT THE CONSTRUCTION SITE.
F. EROSION AND SEDIMENT CONTROL IMPLEMENTED DURING CONSTRUCTION SHALL STRICTLY COMPLY WITH THE GUIDELINES AND REQUIREMENTS SET FORTH IN WISCONSIN ADMINISTRATIVE CODE (W.A.C.) NR 151, THE STATE OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES RUNOFF MANAGEMENT PERFORMANCE STANDARDS. TECHNICAL STANDARDS PUBLISHED BY THE WISCONSIN DNR SHALL ALSO BE UTILIZED TO IMPLEMENT THE REQUIRED PERFORMANCE STANDARDS. THE METHODS AND TYPES OF EROSION CONTROL WILL BE DEPENDENT ON THE LOCATION AND TYPE OF WORK INVOLVED. ALL SEDIMENT CONTROL MEASURES SHALL BE ADJUSTED TO MEET FIELD CONDITIONS AT THE TIME OF CONSTRUCTION, AND INSTALLED PRIOR TO ANY GRADING OR DISTURBANCE OF EXISTING SURFACE MATERIAL. BELOW IS A LIST OF EROSION AND SEDIMENT CONTROL BEST MANAGEMENT PRACTICES TO ACHIEVE THE PERFORMANCE STANDARDS REQUIRED.
   1. SILT FENCE SHALL BE PLACED ON SITE AT LOCATIONS SHOWN ON THE EROSION CONTROL PLAN. SILT FENCE SHALL ALSO BE PROVIDED AROUND THE PERIMETER OF ALL SOIL STOCKPILES THAT WILL EXIST FOR MORE THAN 7 DAYS. FOLLOW PROCEDURES FOUND IN WISCONSIN DNR TECHNICAL STANDARD 1056 (CURRENT EDITION).
   2. DITCH CHECKS SHALL BE PROVIDED TO REDUCE THE VELOCITY OF WATER FLOWING IN DITCH BOTTOMS. PLACE AT LOCATIONS SHOWN ON THE EROSION CONTROL PLAN. FOLLOW PROCEDURES FOUND IN WISCONSIN DNR TECHNICAL STANDARD 1062 (CURRENT EDITION).
   3. STONE TRACKING PADS AND TRACKOUT CONTROL PRACTICES SHALL BE PLACED AT ALL CONSTRUCTION SITE ENTRANCES AND SHALL BE INSTALLED PRIOR TO ANY TRAFFIC LEAVING THE CONSTRUCTION SITE. SEE THE EROSION CONTROL PLAN FOR LOCATIONS. THE AGGREGATE USED FOR THE STONE TRACKING PAD SHALL BE 3/8" TO 3 INCH CLEAR OR WASHED STONE AND SHALL BE PLACED IN A LAYER AT LEAST 12 INCHES THICK. THE STONE SHALL BE UNDERLAIN WITH A WISDOT TYPE R GEOTEXTILE FABRIC AS NEEDED. THE TRACKING PAD SHALL BE THE FULL WIDTH OF THE EGRESS POINT (12' MIN WIDTH) AND SHALL BE A MINIMUM OF 50 FEET LONG. SURFACE WATER MUST BE PREVENTED FROM PASSING THROUGH THE TRACKING PAD. OTHER TRACKOUT CONTROL PRACTICES INCLUDING STABILIZED WORK SURFACES, MANUFACTURED TRACKOUT CONTROL DEVICES, TIRE WASHING, AND STREET/PAVEMENT CLEANING SHALL BE IMPLEMENTED AS NECESSARY TO MITIGATE THE TRACKOUT OF SEDIMENT OFFSITE. FOLLOW PROCEDURES FOUND IN WISCONSIN DNR TECHNICAL STANDARD 1057 (CURRENT EDITION).
   4. STORM DRAIN INLET PROTECTION SHALL BE PROVIDED FOR ALL NEW AND DOWNSTREAM STORM CATCH BASINS AND CURB INLETS. TYPE B OR C PROTECTION SHOULD BE PROVIDED AND SHALL BE IN CONFORMANCE WITH WISCONSIN DNR TECHNICAL STANDARD 1060 (CURRENT EDITION).
   5. DUST CONTROL MEASURES SHALL BE PROVIDED TO REDUCE OR PREVENT THE SURFACE AND AIR TRANSPORT OF DUST DURING CONSTRUCTION. CONTROL MEASURES INCLUDE APPLYING MULCH AND ESTABLISHING VEGETATION; WATER SPRAYING, SURFACE ROUGHENING, APPLYING POLYMERS, SPRAY-ON TACKIFIERS, CHLORIDES, AND BARRIERS. SOME SITES MAY REQUIRE AN APPROACH THAT UTILIZES A COMBINATION OF MEASURES FOR DUST CONTROL. FOLLOW PROCEDURES FOUND IN WISCONSIN DNR TECHNICAL STANDARD 1068 (CURRENT EDITION).
   6. THE USE, STORAGE, AND DISPOSAL OF CHEMICALS, CEMENT, AND OTHER COMPOUNDS AND MATERIALS USED ON SITE SHALL BE MANAGED DURING THE CONSTRUCTION PERIOD TO PREVENT THEIR TRANSPORT BY RUNOFF INTO WATERS OF THE STATE.
   7. CONTRACTOR SHALL PROVIDE AN OPEN AGGREGATE CONCRETE TRUCK WASHOUT AREA ON SITE. CONTRACTOR TO ENSURE THAT CONCRETE WASHOUT SHALL BE CONTAINED TO THIS DESIGNATED AREA AND NOT BE ALLOWED TO RUN INTO STORM INLETS OR INTO THE OVERLAND STORMWATER DRAINAGE SYSTEM. WASHOUT AREA SHALL BE REMOVED UPON COMPLETION OF CONSTRUCTION.
   8. TEMPORARY SITE RESTORATION SHALL TAKE PLACE IN DISTURBED AREAS THAT WILL NOT BE BROUGHT TO FINAL GRADE OR ON WHICH LAND DISTURBING ACTIVITIES WILL NOT BE PERFORMED FOR A PERIOD GREATER THAN 14 DAYS AND REQUIRES UNIFORM SEED COVER FOR LESS THAN ONE YEAR. THIS TEMPORARY SITE RESTORATION REQUIREMENT ALSO APPLIES TO SOIL STOCKPILES THAT EXIST FOR MORE THAN 7 DAYS. PERMANENT RESTORATION APPLIES TO AREAS WHERE LAND DISTURBING ACTIVITIES ARE NEEDED TO PERMANENTLY STABILIZE AREAS OF EXPOSED SOIL. PERMANENT STABILIZATION SHALL OCCUR WITHIN 3 WORKING DAYS OF FINAL GRADING. TOPSOIL, SEED, AND MULCH SHALL BE IN GENERAL CONFORMANCE WITH TECHNICAL STANDARDS 1058 AND 1059 AND SHALL MEET THE SPECIFICATIONS BELOW.
      1. LANDSCAPING AND SITE STABILIZATION SECTION OF THIS CONSTRUCTION DOCUMENT. ANY SOIL EROSION THAT OCCURS AFTER FINAL GRADING AND/OR FINAL STABILIZATION MUST BE REPAIRED AND THE STABILIZATION WORK REDONE.
   9. IF SITE DEWATERING IS REQUIRED FOR PROPOSED CONSTRUCTION ACTIVITIES, ALL SEDIMENT LADEN WATER GENERATED DURING THE DEWATERING PROCESS SHALL BE TREATED TO REMOVE SEDIMENT PRIOR TO DISCHARGING OFF-SITE OR TO WATERS OF THE STATE. FOLLOW ALL PROCEDURES FOUND IN TECHNICAL STANDARD 1061.
   10. ALL OFF-SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF CONSTRUCTION WORK OR A STORM EVENT SHALL BE CLEANED UP BY THE END OF EACH WORKING DAY. DUST CONTROL REQUIREMENTS SHALL BE FOLLOWED PER WISCONSIN DNR TECHNICAL STANDARD 1068 (CURRENT EDITION). FLUSHING SHALL NOT BE ALLOWED.
G. EROSION CONTROL MEASURES SHALL NOT BE REMOVED UNTIL THE AREA(S) SERVED HAVE ESTABLISHED VEGETATIVE COVER.
H. ONCE THE CONSTRUCTION SITE HAS BEEN FULLY STABILIZED AND TEMPORARY EROSION CONTROL BEST MANAGEMENT PRACTICES HAVE BEEN REMOVED, THE CONTRACTOR SHALL FILE A CONSTRUCTION NOTICE OF TERMINATION WITH THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES IN ACCORDANCE WITH NR 216.55.
I. AT THE COMPLETION OF THE PROJECT, THE CONTRACTOR SHALL GIVE THE OWNER COPIES OF THE EROSION CONTROL AND STORM WATER MANAGEMENT PLANS, AMENDMENTS TO PLANS, SUPPORTING PLAN DATA, AND CONSTRUCTION SITE EROSION CONTROL INSPECTION REPORTS. THE OWNER SHALL RETAIN THESE FOR A PERIOD OF 3 YEARS FROM THE DATE OF TERMINATING COVERAGE UNDER WPDES GENERAL PERMIT.
J. ALL POST CONSTRUCTION STORMWATER MANAGEMENT BEST MANAGEMENT PRACTICES SHALL BE CONSTRUCTED BEFORE THE SITE HAS UNDERGONE FINAL STABILIZATION.

DIVISION 32 EXTERIOR IMPROVEMENTS

32 11 00 GRAVEL AREAS

A. CONTRACTOR TO PROVIDE COMPACTED GRAVEL WHERE INDICATED ON THE PLANS. ALL AGGREGATE PROVIDED MUST COMPLY WITH SECTION 305 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION. CONTRACTOR TO PROVIDE TYPES AND DEPTHS AS INDICATED BELOW:
   - 5" OF 3/4" CRUSHED AGGREGATE
   - 8" OF 1-1/4" CRUSHED AGGREGATE
   - 12" OF 3" CRUSHED AGGREGATE
B. CONTRACTOR TO COMPACT THE AGGREGATE TO AN AVERAGE DENSITY PER WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION. ALL GRAVEL AREAS SHALL BE GRADED TO WITHIN 0.10' OF DESIGN SURFACE GRADES WITH POSITIVE DRAINAGE BEING MAINTAINED IN ACCORDANCE WITH DESIGN PLANS. A MINIMUM OF 1% SLOPE SHALL BE MAINTAINED IN ALL GRAVEL AREAS.

32 20 00 AGGREGATE BASE & ASPHALT PAVEMENT

A. CONTRACTOR TO PROVIDE COMPACTED AGGREGATE BASE AND HOT MIX ASPHALT PAVEMENT WHERE INDICATED ON THE PLANS. ALL AGGREGATE PROVIDED MUST COMPLY WITH SECTION 305 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION. PROVIDE HOT MIX ASPHALT MIXTURE TYPES PER SECTION 460 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION. CONTRACTOR SHALL OBTAIN AND REVIEW SOILS REPORT FOR RECOMMENDATIONS FOR GEO-GRID / GEOTEXTILE BELOW CRUSHED AGGREGATE (IF APPLICABLE). CONTRACTOR TO PROVIDE AGGREGATE BASE AND HOT MIX ASPHALT PAVEMENT TYPES AND DEPTHS AS INDICATED BELOW:

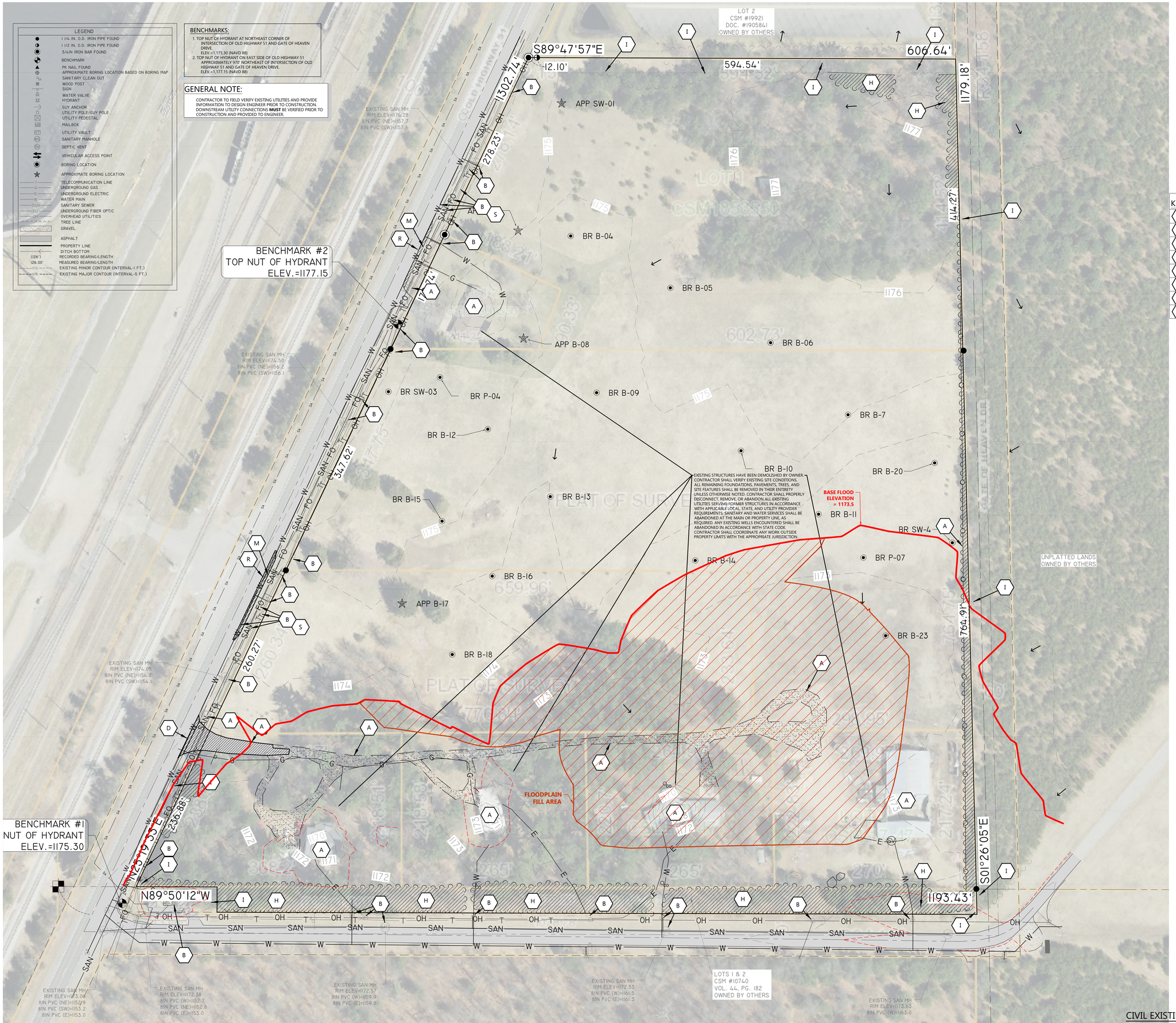
STANDARD ASPHALT PAVING SECTION	HEAVY ASPHALT PAVING SECTION
1.5" SURFACE COURSE (5 MT 58-28S)	1.5" SURFACE COURSE (5 MT 58-28S)
(WISDOT 455.2.5 TACK COAT (STAGED PAVING)	WISDOT 455.2.5 TACK COAT (STAGED PAVING)
2.5" BINDER COURSE (3 MT 58-28S)	3.5" BINDER COURSE (2 MT 58-28S)
8" OF 1-1/4" CRUSHED AGGREGATE	8" OF 1-1/4" CRUSHED AGGREGATE
12" OF 3" CRUSHED AGGREGATE	12" OF 3" CRUSHED AGGREGATE

B. CONTRACTOR TO COMPACT THE AGGREGATE BASE, ASPHALT BINDER COURSE, AND ASPHALT SURFACE COURSE TO AN AVERAGE DENSITY PER WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION. ALL ASPHALT PAVEMENT AREAS SHALL BE PAVED TO WITHIN 0.05' OF DESIGN SURFACE GRADES WITH POSITIVE DRAINAGE BEING MAINTAINED IN ACCORDANCE WITH DESIGN PLANS. A MINIMUM OF 1.5% SLOPE SHALL BE MAINTAINED IN ALL ASPHALT PAVEMENT AREA.
C. HOT MIX ASPHALT CONSTRUCTION TO BE PROVIDED PER MORE STRINGENT REQUIREMENTS OF GEOTECHNICAL REPORT OR CONSTRUCTION DOCUMENTS.
D. CONTRACTOR TO PROVIDE 4" WIDE (YELLOW OR WHITE) PAINTED STRIPPING FOR PARKING STALLS, TRAFFIC LANES, AND NO PARKING AREAS. (YELLOW OR WHITE) PAINT MARKINGS SHALL ALSO BE PROVIDED FOR H.C. ACCESSIBLE SYMBOLS, TRAFFIC ARROWS, AND TRAFFIC MESSAGES.

32 30 00 CONCRETE AND AGGREGATE BASE

A. CONTRACTOR TO PROVIDE CRUSHED AGGREGATE BASE AND CONCRETE WHERE INDICATED ON THE PLANS.
B. ALL AGGREGATE PROVIDED MUST COMPLY WITH SECTION 305 OF THE WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION. ALL AGGREGATE PLACED MUST BE COMPACTED TO AN AVERAGE DENSITY PER WISCONSIN STANDARD SPECIFICATIONS FOR HIGHWAY AND STRUCTURE CONSTRUCTION.
C. DESIGN AND CONSTRUCTION OF ALL CAST-IN-PLACE EXTERIOR CONCRETE FLAT WORK SHALL CONFORM TO ACI 330R-08 & ACI 318-08.
D. EXTERIOR CONCRETE FLAT WORK CONSTRUCTION IS BE PROVIDED PER MORE STRINGENT REQUIREMENTS OF THE GEOTECHNICAL REPORT OR THIS SPECIFICATION. CONCRETE FLAT WORK CONSTRUCTION IS AS FOLLOWS:
   1. SIDEWALK CONCRETE - 4" OF CONCRETE OVER 4" OF 3/4" CRUSHED AGGREGATE BASE. CONTRACTION JOINTS SHALL CONSIST OF 1/8" WIDE BY 1" DEEP TOOLED JOINT WHERE INDICATED ON THE PLANS.
   2. DUMPSTER PAD/APRON CONCRETE - 8" OF CONCRETE OVER 6" OF AGGREGATE BASE.
      a. CONCRETE SHALL BE STEEL REINFORCED WITH THE FOLLOWING AND PLACED IN THE UPPER 1/3 TO ½ OF THE SLAB:
         1) TIE BARS AT ALL CONTRACTION JOINTS OF THE CONCRETE. TIE BARS SHALL BE #4 REBAR 30" LONG PLACED AT 30" O.C.
      b. DUMPSTER PAD CONCRETE JOINTING SHALL BE AS FOLLOWS:
         1) CONTRACTION SAWCUT JOINT - CONTRACTOR SHALL PROVIDE A SAWCUT JOINT AT MAXIMUM SPACING OF 15' ON CENTER. SAWCUT SHALL BE 2" IN DEPTH.
         2) TYPICAL POUR CONTROL JOINT - POUR CONTROL JOINT SHALL BE PROVIDED WITH 1-1/4" DIAMETER BY 20" LONG SMOOTH DOWEL PLACED AT 12" O.C. ONE HALF OF THE DOWEL SHALL BE GREASED. GREENSTREAK 9" SPEED DOWEL TUBES SHALL BE USED.
   4. HEAVY DUTY CONCRETE (TRUCK TRAFFIC) - 6" OF CONCRETE OVER 6" OF 3/4" CRUSHED AGGREGATE. CONCRETE SHALL BE REINFORCED WITH #3 REBARS ON CHAIRS AT 3' O.C. REBAR SHALL BE PLACED IN THE UPPER 1/3 TO ½ OF THE SLAB. CONTRACTION JOINTS SHALL BE SAWCUT 1.5" IN DEPTH AND BE SPACED A MAXIMUM OF 15' ON CENTER.
   5. HEAVY DUTY CONCRETE (TRUCK TRAFFIC) ALTERNATE - 6" OF CONCRETE OVER 6" OF 3/4" CRUSHED AGGREGATE BASE. CONCRETE SHALL BE REINFORCED WITH SYNTHETIC MACRO-FIBERS (FORTA FERRO OR EQUIV.) MIN. LENGTH OF 2". DIAMETER EQUAL OR GREATER THAN 0.012" AND PLACED AT A RATE OF 5.0 LBS FIBER/YARD^3 OF CONCRETE. THEY SHALL BE SPECIFICALLY MANUFACTURED FOR CONCRETE REINFORCEMENT AND CONFORM WITH ASTM C 1116, TYPE III FIBER REINFORCED CONCRETE. CONTRACTION JOINTS SHALL BE SAWCUT 1.5" IN DEPTH AND BE SPACED A MAXIMUM OF 15' O.C. CONTRACTOR TO PROVIDE A TEST PANEL FOR OWNERSHIP TO APPROVE PRIOR TO INSTALLATION. CONTRACTOR TO SCHEDULE PRE CONSTRUCTION MEETING WITH FIBER REPRESENTATIVE BEFORE PLACEMENT OF CONCRETE.
      a. CONCRETE SHALL BE STEEL REINFORCED AS FOLLOWS:
         1) TIE BARS AT OUTERMOST CONTRACTION JOINT (FIRST JOINT FROM EDGE OR AT CURB JOINT) AROUND PERIMETER OF CONCRETE. TIE BARS SHALL BE #5 REBAR 24" LONG PLACED AT 30" O.C.
         2) TYPICAL POUR CONTROL JOINT - POUR CONTROL JOINT SHALL BE PROVIDED WITH 1/4" X 4-1/2" X 4-1/4" DIAMOND SHAPED TAPERED PLATE DOWELS MANUFACTURED PER ASTM A36. INSTALL PER MANUFACTURERS SPECIFICATIONS.
E. DESIGN MIXES SHALL BE IN ACCORDANCE WITH ASTM C94
   6. STRENGTH TO BE MINIMUM OF 4,500 PSI AT 28 DAYS FOR EXTERIOR CONCRETE.
   7. MAXIMUM WATER/CEMENT RATIO SHALL BE 0.45.
   8. SLUMP SHALL NOT EXCEED 4" FOR EXTERIOR CONCRETE FLAT WORK
   9. SLUMP SHALL BE 2.5" OR LESS FOR SUB-FLOORS OF STEEL PAN CONCRETE.
   10. SLUMP SHALL BE BETWEEN 1.5" TO 3" FOR NON SLIP-FORMED CURB AND GUTTER.
   11. ALL EXTERIOR CONCRETE SHALL BE AIR ENTRAINED WITH 4% TO 7% AIR CONTENT. NO OTHER ADMIXTURES SHALL BE USED WITHOUT APPROVAL OF BOTH ENGINEERING, INC. CALCIUM CHLORIDE SHALL NOT BE USED.
   12. MAXIMUM AGGREGATE SIZE FOR ALL EXTERIOR CONCRETE SHALL BE 0.75 INCHES.
F. VERIFY EQUIPMENT CONCRETE PAD SIZES WITH CONTRACTOR REQUIRING PAD. PADS SHALL HAVE FIBERMESH 300 FIBERS AT A RATE OF 1.5 LBS/CU. YD. OR 6 X 6-W1.4 X W1.4 WELDED WIRE MESH WITH MINIMUM 1 INCH COVERAGE. PADS SHALL BE 4 INCHES THICK WITH 1 INCH CHAMFER UNLESS SPECIFIED OTHERWISE. CONCRETE SHALL BE PROVIDED ON 6" OF 3/4" CRUSHED AGGREGATE BASE. COORDINATE ADDITIONAL PAD REQUIREMENTS WITH RESPECTIVE CONTRACTOR.
G. ALL CONCRETE FLAT WORK SURFACES AND CONCRETE CURB FLOWLINES SHALL BE CONSTRUCTED TO WITHIN 0.05' OF DESIGN SURFACE AND FLOWLINE GRADES ASSUMING POSITIVE DRAINAGE IS MAINTAINED IN ACCORDANCE WITH DESIGN PLANS.
H. CONCRETE FLAT WORK SHALL HAVE CONSTRUCTION JOINTS OR SAW CUT JOINTS PLACED AS INDICATED ON THE PLANS AND PER THIS SPECIFICATION. SAWCUTS SHALL BE DONE AS SOON AS POSSIBLE, BUT NO LATER THAN 24 HOURS AFTER CONCRETE IS PLACED. CONCRETE CURB AND GUTTER JOINTING SHALL BE PLACED EVERY 10' OR CLOSER (6' MIN.). IF CONCRETE PAVEMENT IS ADJACENT TO CONCRETE CURB, JOINTING PATTERN SHALL MATCH CURB JOINTING. ALL EXTERIOR CONCRETE SHALL HAVE A BROOM FINISH UNLESS NOTED OTHERWISE. A UNIFORM COAT OF A HIGH SOLIDS CURING COMPOUND MEETING ASTM C309 SHALL BE APPLIED TO ALL EXPOSED CONCRETE SURFACES IMMEDIATELY AFTER FINISHING. CURING COMPOUND SHALL NOT BE APPLIED AND MUST BE FREE OF GREASE/OIL, DIRT OR DEEP RUST WHEN PLACED IN THE WORK. ALL WELDED WIRE FABRIC SHALL MEET THE REQUIREMENTS OF ASTM A 1064. WELDED WIRE FABRIC SHALL BE PLACED 2" FROM TOP OF SLAB AND THEN CUT FOR A PERIOD OF 3 YEARS.
I. CONTRACTOR SHALL ENGAGE A QUALIFIED INDEPENDENT TESTING AND INSPECTING AGENCY TO SAMPLE MATERIALS, PERFORM TESTS, AND SUBMIT TEST REPORTS DURING CONCRETE PLACEMENT. TESTS WILL BE PERFORMED ACCORDING TO ASTM C 172. EACH LABORATORY CURE ONE SET OF FOUR STANDARD CYLINDERS FOR EACH COMPOSITE SAMPLE FOR EACH DAY'S POUR OF EACH CONCRETE MIX EXCEEDING 5 CU. YD., BUT LESS THAN 25 CU. YD., PLUS ONE SET FOR EACH ADDITIONAL 50 CU. YD. OR FRACTION THEREOF. PERFORM COMPRESSIVE-STRENGTH TESTS ACCORDING TO ASTM C 39. TEST TWO SPECIMENS AT 7 DAYS AND TWO SPECIMENS AT 28 DAYS. PERFORM SLUMP TESTING ACCORDING TO ASTM C 143. PROVIDE ONE TEST AT POINT OF PLACEMENT FOR EACH COMPOSITE SAMPLE, BUT NOT LESS THAN ONE TEST FOR EACH DAY'S POUR OF EACH CONCRETE MIX. PERFORM ADDITIONAL TESTS WHEN CONCRETE CONSISTENCY APPEARS TO CHANGE.
K. PROTECT FRESHLY PLACED CONCRETE FROM PREMATURE DRYING AND EXCESSIVE COLD OR HOT TEMPERATURES. IN HOT, DRY, AND WINDY WEATHER, APPLY AN EVAPORATION-CONTROL COMPOUND ACCORDING TO MANUFACTURER'S INSTRUCTIONS AFTER SCREEDING AND BULL FLOATING, BUT BEFORE POWER FLOATING AND TROWELLING.
   LIMIT MAXIMUM WATER-CEMENTITIOUS RATIO OF CONCRETE EXPOSED TO FREEZING, THAWING AND DEICING SALTS TO 0.45.
M. TEST RESULTS WILL BE REPORTED IN WRITING TO THE DESIGN ENGINEER, READY-MIX PRODUCER, AND CONTRACTOR WITHIN 24 HOURS AFTER TESTING. REPORTS OF COMPRESSIVE STRENGTH TESTS SHALL CONTAIN THE PROJECT IDENTIFICATION NAME AND NUMBER, DATE OF CONCRETE PLACEMENT, NAME OF CONCRETE TESTING SERVICE, CONCRETE TYPE AND CLASS, LOCATION OF CONCRETE BATCH IN STRUCTURE, DESIGN COMPRESSIVE STRENGTH AT 28 DAYS, CONCRETE MIX PROPORTIONS AND MATERIALS, COMPRESSIVE BREAKING STRENGTH, AND TYPE OF BREAK FOR BOTH 7-DAY TESTS AND 28-DAY TESTS.

32 40



SURVEY NOTES:

EXISTING CONDITIONS SURVEY WAS COMPLETED BY REI ENGINEERING, INC. ON OCTOBER 29, 2025. CONTACT REI AT (715) 675-9784 WITH ANY QUESTIONS REGARDING SURVEY OR EXISTING CONDITIONS INFORMATION.

AN UPDATED SURVEY AND TITLE SEARCH HAVE NOT BEEN AUTHORIZED AND THE BOUNDARY AND EASEMENTS SHOWN ON THIS PLAN MAY BE INCOMPLETE OR IN ERROR.

LEGEND:

- REMOVE PAVEMENT & BASE
- REMOVE PAVEMENT, PROTECT BASE
- REMOVE FEATURES

LEGEND:

- FLOODPLAIN FILL (SEE SHEET C1.2 FOR COMPENSATORY STORAGE)

KEYNOTES

A	REMOVE
B	PROTECT
D	SAWCUT (AS NECESSARY) AND REMOVE ASPHALT AND PROTECT BASE
H	REMOVE TREE
I	PROTECT TREE
M	RECYCLE GRAVEL AS NEEDED
R	REMOVE 2' OF ASPHALT
S	CONTRACTOR TO MAINTAIN 18" COVER DURING EXCAVATION & VERIFY DEPTH OF FACILITIES DURING EXCAVATION.

SCALE: 1"= 50'

CIVIL EXISTING SITE AND DEMOLITION PLAN

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PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:
MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

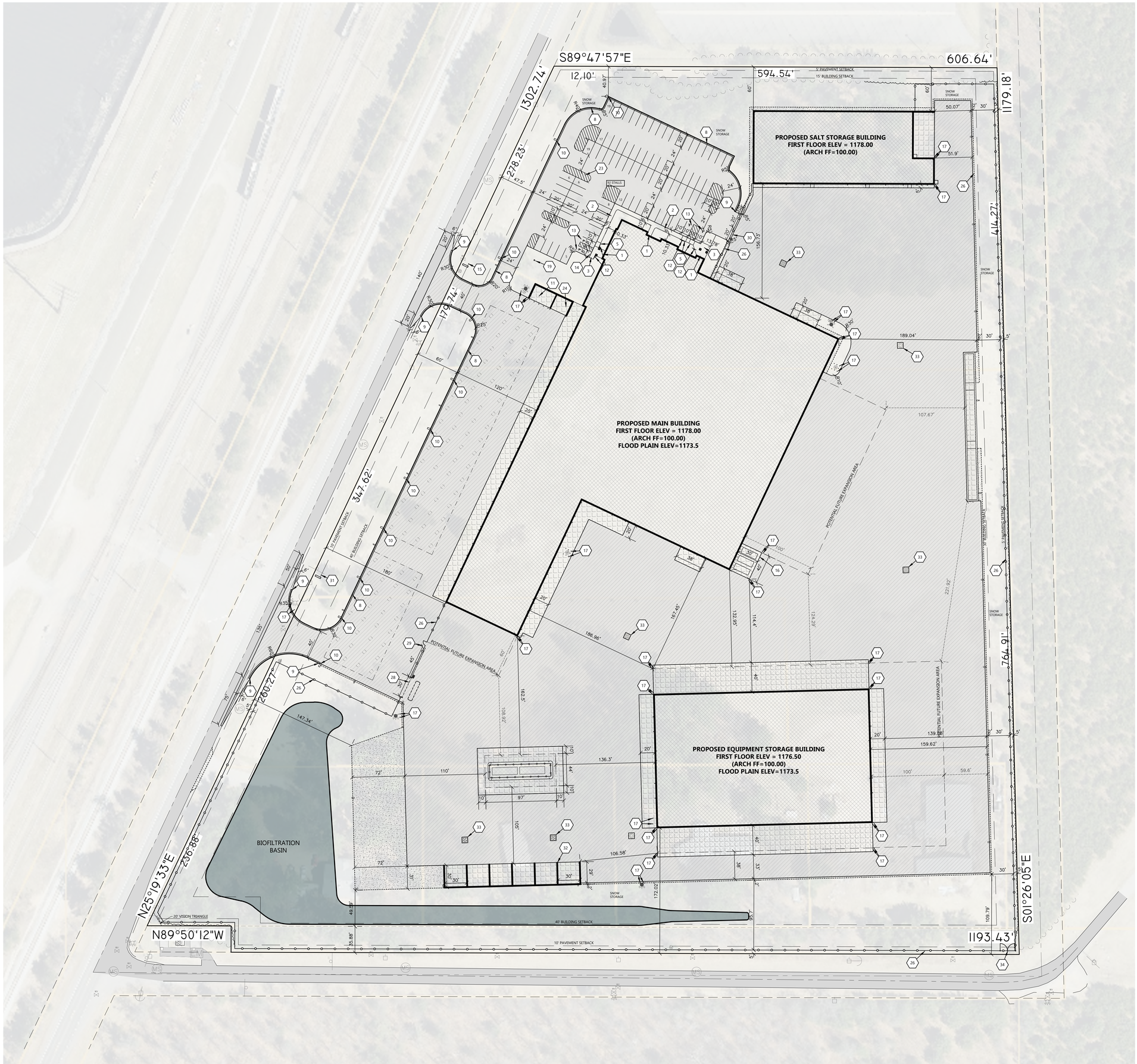
PROFESSIONAL SEAL

PRELIMINARY DATES
MAR. 27, 2026
APR. 15, 2026
JULY 14, 2026
JULY 23, 2026

NOT FOR CONSTRUCTION

JOB NUMBER
250008600

SHEET NUMBER
C1.0



LEGEND:

HATCH	PAVEMENT SECTION	HATCH	PAVEMENT SECTION
	STANDARD ASPHALT		HEAVY DUTY CONCRETE
	HEAVY DUTY ASPHALT		GRAVEL
	SIDEWALK CONCRETE		CANOPY

KEYNOTES

1	CONCRETE STOOP (SEE STRUCTURAL PLANS FOR DETAILS)
2	RAISED WALK (SEE DETAIL)
3	FLUSH WALK (SEE DETAIL)
5	CURB RAMP (SEE DETAIL)
8	24" MOUNTABLE CURB (2" TALL) & GUTTER (SEE DETAIL)
9	CURB TAPER (SEE DETAIL)
10	CURB CUT (SEE DETAIL)
11	TRANSFORMER LOCATION
12	HANDICAP SIGN PER STATE CODE (SEE DETAIL) FURNISHED BY OWNER
13	HANDICAP STALL & STRIPING PER STATE CODES
14	PRECAST CONCRETE WHEEL STOP (TYP.)
15	MONUMENT SIGN BY OWNER (FINAL DESIGN DETAILS, LOCATION, & APPROVAL BY OWNER)
16	WASTE ENCLOSURE LOCATION CONCRETE PAD FOR (3) 40 YARD DUMPSTERS
17	6" CONCRETE BOLLARDS (TYP.) (SEE ARCH PLANS FOR DETAILS)
19	FLAGPOLE, 35' (TYP.)
23	PAINT STRIPING (TYP). COLOR TO MATCH PARKING STALL STRIPING
24	GENERATOR LOCATION
26	8' HIGH GALVANIZED CHAINLINK FENCE
28	30' AUTOMATED CANTILEVER SLIDE GATE (INSIDE FENCE). GATE SHALL MATCH HEIGHT AND MATERIAL OF ADJACENT FENCE. CONTRACTOR TO PROVIDE CONDUIT STUBBED TO GATE FOR MOTORIZED OPERATION (SEE ELEC. PLANS) GATE OPERATOR SHALL HAVE A CLUTCH RELEASE FOR MANUALLY OPENING THE GATE. PROVIDE FIRE DEPT LOCK BOX AS REQUIRED. SEE SPECIFICATIONS FOR GATE OPERATOR REQUIREMENTS, VEHICLE DETECTION LOOP LOCATION AND PLACEMENT SHALL BE BY GATE CONTRACTOR.
29	MAN GATE LOCATION - PROVIDE SEPARATE PEDESTRIAN GATE IN ACCORDANCE WITH UL 325. COORDINATE LOCKING HARDWARE AND ACCESS CONTROL REQUIREMENTS WITH OWNER.
30	20' MANUAL CANTILEVER SLIDING GATE
31	DIRECTIONAL SIGNAGE BY OWNER
32	CONCRETE PAD FOR BUNKER AREA CONCRETE BLOCK RETAINING WALL BINS BY OWNER
33	8'x8' CONCRETE AROUND STORM STRUCTURES WITH VERTICAL PAVEMENT JOINT (6" CONCRETE)
34	20' EMERGENCY GATE

SCALE: 1"= 50'

NORTH

CIVIL SITE PLAN

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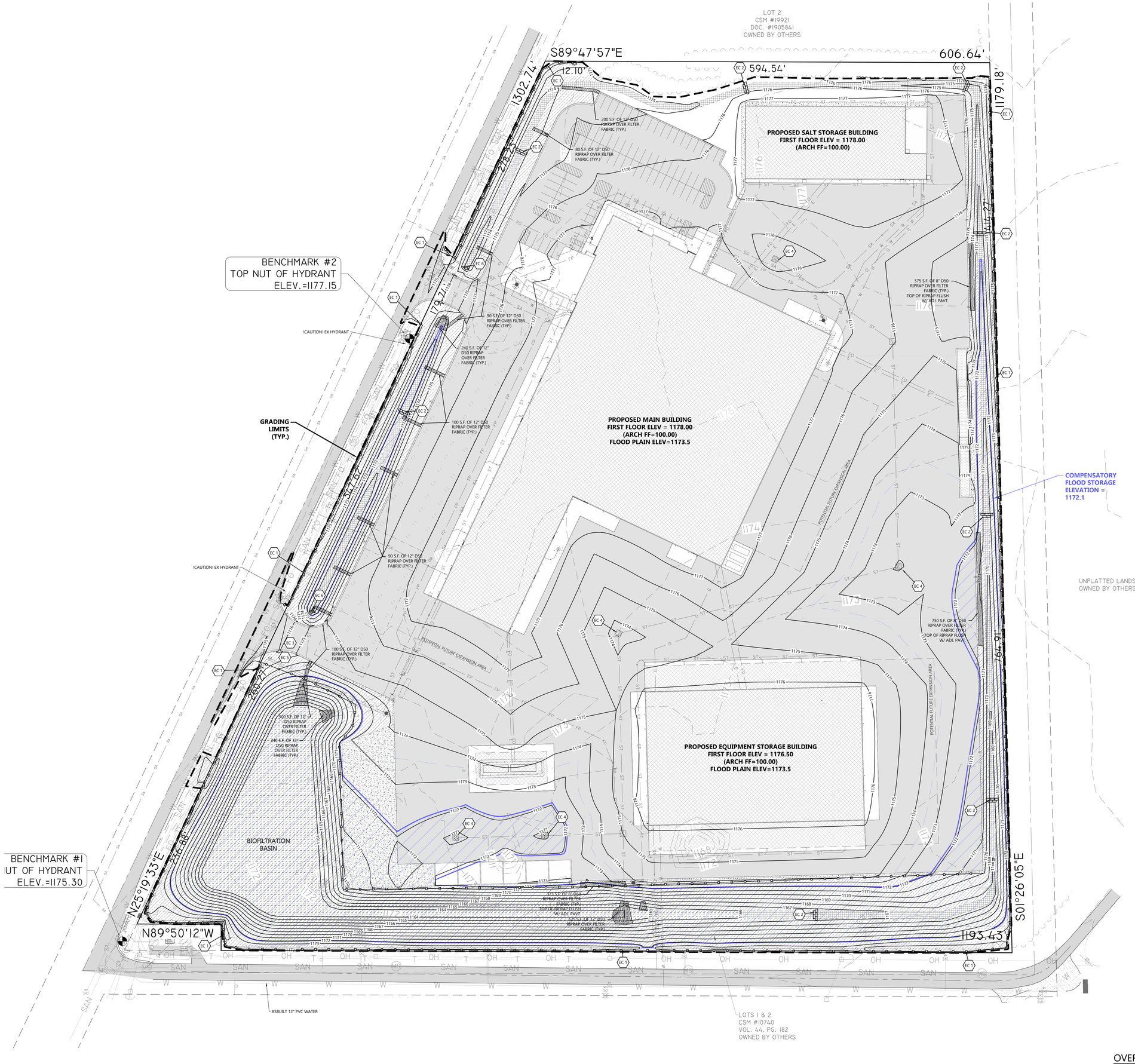
PROFESSIONAL SEAL

PRELIMINARY DATES
NOV. 26, 2025
DEC. 12, 2025
JAN. 9, 2026
FEB. 6, 2026
FEB. 25, 2026
MAR. 2, 2026
MAR. 27, 2026
APR. 9, 2026
APR. 15, 2026
JULY 14, 2026
JULY 23, 2026

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JOB NUMBER
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SHEET NUMBER
C1.1



GENERAL NOTES:

- HANDICAP STALL AND ACCESS AISLES SHALL NOT EXCEED A SLOPE OF 1.50% IN ANY DIRECTION. HANDICAP STALL & ACCESS AISLES SHALL CONFORM TO ADA REQUIREMENTS (CURRENT EDITION).
- ALL SIDEWALKS SHALL NOT EXCEED A MAXIMUM CROSS SLOPE OF 1.50% AND RUNNING SLOPE OF 4.50% UNLESS OTHERWISE SPECIFIED.
- CONTRACTOR SHALL PROVIDE STABILIZED CONSTRUCTION ENTRANCE AT CONSTRUCTION ENTRANCE FOR PROPOSED IMPROVEMENTS AS REQUIRED PER CODE.
- CONTRACTOR SHALL PROVIDE CONCRETE WASHOUT AS REQUIRED PER CODE. FINAL LOCATION TBD BY CONTRACTOR.
- CONTRACTOR SHALL PROVIDE TEMPORARY INLET PROTECTION FOR ALL CURB INLETS & CATCH BASINS ONSITE & OFFSITE IMMEDIATELY DOWNSTREAM OF THE PROJECT SITE PER LOCAL CODE.
- ALL EROSION AND SEDIMENT CONTROL BMPS SHALL BE INSPECTED AND MAINTAINED IN ACCORDANCE WITH SPECIFICATIONS ON SHEET C0.2. ACCUMULATED SEDIMENT SHALL BE REMOVED FROM SEDIMENT BARRIERS WHEN DEPOSITS REACH ONE-HALF THE EFFECTIVE HEIGHT OF THE BARRIER. DAMAGED BMPS SHALL BE REPAIRED OR REPLACED IMMEDIATELY.
- COMPENSATORY FLOODPLAIN STORAGE AREA SHOWN. STORAGE PROVIDED WITHIN THE PROPOSED BIORETENTION BASIN BETWEEN THE CALCULATED 100-YEAR WATER SURFACE ELEVATION AND SPILLWAY ELEV. 1172.1 TOTALS 494,086 CU. FT., EXCEEDING THE EXISTING FLOODPLAIN STORAGE VOLUME OF 282,933 CU. FT. BY 211,153 CU. FT. REFER TO THE STORMWATER MANAGEMENT REPORT AND APPENDIX J FOR ADDITIONAL INFORMATION AND CALCULATIONS.

KEYNOTES

EC 1	SILT FENCE
EC 2	DITCH CHECK
EC 3	STABILIZED CONSTRUCTION ENTRANCE
EC 4	INLET PROTECTION
EC 5	CONCRETE WASHOUT
EC 6	SEDIMENT LOG

HATCH KEY:

HATCH	LANDSCAPE MATERIAL
	EROSION MATTING (NAG C125) OVER SEEDED LAWN (SWALE BOTTOMS & SWM)
	EROSION MATTING (NAG S150) OVER SEEDED LAWN (> OR = 4:1 SLOPES OUTSIDE OF SWM)
	BIOFILTER SEEDING

LEGEND:

FLOODPLAIN COMPENSATORY STORAGE

SCALE: 1"= 50'
50' 0 50' 100'
NORTH

OVERALL CIVIL GRADING AND EROSION CONTROL PLAN

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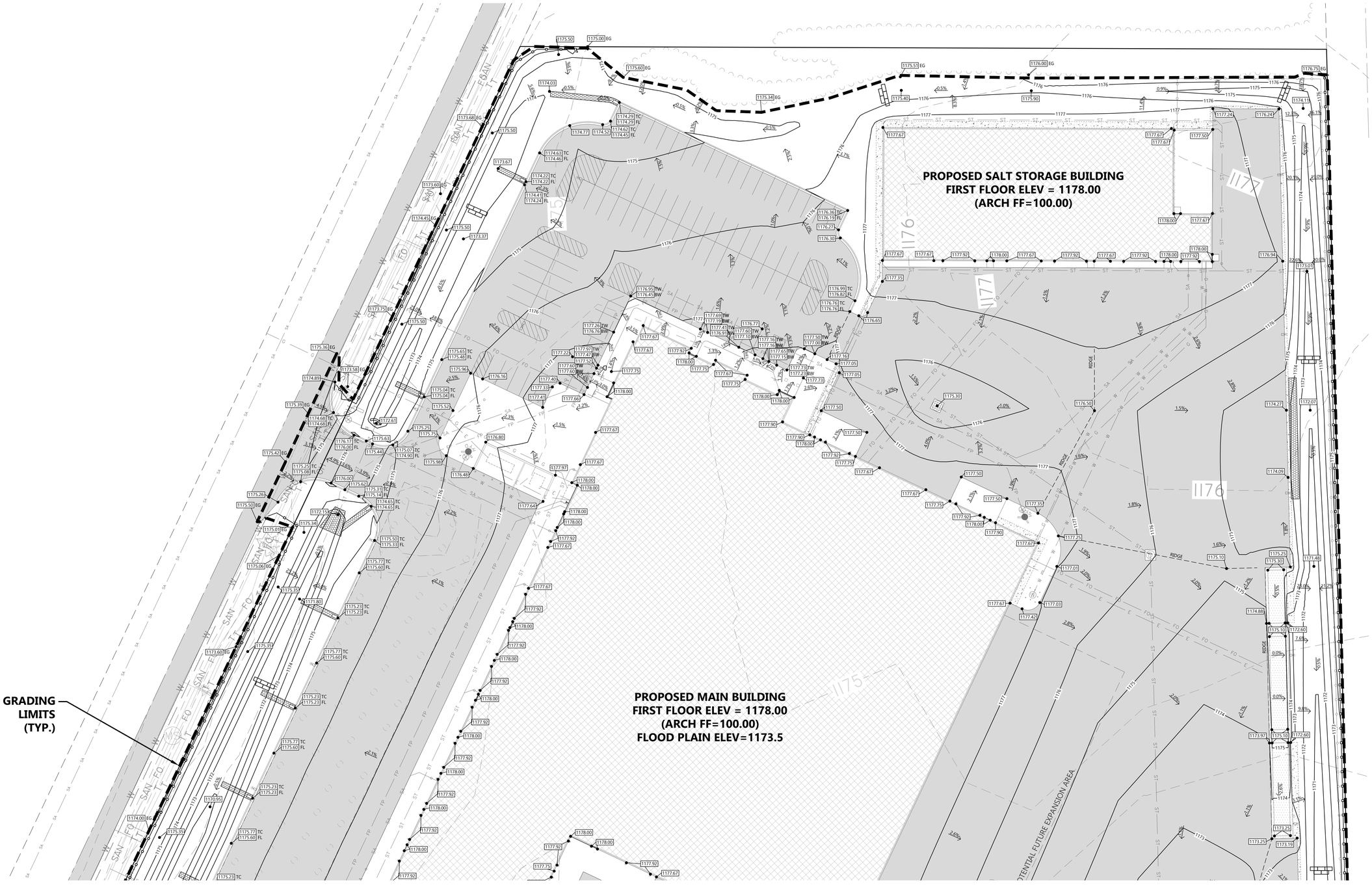
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JOB NUMBER
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SHEET NUMBER
C1.2



SCALE: 1" = 30'
30' 0 30' 60'
NORTH

CIVIL GRADING AND EROSION CONTROL PLAN NORTH

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SHEET NUMBER
C1.2A

GRADING LIMITS (TYP.)

PROPOSED MAIN BUILDING
FIRST FLOOR ELEV = 1178.00
(ARCH FF=100.00)
FLOOD PLAIN ELEV=1173.5

PROPOSED EQUIPMENT STORAGE BUILDING
FIRST FLOOR ELEV = 1176.50
(ARCH FF=100.00)
FLOOD PLAIN ELEV=1173.5

POTENTIAL FUTURE EXPANSION AREA

BIOFILTRATION BASIN

CIVIL GRADING AND EROSION CONTROL PLAN SOUTH

SCALE: 1" = 30'
30' 0 30' 60'
NORTH

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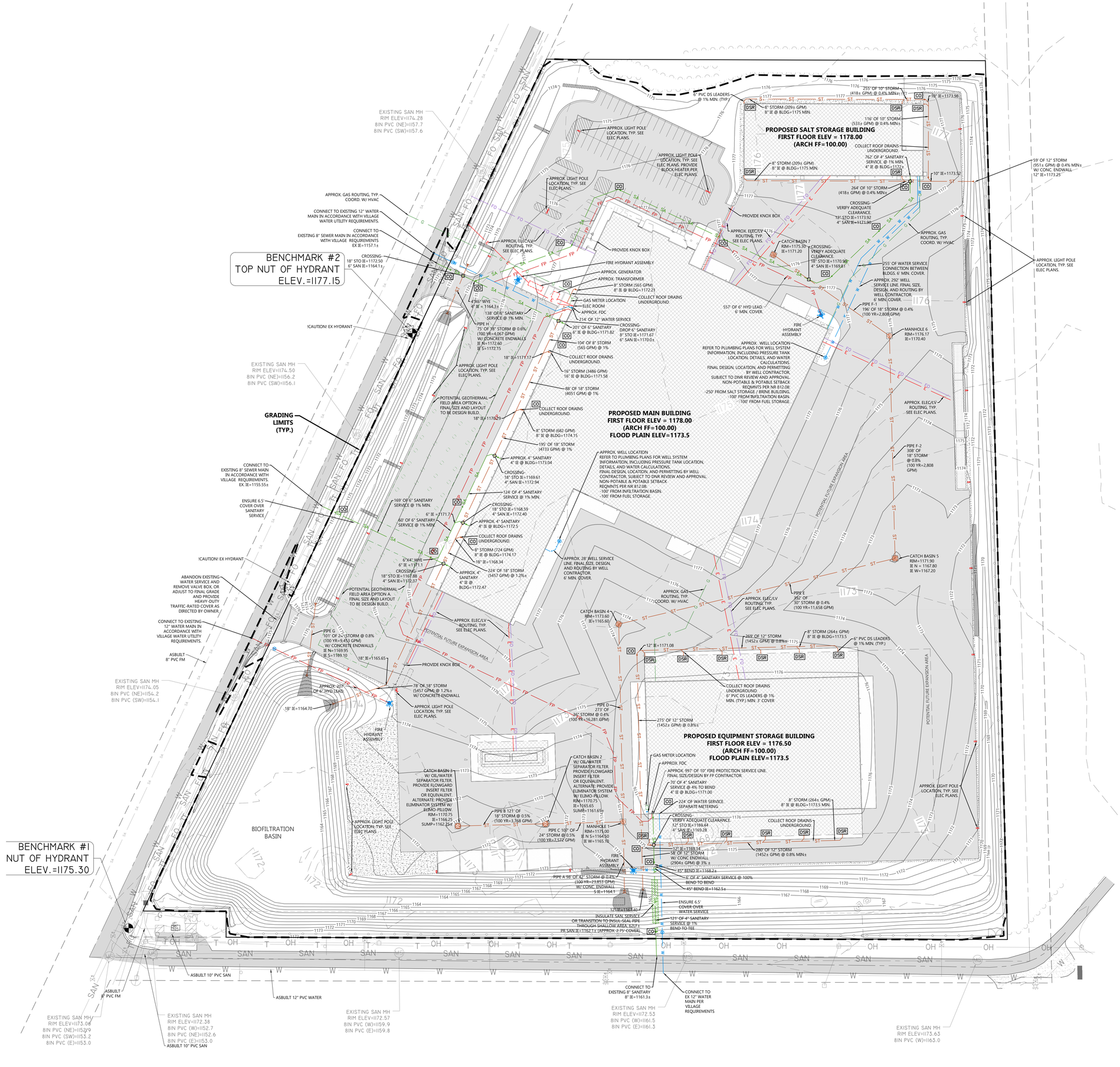
PROFESSIONAL SEAL

PRELIMINARY DATES
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JULY 23, 2026

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SHEET NUMBER
C1.2B



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JOB NUMBER
250008600

SHEET NUMBER
C1.3

SCALE: 1"= 50'
50' 0 50' 100'
NORTH

CIVIL UTILITY PLAN

OVERALL PLANT SCHEDULE

SYMBOL	COMMON NAME	BOTANICAL NAME	QUANTITY	POINTS	TOTAL POINTS	PLANTED SIZE	ROOT
LARGE DECIDUOUS TREES							
	Hackberry	Celtis occidentalis	2	125	250	2" CAL.	B&B
	Espresso Kentucky Coffeetree	Gymnocladus dioica 'Espresso-JFS'	3	125	375	2" CAL.	B&B
SMALL DECIDUOUS TREES							
	Winter King Hawthorn	Crataegus viridis 'Winter King'	2	60	120	1 1/2" CAL.	B&B
EVERGREEN TREES							
	Eastern Red Cedar	Juniperus virginiana	26	50	1,300	6' HT.	B&B
	Eastern White Pine	Pinus strobus	29	50	1,450	6' HT.	B&B
DECIDUOUS SHRUBS							
	Jewel Bush Honeysuckle	Diervilla lonicera 'Jewel'	10	20	200	5' HT.	B&B
	Annabelle Hydrangea	Hydrangea arborescens 'Annabelle'	12	20	240	5' HT.	B&B
	Amber Jubilee Ninebark	Physocarpus opulifolius 'Jefam'	9	20	180	5' HT.	B&B
EVERGREEN SHRUBS							
	Densi Yew	Taxus x media 'Densiformis'	16	20	320	36" HT.	CONT.
PERENNIALS							
	Cat's Pajamas Catmint	Nepeta 'Cat's Pajamas'	20	4	80	1 GAL.	CONT.

LANDSCAPING CALCULATIONS

ZONE	REQ. PLANTS	PLANTS PROVIDED
HARD AND GRAVEL SURFACED AREAS	- 100 POINTS OF LANDSCAPING SHALL BE PLANTED FOR EACH 2,500 SF OF HARD AND GRAVEL SURFACED AREA - PLANTS SHALL BE INSTALLED WITHIN 15' OF SURFACED AREAS AND SHALL INCLUDE LARGE DECIDUOUS TREES 581,256/2,500 X 100 = 23,250.2 POINTS	3,495 POINTS SUPPLEMENTED BY EXISTING TREES PLANTS INSTALLED FARTHER AWAY TO ACCOUNT FOR SNOW STORAGE
FOUNDATION	- 100 POINTS OF LANDSCAPE PER 200 LF OF EXTERIOR BUILDING WALL THAT IS VISIBLE FROM PUBLIC R.O.W OR RESIDENTIAL ZONES - PLANTS SHALL BE INSTALLED WITHIN 20' OF BUILDING AND SHALL NOT INCLUDE LARGE DECIDUOUS TREES 1,703/200 X 100 = 851.5 POINTS	940 POINTS PROVIDED AROUND MAIN ENTRY
GENERAL YARD	- 100 POINTS OF LANDSCAPE PER 5,000 SF OF TOTAL LOT AREA EXCLUDING AREAS UNDER ROOFTOP, HARD SURFACED AREA, REQUIRED BUFFER YARDS, OR FUTURE PHASES OF DEVELOPMENT - LANDSCAPING IN THIS SECTION SHALL BE PLACED TO MAXIMIZE VISUAL IMPACT (SUCH AS STREET YARDS) 299,776/5,000 X 100 = 5,995.5 POINTS	USING EXISTING TREES ALONG NORTH LOT LINE TO MEET REQUIREMENTS
EXISTING PLANT MATERIALS	- HEALTHY PLANT MATERIALS OF ACCEPTABLE SPECIES MAY ALLOW CREDIT FOR SUCH MATERIAL OUR SOLUTION FOR ESTIMATING: EXISTING PLANT MATERIAL TYPE CHOSEN BY MAJORITY SPECIES. QUANTITY ESTIMATED BY DIVIDING TOTAL AREA BY MATURE SIZE AND THEN MULTIPLYING BY 1.5 TIMES INSTALLED POINT VALUE TO ESTIMATE TOTAL POINTS	MAJORITY SEEMS TO BE EVERGREEN VARIETIES. ESTIMATING 25' MATURE SIZE 10,442.8/25 x 75 = 31,328.4 POINTS

GENERAL NOTES:

- SEE SHEET C0.2 FOR LANDSCAPE SPECIFICATIONS.
- ALL BARE DISTURBED SOIL OUTSIDE OF MULCH AREAS TO BE SEEDED.

HATCH KEY:

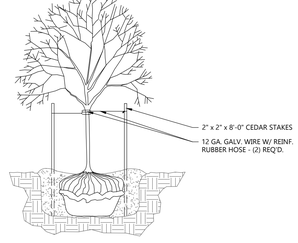
HATCH	LANDSCAPE MATERIAL
	STONE MULCH
	SEEDED LAWN

DECIDUOUS TREE PLANTING DETAIL

NOT TO SCALE

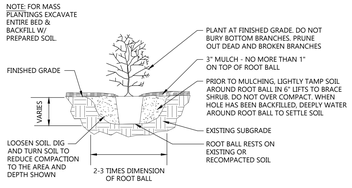
EVERGREEN TREE PLANTING DETAIL

NOT TO SCALE



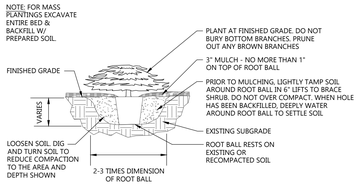
DECIDUOUS TREE STAKING DETAIL

NOT TO SCALE



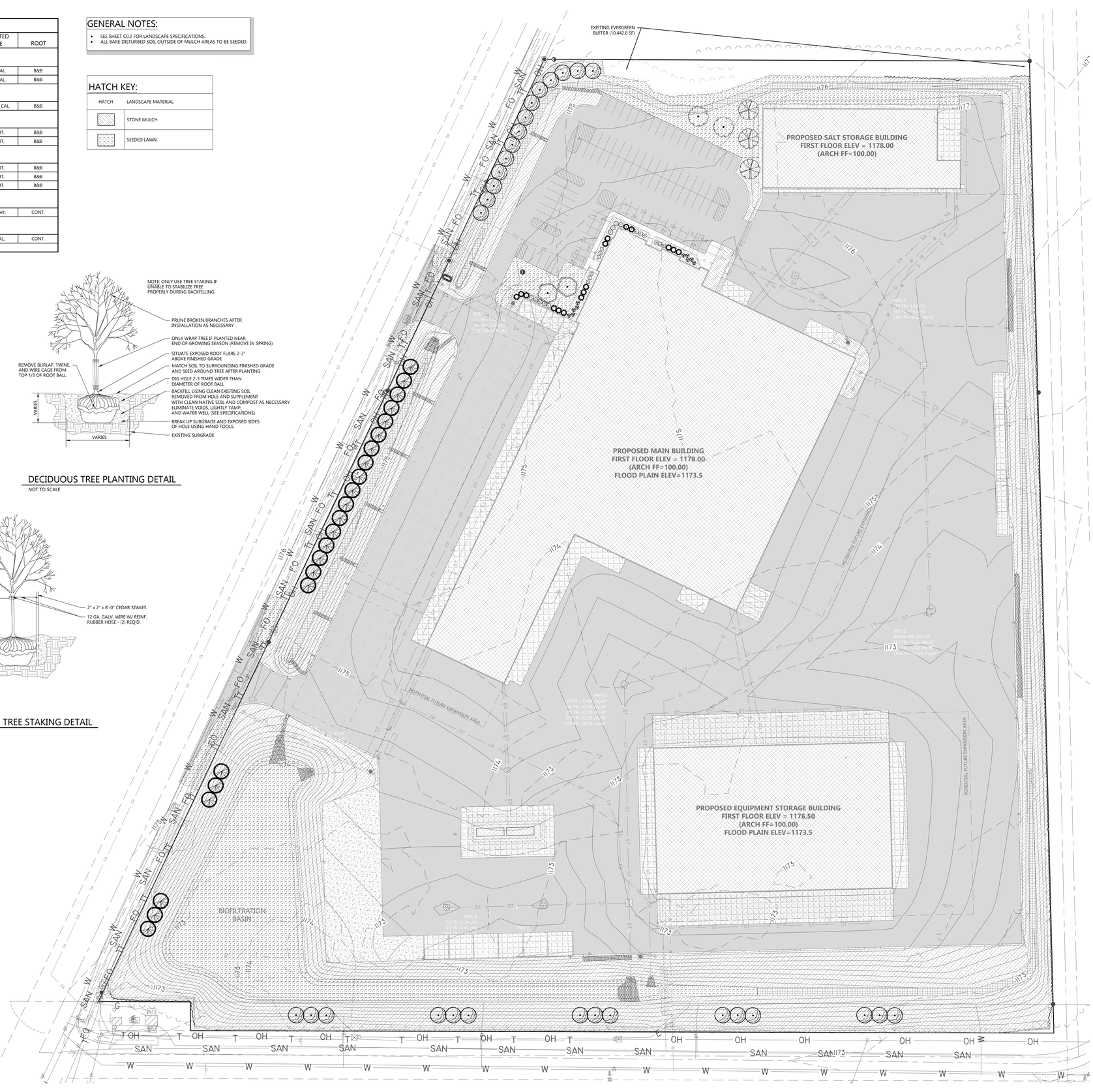
DECIDUOUS SHRUB PLANTING DETAIL

NOT TO SCALE



EVERGREEN SHRUB PLANTING DETAIL

NOT TO SCALE



SCALE: 1" = 50'

NORTH

CIVIL LANDSCAPE AND RESTORATION PLAN

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION
Miron
Building Excellence
Miron Construction Co., Inc.
1471 McMahon Drive
Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:

MARATHON COUNTY HIGHWAY COMMISSION

OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

PRELIMINARY DATES

JULY 23, 2026

NOT FOR CONSTRUCTION

JOB NUMBER

250008600

SHEET NUMBER

C1.4

OVERALL PLANT SCHEDULE

SYMBOL	COMMON NAME	BOTANICAL NAME	QUANTITY	POINTS	TOTAL POINTS	PLANTED SIZE	ROOT
LARGE DECIDUOUS TREES							
	Hackberry	Celtis occidentalis	2	125	250	2" CAL.	B&B
	Espresso Kentucky Coffeetree	Gymnocladus dioica 'Espresso-JFS'	3	125	375	2" CAL.	B&B
SMALL DECIDUOUS TREES							
	Winter King Hawthorn	Crataegus viridis 'Winter King'	2	60	120	1 1/2" CAL.	B&B
EVERGREEN TREES							
	Eastern Red Cedar	Juniperus virginiana	26	50	1,300	6' HT.	B&B
	Eastern White Pine	Pinus strobus	29	50	1,450	6' HT.	B&B
DECIDUOUS SHRUBS							
	Jewel Bush Honeysuckle	Diervilla lonicera 'Jewel'	10	20	200	5' HT.	B&B
	Annabelle Hydrangea	Hydrangea arborescens 'Annabelle'	12	20	240	5' HT.	B&B
	Amber Jubilee Ninebark	Physocarpus opulifolius 'Jefam'	9	20	180	5' HT.	B&B
EVERGREEN SHRUBS							
	Densi Yew	Taxus x media 'Densiformis'	16	20	320	36" HT.	CONT.
PERENNIALS							
	Cat's Pajamas Catmint	Nepeta 'Cat's Pajamas'	20	4	80	1 GAL.	CONT.

LANDSCAPING CALCULATIONS

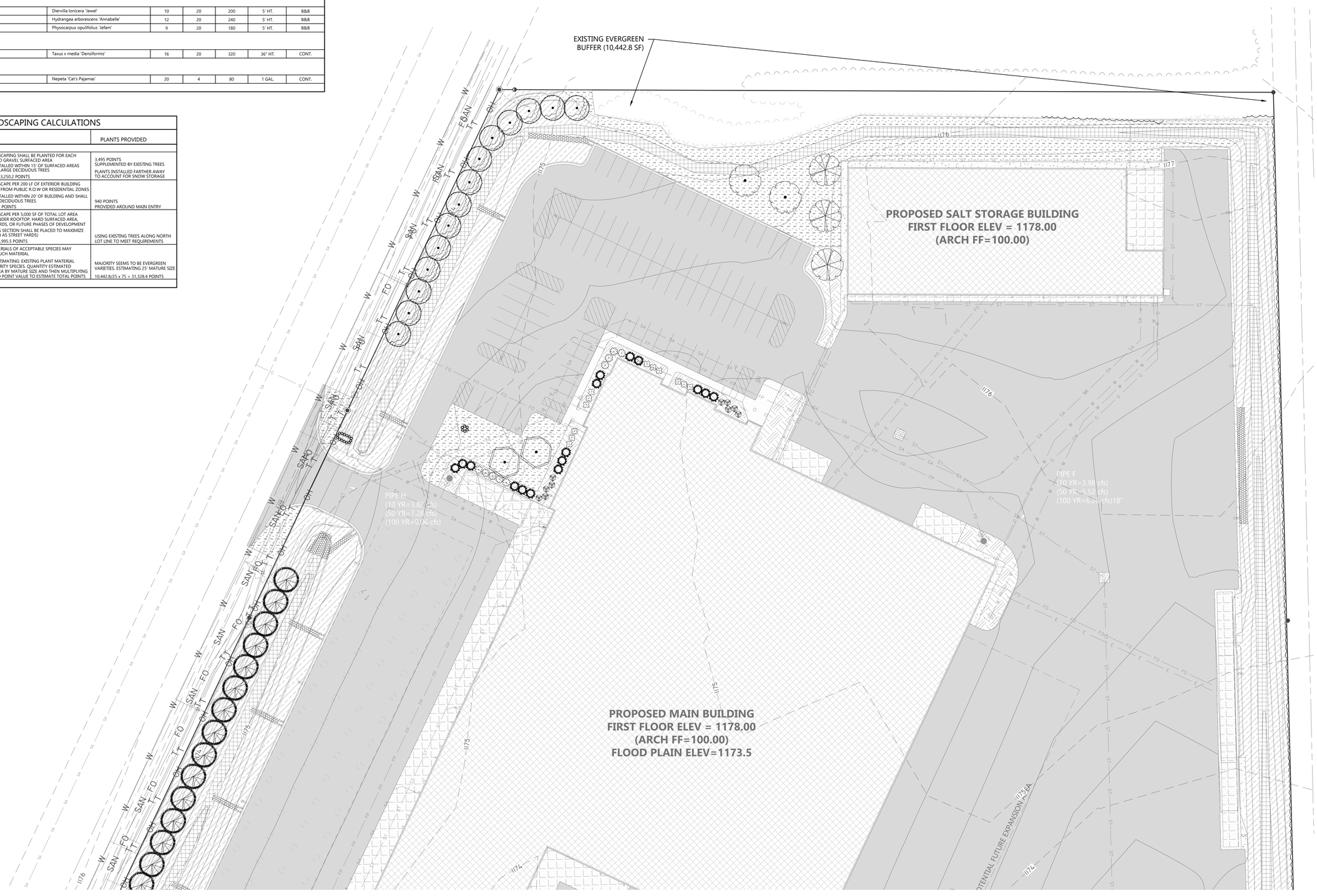
ZONE	REQ. PLANTS	PLANTS PROVIDED
HARD AND GRAVEL SURFACED AREAS	- 100 POINTS OF LANDSCAPING SHALL BE PLANTED FOR EACH 2,500 SF OF HARD AND GRAVEL SURFACED AREA - PLANTS SHALL BE INSTALLED WITHIN 15' OF SURFACED AREAS AND SHALL INCLUDE LARGE DECIDUOUS TREES 581,256/2,500 X 100 = 23,250.2 POINTS	3,495 POINTS SUPPLEMENTED BY EXISTING TREES PLANTS INSTALLED FARTHER AWAY TO ACCOUNT FOR SNOW STORAGE
FOUNDATION	- 100 POINTS OF LANDSCAPE PER 200 LF OF EXTERIOR BUILDING WALL THAT IS VISIBLE FROM PUBLIC R.O.W OR RESIDENTIAL ZONES - PLANTS SHALL BE INSTALLED WITHIN 20' OF BUILDING AND SHALL NOT INCLUDE LARGE DECIDUOUS TREES 1,703/200 X 100 = 851.5 POINTS	940 POINTS PROVIDED AROUND MAIN ENTRY
GENERAL YARD	- 100 POINTS OF LANDSCAPE PER 5,000 SF OF TOTAL LOT AREA EXCLUDING AREAS UNDER ROOFTOP, HARD SURFACED AREA, REQUIRED BUFFER YARDS, OR FUTURE PHASES OF DEVELOPMENT - LANDSCAPING IN THIS SECTION SHALL BE PLACED TO MAXIMIZE VISUAL IMPACT (SUCH AS STREET YARDS) 299,776/5,000 X 100 = 5,995.5 POINTS	USING EXISTING TREES ALONG NORTH LOT LINE TO MEET REQUIREMENTS
EXISTING PLANT MATERIALS	- HEALTHY PLANT MATERIALS OF ACCEPTABLE SPECIES MAY ALLOW CREDIT FOR SUCH MATERIAL OUR SOLUTION FOR ESTIMATING: EXISTING PLANT MATERIAL TYPE CHOSEN BY MAJORITY SPECIES. QUANTITY ESTIMATED BY DIVIDING TOTAL AREA BY MATURE SIZE AND THEN MULTIPLYING BY 1.5 TIMES INSTALLED POINT VALUE TO ESTIMATE TOTAL POINTS	MAJORITY SEEMS TO BE EVERGREEN VARIETIES. ESTIMATING 25' MATURE SIZE 10,442.8/25 x 75 = 31,328.4 POINTS

GENERAL NOTES:

- SEE SHEET C0.2 FOR LANDSCAPE SPECIFICATIONS.
- ALL BARE DISTURBED SOIL OUTSIDE OF MULCH AREAS TO BE SEEDED.

HATCH KEY:

HATCH	LANDSCAPE MATERIAL
	STONE MULCH
	SEEDED LAWN



SCALE: 1" = 30'
30' 0 30' 60'
NORTH

CIVIL LANDSCAPE AND RESTORATION PLAN NORTH

EXCEL
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100 Camelot Drive
Fond du Lac, WI 54935
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excelengineer.com

COLLABORATION

Miron
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Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:
MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

PRELIMINARY DATES
JULY 23, 2026

NOT FOR CONSTRUCTION

JOB NUMBER
250008600

SHEET NUMBER
C1.4A

PROPOSED MAIN BUILDING
FIRST FLOOR ELEV = 1178.00
(ARCH FF=100.00)
FLOOD PLAIN ELEV=1173.5

POTENTIAL FUTURE EXPANSION AREA

PIPE E
(DSPS=9.8 cfs) 24"
(10 YR=16.52 cfs)30"
(25 YR=22.92 cfs)30"
(100 YR=25.98 cfs)30"

PIPE D
(DSPS =13.68 cfs)24"
(10 YR=23.06 cfs)30"
(25 YR=27.92 cfs)30"
(50 YR=32.00 cfs)36"
(100 YR=36.28 cfs)36"

PROPOSED EQUIPMENT STORAGE BUILDING
FIRST FLOOR ELEV = 1176.50
(ARCH FF=100.00)
FLOOD PLAIN ELEV=1173.5

BIOFILTRATION BASIN

PIPE B
(10 YR=5.34 cfs)
(50 YR= 7.41 cfs)
(100 YR=7.65 cfs)

PIPE C

SCALE: 1" = 30'
30' 0 30' 60'
NORTH

CIVIL LANDSCAPE AND RESTORATION PLAN SOUTH

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION
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PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:
MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

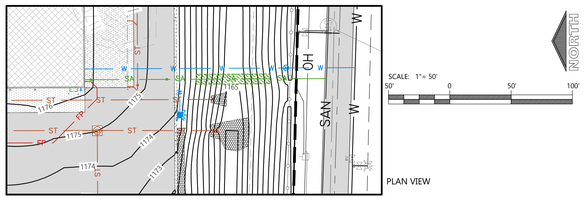
PROFESSIONAL SEAL

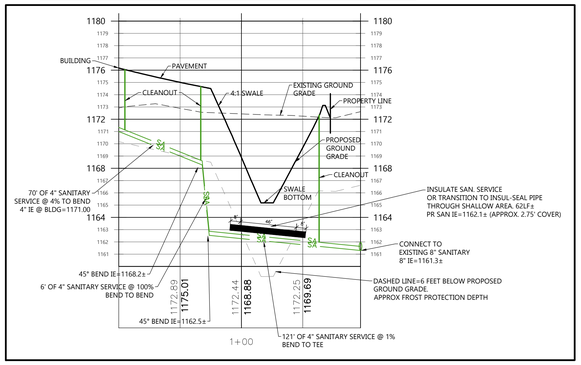
PRELIMINARY DATES
JULY 23, 2026

NOT FOR CONSTRUCTION

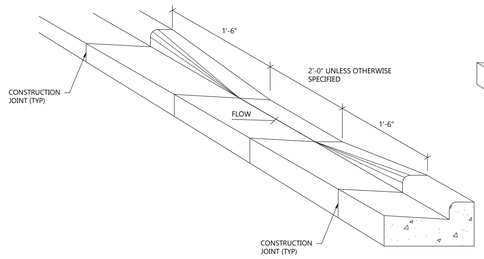
JOB NUMBER
250008600

SHEET NUMBER
C1.4B

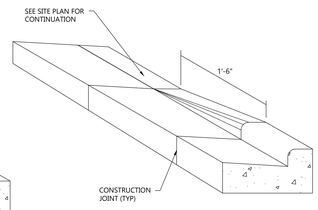




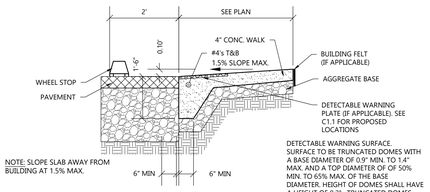
SANITARY INSULATION CROSS SECTION
NOT TO SCALE



CURB CUT DETAIL
NOT TO SCALE

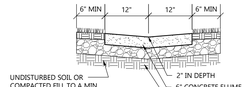


CURB TAPER DETAIL
NOT TO SCALE

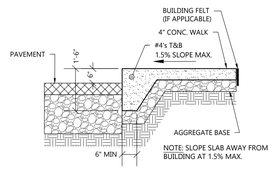


DETECTABLE WARNING SURFACE. SURFACE TO BE TRUNCATED DOMES WITH A BASE DIAMETER OF 0.9" MIN. TO 1.4" MAX. AND A TOP DIAMETER OF OF 50% MIN. TO 65% MAX. OF THE BASE DIAMETER. HEIGHT OF DOMES SHALL HAVE A HEIGHT OF 0.2". TRUNCATED DOMES SHALL HAVE A CENTER-TO-CENTER SPACING OF 1.6" MIN. AND 2.4" MAX. AND A BASE-TO-BASE SPACING OF 0.65" MIN. MEASURED BETWEEN THE MOST ADJACENT DOMES ON THE GRID. DOMES SHALL BE ALIGNED IN A SQUARE GRID PATTERN.

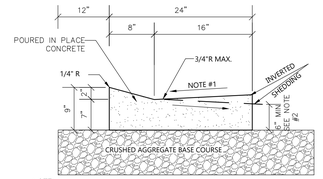
FLUSH WALK DETAIL
NOT TO SCALE



CONCRETE FLUME DETAIL (LAWN)
NOT TO SCALE

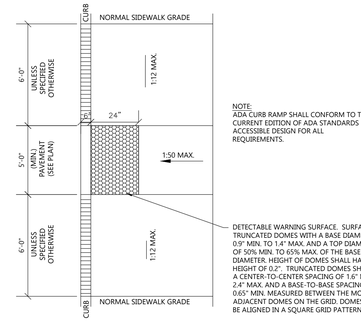


RAISED WALK DETAIL
NOT TO SCALE



NOTE:
1. USE 4% GUTTER CROSS SLOPE UNLESS OTHERWISE NOTED IN THE PLANS.
2. THE BOTTOM OF CURB AND GUTTER MAY BE CONSTRUCTED EITHER LEVEL OR PARALLEL TO THE SLOPE OF THE SUBGRADE OR BASE AGGREGATE PROVIDED A 6" MIN. GUTTER THICKNESS IS MAINTAINED.
3. SEE SITE PLAN & GRADING PLAN FOR INVERTED & SHEDDING CURB LOCATIONS

24" MOUNTABLE CURB & GUTTER DETAIL
NO SCALE



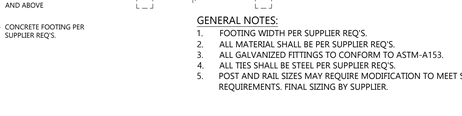
ADA SIDEWALK RAMP DETAIL
NOT TO SCALE



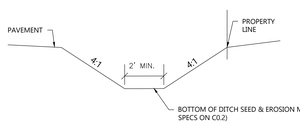
MAX PONDING ELEVATIONS:
1 YEAR, 24-HOUR=1164.72
2 YEAR, 24-HOUR=1165.00
10 YEAR, 24-HOUR=1165.97
25 YEAR, 24-HOUR=1166.62
100 YEAR, 24-HOUR=1167.66

ENGINEERED SOIL
THE NATIVE SAND SHALL BE WASHED USDA SAND, 0.02 TO 0.04 INCHES IN DIAMETER. THE COMPOST COMPONENT SHALL MEET THE REQUIREMENTS OF WISCONSIN DEPARTMENT OF NATURAL RESOURCES SPECIFICATION 5100. ENGINEERED SOIL MIX SHALL HAVE A PH BETWEEN 5.5 AND 6.5.

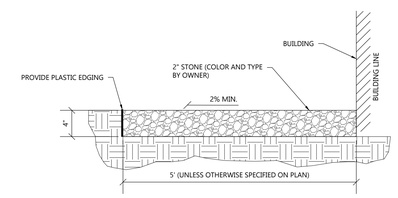
BIOFILTRATION BASIN
NOT TO SCALE



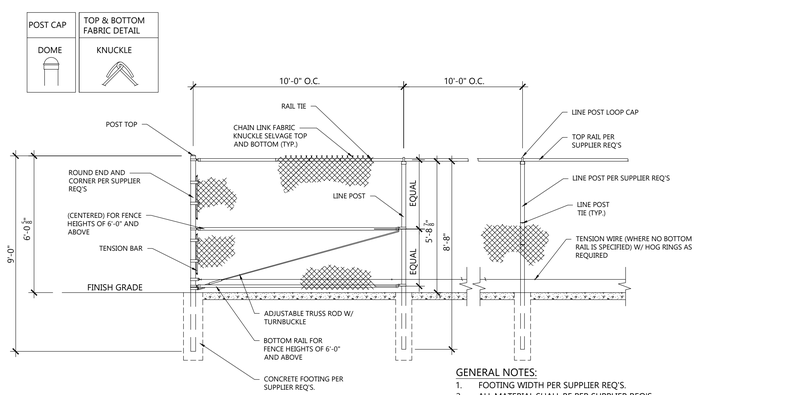
WEST SWALE X-SECTION
NOT TO SCALE



EAST SWALE X-SECTION
NOT TO SCALE

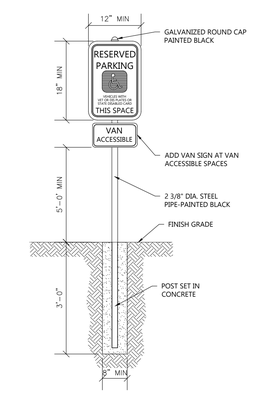


STONE STRIP DETAIL
NOT TO SCALE



GENERAL NOTES:
1. FOOTING WIDTH PER SUPPLIER REQ'S.
2. ALL MATERIAL SHALL BE PER SUPPLIER REQ'S.
3. ALL GALVANIZED FITTINGS TO CONFORM TO ASTM-A153.
4. ALL TIES SHALL BE STEEL PER SUPPLIER REQ'S.
5. POST AND RAIL SIZES MAY REQUIRE MODIFICATION TO MEET SPECIFIC PROJECT REQUIREMENTS. FINAL SIZING BY SUPPLIER.

6' HIGH CHAINLINK FENCE DETAIL
NOT TO SCALE



HANDICAP SIGNAGE WITH CONCRETE BASE DETAIL
NOT TO SCALE

CIVIL DETAILS

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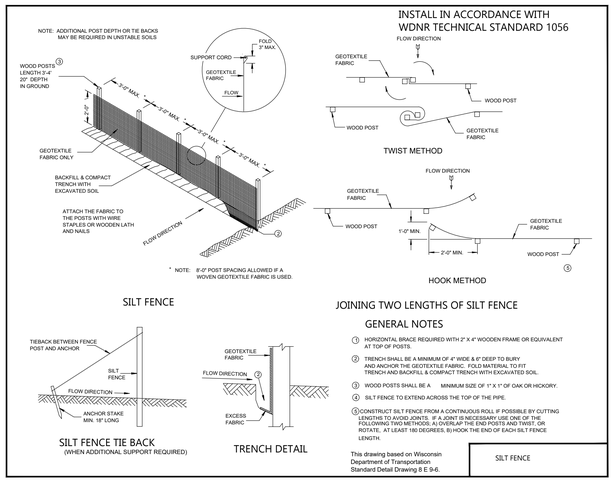
PROFESSIONAL SEAL

PRELIMINARY DATES
APR. 15, 2026
JULY 14, 2026
JULY 23, 2026

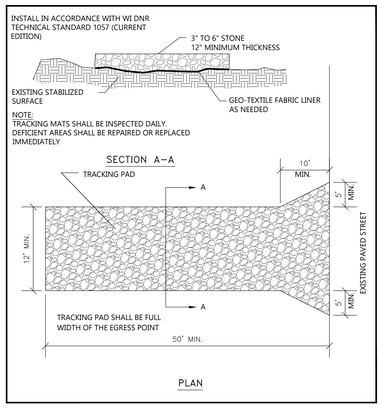
NOT FOR CONSTRUCTION

JOB NUMBER
250008600

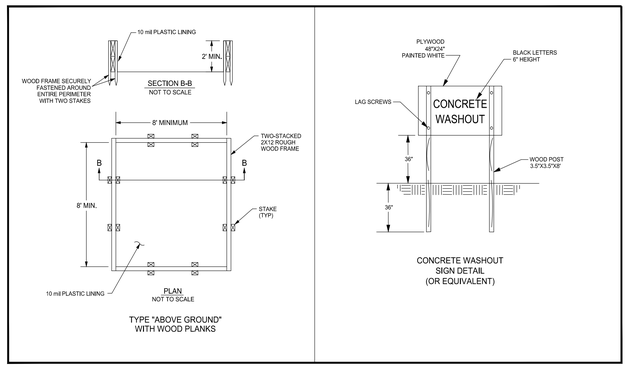
SHEET NUMBER
C2.0



SILT FENCE - INSTALLATION DETAIL
NOT TO SCALE



TRACKPAD DETAILS
NOT TO SCALE



CONCRETE WASHOUT DETAIL
NOT TO SCALE

GENERAL NOTES

DETAILS OF CONSTRUCTION, MATERIALS AND WORKMANSHIP NOT SHOWN ON THIS DRAWING SHALL CONFORM TO THE PERTINENT REQUIREMENTS OF THE WISCONSIN DEPARTMENT OF NATURAL RESOURCES TECHNICAL STANDARD NO. 1053 (CHANNEL EROSION MAT).

VARIATIONS IN THE DIMENSIONS OR MATERIALS SHOWN HEREON SHALL BE PERMITTED IF THEY PROVIDE EQUIVALENT PROTECTION AND MATERIAL STRENGTH AND IF PRIOR APPROVAL OF THE ENGINEER IS OBTAINED.

LAP JOINTS SHALL NOT BE PLACED IN THE BOTTOM OF V–SHAPED DITCHES.

JUNCTION SLOTS ON ADJACENT STRIPS OF MATTING SHALL BE STAGGERED A MINIMUM OF 4 FEET APART.

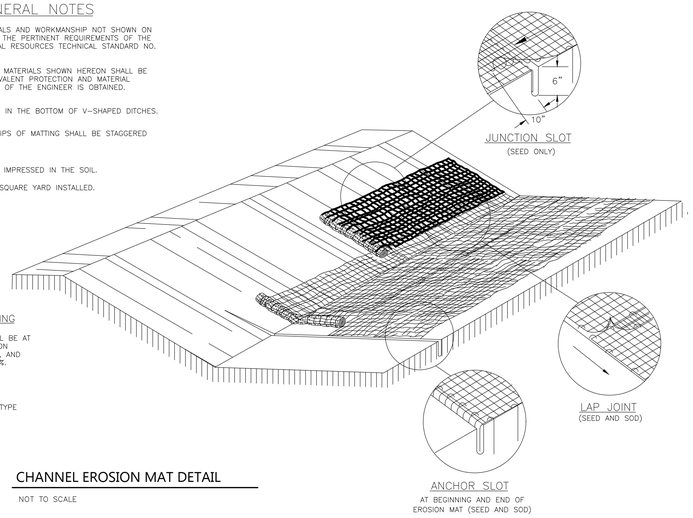
EDGES OF EROSION MAT SHALL BE IMPRESSED IN THE SOIL.

EROSION MAT SHALL PAID BY THE SQUARE YARD INSTALLED.

EROSION MAT OVER SEEDING

JUNCTION OR ANCHOR SLOTS SHALL BE AT MINIMUM INTERVALS OF 100 FEET ON GRADES UP TO AND INCLUDING 3%, AND 50 FEET ON GRADES EXCEEDING 3%.

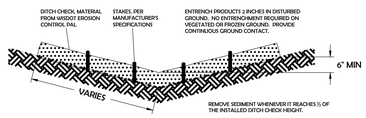
NOTE:
SEE SPECIFICATIONS FOR MATTING TYPE



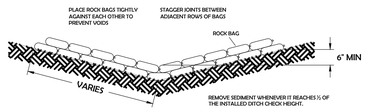
CHANNEL EROSION MAT DETAIL
NOT TO SCALE

DITCH CHECK DETAIL

LOG-TYPE DITCH CHECK



ROCK BAG DITCH CHECK

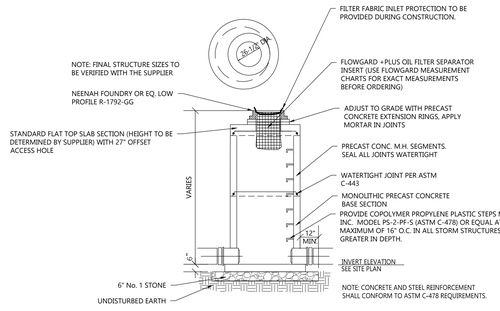


FILL BAGS WITH AGGREGATE CONFORMING TO THE FOLLOWING GRADATION (WISDOT NO. 1 COARSE AGGREGATE)

SIEVE	PERCENT PASSING BY WEIGHT
2-INCH	-
1½"-INCH	-
1-INCH	100
¾"-INCH	90-100
⅜"-INCH	20-55
No. 4	0-10
No. 8	0-5

PROVIDE BAGS MADE OF HIGH-DENSITY POLYETHYLENE OR GEOTEXTILE FABRIC

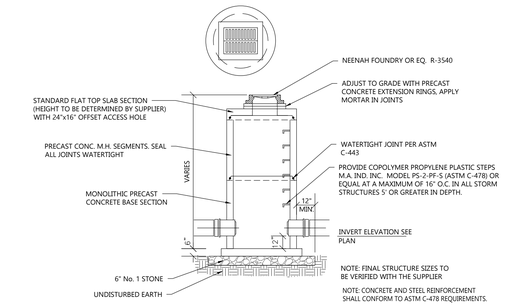
BAGS SHALL HAVE A MINIMUM IN-PLACE FILLED SIZE OF 18 INCHES LONG BY 12 INCHES WIDE BY 6 INCHES HIGH



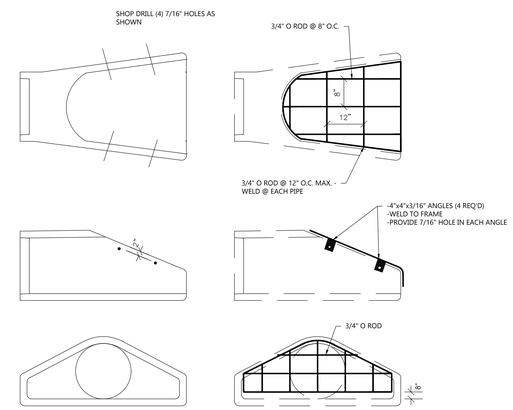
NOTE: FLOWGARD +PLUS CATCHBASIN INSERT SHALL BE MAINTAINED IN ACCORDANCE WITH THE MANUFACTURER'S GUIDELINES, WHICH AT A MINIMUM SHALL BE THREE INSPECTIONS PER YEAR AND A FILTER MEDIUM CHANGE ONCE PER YEAR.

ALTERNATE NOTE: THE OIL/WATER SEPARATOR FILTER MAY BE PROVIDED AS AN ELIMINATOR SYSTEM W/ ELIMO-PILLOW OR EQUIVALENT.

STORM CATCH BASIN W/ OIL SEPARATOR DETAIL
NOT TO SCALE



STORM SQUARE INLET W/ SUMP DETAIL
NOT TO SCALE

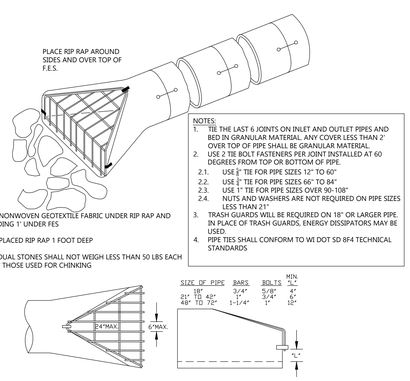


- THE CONTRACTOR SHALL BOLT THE GRATE TO THE CONCRETE END WALL WITH FOUR 3/8" x 6" MACHINE BOLTS WITH NUTS ON INSIDE WALL.
- APPLICABLE FOR PIPE SIZES 18" AND GREATER.

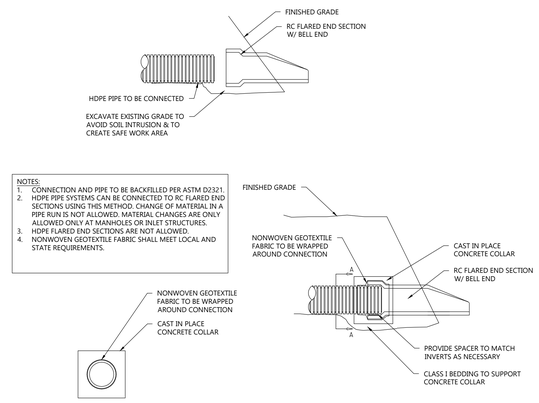
PAINTING SPECIFICATIONS
THE PIPE GRATE SHALL RECEIVE THE FOLLOWING PREPARATION & PAINTING, SEE NOTES: FIRST COAT- RUST-OLEUM X-60 RED BARE METAL PRIMER OR EQUAL
SECOND COAT- RUST-OLEUM 960 ZINC CHROMATE PRIMER OR EQUAL
THIRD COAT- RUST-OLEUM 1282 HIGH GLOSS & METALLIC FINISH OR EQUAL.

NOTES:
- BARE SURFACES - AFTER THROUGH SCRAPING, WIRE BRUSHING & CLEANING, APPLY THE THREE COAT SYSTEM LISTED.
- EACH COAT AN OVERALL COAT
- ALLOW 24-48 HOURS DRYING TIME BETWEEN COATS.

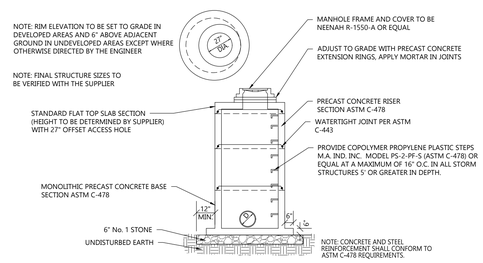
GRATE INSTALLATION DETAIL
NOT TO SCALE



CONCRETE END SECTION DETAIL
NOT TO SCALE



CONNECTION DETAIL FOR HDPE PIPE TO RC FLARED END SECTION BELL END
NOT TO SCALE



STORM MANHOLE DETAIL
NOT TO SCALE

CIVIL DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION
Miron
Building Excellence
Miron Construction Co., Inc.
1471 McMahon Drive
Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:
MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

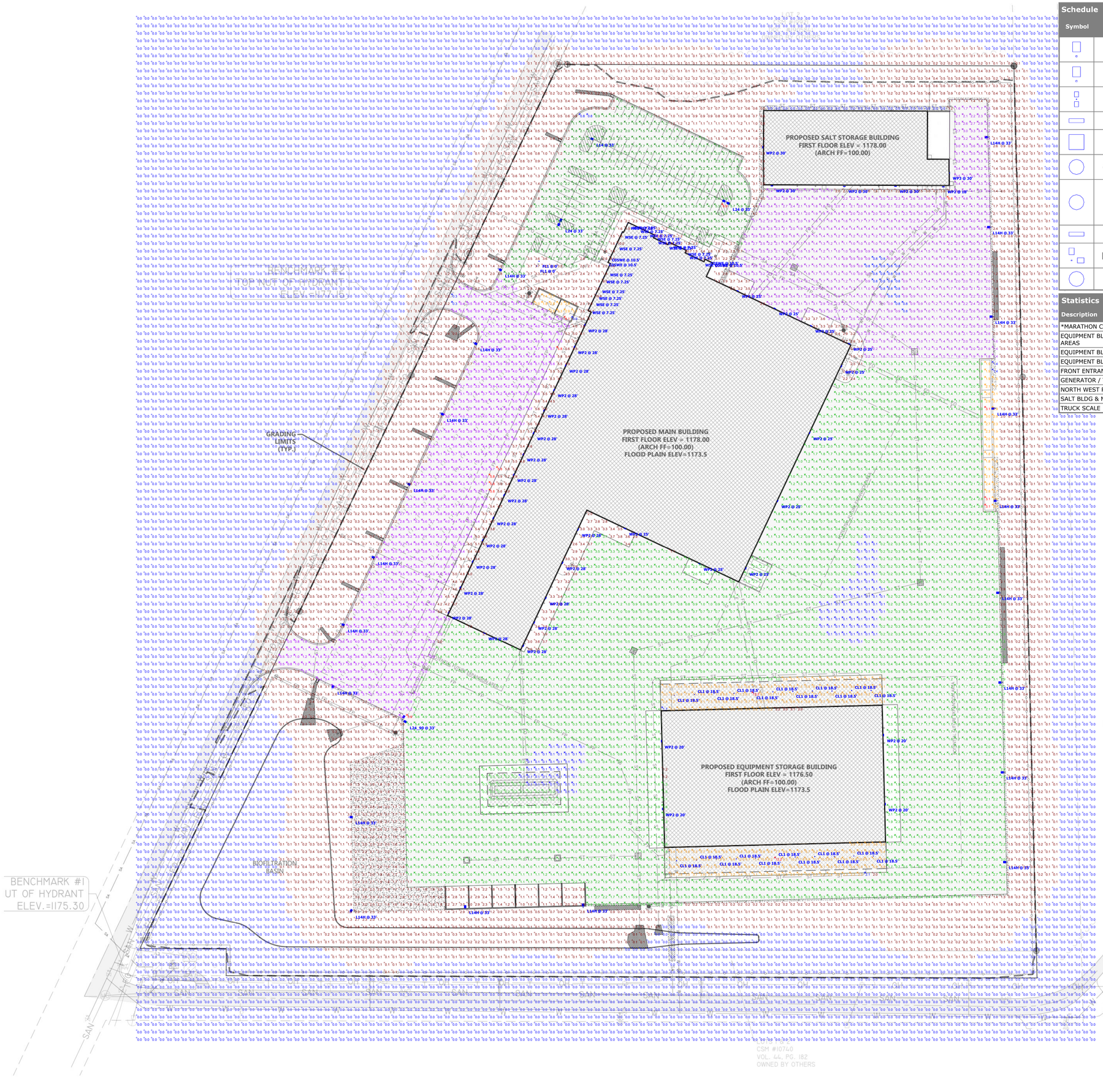
PROFESSIONAL SEAL

PRELIMINARY DATES
APR. 15, 2026
JULY 14, 2026
JULY 23, 2026

NOT FOR CONSTRUCTION

JOB NUMBER
250008600

SHEET NUMBER
C2.1

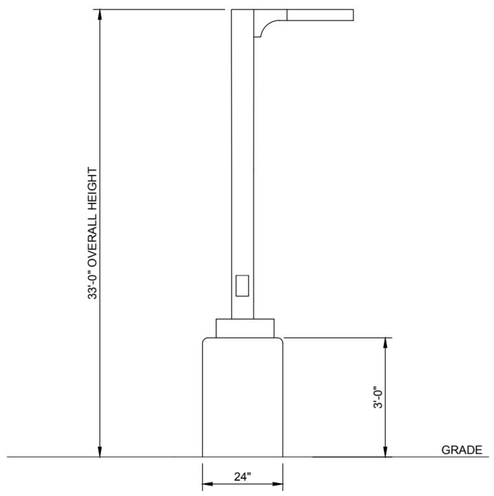


Schedule

Symbol	Label	Catalog Number	Description	Lumens per Lamp	Wattage
	L14	DSX2 LED P4 40K 70CRI TFTM	D-Series Size 2 Area Luminaire P4 Performance Package 4000K CCT 70 CRI Forward Throw	35808	272.65
	L14H	DSX2 LED P4 40K 70CRI TFTM HS	D-Series Size 2 Area Luminaire P4 Performance Package 4000K CCT 70 CRI Forward Throw Houseside Shield	30029	272.6516
	L24	DSX2 LED P4 40K 70CRI TFTM	D-Series Size 2 Area Luminaire P4 Performance Package 4000K CCT 70 CRI Forward Throw	35808	545.3
	WP2	DSXW2 LED P7 40K 70CRI TFTM	14000 4000K 70CRI 70CRI Forward Throw Medium	14565	103.84
	CL1	CNY LED ALO @10000L SWW2 @40K UVOLT PE PIR DDB	CNY LED ALO SWW2 UVOLT PE PIR DDB 40K 10000L	9877	72.84
	C05WE	IVO4 D 07LM 40K 80CRI MD BEV ARS	IVO4 Downlight 700 Lumens 4000K 80+ CRI Medium Batwing Downlight Bevel Clear Anodized Semi-Specular	587	7.337
	WSE	GL-6543-B-CC-R3-TBL-A	BRIDGELUX LED 3.75"DIA CYLINDER PHOENIX SCONCE LUMINAIRE SEMI-SPEC 30DEG REFL w/CLEAR ACRYLIC FLAT LENS THOMAS RESEARCH PRODUCTS REMOTE DRIVER #LED20W-48-C0350-D	848	13
	WP3	DSXW2 LED P7 40K 80CRI T3M	14000 4000K 80CRI Type 3 Medium	12982	103.84
	L24_90	DSX2 LED P4 40K 80CRI TFTM	D-Series Size 2 Area Luminaire P4 Performance Package 4000K CCT 80 CRI Forward Throw	32856	545.3
	FL1	DSXF1 LED P2 40K NSP	DSXF1 LED P2 40K NSP	Absolute	42

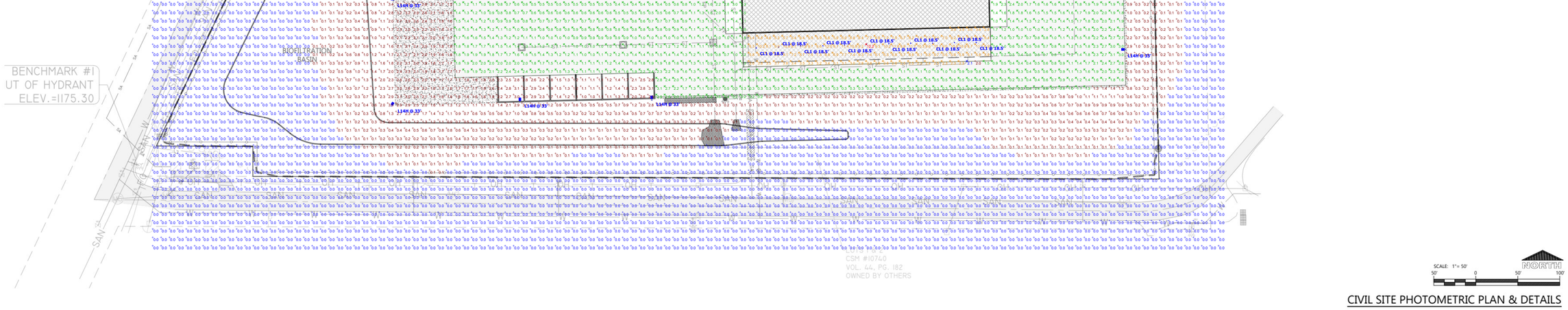
Statistics

Description	Symbol	Avg	Max	Min	Max/Min	Avg/Min
*MARATHON CO OVERALL SITE	+	0.9 fc	30.9 fc	0.0 fc	N/A	N/A
EQUIPMENT BLDG, FUEL CANOPY, & MAIN BLDG DRIVE AREAS	X	1.2 fc	5.9 fc	0.1 fc	59.0:1	12.0:1
EQUIPMENT BLDG. CANOPY	X	6.5 fc	12.2 fc	2.1 fc	5.8:1	3.1:1
EQUIPMENT BLDG. CANOPY	X	6.5 fc	12.2 fc	1.7 fc	7.2:1	3.8:1
FRONT ENTRANCES AND WEST DRIVEWAYS	X	3.7 fc	5.8 fc	0.3 fc	19.3:1	12.3:1
GENERATOR / TRANSFORMER	X	2.5 fc	4.1 fc	0.9 fc	4.6:1	2.8:1
NORTH WEST PARKING AREA	X	2.6 fc	6.9 fc	0.8 fc	8.6:1	3.3:1
SALT BLDG & MAIN BLDG DRIVE AREA	X	2.1 fc	6.6 fc	0.8 fc	8.3:1	2.6:1
TRUCK SCALE	X	2.2 fc	3.1 fc	1.4 fc	2.2:1	1.6:1



LIGHT POLE DETAIL

NO SCALE



CIVIL SITE PHOTOMETRIC PLAN & DETAILS

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION
Miron
Building Excellence
Miron Construction Co., Inc.
1471 McMahon Drive
Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:

MARATHON COUNTY HIGHWAY COMMISSION

OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

PRELIMINARY DATES
JULY 14, 2026
JULY 23, 2026

NOT FOR CONSTRUCTION

JOB NUMBER
250008600

SHEET NUMBER
C3.1



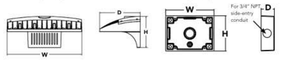
d*series

D-Series Size 2
LED Wall Luminaire

Catalog Number
Notes
Type

Specifications
Luminaire
Width: 18-1/2" (47.0 cm) **Weight:** 21 lbs (9.5 kg)
Depth: 10" (25.4 cm)
Height: 7-5/8" (19.4 cm)

Back Box (BBW)
Width: 5-1/2" (14.0 cm) **BBW Weight:** 1 lbs (0.5 kg)
Depth: 1-1/2" (3.8 cm)
Height: 4" (10.2 cm)



A+ Capable Luminaire
This item is an A+ capable luminaire, which has been designed and tested to provide consistent color appearance and system-level interoperability.

- All configurations of this luminaire meet the Acuity Brands' specification for chromatic consistency
- This luminaire is A+ Certified when ordered with DTL® controls marked by a shaded background. DTL DLL equipped luminaires meet the A+ specification for luminaire to photocontrol interoperability
- This luminaire is part of an A+ Certified solution for ROAM® or XPoint™ Wireless control networks, providing out-of-the-box control compatibility with simple commissioning, when ordered with drivers and control options marked by a shaded background

To learn more about A+, visit www.acuitybrands.com/aplus.

1. See ordering tree for details.
2. A+ Certified Solutions for ROAM require the order of one ROAM node per luminaire. Sold Separately: Link to Roam; Link to DTL DLL

A+ Capable options indicated by this color background.

Ordering Information
EXAMPLE: DSXW2 LED P2 40K 70CRI T3M MVOLT SRM DDBTXD

DSXW2 LED

Series	Lumen Package	CCT	CRI	Distribution	Voltage	Mounting	Control Options
DSXW2 LED	P1 4200 Lumens P2 5300 Lumens P3 6100 Lumens P4 7200 Lumens P5 8200 Lumens P6 10000 Lumens P7 14500 Lumens	27K 2700K 30K 3000K 35K 3500K 40K 4000K 50K 5000K 57K 5700K AMBPC Amber PC[1] AMBLW Amber LW[1]	70CRI 70CRI 80CRI 80CRI[2] AMCRI Amber CRI	T2S Type 2 Short T2M Type 2 Medium T3LG Type 3 Low Glare[3] T3M Type 3 Medium T4M Type 4 Medium TFTM Forward Throw Medium BLC3 Back Light Control Type 3[3] BLC4 Back Light Control Type 4[3]	MVOLT 120-277V[4] 208[5] 240[5] 277[5] 347[5,6] 480[5,6] HVOLT*	**Shipped included** SRM Surface-mounting bracket **Shipped separately**[7] BBW Surface-mounted back box (for conduit entry)	**Shipped included** PE Photoelectric cell, button type[8] PER NEMA twist-lock receptacle only (control ordered separately)[8,9] PERS Five-wire receptacle only (control ordered separately)[8,9] PERT Seven-wire receptacle only (control ordered separately)[8,9]

Other Options	Finish (required)
Shipped installed SF Single fuse (120, 277, 347V)[5] DF Double fuse (208, 240, 480V)[5] HS House-side shield SPD Separate surge protection[10]	**Shipped separately**[10] BSW Bird-deterrent spikes VG Vandal guard
DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White	DSSTXD Sandstone DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum	DWHGXD Textured white DSSTXD Textured sandstone

LITHONIA LIGHTING
COMMERCIAL OUTDOOR
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DSXW2 LED
Rev. 05/19/26
Page 1 of 4

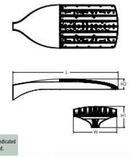


d*series

D-Series Size 2
LED Area Luminaire

Catalog Number
Notes
Type

Specifications
EPA: 1.06 ft² (0.10 m²)
Length: 40.59" (103.1 cm)
Width: 16.76" (42.6 cm)
Height H1: 8.11" (20.6 cm)
Height H2: 3.96" (10.1 cm)
Weight: 46 lbs (20.9 kg)



Introduction
The modern styling of the D-Series features a highly refined aesthetic that blends seamlessly with its environment. The D-Series offers the benefits of the latest in LED technology into a high performance, high efficacy, long-life luminaire.
The outstanding photometric performance results in sites with excellent uniformity, greater pole spacing and lower power density. D-Series outstanding photometry aids in reducing the number of poles required in area lighting applications with typical energy savings of up to 80% vs. 1000W HID and expected service life of over 100,000 hours.

design select
Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect.
*See ordering tree for details

Design Select options indicated by this color background.

Ordering Information
EXAMPLE: DSX2 LED P7 40K 70CRI T3M MVOLT SPA NLTAIR2 PIRHN DDBXD

DSX2 LED

Series	LEDs	Color temperature[1]	Color Rendering Index[1]	Distribution	Voltage	Mounting
DSX2 LED	**Forward optics** P1 P5 P2 P6 P3 P7 P4 P8 **Rotated optics** P10[2] P13[2] P11[2] P14[2] P12[2]	(this section 70CRI only) 30K 3000K 40K 4000K 50K 5000K 27K 2700K 30K 3000K 35K 3500K 40K 4000K 50K 5000K	70CRI 70CRI 70CRI 80CRI 80CRI 80CRI 80CRI 80CRI	AFR Automotive front row TFTM Forward throw medium T5M Type V medium T5LG Type V low glare T5W Type V wide BLC3 Type III backlight control[3] BLC4 Type IV backlight control[3] LCCO Left corner cutoff[3] RCCO Right corner cutoff[3]	MVOLT (120V-277V)[4] HVOLT (347V-480V)[5,6] XVOLT (277V-480V)[5,6] 120[5,6,7] 208[5,6,7] 240[5,6,7] 277[5,6,7] 347[5,6,7] 480[5,6,7]	**Shipped included** SPA Square pole mounting (4ft drilling) RPA Round pole mounting (4ft drilling) SPAS Square pole mounting (ft drilling)[7] RPAS Round pole mounting (ft drilling)[7] SPABN Square narrow pole mounting (ft drilling) WBA Wall bracket[8] AA Mast arm adapter (mounts on 2 3/8" OD horizontal tenon)

Control options	Other options	Finish (required)
Shipped installed NLTAIR2 PIRHN nLight AIR gen 2 enabled with bi-level motion / ambient sensor, 8–40' mounting height, ambient sensor enabled at 2fc[11,12,13,14] PIR High/low, motion/ambient sensor, 8–40' mounting height, ambient sensor enabled at 2fc[11,12,13,14] PER NEMA twist-lock receptacle only (controls ordered separate)[15] PERS Five-pin receptacle only (controls ordered separate)[15,16]	**Shipped included** SF Single fuse (120V, 277V, 347V)[5] DF Double fuse (208V, 240V, 480V)[5] HS House-side shield[17] SPD Separate surge protection[18] PER7 Seven-pin receptacle only (controls ordered separate)[15,16] FAO Field adjustable output[11,19] BL30 Bi-level switched dimming, 30%[11,13] BL50 Bi-level switched dimming, 50%[11,13] DMG 0-10v dimming wires pulled outside fixture (for use with an external control, ordered separately)[11] DS Dual switching[11,20,21]	**Shipped separately** BSW Bird-deterrent spikes VG Vandal guard ELCR External Glare Shield (reversible, field install required, matches housing finish) RSDB Bird spikes (field install required)	DDBXD Dark Bronze DBLXD Black DNAXD Natural Aluminum DWHXD White DDBTXD Textured dark bronze DBLBXD Textured black DNATXD Textured natural aluminum DWHGXD Textured white

LITHONIA LIGHTING
COMMERCIAL OUTDOOR
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DSX2 LED
Rev. 09/26/25
Page 1 of 10

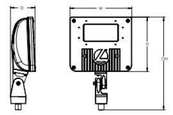


d*series

D-Series DSXF1
LED Floodlight

Catalog Number
Notes
Type

Specifications
EPA: 0.6 ft² (0.05 m²)
Depth: 3.52" (8.9 cm)
Width: 8.86" (22.5 cm)
Height: 7.84" (19.9 cm)
Overall Height 13.37" (34.0 cm)
Weight: 7.2 lbs (3.3 kg)



Introduction
The Solar DSXF1 floodlight feature a wide offering of six precision optics, two mountings and three color temperatures to meet your specific Solar floodlighting needs.
Solar DSXF1 delivers up to 5500 lumens, meeting a large breadth of illumination requirements for design and renovation when replacing 70W to 150W HID floodlights. All configurations are assembled in the USA allowing for quick delivery.
The solar version is compatible with Sol By Sunna Design's Solar Lighting Engine. The performance will be based on the project location and the available solar energy output. Contact Sol by Sunna Design Sales Team for a quote for your Lithonia Solar Lighting Solutions. email: sales@solarlighting.com or call: 1-800-959-1329

Sol by Sunna Design®

Ordering Information
EXAMPLE: DSXF1 LED P1 40K MSP SOLAR THK DDBXD

DSXF1 LED

Series	Performance Package	Color Temperature	Distribution	Voltage	Mounting
DSXF1 LED	P1 P2	30K 3000K 40K 4000K 50K 5000K	WFL Wide flood (60) FL Flood (105) MFL Medium flood (40) WFR Wide flood rectangular (60) HMF Horizontal medium flood (60) NSP Narrow spot (30)	SOLAR Only compatible with Sol By Sunna Design's Solar Lighting Solutions	**Shipped included** THK Knuckle with 1/2" NPT threaded pipe IS Integral slipfitter (fits 2-3/8" OD tenon)

Options	Finish (required)
Shipped installed CCO Coastal Construction	**Shipped separately**[1] UBV Upper/bottom visor (universal) FV Full visor VG Vandal guard WFL Wide flood (60) HMF Horizontal medium flood (60)	DDBXD Dark bronze DBLXD Black DNAXD Natural aluminum DWHXD White

Accessories[1]
Ordered and shipped separately.
DSXF1 SBKT DDBXD U Open bottom mini accessory (specify finish)
DSXF1 FV DDBXD U Full visor accessory (specify finish)
DSXF1 VG U Vandal guard accessory

For more mounting options, refer to mounting accessories pages.

NOTES
1. Also available as accessories; see Accessories information at left.

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DSXF1 LED SOLAR
Rev. 06/28/24
Page 1 of 6

CS CONTRACTOR SELECT

LITHONIA LIGHTING

Catalog Number
Notes
Type

Contractor Select™

CNY LED ALO
Canopy Luminaire Adjustable+Switchable+Photocell +Occupancy Sensor



Adjustable Lumen Output ALO
Switchable CCT 5WH2
Integrated Photocell
Integrated Motion Sensor
65 SR WHITE
LBE
IP65
HALO LOCATOR™
5 YEAR WARRANTY

The Lithonia Lighting CNY LED ALO canopy luminaire is a versatile, energy efficient solution for surface-mount applications for walkways, overhangs, and parking garages. Adjustable switch paired easily changes lumen output, color temperature, integrated photocell, and integrated motion sensor. The low profile frosted lens creates a visually comfortable illumination and even distribution.

FEATURES:
- 3 power levels deliver 5,000 - 10,000 lumens.
- Switchable CCT (30K/40K/50K) offers warm, cool, and daylight in a single fixture
- Integrated On/Off photocell
- Integrated occupancy sensor can be turned on, off, or set to 10% dim
- Install by surface mount, junction box, or pendant mount
- IK08 impact resistant polycarbonate frosted lens
- IP65 rated, die cast aluminum housing

Catalog Number	Adjustable Lumen Output ALO	Switchable CCT 5WH2	Photocell Operation	Occupancy Sensor	Input Voltage	CRI	Finish
CNY LED ALO 5WH2 SVOLT PE P10 DDB W2	5,000 Lumens / 7,500 Lumens / 10,000 Lumens	Switchable 3000K, 4000K,5000K	Included Standard, Selectable On/Off/10% Dim	Included Standard, Selectable On/Off/10% Dim	120-347V	80CRI	Dark Bronze
CNY LED ALO 5WH2 SVOLT PE P9R WH W2	5,000 Lumens / 7,500 Lumens / 10,000 Lumens	Switchable 3000K, 4000K,5000K	Included Standard, Selectable On/Off/10% Dim	Included Standard, Selectable On/Off/10% Dim	120-347V	80CRI	White

CNY Stock Options

Catalog Number	UPC	CI Code	Number of Fixtures per pallet	Traditional Replacement
CNY LED ALO 5WH2 SVOLT PE P9R DDB W2	0078758945165	*284868	160	Up to 250W MH
CNY LED ALO 5WH2 SVOLT PE P9R WH W2	0078758945226	*284869	180	Up to 250W MH

Lumen Output:
Lumen values are from photometric tests performed in accordance with IESNA LM-79-08. Data is considered to be representative of configurations shown within the tolerances described within LM-79.

Lumen Output	Input Wattage	CCT/CRI	Delivered Lumens	Lumens Per Watt
5,000	34	5000K	4169	139
		4000K	4794	147
		5000K	6777	145
7,500	52	3000K	7369	153
		4000K	7603	144
		5000K	7291	137
10,000	75	3000K	9504	121
		4000K	9894	136
		5000K	9529	125

Accessories: Order as separate catalog number.
CNYBCP DDB — 14 Inch x 14 Inch Beauty Cover Plate
CNYDLE7WC M12 — Field installable emergency battery, 7W, UVOLT compatible, Minimum operating temp of 0°C

CONTRACTOR SELECT CNY LED ALO
Page 1 of 2

CYLINDER
Outdoor ADA Wall Sconce

G Lighting
9777 Reavis Park Drive
St. Louis, MO 63123
800.331.2425 or 314.631.6000
sales@glighting.com www.glighting.com





GENERAL SPECIFICATION
LED: High efficiency high-power LED. Lumen maintenance +90% over 50,000 hour life. Light source is field replaceable.
Driver: Standard 1% 0-10V dimming. Max remote driver installation distance: 25ft from fixture body.Universal voltage 120-277V.
Body: Cast aluminum.
Mounting: Driver mounted in 4" square by 2 1/8" deep junction box: Steel City #52171 or equivalent (supplied by others)
Finish: Highly durable oven cured no VOC premium powder coat.
Surge Protection: External surge protector provided as standard.

SAMPLE CATALOG NUMBER:
GL-6540- B- R2 R2 TBL- A

MODEL NO.	LAMPING	REFLECTOR UP	REFLECTOR DOWN	FINISH	OPTIONS
GL-6540 W 5" in H 9 1/4" in E 4" in	**C.**LED30 **B.**LED35 **E.**LED40	Up **R2** 20° Fresnel Lens **R3** 30° Flat, Clear Lens	Down **R2** 20° Fresnel Lens **R3** 30° Flat, Clear Lens	Textured Powder: **TLV**-Light Verdigris **TWH**-Textured White **TBL**-Textured Black **TS**-Textured Silver **TBZ**-Textured Bronze **TST**-Stone	**A.** No Options **EL.** Emergency Ballast Remote mount up to 10' from light source in controlled environment with an extra temperature range of 32°-131°F.
GL-6541 W 5" in H 6" in E 4" in	**C.**LED30 **B.**LED35 **E.**LED40	Up **R5** 50° Flat, Clear Lens **CC** Closed Cap	Down **R5** 50° Flat, Clear Lens **CC** Closed Cap		
GL-6542 W 5" in H 7 5/8" in E 4" in	**C.**LED30 **B.**LED35 **E.**LED40	Up **R2** 20° Fresnel Lens **R3** 30° Flat, Clear Lens	Down **R5** 50° Flat, Clear Lens **CC** Closed Cap		
GL-6543 W 5" in H 7 5/8" in E 4" in	**C.**LED30 **B.**LED35 **E.**LED40	Up **R5** 50° Flat, Clear Lens **CC** Closed Cap	Down **R2** 20° Fresnel Lens **R3** 30° Flat, Clear Lens		

*All dimensions are nominal.

Light Source Definition

Code	Kelvin	Reflector	CRI	Specifications per side — Total Wattage	Rated Life Hrs	Delivered Lumens
LED30	3000K	20°	+80	14W	50000	1462*
		30°	+80	14W	50000	1030
		50°	+80	14W	50000	1284
LED35	3500K	20°	+80	14W	50000	1462*
		30°	+80	14W	50000	1030
		50°	+80	14W	50000	1284
LED40	4000K	20°	+80	14W	50000	1462*
		30°	+80	14W	50000	1030
		50°	+80	14W	50000	1284

Fixture is ETL listed for wet locations
Complete LM-79 data available at glighting.com

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G Lighting reserves the right to modify existing designs to improve appearance or function
lighting facts
04/25

gotham® EVO
Multiple Layers of Light

Luminaire Type:
Catalog Number:

General Illumination Round Downlight 4"



Feature Set
- Bounding Ray™ optical design
- Unitized optics mechanically attach the light engine to the lower reflector for complete optical alignment.
- 45° cutoff to source and source image
- Fully serviceable and upgradeable lensed LED light engine
- 70% lumen maintenance at 60,000 hours
- 2.5 MacAdam Ellipse; 85 CRI typical, 90+ CRI optional
- Fixtures are wet location, covered ceiling
- Available with 10% dimming, 1% dimming, or dim to dark
- Batwing distribution with feathered edges provides even illumination on horizontal and vertical surfaces.
- UGR of zero for fixtures aimed at nadir with a cut-off equal to or less than 650kg per CIE 117-1995 Discomfort Glare in Interior Lighting. UGR FAQ

design select
Items marked by a shaded background qualify for the Design Select program and ship in 15 days or less. To learn more about Design Select, visit www.acuitybrands.com/designselect.
*See ordering tree for details

Distribution



Superior Performance*

Nominal Lumens	250	500	750	1000	1500	2000	2500	3000	3500	4000	4500
Delivered Lumens	271	573	808	1001	1527	1994	2580	3110	3612	4120	4584
Wattage	3.1	7.2	7.9	8.8	13.7	19.5	25.7	31.2	38.4	35.4	40.1
Lumens per Watt	87.4	79.6	102.3	113.8	111.5	102.3	100.4	99.7	94.1	116	114

*Based on 3500K 4B LSS MMD 80CRI

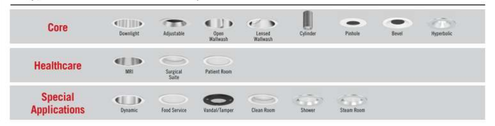
Coordinated Apertures I Multiple Layers of Light


General Illumination Layer I EVO


High Center Beam Layer I Incito


EVO + Incito — Multiple Layers of Light

COMPLEMENTARY PRODUCTS



EVD4
page 1 of 7
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SCALE: 1" = 50'
50' 0 50' 100'
NORTH

CIVIL SITE PHOTOMETRIC DETAILS

Section 5, ItemF.

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Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:
MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

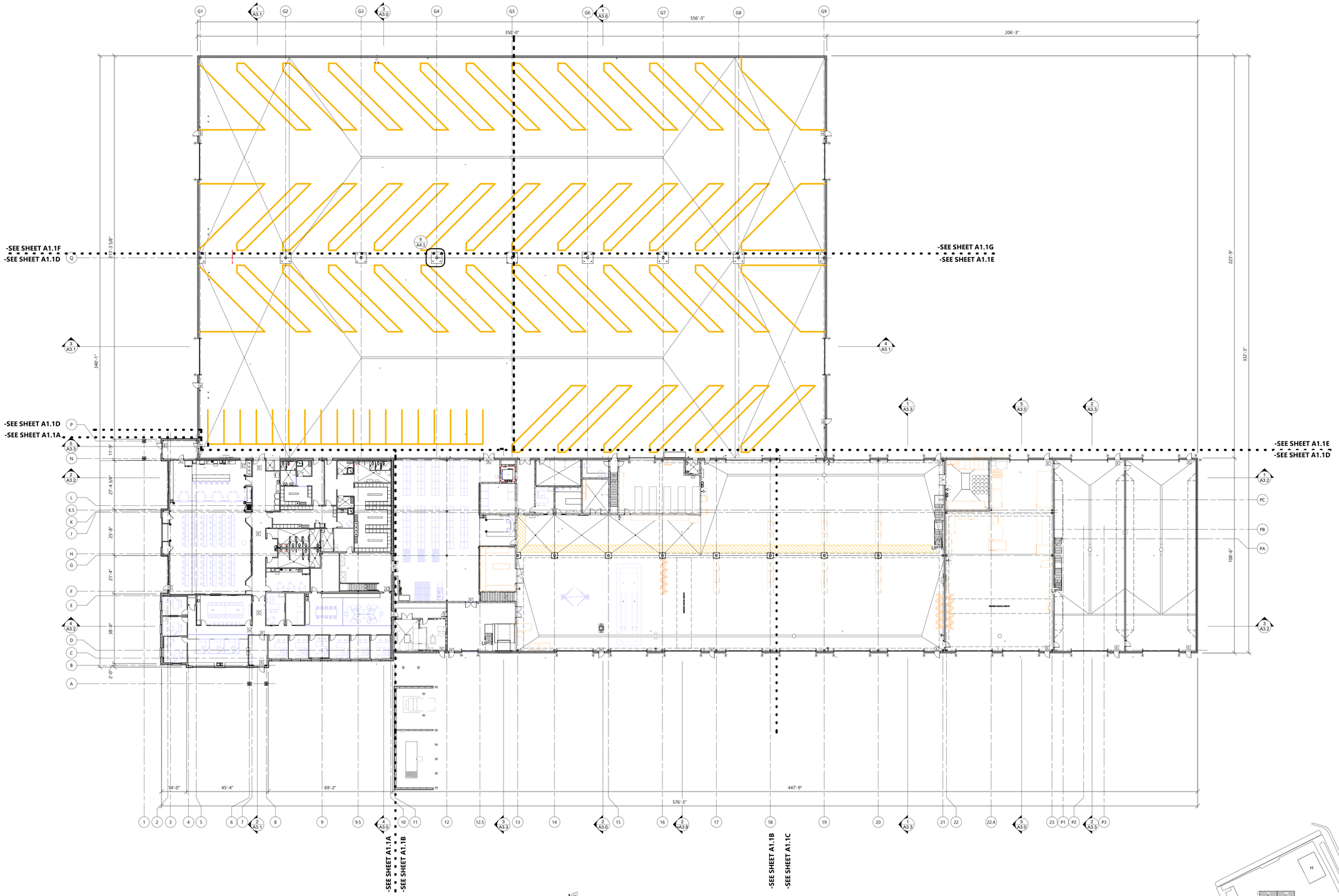
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PRELIMINARY DATES
JULY 23, 2026

NOT FOR CONSTRUCTION

JOB NUMBER
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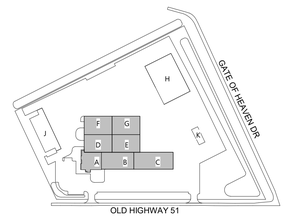
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FIRST FLOOR PLAN - OVERALL

SCALE: 3/64" = 1'-0"

0' 16' 32'



KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - MAIN BUILDING

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PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:

MARATHON COUNTY HIGHWAY COMMISSION

OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

PRELIMINARY DATES

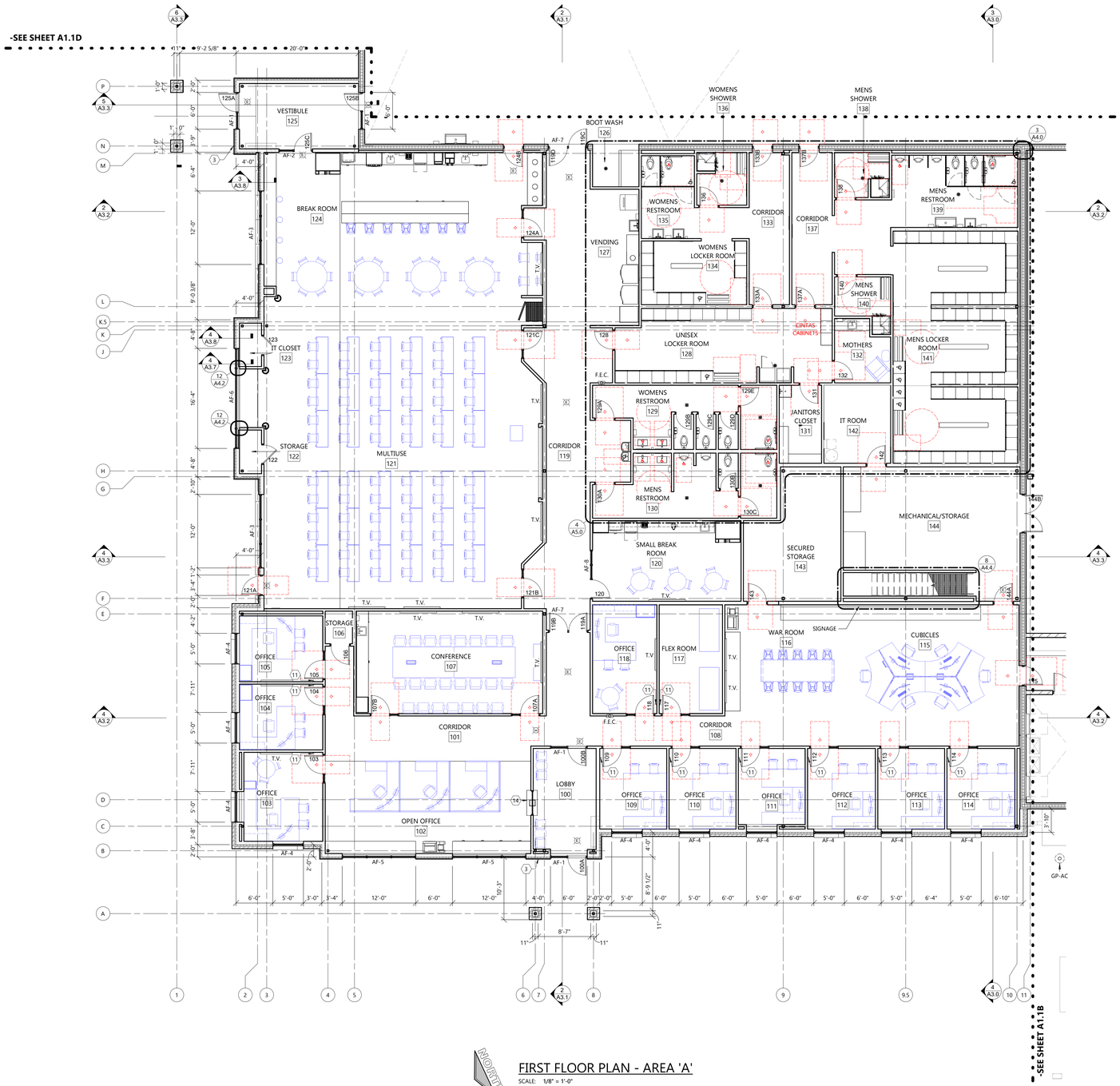
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JULY 23, 2026

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JOB NUMBER
250008600

SHEET NUMBER
A1.1

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FIRST FLOOR PLAN - AREA 'A'

SCALE: 1/8" = 1'-0"

0' 8' 16'

SYMBOLS LEGEND

- EM1 — EXTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- IW02 — INTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 3+3+GP — PRECAST WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 6M3.2 FW — FIRE RATED WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X — GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6.X FOR DETAILS
- STUD WALL
- MASONRY VENEER
- C.M.U. WALL

SEE PLAN FOR ALL WALL WIDTHS

NEW DOOR

GENERAL NOTES

- ALL INTERIOR DIMENSIONS ARE FROM FACE-OF-STUD TO FACE-OF-STUD.
- SEE SPECIFICATIONS FOR WORK BY OWNER. WORK BY OWNER SHOWN ON PLANS IS SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE SPECIFIC INSTALLATION REQUIREMENTS WITH OWNER/OWNER'S VENDOR.
- LOCATE ALL DOORS IN METAL STUD AND MASONRY WALLS 4" FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
- INSTALL FIRE-TREATED WOOD BLOCKING FOR OWNER AND CONTRACTOR PROVIDED FURNISHINGS, EQUIPMENT AND WINDOW TREATMENTS (VERIFY LOCATIONS).
- INSTALL GYPSUM BOARD CONTROL JOINT WITH 1/4" "V" REVEAL. POSITION ABOVE JAMB OF WALL OPENING.
- FILL EXTERIOR LIGHT GAUGE STUD FRAMING (CLOSED JAMBS, HEADERS, ETC.) WITH MINERAL WOOL INSULATION.
- COMPLETELY CONCEAL ALL SPRAY FOAM AT INTERIOR SIDE OF EXTERIOR WALLS WITH GYPSUM BOARD OR INTUMESCENT COATING (CODE REQUIRED THERMAL BARRIER).

FLOOR PLAN KEYNOTES

#	
3	PROPOSED KNOX BOX LOCATION. COORDINATE FINAL LOCATION(S) AND REQUIREMENT WITH LOCAL FIRE DEPARTMENT/BUILDING INSPECTOR.
11	INSTALL DOOR HOOKS - PURCHASED AND INSTALLED BY CONTRACTOR
14	READY ACCESS WINDOW. CONTRACTOR PROVIDED AND INSTALLED

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PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR: MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

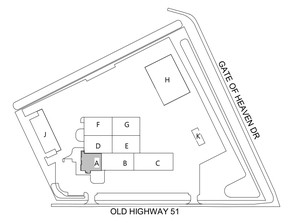
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JULY 14, 2026

NOT FOR CONSTRUCTION

JOB NUMBER 250008600

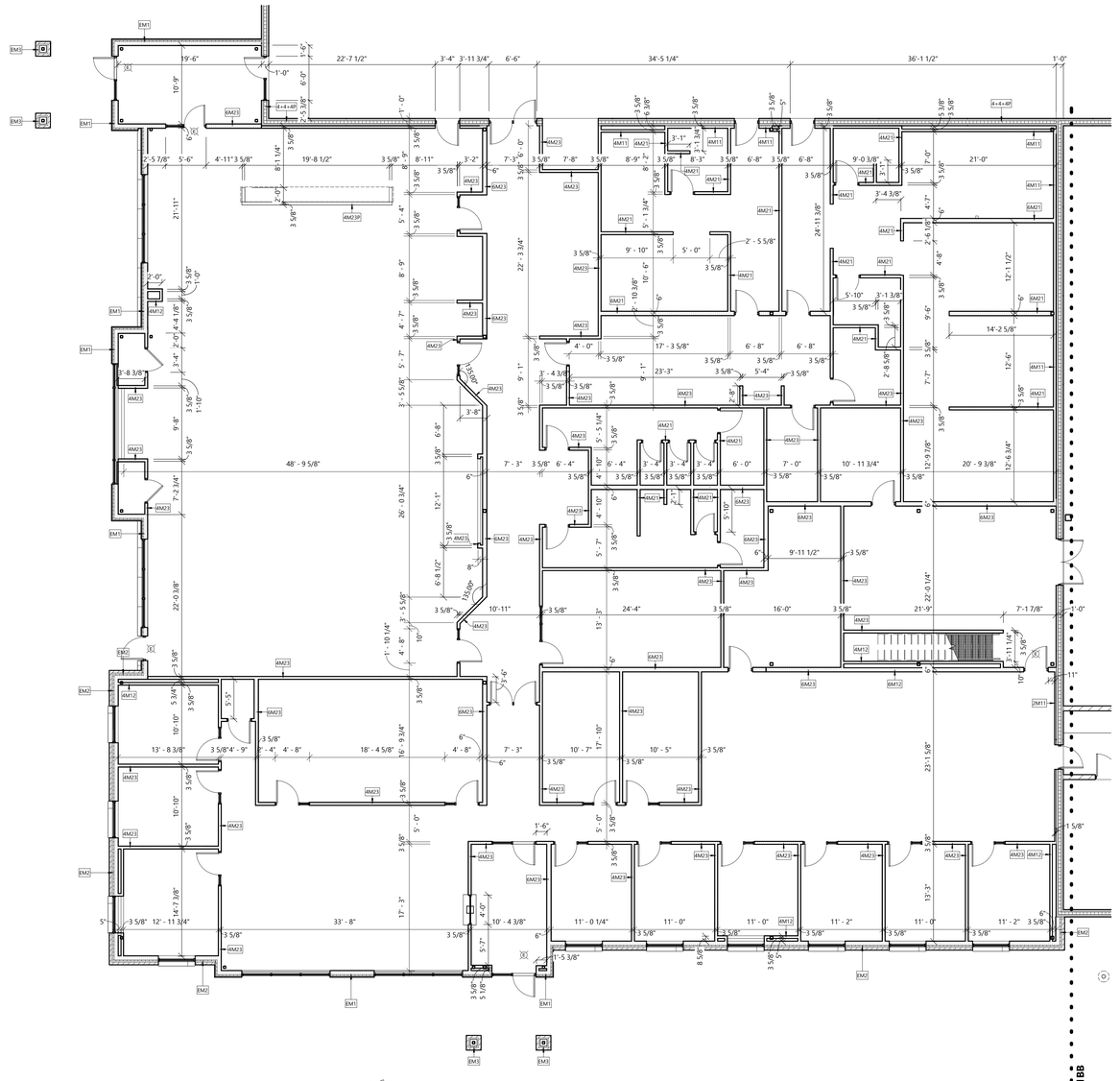
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KEY PLAN

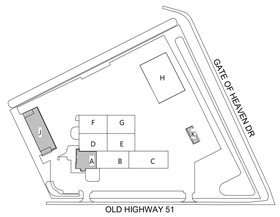
ARCHITECTURAL FIRST FLOOR PLAN - AREA 'A' - MAIN BUILDING

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FIRST FLOOR DIMENSION PLAN - AREA 'A'

SCALE: 1/8" = 1'-0"



KEY PLAN

ARCHITECTURAL FIRST FLOOR - INTERIOR DIMENSIONS - AREA 'A'

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PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:

MARATHON COUNTY HIGHWAY COMMISSION

OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

PRELIMINARY DATES

MAR. 27, 2026
APR. 15, 2026
JULY 14, 2026

NOT FOR CONSTRUCTION

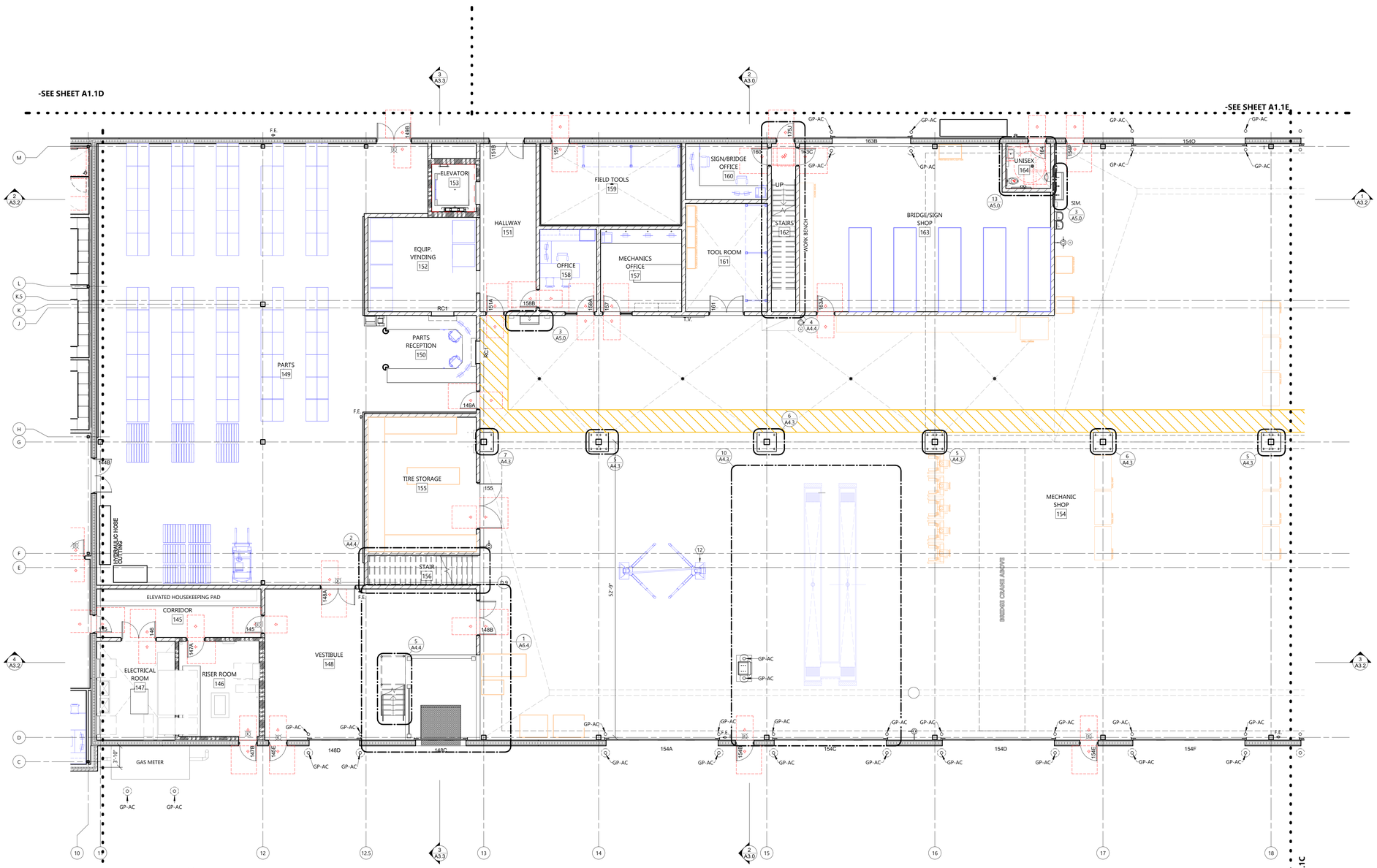
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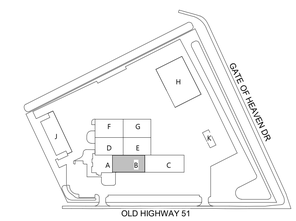
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FIRST FLOOR PLAN AREA "B"

SCALE: 1/8" = 1'-0"

0' 8' 16'



KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - AREA 'B' - MAIN BUILDING

SYMBOLS LEGEND

- EM1 — EXTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- IW22 — INTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 3+3+GP — PRECAST WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 6M23.2 FW — FIRE RATED WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X — GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6.X FOR DETAILS
- STUD WALL
- MASONRY VENEER
- C.M.U. WALL
- SEE PLAN FOR ALL WALL WIDTHS
- NEW DOOR

GENERAL NOTES

- ALL INTERIOR DIMENSIONS ARE FROM FACE-OF-STUD TO FACE-OF-STUD.
- SEE SPECIFICATIONS FOR WORK BY OWNER. WORK BY OWNER SHOWN ON PLANS IS SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE SPECIFIC INSTALLATION REQUIREMENTS WITH OWNER/OWNER'S VENDOR.
- LOCATE ALL DOORS IN METAL STUD AND MASONRY WALLS 4" FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
- INSTALL FIRE-TREATED WOOD BLOCKING FOR OWNER AND CONTRACTOR PROVIDED FURNISHINGS, EQUIPMENT AND WINDOW TREATMENTS (VERIFY LOCATIONS).
- INSTALL GYPSUM BOARD CONTROL JOINT WITH 1/4" "V" REVEAL. POSITION ABOVE JAMB OF WALL OPENING.
- FILL EXTERIOR LIGHT GAUGE STUD FRAMING (CLOSED JAMBS, HEADERS, ETC.) WITH MINERAL WOOL INSULATION.
- COMPLETELY CONCEAL ALL SPRAY FOAM AT INTERIOR SIDE OF EXTERIOR WALLS WITH GYPSUM BOARD OR INTUMESCENT COATING (CODE REQUIRED THERMAL BARRIER).

FLOOR PLAN KEYNOTES

12 TWO POST LIFT BY OWNER.

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PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:
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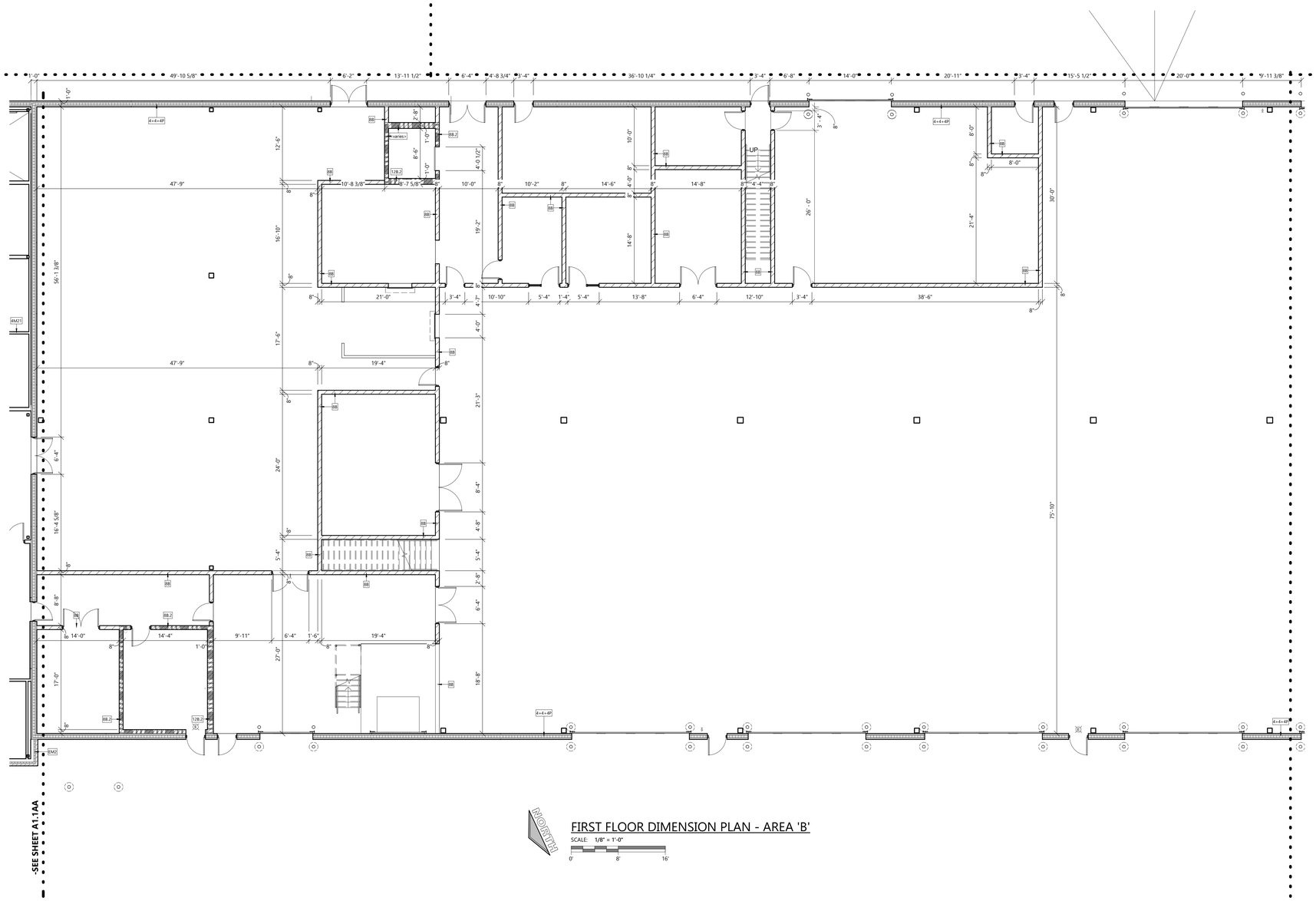
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MAR. 27, 2026
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JULY 23, 2026

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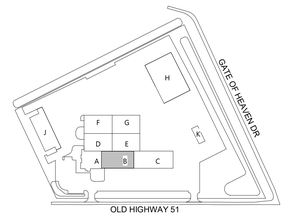
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SHEET NUMBER
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FIRST FLOOR DIMENSION PLAN - AREA 'B'



KEY PLAN

ARCHITECTURAL FIRST FLOOR - INTERIOR DIMENSIONS - AREA 'B'

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PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:
MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

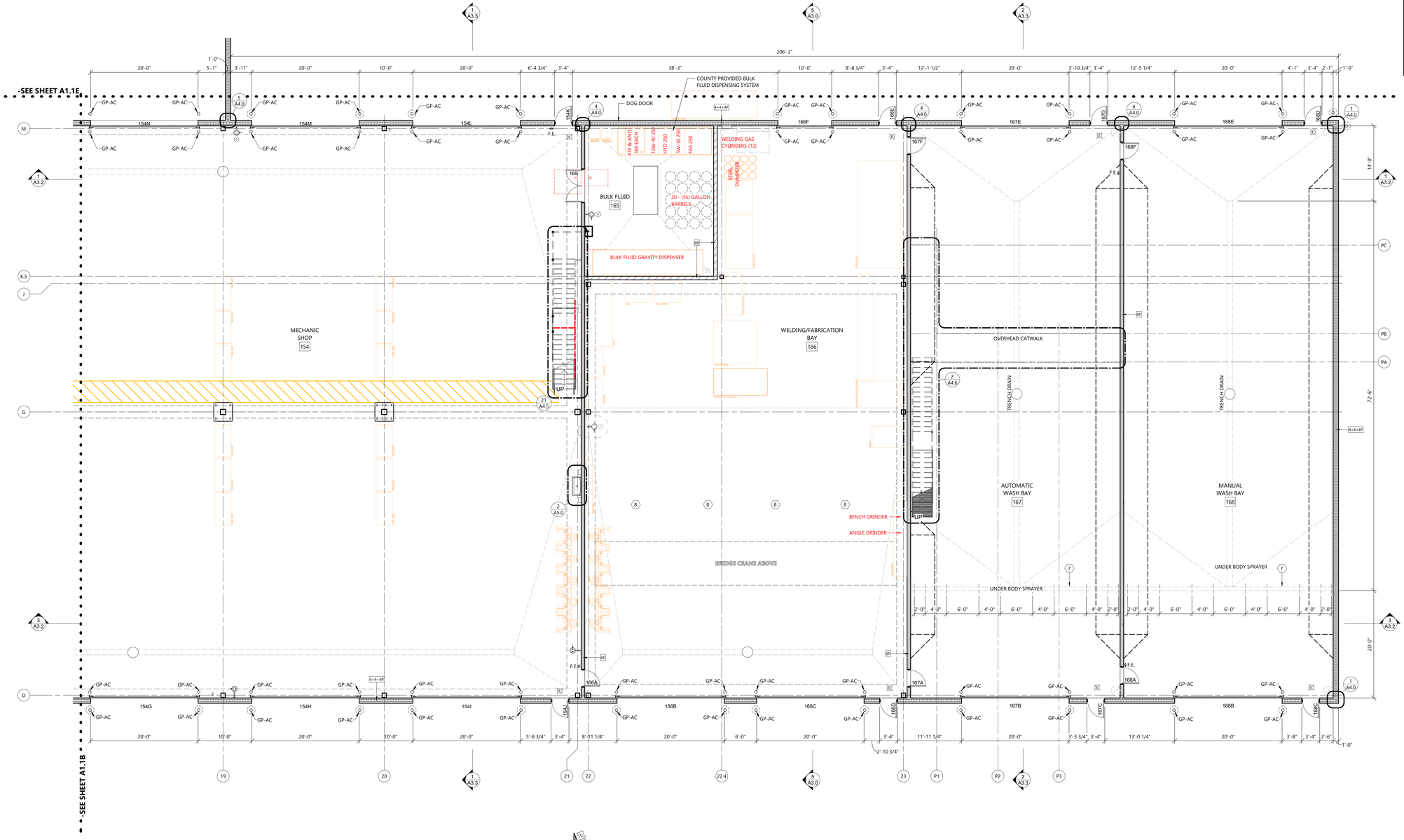
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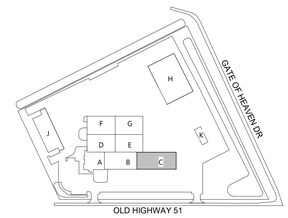
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FIRST FLOOR PLAN - AREA 'C'

SCALE: 1/8" = 1'-0"



KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - AREA 'C' - MAIN BUILDING

SYMBOLS LEGEND

- EXTERIOR WALL TYPE (8M1) • SEE A4 SHEETS FOR WALL TYPES
- INTERIOR WALL TYPE (4W22) • SEE A4 SHEETS FOR WALL TYPES
- PRECAST WALL TYPE (3+3+6P) • SEE A4 SHEETS FOR WALL TYPES
- FIRE RATED WALL TYPE (6M23.2 FW) • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6.X FOR DETAILS
- STUD WALL
- MASONRY VENEER
- C.M.U. WALL

SEE PLAN FOR ALL WALL WIDTHS

NEW DOOR

GENERAL NOTES

- ALL INTERIOR DIMENSIONS ARE FROM FACE-OF-STUD TO FACE-OF-STUD.
- SEE SPECIFICATIONS FOR WORK BY OWNER. WORK BY OWNER SHOWN ON PLANS IS SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE SPECIFIC INSTALLATION REQUIREMENTS WITH OWNER/OWNER'S VENDOR.
- LOCATE ALL DOORS IN METAL STUD AND MASONRY WALLS 4" FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
- INSTALL FIRE-TREATED WOOD BLOCKING FOR OWNER AND CONTRACTOR PROVIDED FURNISHINGS, EQUIPMENT AND WINDOW TREATMENTS (VERIFY LOCATIONS).
- INSTALL GYPSUM BOARD CONTROL JOINT WITH 1/4" 'V' REVEAL. POSITION ABOVE JAMB OF WALL OPENING.
- FILL EXTERIOR UGHT GAUGE STUD FRAMING (CLOSED JAMBS, HEADERS, ETC.) WITH MINERAL WOOL INSULATION.
- COMPLETELY CONCEAL ALL SPRAY FOAM AT INTERIOR SIDE OF EXTERIOR WALLS WITH GYPSUM BOARD OR INTUMESCENT COATING (CODE REQUIRED THERMAL BARRIER).

FLOOR PLAN KEYNOTES

#	
7	DURATRENCH STAINLESS STEEL TRENCH DRAIN. SEE PLUMBING PLANS
8	SWIVEL HOIST RING AND CAP PLATE ASSEMBLY. SEE STRUCTURAL SHEETS.

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PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:

MARATHON COUNTY HIGHWAY COMMISSION

OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

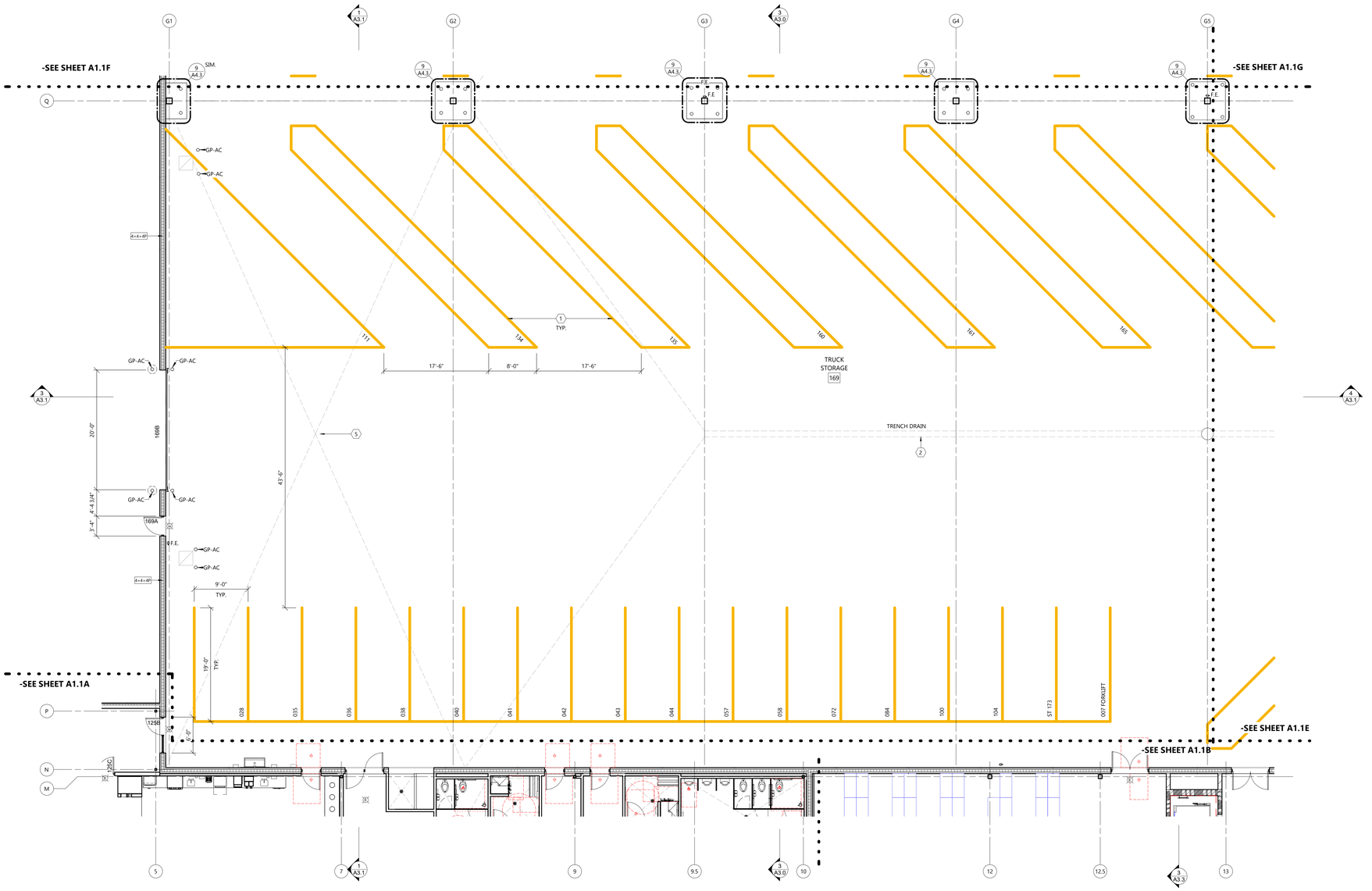
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SHEET NUMBER
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FIRST FLOOR PLAN AREA "D"

SCALE: 1/8" = 1'-0"

0' 8' 16'

NORTH

SYMBOLS LEGEND

- EXTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- INTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- PRECAST WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- FIRE RATED WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6.X FOR DETAILS
- STUD WALL
- MASONRY VENEER
- C.M.U. WALL

SEE PLAN FOR ALL WALL WIDTHS

NEW DOOR

GENERAL NOTES

- ALL INTERIOR DIMENSIONS ARE FROM FACE-OF-STUD TO FACE-OF-STUD.
- SEE SPECIFICATIONS FOR WORK BY OWNER. WORK BY OWNER SHOWN ON PLANS IS SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE SPECIFIC INSTALLATION REQUIREMENTS WITH OWNER/OWNER'S VENDOR.
- LOCATE ALL DOORS IN METAL STUD AND MASONRY WALLS 4" FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
- INSTALL FIRE-TREATED WOOD BLOCKING FOR OWNER AND CONTRACTOR PROVIDED FURNISHINGS, EQUIPMENT AND WINDOW TREATMENTS (VERIFY LOCATIONS).
- INSTALL GYPSUM BOARD CONTROL JOINT WITH 1/4" 'V' REVEAL. POSITION ABOVE JAMB OF WALL OPENING.
- FILL EXTERIOR LIGHT GAUGE STUD FRAMING (CLOSED JAMBS, HEADERS, ETC.) WITH MINERAL WOOL INSULATION.
- COMPLETELY CONCEAL ALL SPRAY FOAM AT INTERIOR SIDE OF EXTERIOR WALLS WITH GYPSUM BOARD OR INTUMESCENT COATING (CODE REQUIRED THERMAL BARRIER).

FLOOR PLAN KEYNOTES

#	
1	PROPOSED INTERIOR PARKING, FORKLIFT, WALK PATH STRIPING. FINAL LAYOUT TO BE CONFIRMED BY OWNER PRIOR TO PAINTING. STALL SIZED TO CONFROM WITH LOCAL AND STATE CODES.
2	FORMED CONCRETE TRENCH DRAIN. SEE STRUCTURAL PLANS
5	CATCH BASIN. SEE PLUMBING PLANS

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PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:

MARATHON COUNTY HIGHWAY COMMISSION

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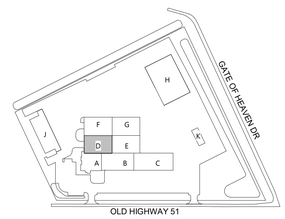
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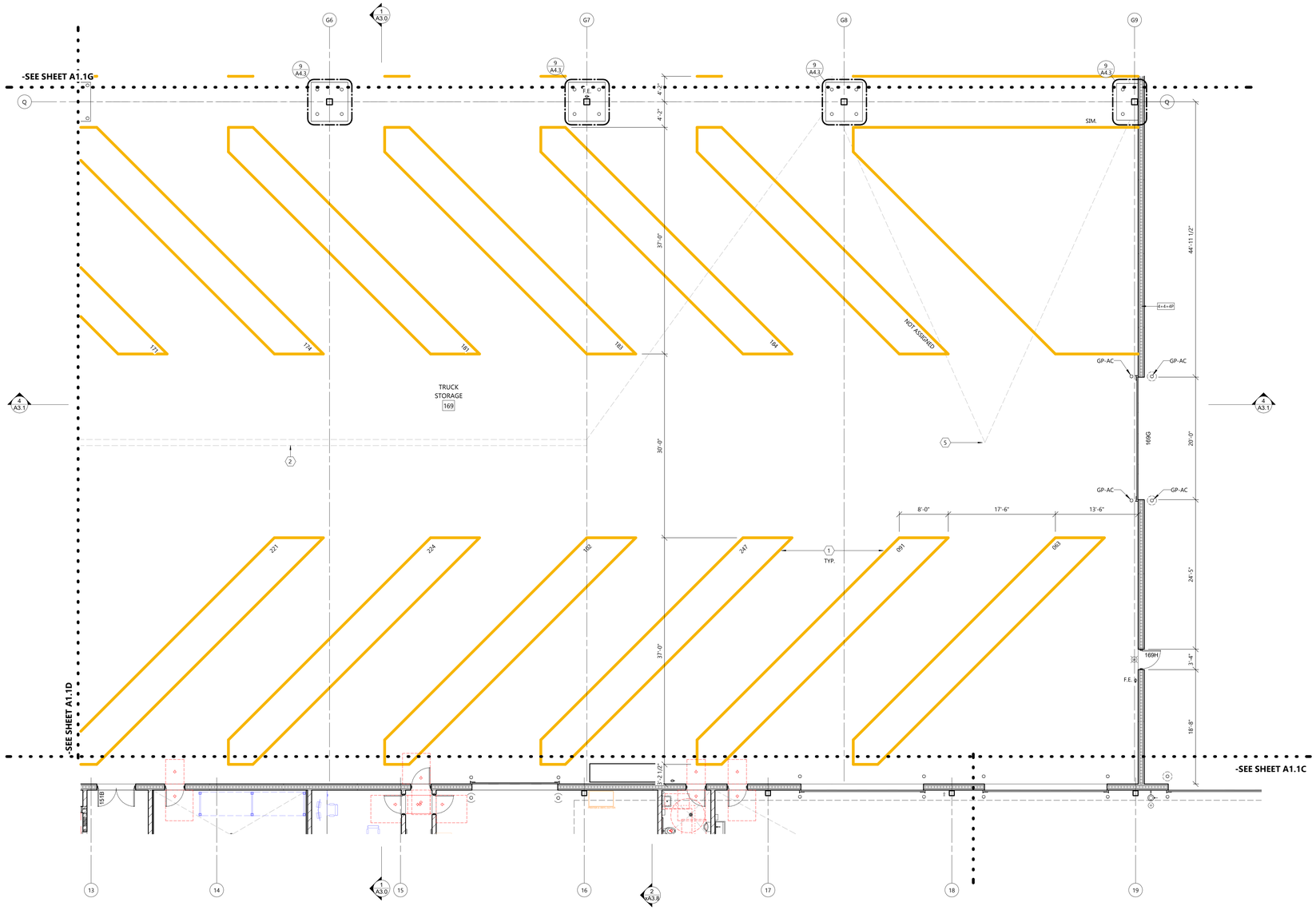
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KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - AREA 'D' - MAIN BUILDING

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FIRST FLOOR PLAN AREA "E"

SCALE: 1/8" = 1'-0"

0' 8' 16'

NORTH

SYMBOLS LEGEND

- EXTERIOR WALL TYPE (EM1) • SEE A4 SHEETS FOR WALL TYPES
- INTERIOR WALL TYPE (4W22) • SEE A4 SHEETS FOR WALL TYPES
- PRECAST WALL TYPE (3+3+6P) • SEE A4 SHEETS FOR WALL TYPES
- FIRE RATED WALL TYPE (6M23.2 FW) • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6.X FOR DETAILS
- STUD WALL
- MASONRY VENEER
- C.M.U. WALL

SEE PLAN FOR ALL WALL WIDTHS

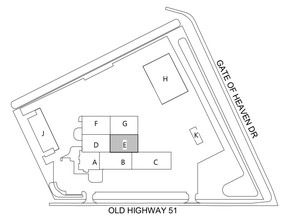
NEW DOOR

GENERAL NOTES

- ALL INTERIOR DIMENSIONS ARE FROM FACE-OF-STUD TO FACE-OF-STUD.
- SEE SPECIFICATIONS FOR WORK BY OWNER. WORK BY OWNER SHOWN ON PLANS IS SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE SPECIFIC INSTALLATION REQUIREMENTS WITH OWNER/OWNER'S VENDOR.
- LOCATE ALL DOORS IN METAL STUD AND MASONRY WALLS 4" FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
- INSTALL FIRE-TREATED WOOD BLOCKING FOR OWNER AND CONTRACTOR PROVIDED FURNISHINGS, EQUIPMENT AND WINDOW TREATMENTS (VERIFY LOCATIONS).
- INSTALL GYPSUM BOARD CONTROL JOINT WITH 1/4" "V" REVEAL. POSITION ABOVE JAMB OF WALL OPENING.
- FILL EXTERIOR LIGHT GAUGE STUD FRAMING (CLOSED JAMBS, HEADERS, ETC.) WITH MINERAL WOOL INSULATION.
- COMPLETELY CONCEAL ALL SPRAY FOAM AT INTERIOR SIDE OF EXTERIOR WALLS WITH GYPSUM BOARD OR INTUMESCENT COATING (CODE REQUIRED THERMAL BARRIER).

FLOOR PLAN KEYNOTES

#	
1	PROPOSED INTERIOR PARKING, FORKLIFT, WALK PATH STRIPING. FINAL LAYOUT TO BE CONFIRMED BY OWNER PRIOR TO PAINTING. STALL SIZED TO CONFROM WITH LOCAL AND STATE CODES.
2	FORMED CONCRETE TRENCH DRAIN. SEE STRUCTURAL PLANS
5	CATCH BASIN. SEE PLUMBING PLANS



KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - AREA 'E' - MAIN BUILDING

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION
Miron
Building Excellence
Miron Construction Co., Inc.
1471 McMahon Drive
Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:

MARATHON COUNTY HIGHWAY COMMISSION

OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

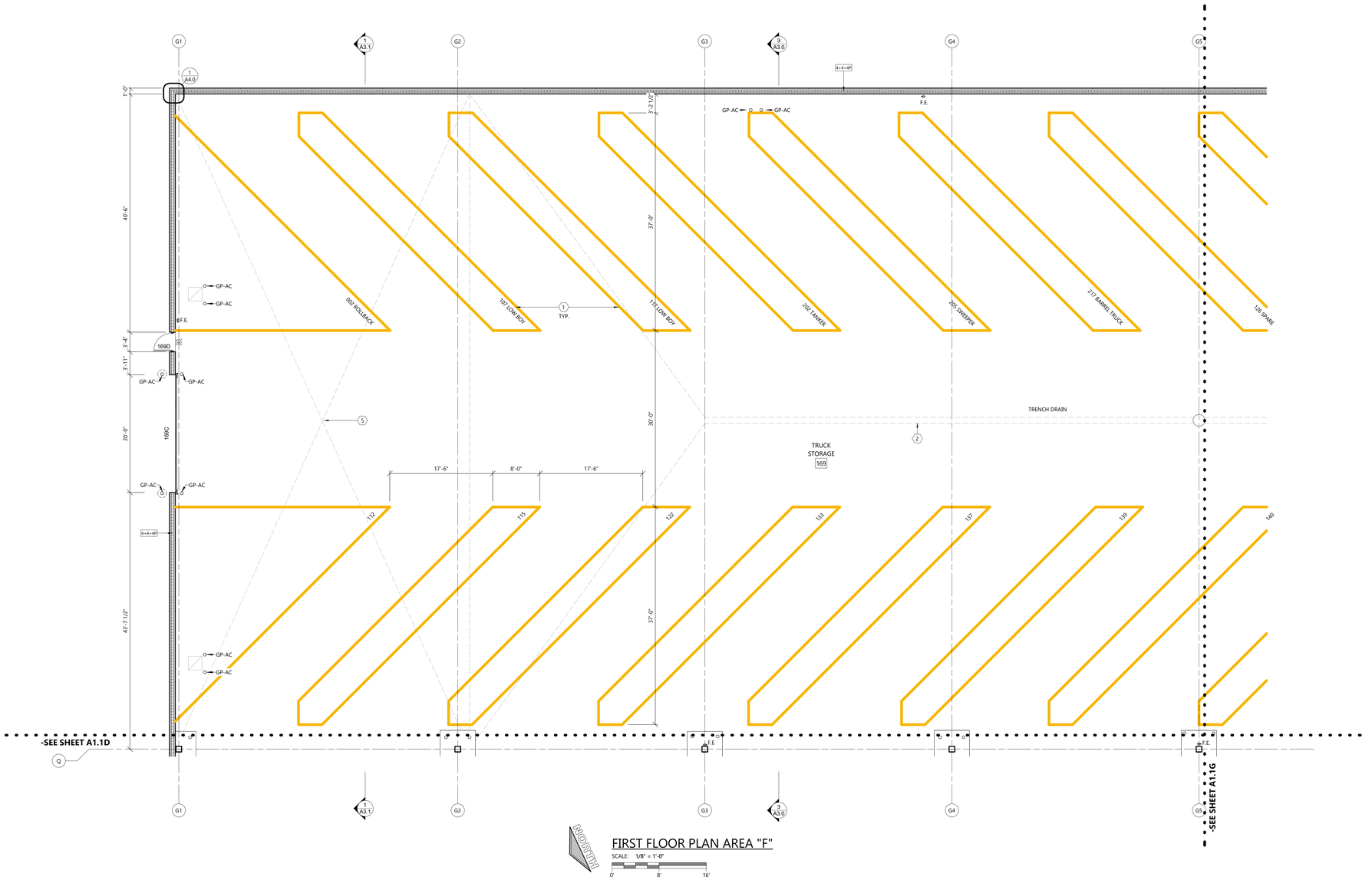
PRELIMINARY DATES
FEB. 6, 2026
MAR. 27, 2026
APR. 15, 2026
JULY 14, 2026
JULY 23, 2026

NOT FOR CONSTRUCTION

JOB NUMBER
250008600

SHEET NUMBER
A1.1E

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FIRST FLOOR PLAN AREA "F"

SCALE: 1/8" = 1'-0"

0' 8' 16'

SYMBOLS LEGEND

- EXTERIOR WALL TYPE (EM1) • SEE A4 SHEETS FOR WALL TYPES
- INTERIOR WALL TYPE (4W22) • SEE A4 SHEETS FOR WALL TYPES
- PRECAST WALL TYPE (3+3+6P) • SEE A4 SHEETS FOR WALL TYPES
- FIRE RATED WALL TYPE (6M33.2 FW) • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- (4B) FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6.X FOR DETAILS
- STUD WALL
- MASONRY VENEER
- C.M.U. WALL

SEE PLAN FOR ALL WALL WIDTHS

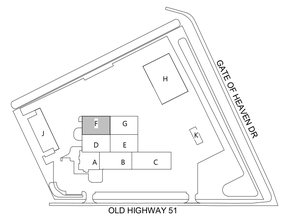
NEW DOOR

GENERAL NOTES

- ALL INTERIOR DIMENSIONS ARE FROM FACE-OF-STUD TO FACE-OF-STUD.
- SEE SPECIFICATIONS FOR WORK BY OWNER. WORK BY OWNER SHOWN ON PLANS IS SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE SPECIFIC INSTALLATION REQUIREMENTS WITH OWNER/OWNER'S VENDOR.
- LOCATE ALL DOORS IN METAL STUD AND MASONRY WALLS 4" FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
- INSTALL FIRE-TREATED WOOD BLOCKING FOR OWNER AND CONTRACTOR PROVIDED FURNISHINGS, EQUIPMENT AND WINDOW TREATMENTS (VERIFY LOCATIONS).
- INSTALL GYPSUM BOARD CONTROL JOINT WITH 1/4" 'V' REVEAL. POSITION ABOVE JAMB OF WALL OPENING.
- FILL EXTERIOR LIGHT GAUGE STUD FRAMING (CLOSED JAMBS, HEADERS, ETC.) WITH MINERAL WOOL INSULATION.
- COMPLETELY CONCEAL ALL SPRAY FOAM AT INTERIOR SIDE OF EXTERIOR WALLS WITH GYPSUM BOARD OR INTUMESCENT COATING (CODE REQUIRED THERMAL BARRIER).

FLOOR PLAN KEYNOTES

#	
1	PROPOSED INTERIOR PARKING, FORKLIFT, WALK PATH STRIPING. FINAL LAYOUT TO BE CONFIRMED BY OWNER PRIOR TO PAINTING. STALL SIZED TO CONFROM WITH LOCAL AND STATE CODES.
2	FORMED CONCRETE TRENCH DRAIN. SEE STRUCTURAL PLANS
5	CATCH BASIN. SEE PLUMBING PLANS



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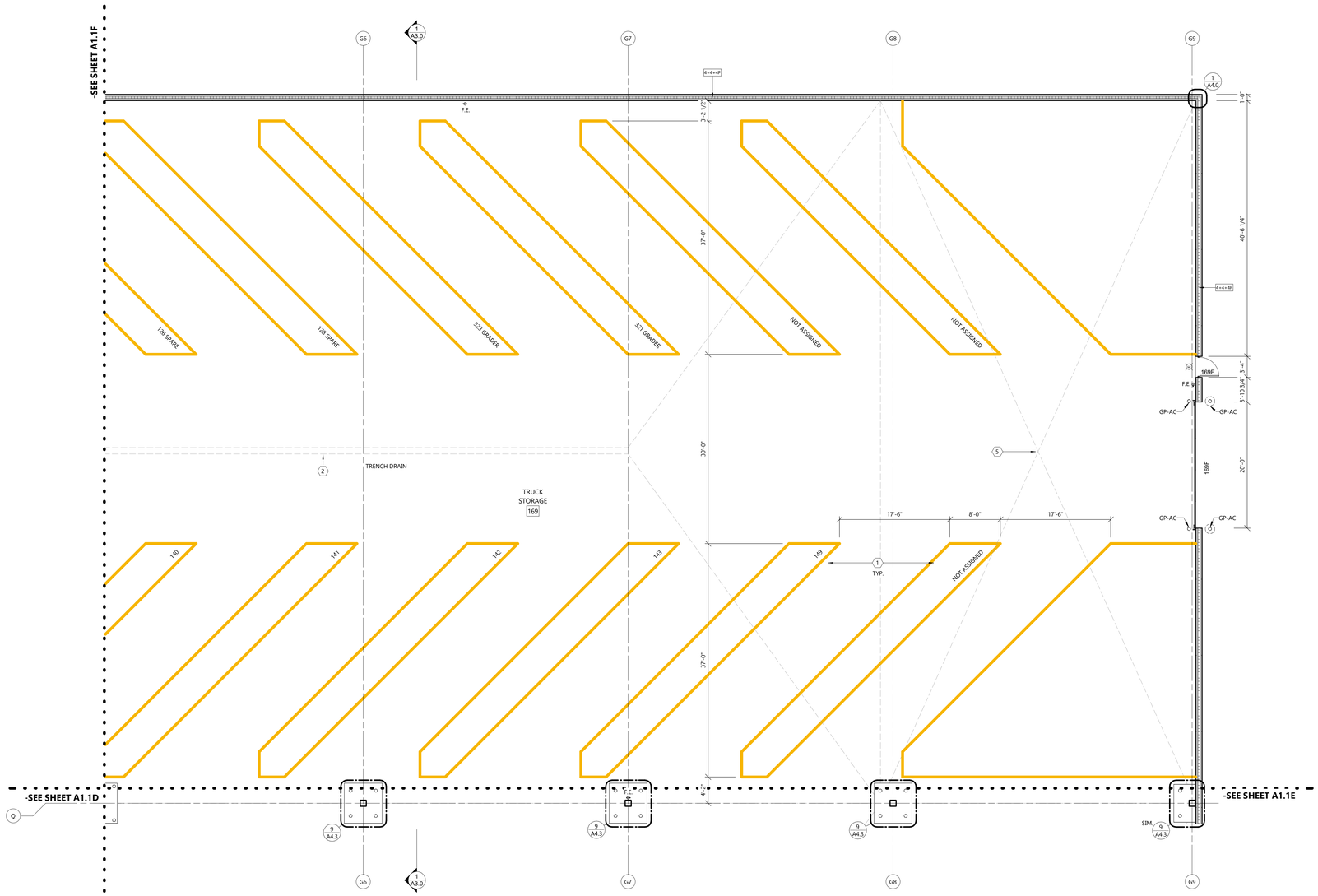
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NORTH

FIRST FLOOR PLAN AREA "G"

SCALE: 1/8" = 1'-0"

0' 8' 16'

SYMBOLS LEGEND

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- INTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- PRECAST WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- FIRE RATED WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
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SEE PLAN FOR ALL WALL WIDTHS

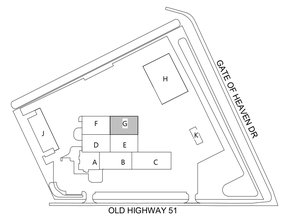
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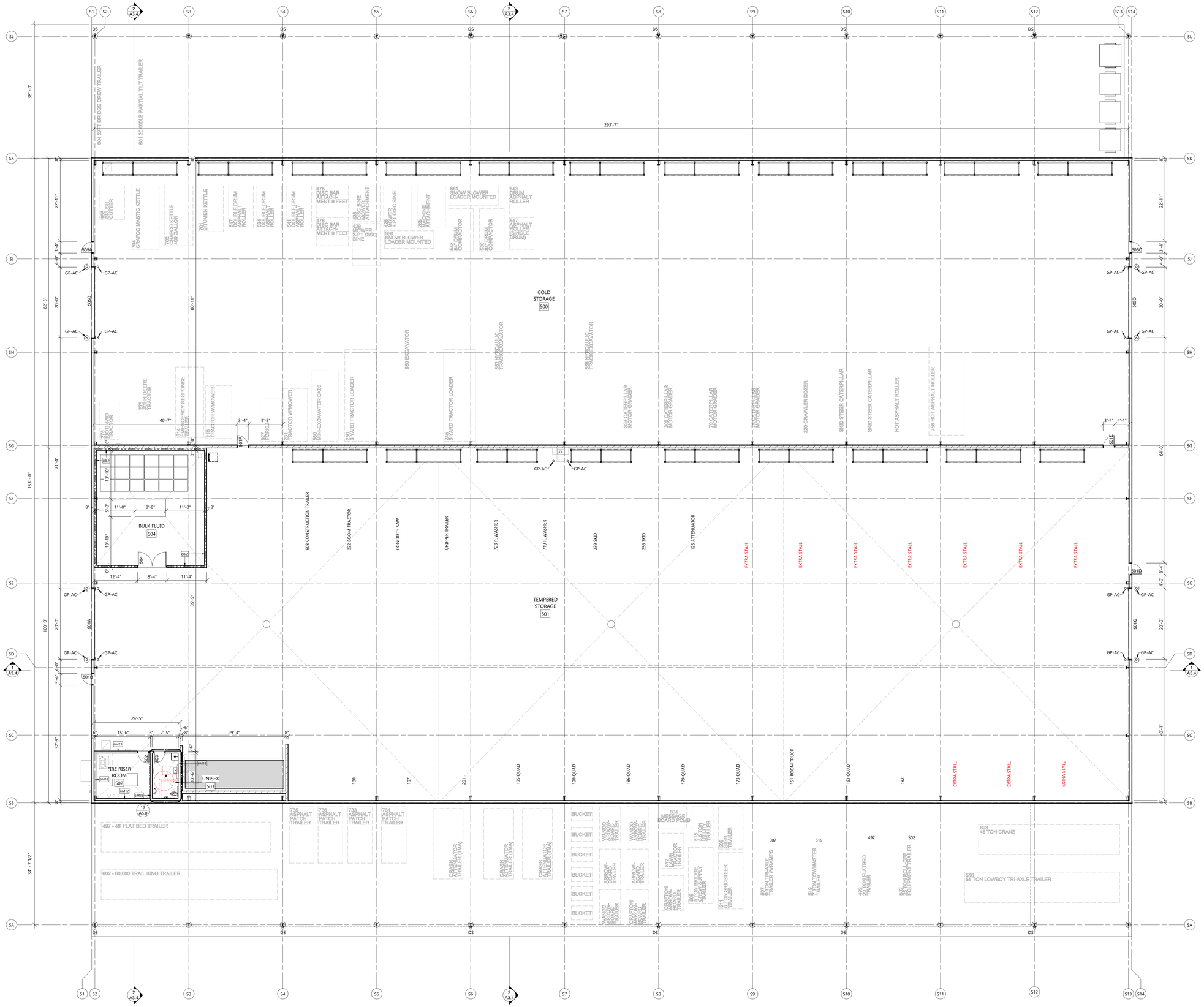
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FIRST FLOOR PLAN AREA "H"

SCALE: 3/32" = 1'-0"

0' 8' 16'

KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - AREA 'H' - TEMPERED STORAGE

SYMBOLS LEGEND

- EM1 — EXTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 4W22 — INTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 3+3+6P — PRECAST WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 6M23.2 FW — FIRE RATED WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
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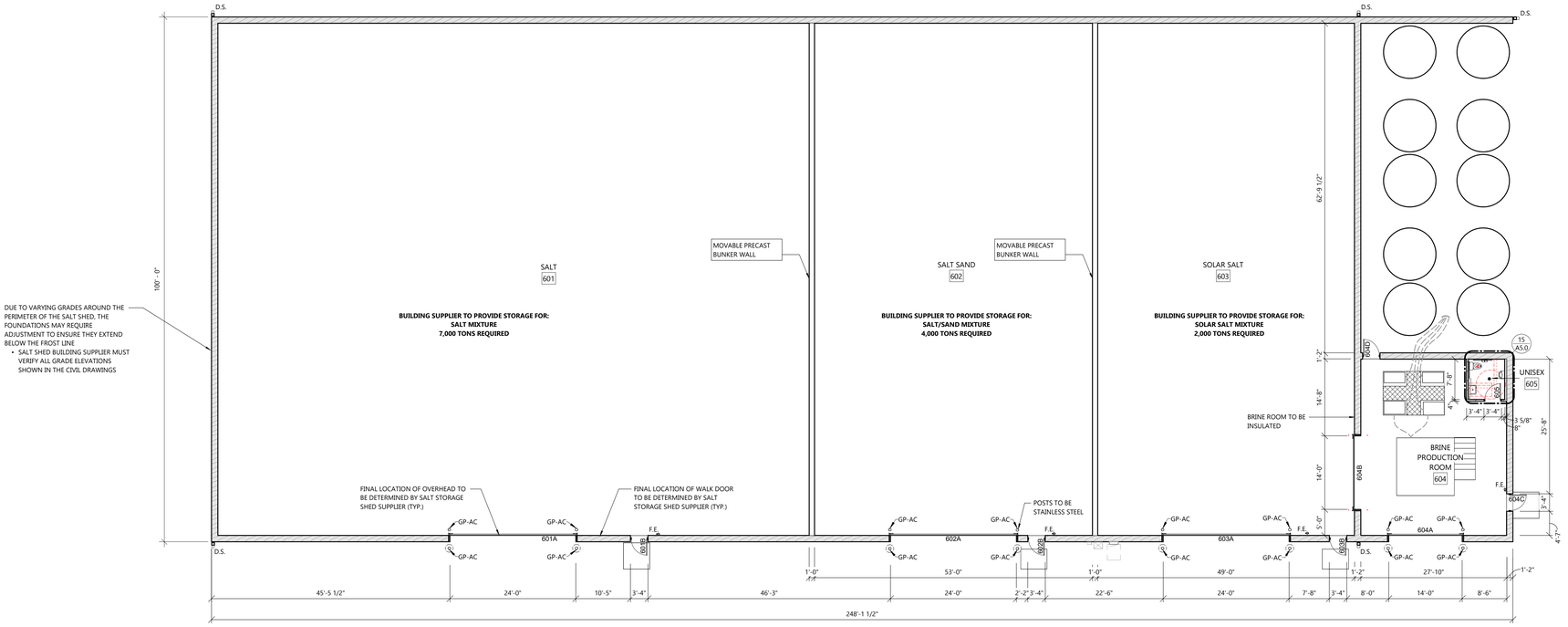
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SEE PLAN FOR ALL WALL WIDTHS

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MAY. 15, 2026
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JULY 23, 2026

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SHEET NUMBER
A1.1J

FIRST FLOOR PLAN AREA "I"
NORTH
SCALE: 3/32" = 1'-0"

SAND & SALT SHED BID SPECIFICATIONS

A. WORK OF THIS SECTION SHALL CONSIST OF THE FURNISHING AND INSTALLATION OF A COMPLETE SAND SALT STORAGE SHED STRUCTURE.
B. BUILDING SHALL BE WEATHERTIGHT AND SUITABLE FOR THE STORAGE OF SAND SALT AND OTHER MATERIALS USED FOR ROADWAY ABRASIVES. DESIGN OF THE FOUNDATIONS SHALL BE PROVIDED AS PART OF THE MANUFACTURER'S BUILDING DESIGN BASED ON INFORMATION OBTAINED FROM THE SUBSURFACE INVESTIGATION AND GEOTECHNICAL ANALYSIS PROVIDED BY THE OWNER.
   1. PROVIDE ALL REQUIRED FOOTINGS, FOUNDATIONS, AND/OR OTHER REQUIRED SUBSTRUCTURES OR SUPPORTS AT THE REQUIRED ELEVATIONS ON PROPERLY PREPARED SUBGRADE AS REQUIRED FOR THE ERECTION OF THE COMPLETE STORAGE BUILDING.
   2. FOUNDATIONS SHALL BE OF SIZE AND DEPTH REQUIRED TO RESIST FROST ACTION.
C. BUILDING SHALL BE RECTANGULAR WITH WALLS SUPPORTED WITH EXTERNAL BRACING TO WITHSTAND LATERAL LOAD OF INTERNAL MATERIAL. BRACING MAY BE EXPOSED ABOVE GRADE. BUILDING IS TO HAVE A STANDING SEAM GABLE ROOF WITH OVERHEAD DOORS ON THE EAST BEARING WALL.
   1. PROVIDE EXTERIOR GRADE STAINLESS STEEL SWING-OUT SERVICE DOOR IN EAST WALL. DOOR SHALL BE RATED FOR HIGH USE AND HIGH IMPACT RESISTANCE. PROVIDE HEAVY DUTY STAINLESS STEEL HINGES, HEAVY DUTY STAINLESS STEEL LEVER LOCKSET, STAINLESS STEEL KICKPLATE AND WEATHERSTRIPPING. SEE DOOR SCHEDULE
D. BUILDING IS TO BE CONSTRUCTED IN ACCORDANCE WITH ALL APPLICABLE CODES.
   1. BUILDING MANUFACTURER SHALL BE RESPONSIBLE FOR SCHEDULING, SUBMITTING AND OBTAINING APPROVAL OF BUILDING PLANS.
E. DESIGN BUILDING TO MEET OR EXCEED APPLICABLE SNOW LOAD; WIND LOAD AND SEISMIC CATEGORY REQUIREMENTS.
F. SUBMIT THE FOLLOWING TO EXCEL ENGINEERING FOR REVIEW:
   1. COMPLETE DRAWINGS, TOGETHER WITH DETAILED SPECIFICATIONS AND DATA COVERING MATERIAL, AND ACCESSORIES FURNISHED. DRAWINGS SHALL COVER ALL COMPONENT AND DETAIL INFORMATION NECESSARY FOR THE DESIGN
G. BUILDING REQUIREMENTS:
   1. SEE PLAN FOR SALT AND SAND SALT STORAGE CAPACITY REQUIREMENTS
   2. 30' TRUSS BEARING
H. ALL STRUCTURAL TIMBER PRODUCTS FURNISHED FOR THE BUILDING SHALL BE COMPLY WITH THE NATIONAL DESIGN SPECIFICATIONS FOR WOOD CONSTRUCTION.
I. PRESERVATIVE TREATMENT OF LUMBER AND TIMBER SHALL BE BY THE PRESSURE PROCESS, AND UNLESS OTHERWISE PROVIDED IN THE CONTRACT SPECIAL PROVISIONS, BE IN ACCORDANCE WITH AWPA STANDARDS AND AASHTO DESIGNATION M 133.
   1. LUMBER AND TIMBER SPECIFIED IN THE PLANS OR SPECIAL PROVISIONS TO BE TREATED WITH COPPER NAPHTHENATE IN TYPE A HYDROCARBON SOLVENT IN ACCORDANCE WITH AWPA P-36 AND HAS 14 TO MEET UC4C UNLESS NOTED. OTHER TIMBER PRESERVATIVES WILL NOT BE CONSIDERED.
   2. AS FAR AS PRACTICAL, ALL ADAZING, BORING, CHAMFERING, FRAMING, GAINING, MORTISING, SURFACING AND GENERAL FRAMING SHALL BE DONE PRIOR TO TREATMENT. IF CUT AFTER TREATMENT, COAT CUT SURFACES ACCORDING TO AWPA M4.
J. ALL HARDWARE SHALL MEET ASTM A307-21 GRADE A, GALVANIZED TO F2329 OR A153. ALL HIGH STRENGTH HARDWARE SHALL MEET ASTM A 325 OR A449, GALVANIZED TO F2329 OR A153. ALL STRUCTURAL STEEL SHALL MEET ASTM A36, GALVANIZED TO A123.
K. ALL METAL GUSSET PLATES ON TRUSS AND TRUSS TY-DOWNS SHALL BE PAINTED WITH ASPHALT PAINT
L. VENTILATION: PROVIDE VENTILATION TO SATISFY FREE AIR AREAS REQUIRED BY CODE.
M. ELECTRICAL: ELECTRICAL SERVICE TO SATISFY THE NEEDS OF THE BUILDING. LIGHTING SHALL BE INSTALLED TO ILLUMINATE THE FULL INTERIOR OF THE BUILDING. EXTERIOR LIGHTS TO BE INSTALLED ABOVE BOTH THE OVERHEAD DOOR AND SERVICE DOOR. SEE ELECTRICAL PLANS.

GENERAL NOTES FOR BUILDING SUPPLIER

- CONFIRM SALT AND SALT/SAND CAPACITY VOLUMES IS COMPATIBLE WITH OVERALL BUILDING DIMENSIONS
- SALT TO BE PILED 12' HIGH AGAINST THE LOAD-BEARING WALLS
- ADJUST BUILDING SIZE AS REQUIRED
- EXPOSED CONCRETE RETAINING WALL ON THREE SIDES
- FLOOR OF SHED TO BE HEAVY DUTY ASPHALT PAVEMENT. SEE CIVIL SPECIFICATION FOR CONSTRUCTION.
- SEE DOOR SCHEDULE FOR OVERHEAD DOORS AND WALK DOORS
- 3 / 12 SLOPED GABLE STYLE METAL ROOF BY BUILDING SUPPLIER — NEED TO CONFIRM
- BUILDING SUPPLIER RESPONSIBLE FOR SUBMITTAL TO STATE FOR BUILDING REVIEW
- BUILDING AND FOUNDATIONS TO BE DESIGNED AND SUBMITTED BY BUILDING SUPPLIER
- BUILDING CONSTRUCTION TO INCLUDE DOUG FIR, COOPER NAPHTHENATE TREATED TIMBER POST, WALL PLANKS AND PLYWOOD. UNTREATED LUMBER TRUSSES, ROOFING PLYWOOD WITH CONNECTING
- GALVANIZED HARDWARE.
- PROVIDE MOVEABLE CONCRETE WALL BARRIER AS SHOWN ON PLANS

STANDING SEAM METAL ROOF SPECIFICATIONS

MANUFACTURER:
- PAC-CLAD OR APPROVED EQUIVALENT

PRODUCT:
- TITE-LOC PLUS

ROOF
- THICKNESS: 24 ga - 22 ga
- MATERIAL: PREFINISHED GALVANIZED STEEL
- HEIGHT: 2"
- SPACING: 16" O.C.
- COLOR: TO MATCH COMPOSITE PANEL COLOR
- INSTALLATION: INSTALL PER MFR INSTALLATION INSTRUCTIONS AND RECOMMENDATIONS. USE CONTINUOUS LONGEST POSSIBLE LENGTH PANELS WITH NO LAPS
- SNOW GUARD: S-5 : COLORGUARD 2.0 SNOW RETENTION SYSTEM
   1. COLOR: TO MATCH ROOF

WARRANTY:
- PROVIDE 30 YEAR WARRANTY

TRANSLUCENT POLYCARBONATE OVERHEAD DOOR SPECIFICATIONS:

MANUFACTURER:
- AMERICAN

PRODUCT:
- SURVIVOR GOLIATH TRANSLUCENT POLYCARBONATE GARAGE DOOR
- PLATINUM - PREMIUM MODEL

CONSTRUCTION:
- 5/8" THICK POLYCARBONATE PANEL
- 3" HEAVY DUTY STAINLESS STEAL ANGLE MOUNTED LIFT TRACK
- LIFT OPTIONS:
   - HIGH LIFT PARTIAL VERTICAL (HLV)
   - (SEE DOOR SCHEDULE FOR LIFT OPTION TYPE)
- OPERATION OPTIONS:
   - 3 PUSH BUTTON (3B)
   - (SEE DOOR SCHEDULE FOR OPERATION OPTION TYPE)
- 50,000 CYCLE SPRINGS
- SIDE MOUNTED HEAVY DUTY GEAR REDUCTION SYSTEM FOR MOTOR OPERATED DOORS
- STANDARD ALUMINUM FINISH
- PROVIDE INTERIOR SIDE LOCK
- PROVIDE SPARE CONTACT TO COORDINATE w/ DOCK LEVELER
- MOTOR OPTIONS:
   - 8'x10' OR SMALLER
      - 1/2 hp, 120 VOLT 9.8 FLA SINGLE PHASE
   - LARGER THAN 8'x10'
      - 1 hp, 208 VOLT 4.8 FLA 3 PHASE
      - 1 hp, 480 VOLT 2.1 FLA 3 PHASE
- THE OVERHEAD DOOR SUPPLIER SHALL ACCOUNT FOR ALL APPLICABLE WIND LOADS, PROVIDE ANY REQUIRED PANEL REINFORCEMENT IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION GUIDELINES AND SPECIFICATIONS.

WARRANTY:
- 5 YEAR MANUFACTURERS WARRANTY - MATERIAL AND DEFECT
- 1 YEAR CONTRACTORS WARRANTY

STAINLESS STEEL DOOR SPECIFICATION:

MANUFACTURER:
- LAFORCE STAINLESS STEEL DOORS (APPROVED EQUIVALENT - WEILAND)

CONSTRUCTION:
- DOORS
   - DOOR SKIN TO BE 16 ga., 304 STAINLESS STEEL
   - FULLY WELDED EDGES
   - CORES TO BE 1 1/2" THICK RIGID POLYURETHANE, R VALUE = 11
   - MANUF. SHALL PROVIDE FLUSH, SEALED, & CLOSED STAINLESS STEEL TOPS AND BOTTOMS ON DOORS
   - MANUF. SHALL PROVIDE VERTICAL STEEL STIFFENED DOORS
- FRAMES
   - FULL WELDED FRAMES
   - VERTICAL GRAIN
   - MIN. 16 ga. @ INTERIOR FRAMES
   - MIN. 14 ga. @ EXTERIOR FRAMES
- GENERAL REQUIREMENTS
   - ALL DOORS & FRAMES TO BE REINFORCED AND PREPARED FOR HARDWARE
   - PROVIDE BACK BOXES FOR ALL ELECTRICAL DOOR HARDWARE
   - ALL REINFORCEMENT TO BE MIN. 12 ga.
   - PROVIDE WELDED-IN BASE ANCHORS
   - PROVIDE (3) SURFACE APPLIED SILENCERS PER JAMB @ ALL STAINLESS STEEL DOOR FRAMES
   - PROVIDE STAINLESS STEEL FRAME FOR LITES & GRILLES
   - FINISH #4 SATIN
   - PROVIDE RATED DOORS & FRAMES AS SCHEDULED
   - DOOR FRAME TO BE CARBON FREE. REMOVE ALL RUST FROM FRAME.
   - STAINLESS STEEL
      - PROVIDE 316 STAINLESS STEEL COMPONENTS, FRAMES, ETC. IN BRINE ROOM AND OTHER HIGH CORROSIVE ENVIRONMENTS.

CONFIRM FINISH AND REMOVE THIS NOTE & CLOUD

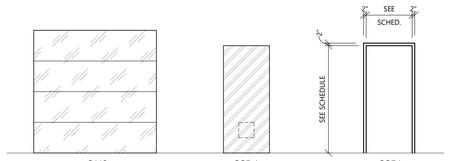
WARRANTY:
- 10 YEARS

GENERAL DOOR AND FRAME NOTES:

- ALL DOORS SHALL MEET A.D.A. REQUIREMENTS
- ALL DOOR THRESHOLDS SHALL NOT EXCEED 1/2" IN HEIGHT
- VERIFY FRAME DEPTHS W/ WALL THICKNESS. PROVIDE WRAP AROUND FRAMES AT STUD WALLS
- PROVIDE SEALANT BOTH SIDES OF DOOR FRAMES, WHERE DIFFERENT MATERIALS MEET AND FOR WEATHER TIGHTNESS
- GENERAL CONTRACTOR TO VERIFY SIZE OF ALL EQUIPMENT (ELECTRICAL, MECHANICAL, KITCHEN, LAUNDRY, ETC.) SELECTED FOR THE PROJECT TO DETERMINE THAT ALL DOORS (INCLUDING PATH OF TRAVEL) ARE OF ADEQUATE SIZE TO ACCOMMODATE INSTALLATION AND REPLACEMENT
- VERIFY ALL ROUGH OPENING REQUIREMENTS WITH MANUFACTURERS DRAWINGS
- SEE SHEET A0.1 FOR GENERAL BUILDING SPECIFICATIONS
- DOOR, FRAME AND HARDWARE SCHEDULE TO BE PROVIDED BY HARDWARE SUPPLIER FOR A/E REVIEW - NUMBERING SYSTEM AND NOMENCLATURE SHALL MATCH THOSE FOUND IN CONSTRUCTION DOCUMENTS
- HARDWARE SUPPLIER IS RESPONSIBLE FOR COORDINATING KEYING REQUIREMENTS WITH OWNER
- ALUMINUM SUPPLIER SHALL FURNISH AND INSTALL ALL HARDWARE FOR ALUMINUM DOORS AS NOTED ON PLANS - THE SAME MANUFACTURERS AND MODELS SHALL BE USED FOR BOTH ALUMINUM AND OTHER DOOR HARDWARE
- CONTRACTOR TO PROVIDE PRODUCTS AND SYSTEMS COMPLETE WITH ALL ACCESSORIES, TRIM, FINISH, FASTENERS AND OTHER ITEMS NEEDED FOR A COMPLETE INSTALLATION AND INTENDED USE AND EFFECT
- DOOR UNDERCUTS, WHERE NOTED, SHALL BE 1" FROM FINISHED FLOOR (TYP.)
- DOOR TRANSFER GRILLES BY DOOR SUPPLIER
   NATIONAL GUARD PRODUCTS MODEL L-700-RX
   -PAINT TO MATCH DOOR FRAME
   NATIONAL GUARD PRODUCTS MODEL L-700-C
   -PAINT TO MATCH DOOR FRAME
   SIGHT PROOF, V-SLAT WOOD LOUVER
   -STAIN AND VARNISH TO MATCH DOOR
- SEE ELECTRICAL PLANS FOR DOOR CARD READER LOCATIONS
- SEE FLOOR PLANS & STRUCTURAL FOUNDATION PLANS FOR GUARD POST AND GOAL POST LOCATIONS

DOOR SCHEDULE

DOOR NO.	DOOR SIZE WIDTH	DOOR SIZE HEIGHT	DOOR TYPE	FRAME TYPE	JAMB/HEAD WRAP	FIRE RATING	UNDERCUT OR GRILLE (W x H)	DOOR HARDWARE HINGE	LOCKSET	STOPS	CLOSER	EXIT DEVICE	PUSH-PULL / KICK	MISC.	W.S., SWEEP, THRESHOLD	DOOR OPTIONS OPERATION	LIFT	REMARKS
601A	24'-0"	28'-0"	OH1	-		--	--	--	--	--	--	--	--	--	--	3B	HLV	
601B	3'-0"	7'-0"	SSD1	SSF1		--	--	H4	L4	S5	C6	--	--	K1	T3,SW1,WS1	--	--	
602A	24'-0"	28'-0"	OH2	-		--	--	--	--	--	--	--	--	--	--	3B	HLV	
602B	3'-0"	7'-0"	SSD1	SSF1		--	--	H4	L4	S5	C6	--	--	K1	T3,SW1,WS1	--	--	
603A	24'-0"	28'-0"	OH2	-		--	--	--	--	--	--	--	--	--	--	3B	HLV	
603B	3'-0"	7'-0"	SSD1	SSF1		--	--	H4	L4	S5	C6	--	--	K1	T3,SW1,WS1	--	--	
604A	14'-0"	16'-0"	OH2	-		--	--	--	--	--	--	--	--	--	--	3B	HLV	
604B	14'-0"	16'-0"	OH2	-		--	--	--	--	--	--	--	--	--	--	3B	HLV	
604C	3'-0"	7'-0"	SSD1	SSF1		--	--	H6	L4	S4	C6	--	--	K2	T3,SW1,WS1	--	--	
604D	3'-0"	7'-0"	SSD1	SSF1		--	--	H6	L4	S4	C6	--	--	K2	T3,SW1,WS1	--	--	
605	3'-0"	7'-0"	MD1	HM1		--	--	H1	L13	S2	C1	--	--	K1	--	--	--	



DOOR AND FRAME ELEVATIONS

DOOR HARDWARE KEY

	HINGES			
	DESCRIPTION / FINISH	Ives	Hager	McKinney	Stanley
H1	STANDARD (626)	SB81	BB1279	TAZ714	FBB179
H4	HEAVY (630)	SB81HW 5S	BB1199	T4A3386	FBB199

	CONTINUOUS HINGES				
	DESCRIPTION / FINISH	Roton (Hager)	McKinney	Select	Pemko
H6	AL. GEAR TYPE (630)	780-224HD	MCK-25HD	SL-24HD600	CFMHD

	LOCKSETS			
	DESCRIPTION / FINISH	Schlage ND Series (RHO)	Sargent 10X-Line (LL)	Best 9K (15D)
L4	STOREROOM (626)	ND80PD	10XG04	9K D
		Sargent 8200 (L)		
L13	MORTISE PRIVACY (626)	66 PRIVACY + 49 OCC INDICATOR		

	STOPS			
	DESCRIPTION / FINISH	Ives	Hager	Rockwood
S2	WALL MTD. (626)	WS407CCV	230W	409

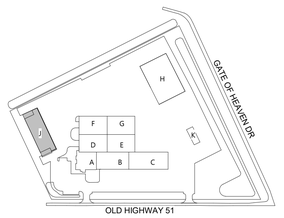
	OVERHEAD STOPS			
	DESCRIPTION / FINISH	Glynn-Johnson	Sargent	Rixson
S4	HD CONCEALED (630)	100 Series	690	1 Series
S5	STD. CONCEALED (630)	410 Series	1530	2 Series

	CLOSERS			
	DESCRIPTION / FINISH	LCN	Sargent	Norton
C1	PULL SIDE REG. (689)	4040 XP REG	351 O	
C6	PUSH SIDE EXT. DOORS (689)	4040XP SCUSH	351 CPS	UNI7501

	PUSH-PULL / KICKPLATES			
	DESCRIPTION / FINISH	Rockwood	Hager	Ives
K1	KICKPLATE 8"x2"LDW (630)	K1050 B4E	190S	8400
K2	KICKPLATE 32"x2"LDW (630)	K1050 B4E	190S	8400

	WEATHERSTRIP, SWEEPS, & THRESHOLDS			
	DESCRIPTION	National Guard	Reese	Pemko
T3	SS THERMAL THRESHOLD			252-.55SFG
SW1	SWEEP	200NA	772	315N
WS1	WEATHERSTRIP	160VA	DS106C	294AV

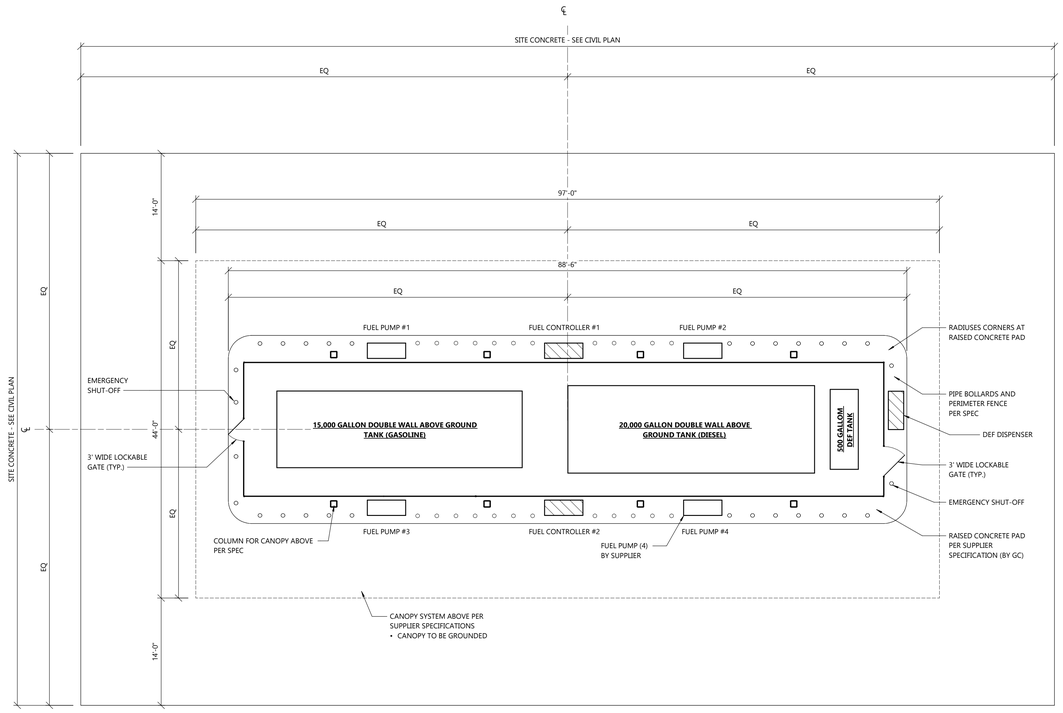
	MOTORIZED DOOR OPTIONS		
	OPERATION DESCRIPTION		
3B	3 PUSH BUTTON		
	LIFT DESCRIPTION		
HLV	HIGH LIFT PARTIAL VERTICAL		



KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - AREA 'J' - SALT SHED

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NORTH

FIRST FLOOR PLAN AREA "K"

SCALE: 1/8" = 1'-0"

FUEL ISLAND BID SPECIFICATIONS:

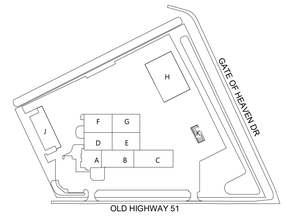
A. THE SCOPE OF WORK WOULD INCLUDE EQUIPMENT PURCHASE, DESIGN AND INSTALLATION, OF FUEL ISLAND EQUIPMENT AND SYSTEMS, FUEL ISLAND CANOPY, FUEL MANAGEMENT FACILITIES, TANK GAUGING FACILITIES, ELECTRICAL COMPONENTS, AND ALL OTHER INCIDENTAL ITEMS AND EQUIPMENT NECESSARY TO COMPLETE THE PROJECT AS INCLUDED IN SPECIFICATIONS.
B. PRODUCTS SHALL BE PRODUCED BY MANUFACTURERS REGULARLY ENGAGED IN THE MANUFACTURE OF SIMILAR ITEMS AND WITH A HISTORY OF SUCCESSFUL PRODUCTION ACCEPTABLE TO OWNER/ARCHITECT.
C. INSTALLERS SHALL BE CERTIFIED AND HAVE A MINIMUM OF 5 YEARS EXPERIENCE IN THE FIELD OF FUEL EQUIPMENT SYSTEMS INSTALLATION.
D. OWNER WILL PROVIDE IT ASSISTANCE IN SETTING UP AND ESTABLISHING COMMUNICATION BETWEEN THE MAIN FUELING PC'S AND THE TANK GAUGING AND FUEL MANAGEMENT SYSTEMS. THE INTENT OF THE EQUIPMENT WILL BE TO ESTABLISH COMMUNICATION TO ALL FUEL MANAGEMENT AND TANK GAUGING EQUIPMENT OVER THE INTERNET/INTRANET. THE VENDOR IS TO BE ABLE TO ACCESS THE FUEL MANAGEMENT EQUIPMENT FOR MAINTENANCE AND TROUBLE SHOOTING VIA THE INTERNET/INTRANET.
E. CONTRACTOR SHALL OBTAIN ALL NECESSARY PERMITS, ARRANGE FOR INSPECTIONS AND OBTAIN APPROVALS FROM THE APPROPRIATE AUTHORITIES HAVING JURISDICTION. CONTRACTOR SHALL OBTAIN PERMITS AND PAY FEES AS REQUIRED BY THE WISCONSIN DEPARTMENT OF SAFETY AND PROFESSIONAL SERVICES PER SPS 310 CODE AND COORDINATE ALL INSTALLATION INSPECTIONS AND FINAL APPROVAL AT ALL FUELING LOCATIONS FOR THE OWNER. ANY PERMIT CHANGES WILL BE COORDINATED BETWEEN THE DSPS, OWNER AND THE CONTRACTOR. WORK SHALL BE PERFORMED BY CONTRACTORS THAT ARE STATE OF WISCONSIN CERTIFIED TANK INSTALLERS.
F. SUBMIT THE FOLLOWING INFORMATION AND SHOP DRAWINGS IN ACCORDANCE WITH THE SUBMITTAL MATRIX INDICATED ON THE PLANS:
   1. PRODUCT DATA: FOR EACH PRODUCT TYPE.
   2. FUEL AND DEF TANKS
   3. TANK GAUGE EQUIPMENT AND TANK CONSOLES
   4. FUEL MANAGEMENT EQUIPMENT
   5. ELECTRICAL EQUIPMENT AND COMPONENTS
   6. DESIGN DRAWINGS: FOR FUEL ISLAND EQUIPMENT AND CANOPY, WITH CALCULATIONS, PREPARED AND STAMPED BY DESIGN ENGINEER.
G. DELIVER ALL MATERIALS TO THE JOB SITE IN THEIR ORIGINAL UNOPENED CONTAINERS WITH ALL LABELS INTACT AND LEGIBLE AT TIME OF USE. STORE IN STRICT ACCORDANCE WITH MANUFACTURER'S RECOMMENDATIONS.
H. USE ALL MEANS NECESSARY TO PROTECT ALL MATERIALS BEFORE, DURING AND AFTER INSTALLATION AND TO PROTECT INSTALLED WORK AND MATERIALS OF ALL OTHER TRADES.
   1. IN THE EVENT OF DAMAGE, IMMEDIATELY MAKE ALL REPAIRS AND REPLACEMENTS NECESSARY TO THE APPROVAL OF THE OWNER/ARCHITECT/ENGINEER, AND AT NO ADDITIONAL COST TO THE OWNER.
I. INSPECT INSTALLED WORK OF ALL OTHER TRADES AND VERIFY THAT ALL SUCH WORK IS COMPLETE TO THE POINT WHERE WORK OF THIS SECTION MAY PROPERLY COMMENCE AND THAT EQUIPMENT CAN BE INSTALLED IN STRICT ACCORDANCE WITH ALL PERTINENT CODES AND REGULATIONS.
   1. DO NOT BEGIN INSTALLATION UNTIL ALL SURFACES AND CONDITIONS ARE SATISFACTORY FOR THE INSTALLATION OF THE FUEL ISLAND EQUIPMENT.
J. PREPARE THE SITE TO ENSURE ADEQUATE SUPPORT FOR THE TANK SYSTEM AND DRAINAGE OF SURFACE WATER.
K. MAINTAIN LEGAL SEPARATION DISTANCES FROM PROPERTY LINES, BUILDINGS, PUBLIC WAYS, DISPENSERS, VEHICLES BEING FUELED AND OTHER STORAGE TANKS.
L. TANKS SHALL BE HANDLED, LIFTED, STORED AND SECURED IN ACCORDANCE WITH THE MANUFACTURER'S INSTRUCTIONS.
M. TANK AND ASSOCIATED EQUIPMENT SHALL BE INSTALLED IN ACCORDANCE WITH THE FIRE SAFETY CODES, REGULATIONS, STANDARDS AND MANUFACTURER'S INSTRUCTIONS.
N. NO MODIFICATIONS SHALL BE MADE TO ANY TANK WITHOUT THE PRIOR WRITTEN APPROVAL OF THE MANUFACTURER AND ENGINEER.
O. ANY PORTION OF THE FUELING SYSTEM IN CONTACT WITH THE SOIL SHALL BE PROTECTED FROM CORROSION IN ACCORDANCE WITH SOUND ENGINEERING PRACTICE AND IN ACCORDANCE WITH NFPA 30A (2-4.8).
P. PROTECT ABOVE GROUND PIPING AND EQUIPMENT FROM CORROSION BY PAINTING OR WRAPPING WITH A COATING WHICH IS COMPATIBLE WITH THE PRODUCT STORED AND THE CONDITIONS OF THE EXPOSURE.
Q. VISUALLY INSPECT TANKS AND PIPING FOR DAMAGE AT TIME OF DELIVERY AND JUST PRIOR TO INSTALLATION.
R. INSTALL TANKS, DISPENSERS, PIPING AND EQUIPMENT IN ACCORDANCE WITH THE MANUFACTURER'S INSTALLATION INSTRUCTIONS, INDUSTRY STANDARD RECOMMENDED PRACTICES AND FEDERAL, STATE AND LOCAL REGULATIONS.
   1. CALIBRATION AND START-UP OF EQUIPMENT SHALL BE PERFORMED BY FACTORY TRAINED AND QUALIFIED PERSONNEL.
S. ELECTRICAL INSTALLATION SHALL BE IN ACCORDANCE WITH MANUFACTURER'S INSTALLATION INSTRUCTIONS AND SHALL CONFORM TO STATE AND LOCAL ELECTRICAL CODES.
T. TESTING SHALL BE PERFORMED IN CONFORMANCE WITH THE MANUFACTURER'S INSTRUCTIONS, STATE LAWS AND QUOTED INDUSTRY STANDARDS.
   1. CONTRACTOR TO TEST ALL INSTALLED SYSTEMS FOR CALIBRATION, LIQUID TIGHTNESS AND PROPER OPERATION.
U. PROVIDE INSTRUCTION OF OWNER PERSONNEL ON THE PROPER OPERATION AND MAINTENANCE OF ALL COMPONENTS.
V. FUEL ISLAND EQUIPMENT PACKAGE TO INCLUDE THE FOLLOWING:
   1. ONE (1) 20,000 GALLON DOUBLE WALL ABOVE GROUND TANK FOR DIESEL FUEL
   2. ONE (1) 12,000 GALLON DOUBLE WALL ABOVE GROUND TANK FOR GASOLINE
   3. ONE (1) 500 GALLON DOUBLE WALL INSULATED ABOVE GROUND TANK FOR DEF
   4. TANK ACCESSORIES:
      A. 5 GALLON ALUMINUM FILL/SPILL WITH DROP TUBE AND FLIP CAP
      B. CLOCK GAUGE WITH OVERFILL ALARM
      C. P/V VENT CAP FOR GASOLINE TANK
      D. FLANGED E-VENTS
      E. TANK DECALS AND LABELS
      F. CONFIRM QUANTITY OF REQUIRED PORTS AT EACH NEW TANK WITH OWNER(FUEL HAULERS GAUGE & MONITORING PORT)
   5. ABOVE GRADE PIPING
   6. TANK GAUGE (TG) OR TANK LEVEL INDICATOR (TLI) EQUIPMENT AND TANK CONSOLES
   7. ELECTRICAL EQUIPMENT AND COMPONENTS
   8. FOUR (4) HIGH FLOW DISPENSERS: GASBOY ATLAS 9850 ULTRA-HI FLOW SERIES 50 GPM (DIESEL) AND 20-25GPM (GASOLINE)
   9. TWO (2) DOUBLE WALL FLEXIBLE HOSES AT EACH DISPENSER – 10' MINIMUM LENGTH. ¾" DIAMETER FOR GAS AND 1" DIAMETER FOR DIESEL.
   10. EACH DISPENSER TO SUPPLY BOTH GASOLINE AND DIESEL FUEL. DEF DISPENSED AT DEF TANK ONLY.
   11. BREAKAWAYS AND SWIVELS
   12. FUEL MANAGEMENT SYSTEM: ???? (NO SUBSTITUTE)
   13. SYSTEM TO BE COMPLIANT WITH CURRENT SYSTEMS
   14. PROVIDE 4 HOURS OF OWNER TRAINING ON FUEL MANAGEMENT AND TANK GAUGING SYSTEMS
   15. PROVIDE CURRENT SOFTWARE AND SOFTWARE LICENSING FOR FUEL MANAGEMENT SYSTEM.
   16. PROVIDE TANK MONITORS AND GAUGING EQUIPMENT ALONG WITH COMPATIBLE SENSORS, PROBES, EXTERNAL OVERFILL ALARMS AND CABLING.
   17. PROVIDE TWO SUBMERSIBLE PUMPS PER TANK FOR EQUIPMENT REDUNDANCY.
   18. TWO (2) EMERGENCY SHUT-OFFS LOCATED AS SHOWN ON PLANS
   19. GROUNDING ROD AND CABLE FOR CANOPY
   20. ALL ABOVEGROUND STORAGE TANKS (AST) TO BE GROUNDED
   21. FUEL ISLAND CANOPY DESIGN AND INSTALLATION (MANUFACTURES STANDARD COLOR SELECTED BY ARCHITECT)
W. CANOPY STRUCTURE:
   1. FURNISH AND INSTALL A NEW CANOPY TO COVER TANKS AND FUELING LANES PER THE FOLLOWING:
   2. 42' X 97' X 19' (16' TO UNDERSIDE) CANOPY 3' WHITE LAMINATED FASCIA
   3. SHAPE: RECTANGLE - FLAT DECK
   4. FASCIA: BRONZE COLOR
   5. DRAINAGE: DOWN SPOUTS LOCATED AT EXTERIOR OF CANOPY COLUMNS
   6. DECK PANEL: SMOOTH - BRONZE COLOR
   7. VENTS: PROVIDE ACCESS PANELS AS REQUIRED OVER FUEL TANKS.
   8. CANOPY TO BE A FOUR-COLUMN WITH FOUNDATION BELOW BY FUEL ISLAND SUPPLIER
   9. PAINTING OF CANOPY COLUMNS. SEE SHOP APPLIED COATING SCHEDULE.
   10. CANOPY LIGHTING – DARK BRONZE COLOR - LED 4000K WITH MINIMUM 25 FOOT CANDLES AT PAVEMENT WITH DUSK/DAWN AND MOTION SENSORS
   11. CHAIN LINK FENCE AROUND PERIMETER OF RAISED CONCRETE TANK SLAB WITH ACCESS DOORS TO FUEL TANKS DETERMINED BY SUPPLIER
   12. 6" DIAMETER CRASH BOLLARDS FILLED WITH CONCRETE AT 48" O.C., 6' TALL WITH YELLOW POLYETHYLENE SLEEVE PROTECTORS.
X. CANOPY FOOTINGS:
   a. CANOPY FOOTINGS ENGINEERED BY SUPPLIER.
Y. CONCRETE AND COLLISION PROTECTION:
   1. SITE PREP, FILL AND PREPARE FOR NEW CONCRETE AS SPECIFIED ON CIVIL AND ARCHITECTURAL DRAWINGS TO BE PERFORMED BY THE GENERAL CONTRACTOR
   2. 6" RAISED CONCRETE PAD. SIZE CONCRETE PAD TO BE ABLE TO FIT THE NEW TANKS, EQUIPMENT, FENCE, BOLLARDS, AND STRUCTURE FOR THE CANOPY ABOVE.
   3. BOLLARDS FOR COLLISION PROTECTION TO BE PROVIDED AND INSTALLED BY GENERAL CONTRACTOR
   4. YELLOW PVC BOLLARD COVERS WITH REFLECTIVE STRIPES PROVIDED BY FUEL SYSTEM CONTRACTOR
Z. EMERGENCY/SAFETY EQUIPMENT AND SIGNAGE:
   1. FIRE EXTINGUISHERS WITH CABINETS AS REQUIRED BY CODE
   2. EMERGENCY STOP AND SAFETY/WARNING SIGNS LOCATED AS REQUIRED BY CODE
AA. WARRANTY
   1. ONE (1) YEAR PARTS AND LABOR FROM DATE OF SUBSTANTIAL COMPLETION

GENERAL NOTES FOR BUILDING SUPPLIER

- ADJUST CANOPY SIZE AS REQUIRED
- FUEL ISLAND SUPPLIER RESPONSIBLE FOR SUBMITTAL TO STATE FOR BUILDING REVIEW
- FUEL ISLAND AND FOUNDATIONS TO BE DESIGNED AND SUBMITTED BY BUILDING SUPPLIER
- SEE CIVIL PLAN FOR ADDITIONAL INFORMATION.

ARE HIGH HOSE RETRACTORS DESIRED?

WHAT FUEL MANAGEMENT SYSTEM IS THE COUNTY GOING WITH?



KEY PLAN

ARCHITECTURAL FIRST FLOOR PLAN - AREA 'K' - FUEL ISLAND

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION
Miron
Building Excellence
Miron Construction Co., Inc.
1471 McMahon Drive
Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:

MARATHON COUNTY HIGHWAY COMMISSION

OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

PRELIMINARY DATES

APR. 15, 2026
JUNE 4, 2026
JULY 14, 2026
JULY 23, 2026

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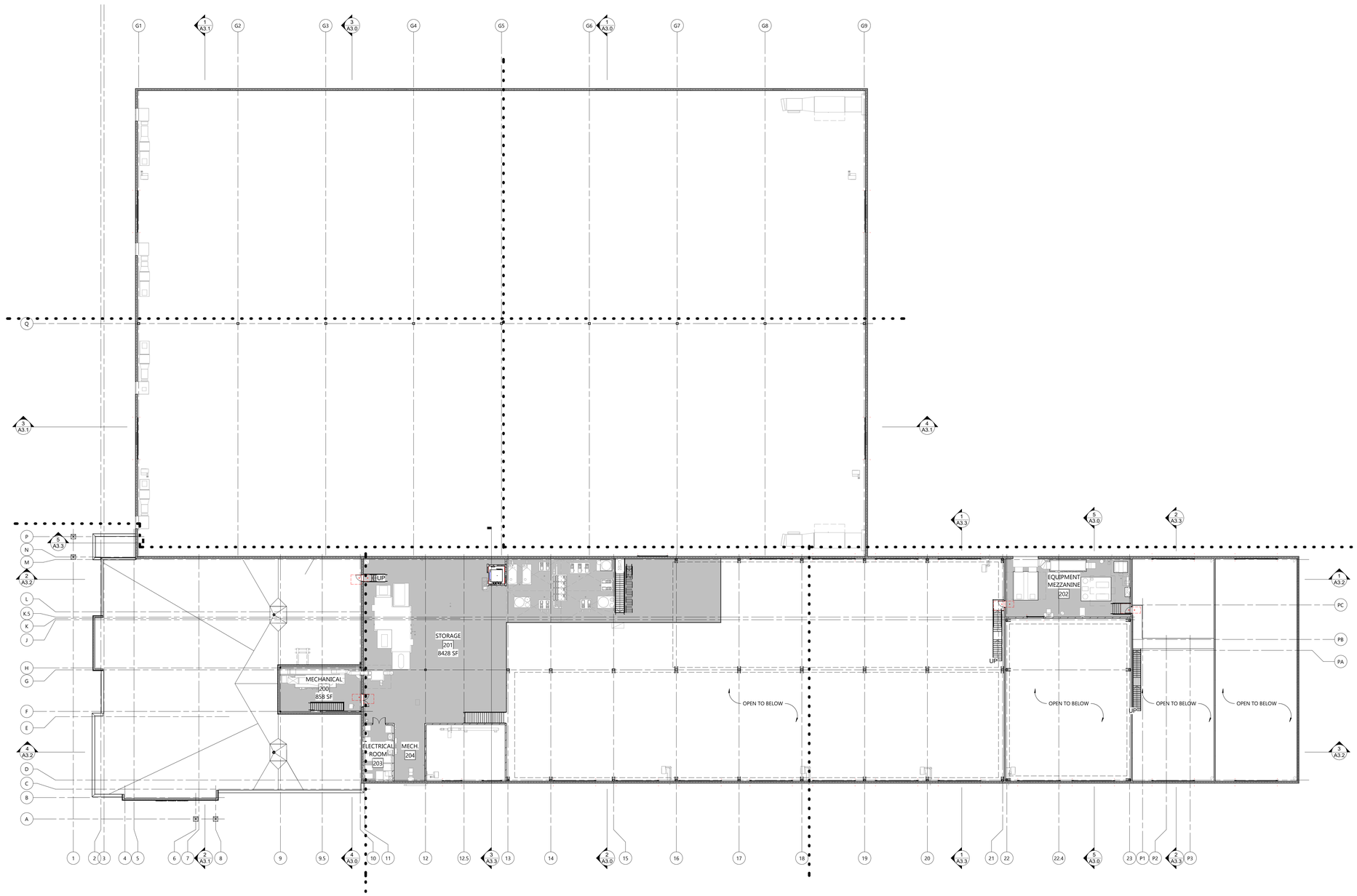
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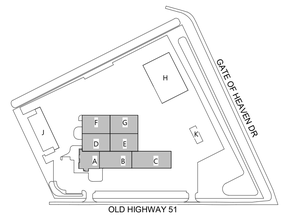


NORTH

SECOND FLOOR PLAN - OVERALL

SCALE: 3/64" = 1'-0"

0' 16' 32'



KEY PLAN

ARCHITECTURAL OVERALL SECOND FLOOR PLAN - MAIN BUILDING

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION
Miron
Building Excellence
Miron Construction Co., Inc.
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MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

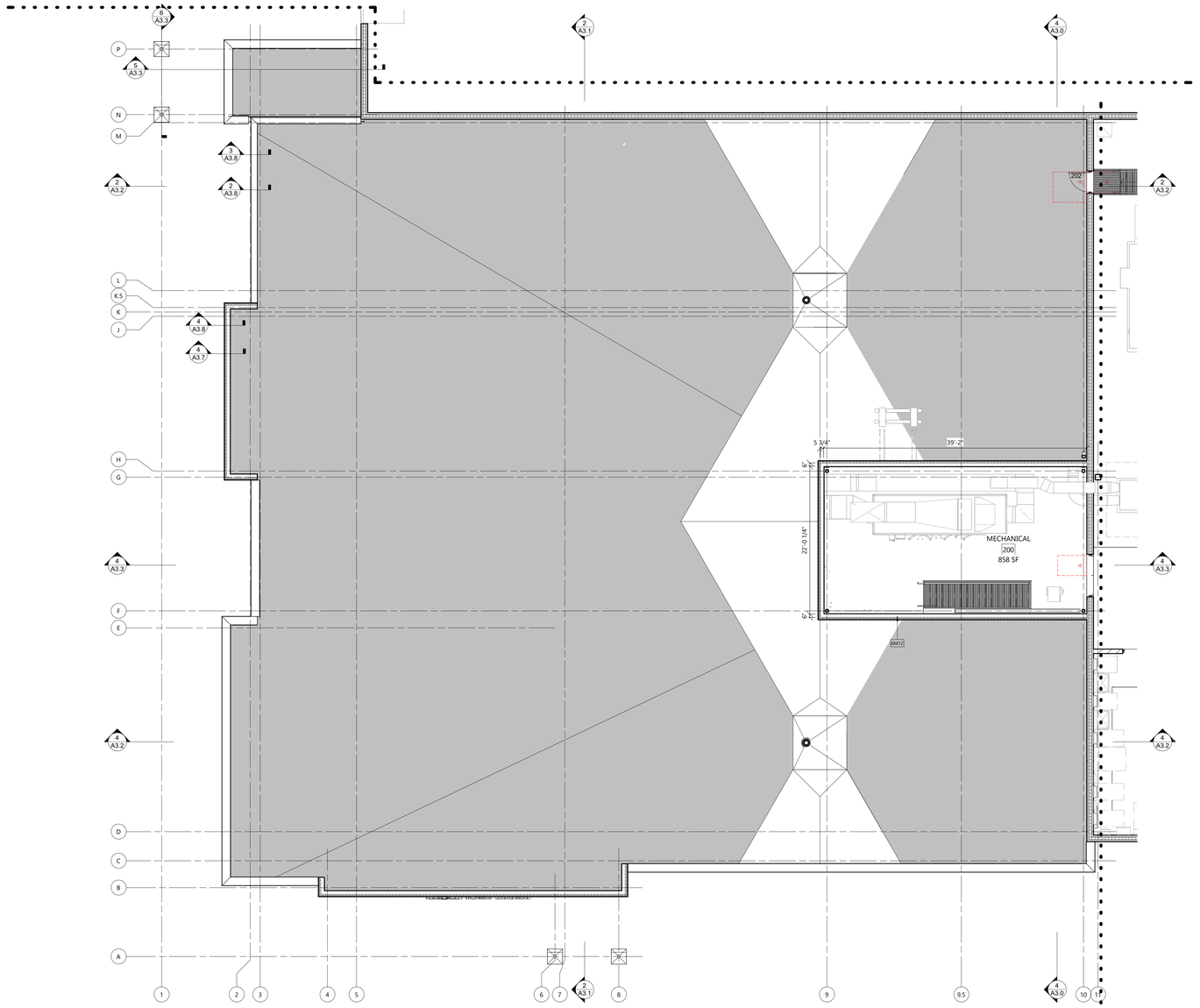
PRELIMINARY DATES
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MAR. 2, 2026
MAR. 27, 2026
APR. 15, 2026
JULY 14, 2026
JULY 23, 2026

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JOB NUMBER
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SHEET NUMBER
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MEZZANINE PLAN - AREA "A"

SCALE: 1/8" = 1'-0"

0' 8' 16'

SYMBOLS LEGEND

- EM1 — EXTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 4W22 — INTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 3+3+6P — PRECAST WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 6M23.2 FW — FIRE RATED WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X — GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6.X FOR DETAILS
- STUD WALL
- MASONRY VENEER
- C.M.U. WALL

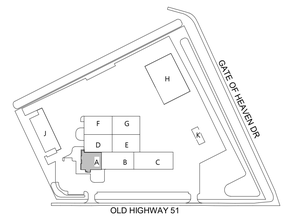
SEE PLAN FOR ALL WALL WIDTHS

NEW DOOR

GENERAL NOTES

- ALL INTERIOR DIMENSIONS ARE FROM FACE-OF-STUD TO FACE-OF-STUD.
- SEE SPECIFICATIONS FOR WORK BY OWNER. WORK BY OWNER SHOWN ON PLANS IS SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE SPECIFIC INSTALLATION REQUIREMENTS WITH OWNER/OWNER'S VENDOR.
- LOCATE ALL DOORS IN METAL STUD AND MASONRY WALLS 4" FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
- INSTALL FIRE-TREATED WOOD BLOCKING FOR OWNER AND CONTRACTOR PROVIDED FURNISHINGS, EQUIPMENT AND WINDOW TREATMENTS (VERIFY LOCATIONS).
- INSTALL GYPSUM BOARD CONTROL JOINT WITH 1/4" 'V' REVEAL. POSITION ABOVE JAMB OF WALL OPENING.
- FILL EXTERIOR LIGHT GAUGE STUD FRAMING (CLOSED JAMBS, HEADERS, ETC.) WITH MINERAL WOOL INSULATION.
- COMPLETELY CONCEAL ALL SPRAY FOAM AT INTERIOR SIDE OF EXTERIOR WALLS WITH GYPSUM BOARD OR INTUMESCENT COATING (CODE REQUIRED THERMAL BARRIER).

(#) FLOOR PLAN KEYNOTES



KEY PLAN

ARCHITECTURAL MEZZANINE PLAN - AREA 'A' - MAIN BUILDING

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION
Miron
Building Excellence
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1471 McMahon Drive
Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:
MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

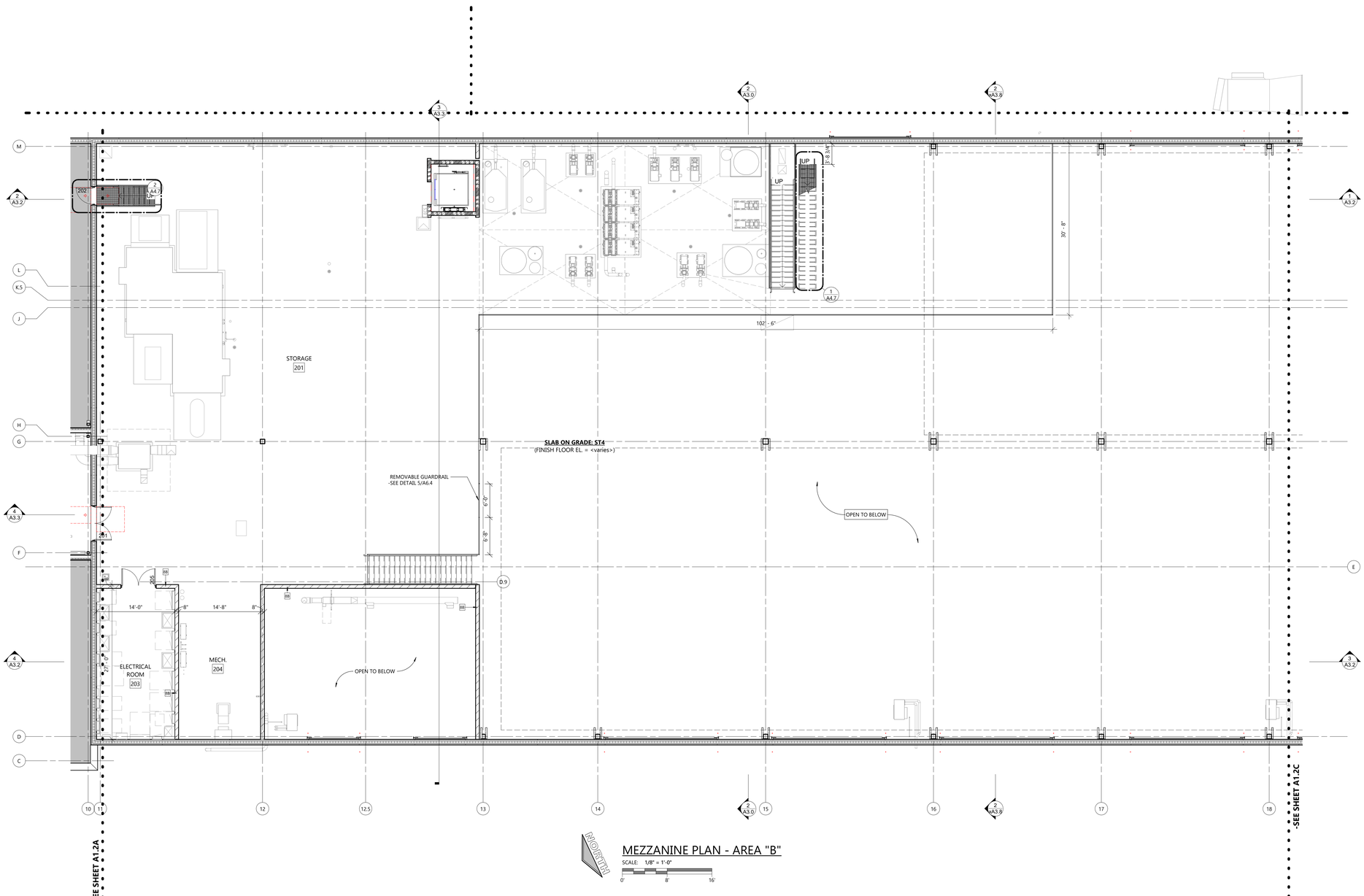
PRELIMINARY DATES
FEB. 6, 2026
MAR. 2, 2026
MAR. 27, 2026
APR. 15, 2026
JULY 14, 2026
JULY 23, 2026

NOT FOR CONSTRUCTION

JOB NUMBER
250008600

SHEET NUMBER
A1.2A

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MEZZANINE PLAN - AREA "B"

SCALE: 1/8" = 1'-0"

0' 8' 16'

SYMBOLS LEGEND

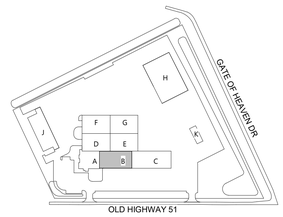
- EM1 — EXTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- IW22 — INTERIOR WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 3+3+6P — PRECAST WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- 6M22.2 FW — FIRE RATED WALL TYPE • SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X — GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6.X FOR DETAILS
- STUD WALL
- MASONRY VENEER
- C.M.U. WALL

SEE PLAN FOR ALL WALL WIDTHS

NEW DOOR

GENERAL NOTES

- ALL INTERIOR DIMENSIONS ARE FROM FACE-OF-STUD TO FACE-OF-STUD.
- SEE SPECIFICATIONS FOR WORK BY OWNER. WORK BY OWNER SHOWN ON PLANS IS SUBJECT TO CHANGE. CONTRACTOR TO COORDINATE SPECIFIC INSTALLATION REQUIREMENTS WITH OWNER/OWNER'S VENDOR.
- LOCATE ALL DOORS IN METAL STUD AND MASONRY WALLS 4" FROM ADJACENT WALL UNLESS NOTED OTHERWISE.
- INSTALL FIRE-TREATED WOOD BLOCKING FOR OWNER AND CONTRACTOR PROVIDED FURNISHINGS, EQUIPMENT AND WINDOW TREATMENTS (VERIFY LOCATIONS).
- INSTALL GYPSUM BOARD CONTROL JOINT WITH 1/4" 'V' REVEAL. POSITION ABOVE JAMB OF WALL OPENING.
- FILL EXTERIOR LIGHT GAUGE STUD FRAMING (CLOSED JAMBS, HEADERS, ETC.) WITH MINERAL WOOL INSULATION.
- COMPLETELY CONCEAL ALL SPRAY FOAM AT INTERIOR SIDE OF EXTERIOR WALLS WITH GYPSUM BOARD OR INTUMESCENT COATING (CODE REQUIRED THERMAL BARRIER).



KEY PLAN

ARCHITECTURAL MEZZANINE PLAN - AREA 'B' - MAIN BUILDING

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920-926-9800
excelengineer.com

COLLABORATION
Miron
Building Excellence
Miron Construction Co., Inc.
1471 McMahon Drive
Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:

MARATHON COUNTY HIGHWAY COMMISSION

OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

PRELIMINARY DATES
FEB. 6, 2026
MAR. 2, 2026
MAR. 27, 2026
APR. 15, 2026
JULY 14, 2026
JULY 23, 2026

NOT FOR CONSTRUCTION

JOB NUMBER
250008600

SHEET NUMBER
A1.2B

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SYMBOLS LEGEND

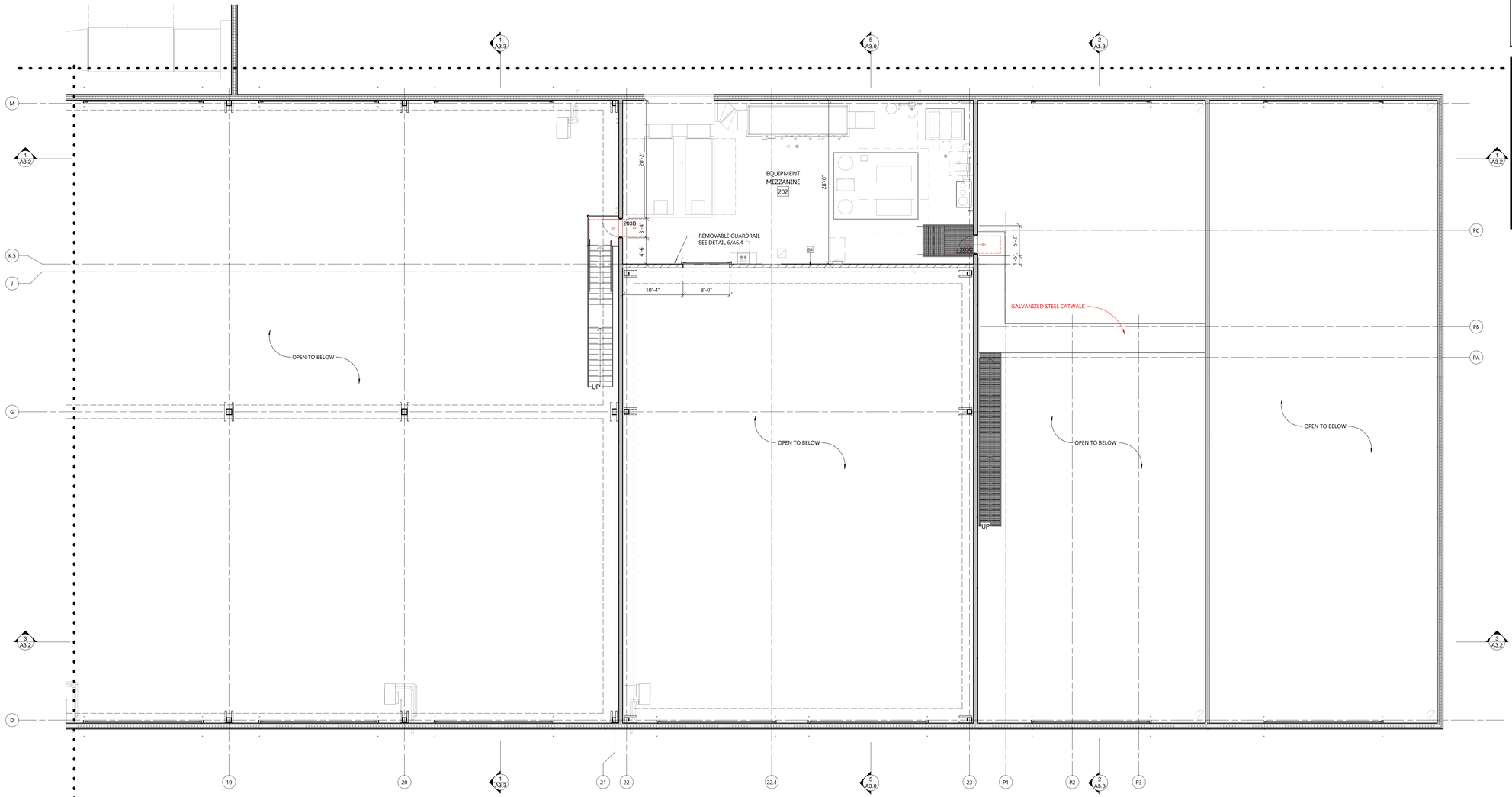
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  - SEE A4 SHEETS FOR WALL TYPES
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- 6M23.2 FW — FIRE RATED WALL TYPE
  - SEE A4 SHEETS FOR WALL TYPES
- EXIT SIGNAGE
- FIRE EXTINGUISHER -SEE A5 SHEETS
- FIRE EXTINGUISHER w/ CABINET -SEE A5 SHEETS
- GP-X — GUARD POST/GOAL POST DESIGNATION -SEE SHEET A6.X FOR DETAILS
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- MASONRY VENEER
- C.M.U. WALL

SEE PLAN FOR ALL WALL WIDTHS

NEW DOOR

GENERAL NOTES

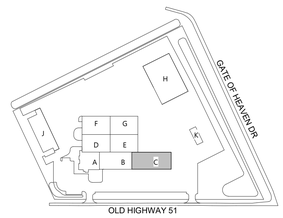
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MEZZANINE PLAN - AREA "C"

SCALE: 1/8" = 1'-0"

0' 8' 16'



KEY PLAN

ARCHITECTURAL MEZZANINE PLAN - AREA 'C' - MAIN BUILDING

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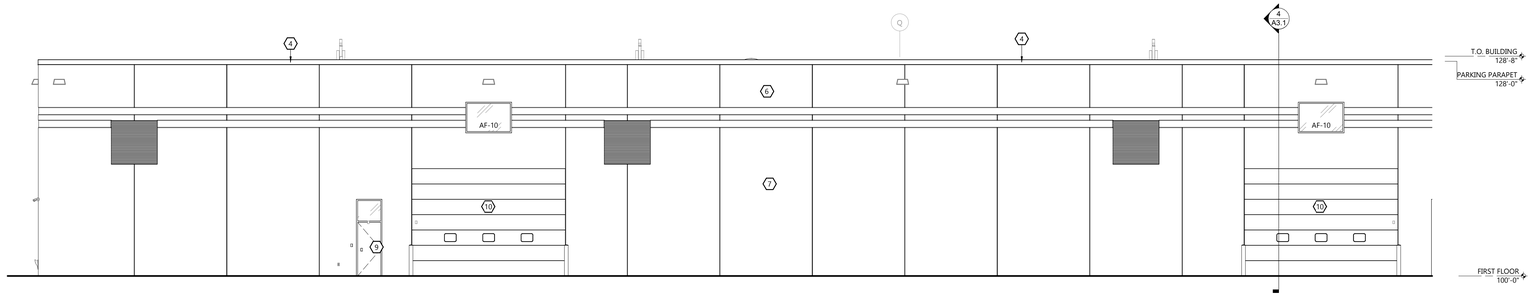
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MAR. 27, 2026
APR. 15, 2026
JULY 14, 2026
JULY 23, 2026

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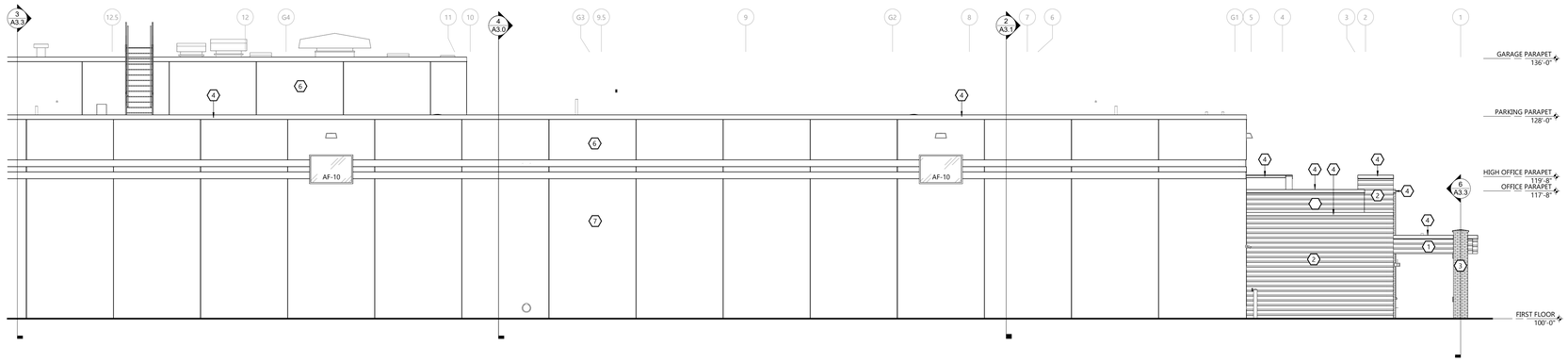
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SHEET NUMBER
A1.2C

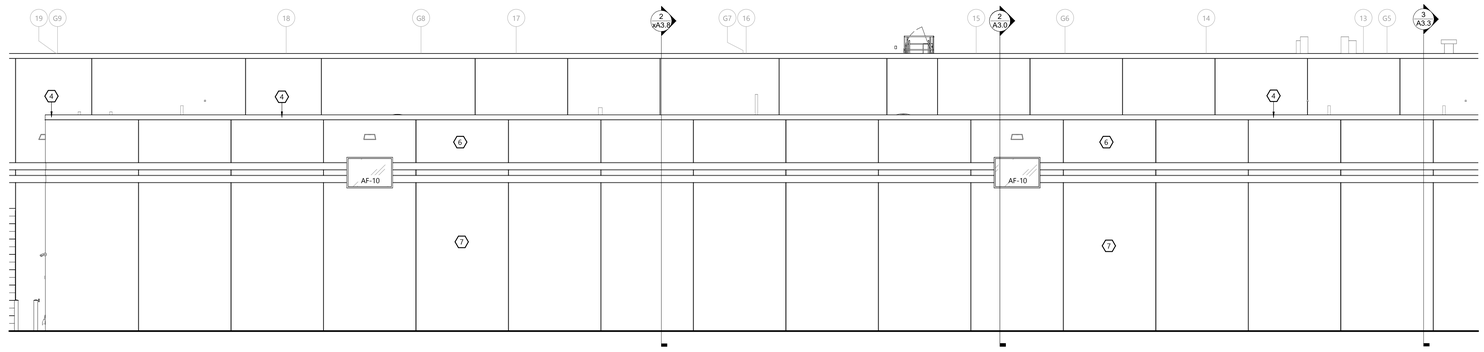
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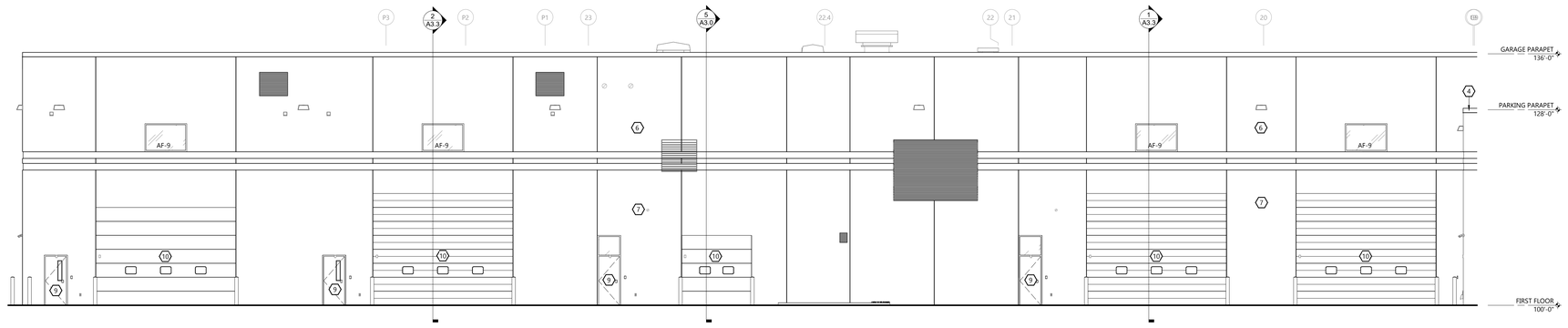
1 A2.0 NORTH BUILDING ELEVATION
SCALE: 1/8" = 1'-0"



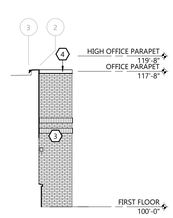
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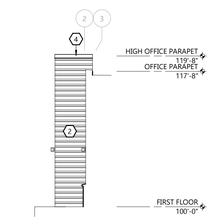
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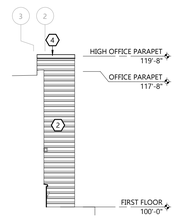
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SCALE: 1/8" = 1'-0"



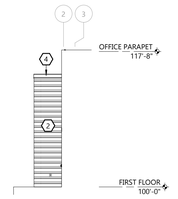
6 A2.0 EAST - HIDDEN
SCALE: 1/8" = 1'-0"



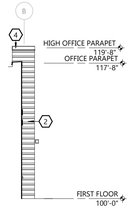
5 A2.0 WEST - HIDDEN
SCALE: 1/8" = 1'-0"



8 A2.0 EAST HIDDEN 2
SCALE: 1/8" = 1'-0"



7 A2.0 WEST- HIDDEN 2
SCALE: 1/8" = 1'-0"



9 A2.0 NORTH - HIDDEN
SCALE: 1/8" = 1'-0"

GENERAL NOTES

1281 SEE WALL SECTIONS FOR EXTERIOR WALL CONSTRUCTION

- REFERENCE EXTERIOR ELEVATIONS FOR VENEER CONTROL JOINTS. SEE STRUCTURAL PLANS FOR CMU CONTROL JOINT LOCATIONS. VENEER CONTROL JOINTS AND CMU CONTROL JOINTS ARE NOT REQUIRED TO ALIGN.

EXTERIOR MATERIAL KEY

1	**EXTERIOR SIDING** MFR: MUZA PRODUCT: MZ4 COLOR: TBD	MATERIAL: 24 GA. GALVANIZED STEEL
2	**EXTERIOR SIDING** MFR: MUZA PRODUCT: MZ5 COLOR: TBD	MATERIAL: 24 GA. GALVANIZED STEEL
3	**BRICK** MFR: TBD PRODUCT: TBD COLOR: TBD	SIZE: UTILITY MORTAR: NATURAL COLOR
4	**METAL COPING** MFR: PAC-CLAD PROFILE: PAC-TITE COPING - TAPERED COLOR: TO MACH METAL PANEL	
5	**CAST STONE SILL** MFR: COUNTY MATERIALS PROFILE: SEE SECTION DETAILS COLOR: PROVIDE SAMPLES TO MATCH BRICK COLOR	
6	**ACID ETCHED PRECAST** COLOR: TBD CONCRETE COLOR: GRAY TEXTURE: ACID ETCH MEDIUM	
7	**SAND BLASTED PRECAST** COLOR: TBD CONCRETE COLOR: GRAY TEXTURE: SANDBLAST MEDIUM	
8	**ALUMINUM DOOR AND FRAME** ANNODIZED COLOR: TBD	
9	**HOLLOW METAL DOOR AND FRAME** PAINTED COLOR:	
10	**OVERHEAD DOOR** MRF: OVERHEAD DOOR COMPANY COLOR: TBD	

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PROJECT INFORMATION

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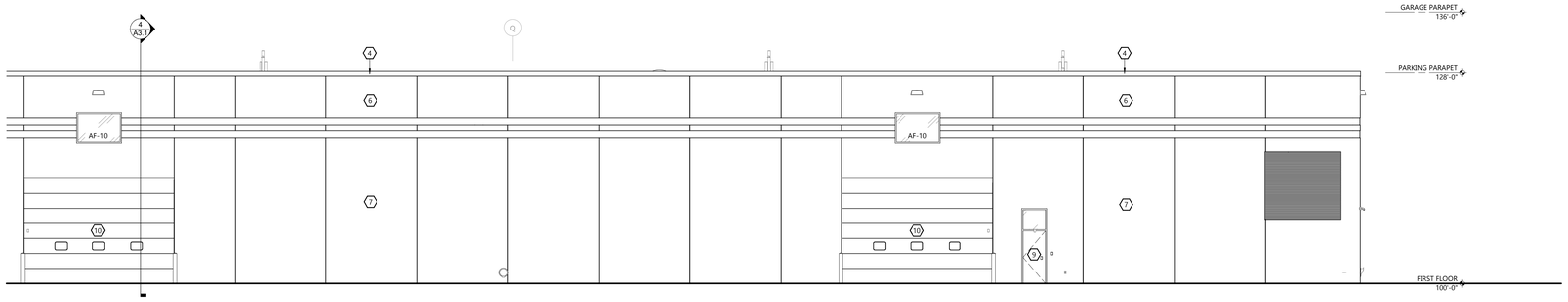
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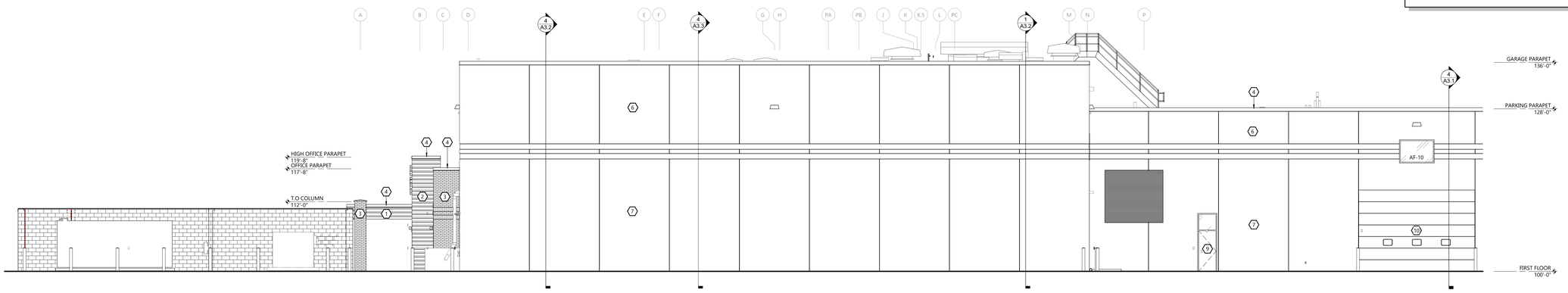
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ARCHITECTURAL EXTERIOR ELEVATIONS - MAIN BUILDING

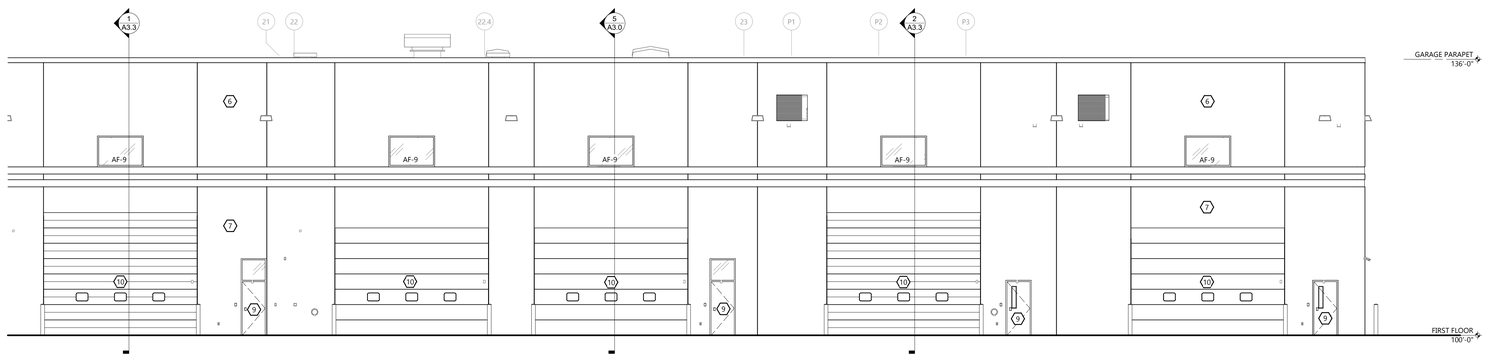
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1 / A2.1 SOUTH BUILDING ELEVATION
SCALE: 1/8" = 1'-0"



2 / A2.1 SOUTH BUILDING ELEVATION
SCALE: 1/8" = 1'-0"



3 / A2.1 WEST BUILDING ELEVATION
SCALE: 1/8" = 1'-0"

GENERAL NOTES

1281 SEE WALL SECTIONS FOR EXTERIOR WALL CONSTRUCTION

- REFERENCE EXTERIOR ELEVATIONS FOR VENEER CONTROL JOINTS. SEE STRUCTURAL PLANS FOR CMU CONTROL JOINT LOCATIONS. VENEER CONTROL JOINTS AND CMU CONTROL JOINTS ARE NOT REQUIRED TO ALIGN.

EXTERIOR MATERIAL KEY

1	**EXTERIOR SIDING** MFR: MUZA PRODUCT: MZ4 COLOR: TBD	MATERIAL: 24 GA. GALVANIZED STEEL
2	**EXTERIOR SIDING** MFR: MUZA PRODUCT: MZ5 COLOR: TBD	MATERIAL: 24 GA. GALVANIZED STEEL
3	**BRICK** MFR: TBD PRODUCT: TBD COLOR: TBD	SIZE: UTILITY MORTAR: NATURAL COLOR
4	**METAL COPING** MFR: PAC-CLAD PROFILE: PAC-TITE COPING - TAPERED COLOR: TO MACH METAL PANEL	
5	**CAST STONE SILL** MFR: COUNTY MATERIALS PROFILE: SEE SECTION DETAILS COLOR: PROVIDE SAMPLES TO MATCH BRICK COLOR	
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7	**SAND BLASTED PRECAST** COLOR: TBD CONCRETE COLOR: GRAY TEXTURE: SANDBLAST MEDIUM	
8	**ALUMINUM DOOR AND FRAME** ANNODIZED COLOR: TBD	
9	**HOLLOW METAL DOOR AND FRAME** PAINTED COLOR:	
10	**OVERHEAD DOOR** MFR: OVERHEAD DOOR COMPANY COLOR: TBD	

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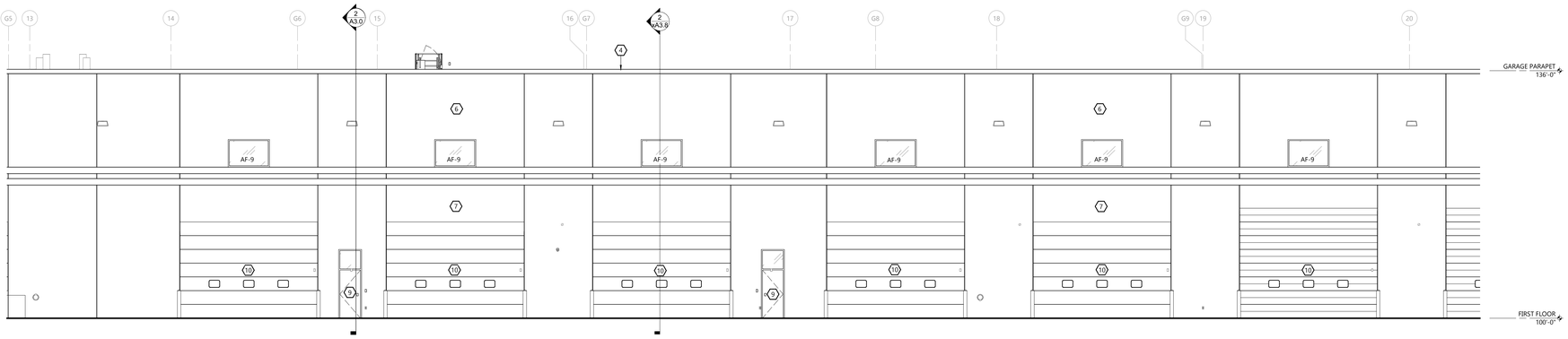
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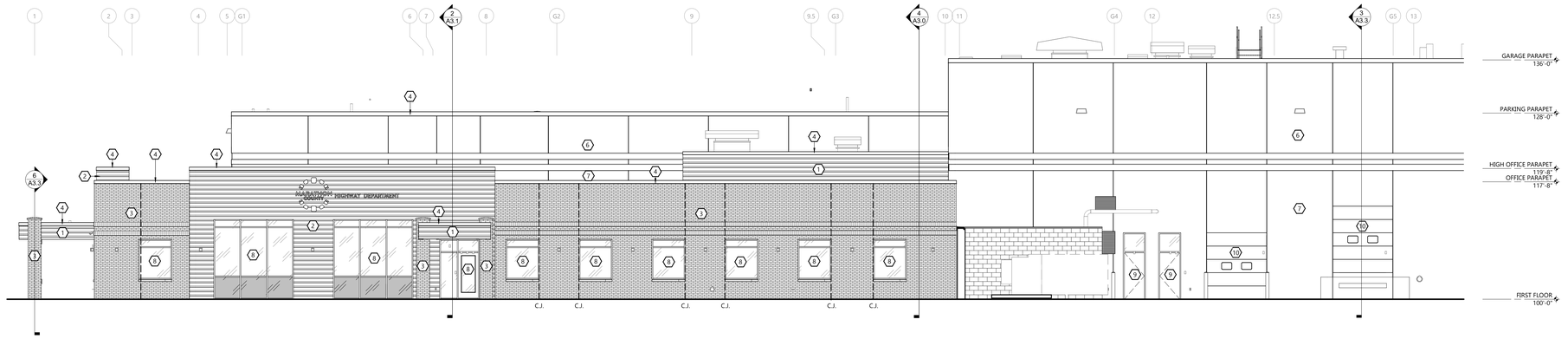
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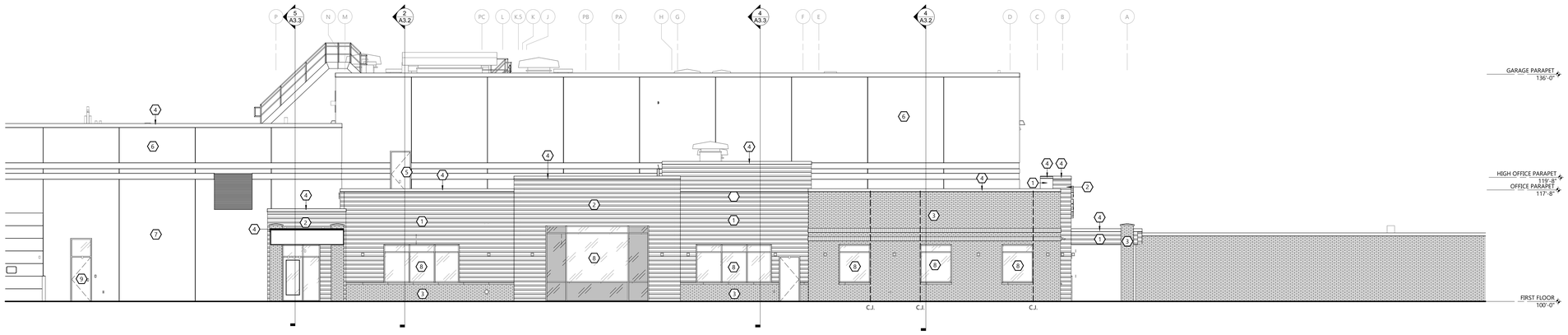
ARCHITECTURAL EXTERIOR ELEVATIONS - MAIN BUILDING



1 A2.2 WEST BUILDING ELEVATION
SCALE: 1/8" = 1'-0"



2 A2.2 WEST BUILDING ELEVATION
SCALE: 1/8" = 1'-0"



3 A2.2 NORTH BUILDING ELEVATION
SCALE: 1/8" = 1'-0"

GENERAL NOTES

1 2 8 1 SEE WALL SECTIONS FOR EXTERIOR WALL CONSTRUCTION

- REFERENCE EXTERIOR ELEVATIONS FOR VENEER CONTROL JOINTS. SEE STRUCTURAL PLANS FOR CMU CONTROL JOINT LOCATIONS. VENEER CONTROL JOINTS AND CMU CONTROL JOINTS ARE NOT REQUIRED TO ALIGN.

EXTERIOR MATERIAL KEY

1 **EXTERIOR SIDING**
MFR: MUZA
PRODUCT: MZ4
COLOR: TBD
MATERIAL: 24 GA. GALVANIZED STEEL

2 **EXTERIOR SIDING**
MFR: MUZA
PRODUCT: MZ5
COLOR: TBD
MATERIAL: 24 GA. GALVANIZED STEEL

3 **BRICK**
MFR: TBD
PRODUCT: TBD
COLOR: TBD
SIZE: UTILITY
MORTAR: NATURAL COLOR

4 **METAL COPING**
MFR: PAC-CLAD
PROFILE: PAC-TITE COPING - TAPERED
COLOR: TO MACH METAL PANEL

5 **CAST STONE SILL**
MFR: COUNTY MATERIALS
PROFILE: SEE SECTION DETAILS
COLOR: PROVIDE SAMPLES TO MATCH BRICK COLOR

6 **ACID ETCHED PRECAST**
COLOR: TBD
CONCRETE COLOR: GRAY
TEXTURE: ACID ETCH MEDIUM

7 **SAND BLASTED PRECAST**
COLOR: TBD
CONCRETE COLOR: GRAY
TEXTURE: SANDBLAST MEDIUM

8 **ALUMINUM DOOR AND FRAME**
ANNODIZED COLOR: TBD

9 **HOLLOW METAL DOOR AND FRAME**
PAINTED COLOR:

10 **OVERHEAD DOOR**
MFR: OVERHEAD DOOR COMPANY
COLOR: TBD

NOTE:
- EXTERIOR SIGN IS ILLUMINATED. THE EXTERIOR WALL WHERE THE SIGN IS MOUNTED IS BRICK AND NO VISIBLE WIRES ARE ALLOWED ON THE EXTERIOR. THEREFORE, THE LOW VOLTAGE WIRES FOR THE SIGN MUST BE CONCEALED WITHIN THE EXTERIOR WALL CONSTRUCTION. PRIOR TO THE BRICK BEING INSTALLED, THE SIGN VENDOR MUST LOCATE AND INSTALL ALL LOW VOLTAGE WHIPS TO A JUNCTION BOX CONNECTED TO VIEW FROM PARKING LOT AND RETURN LATER TO TERMINATE AFTER BRICK HAS BEEN INSTALLED.
- SIGN LETTERS TO BE INSTALLED OVER BRICK WITH 3" STAND OFF FROM WALL FINISH
- OBTAIN SIGN LOGO AND TYPOGRAPHY FROM OWNER
- SIGNAGE BY OWNER



4 A2.2 SIGNAGE
SCALE: 1/4" = 1'-0"

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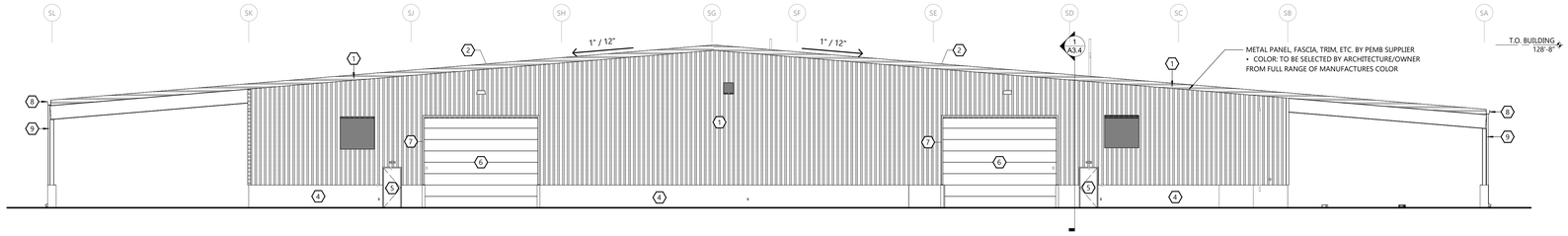
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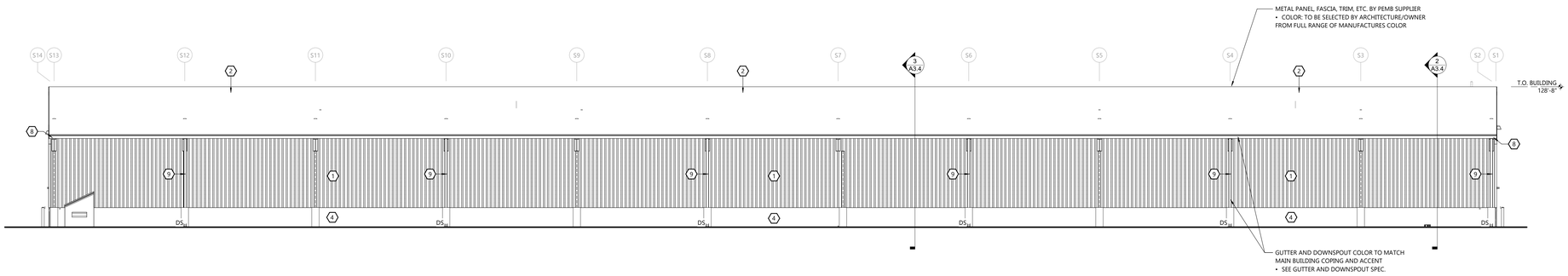
ARCHITECTURAL EXTERIOR ELEVATIONS - MAIN BUILDING

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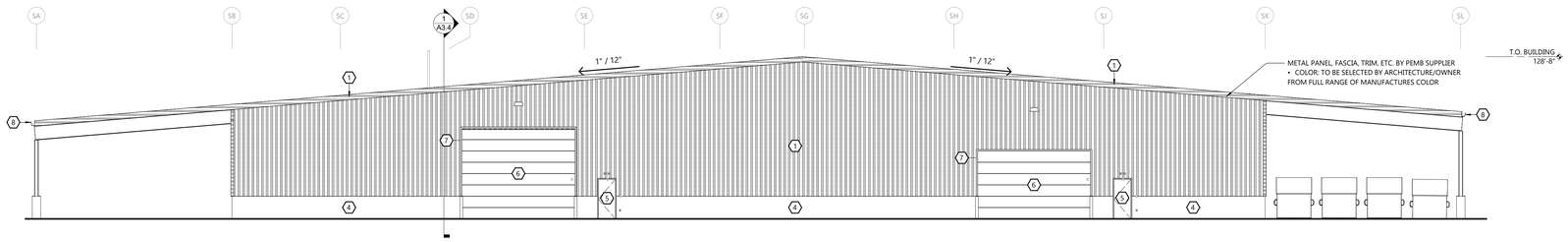
1 A2.3 NORTH TEMPERED STORAGE ELEVATION

SCALE: 3/32" = 1'-0"



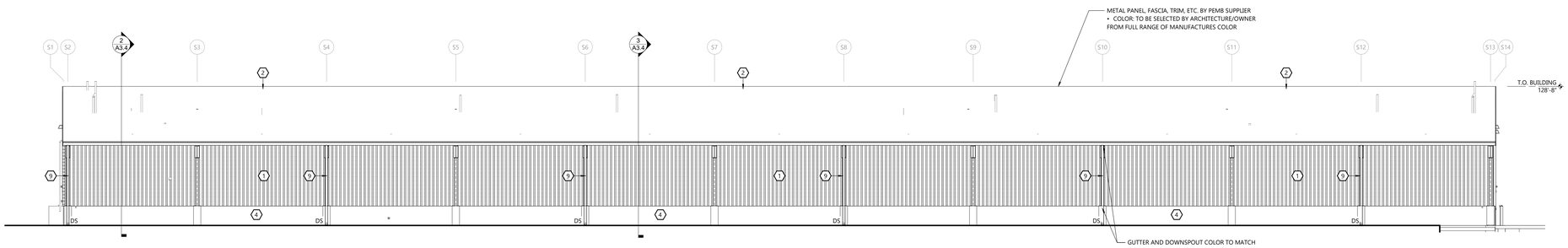
2 A2.3 EAST TEMPERED STORAGE ELEVATION

SCALE: 3/32" = 1'-0"



3 A2.3 SOUTH TEMPERED STORAGE ELEVATION

SCALE: 3/32" = 1'-0"



4 A2.3 WEST TEMPERED STORAGE ELEVATION

SCALE: 3/32" = 1'-0"

EXTERIOR MATERIAL KEY

1 **VERTICAL METAL WALL PANEL**
PRODUCT: SHADOWALL
MATERIAL: 26 GA. MTL PANEL
COLOR: TBD

2 **METAL ROOF PANEL**
PRODUCT: MR-24- STANDING SEAM MTL ROOF
MATERIAL: 24 GA. MTL PANEL
COLOR: TBD

3 **METAL BUILDING TRIM**
PRODUCT: MR-24 - STANDING SEAM MTL ROOF
MATERIAL: 24 GA MTL PANEL
COLOR: TBD

4 **CONCRETE WALL**
COLOR: STANDARD CONCRETE
FINISH: FORM FINISHED

5 **HOLLOW METAL DOOR AND FRAME**
PAINTED COLOR: COLOR

6 **OVERHEAD DOOR**
OVERHEAD DOOR COMPANY
COLOR: WHITE

7 **OVERHEAD DOOR FRAME**
MATERIAL: SUPPLIED BY METAL BUILDING MANUF.
COLOR: MATCH WALL PANEL

8 **GUTTERS**
DIMENSIONS: PROVIDED & SIZED BY PEMB
MATERIAL: PREFINISHED METAL
COLOR: MATCH WALL PANEL

9 **DOWNSPOUTS**
DIMENSIONS: PROVIDED & SIZED BY PEMB
MATERIAL: PREFINISHED METAL
COLOR: MATCH WALL PANEL

10 **METAL SOFFIT PANEL**
PRODUCT: MANUF. STANDARD SOFFIT PANEL
MATERIAL: 24 GA. MTL PANEL
COLOR: COLOR TO MATCH WALL PANEL ADJACENT TO PEMB CANOPY

GENERAL NOTES

12B1 SEE WALL SECTIONS FOR EXTERIOR WALL CONSTRUCTION

• REFERENCE EXTERIOR ELEVATIONS FOR VENEER CONTROL JOINTS. SEE STRUCTURAL PLANS FOR CMU CONTROL JOINT LOCATIONS. VENEER CONTROL JOINTS AND CMU CONTROL JOINTS ARE NOT REQUIRED TO ALIGN.

EXCEL
Always a Better Plan
100 Camelot Drive
Fond du Lac, WI 54935
920-926-9800
excelengineer.com

COLLABORATION
Miron
Building Excellence
Miron Construction Co., Inc.
1471 McMahon Drive
Neenah, WI 54956

PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:
MARATHON COUNTY HIGHWAY COMMISSION
OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

PRELIMINARY DATES
FEB. 6, 2026
MAR. 2, 2026
MAR. 27, 2026
APR. 15, 2026
JULY 14, 2026
JULY 23, 2026

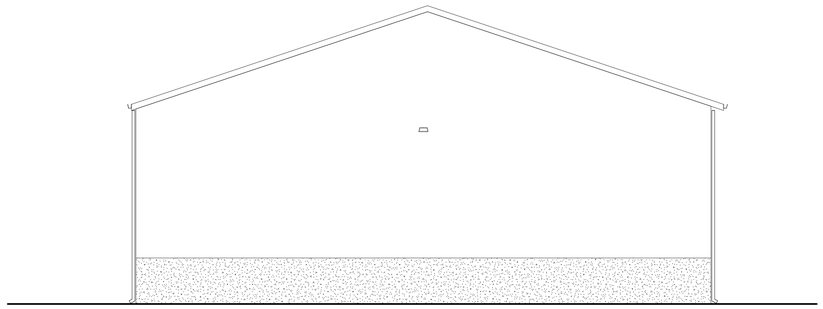
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JOB NUMBER
250008600

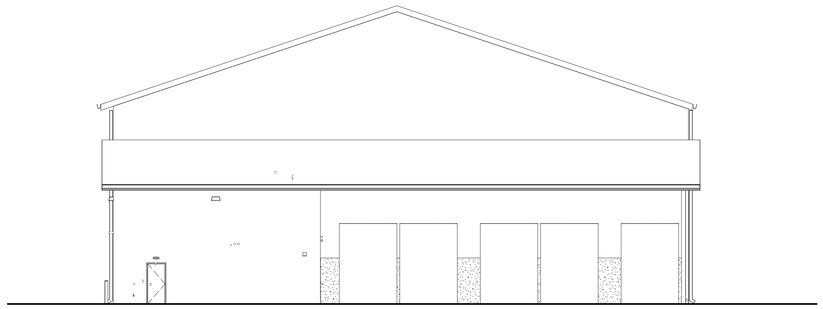
SHEET NUMBER
A2.3

ARCHITECTURAL EXTERIOR ELEVATIONS - TEMPERED STORAGE

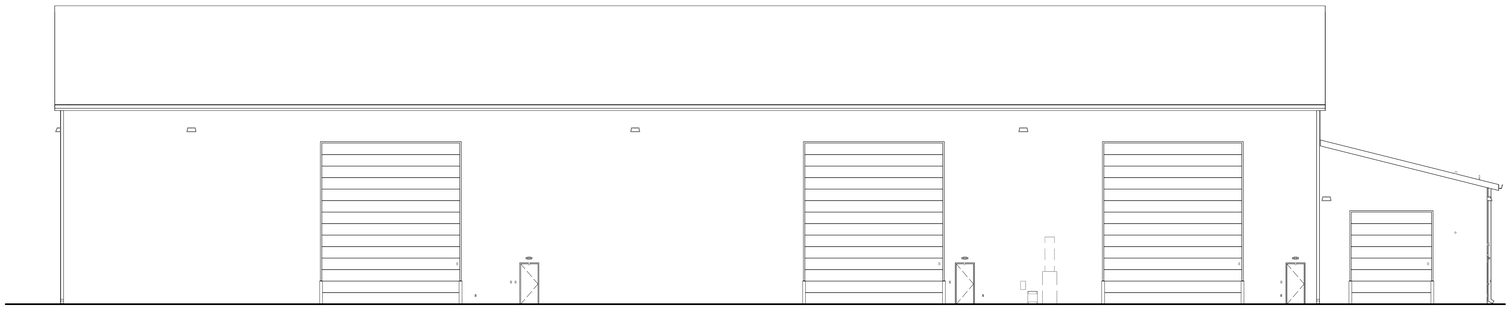
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7/24/2026 7:19:38 AM



1 / A2.4 NORTH SALT SHED ELEVATION
SCALE: 3/32" = 1'-0"



3 / A2.4 SOUTH SALT SHED ELEVATION
SCALE: 3/32" = 1'-0"



4 / A2.4 WEST SALT SHED ELEVATION
SCALE: 3/32" = 1'-0"



2 / A2.4 EAST SALT SHED ELEVATION
SCALE: 3/32" = 1'-0"

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PROJECT INFORMATION

PROPOSED NEW HIGHWAY GARAGE FOR:

MARATHON COUNTY HIGHWAY COMMISSION

OLD HIGHWAY 51 • KRONENWETTER, WI 54455

PROFESSIONAL SEAL

PRELIMINARY DATES

FEB. 6, 2026
MAR. 2, 2026

NOT FOR CONSTRUCTION

JOB NUMBER

250008600

SHEET NUMBER

A2.4

EXTERIOR ELEVATIONS - SALT SHED

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7/24/2026 7:19:41 AM

POLICY ID: *PW-011*	TITLE: ***Water and sewer service policy for non-standard water and sewer lateral installations***
☒ ORIGINAL ☐ REVISION	APPROVED BY VILLAGE BOARD: DATE:
EFFECTIVE DATE: *Immediate*	Village Clerk April 11, 2017
APPLIES TO: ☒ FLSA EXEMPT ☒ FLSA NON-EXEMPT	
☒ REPRESENTED EMPLOYEES ☒ Non-REPRESENTED EMPLOYEES	

This policy applies to all Village of Kronenwetter employees in the categories checked in this section. Provisions within individual personal contracts or a collective bargaining agreement may supersede certain parts of this policy.

Purpose:

Periodically Village residents near existing Village sewer and water mains require or desire municipal sewer/water facilities. However, existing main line pipes may not be installed abutting the resident's property, such that a typical sewer/water lateral configuration can be installed. Mains may be located abutting an adjacent property, but located on the far side of the abutting parcel, placing them 100 feet or more away. Or mains may be located across an intersection. Or there may be a vacant parcel or resident not desiring service between the mains and the resident in need of service. The dead end sewer main located nearby may be too shallow to provide gravity sewer service to the resident needing/desiring service.

The vast majority of sewer/water laterals are constructed perpendicular to the mains and right of way, in front of the dwelling being serviced, with the municipal portion of the services being 30 to 40 feet long. In cul-de-sacs or on curves the municipal section of the service line maybe longer. The standard Village policy on maintenance and/or repair of laterals is that portion of the piping in the right of way is the responsibility of the Village.

In most cases the preferred method of providing new properties with sewer/water service is to install mainline extensions. In these situations a maximum sewer extension length would be 400 feet (maximum 400 feet between manholes) and a water main of 600 feet (fire hydrants required every 600 feet). Shorter distances are certainly possible. However, the fixed costs of dead end manholes and fire hydrants rapidly increase the per foot cost of the main extensions the shorter they are. Main extensions also add another variable in that there would be property across the street that could also receive services – a service that the resident across the street may not want. However, since municipal services are "available" they may be required to abandon their private facilities and connect to the municipal facilities. Also in most cases the main line extensions, when possible, would be installed to the far side of the resident's property, so that the next extension begins at the new service area, not part way through the downstream previously serviced property.

Procedure:

When main line extensions are cost prohibited for an adjacent resident to receive sewer/water services, private laterals may be installed in the ditch line, parallel to the right of way, in front of an adjacent residents dwelling, to connect to existing facilities located nearby.

These long services should be;

1) Pipe limited to 200 feet in length from the connection to the main to where they enter the property being serviced.
2) Gravity sewer lateral cleanouts shall be constructed in concrete and/or ductile iron frost sleeves to protect them from damage.
3) Sewer laterals maybe small diameter force mains from private grinder pump stations when adequate grade is not available for gravity sewer service.
4) Only the first 30 feet of the sewer and water services shall be the maintenance responsibility of the Village. From 30 feet out, to the dwelling being serviced, shall be considered the private portion of the service and the responsibility of the customer, even though the piping is located in the right of way. The water service curb stop shall be located near the main being tapped. A second curb stop at the customer's property line would be recommended.
5) The customer shall be responsible for operation and maintenance, including Digger's locates, for the extra lengths.

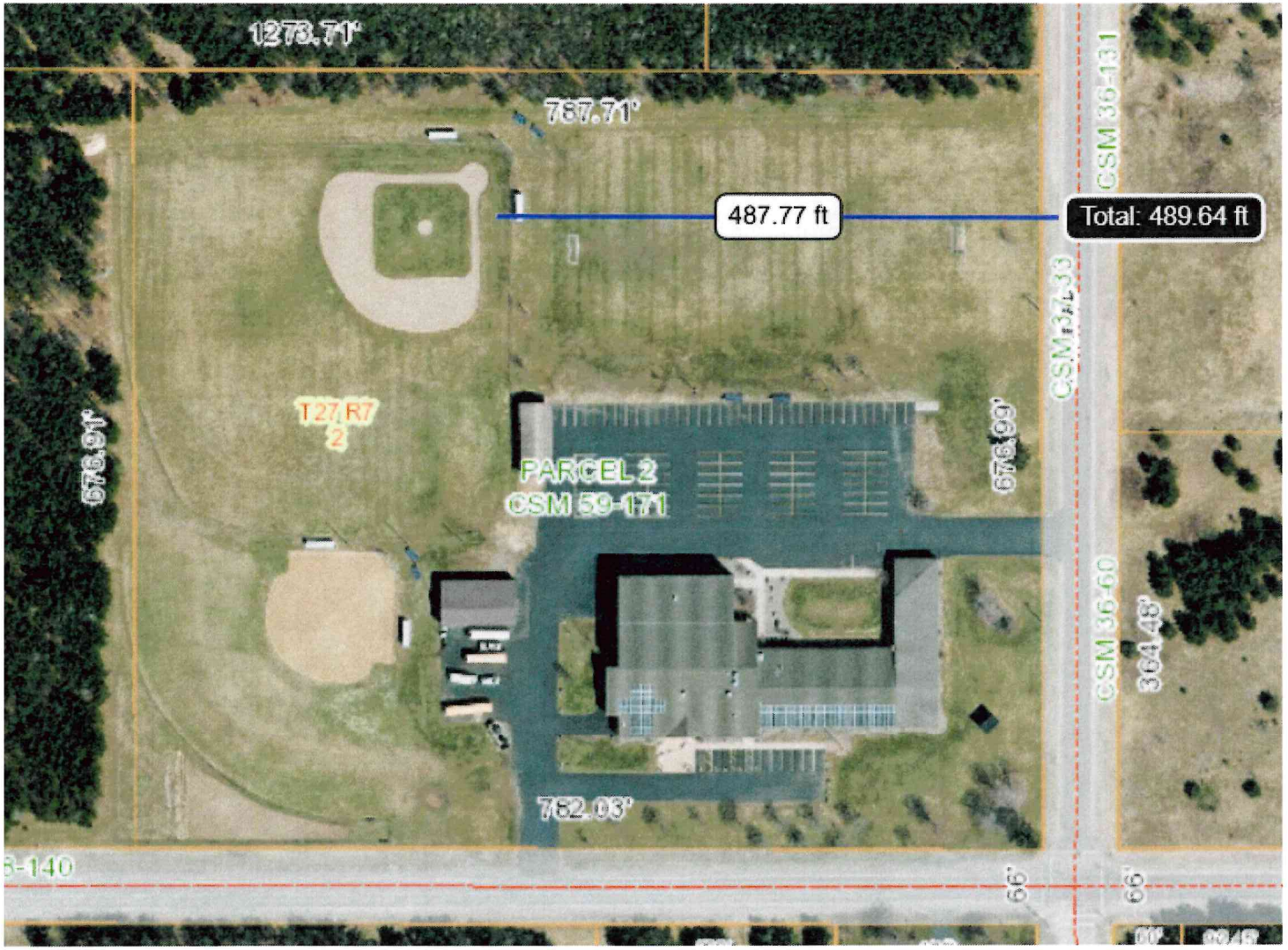
6) At such time main line sewer and/or water mains are extended adjacent to the customer's property, the long services shall be abandoned and shortened to conventional lengths at the customer's expense.
7) The new customer shall submit plans of such proposed services for approval to various Village committees and the Village Board. Approvals will be granted on a case by case bases, pending the particular circumstances of the existing mains, design grades, right of way conditions, level of service of the street and others such issues. A road excavating permit shall be required.
8) An agreement between the Village and customer shall be drafted and recorded addresses key issue for the particular installation.

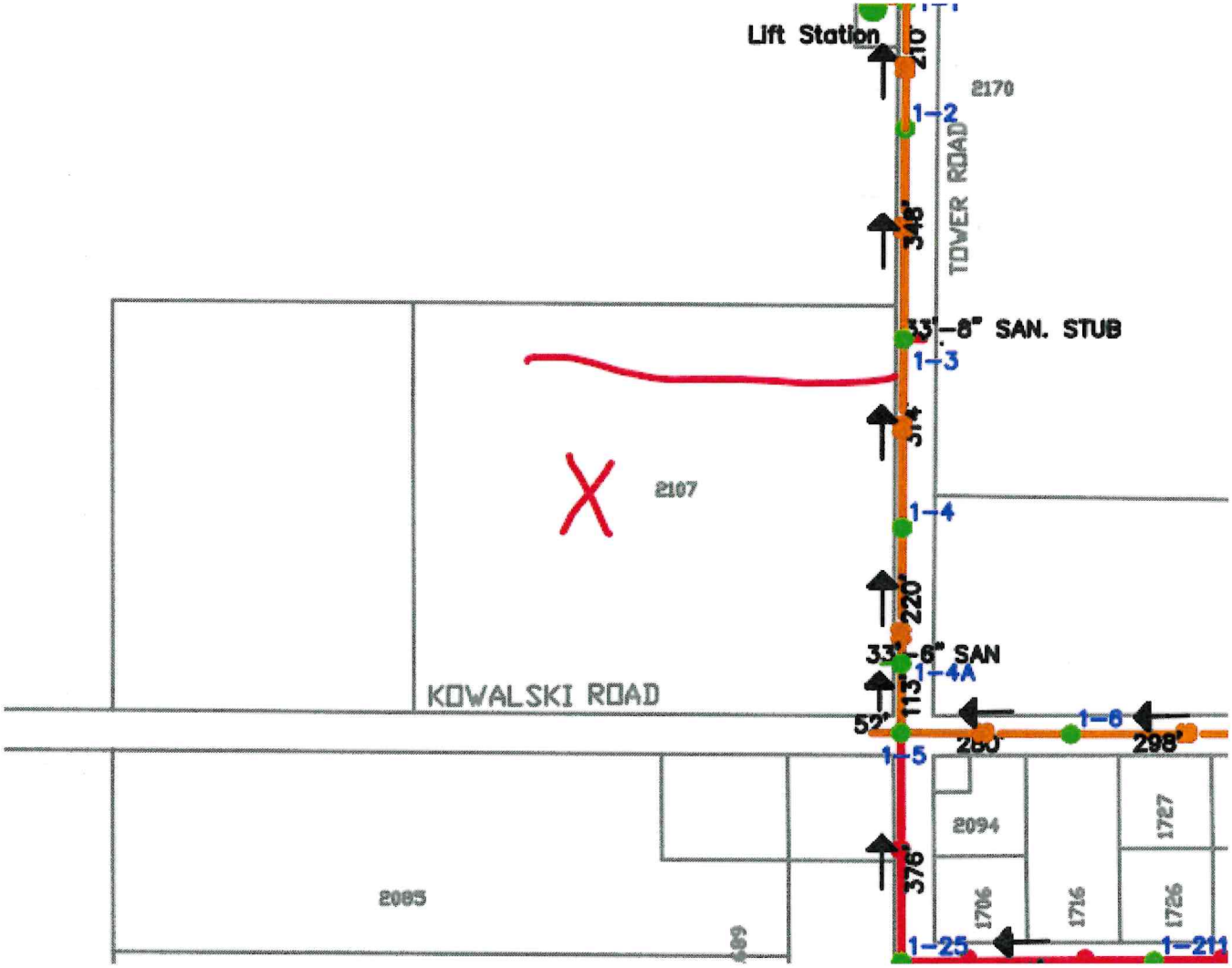
Connection of long sewer or water services shall be subject to any connection fee and prevailing hookup or aid to construction fees.

§ 508-37. - Septic tanks prohibited.

The maintenance and use of septic tanks and other private sewage disposal systems within the boundaries of the village and serviced by its sewer system are hereby declared to be a public nuisance and a health hazard. From and after December 31, 1997, the use of septic tanks or any private sewage disposal system within the boundaries of the village serviced by the sewer system shall be prohibited.

(Ord. of 4-12-2004; Ord. of 11-17-2009)


1273.71'
787.71'
487.77 ft
Total: 489.64 ft
CSM 36-131
CSM 37-33
T27 R7
2
PARCEL 2
CSM 59-171
676.91'
676.99'
CSM 36-60
364.48'
762.03'
66'
66'


Lift Station
210'
2170
1-2
348'
TOWER ROAD
33'-8" SAN. STUB
1-3
314'
2107
1-4
220'
33'-6" SAN
1-4A
115'
KOWALSKI ROAD
52'
1-6
260'
298'
1-5
2094
1727
376'
2085
1706
1716
1726
409'
1-25
1-211

village of Kronenwetter

Report to Planning Commission

Agenda Item: Septic Tank Ordinance Discussion
Meeting Date: August 17, 2026
Referring Body: Plan Commission
Committee Contact:
Staff Contact: Greg Ulman
Report Prepared by: Greg Ulman

AGENDA ITEM: Septic Tank Ordinance Discussion

OBJECTIVE(S): To review the current septic tank ordinance.

HISTORY/BACKGROUND: Northland Lutheran High School is looking to hook up a small kitchen and/or bathroom to a septic holding tank in their athletic facility behind the school at 2107 Tower Rd. in Kronenwetter. Our current ordinance prohibits septic tanks, however, since this is a temporary use seasonal facility would the Village entertain the idea of amending the ordinance to allow this type of structure to exist in a non-household situation?

After speaking with our Village attorney, the direction they gave was that as our ordinance sits currently, they can not have a septic tank. We would need to amend our ordinance to allow it.

RECOMMENDED ACTION: To give direction to staff about possible changes to ordinance.

ATTACHMENTS: Ordinance, maps, and policy

E. *Review and action by plan commission.* Within 60 days after the public hearing, or extension of said period requested in writing or electronic format by the applicant and granted by the commission, the plan commission shall take final action on the conditional use permit request. The commission may approve the conditional use as originally proposed, may approve the proposed conditional use with conditions or modifications, or may deny approval of the proposed conditional use and include reasons for denial. Any action to approve or amend the proposed conditional use permit requires a majority vote of commission members in attendance.

F. *Appeal to village board.* An appeal of a decision under subsection E may be taken to the village board by any person, firm or corporation or any officer, department, board, commission or agency of the village who is aggrieved by the decision. Such appeal shall be made in writing to the zoning administrator within ten days after the date of the commission's decision. In the case of an appeal:

(1) The zoning administrator and building inspector shall issue no permits to enable commencement or continuation of building and other activities authorized by the conditional use permit and shall issue a stop-work order for any such activities already commenced.

(2) The zoning administrator shall immediately notify the applicant and property owner of the appeal in writing and shall schedule the appeal for village board consideration.

(3) The village board shall, by resolution, make a final decision to grant, with or without conditions, or to deny each application for a conditional use permit after receiving and reviewing the commission's findings and making its own findings as to whether or not the proposed use will satisfy the standards for approval set forth in subsection G and shall have all of the powers of the commission under this section. The village board's determination shall be final and subject to appeal to the circuit court under any procedure authorized by statute.

G. *Review criteria for conditional use permit.* Each requested conditional use permit shall meet the following criteria (achieve "yes" answers) to be approved:

(1) Is the proposed conditional use in harmony with the comprehensive plan, this chapter, and any other plan, program, or ordinance adopted by the village?

(2) The proposed conditional use does not, in its proposed location and as depicted on the required site plan, result in a substantial or undue adverse impact on nearby property, the character of the neighborhood, environmental factors, traffic factors, parking, public improvements, public property or rights-of-way, or other matters affecting the public health, safety, or general welfare, either as they now exist or as they may in the future be developed as a result of the implementation of the provisions of this chapter, the comprehensive plan, or any other plan, program, map, or ordinance adopted by the village?

(3) Does the proposed conditional use maintain the desired consistency of land uses, land use intensities, and land use impacts as related to the environs of the subject property?

(4) Is the proposed conditional use located in an area that will be adequately served by, and will not impose an undue burden on, any of the improvements, facilities, utilities, or services provided by public agencies serving the subject property?

(5) Do the potential public benefits of the proposed conditional use outweigh potential adverse impacts of the proposed conditional use, after taking into consideration the applicant's proposal and any requirements recommended by the applicant to ameliorate such impacts?

Perspectives on Planning

January 2018



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Conditional Use Permits After 2017 Wisconsin Act 67

By Brian W. Ohm

2017 Wisconsin Act 67 adds new sections to the *Wisconsin Statutes* governing the issuance of conditional use permits to the general zoning enabling laws for cities, villages, towns, and counties.[1] Until the addition of these sections, the general zoning enabling statutes did not include the term "conditional use permit" nor provide any guidance for the issuance of conditional use permits. Rather, the law governing conditional use permits was based on court decisions.

Act 67 Responds to the Wisconsin Supreme Court Decision in *AllEnergy Corp. v. Trempealeau County*

The Wisconsin Supreme Court's May 2017 decision in ***AllEnergy Corp. v. Trempealeau County***, 2017 WI 52, provides important context for understanding the conditional use requirements inserted in Act 67.

The *AllEnergy* case involved the denial of a conditional use permit for a proposed frac sand mind in Trempealeau County. The County voted to adopt 37 conditions for the mine, which AllEnergy agreed to meet, but then the County voted to deny the conditional use permit in part relying on public testimony in opposition to the mine. A divided Wisconsin Supreme Court upheld the County's denial of the conditional use permit acknowledging the discretionary authority of local governments in reviewing proposed conditional uses.

Act 67 in part reflects the sentiment articulated by the dissent in the *AllEnergy* decision According to the Dissent in *AllEnergy*: "When the Trempealeau County Board writes its zoning code, or considers amendments, . . . is the stage at which the County has the greatest discretion in determining what may, and may not, be allowed on various tracts of property." "Upon adding a conditional use to a zoning district, the municipality rejects, by that very act, the argument that the listed use is incompatible with the district." "An application for a conditional use permit is not an invitation to re-open that debate. A permit application is, instead, an opportunity to determine whether the specific instantiation of the conditional use can be accomplished within the standards identified by the zoning ordinance."

While local governments did not need to change their ordinances in response to the *AllEnergy* decision, Act 67 should prompt local governments to review their zoning ordinances, practices, and procedures to ensure they meet the new statutory requirements.

The New Statutory Requirements

Act 67 Act 67 limits local government discretion related to the issuance of conditional use permits.

[1]Act 67 creates section 62.23 (7) (de) for cities, villages, and towns exercising zoning under village powers, section 60.61 (4e) for towns exercising zoning without village powers, and section 59.69 (5e) for counties.

The new law adds the following definition of "conditional use" to the Statutes: "'Conditional use' means a use allowed under a conditional use permit, special exception, or other zoning permission issued by a [city, village, town, county] but does not include a variance."

Act 67 also includes the following definition of "substantial evidence," a term used in several places in the Act: "'Substantial evidence' means facts and information, other than merely personal preferences or speculation, directly pertaining to the requirements and conditions an applicant must meet to obtain a conditional use permit and that reasonable persons would accept in support of a conclusion." This language softens the language of earlier versions of the bill that stated substantial evidence did not include "public comment that is based solely on personal opinion, uncorroborated hearsay, or speculation." Public comment that provides reasonable facts and information related to the conditions of the permit is accepted under Act 67 as evidence.

Act 67 then provides that "if an applicant for a conditional use permit meets or agrees to meet all of the requirements and conditions specified in the [city, village, town, county] ordinance or imposed by the [city, village, town, county] zoning board, the [city, village, town, county] shall grant the conditional use permit." This new language follows the argument made by the plaintiffs and the dissenting opinion in the *AllEnergy* case. The use of the term "zoning board," however, is at odds with current Wisconsin law that allows the governing body, the plan commission, or the zoning board of adjustment/appeals to grant conditional uses. This "zoning board" terminology may lead to some confusion.

Act 67 also provides that the conditions imposed "must be related to the purpose of the ordinance and be based on substantial evidence" and "must be reasonable and to the extent practicable, measurable" This new statutory language emphasizes the importance of having clear purpose statements in the zoning ordinance. In addition, since local comprehensive plans can help articulate the purpose of ordinances that implement the plan, local governments should consider including a requirement that the proposed conditional use furthers and does not conflict with the local comprehensive plan.

Act 67 states that permits "may include conditions such as the permit's duration, transfer, or renewal." In the past, sometimes there was confusion about whether local governments had the authority to place a time limit on the duration of a conditional use permit. This new statutory language clarifies that local governments have that authority.

Next, Act 67 provides that the applicant must present substantial evidence "that the application and all requirements and conditions established by the [city, village, town, county] relating to the conditional use are or shall be satisfied." The city, village, town or county's "decision to approve or deny the permit must be supported by substantial evidence."

Under the new law, a local government must hold a public hearing on a conditional use permit application, following publication of a class 2 notice. If a local government denies an application for a conditional use, the applicant may appeal the decision to circuit court. The conditional use permit can be revoked if the applicant does not follow the conditions imposed in the permit.

The New Requirements In A Nutshell:

- The requirements and conditions specified in the ordinance or imposed by the zoning board must be reasonable, and to the extent practicable, measurable.
- Any condition imposed must relate to the purpose of the ordinance and be based on substantial evidence.
- Substantial evidence means facts and information, other than merely personal preferences or speculation, directly pertaining to the requirements and conditions an applicant must meet to obtain a conditional use permit and that a reasonable person would accept in support of a conclusion.
- If an applicant meets, or agrees to meet, all of the requirements and conditions specified in the ordinance or imposed by the zoning board, the local government must grant the CUP.
- The applicant must provide substantial evidence that the application and all requirements and conditions are, or shall be, satisfied.
- If an applicant does not meet one or more of the requirements (for example the application is incomplete) or conditions specified in the ordinance or imposed by the zoning board, the local government can deny the CUP.
- A local government's decision to approve or deny a conditional use permit must be supported by substantial evidence.

The new conditional use law applies to applications for conditional use permits filed on and after November 28, 2017.

Local governments should review the requirements of their ordinance to consider adding to or revising the conditions listed in the ordinance to ensure that the local government will be able to review specific development proposals against the purpose of the ordinance and be able to support conditions imposed on a specific application with substantial evidence. Act 67 may prompt some local governments to reconsider what might be listed as a conditional use in certain zoning districts and explore creating new districts or other ways to regulate the use. Local governments might also want to a multi-step process that informs applicants of the conditions the zoning board will imposed prior to the board's decision so the applicant can prove that they can comply with the conditions.

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Frequently Asked Questions About Act 67[2]

■*Does Act 67 Limit Local Discretion to Deny a Conditional Use Permits?*

Act 67 attempts to limit the level of discretion implied in the lead opinion of Wisconsin Supreme Court in the *AllEnergy* case.

Clearly under Act 67, if an applicant agrees to meet all the requirements of the ordinance and all the conditions imposed, the local government has no discretion to deny the permit.

However, local governments still have discretion in terms of whether or not something is listed as a conditional use in the zoning ordinance. Local governments also have discretion as to whether or not to impose a condition (for example every permit might not need conditions related to hours of operation). Local governments also have the authority to deny a permit if the applicant cannot meet the requirements of the ordinance or the conditions imposed. The fact that Act 67 talks about denial of a permit and the right challenge a denial in court shows the legislature did not take away all authority to deny an application for a conditional use permit.

A local government still has the ability to approve or deny a permit, and to attach conditions. A local government either approves a CUP because it complies with the requirements of the ordinance and the conditions imposed or they deny it because it does not meet the requirements of the ordinance and the conditions imposed.

Local governments have more discretion when rezoning a property. Act 67 may prompt some local governments to limit what is a conditional use and require a rezoning to a different district for certain uses.

■*Is a local government obligated to craft conditions that will help the applicant meet the ordinance requirements?*

No, but the local government needs to articulate why the proposed use does not meet the ordinance requirements and allow the applicant to suggest conditions that address the deficiencies.

For example, say an ordinance has general standards for CUPS like "protect public health, safety, and welfare." The zoning board uses that standard to say "we should not allow this project because it will lead to traffic congestion leading to unsafe traffic conditions." Under Act 67, the local government can't deny it unless they back it up with substantial evidence. The local government decides to conduct a traffic study. The traffic study concludes that if truck traffic to the site is limited to certain hours, there will be no congestion. The applicant proposes a condition to limit truck traffic based on the findings of the study.

There needs to be an opportunity for some back and forth between the applicant and the local government -- for example, the local government says we're concerned about water quality. They will need to provide specific facts about the water quality impacts. They may use that information to impose a specific condition that will address the water quality issue or it might be that the local government identifies the threat posed by the conditional use and the applicant responds by saying "I've hired a hydrologist, here is their report about the water quality impacts. The hydrologist recommends we do x, y, and z to address those impact. We propose doing that". The applicant develops the alleviating conditions.

What Act 67 changes is that in the past a group of citizens who are opposed to a project would say "deny the CUP because it will have traffic impact" and the local government would deny the CUP. Act 67 changes that.

[2] Thanks to Becky Roberts with the Center for Land Use Education at UW-Stevens Point for compiling these questions.

Local governments can't just say, “We have a standard in or ordinance that a CUP promote public health, safety, and welfare. We think there are traffic impacts so we deny the CUP.” Local governments need substantial evidence that there will be traffic impacts. That evidence will provide the basis for more specific conditions imposed by the local government or suggested by the applicant. There are engineering solutions for many impacts so it will be difficult for there to be no condition that could be imposed to meet the ordinance standards. It may be extremely expensive to follow the condition -- that might stop the project. Perhaps the hours of operation end up being so limited the applicant drops the project. That may lead the applicant to argue the condition is unreasonable. Resolution of that issue will take further litigation.

Historically, most CUPs are approved. Denials are very limited. Act 67 may make denials harder.

■*How closely do conditions imposed by the zoning board need to match the “standards” (requirements and conditions) outlined in the zoning ordinance? In other words,* d*o you need to rely on the ordinance purpose or ordinance standards when crafting conditions?*

Yes, Act 67 requires that “any condition imposed must be related to the purpose of the ordinance and be based on substantial evidence.” Many ordinances include general statements like protect public health and safety in the purpose statement of the ordinance, as a requirement of the ordinance, or as a standard for granting conditions. *Kraemer & Sons Inc. v. Sauk Cnty. Adjust. Bd*., 183 Wis. 2d 1, 13, 515 N.W.2d 256 (1994), provides guidance that standards in ordinances can include general standards like the "need to protect public health, safety, and welfare" and more specific standards like "mining operations must not impair water quality." Act 67 does not prohibit the use of general standards so local governments should still include them. They just will need to provide substantial evidence to justify why the condition is necessary to protect public health, safety, and welfare.

■*Act 67 requires applicants to demonstrate that all requirements and conditions are, or shall be, satisfied. This seems like it will be problematic. Do you have any tips that a local government can use to avoid situations where the applicant promises to meet the requirements/conditions and then never follows through?*

A local government could revoke the permit or take other legal action if the requirements and conditions are not met. The body granting a conditional use permit retains jurisdiction over the permit to insure that the applicant complies with the conditions over the life of the permit and the applicant does what they said they would do. Just like the enforcement of any zoning matter, the zoning administrator will need to monitor the activity to insure compliance. Neighboring property owners also can monitor compliance and can file a complaint with the local government --"The permit allows the mine to operate from 8am to 5pm and they have been working until 7 pm this past week." The local government could revoke the permit for noncompliance. They could also impose a monetary penalty for not being in compliance. They should check the enforcement section of their zoning ordinance to see what it currently provides. Now Act 67 requires that the applicant provide substantial evidence that they will comply. It is not clear that applicants have been held to this standard before. This might prove helpful when dealing with, for example, "bad actors" -- "In the past, you had a CUP for a similar use and you didn't do x, y, and z as you were supposed to do. Provide us with substantial evidence that you will do things differently." It might be difficult for the applicant to do.

■*Does Act 67’s reference to only the “zoning board” mean that the plan commission and/or governing body cannot grant conditional use permits?*

Under prior Wisconsin law, it was interpreted that the authority to grant conditional use permits could rest with either the zoning board of appeals/adjustment, the plan commission, or the governing body.[3] It is not clear whether the use of "zoning board" was a drafting error or intentional.

It may lead some people to argue that as a result of Act 67 only the zoning board can grant conditional use permits despite the language elsewhere that conditional use permits can be decided by the zoning board, the plan commission, or the governing body. (When there is a conflict in the statutes, the most recently adopted statute controls.)

The language of Act 67 may lead others to argue that Act 67 only applies to conditional use permits issued by the zoning board. The plaintiffs in *AllEnergy* made the argument that the county committee did not have the

[3] See Wis. Stat. §§ 59.694(1), 60.65(3) and 62.23(7)(e)

legal authority to make the decision it did because the decision to not allow the mine was a legislative decision that could only be made by the county board -- the legislative body. The lead opinion in the Supreme Court's decision determined that the ordinance (the standards in the ordinance, etc.) properly authorized the committee's actions so it was not an improper delegation of legislative authority. Since Act 67 is limited to the zoning board, it does raise the argument that if it is the governing body that issues the conditional use permit, the governing body, as a legislative body, has more discretion to act on conditional use permits because they are not bound by the requirements of Act 67.

■*Can a local ordinance provide for an appeal of a conditional use permit decision to another local body?*

A number of local governments provide for appeal of a plan commission decision on a conditional use permit to the zoning board of appeals or the governing body. It is not clear from the wording of Act 67 if it preempts local ordinances from having an intermediate step of appeal to a zoning board or the governing body before the denied applicant could appeal the decision to circuit court. An ordinance providing for an intermediate appeal in an ordinance should still be acceptable under an argument that if the applicant succeeds in the appeal it saves the time and expense of having to bring a lawsuit in a court of law.

Brian W. Ohm, an attorney, is a professor in the UW-Madison Department of Planning and Landscape Architecture and the state specialist in planning law for UW-Extension.

Plan Commission Handbook

Second Edition
2012

Rebecca Roberts
Center for Land Use Education

Center for Land Use Education
College of Natural Resources
University of Wisconsin-Stevens Point

UW Extension
University of Wisconsin-Extension

No state tax revenue supported the printing of this publication. Printed on 100% post-consumer chlorine-free recycled paper. Bound in 52% post-consumer PVC-free recycled binder.

Cover Photo: Chippewa-Falls, Wisconsin, county-seat of Chippewa-County 1886 / [Drawn by] Henry Wellge; Beck & Pauli, litho. Wisconsin Historical Society WHS-11408. Original image has been cropped and printed in grayscale.

Time Limits, Modification and Revocation of Permits

Once a conditional use permit is granted, subsequent owners of the property are generally allowed to continue the use subject to limitations imposed in the original permit.[56] However, there are some exceptions to this rule. Communities may issue a limited-term permit for uses that are temporary in nature, such as a gravel pit or annual concert series. Permits can also be revoked or conditions added if the owner changes the use or violates permit conditions.[57] Revoking a conditional use permit is not considered a taking without just compensation because a conditional use permit is a type of zoning designation and not a property right.[58]

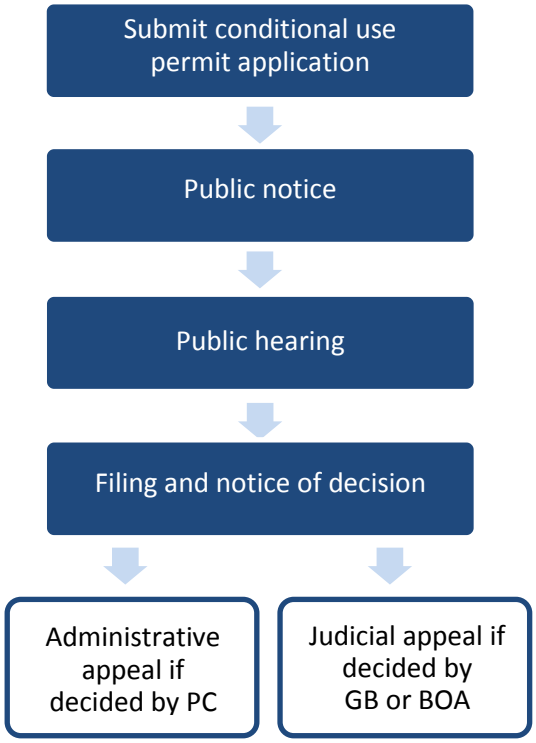
If a zoning code amendment removes the conditional use that was the basis for a permit, the conditional use permit becomes void.[59] In situations like this, the use is allowed to continue as a nonconforming use. However, the permit conditions are not enforceable.

Reconsideration and Appeal of Decisions

A person who is dissatisfied with a decision of the plan commission may ask to have their case reheard multiple times hoping for the answer they desire. Courts have found that requests for re-hearings can be denied unless there is a significant change in the project proposal, new information relevant to the decision, or a reversible error in the original process or decision.[60]

Likewise, a person may appeal a decision of the plan commission. Appeal of conditional use decisions is handled differently depending on the body that made the initial decision to grant or deny the permit. The diagram below shows the relationship between the initial decision-making body and the appropriate appeal body. Conditional use decisions of the plan commission are appealed to the zoning board of adjustment or appeals, unless the ordinance provides an alternate mechanism of appeal to the governing body.[61] Conditional use decisions of the governing body or zoning board are appealed directly to circuit court.[62]

Conditional Use Permit Application and Appeals



PC – Plan Commission, GB – Governing Body, BOA – Board of Adjustment/Appeals

[56] See Rohan, *Zoning and Land Use Controls*, sec. 44.01[4], p. 44-18, and Anderson, *American Law of Zoning* 3d, vol. 3, sec. 21.32, p. 754-5.
[57] Action may be taken following notice and a public hearing. *Hartland Sportsman's Club v. Town of Delafield*, 35 F.3d 1198 (7th Cir. Wis. 1994) and *Bettendorf v. St. Croix County Bd. of Adjustment*, 224 Wis. 2d 735, 591 N.W.2d 916 (Ct. App.1999).
[58] *Rainbow Springs Golf v. Town of Mukwonago*, 2005 WI App 163, 284 Wis. 2d 519, 702 N.W.2d 40.
[59] *Hussein v. Village of Germantown Bd. of Zoning Appeals*, 2011 WI App 96, 334 Wis. 2d 764, 800 N.W.2d 551.
[60] *Tateoka v. City of Waukesha Bd. of Zoning Appeals*, 220 Wis. 2d 656, 583 N.W.2d 871 (Ct. App. 1998); *Goldberg v. Milwaukee Bd. of Zoning Appeals*, 115 Wis. 2d 517, 340 N.W.2d 558 (Ct. App. 1983)
[61] *League of Woman Voters v. Outagamie County*, 113 Wis. 2d 313, 334 N.W.2d 887 (1983); *State ex. rel. Brookside Poultry Farms, Inc. v. Jefferson County Bd. of Adj.*, 131 Wis. 2d 101, 388 N.W.2d 593 (1984).
[62] *Town of Hudson v. Hudson Town Bd. of Adjustment*, 158 Wis. 2d 263, 461 N.W.2d 827 (Ct. App. 1990); *Magnolia Twp. V. Town of Magnolia*, 2005 WI App 119, 284 Wis. 2d. 361, 701 N.W.2d 60.

APPEAL OF ZONING DECISIONS

Applicants and other specified parties that are dissatisfied with a zoning decision may file an appeal within time limits specified by state statutes and local ordinance. The appeal process varies based on the type of decision being appealed and the body that made the original decision.

Administrative Appeals

Decisions of the zoning administrator, such as the granting of a simple zoning permit, the interpretation of a zoning ordinance, the accuracy of measurements, or the authority of a zoning official to make a decision are appealed to the zoning board of adjustment or appeals. Conditional use decisions of the plan commission are also appealed to the zoning board as an administrative appeal, unless the ordinance provides an alternate mechanism of appeal to the governing body.[63]

Any "aggrieved" person and any officer, department, board or bureau of the municipality affected by an administrative decision of a zoning officer may appeal the decision within a "reasonable" time period determined by the board.[64] If a time limit is not specified in the local zoning ordinance or by board rules, the appeal period begins when the aggrieved party finds out about the decision or has notice of the decision.[65] An aggrieved person is one whose legally protected interests are affected by the decision.

When hearing an appeal, the zoning board should review the record of proceedings before it and may take new evidence.[65] The board has all of the powers of the decision-maker whose decision was appealed and may reverse, affirm or modify the original decision or issue or direct that a permit be issued. The applicant has the burden of proof of demonstrating that the administrative decision was incorrect or unreasonable.

Judicial Appeals

Decisions of the zoning board, including variances, conditional uses and administrative appeals, may be appealed to circuit court. Any aggrieved person, taxpayer, officer, or body of the municipality may seek certiorari review within 30 days of filing the decision in the office of the zoning board.[67]

Decisions of the governing body, such as acting upon a permit application or choosing the procedure to follow in considering an ordinance may also be appealed to circuit court. Any party to the proceeding may seek certiorari review within 30 days of being notified of the final decision.[68]

In a certiorari action, the court will review the record using the standards described on page 16. It may affirm, reverse or modify the decision appealed in whole or in part. If a decision is overturned, the court may "remand" or send the case back to the original decision-maker with instructions for further proceedings.

For More Information

Additional information on appealing administrative and quasi-judicial decisions may be found in Chapters 13 and 17 of the Zoning Board Handbook. The Handbook is available on the Center for Land Use Education website at:
www.uwsp.edu/cnr-ap/clue/Pages/ZoningHandbook.aspx

[63] *League of Woman Voters v. Outagamie County*, 113 Wis. 2d 313, 334 N.W.2d 887 (1983); *State ex. rel. Brookside Poultry Farms, Inc. v. Jefferson County Bd. of Adj.*, 131 Wis. 2d 101, 388 N.W.2d 593 (1984).
[64] Wis. Stat. §§ 59.694(4) and 62.23(7)(e)(4).
[65] *State ex rel. DNR v. Walworth Co. Bd. of Adj.*, 170 Wis. 2d 406, 489 N.W.2d 631 (Ct. App. 1992); *State ex rel. Brookside Poultry Farms, Inc. v. Jefferson Co. Bd. of Adj.*, 131 Wis. 2d 101, 388 N.W.2d 593 (1986).
[66] Wis. Stat. § 59.694(8); *Osterhues v. Bd. of Adj. for Washburn Co*, 2005 WI 92, 282 Wis. 2d 228, 698 N.W.2d 701.
[67] Wis. Stat. §§ 59.694(10) & 62.23(7)(e)10.
[68] Wis. Stat. § 68.13.

Certiorari Review Standards

The following standards are used by courts to review local land use decisions on certiorari.[69] These points provide an excellent checklist that can be used by plan commission members and other local land use decision-makers to judge the overall quality and defensibility of their decisions.

	Questions the court will ask when reviewing local decisions	Tips to help local decision-makers comply with the standard
1. Jurisdiction	Did the body have the authority to make the decision?	▪ For each hearing, ensure that the geographical location and type of decision is within the jurisdiction of the body.
2. Proper procedures	Did the body follow proper legal procedures?	▪ Ensure that public notice and open meeting laws are followed as well as other procedures specified in local or state codes.
3. Proper legal standards	Did the body follow the proper legal standards?	▪ Ensure that decisions are based on standards found in local ordinances, state statutes and case law.
4. Unbiased decision-makers	Was the action arbitrary, oppressive or unreasonable, and representative of its will and not its judgment?	▪ Ensure that decision-makers are unbiased and recuse themselves from decisions that present a conflict of interest or appearance of bias. ▪ Make sure the decision explains the reasons why each decision standard was or was not met.
5. Substantial evidence	Could a fair and reasonable person have reached the same conclusion based on the facts in the record?	▪ Make sure all evidence, including that from site inspections, is included in the record.[70] ▪ Explain how the evidence showed why each decision standard was or was not met.

[69] *State ex rel. Ziervogel v. Washington County Bd. of Adjustment*, 2004 WI 23, 269 Wis. 2d 549, 676 N.W.2d 401; *State v.Waushara County Bd. of Adjustment*, 2004 WI 56, 271 Wis. 2d 547, 679 N.W.2d 514; *Nielsen v. Waukesha County Bd. of Supervisors*, 178 Wis. 2d 498, 511, 504 N.W.2d 621 (Ct. App. 1993); *Lamar Central Outdoor v. Bd. of Zoning Appeals,* 2005 WI 117, 284 Wis. 2d 1, 700 N.W.2d 87.

[70] The record is the compilation of all evidence that was presented to the decision-making body, including applications, written comments, other documents, and oral testimony, as well as the record of the proceedings, deliberations and decision. Additional guidance on drafting land use findings and constructing an adequate record is provided in Chapters 2 and 6.

Legislative enactments, such as the adoption or amendment of a zoning ordinance may also be challenged in circuit court. The most common method of challenging the validity of a zoning ordinance is an action for declaratory judgment.[71] An action for declaratory judgment is typically made when the party claims constitutional violations, such as equal protection, procedural due process or substantive due process. A party can also make a claim for monetary damages due to inverse condemnation if they believe their property was "taken" by regulatory or legislative action. Monetary relief can also be requested if the party claims they have been damaged by a governmental entity violating their federal constitutional rights.[72]

When a party files for declaratory judgment, they are asking the court to review the circumstances of their claim and "declare" a correct application of the law. In order to have "standing" to sue in a declaratory judgment, a party must have a personal stake in the outcome and must be directly affected by the issue in controversy. The party must have sustained, or will sustain, some pecuniary loss before he or she has standing. A person's status as a taxpayer, property owner, or one who disagrees with a municipal decision does not confer standing.[73]

The concept of separation of powers causes courts to defer to legislative action. In order to successfully maintain a challenge to the constitutionality of an ordinance, the party must prove their case beyond a reasonable doubt.[74] However, when the ordinance concerns the exercise of a First Amendment right, such as religious land uses, adult uses, or billboards, the burden of proof reverses.[74]

Although a court may differ with the wisdom of the zoning authority, it cannot substitute its judgment for that of the local authority. Therefore, the court must uphold a local zoning decision unless it finds an error of law, excess of power, or abuse of discretion. This rule applies not only to the necessity and extent of zoning but also to the classification and establishment of districts, boundaries and uses, and to the determination of whether or not there has been a change of conditions to warrant a rezoning.[76]

In reviewing a declaratory action, the court may rule for or against the party. The losing party may appeal the decision to the Court of Appeals. In rare cases, a decision may be heard by the Wisconsin Supreme Court, either directly or following review by one of the lower courts.

Claims against Governmental Bodies

A landowner, occupant or other person affected by a county zoning ordinance or amendment may contest the validity of the ordinance on procedural grounds within 180 days.[77] Certain other claims against governmental bodies require a notice of injury and notice of claim to be filed with a local government official within 120 days of the event giving rise to the claim.[78] The governmental body has 120 days to act on the claim and if disallowed, the claimant has six months to bring suit. Local government officials are exempt from this provision when acting in a legislative or quasi-judicial function. Annexation challenges,[79] open meetings law and public records law challenges,[80] and federal constitutional challenges[81] are also exempt.

[71] Rathkopf. *The Law of Zoning and Planning* § 35.01[1] at 35-2 (1980). See also Wis. Stat. § 806.04.
[72] 42 USC § 1983.
[73] *Lake Country Racquet & Athletic Club. v. Hartland*, 2002 WI App 301, 259 Wis. 2d 107, 655 N.W.2d 189.
[74] *Town of Rhine v. Bizzell*, 2008 WI 76, 311 Wis. 2d 1, 751 N.W.2d 780.
[75] *Fond du Lac County v.Mentzel*, 195 Wis. 2d 313, 320, 536 N.W.2d 160, 163 (Ct. App. 1995).
[76] *Buhler v. Racine County*, 33 Wis. 2d 137, 146-47, 146 N.W.2d 403 (1966).
[77] Wis Stat §§ 59.69(14) and 893.73(1).
[78] Wis Stat §§ 893.80.
[79] *Town of Burke v. City of Madison*, 225 Wis. 2d 615, 626, 593 N.W.2d 822, 826 (Ct. App. 1999).
[80] *Auchinleck v. Town of LaGrange*, 200 Wis. 2d 585, 547 N.W.2d 587 (1996).
[81] *Thorp v. Town of Lebanon*. 2000 WI 60, 235 Wis. 2d; *Felder v. Casey*, 487 U.S. 131 (1988).