VILLAGE OF NEW GLARUS
PLAN COMMISSION MEETING AGENDA
Village Hall Board Room
319 2nd St.
9/27/2023 6:00 PM
Zoom Meeting Link: https://us02web.zoom.us/j/85622113113

REGULAR MEETING

1. Call to Order
2. Approval of Agenda
3. Approval of Minutes –July 26, 2023
4. Consideration/Discussion: New Glarus High School Track & Field Site Plan, Parcel # 2316106750000
5. Consideration/Discussion: New Glarus High School Track & Field Master Plan
6. Set next meeting date for Wednesday, October 18 at 6:00 PM
7. Adjournment

Roger Truttmann, Chair
Village Plan Commission

POSTED:
N.G. Village Hall 9/22/23
N.G. Post Office 9/22/23
Bank of New Glarus 9/22/23

_____
Kelsey A. Jenson, Clerk

PURSUANT TO APPLICABLE LAW, NOTICE IS HEREBY GIVEN THAT A QUORUM OR A MAJORITY OF THE NEW GLARUS VILLAGE BOARD TRUSTEES MAY ATTEND THIS MEETING. INFORMATION PRESENTED AT THIS MEETING MAY HELP FORM THE RATIONALE BEHIND FUTURE ACTIONS THAT MAY BE TAKEN BY THE NEW GLARUS VILLAGE BOARD.

PERSONS REQUIRING ADDITIONAL SERVICES TO PARTICIPATE IN A PUBLIC MEETING MAY CONTACT THE VILLAGE CLERK FOR ASSISTANCE AT 527-2510

VILLAGE OF NEW GLARUS
PLAN COMMISSION MEETING MINUTES
Village Hall Board Room
319 2nd Street
July 26, 2023 6:00 PM

REGULAR MEETING CALL TO ORDER**:** Chair Roger Truttman, called regular meeting to order at 6:12 p.m.

PRESENT: Roger Truttmann, Bekah Stauffacher, Mike Marty, & Beth Alderman

ALSO PRESENT: Andrew Kerr (Bray Architects), Dr. Jennifer Thayer (School District of New Glarus), Pat Rank (Strand), Mark Shubak (Strand), Lauren Freeman (Village Administrator), Larry Stuessy, Laura Eicher, Dave Erickson, Travis Zimmerman, Ron Roesslein, Gery Steinmetz

APPROVAL OF AGENDA: Motion by Mike Marty, seconded by Bekah Stauffacher. Motioned carried unanimously 4-0.

APPROVAL OF MINUTES FROM 6.21.23: Motion by Bekah Stauffacher, seconded by Beth Alderman. Motioned carried unanimously 4-0.

CONSIDERATION/DISCUSSION: NEW GLARUS PRIMARY SCHOOL BUILDING ADDITION SITE PLAN, 1420 2ND STREET:

Motion by Mike Marty to conditionally approve site plan upon satisfaction of comments made by Strand Engineering in the July 20, 2023 memo and Mark Roffers in the July 19, 2023 memo and additional cooperation on revised landscaping plan to spread out landscaping to other portions of the property such as the east side of the property line, seconded by Beth Alderman. Motion carried unanimously 4-0.

The next Plan Commission meeting will be Wednesday, August 23 at 6:00 PM.

ADJOURN: The meeting was adjourned at 7:15 p.m.

- Lauren Freeman
  Village Administrator

STRAND ASSOCIATES®
Excellence in Engineering
Since 1946

Strand Associates, Inc.®
910 West Wingra Drive
Madison, WI 53715
(P) 608.251.4843
www.strand.com

September 19, 2023

Ms. Lauren Freeman, Village Administrator
Village of New Glarus
319 2nd Street
New Glarus, WI 53574

Re: New Glarus School District–Athletic Field
Site Review Letter
Village of New Glarus, Wisconsin (Village)

Dear Lauren,

Strand Associates, Inc.® (Strand) received the following information on September 6 through 8, 2023, for the above-referenced project:

1. Checklist for Site Plan Approval Application dated September 6, 2023, consisting of 7 pages.
2. Location Map consisting of 1 page.
3. Plat of Survey dated May 2, 2023, consisting of 1 page.
4. Site Plans dated September 6, 2023, consisting of 10 pages.
5. Technical Specifications dated September 6, 2023, consisting of 83 pages.
6. Flood Insurance Rate Map (FIRM) consisting of 1 page.
7. Assured Wetland Delineation Report dated January 2, 2012, consisting of 93 pages.
8. Geotechnical Engineering Exploration and Analysis Report dated May 31, 2023, consisting of 44 pages.
9. Stormwater Management Permit Application dated September 6, 2023, consisting of 3 pages.
10. Construction Site Erosion Control Permit Application consisting of 2 pages.
11. Stormwater Maintenance Plan consisting of 1 page.
12. Musco Photometrics consisting of 9 pages.
13. Exterior Layout Photometrics dated September 6, 2023, consisting of 1 page.
14. Agreement to Maintain Stormwater Facilities consisting of 5 pages
15. Erosion Control & Storm Water Management Plan consisting of 111 pages.

The following are Strand's review comments based on the information provided.

General

1. Complete a Developer's Agreement with the Village.

2. Obtain New Glarus Fire Department and Police Department approvals, as necessary.

3. Obtain all State of Wisconsin approvals, as necessary.

Erosion Control and Stormwater Management Maintenance/Operation Plan

1. The applicant has indicated that the total land disturbance for the project is approximately 348,480 square feet (sf) (8 acres) and, according to the stormwater calculations, there is a net increase in 221,025 sf (5.07 acres) of impervious surface. Given that the land disturbance for the project exceeds 43,560 sf (1 acre), the applicant is required to submit applications for a Wisconsin Department of Natural Resources (WDNR) Stormwater Management Permit and a Village Stormwater Management Permit, Construction Site Erosion Control Permit, and required stormwater and erosion control checklists. The applicant has submitted the required Village permit applications and checklists and they appear to be acceptable. The applicant should submit documentation demonstrating WDNR Stormwater Management Permit approval.

2. The applicant has indicated that the proposed site improvements can be classified as a "redevelopment" site. It is Strand's opinion that site improvements for this project should be classified as a "new development" site for both WDNR NR 151 and Village postconstruction stormwater control compliance. Given that previous land disturbance for the site occurred somewhere between 2011 and 2013, which is well after the October 1, 2004, date that indicates when "existing development" is to be defined, and that previous land use of the site was agricultural, the site should be classified as a "new development" site. Similarly, the Village uses the same definition for "new development." The stormwater management plan will need to address additional "new development" postconstruction standards, including total suspended solids (TSS) loading of 80 percent instead of 40 percent, addressing infiltration standards, and meeting protective area standards. The current stormwater plan achieves 55.49 percent TSS reduction, so additional TSS removal control will be needed. The applicant may need to consider converting the dry detention basin to a bioretention basin. Note that WDNR NR 151 standards require peak reduction for a 1-year, 24-hour storm event, which was not evaluated.

3. A stormwater management maintenance plan and agreement have been prepared and submitted and appear to be acceptable. Note that any changes to the stormwater management plan in order to address Comment No. 2 above should be reflected in an update to the stormwater management maintenance plan and agreement.

4. The stormwater utility account entry for this parcel will need to be updated that reflects the added impervious area. Stormwater calculations have been submitted that represent the full build-out impervious area of the site. The applicant should provide the proposed impervious area for the first phase of construction.

5. A portion of the site along the north side of the site is mapped as a Zone AE special flood hazard area of Legler School Branch. There is a small portion of the floodplain that is classified as regulatory floodway and the proposed grading to accommodate the proposed detention basin does not involve placement of fill and, therefore, appears to comply with the Village's floodplain zoning ordinance standards. Note that a portion of the floodplain is also classified as flood fringe. Grading and placement of fill that is being proposed in the flood fringe is allowed by Village floodplain zoning ordinance standards and appears to be acceptable.

6. A portion of the site has designated as delineated wetlands. Based on review of the drawings, no fill is proposed to be filled within the delineated wetland at the site and, therefore, the Village's Shoreland-Wetland Zoning requirements are being met. Note that because the site is classified as a new development site, the WDNR and Village protective area setback requirements from

this wetland will need to be met. It appears that because proposed impervious surfaces located within the protective area setback are shown to drain away from the wetlands and into a stormwater management facility, the WDNR and Village protective area setback requirements are being met.

Sheet No. C1.0–Demolition Plan

1. Coordinate with the Village if the power pole indicated to be removed is acceptable.

2. Coordinate with the Village if the existing electrical boxes indicated to be removed is acceptable.

Sheet No. C2.0–Layout Plan

1. The crosswalk at the southern end of the project is directed toward an open area between two driveways of an existing parking lot on the west side of 2nd Street. Control of pedestrian traffic at this location is not apparent. Until additional sidewalks or paths are placed on the west side of 2nd Street, it appears this crosswalk should be eliminated.

2. Is there a railing or other means of protection on the upper side of the retaining walls at the southwesterly location of the facility?

3. The public sidewalk on the east side of 2nd Street is shown to conflict with existing public electrical equipment near the right-of-way (ROW). The Village has previously indicated that the public sidewalk may be located closer to the street to not conflict with the existing public electrical equipment. However, the public sidewalk must have an approximately 50-foot transition back to the ROW in each direction.

4. Provide information on the stair and ramp from the high school located on the west side of 2nd Street. Provide information as to how this stair and ramp would generally fit into the future improvements on 2nd Street and what modifications could be expected. What is planned for traffic control at this crosswalk?

5. Where are accessible parking stalls located in the expanded parking lot?

Sheet No. C3.0–Grading Plan

1. Provide the alignment stationing on the Grading Plan as shown on Sheet No. C3.1 for 2nd Street.

2. An overflow swale should be indicated around the east side of the shotput pit directed to the detention basin for excess runoff that exceeds the capacity of the storm sewer.

3. An emergency spillway should be indicated for the proposed detention basin. A construction detail, including permanent stabilization of the spillway, should be provided.

Sheet No. C3.1–2nd Street Improvements–Profile

1. If the sidewalk is placed in the current location as shown, the existing electrical equipment will need to be relocated.

2. The drawing indicates a single proposed curb inlet near Station (Sta.) 6+40 of 2nd Street. This inlet should be relocated to Sta. 5+49 and an additional curb inlet and associated trunk storm sewer line be added near Sta. 1+50 to reduce the flow distance to the first inlet along this stretch of curb and gutter. Sizing calculations for this storm sewer should be provided. Note that this storm sewer should be sized to accommodate the potential urbanization of the west side of 2nd Street along this stretch.

Sheet No. C3.2–2nd Street Improvements–Sections

1. Provide additional cross sections every 25 feet and at Stas. 0+00, 0+30, 2+07, 3+20, 5+36, 5+51, and 6+47.

2. Provide the location of the 2nd Street ROW on the cross sections.

Sheet No. C4.0–Erosion Control Plan

1. No comments.

Sheet No. C5.0–Utility Plan

1. The applicant should clarify whether the 12-inch-diameter storm sewer system southwest of the track has been sized to accept drainage from the future parking lot and pavilion paving improvements.

2. An invert elevation callout for EW#6 should be provided.

Sheet No. C6.0–Details

1. Complete the design for the gravity retaining wall as indicated on the drawings.

2. The gravity retaining wall detail indicates the height of the wall to be 4 feet high. The grading plan shows the gravity retaining wall to have a height of 7 feet in several locations. Details should be updated accordingly.

Sheet No. C6.1–Details

1. No comments.

Sheet No. C6.2–Details

1. The drawings have a duplicate Sheet No. C6.2–Details. Was there supposed to be a Sheet No. C6.3–Details that is missing?

Sheet No. C6.2–Details

1. The drawings have a duplicate Sheet No. C6.2–Details. Was there supposed to be a Sheet No. C6.3–Details that is missing?

Sheet No. C6.4–Details

1. Storm sewer inlets on 2nd Street must be precast concrete structures.

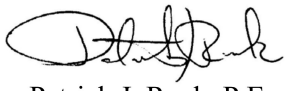
Sheet No. 15–Van Ert Photometrics

1. According to the Village's lighting ordinance code, the field's parking lots fall under the medium level of activity for recreational events and illumination levels. The illumination levels shall be an average of 2.4 foot candles (fc), a minimum of 0.6 fc, and have uniformity (average to minimum) of 4:1.

Please call me at 608-251-4843 if you have any questions.

Sincerely,

STRAND ASSOCIATES, INC.®



Patrick J. Rank, P.E.

c: Andrew Kerr, Bray Architects

MDROFFERS CONSULTING

To: Lauren Freeman, Village Administrator

From: Mark Roffers, AICP, Village Planner

Date: September 20, 2023

Re: Landscape Plan Review, School District Activities Complex

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You asked me to review this landscape plan submittal, plan sheet dated 9/6/2023, against applicable Village ordinance requirements.

I had previously advised that the Village zoning ordinance landscaping standards listed as 1-3 below be applied to this project, with the 9/6/2023 plan's perform against each of these in *italics* following the standard.

1. One large deciduous tree every 50 feet along 2nd Street, planted in the 8.5' terrace area between the sidewalk and curb. If the Village Engineer or Public Works Director indicates that there are too many utility conflicts in that terrace, then these trees could instead be planted on the east side of the sidewalk.

   This requirement is met by the 9/6/2023 plan. I understand that there are in fact too many utility conflicts in the terrace area. The selected trees along 2nd Street are diverse, attractive, and salt tolerant.

2. One large deciduous tree for every 50 feet along Highway 69, except in and within 35' of the wetland. These should be on the school district's land, not in the highway right-of-way.

   This requirement is met by the 9/6/2023 plan. The proposed Hackberries are a good choice there, providing hardiness, reasonably fast growth, and tall mature heights.

3. 200 additional landscape points for every 5,000 square feet of "general yard area" to be disturbed with this project, with such landscaping focused particularly around the new parking lot, ticket booth area, and back of scoreboard area near 69.

   This is proposed to be met by the planned disease-resistant elms across the south line plus shrubs in a planting bed west of the ticket booth. By my calculation, this amounts to 2,530 landscape points, which would be enough for 1.45 acres of land disturbance.

The silt fencing indicated on the landscape plan sheet suggests that there may be about 5.5 acres of land disturbance with this project. Therefore, the "general yard area" point requirement is not met with the current landscape plan. I suggest a solution that, in part, includes some modest additional tree planting. In my opinion, this may best take the form of 5-7 faster-growing, broad leaf canopy trees west of the grandstand, which could provide some shade to the grandstand area on hotter afternoons and soften the grandstand's appearance from 2nd Street. This is also likely close to a water source.

I do not believe the "paved area" landscape point requirement in the ordinance should be applied to this project, for two reasons. First, it appears that the parking lot area close 2nd Street will be substantially reduced in length with this project. The landscaping requirement for paved areas is intended to buffer large expanses of pavement, and the cars, trucks, equipment, etc. kept on them—and there will actually be less of that with this project. Second, and relatedly, the running track is by nature not a paved area that will have cars, trucks, etc. kept on it, but is instead a recreational facility. The existing ordinance language clearly does not provide an exemption for paved areas that serve as running tracks or similar.

To address the above ordinance issues associated with this project, I advise that the Village should support either a variance from the Board of Zoning Appeals, or a zoning ordinance text amendment. Either of these could be processed before the landscaping would need to be installed or even bid, I presume. I prefer the text amendment approach, as it avoids having to deal with tough variance criteria and recognizes that these issues may surface again with future projects. I can prepare a proposed amendatory ordinance if you like.

In sum, I recommend Plan Commission approval of the 9/6/23 landscape plan for the School District Activities Complex, subject to the following conditions:

1. The landscape plan shall be amended to include additional "general yard area" landscape points associated with the ~4.05 acres not covered by currently provided landscape points and provide "paved area" landscaping associated with the running track, OR the applicant shall obtain Board of Zoning Appeals variance approval of a variance or Village Board approval of a zoning ordinance text amendment that eliminates such requirements.
2. Regardless of the outcome of condition #1, the landscape plan shall be amended to include a minimum of five additional large deciduous trees prior to installation.
3. All landscaping shall be watered in accordance with industry standards and guaranteed for a period of not less than one year after planting.

CHECKLIST FOR SITE PLAN APPROVAL APPLICATION

Completed site plan approval application must be submitted to Village Clerk's Office, along with fee and other requirements outlined by checklist. **Applications must be received 21 days prior to the Plan Commission meeting in order to be placed on the Plan Commission agenda.** The Plan Commission meets the 3rd Thursday of each month.

The application will be placed on agenda only after the completed form, fee and supporting documentation have been filed with the Village Clerk's Office. The application shall be reviewed by the Building Inspector who shall forward his review and findings to the Plan Commission. The Plan Commission will make recommendation to the Village Board who will make the final determination on the application.

Required Items:

__x__ 1. Completed site plan approval application.

__x__ 2. Scale drawing showing all the information required for a building/zoning permit and existing and proposed landscaping (see attached municipal code for requirements). ***Provide 15 copies.***

__x__ 3. Completed Site Review Application Guideline

____ 4. Fee of $100.00 (Resolution R10-24) **NOTE:** Actual costs billed for village consultants will be the responsibility of the applicant.

Rev. 1/2016

FEE : _____
PLUS COSTS

VILLAGE OF NEW GLARUS
APPLICATION FOR SITE PLAN APPROVAL

SUBMITTAL DATE: 9/6/2023

APPLICANT NAME: New Glarus School District, Jennifer Thayer - School District Superintendent
ADDRESS: 1701 2nd St, New Glarus, WI 53574
TELEPHONE: 608-527-2410

SITE ADDRESS: 1420 2nd St, New Glarus, WI, 53574

DESCRIPTION OF SITE BY LOT, BLOCK AND RECORDED SUBDIVISION OR BY METES & BOUNDS: LOT ONE (1), CERTIFIED SURVEY MAP NO. 4118, RECORDED IN THE OFFICE OF THE REGISTER OF DEEDS FOR GREEN COUNTY, WISCONSIN

TYPE OF STRUCTURE: Current: Athletics Field
Proposed: Athletics Field

PROPOSED OPERATION OR USE OF THE STRUCTURE OR SITE: Athletics Field

AND NUMBER OF EMPLOYEES: 0 Employees

PRESENT ZONING OF SITE: R-1 Residential

NOTICE TO APPLICANT:

ATTACH A DRAWING SHOWING ALL OF THE INFORMATION REQUIRED FOR A BUILDING/ZONING PERMIT AND EXISTING AND PROPOSED LANDSCAPING.

ACTUAL COSTS BILLED FOR VILLAGE CONSULTANTS WILL BE THE RESPONSIBILITY OF THE APPLICANT.

APPEALS. DENIALS OF BUILDING PERMITS CONTINGENT UPON SITE PLAN APPROVAL MAY BE APPEALED TO THE ZONING BOARD OF APPEALS BY FILING A NOTICE OF APPEAL WITH THE VILLAGE CLERK-TREASURER WITHIN 10 DAYS OF THE DENIAL.

_____
Applicant Signature

N/A
Owner Signature if different

Municipal Ordinance
§ 118-2(C); § 305-94
Rev. 5/2012

PRESENTED TO BUILDING INSPECTOR:_____

REFERRED TO PLAN COMMISSION: _____

PLAN COMMISSION REVIEW: _____

DETERMINATION: APPROVE DENY DATE: _____

_____

Village Plan Commission Chairman

REFERRED TO VILLAGE BOARD:_____

DETERMINATION: REVERSE AFFIRM ALTERED

DATE:_____

IF ALTERED, HOW ALTERED:_____

_____

_____

_____

_____

Village President

SITE REVIEW APPLICATION GUIDELINE

YES	NO	N/A	
X			A certified survey that meets the requirements of the Municipal code shall accompany the application
X			Sewer and water plans ~~and underground electric and telephone service location be~~ submitted for Public Works review(Not applicable)
X			Maximum number of employees, customers and office vehicles that would be at the facility at any one time. (To determine off street parking requirements.)
X			Existing zoning district designation identified on plan.
X			Intended land use of parcel(s)
X			Surrounding land use and zoning, shown by contiguous drawing
X			Applicable zoning regulations been discussed with Building Inspector and necessary instruments been initiated, filed, applied for.
X			Are streets which are nearby adequate to handle additional traffic flow
X			Is the proposed parcel(s) near collector or arterial roads
	X		Is Department of Transportation Approval needed to service this parcel(s)
X			Is the parcel(s) large enough to accommodate required off-street parking
X			Are the physical characteristics of the site (soil, topography, vegetation) suitable to permit the proposed development without causing drainage, erosion or other problem
X			Is the use consistent with the Village of New Glarus Master Plan and zoning district
	X		Does this request require review by the Historical Preservation Committee or Design Review Committee
			SITE PLAN: that includes all of the following information, where applicable:
X			Location plan/sketch, exterior, 10 copies (building foot print)
		X	Dwelling unit information (over 2 dwelling units), if residential, showing; * total number of buildings and units in each building * distribution by number of bedrooms
X			Lot area information showing total lot area
X			Wetland delineation
X			Flood plain delineation
		X	Roads, traffic and access - future road improvement plans
X			First floor grade of proposed building
X			Elevations on pavement and top of curb
X			Layout and number of parking spaces and type of surface
X			Landscaping and type of lawn restoration (submittal of a landscape plan)
X			Sediment and erosion control measures
X			Storm water management
X			Have property owners within 100' been notified of proposed project

Village of New Glarus Municipal Code:

118-2 (C) Site plan approval.

(1)

All applications for building permits for any construction, reconstruction, expansion or conversion, except for one- and two-family residences in residentially zoned districts shall require site plan approval by the Plan Commission in accordance with the requirements of this section. The applicant shall submit a site plan and sufficient plans and specifications of proposed buildings, machinery and operations to enable the Plan Commission or its expert consultants to determine whether the proposed application meets all the requirements applicable thereto in this chapter.

(2)

Administration. The Building Inspector shall make a preliminary review of the application and plans and refer them along with a report of his/her findings to the Plan Commission. The Plan Commission shall review the application and may refer the application and plans to one or more expert consultants selected by the Village Board to advise whether the application and plans meet all the requirements applicable thereto in this chapter. Within 30 days of its receipt of the application, the Village Board shall authorize the Building Inspector to issue or refuse a building permit.

(3)

Requirements. In acting on any site plan, the Plan Commission shall consider the following:

(a)

The appropriateness of the site plan and buildings in relation to the physical character of the site and the usage of adjoining land areas.

(b)

The layout of the site with regard to entrances and exits to public streets, the arrangement and improvement of interior roadways, and the location, adequacy and improvement of areas for parking and for loading and unloading and shall, in this connection, satisfy itself that the traffic pattern generated by the proposed construction or use shall be developed in a manner consistent with the safety of residents and the community, and the applicant shall so design the construction or use as to minimize any traffic hazard created thereby.

(c)

The adequacy of the proposed water supply, drainage facilities and sanitary and waste disposal.

(d)

The landscaping and appearance of the completed site. The Plan Commission shall require that those portions of all front, rear and side yards not used for off-street parking shall be attractively planted with trees, shrubs, plants or grass lawns and that the site be effectively screened so as not to impair the value of adjacent properties nor impair the intent of purposes of this chapter.

(4)

Effect on municipal services. Before granting any site approval, the Plan Commission may, besides obtaining advice from consultants, secure such advice as may be deemed necessary from the Building Inspector or other municipal officials, with special attention to the effect of such approval upon existing municipal services and utilities. Should additional facilities be needed, the Plan Commission shall not issue the final approval until the Village has entered into an agreement with the applicant regarding the development of such facilities.

(5)

Appeals. Denials of building permits contingent upon site plan approval may be appealed to the Zoning Board of Appeals by filing a notice of appeal with the Village Clerk-Treasurer within 10 days of the denial.

Chapter 305. ZONING

Article XII. Administration

§ 305-94. Site plan approval.

A.
When required. All applications for zoning permits for any construction, reconstruction, expansion or conversion, except for one- and two-family residences in residential districts, shall require site plan approval by the Plan Commission in accordance with the requirements of this section.

B.
Application. The applicant for a zoning permit shall also submit a site plan containing the following information:
[Amended 2-6-2007 by Ord. No. 07-01]

(1)
X Plan of operations including hours of operation, nature of activities on site, nature of materials and equipment to be used on site.

(2)
X Owner's and/or developer's name and address noted.

(3)
X Architect's and or engineer's name and address noted.

(4)
X Scale and North arrow in legend.

(5)
X Site plans drawn to a recognized engineering scale (i.e., 1:20 to 1:60).

(6)
X Dimensional and area measurements of the site.

(7)
X Existing and proposed topography.

(8)
X Name and location of existing and proposed public rights-of-way abutting the property.

(9)
X Location of existing floodplains, floodways, wetlands, environmental corridors, mature woodlands, and steep slopes.

(10)
X Existing and proposed utilities easements, utility lines and fire hydrants.

(11)
Applicable setback lines.

(12)
X Building dimensions and area, building coverage of lot, and total impervious surface area.

(13)
X Location of all proposed paved areas, driveways, curb cuts.

(14)
X Number and location of parking stalls (drawn to scale).

(15)
X Existing and proposed stormwater management facilities.

(16)
X Proposed location and dimensions of all outdoor storage areas, fences, and signage.

(17)
Location and type of existing and planned landscaping.

(18)
X Exterior lighting including fixture design and photometric analysis of site.
(19)
Elevation drawings for all exterior sides of structures.
(20)
X An erosion control plan.
(21)
Any other data or information deemed necessary by Village staff or the Village Plan Commission.

C.
Administration. The completed site plan application and supporting documentation shall be submitted to the Village Clerk's office no later than 21 days prior to the Plan Commission meeting at which the site plan will be considered. The Zoning Administrator and if necessary additional staff or consultants shall make a preliminary review of the application and plans and refer them, along with a report of the findings, to the Plan Commission within 10 days. The Plan Commission shall review the application and may refer the application and plans to any expert consultants selected by the Village Board to advise whether the application and plans meet all the requirements applicable thereto in this chapter. Within 30 days of its receipt of the application, the Plan Commission shall authorize the Zoning Administrator to issue or refuse a zoning permit.
[Amended 5-1-2012 by Ord. No. 12-02]

D.
Requirements. In acting on any site plan, the Plan Commission shall consider the following:
(1)
The appropriateness of the site plan and buildings in relation to the physical character of the site and the usage of adjoining land areas.
(2)
The layout of the site with regard to entrances and exits to public streets, the arrangement and improvement of interior roadways, and the location, adequacy and improvement of areas for parking and for loading and unloading and shall, in this connection, satisfy itself that the traffic pattern generated by the proposed construction or use shall be developed in a manner consistent with the safety of residents and the community, and the applicant shall so design the construction or use as to minimize any traffic hazard created thereby.
(3)
The adequacy of the proposed water supply, drainage facilities and sanitary and waste disposal.
(4)
A landscape plan complying with the requirements of Article **XVII** of this chapter.
[Amended 2-6-2007 by Ord. No. 07-01]
(5)
An exterior lighting plan complying with the requirements of Article **XVIII** of this chapter.
[Added 2-6-2007 by Ord. No. 07-01]
(6)
Elevation drawings for all exterior sides of structures, wall signs, and freestanding signs to include information indicating materials, colors, and method of illumination for all exterior surfaces.
[Added 2-6-2007 by Ord. No. 07-01]

E.
Effect on municipal services. Before granting any site plan approval, the Plan Commission may, besides obtaining advice from consultants, secure such advice as may be deemed necessary from the Village Engineer or other municipal officials, with special attention to the effect of such approval upon existing municipal services and utilities. Should additional facilities be needed, the Plan Commission shall forward its recommendations to the Village Board and shall not issue final approval until the Village Board has entered into an agreement with the applicant regarding the development of such facilities.

Location Map

Legend

- Municipality
- State Boundaries
- County Boundaries
- Major Roads
  - Interstate Highway
  - State Highway
  - US Highway
- County and Local Roads
  - County HWY
  - Local Road
- Railroads
- Tribal Lands
- Railroads
- Rivers and Streams
- Intermittent Streams
- Lakes and Open water

Notes

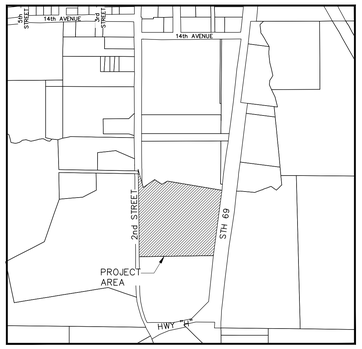
0.1 0 0.06 0.1 Miles

NAD_1983_HARN_Wisconsin_TM

1: 3,960

PLAT OF SURVEY WITH TOPOGRAPHY

LOT ONE OF CERTIFIED SURVEY MAP NO. 4118, BEING PARTS OF THE SOUTHWEST ¼ AND THE SOUTHEAST ¼ OF SECTION 23, TOWNSHIP 4 NORTH, RANGE 7 EAST, VILLAGE OF NEW GLARUS, GREEN COUNTY, WISCONSIN



VICINITY MAP
NOT TO SCALE

BEARINGS ARE BASED ON THE WisCRS GREEN COUNTY ZONE, (2012) VERTICAL DATUM NAVD 88

DIGGERS HOTLINE
Toll Free (800)242-8511
Milwaukee Area (414)259-1181
Hearing Impaired TDD (800)542-2289
www.DiggersHotline.com
REQISTER'S HOTLINE TICKETS:
20201714533, 20201714538, 20201715102, 20201715108

ALTHOUGH DIGGERS' HOTLINE WAS NOTIFIED THIS SURVEY DOES NOT GUARANTEE THAT ALL UTILITIES HAVE BEEN LOCATED ON SITE. SOME OF THE UTILITIES MAY HAVE BEEN DRAWN IN PER PLAN BASED ON MAPS RECEIVED FROM MEMBERS NOTIFIED. LACKING EXCAVATION THE EXACT LOCATION OF UNDERGROUND FEATURES CANNOT BE ACCURATELY, COMPLETELY AND RELIABLY DEPICTED. WHERE ADDITIONAL OR MORE DETAILED INFORMATION IS REQUIRED, THE CLIENT IS ADVISED THAT EXCAVATION MAY BE NECESSARY.

LEGEND

- = BENCH MARK
- △ = CONTROL POINT
- ○ = 1 1/4" IRON PIPE O.D. FOUND OR AS NOTED
- ● = 1-1/4" O.D.x 18"LONG. IRON PIPE SET, WEIGHING 1.68 LBS./FT.
- = SECTION CORNER MON.
- (R.A.) = RECORDED AS
- O.D. = OUTSIDE DIAMETER
- = WATER VALVE
- = FIRE HYDRANT
- 970.90 = SPOT ELEVATION
- = BUSH, SHRUB
- = POLE/POST/BOLLARD
- = BOULDER
- = PULLBOX
- (MH) = MANHOLE TYPE NOTED
- (SA) = SANITARY SEWER MANHOLE
- (ST) = STORM SEWER MANHOLE
- (E) = ELECTRIC MANHOLE
- (T) = TELEPHONE MANHOLE
- (W) = WATER MANHOLE
- = UTILITY METER
- (GUY) = GUY WIRE POLE
- = LIGHT POLE
- = PEDESTAL
- = POWER POLE
- = INLET
- = CURB INLET
- = GAS VALVE
- = LIGHT POLE WITH MAST
- = TREE (CONIFEROUS) DRIP LINE SCALABLE
- = TREE (DECIDUOUS) DRIP LINE SCALABLE
- (CO) = CLEANOUT
- (FLAG) = FLAG POLE
- (MP) = UTILITY MARKER POST
- = SIGN ON POST
- = UTILITY CONTROL BOX
- (VLV) = UNKNOWN UTILITY VALVE
- FL. EL. = FIRST FLOOR ELEVATION
- = BUILDING OUTLINE
- 3 = MINOR CONTOUR
- 5 = MAJOR CONTOUR
- = FENCE
- = BEAM GUARD
- = CHAINLINK FENCE
- = WOODED AREA/SHRUB EDGE
- W = WATER MAIN
- ST = STORM SEWER
- SAN = SANITARY SEWER
- G = NATURAL GAS MAIN
- T = UNDERGROUND TELEPHONE
- E = UNDERGROUND ELECTRIC
- OH = OVERHEAD UTILITY LINES
- FO = UNDERGROUND FIBER OPTIC
- TV = UNDERGROUND CABLE TV
- C = COMMUNICATION CONDUIT
- = ASPHALT SURFACE
- = CONCRETE SURFACE
- = CRUSHED AGGREGATE

CONTROL TABLE				
POINT #	NORTHING	EASTING	ELEV.	DESCRIPTION
100	210164.241	612688.528	872.298	CP MAG NAIL
101	210419.990	612769.924	867.164	CP MAG NAIL
102	210983.258	612678.575	859.337	CP MAG NAIL
103	210190.353	613379.899	859.966	CP MAG NAIL
104	210777.772	613452.313	858.917	CP MAG NAIL

LEGAL DESCRIPTION

LOT ONE (1), CERTIFIED SURVEY MAP NO. 4118, RECORDED IN THE OFFICE OF THE REGISTER OF DEEDS FOR GREEN COUNTY, WISCONSIN, IN VOLUME 16 OF CERTIFIED SURVEY MAPS, PAGE 165 AS DOCUMENT NO. 482600, IN THE VILLAGE OF NEW GLARUS, GREEN COUNTY, WISCONSIN.

FOR INFORMATIONAL PURPOSES ONLY

PROPERTY ADDRESS: NO PARCEL ADDRESS AVAILABLE, NEW GLARUS, WI 53574
TAX KEY NO.: 23-161-0675.0000

SURVEYOR'S CERTIFICATE:

I, Brian Sandberg do hereby certify that that under My direction and control the the above described property was surveyed on 3/24/2020 in accordance with AE-7 of the Wisconsin Administrative Code and is correct to the best of my knowledge and belief.

Brian E. Sandberg S-2500
May 2nd, 2023

kapur
7711 N. Port Washington Road
Milwaukee, Wisconsin 53217
kapurinc.com

PROJECT:
NEW GLARUS SCHOOL DISTRICT

LOCATION:
(NO PARCEL ADDRESS AVAILABLE)
NEW GLARUS, WI 53574

CLIENT:
NEW GLARUS SCHOOL DISTRICT

RELEASE:
FINAL

REVISIONS:

#	DATE	DESCRIPTION

NORTH ARROW:

SCALE: 1" = 50'
0 10 20/30 40/50 100

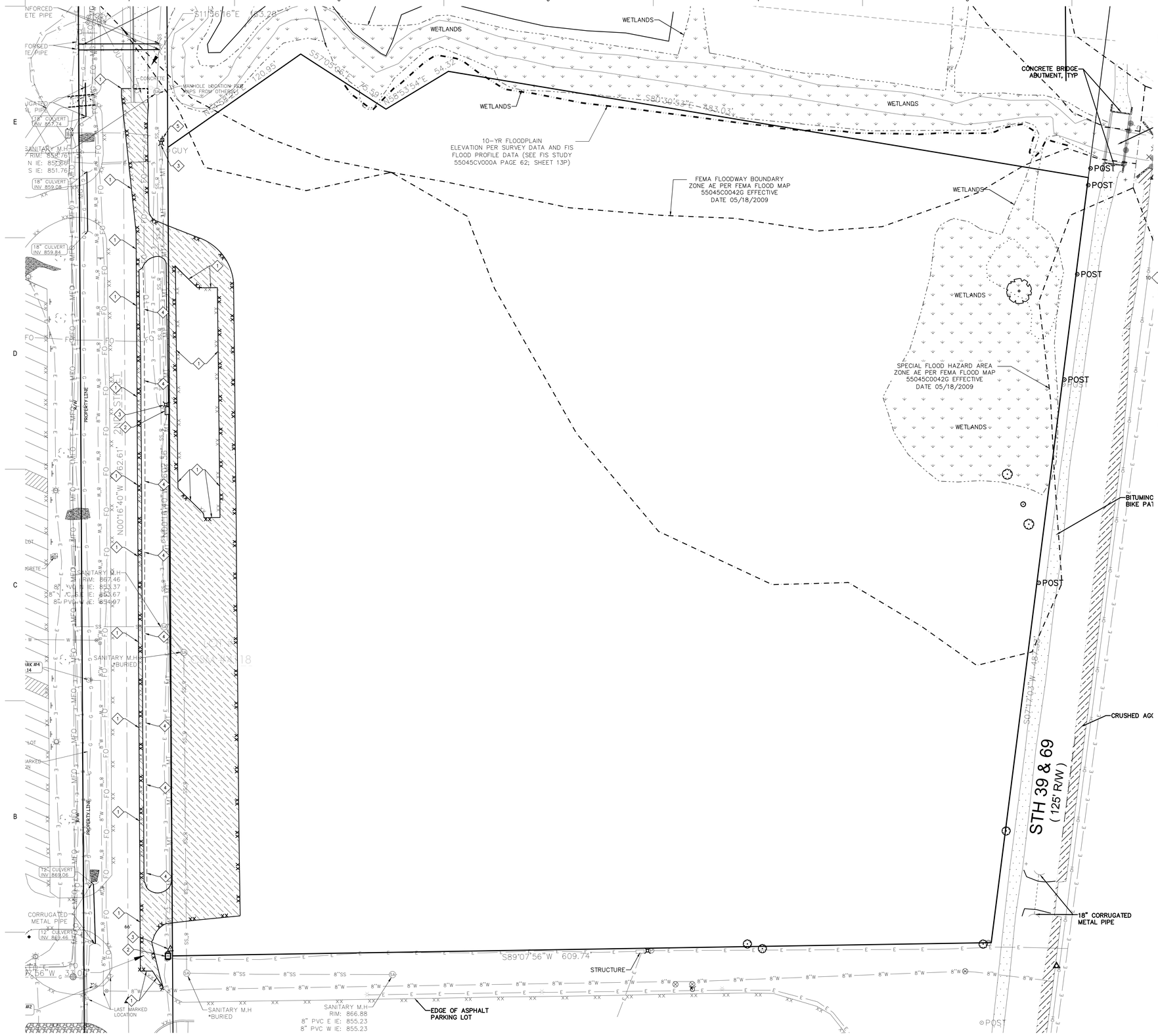
SEAL:
WISCONSIN
BRIAN SANDBERG
S-2500
PORT WASHINGTON
Wisconsin
LAND SURVEYOR

all in

SHEET:
PLAT OF SURVEY

PROJECT MANAGER:	BES
PROJECT NUMBER:	200364.01
DATE:	05/02/2023

SHEET NUMBER:
1 of 1



GENERAL NOTES:

1. CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
2. ALL DEMOLITION MATERIALS SHALL BE REMOVED FROM THE SITE AND DISPOSED OF IN A LEGAL MANNER EXCEPT FOR THOSE ITEMS NOTED TO BE SALVAGED, WHICH SHOULD BE TURNED OVER TO THE OWNER.
3. INSTALL AND MAINTAIN ALL REQUIRED EROSION CONTROL MEASURES FOR PERIMETER PROTECTION PRIOR TO THE START OF DEMOLITION/CONSTRUCTION, IN ACCORDANCE WITH THE LOCAL AND STATE GOVERNING AUTHORITIES.
4. BIDDERS SHALL VISIT THE SITE AND REVIEW EXISTING CONDITIONS PRIOR TO THE BID DATE.
5. COORDINATE WITH THE OWNER AND LOCAL UTILITY COMPANIES TO LOCATE ANY EXISTING UTILITIES ON SITE PRIOR TO THE START OF WORK.
6. ANY EXISTING UTILITIES NOT SHOWN ON THIS DOCUMENT WHICH NEED TO BE REMOVED, RELOCATED, AND/OR ADJUSTED SHALL BE THE RESPONSIBILITY OF THE SITE GRADING CONTRACTOR AND INCLUDED IN THE BASE BID CONTRACT.
7. COORDINATE ALL UTILITY REMOVAL, DISCONNECTION, &/OR RECONNECTION WITH RESPECTIVE UTILITY COMPANIES PRIOR TO BEGINNING WORK.
8. ANY EXISTING UTILITIES NOT EXPRESSLY LABELED FOR DEMOLITION/REMOVAL ON THIS DOCUMENT SHALL BE LEFT IN PLACE AND IN THEIR CURRENT STATE OF OPERATION. CONTACT ENGINEER WHEREVER CLARIFICATION IS NEEDED.
9. STRIP TOPSOIL WITHIN THE PROJECT LIMITS IN ACCORDANCE WITH THE PROJECT MANUAL SPECIFICATIONS.
10. IF STRIPPED TOPSOIL IS STOCKPILED ON SITE, SILT FENCE SHALL BE INSTALLED AROUND THE BASE OF THE STOCKPILE TO PREVENT SEDIMENT TRANSPORT.
11. PRIOR TO PERFORMING WORK WITHIN PUBLIC RIGHT OF WAYS, NOTIFY AND COORDINATE WORK WITH THE LOCAL MUNICIPALITY.

KEYNOTES:

1. SAWCUT EXISTING ASPHALT PAVEMENT
2. RELOCATE EXISTING ELECTRICAL BOX (COORDINATE W/ LOCAL UTILITY)
3. RELOCATE EXISTING TELEPHONE PEDESTAL (COORDINATE W/ LOCAL UTILITY)
4. REMOVE EXISTING GRAVEL
5. REMOVE & REINSTALL POWER POLE FOLLOWING GRADING OPERATIONS. (COORDINATE W/ LOCAL UTILITY)

DEMOLITION HATCH PATTERNS:

REMOVE EXISTING ASPHALT & UNDERLYING BASE COURSE

Sheet List Table	
Sheet Number	Sheet Title
C1.0	DEMOLITION PLAN
C2.0	LAYOUT PLAN
C3.0	GRADING PLAN
C4.0	EROSION CONTROL PLAN
C5.0	UTILITY PLAN
C6.0	DETAILS
C6.1	DETAILS
C6.2	DETAILS
C6.3	DETAILS
C6.4	DETAILS

BENCHMARK:

BEARING ARE BASED ON WisCRS GREEN COUNTY ZONE, (2012) VERTICAL DATUM NAVD 88.

CONTACT KAPUR FOR BENCHMARK INFO.

UTILITY DISCLAIMER:

THE LOCATIONS, SIZES, AND TYPES OF UNDERGROUND PUBLIC AND PRIVATE UTILITIES OR SUBSTRUCTURES SHOW HEREON WERE OBTAINED FROM VISUAL INSPECTION, FIELD MEASUREMENTS, AND/OR AS-BUILT PLANS. SANITARY SEWER AND STORM SEWER PIPE SIZES, INVERTS, DIRECTION, AND LOCATIONS BETWEEN MANHOLES ARE SUPPLEMENTED BY AS-BUILT PLANS AND/OR ESTIMATED BASED ON FIELD OBSERVATIONS. PRIOR TO CONSTRUCTION IN THE VICINITY OF ANY UTILITIES SHOWN HEREON, IT IS RECOMMENDED THAT THE LOCATIONS, DEPTHS, AND SIZES BE FIELD VERIFIED. THE LOCATIONS SHOWN HEREON ARE ONLY APPROXIMATE, WITH POSSIBILITY THAT ADDITIONAL UTILITY LINES NOT DISCOVERED, OR MARKED, DURING THE SEARCH OF RECORDS AND THE FIELD SURVEY MAY EXIST. ANY CONTRACTOR USING THE INFORMATION SHOWN HEREON IS HEREBY FOREWARNED THAT ANY EXCAVATION UPON THIS SITE MAY RESULT IN THE DISCOVERY OF ADDITIONAL UNDERGROUND UTILITIES NOT SHOWN HEREON. IN GENERAL, UNDERGROUND UTILITY LOCATIONS ARE SHOWN FROM UTILITY MARKINGS, BY OTHERS, AND/OR AS-BUILT PLANS, PROVIDED BY OTHERS. POINT OF BEGINNING MAKES NO WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, WITH RESPECT TO THE EXISTING UTILITIES SHOWN HEREON, AND BELIEVES THAT THE INFORMATION CONTAINED HEREIN IS RELIABLE AND GENERALLY ACCURATE FOR THE PURPOSE INTENDED.

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Landscape Architecture
Stevens Point, WI 54481
Green Bay, WI 54305
Sun Prairie, WI 53590
715.344.9999(PH) 715.344.9922(FX)
pobinc.com

Point of Beginning

Project Title:
Track and Field Renovations
New Glarus High School
New Glarus School District
1420 2nd St
New Glarus, WI 53574

REVISIONS:

Project Number:
3388.6

Issued For:
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NOT FOR
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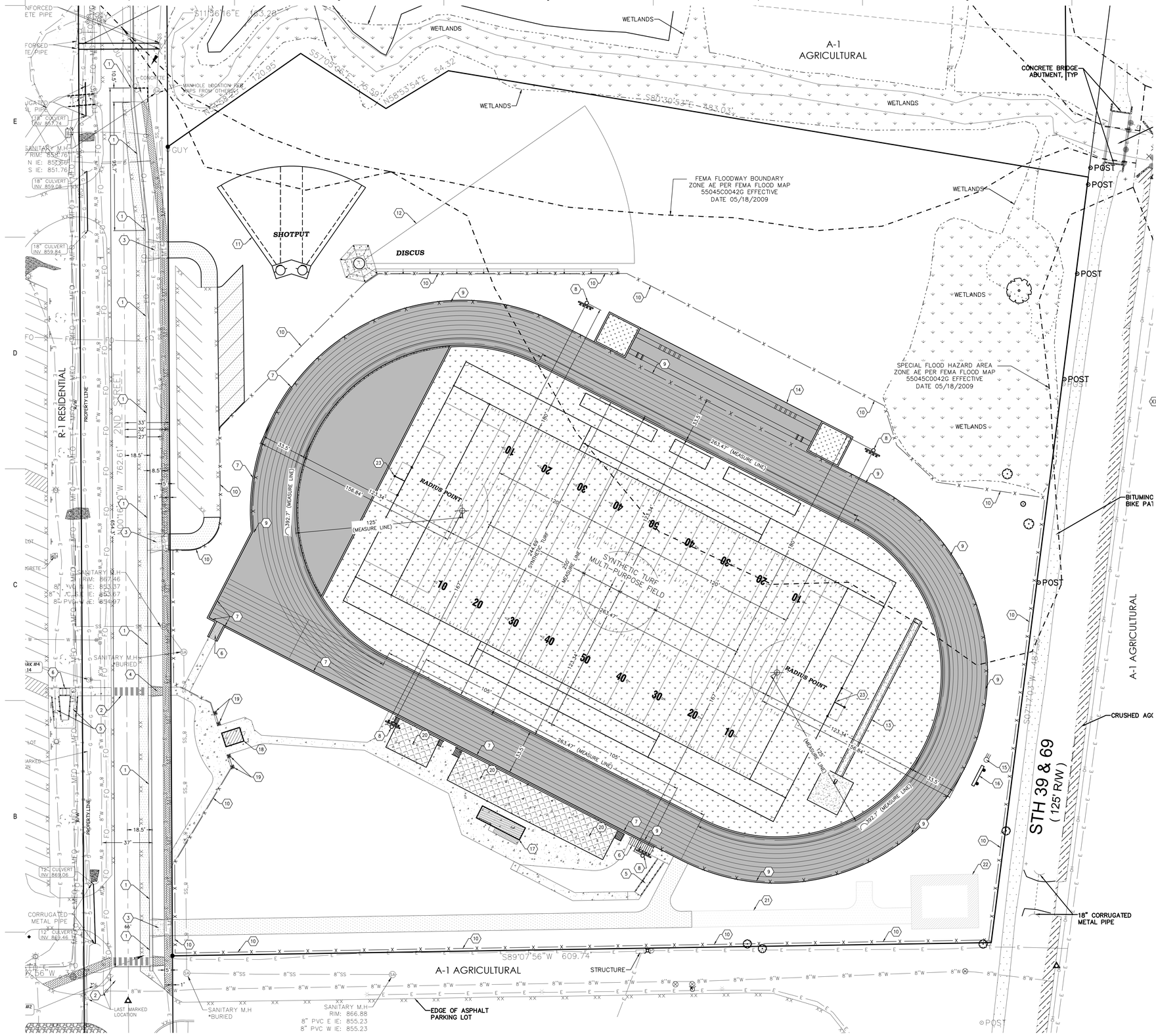
Sheet Title:
DEMOLITION PLAN

Sheet Number:
C1.0



GENERAL NOTES:

1. CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
2. GRADE, LINE, AND LEVEL TO BE REVIEWED IN THE FIELD BY THE CONSTRUCTION MANAGER.
3. EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED PER STATE AND REQUIREMENTS.
4. SEE SHEET C4.0 FOR ALL REQUIRED EROSION CONTROL ELEMENTS.
5. ANY EXISTING UTILITIES NOT SHOWN ON THIS DOCUMENT WHICH NEED TO BE REMOVED, RELOCATED AND OR ADJUSTED SHALL BE THE RESPONSIBILITY OF THE SITE GRADING CONTRACTOR.
6. VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF WORK.
7. BIDDERS SHALL VISIT THE SITE AND REVIEW EXISTING CONDITIONS PRIOR TO BID DATE.
8. BEFORE STARTING WORK, VERIFY WITH THE LOCAL AUTHORITIES THAT ALL REQUIRED PERMITS HAVE BEEN ACQUIRED.
9. COORDINATE CONSTRUCTION IN THE RIGHT OF WAY WITH THE LOCAL AUTHORITIES.
10. SIDEWALK JOINTS SHALL BE INSTALLED AS INDICATED OR AS APPROVED BY THE CONSTRUCTION MANAGER.
11. ALL GENERAL LANDSCAPE AREAS SHALL BE SEEDED, FERTILIZED, AND CRIMP HAY MULCHED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

PAVEMENT HATCH PATTERNS:

INSTALL ASPHALT PAVEMENT	1 C6.0
INSTALL 4" PRIVATE SIDEWALK	2 C6.0
INSTALL 5" PUBLIC SIDEWALK	3 C6.0
INSTALL 7" CONCRETE PAVEMENT	4 C6.0
INSTALL TRACK ASPHALT PAVEMENT W/ POLYURETHANE TRACK SURFACING (TRACK SURFACING SHALL START 1' INSIDE PERIMETER FENCE AND EXTEND TO CURB)	7 C6.0

KEYNOTES:

1. INSTALL 30" CURB AND GUTTER (PUBLIC) — 9 C6.1
2. INSTALL PAINTED CROSSWALK — 1 C6.2
3. INSTALL CONCRETE DRIVEWAY APRON — 4 C6.0
4. INSTALL ACCESSIBLE CURB RAMP — 2 C6.2
5. INSTALL ACCESSIBLE RAMP W/ HAND RAILS — 3 C6.2
6. INSTALL CONCRETE STAIRCASE W/ HAND RAILS — 4 C6.2
7. INSTALL GRAVITY RETAINING WALL — 9 C6.0
8. INSTALL NEW LIGHT POLE & FOUNDATION AND SALVAGED LIGHT FIXTURE (CM/OWNER TO SUPPLY SALVAGED LIGHT FIXTURE)
9. INSTALL 4' BLACK VINYL CHAIN LINK FENCE — 2,3 C6.0
10. ALTERNATE BID: INSTALL 6' BLACK VINYL CHAIN LINK FENCE — 2,3 C6.0
11. INSTALL SHOT PUT — 8 C6.1
12. INSTALL DISCUS — 1 C6.1
13. INSTALL POLE VAULT — 4 C6.1
14. INSTALL LONG JUMP/TRIPLE JUMP — 5 C6.1
15. INSTALL NEW FLAGPOLE — 7 C6.1
16. INSTALL SALVAGED SCOREBOARD (CM/OWNER TO SUPPLY SALVAGED SCOREBOARD)
17. INSTALL PRE-FAB 10'x36' PRESS BOX W/ STAIRCASE AND CONCESSIONS BELOW
18. INSTALL TICKETBOOTH
19. INSTALL PILLAR
20. INSTALL SALVAGED BLEACHER (CM/OWNER TO SUPPLY SALVAGED BLEACHER)
21. ALTERNATE BID: INSTALL ADDITIONAL ASPHALT PAVEMENT
22. ALTERNATE BID: INSTALL 40'x50' PRE-FAB METAL STORAGE BUILDING
23. INSTALL SALVAGED FIELD GOAL — 6 C6.1

BENCHMARK:

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SITE PARKING:

OFF-STREET PARKING-REQUIRED

1 SPACE FOR EACH 4 EXPECTED PATRONS AT MAXIMUM CAPACITY

MAXIMUM CAPACITY = 1000 PATRONS
TOTAL REQUIRED PARKING = 250 STALLS

OFF-STREET PARKING-PROPOSED

EXISTING ONSITE PARKING STALLS TO REMAIN = 21
EXISTING OFFSITE PARKING STALLS
(ACROSS THE STREET AT HIGH SCHOOL) = 245

TOTAL PARKING FOLLOWING CONSTRUCTION = 266

SITE/PARCEL STATISTICS:

CURRENT ZONE = A-1		
PROPOSED ZONE = A-1		
TOTAL LOT AREA = 404,171 S.F.		
LAND USE DESIGNATION = INSTITUTIONAL		
CURRENT LAND USE = INSTITUTIONAL (RECREATIONAL FACILITY)		
PROPOSED LAND USE = INSTITUTIONAL (RECREATIONAL FACILITY)		
CURRENT EMPLOYEES = 0		
PROPOSED EMPLOYEES = 0		
HOURS OF OPERATION = APPROXIMATELY 8AM-6PM, 5 DAYS A WEEK		
BUILDING	*CONCRETE WALKS & BITUMINOUS PAVEMENT*	*GREEN SPACE*
2510 S.F. (0.6% OF SITE)	200,098 S.F. (49.5% OF SITE)	201,563 S.F. (49.9% OF SITE)

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Sun Prairie, WI 53590
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pdsinc.com

Point // Beginning

Project Title:
Track and Field Renovations
New Glarus High School
New Glarus School District
1420 2nd St
New Glarus, WI 53574

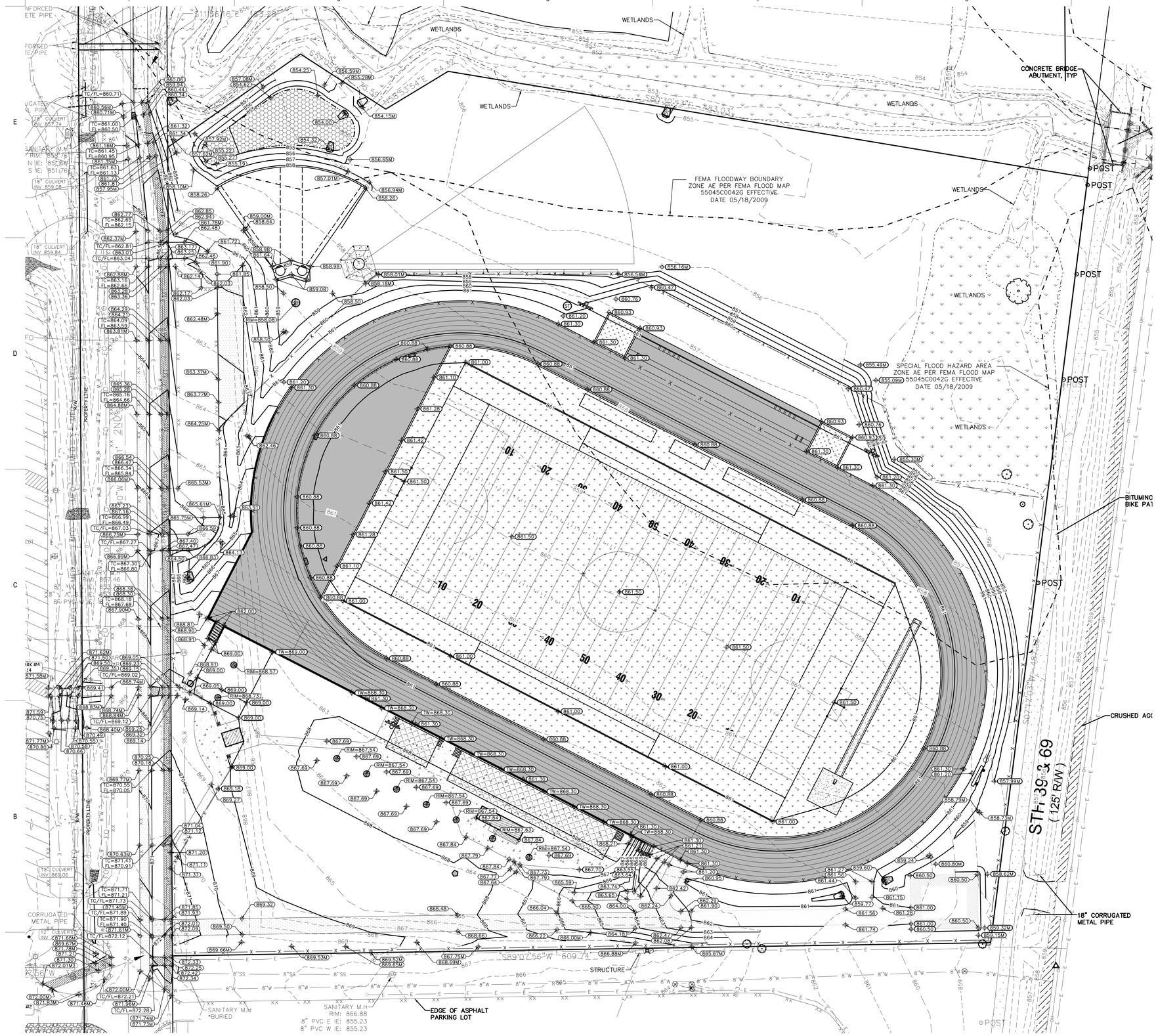
REVISIONS:

Project Number:
3388.6

Issued For:
PLAN REVIEW
NOT FOR
CONSTRUCRTION
9/6/2023

Sheet Title:
LAYOUT PLAN

Sheet Number:
C2.0



GENERAL NOTES:

1. CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
2. GRADE, LINE, AND LEVEL SHALL BE REVIEWED IN THE FIELD BY THE CONSTRUCTION MANAGER.
3. INSTALL AND MAINTAIN ALL REQUIRED EROSION CONTROL MEASURES IN ACCORDANCE WITH LOCAL MUNICIPAL AND DEPARTMENT OF NATURAL RESOURCES REGULATIONS.
4. 10" OF TOPSOIL SHALL BE PROVIDED IN ALL GENERAL LAWN AREAS AND 12" SHALL BE PROVIDED IN ALL PLANTING BED AREAS.
5. SEE SHEET C4.0 FOR ALL REQUIRED EROSION CONTROL ELEMENTS.
6. ANY EXISTING UTILITIES NOT SHOWN ON THIS DOCUMENT WHICH NEED TO BE REMOVED, RELOCATED, AND/OR ADJUSTED SHALL BE THE RESPONSIBILITY OF THE SITE GRADING CONTRACTOR AND INCLUDED IN THE BASE BID CONTRACT.
7. COORDINATE ALL EARTHWORK ACTIVITIES WITH THE RESPECTIVE TRADES RESPONSIBLE FOR THE INSTALLATION OF GAS, CABLE, TELEPHONE AND ELECTRICAL (INCLUDING MAIN SERVICE, SITE LIGHTING, CONDUITS AND SIGNAGE).
8. INSTALL WisDOT TYPE HR FILTER FABRIC BENEATH ALL RIP RAP.
9. EXCESS TOPSOIL SHALL BE REMOVED FROM SITE, UNLESS OTHERWISE DIRECTED BY THE OWNER. COORDINATE WITH OWNER FOR LOCATION OF STOCKPILE IF THE OWNER CHOOSES TO SALVAGE EXCESS TOPSOIL FOR FUTURE USE. SILT FENCE SHALL BE PLACED AROUND STOCKPILE.
10. THE ENGINEERED SOIL SHALL NOT BE PLACED IN THE BIORETENTION AREAS UNTIL THE SURROUNDING DRAINAGE AREA HAS BEEN FULLY STABILIZED. ALL CONSTRUCTION SITE SEDIMENT SHALL BE REMOVED FROM THE SUBGRADE OF THE BIORETENTION AREA PRIOR TO PLACEMENT OF THE ENGINEERED SOIL.
11. ALL TESTING AND INSPECTION SHALL BE DONE IN ACCORDANCE WITH SPS 382.21.
12. THE LOCAL MUNICIPALITY SHALL BE CONTACTED PRIOR TO ANY EXCAVATION IN THE PUBLIC RIGHT-OF-WAY.
13. THE LOCAL MUNICIPALITY SHALL OPERATE ALL EXISTING WATER VALVES IF NEEDED.

GRADING LEGEND:

EXISTING CONTOUR	712
PROPOSED CONTOUR	712
PROPOSED SPOT ELEVATION	892.26
PROPOSED ENDWALL INVERT ELEVATION	INV=892.05
PROPOSED RIM ELEVATION	RIM=893.56
PROPOSED TOP OF CURB ELEVATION	TC=893.56
PROPOSED FLOW LINE ELEVATION	FL=893.56
PROPOSED TOP OF SIDEWALK ELEVATION	TS=893.56
PROPOSED TOP OF WALL ELEVATION	TW=893.56
PROPOSED BOTTOM OF WALL ELEVATION	BW=893.56
PROPOSED MATCH ELEVATION (CONTRACTOR TO VERIFY)	892.05M
PROPOSED ENDWALL STRUCTURE WITH RIP RAP	7 / C6.2
PROPOSED ENDWALL STRUCTURE WITHOUT RIP RAP	7 / C6.2
PROPOSED STORM SEWER MANHOLE	ST 8 / C6.2
PROPOSED STORM SEWER INLET	8 / C6.2
PROPOSED STORM SEWER MODULAR INLET OR YARD DRAIN	1 / C6.3
PROPOSED SANITARY SEWER CLEANOUT	7 / C6.3
PROPOSED STORM SEWER CLEANOUT	2 / C6.3
PROPOSED WATER VALVE	3 / C6.3
PROPOSED DRY BASIN (SEE GRADING PLAN)	

BENCHMARK:

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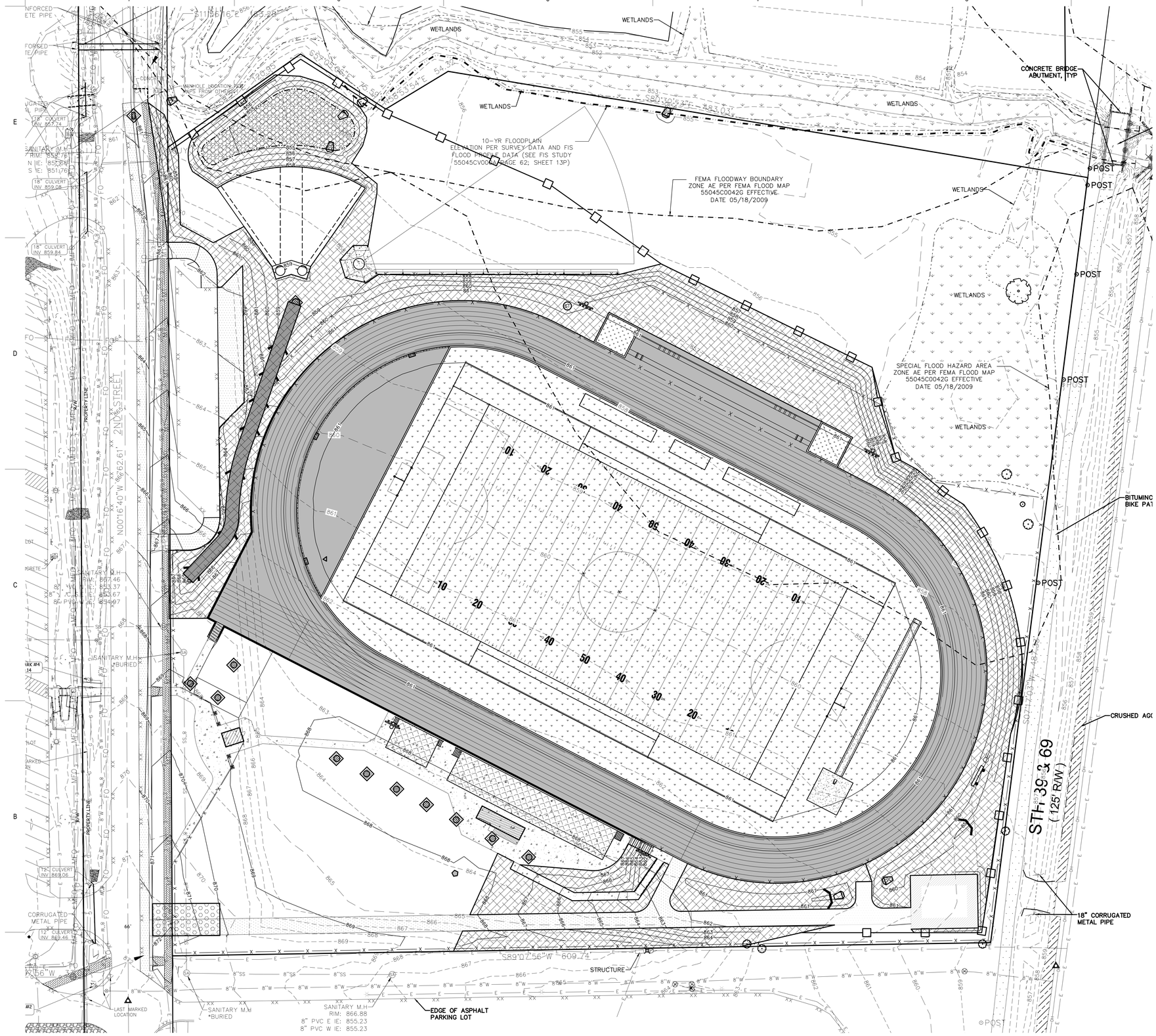
Sheet Title:
GRADING PLAN

Sheet Number:
C3.0



GENERAL NOTES:

1. CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
2. NOTIFY THE LOCAL MUNICIPALITY AT LEAST 2 WORKING DAYS PRIOR TO THE START OF SOIL DISTURBING ACTIVITIES.
3. INSTALL ALL TEMPORARY EROSION CONTROL ELEMENTS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
4. ALL ACTIVITIES SHALL BE CONDUCTED IN A LOGICAL SEQUENCE TO MINIMIZE THE AMOUNT OF BARE SOIL EXPOSED AT ANY ONE TIME. MAINTAIN EXISTING VEGETATION AS LONG AS POSSIBLE.
5. CRUSHED ROCK DRIVES FOR SEDIMENT TRACKING UTILIZING 3" CRUSHED ROCK SHALL BE MAINTAINED AT ALL CONSTRUCTION ENTRANCES TO THE SITE. THE ROCK DRIVE SHALL BE A MINIMUM OF 12" THICK AND BE A MINIMUM OF 50 FEET IN LENGTH BY THE WIDTH OF THE DRIVEWAY.
6. OFF SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF A STORM EVENT SHALL BE CLEANED UP BY THE END OF THE NEXT WORK DAY. ALL OFF SITE SEDIMENT DEPOSITS OCCURRING AS A RESULT OF CONSTRUCTION ACTIVITIES, INCLUDING SOIL TRACKED BY CONSTRUCTION TRAFFIC, SHALL AT A MINIMUM BE CLEANED BY THE END OF EACH WORK DAY. EXCESSIVE AMOUNTS OF SEDIMENT OR OTHER DEBRIS TRACKED ONTO ADJACENT STREETS SHALL BE CLEANED IMMEDIATELY. FINE SEDIMENT ACCUMULATIONS SHALL BE CLEANED FROM ADJACENT STREETS BY THE USE OF MECHANICAL OR MANUAL SWEEPING OPERATIONS ONCE A WEEK AT A MINIMUM AND BEFORE IMMINENT RAIN EVENTS.
7. DISTURBED GROUND OUTSIDE OF THE EVERYDAY CONSTRUCTION AREAS, INCLUDING SOIL STOCKPILES, THAT ARE LEFT INACTIVE FOR MORE THAN 7 DAYS SHALL BE TEMPORARILY STABILIZED BY SEEDING/MULCHING OR OTHER APPROVED METHODS.
8. WASTE MATERIAL THAT IS GENERATED ON THE CONSTRUCTION SITE SHALL BE PROPERLY DISPOSED OF AND NOT ALLOWED TO RUN INTO RECEIVING WATERS.
9. EROSION CONTROL DEVICES DESTROYED AS A RESULT OF CONSTRUCTION ACTIVITIES SHALL BE REPAIRED BY THE END OF EACH WORK DAY.
10. INSPECT ALL EROSION CONTROL MEASURES AT LEAST ONCE A WEEK AND AFTER ANY RAINFALL OF 0.5" OR MORE. MAKE NEEDED REPAIRS AND DOCUMENT ALL ACTIVITIES AS PER THE REQUIREMENTS OF THE NOTICE OF INTENT SUBMITTED BY THE PROJECT CIVIL ENGINEER.
11. ALL TEMPORARY EROSION CONTROL ELEMENTS SHALL REMAIN IN PLACE UNTIL A SUFFICIENT GROWTH OF VEGETATION IS ESTABLISHED AND THEN BE REMOVED AS PART OF THE BASE BID.
12. IF SEDIMENT LADEN WATER NEEDS TO BE REMOVED FROM THE SITE, FILTER BAGS OR SCREENING SHALL BE USED IN ACCORDANCE WITH WI DNR TECHNICAL STANDARD 1061 TO PREVENT SEDIMENT DISCHARGE TO THE MAXIMUM EXTENT PRACTICABLE.
13. COORDINATE ALL EARTHWORK ACTIVITIES WITH THE RESPECTIVE TRADES RESPONSIBLE FOR THE INSTALLATION OF GAS, CABLE, TELEPHONE AND ELECTRICAL (INCLUDING MAIN SERVICE, SITE LIGHTING, CONDUITS AND SIGNAGE).
14. PROVIDE RIP RAP AT ALL CULVERT OUTFLOW ENDWALL STRUCTURES TO PREVENT WASHOUT AND EROSION.
15. INSTALL WisDOT TYPE HR FILTER FABRIC BENEATH ALL RIP RAP.
16. IF BARE SOIL IS EXPOSED DURING THE WINTER MONTHS, STABILIZATION BY MULCHING OR ANIONIC POLYACRYLAMIDE SHALL OCCUR PRIOR TO SNOWFALL OR GROUND FREEZE.
17. SILT FENCE SHALL BE INSTALLED AROUND THE TOPSOIL STOCKPILE.
18. THE CONTRACTOR SHALL PERFORM INSPECTIONS AND MONITORING OF EROSION CONTROL PRACTICES IN ACCORDANCE WITH THE WI DNR "CONSTRUCTION SITE INSPECTION REPORT" FORM 3400-187. THIS FORM CAN BE FOUND IN THE CONSTRUCTION SPECIFICATIONS.

EROSION CONTROL LEGEND:

- EXISTING CONTOUR — 888
- PROPOSED CONTOUR — 888
- PROPOSED SILT FENCE — 1 C6.3
- PROPOSED INLET PROTECTION — 2 C6.3
- EROSION CONTROL BLANKET — 3 C6.3
- EROSION CONTROL BLANKET (CHANNEL FLOW) — 4 C6.3
- ROCK CONSTRUCTION ENTRANCE — 5 C6.3
- TEMPORARY DITCH CHECK — 6 C6.3

EROSION CONTROL SEQUENCING:

1. INSTALL PERIMETER EROSION CONTROL
2. BEGIN DEMOLITION
3. BEGIN ROUGH GRADING AND UTILITY INSTALLATION
4. DURING GRADING ACTIVITIES EXISTING GRASS AND VEGETATION, TO BE REMOVED, SHALL REMAIN IN PLACE FOR AS LONG AS POSSIBLE, TO AVOID SEDIMENT TRANSPORT.
5. TEMPORARY STABILIZATION ACTIVITY SHALL COMMENCE WHEN LAND DISTURBING CONSTRUCTION ACTIVITIES HAVE TEMPORARILY CEASED AND WILL NOT RESUME FOR A PERIOD EXCEEDING 14 CALENDAR DAYS.
6. FINAL STABILIZATION ACTIVITY SHALL COMMENCE WHEN LAND DISTURBING ACTIVITIES CEASE AND FINAL GRADE HAS BEEN REACHED ON ANY PORTION OF THE SITE.
7. IF DISTURBED AREAS MUST BE LEFT OVER WINTER, AN ANIONIC POLYACRYLAMIDE SHALL BE APPLIED TO ALL DISTURBED AREAS PRIOR TO GROUND FREEZE. SEE SPECIFICATIONS FOR DETAILS.

BENCHMARK:

BEARING ARE BASED ON WisCRS GREEN COUNTY ZONE, (2012) VERTICAL DATUM NAVD 88.

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Point of Beginning

Project Title:
Track and Field Renovations
New Glarus High School
New Glarus School District
1420 2nd St
New Glarus, WI 53574

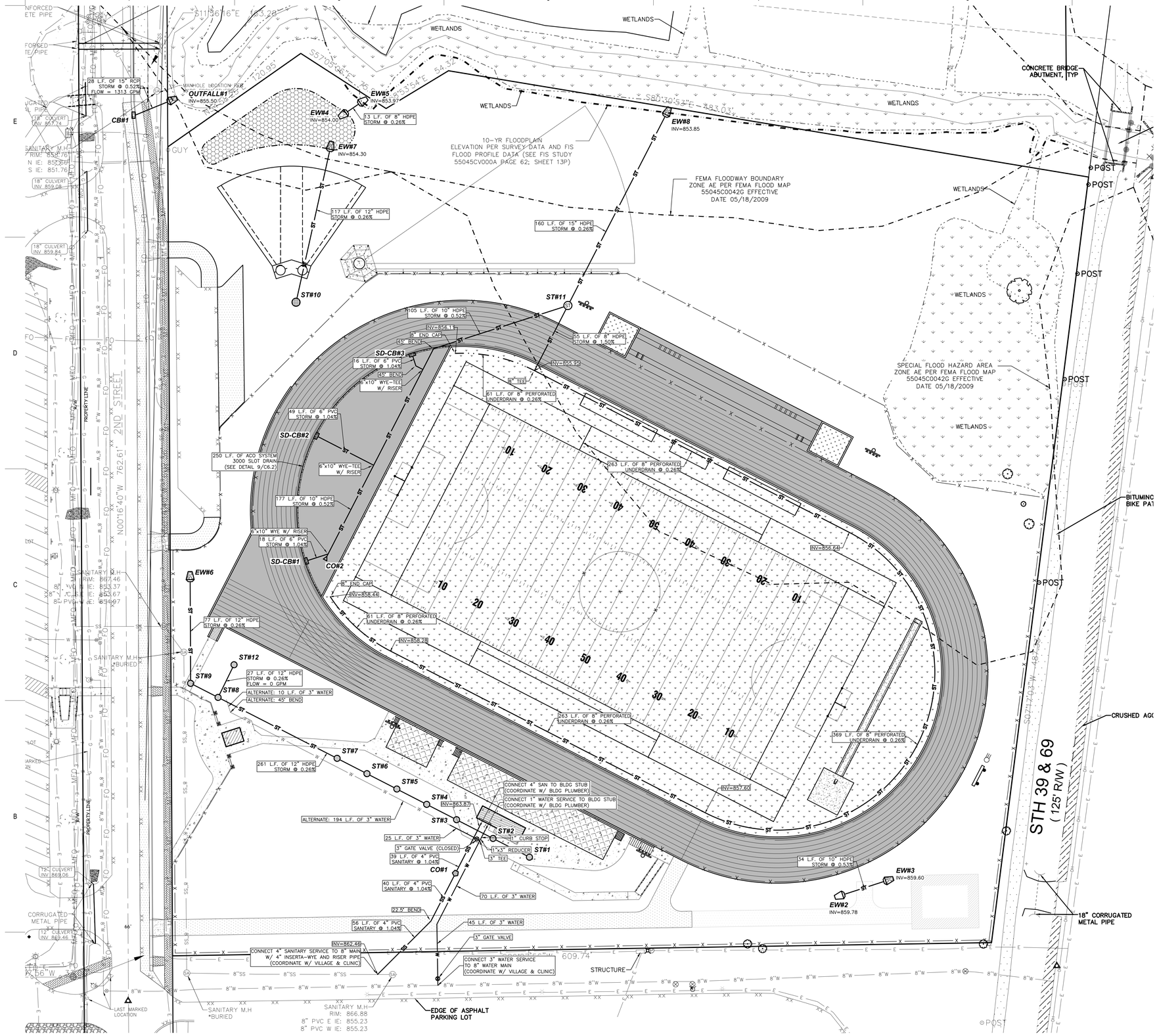
REVISIONS:

Project Number:
3388.6

Issued For:
PLAN REVIEW NOT FOR CONSTRUCRTION
9/6/2023

Sheet Title:
EROSION CONTROL PLAN

Sheet Number:
C4.0



GENERAL NOTES:

1. CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF CONSTRUCTION.
2. GRADE, LINE, AND LEVEL SHALL BE REVIEWED IN THE FIELD BY THE CONSTRUCTION MANAGER.
3. ANY EXISTING UTILITIES NOT SHOWN ON THIS DOCUMENT WHICH NEED TO BE REMOVED, RELOCATED AND OR ADJUSTED SHALL BE THE RESPONSIBILITY OF THE SITE GRADING CONTRACTOR.
4. REFER TO THE PROPOSED BUILDING MECHANICAL/PLUMBING PLANS TO VERIFY EXACT CONNECTION LOCATIONS AND SIZES OF PROPOSED SANITARY SEWER AND WATER LATERALS.
5. COORDINATE ALL UTILITY WORK WITH THE RESPECTIVE TRADES RESPONSIBLE FOR THE INSTALLATION OF GAS, CABLE, TELEPHONE AND ELECTRICAL (INCLUDING MAIN SERVICE, SITE LIGHTING, CONDUITS AND SIGNAGE).
6. COORDINATE ALL WORK WITHIN THE PUBLIC RIGHT OF WAY WITH THE LOCAL MUNICIPALITY.
7. ALL TESTING AND INSPECTION SHALL BE DONE IN ACCORDANCE WITH SPS 382.21.
8. THE PROPOSED WATER LINE SHALL HAVE A MINIMUM COVER OF 7'-0" TO THE TOP OF PIPE FROM PROPOSED FINISHED GRADE. SEE SHEET C3.0 FOR PROPOSED FINISHED GRADE.
9. THE MUNICIPALITY SHALL BE CONTACTED PRIOR TO ANY EXCAVATION IN THE PUBLIC RIGHT-OF-WAY, AND PRIOR TO CONNECTING SANITARY SEWER AND WATER LATERALS TO THE PUBLIC MAINS.
10. THE CONTRACTOR SHALL HAVE A TRAFFIC CONTROL PLAN APPROVED PRIOR TO WORK COMMENCING.
11. THE MUNICIPALITY SHALL OPERATE ALL EXISTING WATER VALVES, IF NEEDED.
12. FIELD VERIFY INVERT ELEVATION OF THE SANITARY SEWER AND WATER PUBLIC MAIN, AT THE LOCATION OF THE SERVICE LATERAL CONNECTIONS, PRIOR TO CONNECTING THE LATERALS TO THE PUBLIC MAIN.
13. INSTALL WisDOT TYPE HR FILTER FABRIC BENEATH PROPOSED RIP RAP.

UTILITY LEGEND:

PROPOSED STORM SEWER	ST
PROPOSED SANITARY SEWER	SS
PROPOSED WATER MAIN	W
PROPOSED ENDWALL STRUCTURE WITH RIP RAP	7 / C6.2
PROPOSED ENDWALL STRUCTURE WITHOUT RIP RAP	7 / C6.2
PROPOSED STORM SEWER MANHOLE	ST 8 / C6.2
PROPOSED STORM SEWER INLET	8 / C6.2
PROPOSED STORM SEWER MODULAR INLET OR YARD DRAIN	1 / C6.3
PROPOSED SANITARY SEWER CLEANOUT	2 / C6.3
PROPOSED STORM SEWER CLEANOUT	2 / C6.3
PROPOSED WATER VALVE	3 / C6.3
PROPOSED DRY BASIN (SEE GRADING PLAN)	

STORM MANHOLE SCHEDULE:

STRUCTURE #	STRUCTURE DETAILS
CB#1	RIM = 860.50 INV (E) = 855.64 DEPTH = 4.85' RECTAGULAR CURB INLET
SD-CB#1	RIM = 861.42 INV (E) = 859.24 DEPTH = 2.18' ACO SYSTEM 3000 CATCH BASIN (SEE DETAIL 10/C6.2)
SD-CB#2	RIM = 861.42 INV (SE) = 859.24 DEPTH = 2.18' ACO SYSTEM 3000 CATCH BASIN (SEE DETAIL 10/C6.2)
SD-CB#3	RIM = 861.42 INV (S) = 859.24 DEPTH = 2.18' ACO SYSTEM 3000 CATCH BASIN (SEE DETAIL 10/C6.2)
ST#1	RIM = 867.54 INV (NW) = 865.44 DEPTH = 2.10' 15" NYLOPLAST PVC DRAIN BASIN W/ 15" PEDESTRIAN GRATE W/ 6" SUMP
ST#2	RIM = 867.63 INV (SE) = 865.36 INV (NW) = 865.36 DEPTH = 2.27' 15" NYLOPLAST PVC DRAIN BASIN W/ 15" PEDESTRIAN GRATE W/ 6" SUMP
ST#3	RIM = 867.54 INV (SE) = 865.28 INV (NW) = 865.28 DEPTH = 2.26' 15" NYLOPLAST PVC DRAIN BASIN W/ 15" PEDESTRIAN GRATE W/ 6" SUMP
ST#4	RIM = 867.54 INV (SE) = 865.22 INV (NW) = 865.22 DEPTH = 2.32' 15" NYLOPLAST PVC DRAIN BASIN W/ 15" PEDESTRIAN GRATE W/ 6" SUMP
ST#5	RIM = 867.54 INV (SE) = 865.15 INV (NW) = 865.15 DEPTH = 2.39' 15" NYLOPLAST PVC DRAIN BASIN W/ 15" PEDESTRIAN GRATE W/ 6" SUMP
ST#6	RIM = 867.54 INV (SE) = 865.09 INV (NW) = 865.09 DEPTH = 2.45' 15" NYLOPLAST PVC DRAIN BASIN W/ 15" PEDESTRIAN GRATE W/ 6" SUMP
ST#7	RIM = 867.54 INV (SE) = 865.02 INV (NW) = 865.02 DEPTH = 2.52' 15" NYLOPLAST PVC DRAIN BASIN W/ 15" PEDESTRIAN GRATE W/ 6" SUMP
ST#8	RIM = 868.73 INV (SE) = 864.76 INV (NE) = 864.76 INV (NW) = 864.76 DEPTH = 3.97' 15" NYLOPLAST PVC DRAIN BASIN W/ 15" PEDESTRIAN GRATE W/ 6" SUMP
ST#9	RIM = 868.99 INV (SE) = 864.70 INV (N) = 864.70 DEPTH = 4.29' 15" NYLOPLAST PVC DRAIN BASIN W/ 15" PEDESTRIAN GRATE W/ 6" SUMP
ST#10	RIM = 858.08 INV (N) = 854.60 DEPTH = 3.47' 48" I.D. PRECAST MANHOLE W/ NEENAH 2560-EA CASTING W/ BEEHIVE GRATE
ST#11	RIM = 860.38 INV (SW) = 855.14 INV (W) = 854.68 INV (NE) = 854.27 DEPTH = 6.12' 48" I.D. PRECAST MANHOLE W/ NEENAH 1556 CASTING W/ SOLID LID
ST#12	RIM = 868.57 INV (SW) = 864.83 DEPTH = 3.73' 15" NYLOPLAST PVC DRAIN BASIN W/ 15" PEDESTRIAN GRATE W/ 6" SUMP

CLEAN OUT SCHEDULE:

STRUCTURE #	STRUCTURE DETAILS
CO#1	RIM = 864.15 INV (NE) = 863.47 INV (SW) = 863.47
CO#2	RIM = 861.02 INV (NE) = 856.15

BENCHMARK:

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Point // Beginning

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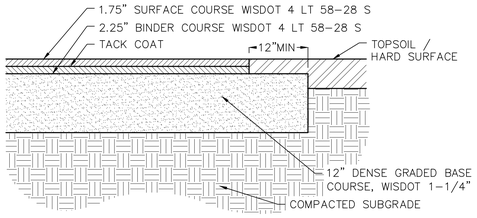
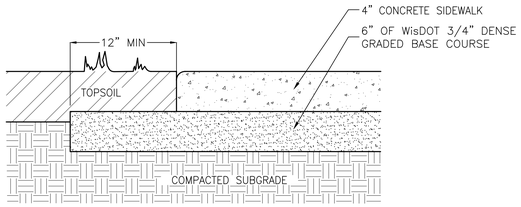


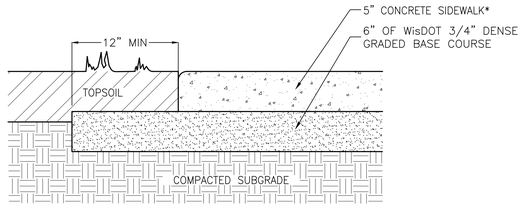
NOTES:
1. BREAKER RUN AND DENSE GRADED BASE COURSE SHALL EXTEND 1.0' BEYOND EDGE OF ASPHALT

ASPHALT PAVEMENT — 1 / C6.0



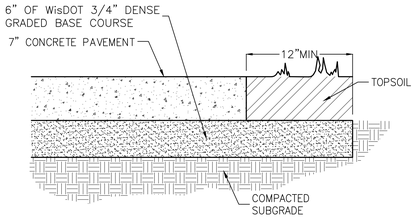
NOTES:
1. DENSE GRADED BASE COURSE SHALL EXTEND 1.0' BEYOND EDGE OF CONCRETE

PRIVATE SIDEWALK — 2 / C6.0



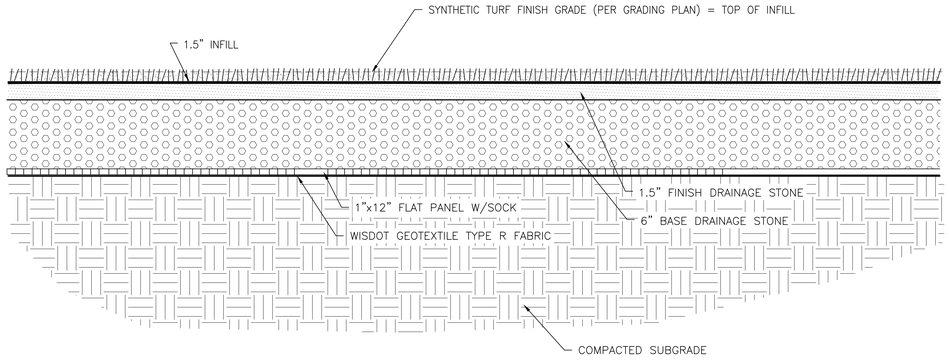
NOTES:
* INCREASE CONCRETE SIDEWALK THICKNESS TO 7" WHERE SIDEWALK CROSSES DRIVE OPENINGS AND FOR ALL CURB RAMPS
** DENSE GRADED BASE COURSE SHALL EXTEND 1.0' BEYOND EDGE OF CONCRETE

PUBLIC SIDEWALK — 3 / C6.0

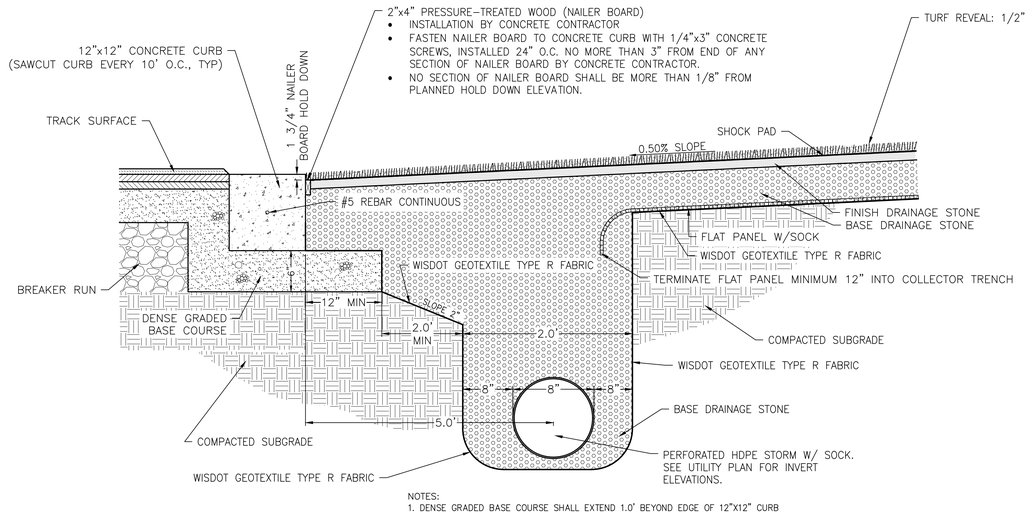


NOTES:
1. DENSE GRADED BASE COURSE SHALL EXTEND 1.0' BEYOND EDGE OF CONCRETE

CONCRETE PAVEMENT — 4 / C6.0

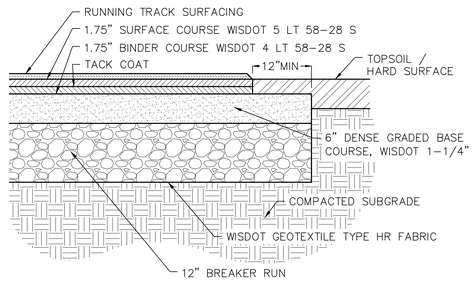


SYNTHETIC TURF CROSS SECTION — 5 / C6.0



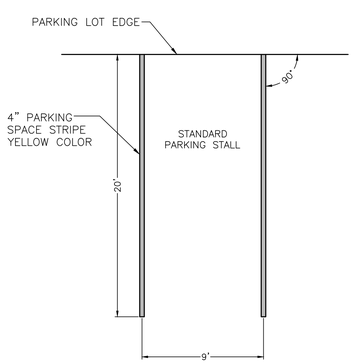
NOTES:
1. DENSE GRADED BASE COURSE SHALL EXTEND 1.0' BEYOND EDGE OF 12"X12" CURB

COLLECTOR TRENCH — 6 / C6.0

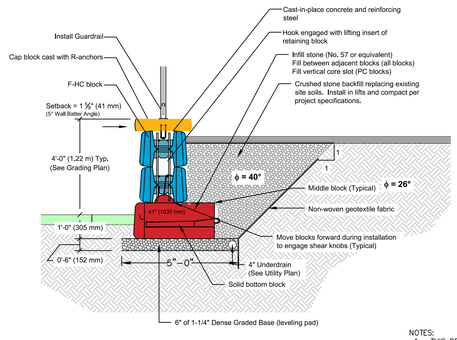


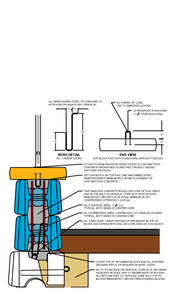
NOTES:
1. BREAKER RUN AND DENSE GRADED BASE COURSE SHALL EXTEND 1.0' BEYOND EDGE OF ASPHALT

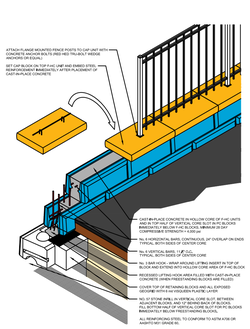
ASPHALT TRACK PAVEMENT — 7 / C6.0



PARKING LOT STRIPING — 8 / C6.0







NOTES:
1. THIS DETAIL IS PROVIDED FOR REFERENCE ONLY. CONTRACTOR SHALL PROVIDE FINAL STRUCTURAL DRAWINGS STAMPED BY A STRUCTURAL ENGINEER LICENSED IN THE STATE OF WISCONSIN.
2. RETAINING WALL SHALL BE CONSTRUCTED WITH REDI-ROCK RETAINING WALL BLOCKS OR APPROVED EQUAL

DESIGN TO BE COMPLETED

GRAVITY RETAINING WALL — 9 / C6.0

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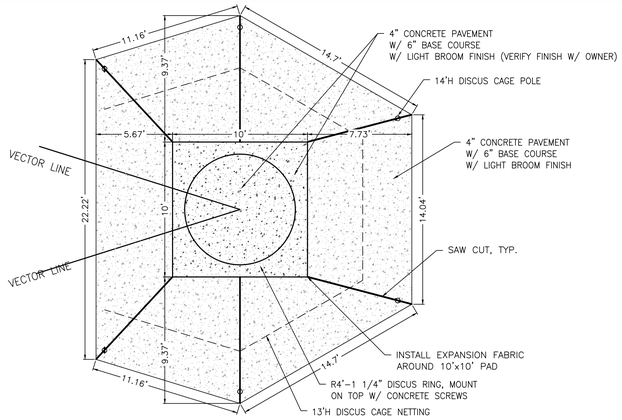
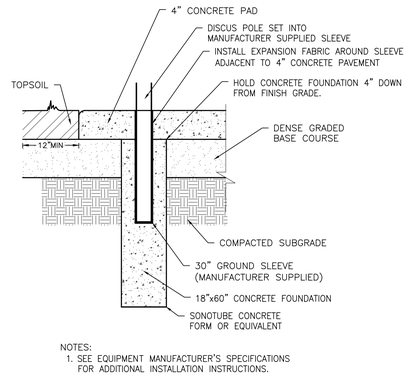


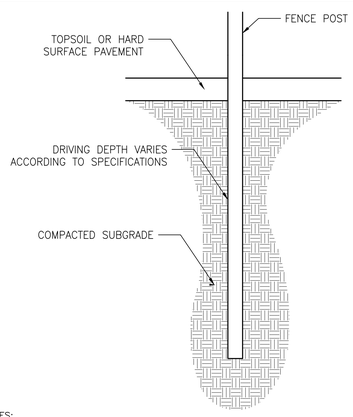
NOTES:
1. DISCUS NET SYSTEM SHALL BE A SPORTSFIELD SPECIALITIES, INC. HIGH SCHOOL DISCUS CAGE (MODEL #DCHS).
2. A NET EXTENSION (IF SHOWN ON THE LAYOUT PLAN) SHALL BE A SPORTSFIELD SPECIALITIES, INC. DISCUS CAGE NET EXTENSION (MODEL #DCNE). SEE LAYOUT PLAN FOR LENGTH.
3. SEE EQUIPMENT MANUFACTURER'S DOCUMENTATION FOR ADDITIONAL INSTALLATION INSTRUCTIONS.
4. 10'x10' CONCRETE THROWING PAD SHALL BE POURED SEPARATELY FROM CONCRETE ENCASING DISCUS CAGE POLES. **NO SAWCUTS** WITHIN 10'x10' CONCRETE THROWING PAD.
5. DISCUS CAGE POLES SHALL BE LOCATED WITHIN THE CONCRETE PAVEMENT, WITH MIN. 4" OF CONCRETE FROM EDGE OF POLE TO EDGE OF CONCRETE SLAB.

DISCUS PAD & NETTING SYSTEM — 1 / C6.1



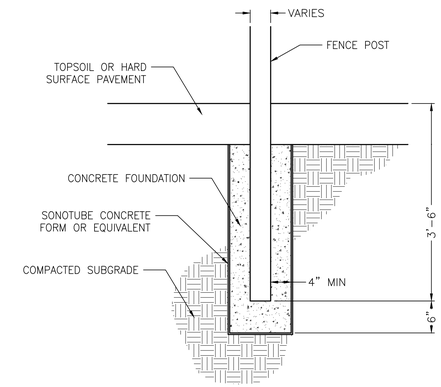
NOTES:
1. SEE EQUIPMENT MANUFACTURER'S SPECIFICATIONS FOR ADDITIONAL INSTALLATION INSTRUCTIONS.

POLE FOUNDATION



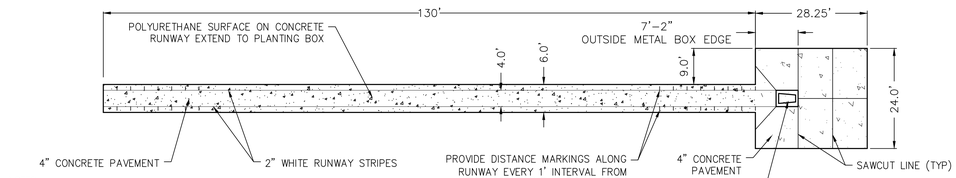
NOTES:
1. ALL NON-TERMINAL/CORNER CHAIN LINK FENCE POSTS SHALL BE DRIVEN.
2. POSTS DRIVEN THROUGH ASPHALT PAVEMENT SHALL BE SEALED WITH CONCRETE SILICONE JOINT SEALANT MEETING ASTM C-920 TYPE S CLASS 25.
3. POSTS DRIVEN THROUGH CONCRETE SHALL BE CORED AND SEALED WITH CONCRETE SILICONE JOINT SEALANT MEETING ASTM C-920 TYPE S CLASS 25.
4. BEFORE DRIVING FENCE POST, IF THE CONCRETE IS LOCATED WITHIN 2 FEET OF THE EDGE OF CONCRETE, SAWCUT A CONTROL JOINT FROM THE CORE TO EDGE OF CONCRETE. SEAL WITH CAULK.
5. SEE LAYOUT PLAN FOR FENCE LOCATION

DRIVEN FENCE POST — 2 / C6.1



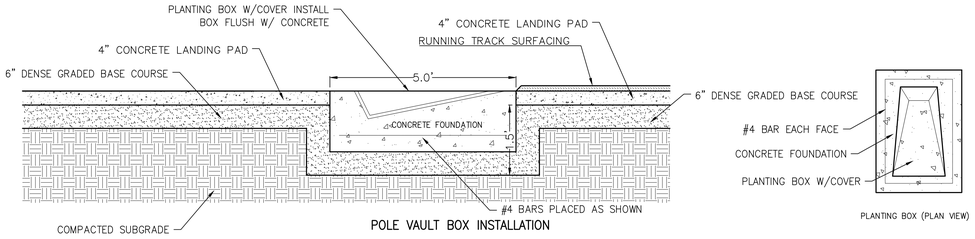
NOTES:
1. SEE LAYOUT PLAN FOR TERMINAL/CORNER POST LOCATIONS.
2. ALL GATES POSTS SHALL BE SET IN CONCRETE, EXCEPT 4' PEDESTRIAN GATE POSTS MAY BE DRIVEN.

TERMINAL/CORNER FENCE POST — 3 / C6.1



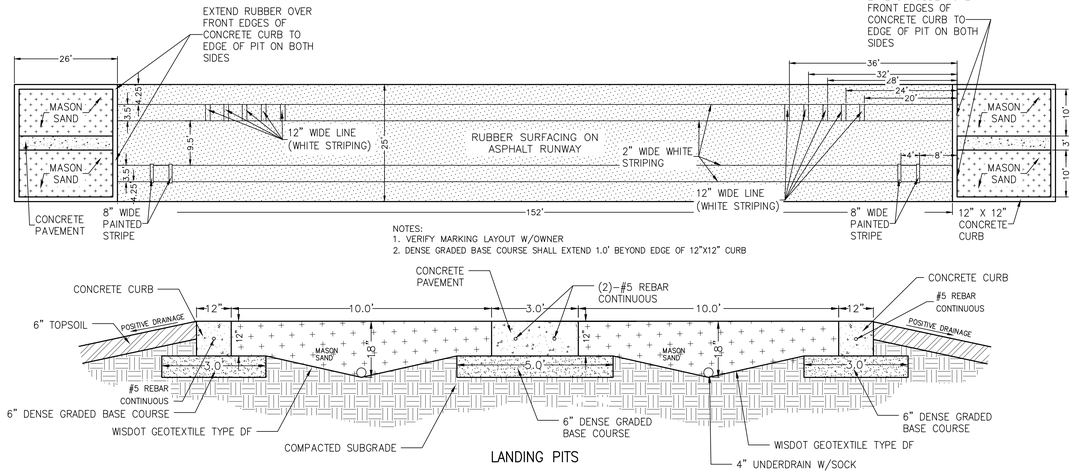
NOTES:
1. BREAKER RUN AND DENSE GRADED BASE COURSE SHALL EXTEND 1.0' BEYOND EDGE OF ASPHALT
2. DENSE GRADED BASE COURSE SHALL EXTEND 1' BEYOND EDGE OF CONCRETE

POLE VAULT LAYOUT



POLE VAULT BOX INSTALLATION

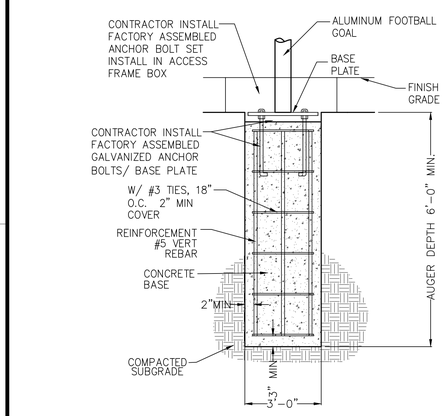
POLE VAULT — 4 / C6.1



NOTES:
1. VERIFY MARKING LAYOUT W/OWNER
2. DENSE GRADED BASE COURSE SHALL EXTEND 1.0' BEYOND EDGE OF 12"X12" CURB

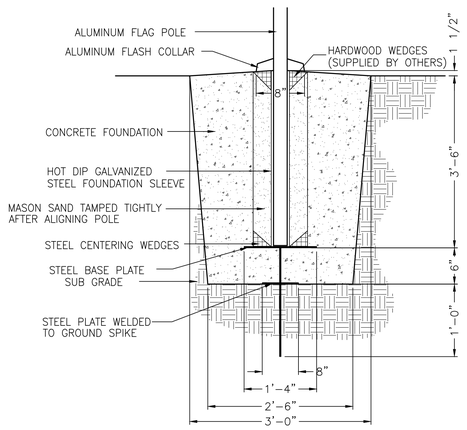
LANDING PITS

LONG JUMP / TRIPLE JUMP — 5 / C6.1



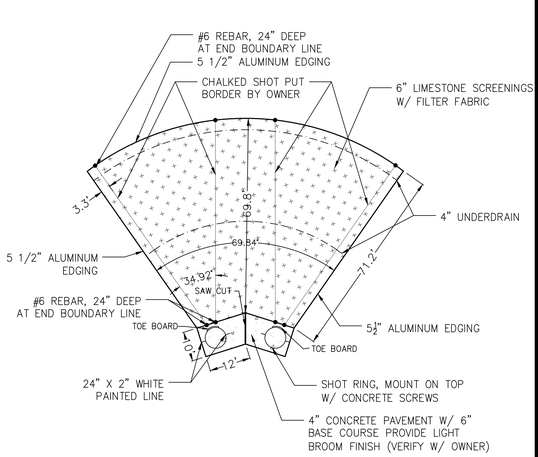
NOTES:
1. SEE MANUFACTURER'S SPECIFICATIONS FOR ASSEMBLY OF ACCESS FRAME KIT AND BOLT ASSEMBLY PROVIDED.

FOOTBALL FIELD GOAL — 6 / C6.1

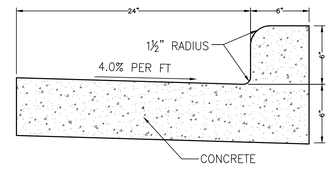


NOTES:
1. INSTALL GROUND SLEEVE, BASE PLATE, AND GROUND SPIKE PER MANUFACTURER'S RECOMMENDATIONS

FLAG POLE FOUNDATION — 7 / C6.1



SHOTPUT LAYOUT — 8 / C6.1



30" CONCRETE CURB & GUTTER — 9 / C6.1

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Sun Prairie, WI 53590
715.344.9999(PH) 715.344.9922(FX)
pdpinc.com
Point of Beginning

Project Title:
Track and Field Renovations
New Glarus High School
New Glarus School District
1420 2nd St
New Glarus, WI 53574

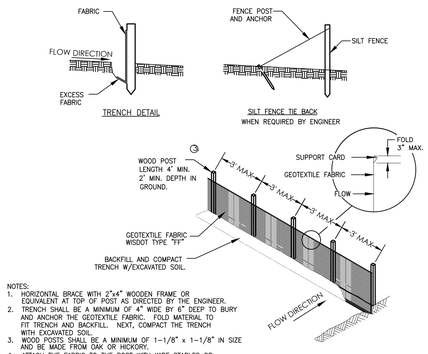
REVISIONS:

Project Number:
3388.6

Issued For:
PLAN REVIEW
NOT FOR
CONSTRUCRTION
9/6/2023

Sheet Title:
DETAILS

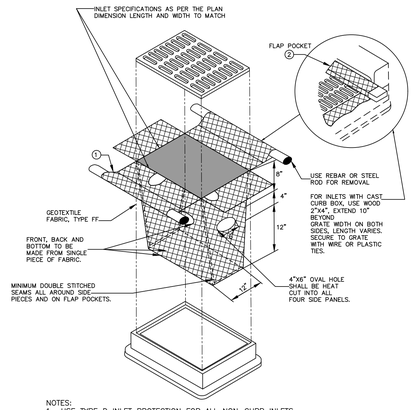
Sheet Number:
C6.1



NOTES:
1. HORIZONTAL BRACE WITH 2"x4" WOODEN FRAME OR EQUIVALENT AT TOP OF POST AS DIRECTED BY THE ENGINEER.
2. TRENCH SHALL BE A MINIMUM OF 4" WIDE BY 6" DEEP TO BURY AND ANCHOR THE GEOTEXTILE FABRIC. FOLD MATERIAL TO FIT TRENCH AND BACKFILL. NEXT, COMPACT THE TRENCH WITH EXCAVATED SOIL.
3. WOOD POSTS SHALL BE A MINIMUM OF 1-1/8" x 1-1/8" IN SIZE AND BE MADE FROM OAK OR HICKORY.
4. ATTACH THE FABRIC TO THE POST WITH WIRE STAPLES OR WOODEN LATH AND NAILS.
5. WOOD POSTS SHALL MAINTAIN A 3' MAXIMUM SPACING WHEN USING STANDARD GEOTEXTILE FABRIC. WHEN WOVEN GEOTEXTILE FABRIC IS USED, THE WOOD POSTS MAY BE SPACED UP TO 8' APART.

SILT FENCE

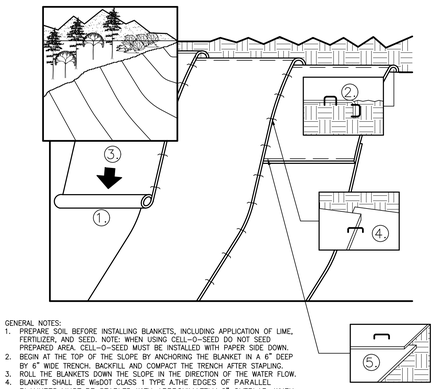
1 C6.3



NOTES:
1. USE TYPE D INLET PROTECTION FOR ALL NON-CURB INLETS
2. USE FLEXSTORM'S CATCH-IT PRODUCT OR APPROVED EQUAL WITH RIGID FRAME.
3. DO NOT BLOCK THE TOP HALF OF THE CURB FACE OPENING

INLET PROTECTION

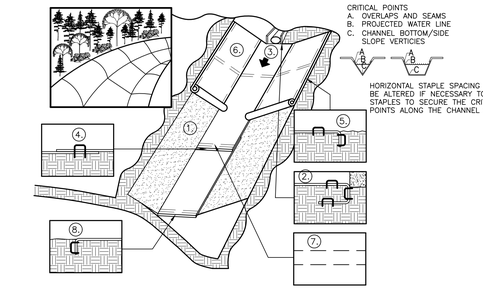
2 C6.3



GENERAL NOTES:
1. PREPARE SOIL BEFORE INSTALLING BLANKETS, INCLUDING APPLICATION OF LIME, FERTILIZER, AND SEED. NOTE: WHEN USING CELL-O-SEED DO NOT SEED PREPARED AREA. CELL-O-SEED MUST BE INSTALLED WITH PAPER SIDE DOWN.
2. BEGIN AT THE TOP OF THE SLOPE BY ANCHORING THE BLANKET IN A 6" DEEP BY 6" WIDE TRENCH. BACKFILL AND COMPACT THE TRENCH AFTER STAPLING.
3. ROLL THE BLANKETS DOWN THE SLOPE IN THE DIRECTION OF THE WATER FLOW.
4. BLANKET SHALL BE WisDOT CLASS 1 TYPE A.THE EDGES OF PARALLEL BLANKETS MUST BE STAPLED WITH APPROXIMATELY 2" OVERLAP. WHEN BLANKETS MUST BE SPLICED DOWN THE SLOPE, PLACE BLANKETS END OVER END (SHINGLE STYLE) WITH APPROXIMATELY 6" OVERLAP. STAPLE THROUGH OVERLAPPED AREA APPROXIMATELY 12" APART.
5. EROSION CONTROL BLANKET SHALL BE LISTED ON THE CURRENT WisDOT PRODUCT ACCEPTABILITY LIST (PAL) AS A CLASS I TYPE A EROSION MAT.

SLOPE EROSION CONTROL MAT

3 C6.3



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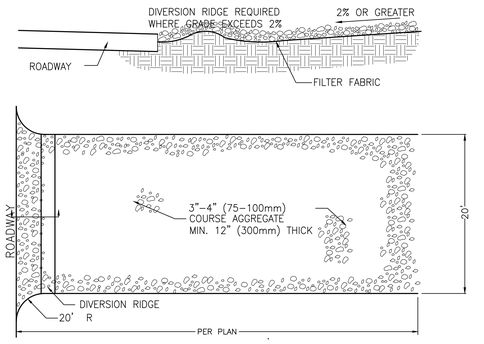
CHANNEL EROSION CONTROL MAT

4 C6.3



GENERAL NOTES:
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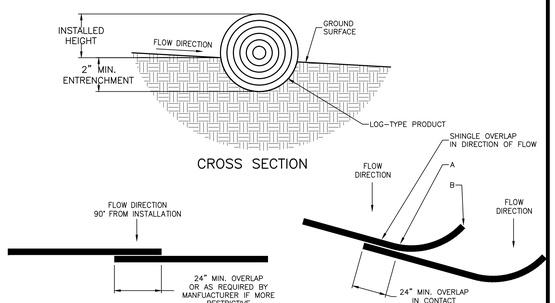
2. WHEN NECESSARY, WHEELS SHALL BE CLEANED PRIOR TO ENTRANCE ONTO PUBLIC RIGHT-OF-WAY.

ROCK CONSTRUCTION ENTRANCE

5 C6.3



NOTES:
1. USE WDNR T.S. 1071 "INTERIM MANUFACTURED PERIMETER CONTROL AND SLOPE INTERRUPTION PRODUCTS."
2. INSTALLED HEIGHT IS MEASURED FROM THE UPSLOPE GROUND SURFACE TO THE TOP OF THE PRODUCT. DUE TO SETTLEMENT &/OR DEFORMATION, THE INSTALLED HEIGHT MAY NOT BE EQUIVALENT TO THE NOMINAL DIAMETER OF THE PRODUCT.
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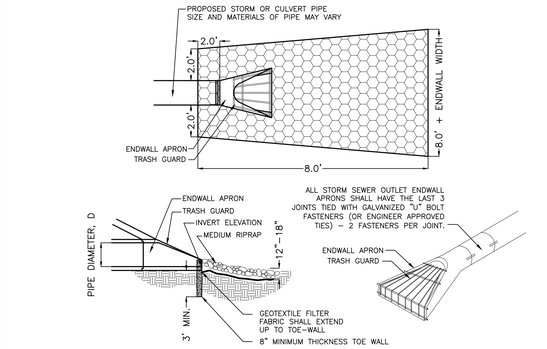
5. STAKE OVERLAP AS REQUIRED BY MANUFACTURER.
6. INSPECT DITCH CHECK FOR DEFICIENCIES PRIOR TO FORECASTED RAIN EVENTS, DAILY DURING EXTENDED RAIN EVENTS, AFTER RAIN EVENTS, AND AT 1-WEEK INTERVALS.
7. REMOVE SEDIMENT BEHIND DITCH CHECK BEFORE SEDIMENT LEVEL REACHES THE HALFWAY POINT BETWEEN THE GROUND SURFACE AND TOP OF THE DITCH CHECK.

DITCH CHECK

6 C6.3



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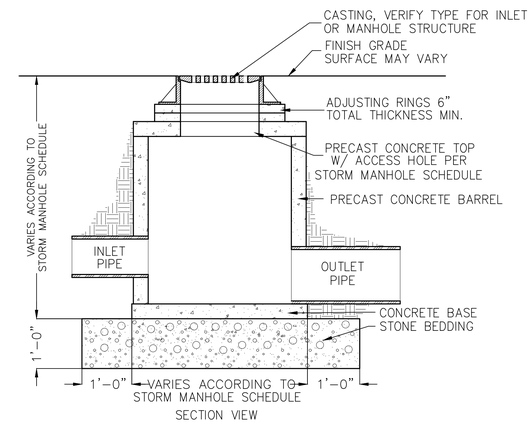
2. ALL ENDWALLS SHALL HAVE A TRASH GUARD
3. ENDWALL MATERIAL SHALL MATCH PIPE MATERIAL
4. FOR PIPES ≤ 24", TOE-WALL LENGTH SHALL MATCH WIDTH OF ENDWALL SECTION.
5. FOR PIPES > 24", TOE-WALL LENGTH SHALL EQUAL 2(D) + ENDWALL SECTION WIDTH.

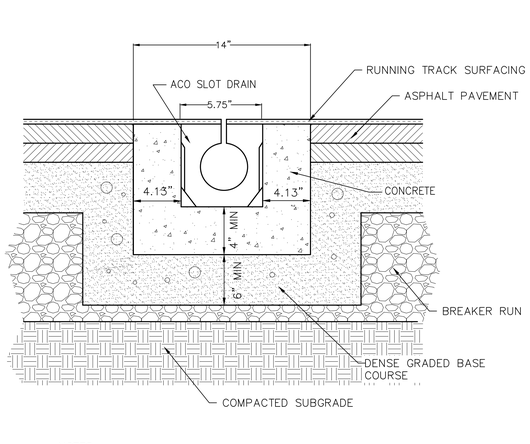
STORM ENDWALL

7 C6.3



STORM MANHOLE

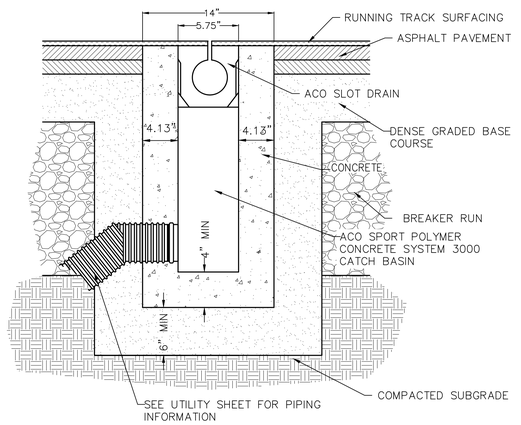
8 C6.3



NOTES:
1. SAWCUT THROUGH CONCRETE AT EVERY (3) SLOT DRAIN SECTIONS THE ENTIRE LENGTH OF THE DRAIN SYSTEM.

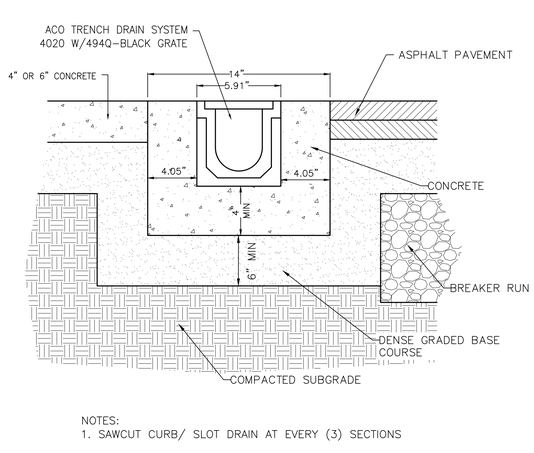
ACO SYSTEM 3000 SLOT DRAIN

9 C6.3



ACO SYSTEM 3000 CATCH BASIN

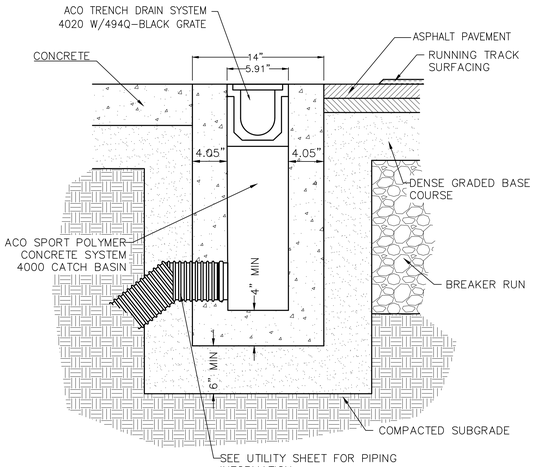
10 C6.3



NOTES:
1. SAWCUT CURB/ SLOT DRAIN AT EVERY (3) SECTIONS

ACO SYSTEM 4000 TRENCH DRAIN

11 C6.3



ACO SYSTEM 4000 CATCH BASIN

12 C6.3

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Sun Prairie, WI 53590
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Point // Beginning

Project Title:
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New Glarus High School
New Glarus School District
1420 2nd St
New Glarus, WI 53574

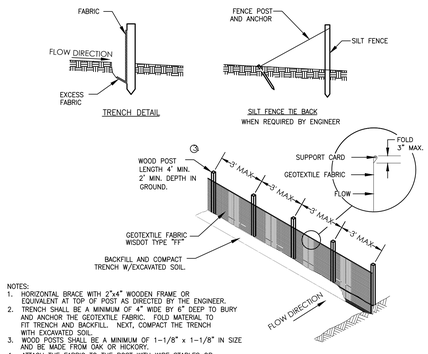
REVISIONS:

Project Number:
3388.6

Issued For:
PLAN REVIEW NOT FOR CONSTRUCRTION
9/6/2023

Sheet Title:
DETAILS

Sheet Number:
C6.2



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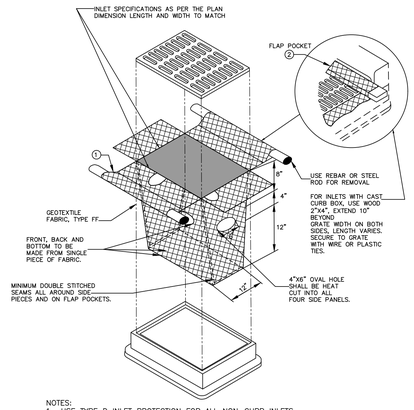

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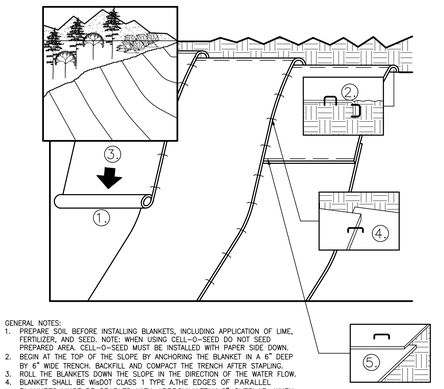
INLET PROTECTION

2 C6.3



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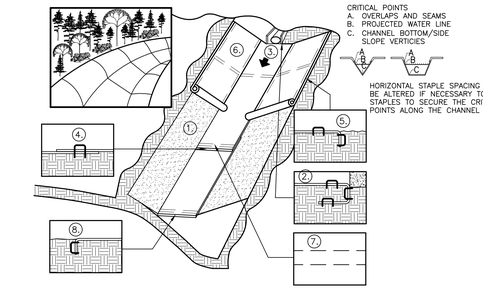
SLOPE EROSION CONTROL MAT

3 C6.3



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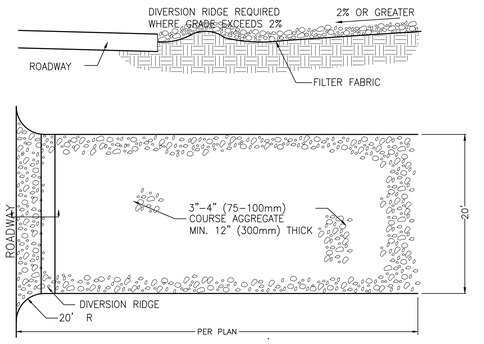
CHANNEL EROSION CONTROL MAT

4 C6.3



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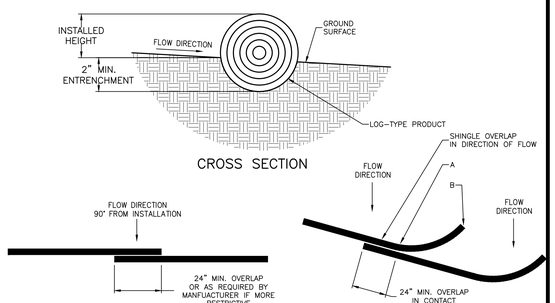
ROCK CONSTRUCTION ENTRANCE

5 C6.3



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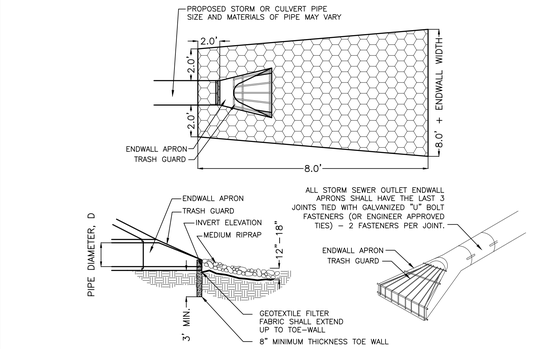
DITCH CHECK

6 C6.3



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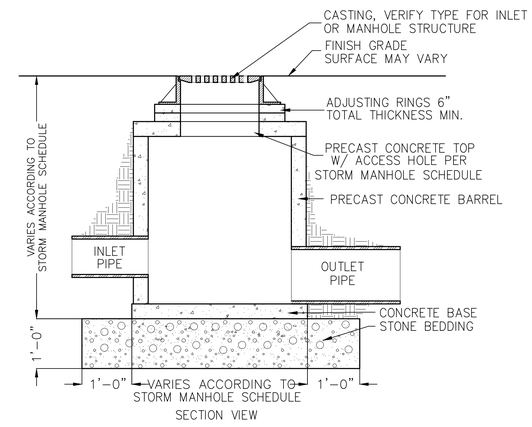
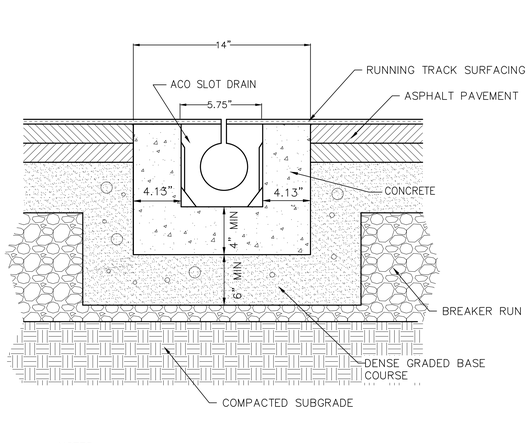
STORM ENDWALL

7 C6.3



STORM MANHOLE

8 C6.3



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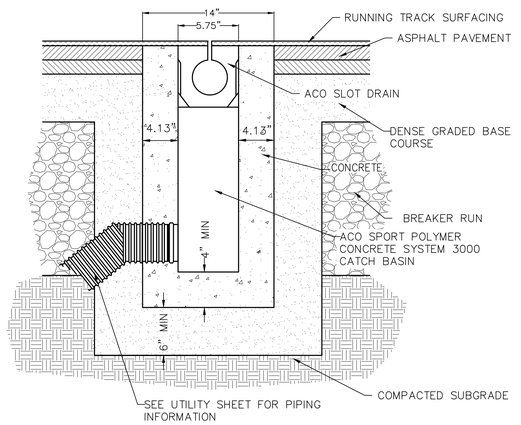
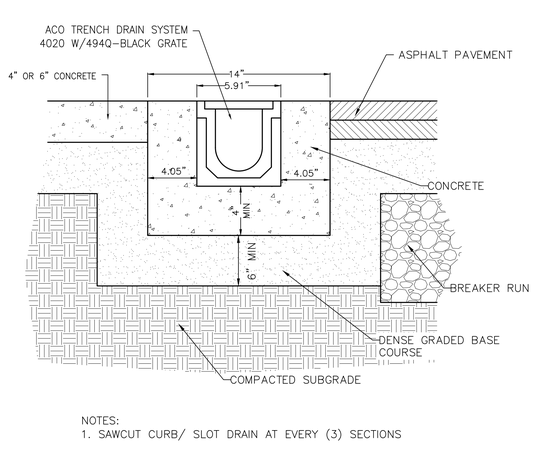
ACO SYSTEM 3000 SLOT DRAIN

9 C6.3



ACO SYSTEM 3000 CATCH BASIN

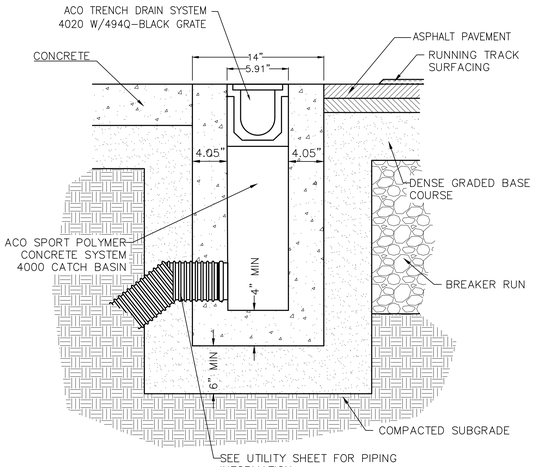
10 C6.3



NOTES:
1. SAWCUT CURB/ SLOT DRAIN AT EVERY (3) SECTIONS

ACO SYSTEM 4000 TRENCH DRAIN

11 C6.3



ACO SYSTEM 4000 CATCH BASIN

12 C6.3

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Point // Beginning

Project Title:
Track and Field Renovations
New Glarus High School
New Glarus School District
1420 2nd St
New Glarus, WI 53574

REVISIONS:

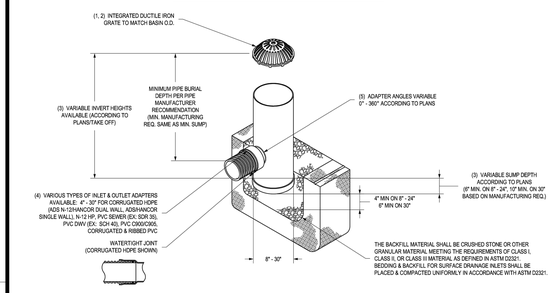
Project Number:
3388.6

Issued For:
PLAN REVIEW NOT FOR CONSTRUCRTION
9/6/2023

Sheet Title:
DETAILS

Sheet Number:
C6.2

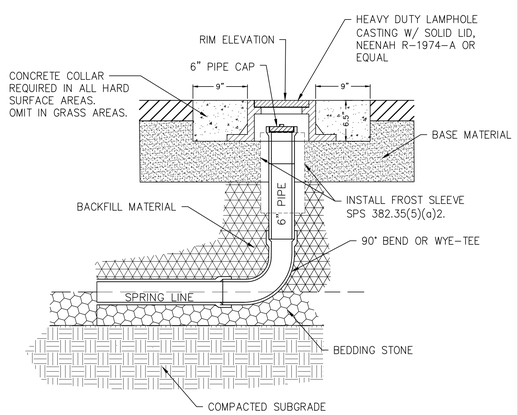
NYLOPLAST DRAIN BASIN WITH DOME GRATE



1 - 8" - 30" DOME GRATES SHALL BE DUCTILE IRON PER ASTM A536 GRADE 70-50-05.
2 - 8" & 10" DOME GRATES FIT ON/TO THE DRAIN BASINS WITH THE USE OF A PVC BODY TOP. SEE DRAWING NO. 7001-110-040.
3 - DRAIN BASIN TO BE CUSTOM MANUFACTURED ACCORDING TO PLAN DETAILS. RISERS ARE NEEDED FOR BASINS OVER 84" DUE TO SHIPPING RESTRICTIONS. SEE DRAWING NO. 7001-110-060.
4 - ADAPTERS FOR CORRUGATED HDPE PIPE SHALL CONFORM TO ASTM D3212 FOR CORRUGATED HDPE (ADS N-12/HANCOR DUAL WALL N-12 HP, & PVC SEWER (4" - 24").
5 - ADAPTERS CAN BE MOUNTED ON ANY ANGLE 0° TO 360°. TO DETERMINE MINIMUM ANGLE BETWEEN ADAPTERS SEE DRAWING NO. 7001-110-012.
6 - 8" - 30" DOME GRATES HAVE NO LOAD RATING.

NYLOPLAST PVC INLET

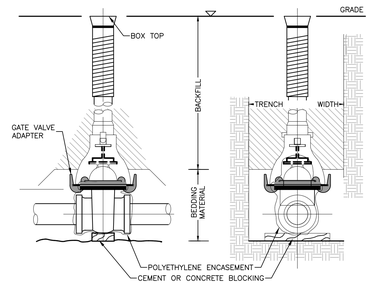
1 / C6.4



NOTES:
1. INSTALL LAMPHOLE CASTING FLUSH WITH THE ADJACENT SURFACE.
2. SEE UTILITY PLAN FOR INSTALLATION LOCATIONS.
3. SEE UTILITY PLAN CLEANOUT SCHEDULE FOR INVERT AND RIM ELEVATIONS.
4. ALL TRENCHES UNDER HARD SURFACES SHALL BE BACKFILLED WITH GRANULAR/BASE MATERIAL

CLEANOUT

2 / C6.4



SIDE VIEW FRONT VIEW

NOTES:
1. VALVE SHALL BE WATEROUS 2500 SERIES, PER SPSS 601.1.4, OR CITY APPROVED EQUAL.

GATE VALVE

3 / C6.4

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FLAGPOLES

PART 1 GENERAL

1.1 SECTION INCLUDES

A. Aluminum Flagpoles.

1.2 RELATED REQUIREMENTS

A. Section 32 13 13 – Portland Cement Concrete Paving: Concrete for base foundation construction.

1.3 REFERENCE STANDARDS

A. AASHTO M 36 - Standard Specification for Corrugated Steel Pipe, Metallic-Coated, for Sewers and Drains; American Association of State Highway and Transportation Officials; 2003.

B. ASTM A123/A123M - Standard Specification for Zinc (Hot-Dip Galvanized) Coatings on Iron and Steel Products; 2012.

C. ASTM B221 - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes; 2012.

D. ASTM B221M - Standard Specification for Aluminum and Aluminum-Alloy Extruded Bars, Rods, Wire, Profiles, and Tubes [Metric]; 2012.

1.4 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Product Data: Provide data on pole, accessories, and configurations.

C. Shop Drawings: Indicate detailed dimensions, base details, anchor requirements, and imposed loads.

1.5 QUALITY ASSURANCE

1.6 DELIVERY, STORAGE, AND HANDLING

PART 2 PRODUCTS

2.1 MANUFACTURERS

A. Flagpoles:
1. American Flagpole: www.americanflagpole.com.
2. Concord Industries, Inc: www.concordindustries.com.
3. Pole-Tech Co., Inc: www.poletech.com.
4. Eder Manufacturing, Oak Creek, Wisconsin

2.2 FLAGPOLES

A. Flagpoles: Aluminum
1. Design: Straight shaft w/ Satin or Clear Finish
2. Mounting: Ground mounted type.
3. Outside Butt Diameter: 6 inches.
4. Nominal Wall Thickness: 0.156 inches.
5. Nominal Height: 30 ft; measured from nominal ground elevation.
6. Cone tapered pole with manufacturer's standard rate of taper.
7. Halyard: External type.

2.3 POLE MATERIALS

A. Aluminum: ASTM B221 (ASTM B 221M), 6063 alloy, T6 temper.

2.4 ACCESSORIES

A. Finial Ball: Aluminum, 6 inch diameter.

B. Truck Assembly: Cast aluminum; revolving, stainless steel ball bearings, non-fouling.

C. Flag: American flag with brass grommets, 5 ft x 8 ft.

D. Cleats: 9 inch size, aluminum with galvanized steel fastenings, two per halyard.

E. Cleat Box: Aluminum, with built-in hinge and hasp assembly, attached to pole with tamper proof cylinder lock cover.

F. Halyard: 3/8 inch diameter nylon, braided, with steel or bronze core.

G. Connecting Sleeve for Multiple Section Poles: Same material as pole, precision fit for field assembly of pole, concealed fasteners.

2.5 MOUNTING COMPONENTS

A. Foundation Tube Sleeve: AASHTO M 36M, corrugated 16 gage steel, galvanized, depth as required by design.

B. Pole Base Attachment: Flush; steel base with base cover and steel centering wedges all welded together.

C. Lightning Ground Cable: Copper No. 6 AWG, soft drawn.

2.6 FINISHING

A. Metal Surfaces in Contact With Concrete: Asphaltic paint.

B. Concealed Steel Surfaces: Galvanized to ASTM A123/A123M requirements.

C. Aluminum: Anodized to, color as selected.

PART 3 EXECUTION

3.1 EXAMINATION

A. Verify that concrete foundation is ready to receive work and dimensions are as indicated on shop drawings.

3.2 PREPARATION

A. Coat metal sleeve surfaces below grade and surfaces in contact with dissimilar materials with asphaltic paint.

3.3 INSTALLATION

A. Install flagpole, base assembly, and fittings in accordance with manufacturer's instructions.

B. Fill foundation tube sleeve with concrete.

C. Install foundation plate and centering wedges for flagpoles base set in concrete base and fasten.

3.4 ADJUSTING

A. Adjust operating devices so that halyard and flag function smoothly.

END OF SECTION 10 75 00

ATHLETIC FIELD EQUIPMENT

PART 1 - GENERAL

1.1 Section includes

A. Pole Vault Equipment
B. Shot Put Equipment
C. Discus Equipment

1.2 Submittals

A. Submit product data, specifications, manufacturer's application recommendations for products to be used.

PART 2 – PRODUCTS

2.1 Pole Vault Box w/ cover (1) Each

A. Manufacturers:

Sportsfield Specialities
41155 Hwy 10, Delhi, NY 13753
Model: (PVBSS) box with (PVBCVRSS) cover

Components: Pole Vault Box fabricated with 13 Gauge 304 Stainless Steel having the following attributes:

1. Regulation Size
2. Stainless Steel Setting Wings for Concrete Encasement

2.2 Shot Put Throw Ring (2) Each

A. Manufacturers:

Sportsfield Specialities
41155 Hwy 10, Delhi, NY 13753
Model: SSI372 – Shot Put Ring
Or approved equal.

2.3 Shot Put Toe Board (2) Each

A. Manufacturers:

Sportsfield Specialities
41155 Hwy 10, Delhi, NY 13753
Model: SSI364 – Shot Put Toe Board

Or approved equal.

2.4 Discus Throw Ring (1) Each

A. Manufacturers:

Sportsfield Specialities
41155 Hwy 10, Delhi, NY 13753
Model: SSI370 – Discus Throw Ring
Or approved equal.

2.5 Discus Cage

A. Manufacturers:

Sportsfield Specialities
Model: DCHS Standard Cage. Include net stabilization arms for all poles.
41155 Hwy 10, Delhi, NY 13753
Or approved equal.

2.6 Shot Put Landing Area Border

A. Manufacturers:

Curv Rite
3603 10th St. C.
Wayland, MI 49348

Model: 5 ½" Black Anodized Aluminum Edging
Or approved equal.

PART 3 - EXECUTION

3.1 Installation of Equipment

A. All athletic equipment shall be installed as recommended with manufacturer's written directions, and or as indicated on the drawings.

END OF DOCUMENT 11 68 33

DOCUMENT 31 10 00 – SITE CLEARING

PART 1 – GENERAL

1.1 WORK INCLUDED

A. The CONTRACTOR shall provide all materials, labor, equipment and service necessary, for the completion of the work specified in this section.

B. Removal of trees, shrubs, plant life and grasses as indicated on the construction documents within the project limits.

C. Grubbing of any stumps or vegetation as indicated on the construction documents within the project limits.

D. Removal of buildings, concrete, asphalt, and all fixed elements as indicated on the construction drawings.

PART 2 – PRODUCTS

(Not Used)

PART 3 – EXECUTION

3.1 EXTENT OF WORK

A. Site preparation work shall be performed over all of the area lying within the project limit lines.

B. Prior to the start of demolition, site clearing activities and/or earthwork verify that perimeter erosion control measures are in place.

3.2 CLEARING AND GRUBBING

A. Clear all trees, vegetation, weeds, brush, roots, etc., lying within the project limits as indicated on the construction documents.

B. Trees that are specified to remain shall be protected from construction activity and are indicated on the construction documents.

C. It is intended that those areas that are to be undisturbed by construction remain as is, however, if disturbed, they must be returned to their existing condition prior to damage when construction is complete.

3.3 PROTECTION OF TREES

A. Existing trees which are to remain are to be protected against construction activity. Do not smother trees by storing materials within the canopy line. Wire plank protection shall be place around the trunks.

B. If a tree scheduled to remain is destroyed by construction activity, the CONTRACTOR shall provide a tree of equivalent size and species or may be assessed a penalty not to exceed $2,000.00. Any such assessment will be deducted from the contract sum by Change Order.

3.4 DEMOLITION

A. Conduct demolition work with minimum interference to roads, streets, driveways, sidewalks, and other facilities including adjacent buildings, structures and their occupants.

B. Sawcut all hard surfaces to provide a clear break line for new abutting surfaces to join at all locations indicated on the construction documents.

C. Remove all fixed elements as indicated on the construction drawings.

D. Take precautions to guard against movement, settlement or collapse of any surrounding structures indicated to remain and be liable for any such movement, settlement or collapse.

3.5 DISPOSAL OF WASTE MATERIAL

A. Burning is not permitted on the OWNER'S property.

B. Remove all organic and cleared vegetative matter from the site and dispose of in a legal manner, as coordinated with front end of this specifications.

C. Remove all concrete, bituminous and debris from site and dispose of in a legal manner, as coordinated with front end of this specifications.

END OF DOCUMENT 31 10 00

DOCUMENT 31 20 00 - EARTH MOVING

PART 1 – GENERAL

1.1 WORK INCLUDED

A. The CONTRACTOR shall provide all materials, labor, equipment and services necessary for the completion of the work specified in this section.

B. Salvaging Topsoil

C. Unclassified Excavation

D. Excavating, Backfilling, and Compacting for Structure

E. Excavating, Backfilling, and Compacting for Utilities

F. Excavating, Backfilling, and Compacting for Pavement

G. Topsoil Placement

H. Landscape Finish Grading

1.2 REFERENCES

A. ANSI/ASTM D698 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures. Using 5.5 lb Rammer and 12” Drop.

B. ANSI/ASTM D1556 - Test Method for Density of Soil in Place by Sand-Cone Method.

C. ANSI/ASTM D1557 - Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 10 lb Rammer and 18” Drop.

D. Subsurface Soil Investigation Report: Professional Service Industries, Inc. Report No. 00941190, Dated August 24, 2020.

1.3 EXISTING CONDITIONS

A. Known underground, surface, and aerial utility lines and buried objects are indicated on the drawings. Contact Digger’s Hotline and the OWNER five (5) working days prior to start of demolition and construction.

B. Locate all private utilities; coordinate with OWNER five (5) working days prior to the start of work.

C. Hand expose existing utilities prior to start of work.

1.4 SUBMITTALS

A. Samples: Submit 10 lb sample of each type of fill to testing laboratory, in air-tight containers.

1.5 RECORD DOCUMENTS

A. Accurately record locations of utilities remaining, by horizontal dimensions, elevations or inverts, and slope gradients.

1.6 UNIT PRICES

A. Provide unit prices for the following items with bid (see bid form).

1. Over excavation of unsuitable soils (excavated, hauled and deposited).

2. Granular fill (hauled, placed and compacted).

PART 2 – PRODUCTS

2.1 MATERIALS

A. Topsoil: On site excavated material, graded, free of roots, rocks larger than 1", subsoil, debris, and large weeds.

B. Subgrade: Excavated material, graded, free of clumps larger than 6", rocks larger than 3", and debris..

C. Granular Fill: Granular fill material, when required shall consist of natural sand or a mixture of sand with gravel, crushed gravel, crushed stone or other broken or fragmented material, and shall meet the gradation requirements below. Subsitutes or variation of these recommendations shall require approval by the project ARCHITECT.

1"	100%
¾"	85 – 100%
3/8"	50 – 80%
No. 4	35 – 65%
No. 40	15 – 30%
No. 200	0 – 5%

D. Stone Bedding: Stone for Class "B" bedding shall meet requirements of ASTM 33.0 with P200 content not exceeding 5%.

E. Dense Graded Base Course: Dense graded base course shall meet the requirements of Section 305, Dense Graded Base course of Standard Specifications for Highway and Structure Construction for D.O.T. 1-1/4" Gradation.

PART 3 – EXECUTION

3.1 SALVAGING AND SPREADING TOPSOIL

A. Remove materials of horticultural value from topsoil prior to stripping.

B. Disc existing turf 8” deep two directions prior to stripping topsoil material.

C. Strip topsoil; do not allow topsoil to be mixed with subgrade.

D. Stockpile salvaged topsoil on site for future use.

E. Place silt fence around the base of the topsoil stockpile to audio sediment runoff.

3.2 UNCLASSIFIED EXCAVATION

A. Excavating

1. Excavate in accordance with design grades and elevations.

2. Do not perform additional excavation without prior written authorization of A/E/OWNER.

3. Machine shape banks.

4. Hand trim excavations to remove loose and/or organic matter.

5. Fill over-excavated areas under structure bearing surfaces with stone bedding.

6. Do not disturb soil within canopy line of existing trees or shrubs that are to remain.

7. If necessary to excavate through canopy line, perform work by hand and cut roots encountered with a sharp ax.

B. Overhaul

1. Haul excess material from site and dispose of in a legal manner.

C. Granular Fill

1. Place fill materials in lifts not exceeding 9” in depth in accordance with design grades and contours.

D. Rough Grading

1. Rough grade site to required contours and elevations as required for finish grading and surface treatment.

3.3 EXCAVATING, BACKFILLING, AND COMPACTING FOR STRUCTURE

A. Excavate to indicated elevations and dimensions within a tolerace of ±1". If applicable, extend excavations a sufficient distance from structures for placing and removing concrete formwork, for installing services and other construction, and for inspections.

1 Excavations for Footings and Foundations: Do not disturb bottom of excavation. Excavate by hand to final grade just before placing concrete reinforcement. Trim bottoms to required lines and grades to leave solid base to receive other work.

2 Perform all structure excavation in accordance with the Subsurface Soil Investigation Reoprt and as recommended by the GEOTECHNICAL ENGINEER.

3.4 EXCAVATING, BACKFILLING, AND COMPACTING FOR UTILITIES

A. Preparation

1. Establish limits of excavation by area and elevation. Designate and identify datum elevation.

2. Set required lines and levels.

3. Maintain existing and established benchmarks, monuments, and other reference points.

B. Utilities

1. Notify utility companies to adjust, relocate, and/or remove lines which are in the way of excavation.

2. CONTRACTOR shall be responsible for maintaining, adjusting, or relocating existing utility lines which are located in the work area. Costs exceeding those covered by utility companies shall be included in CONTRACTOR'S bid.

3. Protect and maintain active utility services exposed by excavation.

4. Remove abandoned utility lines from areas of excavation. Cap, plug, or seal such lines and notify project A/E of such work completed.

5. Locate and record abandoned and/or active utility lines adjusted or relocated during construction with the project A/E.

6. Gas, electric (including main service, site lighting, conduits, and signage) cable, and telephone construction by others. Coordinate all earthwork activities with respective trades responsible for installation of said utilities.

C. Excavation

1. Excavate in accordance with lines and grades indicated on the plan set documents.

2. Excavate trenches wide enough to enable proper installation of utilities and to allow for inspection. Trim and shape trench bottoms and leave free of irregular lumps and projections.

3. Do not disturb soil within canopy line of existing trees or shrubs that are indicated to remain. If it is necessary to excavate within the canopy line, perform work by hand and cut exposed roots with a sharp ax.

4. When complete with work, request CONSTRUCTION MANAGER to inspect excavations. Correct unauthorized excavation as instructed by A/E at no additional cost to OWNER.

5. Stockpile excavated subsoil material for reuse on site. Remove excess or unsuitable excavated subsoil material from site and dispose of it in a legal manner.

D. Dewatering Trenches

1. Provide equipment including pumps, piping, and temporary drains required to keep trenches dry during construction.

2. Do not discharge pumped water directly into municipal sewer systems without receiving prior approval. Ensure discharge water does not contain contamination or silt held in suspension.

3. Direct surface drainage away from excavated areas. Control grading in and adjacent to excavations to prevent water running into excavated areas or onto adjacent properties or public thoroughfares.

4. Furnish and operate pumping equipment on a twenty-four (24) hour basis if needed to keep excavated areas free of water until utilities have been placed and backfilled.

E. Backfilling

1. All backfill material shall be on-site material unless granular fill is required by A/E/OWNER.

2. Do not start backfilling until utilities have been inspected by project A/E.

3. Ensure trenches are not in a frozen condition and are free of debris, snow, ice, or water.

4. Backfill as early as possible to provide time for natural settlement and compaction.

5. Place and compact backfill materials in lifts not exceeding 12”. Use methods so as not to damange or disturb utilities.

6. Maintain optimum moisture content of backfill materials so as to attain required compaction density.

7. Remove excess backfill materials from site.

3.5 EXCAVATING, BACKFILLING, AND COMPACTING FOR PAVEMENT

A. Excavation

1. Excavate the subsoil in accordance with grades and elevation required for completion of the work.

B. Backfilling

1. Verify areas to be backfilled are not frozen and are free from debris, snow, ice, and water.

2. Do not backfill over existing subgrade materials which are wet or spongy.

3. Compact existing subgrade materials if densitites are not equal to that specified for backfill materials

4. Cut out soft, wet, or spongy areas of existing subgrade. Backfill with specified granular fill material and compact to required density.

5. Backfill as early as possible to provide time for natural settlement and compaction to occur.

6. Provide water if needed to maintain optimum moisture content of backfill materials to meet specified compaction density.

C. Excavation Below Bituminous Paved Areas Subgrade

1. Deposits of frost-susceptible material, silty soils, water-bearing soil, topsoil containing considerable amounts of vegetable matter, or other unsuitable material shall be removed from the area to receive paved surfaces to such depths below the proposed finish grade shown on the plans or as direction by the A/E. The bottoms of such excavations shall be sloped and graded so that water does not pond in the bottoms of excavated areas.

2. Humus-bearing soils and other excavated materials not suitable for embankment construction shall be disposed of off site in a legal manner.

3. Overexcavation of unsuitable material shall be deemed as an extra. See the Bid Form.

4. Backfill required for over-excavation shall be granular fill and deemed as an extra.

3.6 TOPSOIL PLACEMENT AS FINISH GRADING

A. Place topsoil in areas where seeding and/or sodding is required to a thickness of 6” lightly compacted depth.

B. Place topsoil in relatively dry state, during dry weather.

C. Finish grade topsoil eliminating rough or low areas while maintaining profiles and contour of subgrade and achieving required 6” compacted depth.

D. Remove roots, debris, rocks larger than ½” in size, weeds, and foreign material while spreading.

E. Manually spread topsoil close to trees, fences, buildings, and other objects to prevent damage.

F. Lightly compact topsoil after placement.

G. Leave the stockpile area and site clean and ready for seeding, sodding, or other finish treatment.

3.7 PROTECTION

A. Protect existing features remaining as part of final landscaping.

B. Protect existing and established benchmarks, roads, sidewalks, paving, vegetation, and curbs against damage from equipment and vehicular or foot traffic.

C. Protect excavation areas by shoring, bracing, sheet piling, underpinning, or other methods as needed to prevent cave-ins or loose dirt from falling into excavations.

D. Secure adjacent structures prior to the start of excavation which may be damaged by excavation work, including utility lines and pipe chases.

E. Notify A/E of unforeseen subsurface conditions encountered and discontinue work in the area until A/E provides notification to resume work.

F. Grade around excavation areas to prevent surface water runoff into excavated areas resulting in pounding.

3.8 COMPACTION REQUIREMENTS

A. Compact all subgrade of proposed bituminous pavement areas to ASTM D1557, 95% Modified Proctor.

B. Compact all turf areas to ASTM D1557, 85% Modified Proctor.

C. The CONTRACTOR shall provide equipment capable of adding measured amounts of moisture to the soil material as determined by moisture-density tests. Where the subgrade or layer of soil material must be moisture conditioned before compaction, uniformly apply required amount of water to the surface of subgrade, or layer of soil material in such manner as to prevent free water from appearing on the surface during or subsequent to compaction operations. Remove and replace soil material that is too wet to permit compaction to 95% of maximum dry density, as established in accordance with ASTM-D1557.

D. Place acceptable granular fill material in lifts no greater than 9” loose thickness.

3.9 COMPACTION TESTING

A. Testing of compacted materials will be performed by an independent testing laboratory appointed and paid for by the CONTRACTOR. The CONTRACTOR shall pay for any additional testing costs as required due to improper performance of work.

B. When work for this section or portions of work are completed, notify the testing laboratory to perform density tests. Do not continue with additional portions of work until test results have been verified.

C. If, during progress of work, tests indicate that compacted backfill materials do not meet specified requirements, remove defective work, replace and retest at no cost to OWNER as directed by the A/E.

D. Verify that compacted fills have been tested before proceeding with placement of surface materials.

E. In-field testing shall be in accordance with ASTM D2922-78 “Density of Soil and Soil-Aggregate in Place by Nuclear Method.” This test correlates to D-1556-74 “Density of Soil in Place by the Sand-Cone Method.”

F. The CONTRACTOR shall notify the testing laboratory and the A/E a minimum of forty-eight (48) hours in advance of the time compaction testing is required.

3.10 TOLERANCES

A. Top Surface of Subgrade: Plus or minus 1/10’.

3.11 FIELD QUALITY CONTROL

A. Testing of granular fill and backfill materials will be performed by an independent testing laboratory appointed and paid for by the CONTRACTOR. The CONTRACTOR will pay for costs of additional testing required due to improperly performed work.

B. Tests and analysis of fill material shall be performed in accordance with ANSI/ASTM D698 D1557.

C. Compaction testing shall be performed in accordance with ANSI/ASTM D1556, ANSI/ASTM D1557, ANSI/ASTM D698.

D. If testing indicates that the work does not meet specified requirements, remove work, replace and retest at no cost to OWNER.

3.12 BIO-RETENTION BASIN

A. Construct the Bio-Infiltration Basin in accordance with the Wisconsin Department of Natural Resources, Runoff Management Storm Water Technical Standards, 1004.

B. Ensure surrounding drainage areas have been fully stabilized before installing einggered soil in bio-retetnion basin.

C. Immediately after installing engineered soil place silt fence around bio-retention basin until all disturbed areas are stabilized.

END OF DOCUMENT 31 20 00

DOCUMENT 31 25 00 - EROSION CONTROL

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. The CONTRACTOR shall provide all materials, labor, equipment and services necessary for the completion of the work specified in this section.

B. Placement and removal of silt fence.

C. Placement of erosion control blankets.

D. Placement, cleaning, and removal of inlet protection.

E. Installation of sediment tracking construction entrance

F. TemporarySeeding

G. Inspections and documentation of erosion control elements as required by the plans.

1.2 RELATED SECTIONS

A. Section 311000 – Site Clearing

B. Section 312000 – Earthmoving

C. Section 334100 – Storm Utility Drainage Piping

1.3 REFERENCES

A. State of Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, Latest Edition.

B. Wisconsin Department of Natural Resources Storm Water Construction and Post-Construction Technical Standards.

C. State of Wisconsin Department of Transportation, Erosion Control Product Acceptability List for Mulit-Modal Applications (PAL), Latest Edition

1.4 REQUIREMENTS

A. CONTRACTOR shall provide and secure all erosion control permits from all governing authorities not previously obtained by the OWNER.

PART 2 – PRODUCTS

2.1 EROSION CONTROL BLANKETS

A. Erosion control blankets for non-channel use shall meet the requirements in Standard 1052 in the Wisconsin Storm Water Construction and Post-Construction Technical Standards.

B. Erosion control blankets for non-channel use shall be on the Wisconsin Department of Transportation's PAL for Class I Erosion Mats, Type A.

C. Erosion control blankets for use in channels shall meet the requirements in Standard 1053 in the Wisconsin Storm Water Construction and Post-Construction Technical Standards.

D. Erosion control blankets for use in channels shall be on the Wisconsin Department of Transportation's PAL for Class III Erosion Mats, Type A.

2.2 SILT FENCE

A. Silt Fence shall meet the requirements in Standard 1056 in the Wisconsin Storm Water Construction and Post-Construction Technical Standards.

B. Silt Fence shall have Wisconsin Department of Transportation PAL Type FF, geotextile fabric.

2.3 INLET PROTECTION

A. Inlet Protection shall meet the requirements in Standard 1060 in the Wisconsin Storm Water Construction and Post-Construction Technical Standards.

B. Inlet Protection shall have Wisconsin Department of Transportaton PAL Type FF, geotextile fabric.

2.4 SEDIMENT TRACKING CONSTRUCTION ENTRANCE

A. Sediment tracking construction entrance shall meet the requirements in Standard 1057 in the Wisconsin Storm Water Construction and Post-Construction Technical Standards.

2.5 TEMPORARY SEEDING

A. Seeding shall meet the requirements in Section 630.2.1.5.1.2 Temporary, in the State of Wisconsin Department of Transportation, Standard Specifications for Highway and Structure Construction, Latest Edition.

PART 3 – EXECUTION

3.1 INSTALLATION OF EROSION CONTROL BLANKET

A. Install Erosion Control blanket in accordance with Standard 1052 and 1053 in the Wisconsin Storm Water Construction and Post-Construction Technical Standards.

B. Refer to manufacturer's recommendations and detail drawings for additional installation information.

3.2 INSTALLATION OF SILT FENCE

A. Install silt fence in accordance with Standard 1056 in the Wisconsin Storm Water Construction and Post-Construction Technical Standards.

3.3 INLET PROTECTION

A. Install inlet protection in accordance with Standard 1060 in the Wisconsin Storm Water Construction and Post-Construction Technical Standards.

3.4 SEDIMENT TRACKING CONSTRUCTION ENTRANCE

A. Install sediment tracking construction entrance in accordance with Standard 1057 in the Wisconsin Storm Water Construction and Post-Construction Technical Standards.

3.5 TEMPORARY SEEDING

A. Apply seed at a rate of 3 lbs. per 1,000 sq. ft. evenly in two (2) intersecting directions.

B. Planting Season: Starting May 1 through October 1.

C. Do not sow immediately following rain, when ground is too dry, or during windy periods.

D. Drag seeded area with lightweight drag to cover seed and level soil.

E. Immediately following seeding, apply mulch to a thickness of 1" to 1-1/2". Maintain clear of shrubs and trees. Crimping of mulch shall be performed in two (2) directions after placement of mulch.

F. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4" of soil.

3.6 NOTICE OF INTENT

A. The PROJECT CIVIL ENGINEER, on behalf of the OWNER, has submitted to the Wisconsin Department of Natural Resources, the Notice of Intent (NOI). It is the responsibility of the CONTRACTOR to perform all work in accordance with the NOI application. A copy may be obtained from the A/E upon request.

3.7 ONGOING INSPECTIONS

A. Inspect and document all inspections of erosion control elements for the required NOI documentation.

3.8 NOTICE OF TERMINATION

A. Upon the completion of the project, complete the Notice of Termination (NOT) form 3400-162, and submit as required to the Wisconsin Department of Natural Resources.

END OF SECTION 31 25 00

DOCUMENT 32 11 23 – DENSE GRADED BASE

PART 1 – GENERAL

1.1 WORK INCLUDED

A. The Contractor shall provide all materials, labor, equipment, and services necessary for the completion of the work specified in this section.

B. Furnish, place, and compact dense graded base course for pavement areas as indicated on construction documents.

1.2 REFERENCES

A. State of Wisconsin Department of Transportation, Division of Highways, Standard Specifications for Highway and Structure Construction, Current Edition

PART 2 – PRODUCTS

2.1 DENSE GRADED BASE COURSE

A. Dense graded base course shall meet Section 305, D.O.T. 1¼" Gradation Dense Graded Base Course of the Standard Specifications for Highway and Structure Construction.

B. Milled asphaltic pavement with 100 percent passing the 1 ½" sieve may be used as base course for proposed asphaltic pavement.

PART 3 – EXECUTION

2.1 GENERAL

A. Place material meeting requirements for Dense Graded Base in lifts not to exceed 6".

B. Compact base course to at least 95% of the maximum Modified Proctor dry density (ASTM D1557).

C. Remove surplus material from site and dispose of in a legal manner.

D. Contractor is responsible for maintaining base course in a suitable condition for paving.

2.2 FIELD QUALITY CONTROL

A. Testing of aggregate base will be performed by an independent testing laboratory appointed and paid for by the Owner. The Contractor will pay for costs of additional testing required due to improperly performed work. All test reports shall be provided to Architect.

B. If testing indicates the work does not meet specified requirements, remove work, replace aggregate, and retest at no cost to Owner.

C. Field Tests and Inspections:

1. Miscellaneous exterior concrete areas:

a. Testing Agency shall provide testing and inspection for exterior aggregate base.

b. Number of tests may vary at discretion of Architect.

c. Testing Agency will test compaction of base in place according to ASTM D1556, ASTM D2167, and ASTM D6938, as applicable. Tests will be performed at following frequency:

d. Sitework Areas: One test for every 10,000 sq. ft. or less of exterior pads area but no fewer than three tests.

2. Asphalt paving area:

a. Testing Agency shall provide testing and inspection for exterior aggregate base.

b. Number of tests may vary at discretion of Architect.

c. Testing Agency will test compaction of base in place according to ASTM D1556, ASTM D2167, and ASTM D6938, as applicable. Tests will be performed at following frequency:

d. Sitework Areas: One test for every 10,000 sq. ft. or less of exterior pads area but no fewer than three tests.

END OF DOCUMENT 32 11 23

DOCUMENT 32 12 16 - ASPHALT PAVING

PART 1 – GENERAL

1.1 WORK INCLUDED

A. The CONTRACTOR shall provide all materials, labor, equipment and services necessary for the completion of the work specified in this section.

B. Finish grading of dense graded base.

C. Asphaltic concrete pavement for all proposed paved areas indicated on drawings.

1.2 REFERENCES

A. State of Wisconsin Department of Transportation, Latest Edition, Standard Specifications for Highway and Structure Construction.

1.3 QUALITY ASSURANCES

A. Job Mix

1. Prior to starting work, the CONTRACTOR shall submit to the project Civil Engineer a Job Mix Formula which has been prepared by a credible and independent testing laboratory. The CONTRACTOR, if required, shall submit separate job mixes for the surface and binder courses. The formula shall be based on testing of the material actually intended for use on the project. The report shall be based on the Marshall Stability Method of Mix Design (ASTM D1559) and shall indicate the proposed mix meets the requirements in Section 460.2 of the Standard Specifications for Highway and Structure Construction for the specified mix.

2. No work shall start until receipt of project Civil Engineer approval of the formula.

3. The project Civil Engineer will inspect the paving operation, monitoring construction methods, gradation, temperature and finished density. Paving mix shall be monitored for proper gradation to ensure stability, flow and air voids is produced, and is maintained. It shall be the responsibility of the CONTRACTOR to insure that the mix meets the specified and submitted formula. The CONTRACTOR shall provide samples of aggregate and asphalt on request for purposes of testing or patching density core removals. If the owner elects to have testing done, the cost of testing for this portion shall be covered by OWNER, unless otherwise specified.

4. All construction procedures and materials noted by Civil Engineer not in accordance with this specification shall be discontinued or made to conform.

PART 2 – PRODUCTS

2. 1 ASPHALT PAVEMENT

A. Asphaltic pavement shall meet the requirements of HMA Pavement of Section 460.2.1 to 460.2.7 of the Standard Specifications for Highway and Structure Construction.

B. Asphaltic pavement surface course aggregate gradation shall conform to the corresponding aggregate gradation master range in Table 460-1 of the Standard Specifications for Highway and Structure Construction.

C. Asphaltic pavement binder course aggregate gradation shall conform to the corresponding aggregate gradation master range in Table 460-1 of the Standard Specifications for Highway and Structure Construction.

D. Asphaltic binder grade shall be PG 58-28 S.

E. The project Civil Engineer reserves the right to alter the grade of asphalt at the time of construction other than that specified in the contract, based on existing conditions.

PART 3 – EXECUTION

3. 1 PREPARATION OF DENSE GRADED BASE

A. Finish grade dense graded base.

B. Dense graded base shall be finish graded smooth and trimmed. It shall not vary more than 1/4” in any direction within 10’ from required line, grade and level. It is the CONTRACTOR’S responsibility to maintain it in this condition until placement of asphaltic concrete.

C. Base course shall be watered and rolled immediately prior to placement of asphaltic concrete.

D. The project CONSTRUCTION MANAGER/ARCHITECT/OWNER reserves the right to alter the grade of asphalt at the time of construction other than that specified in the contract, based on existing conditions.

3. 2 INSTALLATION OF ASPHALTIC CONCRETE PAVEMENT

A. Asphaltic concrete paving shall conform to Section 460.3 Standard Specifications for Highway and Structure Construction, Latest Edition, unless specifically mentioned otherwise.

3. 3 TOLERANCES

A. Finish grade shall not vary from required line, grade and level in 10’ measured in any direction by the following:

1. Base Course: 1/4”

2. Drives and parking areas: 1/8”

END OF DOCUMENT 32 12 16

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ASPHALT PAVING FOR ATHLETICS

PART 1 – GENERAL

1.1 WORK INCLUDED

A. The CONTRACTOR shall provide all materials, labor, equipment and services necessary for the completion of the work specified in this section.
B. Finish grading of dense graded base.
C. Asphaltic concrete pavement for all proposed athletic areas indicated on drawings.

1.2 REFERENCES

A. State of Wisconsin Department of Transportation, Latest Edition, Standard Specifications for Highway and Structure Construction.
B. American Sports Builders Association, 2019, Running Tracks A construction & Maintenance Manual Tenth Edition.

1.3 QUALITY ASSURANCES

A. Job Mix Formula
   1. Prior to starting work, the CONTRACTOR shall submit to the project Civil Engineer a Job Mix Formula which has been prepared by a credible and independent testing laboratory. The CONTRACTOR, if required, shall submit separate job mixes for the surface and binder courses. The formula shall be based on testing of the material actually intended for use on the project. The report shall be based on the Marshall Stability Method of Mix Design (ASTM D1559) and shall indicate the proposed mix meets the requirements in Section 460.2 of the Standard Specifications for Highway and Structure Construction for the specified mix. Job Mix Formula should have a void regression of to 3.5%.
   2. Job Mix Formulas shall contain the following:
      - All Aggregate gradations and quality measurements
      - Plot (0.45 power graph) of final aggregate blend
      - Bulk specific gravity of all aggregates and the final blend (Gsb)
      - Statement of asphaltic binder (Pb)
      - Mix air voids at optimum (Va)
      - Bulk Specific gravity of mix at optimum (Gmb)
      - Theoretical maximum specific gravity at optimum (Gmm)
      - Voids in the mineral aggregate (VMA) and voids filled with asphalt (VFA)
      - Dust to total AC ratio
      - All design data and associated design curves
   3. No work shall start until receipt of project Civil Engineer approval of the formula.
   4. The project Civil Engineer will inspect the paving operation, monitoring construction methods, gradation, temperature and finished density. Paving mix shall be monitored for proper gradation to ensure stability, flow and air voids is produced, and is maintained. It shall be the responsibility of the CONTRACTOR to insure that the mix meets the specified and submitted formula. The CONTRACTOR shall provide samples of aggregate and asphalt on request for purposes of testing or patching density core removals.
   4. All construction procedures and materials noted by Civil Engineer not in accordance with this specification shall be discontinued or made to conform.

PART 2 - PRODUCTS

2.1 ASPHALT PAVEMENT

A. Asphaltic pavement shall meet the requirements of HMA Pavement 5 LT 58-28 S or 4 LT 58-28 S Section 460.2.1 to 460.2.7 of the Standard Specifications for Highway and Structure Construction.
B. Asphaltic pavement surface course aggregate gradation shall conform to the 9.5 mm aggregate gradation master range in Table 460-1 of the Standard Specifications for Highway and Structure Construction.
   a. Modify 2.36 mm sieve requirement to 45%-67%.
   b. The use of RAP or RAS will not be allowed.

C. Asphaltic pavement binder course aggregate gradation shall conform to the 12.5 mm aggregate gradation master range in Table 460-1 of the Standard Specifications for Highway and Structure Construction.
    a. Modify 4.75 mm sieve requirement to minimum of 45%.
    b. The use of RAP or RAS will not be allowed.
D. Asphaltic binder grade shall be PG 58-28 S.
E. The project Civil Engineer reserves the right to alter the grade of asphalt at the time of construction other than that specified in the contract, based on existing conditions.

PART 3 - EXECUTION

3.1 PREPARATION OF DENSE GRADED BASE

A. Finish grade dense graded base.
B. Dense graded base shall be finish graded smooth and trimmed. It shall not vary more than 1/4" in any direction within 10' from required line, grade and level. It is the CONTRACTOR'S responsibility to maintain it in this condition until placement of asphaltic concrete.
C. Base course shall be watered and rolled immediately prior to placement of asphaltic concrete.
D. The project CONSTRUCTION MANAGER/ARCHITECT/OWNER reserves the right to alter the grade of asphalt at the time of construction other than that specified in the contract, based on existing conditions.

3.2 INSTALLATION OF ASPHALTIC CONCRETE PAVEMENT

A. Asphaltic concrete paving shall conform to Section 460 Standard Specifications for Highway and Structure Construction, Latest Edition, unless specifically mentioned otherwise.
B. Provide paving plan showing paving layout.
C. All joints shall be paved with surface temperatures of no less than 220°F.

3.3 TESTING OF ASPHALTIC CONCRETE PAVEMENT

A. Asphaltic concrete testing shall conform to Section 460 Standard Specifications for Highway and Structure Construction, Latest Edition, unless specifically mentioned otherwise.
B. Density
    a. Modify the average sub-lot in-place density for surface course to 94.0% of the Gmm with no individual test less than 92.5% of the Gmm
    b. Modify the average sub-lot in-place density for binder course to 92.0% of the Gmm with no individual test less than 90.5% of the Gmm
    c.
C. Mix Testing
    a. Retained samples shall be kept for 30 days.

3.4 TOLERANCES

A. Finish grade shall not vary from plan grade in any location by the following:
    1. Athletic surfaces: 1/8"
    2. Drives and parking areas: 1/8"

END OF SECTION 32 12 16

DOCUMENT 32 13 13 - PORTLAND CEMENT CONCRETE PAVING

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Exterior concrete for:

1. Paving/Slabs
2. Concrete sidewalks
3. Curbs and gutters
4. Ramps

B. Reinforcement

C. Surface finish

D. Curing

1.2 RELATED WORK

A. Section 32 11 23 – Dense Graded Base

1.3 QUALITY ASSURANCE

A. Perform work in accordance with ACI 301.

B. Obtain materials from same source throughout.

C. Regulatory Requirements:

1. Construct ramps and curb ramps in accordance with Americans with Disabilities Act.

1.4 SUBMITTALS

A. Submittals:

1. Proposed Mix Design for review prior to commencement of work.
2. Product Data: Manufacturer's specifications and installation instructions for Detectable Warnings for Curb Ramps.

1.5 TESTS

A. Testing shall be in accordance with requirements specified in Division 03.

B. Submit proposed mix design for review prior to commencement of work.

C. Test Reports: Reports in accordance with requirements specified in Article D, Field Quality Control.

PART 2 – PRODUCTS

2.1 CONCRETE MATERIALS

A. Portland Cement: Type I conforming to ASTM C 150, "Standard Specification for Portland Cement".

B. Normal Weight Aggregates: Conforming to ASTM C 33 "Standard Specification for Concrete Aggregate." Aggregates not complying with this standard may be used providing it can be shown by special test or a record of past performance that these aggregates produce concrete of adequate strength and durability.

C. Fine aggregate: clean, natural sand, free from loam, clay lumps or deleterious substances. Fineness modulus of sand shall have a minimum value of 2.3 and a maximum value of 3.0.

D. Coarse aggregate:

1. Crushed and graded limestone containing no clay, mud, loam or foreign matter.

2. Limit to 1% of the coarse aggregate by weight the amount of chert with a specific gravity less than 2.40 in exposed concrete.

3. Coarse aggregate shall be nominal maximum sizes of 3/4”, conforming to ASTM C33, Table 2.

E. Water: shall be clean and free from deleterious materials.

F. Curing Compounds: Conforming to ASTM C-309, Type 1, Class A, clear or translucent without fugitive dye; Wax or saponifiable resin types are not approved.

1. Curing compounds shall exceed the moisture retention requirements of ASTM C309, when tested in accordance with ASTM C156 at the maximum coverage rate recommended by the manufacturer.

2. Approved Products:

a. "Masterseal" by Master Builders

b. "1100 Clear" by W.R. Meadows

c. "Tri-Kote 26" by T. K. Products

2.2 REINFORCEMENT

A. Welded Steel Wire Fabric: ASTM A185 plain type; in flat sheets; uncoated finish.

2.3 CONCRETE MIX DESIGN

A. Provide concrete mix with the following properties:

1. Compressive Strength: 4,000 psi at 28 days

2. Slump: 2” to 4”

3. Maximum water to cementitious material (cement plus fly ash) ratio: 0.45.

4. Minimum cement plus fly ash content: 520 lbs. per cubic yard

5. Total air content required (air-entrained and entrapped air): 6%.

2.4 ACCESSORIES

A. Preformed Joint Filler: ASTM D1751, asphalt impregnated fiber board. Provide filler throughout the slab depth and of 1/2" thickness.

B. Detectable Warnings for Curb Ramps: Mat with truncated domes complying with Americans With Disabilities Act; provide fasteners and adhesives as recommended by mat manufacturer.

1. Recycled Tire Core: Nylon and Rayon fibers mixed into rubber composite.

2. Slip resistant surface.

3. Perimeter beveled-edge.

4. Provide fasteners, sealers, and adhesives as recommended by mat manufacturer:

PART 3 – EXECUTION

3.1 GENERAL

A. Place material meeting requirements of Section 305 of Standard Specifications for Highway and Structure Construction, Latest Edition, State of Wisconsin Department of Transportation, Division of Highways.

B. Compact material meeting Special Compaction Requirements of Section 305 of Standard Specifications for Highway and Structure Construction, Latest Edition, State of Wisconsin Department of Transportation, Division of Highways.

C. Remove surplus material from site and dispose of in a legal manner.

3.2 INSPECTION

A. Verify compacted granular base is ready to support paving and imposed loads.

B. Verify gradients and elevations of base are correct.

C. Beginning of installation means acceptance of existing conditions.

3.3 PREPARATION

B. Moisten base to minimize absorption of water from fresh concrete.

C. Notify CONSTRUCTION MANAGER a minimum 24 hours prior to commencement of concrete operations.

3.4 FORMING

A. Place and secure forms to correct location, dimension, and profile.

B. Place joint fillers vertical in position, in straight lines. Secure to formwork during concrete placement.

3.5 REINFORCEMENT

A. Place reinforcement at top third height of slabs-on-grade.

B. Interrupt reinforcement at all joints.

3.6 FORMED JOINTS

A. Place expansion joints in sidewalks every 400 square feet with a maximum 40 ft. o.c. spacing.

B. Place expansion joints in curb and gutter at 40 ft. o.c.

C. Place expansion joints between curbs and walks.

D. Place joint filler in expansion joints and between curbs and walks, between paving components and building, and at catch basins, manholes, and other appurtenances. Recess top of filler 1/2 inches for sealant placement by Section 07 92 00.

E. Provide scored or sawn control joints. Joints shall be at right angles to the edges of work.

1. Where walks are wider than 8'-0" provide longitudinal joints as directed.

2. Space control joints at 5 foot intervals for sidewalks.

3. Space control joints at 10 feet intervals for curbs.

F. Align curb, gutter, and sidewalk joints.

G. Place construction joints at the end of all pours and at locations where placement operations are stopped for more than 1/2 hour. If the construction joint will also be an expansion joint, dowel and sleeve the reinforcement.

3.7 PLACING CONCRETE

A. Place concrete in accordance with ACI 301 and as specified in Division 03.

B. Place concrete in accordance with ACI 301.

3.8 FINISHING

A. After striking off and consolidating concrete, smooth the surface by screeding and floating. Use hand methods only where mechanical floating is not possible. Adjust the floating to compact the surface and produce a uniform texture.

B. Provide positive slope on concrete surfaces to provide drainage.

C. After floating, test surface for trueness with a 10' straightedge. Distribute concrete as required to remove surface irregularities, and refloat repaired areas to provide a continuous, smooth finish.

D. Work edges of walks and joints with a 1/4" radius edging tool. and a 4” wide smooth troweled surface at edges; provide broom finish on remainder of surface.

E. After completion of floating and when excess moisture or surface sheen has disappeared, complete surface finishing by drawing a fine-hair broom across the concrete surface, perpendicular to the line of traffic. Repeat operation if required to provide a fine line texture acceptable to the A/E.

F. Install Detectable Warning Mats at Curb Ramps in accordance with manufacturer's instructions.

1. Surface must be completely dry with no precipitation at least 24 hours prior to installation.

2. Surfaces with newly poured concrete must be fully cured.

3. Place the mat in position on the installation surface and adjust fit.

4. Install mat with recommended Adhesive and Anchors.

5. Seal Edges of mat with recommended Sealer.

3.9 DRIVEWAY APRONS

A. For aprons provide 6 inch thick slab with WWF 6 x 6 x W10.0 x W10.0.

B. Provide doweled joints at right angles to traffic.

C. Provide sawcut control joints parallel to traffic.

D. Maximum spacing of joints 20 ft. each way.

E. For doweled joints, provide 3/4 inch diameter x 1'-4" long plastic coated smooth dowels at 12 inches o.c. in standard highway baskets. Set dowels at right angles to joint at slab mid-depth. Project dowel 1/2 of dowel length from face of joint.

F. Provide light broom finish.

3.10 CURING/PROTECTION

A. Use curing methods and provide protection as required.

B. Apply Curing Compound uniformly in continuous operation by power-spray or roller in accordance with manufacturer's instructions.

1. Recoat areas subjected to heavy rainfall occurring within 3 hours after initial application.

2. Maintain continuity of coating and repair damage during curing period.

C. Immediately after placement, protect concrete from premature drying, excessive hot or cold temperatures, and mechanical injury.

D. Exclude traffic from concrete for at least 14 days after placement. When construction traffic is permitted, maintain the work as clean as possible and remove surface stains and spillage of materials as stains and spillages occur.

3.11 FIELD QUALITY CONTROL

A. Materials and operations shall be tested and inspected as work progresses. Failure to detect defective work shall not prevent rejection when defect is discovered, nor shall it obligate the owner for final acceptance.

B. Testing agencies shall meet the requirements of "Standard Recommended Practice for Inspection and Testing Agencies for Concrete, Steel, and Bituminous Materials as Used in Construction", ASTM E 329.

C. The following testing services shall be performed by the testing agency and shall be paid for by the Contractor.

1. Secure composite samples in accordance with "Standard Method of Sampling Fresh Concrete," ASTM C 172.

2. Mold and cure four cylinders from each test required in accordance with "Standard Method of Making the Curing Concrete Test Specimens in the Field," ASTM C 31.

3. Test cylinders in accordance with "Cylindrical Standard Test Method for Compressive Strength of Concrete Specimens," ASTM C 39. Two cylinders shall be tested at 28 days for acceptance and one shall be tested at 7 days and one at 14 days for information.

4. Make one strength test for each 50 cubic yard or 5000 square feet of wall or floor surface or fraction thereof, of each mix design of concrete placed in any one day.

5. A record shall be made by a representative of the General Contractor of the delivery ticket number for the particular load of concrete tested and the approximate location in the work at which each load represented by a strength test is deposited.

6. Determine total air content of normal-weight concrete sample for each strength test in accordance with "Standard Test Method for Air Content of Freshly Mixed Concrete by the Pressure Method," ASTM C231 or “Standard Test Method for Air Content of Freshly Mixed Concrete by the Volumetric Method”, ASTM C173.

7. Submit one copy of all test data to A/E and the CONCRETE SUPPLIER within 3 days of tests.

END OF DOCUMENT 32 13 13

DOCUMENT 32 17 23 – PAVEMENT MARKINGS

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. The CONTRACTOR shall provide all labor, materials, equipment and service necessary, or incidental, to the completion of the work specified in this section.

B. Crosswalk striping.

C. Parking lot striping

D. Handicap parking striping

1.2 QUALITY ASSURANCE

A. Work in this section shall be completed by workmen skilled and experienced in the application of pavement markings on bituminous surfaces. Submit to the ARCHITECT evidence of five (5) years of experience. List projectsof a similar scope.

1.3 JOB CONDITIONS

A. Verify with the asphaltic paving contractor that the surface on which the markings are to be applied has cured and is ready to be striped.

B. Observe the environmental precautions regarding temperature and humidity in the application of the line marking paint. Delay applications when drying conditions will not allow the paint materials to dry in a timely manner.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Paint shall be waterborne or solvent borne, colors as shown or specified herein.

B. Pavement marking paints shall comply with applicable state and local laws enacted to ensure compliance with Federal Clean Air Standards. Paint materials shall conform to the restrictions of the Local Air Pollution Control District.

C. Waterborne Paint: Paints shall conform to FS TT-P-1952

D. Solvent Borne Paint: Paint shall conform to FS A-A-2886 or AASHTO M248. Paint

E. shall be non-bleeding, quick-drying, and alkyd petroleum base paint suitable for traffic-bearing surface and be mixed in accordance with manufacture’s instructions before application for colors White.

PART 3 – EXECUTION

3.1 LAYOUT

A. Do not apply paint until paving has cured a minimum of 14 days.

B. Use steel tapes, transits, and other surveying equipment which will allow the precise measurement of distances and angles.

C. Perform layout with chalk or lumber crayon only.

D. Remove grease, oil, dirt, or other surface contaminants which would affect the appearance or performance of the painting work.

3.2 APPLICATION

A. Install pavement markings according to the manufacture's recommended procedures for the specified material.

B. Tolerances:

1. General: Make lines parallel, evenly spaced, and with sharply defined edges.

2. Line Widths:

a. Plus or minus 1/4 inch variance on straight segments.

b. Plus or minus 1/2 inch variance on curved alignments.

C. Protect completed work from damage.

3.3 CLEANING

A. Remove drips, overspray, improper markings, and paint material tracked by traffic by sand blasting, wire brushing, or other methods approved by architect.

END OF DOCUMENT 32 17 23

DOCUMENT 32 17 26 – TACTILE WARNING SURFACES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Cast-In-Place detectable/tactile warning surface tiles.

B. Surface Applied detectable/tactile warning surface tiles

1.2 RELATED SECTIONS

A. Section 03 30 00 - Cast-In-Place Concrete.

1.3 REFERENCES

A. ASTM B 117 - Standard Practice for Operating Salt Spray (Fog) Apparatus.

B. ASTM C 153 - Specification for Zinc-Coating (Hot-Dip) on Iron and Steel Hardware.

C. ASTM C 501 - Standard Test Method for Relative Resistance to Wear of Unglazed Ceramic Tile by the Taber Abrader.

D. ASTM C 554 - Standard Test Method for Crazing Resistance of Fired Glazed Whitewares By Autoclave Treatment.

E. ASTM C 1028 - Standard Test Method for Determining the Static Coefficient of Friction of Ceramic Tile and Other Like Surfaces by the Horizontal Dynamometer Pull-Meter Method.

F. ASTM D 543 - Standard Practices for Evaluating the Resistance of Plastics to Chemical Reagents.

G. ASTM D 1037 - Standard Test Methods for Evaluating Properties of Wood-Base Fiber and Particle Panel Materials.

H. ASTM D 2486 - Standard Test Method for Scrub Resistance of Wall Paints.

I. ASTM D 5420 - Standard Test Method for Impact Resistance of Flat, Rigid Plastic Specimen by Means of a Striker Impacted by a Falling Weight (Gardner Impact).

J. ASTM F 2296 - Standard Practice for Determining the Adhesion of Lamination Films to Prints Utilizing Mechanical Stress: Four Different Test Methods Score/Tape, Cross Hatch, X-Cut, and Crease-Folding.

K. ASTM G 155 - Standard Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials.

L. FS SS-T-308b - Federal Specification for Ceramic Tile, Floor, Wall, and Trim Units.

M. AASHTO - Standard Specifications for Highways and Bridges.

N. Americans with Disabilities Act (ADA) - Title III Regulations, 28 CFR Part 36 ADA STANDARDS FOR ACCESSIBLE DESIGN, Appendix A, Section 4.29.2 DETECTABLEWARNINGS ON WALKING SURFACES.

1.4 DESIGN / PERFORMANCE REQUIREMENTS

A. Americans with Disabilities Act (ADA): Cast In Place Detectable/Tactile Warning Surface Tiles shall comply with the detectable warnings on walking surfaces section of the Americans with Disabilities Act (Title III Regulations, 28 CFR Part 36 ADA STANDARDS FOR ACCESSIBLE DESIGN, Appendix A, Section 4.29.2 DETECTABLE WARNINGS ON WALKING SURFACES).

1.5 SUBMITTALS

A. Submit under provisions of Section 01 30 00.

B. Product Data: Manufacturer's data sheets on each product to be used, including:

1. Preparation instructions and recommendations.

2. Storage and handling requirements and recommendations.

3. Installation methods.

C. Shop Drawings: Show fabrication details, composite structural system, tile surface profile,sound on cane contact amplification feature, plans of tile placement including joints, andmaterial to be used as well as outlining installation materials and procedure.

D. Selection Samples: For each finish product specified, two complete sets of color chips representing manufacturer's full range of available colors and patterns.

E. Verification Samples: For each finish product specified, two samples, minimum size 6 inchessquare, representing actual product, color, and patterns.

F. Maintenance Instructions: Submit manufacturer's specified installation and maintenance practices for each type of Detectable Warning Surface Tile and accessory required.

1.6 QUALITY ASSURANCE

A. Manufacturer Qualifications: Manufacturer with a minimum of 3 years experience in the manufacture of Cast In Place Detectable/Tactile Warning Surface Tiles.

B. Installer Qualifications: Installer certified in writing by Cast In Place Detectable/Tactile Warning Surface Tile manufacturer as qualified for performing installation, and who has successfully completed installations similar in material, design, and extent to that indicated for Project.

C. Mock-Up: Provide a mock-up for evaluation of surface preparation techniques and application workmanship.

1. Finish areas designated by Architect.

2. Do not proceed with remaining work until workmanship, color, and sheen are approved by Architect.

3. Refinish mock-up area as required to produce acceptable work.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Store products undercover in manufacturer's unopened packaging until ready for installation.

1.8 SEQUENCING

A. Ensure that locating templates and other information required for installation of products of thissection are furnished to affected trades in time to prevent interruption of construction progress.

B. Ensure that products of this section are supplied to affected trades in time to prevent interruption of construction progress.

1.9 PROJECT CONDITIONS

A. Maintain environmental conditions (temperature, humidity, and ventilation) within limits recommended by manufacturer for optimum results. Do not install products under environmental conditions outside manufacturer's absolute limits.

B. Maintain minimum temperature of 40 degrees F in spaces to receive Surface Applied Detectable/Tactile Warning Surface Tiles for at least 24 hours prior to installation, during installation, and for not less than 24 hours after installation.

1.10 WARRANTY

A. See Section 01 78 00 - Closeout Submittals, for additional warranty requirements.

B. Detectable/Tactile Warning Surface Tiles shall be guaranteed in writing for a period of 5 years (minimum) from date of substantial completion. The guarantee includes defective work, breakage, deformation, fading and loosening of tiles.

PART 2 – PRODUCTS

2.1 MANUFACTURERS

A. Neenah Foundry.

B. Requests for substitutions will be considered in accordance with provisions of Section 01 60 00.

2.2 MATERIALS

A. Cast Gray Iron conforming to ASTM A-48, Class 30A minimum Detectable/Tactile Warning Plates. The plates shall incorporate an in-line pattern of truncated domes measuring nominal 0.2 inch height, 0.9 inch base diameter, and 0.45 inch top diameter, spaced center-to-center 2.4" as measured on a diagonal and 1.7" as measured side by side.

1. Type: Cast in Place Detectable/Tactile Warning Surface Plates.

2. Dimensions: Length and Width, nominal size shall be 24 by 48 inches, using quick connect or bolted plates.

3. Color shall be unfinished.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Do not begin installation until substrates have been properly prepared.

B. If substrate preparation is the responsibility of another installer, notify Architect of unsatisfactory preparation before proceeding.

3.2 PREPARATION

A. Clean surfaces thoroughly prior to installation.

B. Prepare surfaces using the methods recommended by the manufacturer for achieving the best result for the substrate under the project conditions.

3. 3 INSTALLATION

A. Install in accordance with manufacturer's instructions.

3.4 PROTECTION

A. Protect installed products until completion of project.

B. Protect tiles against damage from rolling loads following installation by covering with plywoodor hardwood.

C. Clean Tactile Tiles not more than four days prior to date scheduled for inspection intended to establish date of substantial completion in each area of project. Clean Tactile Tile by method specified by Tactile Tile manufacturer.

D. Comply with manufacturers maintenance manual for cleaning and maintaining tile surface and it is recommended to perform annual inspections for safety and tile integrity.

E. Touch-up, repair or replace damaged products before Substantial Completion.

END OF DOCUMENT 32 17 26

RUNNING TRACK SYNTHETIC SURFACING

PART 1 – GENERAL

1.1. SCOPE

This work under this section shall consist of providing all work, materials, labor, equipment and supervision necessary for proper completion of all synthethic track surfacing, marking and related work indicated on the drawings and specified herein. CONTRACTOR shall refer to the drawings for the required locations of synthetic track surfacing to be installed. CONTRACTOR shall field verify all quantities and dimensions. Included are the following topics:

PART -1 GENERAL
Scope
Quality assurance
Job Conditions
Submittals
References

PART 2- PRODUCTS
Running track surface-1/2" Polyurethane base mat system (Base Bid)
Structrual Spray Overlay (Alternate)

Line Marking

PART 3- EXECUTION
Application Preparation
Installation
Testing
Markings
Painting Work
Clean Up

1.2 QUALITY ASSURANCE

Work in this section shall be completed by workmen skilled and experienced in layout and installation of synthetic track surfacing. If requested by ENGINEER, submit a list of previous projects and references.

Installer of the synthetic surfacing shall be trained and approved to completed work indicated herein by the manufacturer of the synthetic material.

Lane lines, start and finish lines, and all event markings shall conform to the current rules of the Wisconsin Interscholastic Athletic Association (WIAA) and the general guidelines of the National Federation of State High School Association Court and Field diagram guide, track and field Layout diagram, latest edition.

Radius points and other track reference points and lines shall be located by a surveyor registered in the State of Wisconsin as part of the work in other sections of this specification. Locate these radius points and use them for the layout of the track markings.

1.3 JOB CONDITIONS

Comply with the temperature, humidity, wind, and other weather factors required by the synthetic track surfacing materials manufacturer at the time of installation.

Provide suitable barricades, temporary fencing, warning signs, ect., as required to keep unauthorized persons off the synthetic surfaces until they are fully cured and ready for use. Notify the OWNER when the work is complete and when barricades will be removed.

The surface to receive running track surfacing shall be clean, sound, free of grease, oils, and other foreign materials and shall be properly patched or repaired if damaged. New surfaces shall be to grade and pitch to elevations shown on the plan. All areas of pavement delamination, raveling, and distress must also be removed/patched prior to new surfacing application. ENGINEER shall approve surface to receive running track surfacing prior to start of construction.

Verify with the synthetic surfacing CONTRACTOR that the surface on which the markings are to be applied has cured and is ready to be striped. Observe the environmental precautions regarding temperature and humidity in the application of the line marking paint. Delay applications when drying conditions will not allow the paint materials to dry in a timely manner.

1.4 SUBMITTALS

Submit samples of the synthetic surface in accordance with the General Requirements. Samples shall indicate the range of colors and textures available. Color and texture selection shall be made by the OWNER.

Submit two (2) copies of the surveyor's layout for the synthetic surfacing indicating its location in relation to the substrate and the elevations of the substrate.

Submit a drawing (5) weeks prior to work to the ENGINEER which indicates and dimensions the location of all lanes, start/finish lines, and event markings. Indicate the location of the layout points. Provide a copy of the computations used to determine event markings. Submit a sample chart for line paint colors. OWNER shall review and approve all of the above submittals.

1.5 REFERENCES

Applicable provisions of Division 0 and Division 1 shall govern work under this section. The contractor shall provide all labor, materials, equipment and services necessary or incidental to the completion of the work specified in this section. Pavement markings shall be installed per the approved shop drawings provided by contractor.

PART 2 - PRODUCTS

2.1 Running track polyurethane surface

Conform to **American Sports Builders Track Construction Guidelines, "Track Surfacing – Polyurethane Base Mat".**

Nominal finish depth: 1/2".

2.2 Line Marking (VERIFY all markings with owner prior to installation)
Line and event markings shall be formulated for exterior service environments and specifically designed for application to the specified surface. Provide the paint in the colors selected by the OWNER for the various events, lanes, and start/finish lines.

PART 3 - EXECUTION

3.1 APPLICATION PREPARATION

Check the condition of the substrate and notify ENGINEER if any condition exists which might affect the performance or appearance of the synthetic surface. Application of the synthetic surface indicates the applicator has accepted the condition of the substrate.

Verify that the substrate is level to the tolerances required.

Clean and sweep substrate as required to assure proper bond.

Provide measures to protect adjacent surfaces from track surfacing over-spray.

3.2 INSTALLATION

Install the running track surface in strict accordance with the instructions of the binder manufacturer and **American Sports Builders Track Construction Guidelines, "Track Surfacing"**

Selected surface shall be applied no sooner than thirty (30) days after paving is completed.

Installation may be performed after the final completion date to accommodate the required 30 day waiting period.

3.3 MARKINGS (VERIFY all markings with owner prior to installation)

Layout:
Use steel tapes, transits, and other surveying equipment which all allow that precise measurement of distances and angles.

All lanes, start and finish lines shall be 2" in width. All markings shall be colored coded.

Exchange zone indicators to be diamonds or other symbol as selected by the owner. Minimum size shall be 12" width.

Acceleration marks shall be dashed lines 2" by 20" marked in the center of the lane.

Provide (4) sets of 3' high lane numbers

Provide event identification in the form of 3" high letters placed on the right hand side of lane #2 around the track.

As indicated on the drawings and herein, provide required lane lines, start/finish lines, and all other markings required for the following track and field events for boys and girls.

Dash: 100M, 200M, 400M
Run: 800M, 1600M, 3200M, 1 mile, and 2 mile
Relay: 400M, 800M, 1600M, 3200M
Hurdles: Boys: See Hurdle table as per WIAA specification
Hurdles: Girls: See Hurdle table as per WIAA specification
Track Lane Lines

Provide the School Name "Platteville " at sprint lanes.

3.4 PAINTING WORK

Remove grease, oil, dirt, or other surface contaminants which would affect the apprearance or performance of the painting work.

Paint shall be applied by high pressure to assure penetration into coarse surfaces. Protect adjacent surfaces by masking or other means to eliminate overspray.

Protect completed work from damage by others using the area.

Tolerances: Straightness of line shall not vary more than ¼" off a string line pulled in 100' of length including overspray/ or bleeding of paint.

3.5 CLEAN UP

Surfacing CONTRACTOR shall protect adjacent surfaces during installation. CONTRACTOR shall clean all areas by removing all excess material from all adjacent surfaces.

If this work is not completed in a timely manner, OWNER shall contract with local independent cleaning CONTRACTOR and charge CONTRACTOR – all fees required for said service

END OF SECTION 32 18 23.39

DOCUMENT 32 31 13 – CHAIN LINK FENCING AND GATES

PART 1 – GENERAL

1.1 SECTION INCLUDES

A. Chain Link Fencing

B. Service Gate

1.2 SHOP DRAWINGS AND PRODUCT DATA

A. Submit shop drawings and product data.

B. Clearly indicate plan layout, grid, spacing of components, accessories, fittings, and anchorage.

C. Submit manufacturer's installation instructions and procedures.

1.3 REFERENCES

A. ASTM A491 - Standard Specification for Aluminum Coated Steel Chain Link Fence Fabric

B. ASTM A392 - Standard Specification for Hot Dipped Zinc Coated Galvanized Steel Chain Link Fence Fabric

C. ASTM 1428 - Standard Test Method for Weight of Coating on Aluminum-Coated Iron or Steel Articles

D. ASTM A120 - Standard Specification for Pipe, Steel, Black and Hot-Dipped Zinc-Coated (galvanized) Welded and Seamless, for Ordinary Uses

E. ASTM E8 - Tension Testing of Metallic Materials

F. ASTM F552 - Standard Definitions of Terms Relating to Chain Link Fencing

G. ASTM F567 - Standard Practice for Installation of Chain Link Fence

H. ASTM F626 - Standard Specification for Fence Fittings

I. ASTM F669 - Standard Specification for Strength Requirements of Metal Posts and Rails for Industrial Chain Link Fence

J. FS RR-F-191J - Fencing, Wire and Post, Metal (and Gates, Chain Link Fence Fabric, and Accessories)

K. RFS RR-F-00191 0 - Fencing, Wire and Post

PART 2 – PRODUCTS

2.1 MATERIALS, ALUMINUM COATED OR GALVANIZED

A. ASTM A569 SS-40 Pipe.

B. Chain Link Fence:

1. Aluminum-coated steel, in accordance with ASTM A491. Thoroughly degrease, rinse, and coat fabric with clear acrylic lacquer by the complete immersion process in line with the weaving process before taking up into rolls for shipment. Minimum weight of aluminum coating is 0.40 oz/ft for 6 and 9 gauge, as measured in accordance with ASTM A428.

2. Hot dipped, zinc coated, steel (galvanized) in accordance with ASTM A392. Minimum weight of coating shall be 2 oz. per sq. ft.

C. Tension Wire: Aluminized-coated steel, in a marcelled or coil spring configuration to provide stretch ability.

D. Fittings: In compliance with ASTM F626, galvanized steel.

2.2 COMPONENTS

A. Chain link Posts: SS-40 4.64 lbs/ft. 2.875” outside diameter

B. Corner and Terminal Posts: SS-40 4.64 lbs/ft 2.875” outside diameter.

C. Corner and terminal posts for service gates:

1. -15’ Wide or Less: SS-40 6.56 lbs/ft 4” outside diameter

2. -16’ Wide or Greater: SS- 40 18.97 lbs/ft 6.625” outside diameter

D. Top and Brace Rail: SS-40 1.84 lbs/ft 1.66” outside diameter tubular section.

E. Chain Link Fabric: 2” mesh woven from 9 gauge aluminized steel wire, top selvage knuckled bottom selvage knuckled in accordance with ASTM A491.

F. Bottom Tension Wire: 7 gauge galvanized or aluminized steel.

G. Tie Wires for securing chain link fabric to horizontal rails and to line posts over 2.375” OD: 6 gauge aluminum alloy wire.

H. Hog Rings for securing chain link fabric to tension wire: 12 gauge aluminum alloy wire.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Landscape finish grading shall be completed prior to setting line posts.

B. Install line posts, corner posts, terminal posts and horizontal rails with brace bands, rail ends, rail sleeves, line post caps, tension bands, tension bars, chain link fabric and gates to provide a rigid structure for fence. Use manufacturer's standard fittings, fasteners and hardware.

C. Space line posts uniformly and on 8' foot maximum centers (10’ fence).

D. Set posts plumb and true to line and grade.

E. Corner, terminal, line posts to be set in 54” x 12” concrete footings or as indicated on the plan set documents.

F. Position bottom of fabric 1” above finished grade with tension wire stretched taut between terminal posts 1.5” to 2” above bottom of fabric.

G. Knuckle top and bottom standards of all fabric.

H. Pass top rail through line post caps and attach securely to terminal posts.

I. Install brace rail and adjustable truss rod between end, corner and gate posts and first line post.

J. Stretch chain link fabric taut between terminal posts, supporting its weight as necessary with temporary tie wires.

K. Attach fabric to end, corner and gate posts with tension bars and tension bands, using one less band than height of fabric of feet, or approximately 14” on center.

L. Attach fabric to horizontal rails and line posts with tie tires and to tension wire with hog rings, five (5) tie wires, or hog rings per 10’ bay, or approximately 24” on center. Fence fabric shall be placed on the inside of posts around track and placed on the outside of posts along perimeter fence.

M. Install gates and adjust true to fence line and grade.

3.2 CLEAN UP

A. Dispose of excessive material to certified landfill.

B. All pipe, concrete, fabric and miscellaneous parts shall be removed from site.

C. Grade subgrade to within 1" of finish subgrade after work is completed.

3.3 UTILITY LOCATES

A. All required locates and private utility locates shall be ordered and paid for by each contractor requiring the locate service.

END OF DOCUMENT 32 31 13

ORNAMENTAL FENCE

PART 1 - GENERAL
1.1 WORK INCLUDED
The contractor shall provide all labor, materials and appurtenances necessary for installation of the welded ornamental steel fence system defined herein.

1.2 RELATED WORK
Section 31 20 00 – Earth moving
Section 32 13 13 - Portland Cement Concrete Paving

1.3 SYSTEM DESCRIPTION
The manufacturer shall supply a total fence system of Ameristar Industrial Montage II® *Welded and Rackable* (ATF – All Terrain Flexibility) Ornamental Steel (Majestic™) design. The system shall include all components (i.e., panels, posts, gates and hardware) required.

1.4 QUALITY ASSURANCE
The contractor shall provide laborers and supervisors who are thoroughly familiar with the type of construction involved and materials and techniques specified.

1.5 REFERENCES
- ASTM A653/A653M - Standard Specification for Steel Sheet, Zinc-Coated (Galvanized) or Zinc-Iron Alloy Coated (Galvanized) by the Hot-Dip Process.
- ASTM B117 - Practice for Operating Salt-Spray (Fog) Apparatus.
- ASTM D523 - Test Method for Specular Gloss.
- ASTM D714 - Test Method for Evaluating Degree of Blistering in Paint.
- ASTM D822 - Practice for Conducting Tests on Paint and Related Coatings and Materials using Filtered Open-Flame Carbon-Arc Light and Water Exposure Apparatus.
- ASTM D1654 - Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments.
- ASTM D2244 - Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates.
- ASTM D2794 - Test Method for Resistance of Organic Coatings to the Effects of Rapid Deformation (Impact).
- ASTM D3359 - Test Method for Measuring Adhesion by Tape Test.
- ASTM F2408 – Ornamental Fences Employing Galvanized Steel Tubular Pickets.

1.6 SUBMITTAL
The manufacturer's literature shall be submitted prior to installation.

1.7 PRODUCT HANDLING AND STORAGE
Upon receipt at the job site, all materials shall be checked to ensure that no damage occurred during shipping or handling. Materials shall be stored in such a manner to ensure proper ventilation and drainage, and to protect against damage, weather, vandalism and theft.

1.8 PRODUCT WARRANTY
A. All structural fence components (i.e. rails, pickets, and posts) shall be warranted within specified limitations, by the manufacturer for a period of 20 years from date of original purchase. Warranty shall cover any defects in material finish, including cracking, peeling, chipping, blistering or corroding.

B. Reimbursement for labor necessary to restore or replace components that have been found to be defective under the terms of manufactures warranty shall be guaranteed for five (5) years from date of original purchase.

PART 2 – MATERIALS

2.1 MANUFACTURER
The fence system shall conform to Ameristar Industrial Montage II® *Welded and Rackable* (ATF – All Terrain Flexibility) Ornamental Steel, **(Majestic) design**, **(extended picket)** bottom rail treatment, **(3-Rail)** style manufactured by Ameristar Fence Products, Inc., in Tulsa, Oklahoma.

2.2 MATERIAL
A. Steel material for fence panels and posts shall conform to the requirements of ASTM A653/A653M, with a minimum yield strength of 45,000 psi (310 MPa) and a minimum zinc (hot-dip galvanized) coating weight of 0.90 oz/ft2 (276 g/m2), Coating Designation G-90.

B. Material for pickets shall be 1" square x 14 Ga. tubing. The rails shall be steel channel, 1.75" x 1. 75" x .105". Picket holes in the rail shall be spaced 4.715" o.c. Fence posts and gate posts shall meet the minimum size requirements of Table 1.

2.3 FABRICATION
A. Pickets, rails and posts shall be pre-cut to specified lengths. Rails shall be pre-punched to accept pickets.

B. Pickets shall be inserted into the pre-punched holes in the rails and shall be aligned to standard spacing using a specially calibrated alignment fixture. The aligned pickets and rails shall be joined at each picket-to-rail intersection by Ameristar's proprietary fusion welding process, thus completing the rigid panel assembly (Note: The process produces a virtually seamless, spatter-free good-neighbor appearance, equally attractive from either side of the panel).

C. The manufactured panels and posts shall be subjected to an inline electrodeposition coating (E-Coat) process consisting of a multi-stage pretreatment/wash, followed by a duplex application of an epoxy primer and an acrylic topcoat. The minimum cumulative coating thickness of epoxy and acrylic shall be 2 mils (0.058 mm). The color shall be (specify Black or Bronze). The coated panels and posts shall be capable of meeting the performance requirements for each quality characteristic shown in Table 2 (Note: The requirements in Table 2 meet or exceed the coating performance criteria of ASTM F2408).

D. The manufactured fence system shall be capable of meeting the vertical load, horizontal load, and infill performance requirements for Industrial weight fences under ASTM F2408.

E. Swing gates shall be fabricated using 1.75" x 14ga Forerunner double channel rail, 2" sq. x 12ga. gate ends, and 1" sq. x 14ga. pickets. Gates that exceed 6' in width will have a 1.75" sq. x 14ga. intermediate upright. All rail and upright intersections shall be joined by welding. All picket and rail intersections shall also be joined by welding. Gusset plates will be welded at each upright to rail intersection. Cable kits will be provided for additional trussing for all gates leaves over 6'.

F. Pedestrian swing gates shall be self-closing, having a gate leaf no larger than 48" width. Integrated hinge-closer set (2 qty) shall be ADA compliant that shall include a variable speed and final snap adjustment with compact design (no greater than 5" x 6" footprint). Hinge-closer set (2 qty) shall be tested to a minimum of 500,000 cycles and capable of self-closing gates up to a maximum gate weight of 260 lbs. and maximum weight load capacity of 1,500 lbs. Hinge-closer device shall be externally mounted with tamper-resistant security fasteners, with full range of adjustability, horizontal (.5" - 1.375") and vertical (0 - .5"). Maintenance free hinge-closer set shall be tested to operate in temperatures of negative 20 F to 200 F degrees, and swings to negative 2 degrees to ensure reliable final lock engagement.

PART 3 – EXECUTION

3.1 PREPARATION

All new installation shall be laid out by the contractor in accordance with the construction plans.

3.2 FENCE INSTALLATION

Fence post shall be spaced according to Table 3, plus or minus ½". For installations that must be raked to follow sloping grades, the post spacing dimension must be measured along the grade. Fence panels shall be attached to posts with brackets supplied by the manufacturer. Posts shall be set in concrete footers having a minimum depth of 48" (Note: In some cases, local restrictions of freezing weather conditions may require a greater depth). The "Earthwork" and "Concrete" sections of this specification shall govern material requirements for the concrete footer. Posts setting by other methods such as plated posts or grouted core-drilled footers are permissible only if shown by engineering analysis to be sufficient in strength for the intended application.

3.3 FENCE INSTALLATION MAINTENANCE

When cutting/drilling rails or posts adhere to the following steps to seal the exposed steel surfaces; 1) Remove all metal shavings from cut area. 2) Apply zinc-rich primer to thoroughly cover cut edge and/or drilled hole; let dry. 3) Apply 2 coats of custom finish paint matching fence color. Failure to seal exposed surfaces per steps 1-3 above will negate warranty. Ameristar spray cans or paint pens shall be used to prime and finish exposed surfaces; it is recommended that paint pens be used to prevent overspray. Use of non-Ameristar parts or components will negate the manufactures' warranty.

3.4 GATE INSTALLATION

Gate posts shall be spaced according to the manufacturers' gate drawings, dependent on standard out-to-out gate leaf dimensions and gate hardware selected. Type and quantity of gate hinges shall be based on the application; weight, height, and number of gate cycles. The manufacturers' gate drawings shall identify the necessary gate hardware required for the application. Gate hardware shall be provided by the manufacturer of the gate and shall be installed per manufacturer's recommendations.

3.5 CLEANING

The contractor shall clean the jobsite of excess materials; post-hole excavations shall be scattered uniformly away from posts.

Table 1 – Minimum Sizes for Montage II Posts

Fence Posts	Panel Height		
2-1/2" x 12 Ga.	Up to & Including 6' Height		
3" x 12 Ga.	Over 6' Up to & Including 8' Height		
Gate Leaf	Gate Height		
	Up to & Including 4'	Over 4' Up to & Including 6'	Over 6' Up to & Including 8'
Up to 4'	2-1/2" x 12 Ga.	3" x 12 Ga.	3" x 12 Ga.
4'1" to 6'	3" x 12Ga.	4" x 11 Ga.	4" x 11 Ga.
6'1" to 8'	3" x 12 Ga.	4" x 11 Ga.	6" x 3/16"
8'1" to 10'	4" x 11 Ga.	6" x 3/16"	6" x 3/16"
10'1" to 12'	4" x 11 Ga.	6" x 3/16"	6" x 3/16"
12'1" to 14'	4" x 11 Ga.	6" x 3/16"	6" x 3/16"
14'1" to 16'	6" x 3/16"	6" x 3/16"	6" x 3/16"

Table 2 – Coating Performance Requirements

Quality	ASTM Test Method	Performance Requirements

Characteristics		
Adhesion	D3359 – Method B	Adhesion (Retention of Coating) over 90% of test area (Tape and knife test).
Corrosion Resistance	B117, D714 & D1654	Corrosion Resistance over 1,500 hours (Scribed per D1654; failure mode is accumulation of 1/8" coating loss from scribe or medium #8 blisters).
Impact Resistance	D2794	Impact Resistance over 60 inch lb. (Forward impact using 0.625" ball).
Weathering Resistance	D822 D2244, D523 (60˚ Method)	Weathering Resistance over 1,000 hours (Failure mode is 60% loss of gloss or color variance of more than 3 delta-E color units).

Table 3 – Montage II – Post Spacing By Bracket Type

Span	For INVINCIBLE® 8' Nominal (91-1/2" Rail)				For CLASSIC, GENESIS, & MAJESTIC 8' Nominal (92-5/8" Rail)					
Post Size	2-1/2"	3"	2-1/2"	3"	2-1/2"	3"	2-1/2"	3"	2-1/2"	3"
Bracket Type	Industrial Flat Mount (BB301)*		Industrial Line 2-1/2" (BB319) 3" (BB320)		Industrial Universal 2.5" (BB302) 3" (BB303)		Industrial Flat Mount (BB301)		Industrial Swivel (BB304)*	
Post Settings ± ½" O.C.	94-1/2"	95"	94-1/2"	95"	96"	96-1/2"	96"	96-1/2"	*96"	*96-1/2"

*Note: When using BB304 swivel brackets on either or both ends of a panel installation, care must be taken to ensure the spacing between post and adjoining pickets meets applicable codes. This will require trimming one or both ends of the panel. When using the BB301 flat mount bracket for Invincible style, rail may need to be drilled to accommodate rail to bracket attachment.

DOCUMENT 32 33 00 - SITE FURNISHINGS

PART 1 – GENERAL

1.1 WORK INCLUDED

A. The Contractor shall provide all labor, materials, equipment, and services necessary, or incidental to the completion of the work specified in this section.

B. Installation of Signs

PART 2 – PRODUCTS

1.2 MATERIALS

A. Accessible Parking Sign

1. 12”x18” M.U.T.C.D. R7-8, aluminum rust-free sign, with retroflective sealed outer surface. Sign shall meet applicable state and local requirements.

2. 6”x12” M.U.T.C.D. R7-8P, aluminum rust free sign, with retroflective sealed outer surface. Provide only when the accessible parking sign is adjacent to an access aisle 8’ or wider.

3. 12’ green enamel-coated steel 2 lbs/ft U-channel sign post

PART 3 – EXECUTION

1.3 INSTALLATION

A. All signs

1. Drive sign post 5’ into compacted native soil.

2. Mount signs to enameled-coated steel post such that the top of the sign is 7’ above finished grade.

END OF SECTION 32 33 00

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DOCUMENT 32 91 19 - LANDSCAPE FINISH GRADING

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Place topsoil in all general landscape areas.

B. Finish grade topsoil for finish landscaping.

C. Provide additional topsoil if required from an off-site source.

PART 2 – PRODUCTS

2.1 MATERIAL

A. Salvaged Topsoil: on site excavated material, graded, free of roots, rocks larger than 1/2", debris and large weeds.

B. Additional Topsoil: When required, provided, placed and compacted by CONTRACTOR off site material free of debris, roots, and rocks larger than 1/2" in size.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Verify salvaged topsoil is acceptable for use.

B. Verify trench backfilling and compacting has been completed and inspected.

C. Verify subsoil base has been contoured, shaped and compacted to design grades.

3.2 SUBSOIL PREPARATION

A. Shape subsoil to remove uneven areas and low spots.

B. Remove debris, roots, branches, and stones in excess of 1" in size. Remove subsoil contaminated with petroleum products if encountered.

C. Scarify subgrade material to depth of 3" where topsoil is scheduled to be placed where equipment is used for hauling and spreading topsoil and has compacted subsoil.

3.3 PLACING TOPSOIL

A. Place topsoil in areas where seeding and/or sodding is required to a thickness of 10” lightly compacted depth.

B. Place topsoil in relatively dry state, during dry weather.

C. Finish grade topsoil eliminating rough or low areas while maintaining profiles and contour of subgrade and achieving required 10” lightly compacted depth.

D. Remove roots, debris, rocks larger than 1/2” in size, weeds, and foreign material while spreading.

E. Manually spread topsoil close to trees, fences, buildings and other objects to prevent damage.

F. Lightly compact topsoil after placement.

G. Leave stockpile area and site clean and ready for seeding, sodding or other finish treatment.

3.4 TOLERANCES

A. Top of Topsoil: Plus or minus 1/2”

3.5 PROTECTION

A. Protect landscaping and other site features remaining as part of completed project.

B. Protect fences, sidewalks, utilities, structures and pavement from damage.

END OF DOCUMENT 32 91 19

DOCUMENT 32 92 00 - TURF AND GRASSES

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Fertilizing

B. Seeding

C. Mulching

D. Maintenance

1.2 REFERENCES

A. FS O-F-241 - Fertilizers, Mixed, Commercial.

1.3 DEFINITIONS

A. Weeds: Includes Dandelion, Jimsonweed, Quack grass, Horsetail, Morning Glory, Rush Grass, Mustard, Lambsquarter, Chickweed, Cress, Crabgrass, Canadian Thistle, Nutgrass, Poison Oak, Blackberry, Tansy Ragwort, Bermuda Grass, Johnson Grass, Poison Ivy, Nut Sedge, Nimble Will, Bindweed, Bent Grass, Wild Garlic, Perennial Sorrel, and Brome Grass.

1.4 REGULATORY REQUIREMENTS

A. Comply with local governing regulatory agencies for fertilizer and herbicide composition.

1.5 QUALITY ASSURANCE

A. Provide to project A/E tags from seed mixture containers showing percentage of seed mix, year of production, net weight, date of packaging, and location of packaging prior to the start of seeding.

1.6 TESTS

A. Testing is not required if recent tests are available for imported topsoil. Submit these test results to testing laboratory for approval. Indicate, by test results, information necessary to determine suitability.

1.7 MAINTENANCE DATA

A. Submit maintenance data for the OWNER’S continuation of maintenance.

B. Include maintenance instructions for the OWNER relating to cutting method and maximum grass height, type, application frequency, and recommended coverage of fertilizer to be utilized.

1.8 DELIVERY, STORAGE AND HANDLING

A. Deliver grass seed mixture in sealed containers. Seed provided in damaged packages will not be accepted.

B. Deliver fertilizer in waterproof bags showing weight, chemical analysis, and name of manufacturer.

C. Schedule deliveries to coincide with topsoil operations and laying. Keep storage at job site to minimum without causing delays.

1.9 MAINTENANCE SERVICE

A. Maintain seeded areas until acceptable growth is established.

B. Maintenance

1. Mow grass at regular intervals to maintain a minimum height of 2-1/2". Do not cut more than one-third (1/3) of grass blade at any one mowing.

2. Neatly trim edges and hand clip where necessary.

3. Immediately remove any clippings after mowing and trimming.

4. Water to prevent grass and soil from drying out.

5. Control growth of weeds. Apply herbicides in accordance with manufacturer's instructions. Remedy damage resulting from improper use of herbicides.

6. Immediately re-seed areas which show bare spots.

7. Protect seeded areas with warning signs during maintenance period.

C. Acceptable Growth

1. When the majority of the seeding reaches the height of one-third greater than the anticipated cutting height, mowing should then follow standard frequency. (e.g. If a Kentucky Bluegrass turf is to be maintained at a 3 inch cutting height the new seedlings should be mowed when they reach a height of 4 inches.) After the second mowing and after the assessment that no washouts or large bare areas exist, the growth shall be deemed acceptable and from that point on, it is the OWNER'S responsibility.

PART 2 – PRODUCTS

2.1 ACCEPTABLE SEED SUPPLIERS

A. L.L. Olds Seed Company

B. Reinders

C. The Scott's Company

D. Horst Distributing

E. Wisconsin Turf

2.2 SEED MIXTURE

A. Lawn Seed Mixture:
50% Kentucky Bluegrass
15% Creeping Red Fescue
12% Chewing Fescue
23% Improved Turf Type Perennial Ryegrass

B. Application Seeding Rate: 5-6 lbs. per 1,000 square feet

2.3 SOIL MATERIALS

A. Additional Topsoil: Fertile, agricultural soil, typical for locality, capable of sustaining vigorous plant growth, taken from drained site; free of subsoil, clay or impurities, plants, weeds and roots; pH value: 5.4 minimum and 7.0 maximum.

B. Salvaged Topsoil: Excavated from site and in accordance with Section 312000 - Earthmoving.

2.4 ACCESSORIES

A. Mulching Material: Marsh hay or wheat straw, free from weeds, foreign matter detrimental to plant life, and dry. Hay or chopped cornstalks are not acceptable.

B. Fertilizer: Starter Fertilizer to the following proportions: Nitrogen 10 percent, phosphoric acid 18 percent, soluble potash 22 percent. Apply at rate of .5 LBN per 1000 S.F.

C. Water: Clean, fresh and free of substances or matter which could inhibit vigorous growth of grass.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Verify that prepared soil base is ready to receive work of this section.

B. Beginning of installation means acceptance of existing site conditions.

C. Do not commence work of this Section until work of Sections 32 9113 and 32 9300 has been completed and approved.

D. Repair and re-roll areas with depressions, lumps, or other irregularities. Heavy rolling to correct irregularities in grade will not be permitted.

3.2 FERTILIZING

A. Apply fertilizer in accordance with manufacturer's instructions.

B. Apply after smooth raking of topsoil and prior to roller compaction.

C. Do not apply fertilizer at same time or with same machine as will be used to apply seed. Apply fertilizer after seed has been dragged and soil leveled.

D. Mix thoroughly into upper 2" of topsoil.

E. Lightly water to aid dissipation of fertilizer.

3.3 SEEDING

A. Apply seed at a rate of 5-6 lbs. per 1,000 sq. ft. evenly in two (2) intersecting directions. Rake in lightly. Do not seed area in excess of that which can be mulched on same day.

B. Planting Season: Starting May 1 through October 1.

C. Do not sow immediately following rain, when ground is too dry, or during windy periods.

D. Drag seeded area with lightweight drag to cover seed and level soil.

E. Immediately following seeding, fertilizing and compacting, apply mulch to a thickness of 1" to 1/2". Maintain clear of shrubs and trees. Crimping of mulch shall be performed in two (2) directions after placement of mulch.

F. Apply water with a fine spray immediately after each area has been mulched. Saturate to 4" of soil.

3.4 MAINTENANCE

A. During the maintenance period, CONTRACTOR shall sprinkle to supplement rainfall to provide 1" minimum water per week, mow, control weeds (by mowing), repair poorly growing and/or eroded areas, etc.

B. Mowing shall be done regularly to maintain the lawn at a height of 2-1/2" to 3" at all times. In no case shall more than 25% of the total height of grass be removed in one cutting. Clippings shall be permitted to remain unless they are of such quality so that, in the opinion of the LANDSCAPE ARCHITECT, they might damage the lawn. In such cases, CONTRACTOR shall promptly remove the clippings and dispose of same off the site.

END OF DOCUMENT 32 92 00

DOCUMENT 32 93 00 – PLANTS

PART 1 – GENERAL

1.1 SCOPE OF WORK

A. This work shall consist of furnishing and planting plants of the species, varieties and sizes specified, complete in place at the locations designated on the plans or as directed by architect or engineer. It shall include furnishing all necessary materials and performing all necessary work such as excavating plant holes, salvaging topsoil, potting, transplanting, backfilling, pruning, mulching, watering, heeling in, fertilizing, wrapping, guying and bracing, rodent protection and anti-desiccant, disposing of surplus and waste materials, necessary care and replacement.

1.2 QUALITY ASSURANCE

A. Perform work with personnel experienced in the work required in this section under direction of a skilled foreman. The CONTRACTOR shall have a minimum of five successful installations of similar projects and materials, or approval by architecht.

1.3 SUBMITTALS

A. See Section 01 30 00 - Administrative Requirements, for submittal procedures.

B. Samples: Submit sample of stone mulch for landscape beds and mowing strip for approval by Hoffman prior to installation.

C. Maintenance Data: Include cutting and trimming method .

D. Provide Owner with detailed written long term landscape maintenance information.

E. Submit list of plant life sources.

1.4 DELIVERY STORAGE AND HANDLING

A. General

1. All plant stock shall be dug and handled with care and skill to prevent injuries to the trunk, branches, and roots and shall be packed in an approved manner to insure arrival at the project site in good condition.

2. The plant stock shall be transported in enclosed vehicles or, in lieu of the enclosed vehicles, the plant tops shall be suitably protected from drying.

3. All plants furnished with earth balls or in containers shall be handled by the ball or container.

B. Bare Root Stock (BR)

1. Plant stock to be furnished BR shall be moved with the roots protected against drying out by the use of moist sphagnum moss, straw or other suitable material, and covered with canvas or other suitable covering in an approved manner.

C. Bare Root Potted Stock (BRP)

1. Plant stock to be furnished BRP shall be bare root plants potted in accordance with the following requirements and the planting details shown on the plans. The potting shall be the responsibility of the CONTRACTOR and shall be done by placing the plant in a plantable fiber container of the specified size and then placing and compacting the potting mixture backfill so that the elevation of the plant root collar and the backfill material is approximately 1" below the top of the container.

2. The potting shall include pruning of the plants before or at the time of potting and working the plant around as the potting mixture is added to insure that the roots are naturally spread or spaced within the pot. Fertilizer conforming to 2.01 G, H shall be placed on the soil in the pot after potting in accordance with the requirements of such subsection.

3. The plants shall be potted prior to May 1 of the year they are to be planted and shall be stored, watered and otherwise cared for by the CONTRACTOR in a suitable location off the highway right-of-way for at least four (4) weeks. The CONTRACTOR shall inform the A/E of the location of the potting and storage area at least ten (10) days before potting begins.

4. Only live, healthy, vigorously growing BRP plants will be acceptable for planting at the designated locations on the project site.

D. Balled and Burlapped Stock (B&B)

1. Plant stock to be furnished B&B shall be moved with a compact dug ball of earth so firmly wrapped in burlap that upon delivery the soil in the ball is still firm and compact about the small feeding roots. Each ball shall be of sufficient size to encompass all the fibrous feeding roots necessary to insure successful recovery and development of the plant. The minimum sizes of balls, ball depth and diameters, and increased ball sizes for collected stock shall be in accordance with Recommended Balling and Burlapping Specifications, as set forth in the current edition of the American Standard for Nursery Stock sponsored b y the American Association of Nurserymen, Inc.

E. Balled and Potted Stock (B&P)

1. Plant stock to be furnished B&P shall be plants which have been dug from the growing site with the roots contained in a compact unbroken ball of earth and placed in a plantable fiber container. The size and shape of the earth ball shall conform to the approximate size and shape of the container so that the plant root collar is approximately l" below the top of the container. Any voids shall be filled at potting time with native soil. The minimum ball size shall be equivalent to the ball size for B&B stock shown in the current American Standard for Nursery Stock as required for the plant specified.

F. Container Grown Stock (CG)

1. Plants furnished CG shall be well rooted and established in the containers in which they are growing. They shall have grown in the containers sufficiently long enough for the new fibrous roots to have developed so that the root soil mass will retain its shape when removed from the container. The plants shall not have grown in the container long enough to become container bound. The container shall be sufficiently rigid to retain its shape and protect the plant root system during shipping and handling. Container size shall be in accordance with specifications for

CG stock as stated in the current edition of the American Standard for Nursery Stock. Keep plants moist at all times and in the trays or containers till planting.

G. Machine Transplanted Stock (MT)

1. Plants to be furnished or transplanted as MT stock shall be plants that are to be moved from the growing site to selected sites within the right-of-way by use of a tree transplanting machine. The machine shall be capable of digging and removing from the ground, an unbroken mass of earth of the specified size and shape. It shall be capable of lifting and transporting the mass of earth supporting the specified size plant and containing its roots in an undisturbed condition. The machine shall be capable of holding the soil mass and roots in the undisturbed condition until the tree is lowered into the growing position and the soil mass supported by the walls of the planting hole.

H. Stone Mulch

1. Store products (until ready for installation) to prevent excessive mud, concrete or any other materials from coming into contact and affixing to the stone mulch.

1.5 PLANT ESTABLISHMENT PERIOD

A. General

1. A plant establishment period of two (2) years shall follow the completion of planting.

B. Two-Year Plant Establishment Period

1. The plant establishment period shall extend until August 1 of the second full growing season.

C. Care

1. The CONTRACTOR shall properly care for all plants from the time of planting until the partial or final acceptance of the work under the contract.

2. Proper care of plants shall consist of doing such watering, weeding, cultivating, pruning, spraying, tightening of braces and guys, retying, wrapping, re-mulching and other work as may be necessary to keep the plants in a neat appearance and in a healthy growing condition. In addition to the watering required in 3.01, a, entitled MAINTENANCE, complete watering shall be performed at 12 to 15 day intervals between project start and September 15, if required. Such intervals may be lengthened when weather conditions and soil moisture permit. Additional watering may be ordered by the OWNER, CONSTRUCTION MANAGER, or A/E at any time during the plant establishment period should conditions require such watering.

3. A sufficient amount of water shall be placed in each plant hole at the time of each watering to keep the topsoil backfill material in a moist condition, and to keep the plant in a healthy growing condition.

4. All evergreens that die during the course of the plan establishment period shall be removed and disposed of by the CONTRACTOR as their dead conditions become evident.

5. All mulched areas shall be kept free of all vegetation, except the specified plants, by hoeing, hand weeding or by the use of herbicides if approved by the A/E.

6. All vines shall be strung to fences and runners shall be directed toward retaining walls or structures, as the case may be, during plant establishment period.

7. Pesticides shall be applied as required to control insects and disease and to keep the plants in a healthy condition.

8. All plants that die or show evidence of dying during the plant establishment period shall be replaced at the CONTRACTOR'S expense at the earliest appropriate planting time after this condition becomes apparent. Replacement will be permitted until June 1 of the year in which the final inspection is made.

9. All bracing and guying materials shall be removed and disposed of by the CONTRACTOR after the final inspection of the plantings.

D. Acceptance and Replacement of Plant Material

1. Near the end of the applicable plant establishment period, but no later than September 15, the inspection of the planting will be made and only those plants that are in a healthy growing condition and which meet the following minimum requirements will be accepted and measured for payment at the contract lump sum price. Plant sizes and standards shall be in accordance with the American Standards For Nursery Stock.

2. Evergreens shall exceed the minimum size of the specified size range and all coniferous types shall have fully developed, mature needles and average sized buds on current season's growth.

3. Deciduous shrubs shall exceed the requirements of the specified size range and have mature, average sized leaves typically distributed throughout the branch system.

4. Deciduous vines shall have the required number of runners, each exceeding the minimum required length.

5. The plants not meeting the foregoing requirements shall either be removed or replaced with satisfactory plants during the current fall planting season, or at the option of the A/E, be allowed to remain in place. Materials and method of replacement planting shall be the same as specified for the original planting, except that plants furnished BRP may be replaced with B&P or CG stock. Such plants when satisfactorily replaced or allowed to remain will be measured and paid for at the reduced contract unit price provided in a lump sum Basis of Payment.

1.6 WARRANTY

A. Provide to a period through the second spring of growth, a warranty from date of substantial completion.

B. Replace plant materials found dead, or not in a healthy growing condition.

C. Replacements

1. Plant materials of same size and species, with a new warranty commencing on the date of replacement.

PART 2 – PRODUCTS

2.1 MATERIALS

A. Trees and Plants
1. Species and size identified in the plant schedule, grown in climatic conditions similar to those in the locality of the work.

B. Compost
1. Compost shall be a standard commercial compost of cattle, sheep or poultry manure, or other organic material acceptable to the A/E.

C. Peat Moss
1. Peat Moss shall consist of at least 75% of partially decomposed stems and leaves of sphagnum, hypnum, polytrichum and other mosses in which the fibrous and cellular structure is still recognizable. It shall be nearly free of decomposed colloidal residue, wood, and other foreign matter, and shall be brown to black in color. Humus peat will not be acceptable. Peat moss shall have the following characteristics:
   a) Moisture content shall not exceed 60% by weight.
   b) Ash content shall not exceed 20%, based on the oven dry weight of the material.
   c) The pH value shall be not less than 3.2 nor greater than 7.0 at 25 degrees C.
   d) Water holding capacity shall be not less than 400% by weight, on an oven dry basis.
   e) Upon request, the CONTRACTOR shall furnish the A/E with a representative sample of the peat moss for testing in accordance with the Federal Specification for Peat, Moss; Peat, Humus; and Peat, Reed Sedge numbered Q-P-166c.
   f) The CONTRACTOR shall furnish the A/E with a certificate stating the type of peat moss, the brand name, and the country or place of origin. If packed in bales and if bale size is used in determining quantities for mixing, the certificate shall also contain the cubic feet of compressed bale size, the compression ratio, and the approximate weight of the bales. A certificate will not be required if this information is marked on the bales.

D. Topsoil

1. Topsoil shall be salvaged from the plant hole excavation whenever such topsoil conforms to the above requirements. The sod from the plant hole excavation may be used for backfill, together with topsoil, providing it is thoroughly broken into small pieces and used in limited quantities near the bottom of the plant hole and in such manner that it will not be in contact with the small feeder roots.

E. Potting Mixture

1. Potting mixture shall consist of a mixture of peat moss, topsoil, and sand in a ration of 1:1:1 by volume. Fertilizer shall be thoroughly incorporated in the mixture at the rate of four (4) pounds of fertilizer to each cubic yard of mixture.

2. The peat moss shall conform to the requirements of Subsection C and topsoil to Subsection D. The sand shall be approved by the A/E and 100% shall pass a 3/8” sieve.

F. Fertilizer

1. Fertilizer shall conform to the pertinent requirements of the following:

   a. Fertilizer for Potting Mixtures:
   Unless otherwise specified, the fertilizer to be mixed with the potting soil shall be a super phosphate meeting the following minimum requirements:

   Nitrogen 0%

Phosphoric Acid	20%
Potash	0%

b. Fertilizer for BRP Stock:
Fertilizer to be placed on the soil in containers shall be of the controlled release type and shall have the following minimum requirements:

Nitrogen, not less than	18%
Phosphoric Acid, not less than	9%
Potash, not less than	9%

The fertilizer shall consist of granules of soluble nutrients, each granule of which shall be enclosed in a water permeable resinous film. The fertilizer shall be spread evenly over the top of the container at the rate of 2 oz. per cubic foot of container volume.

c. Fertilizer for Plant Holes:
Fertilizer to be used in plant holes shall be a water soluble fertilizer contained in a micro pore slow release polyethylene packet. The amount of fertilizer in each packet shall be minimum of one ounce.The fertilizer shall meet the following minimum requirements:

Nitrogen, not less than	16%
Phosphoric Acid, not less than	8%
Potash, not less than	16%

d. Fertilizer for Wood Chip Mulch:
Fertilizer to be used on areas to be mulched with wood ships shall be a slow release ureaform fertilizer having at least 38% nitrogen.

G. Water

1. Water used shall be free from any impurities or substances which might injure the plant.

H. Hardwood BarkMulch

1. Wood chips shall be chips such as are obtained from any standard wood or brush chipping machine and shall be substantially free of noxious weed seeds or other objectionable foreign materials. The mulch used shall meet the approval of the A/E.

I. Wrapping

1. Wrapping, when specified shall consist of a two-ply waterproofed crepe tree wrapping paper, laminated with a layer of pliable asphalt material

J. Wound Dressing

1. Wound dressing, when required, shall consist of an asphalt base tree paint or other acceptable material suitable for application by brushing or spraying on bruised or cut surfaces of plants.

K. Rodent Protection

1. Rodent protection, when specified, shall consist of galvanized hardware cloth, extruded aluminum mesh, or a durable preformed plastic material. The hardware cloth or aluminum mesh, if used, shall have at least three meshes per linear inch and shall be used in conjunction with a steel rod having a minimum size of 3/8” x 48”. The plastic material shall be a durable, resilient, preformed plastic spiral acceptable to the A/E. Such material shall have a natural, earth-tone color.

L. Bracing and Guying Materials

1. When specified, these materials shall consist of such wood or steel stakes, wire, rubber hose, soft rope or straps, turnbuckles, and other material as needed to perform the work. Stakes shall be of solid durable wood, approximately 2 x 2" and of the required length, except that stakes used for bracing may be approved steel posts of the required length.

2. Wire of good quality shall be No. 11 or 12 steel sire and when used for trees of four (4) inches or less in diameter. No. 9 or 10 for trees over four inches in diameter. A suitable turnbuckle for adjusting the wire tension shall be used with the larger wire.

M. Anti-Desiccant

1. Anti-desiccant, when specified, shall be an approved emulsion which will provide a film over plant surfaces permeable enough to permit transpiration.

N. Equipment

1. The CONTRACTOR shall furnish and have available, sufficient watering equipment, including tanks, pumps, hoses, and incidentals to fully perform all of the watering required in Subsection 301, A. The capacity and adequacy of such equipment shall be determined on the basis of supplying approximately 20 gallons of water per large tree, ten gallons per small tree, five gallons per shrub and two and one-half gallons per vine or sumac plant for each of the required watering. A source of water capable of supplying the above amounts shall be available.

O. Stone Mulch

1. Stone for landscape and beds to be naturally rounded and washed, graduation from 1" to 1-1/2" maximum, River Stone or Mississippi Pebble

2. Color to be selected by owner.

PART 3 – EXECUTION

3.1 PREPARATION

A. Planting

1. All planting of BR, B&B, BRP, B&P, CG, and MT plants, unless otherwise directed, shall be performed in accordance with the method herein provided. Insofar as practicable, BR plants shall be protected against drying by keeping the roots covered with a canvas or other suitable covering until planted.

2. The soil in the bottom of the hole which has been excavated to the prescribed requirements shall be loosened to a depth of three inches and mixed with an equal amount of topsoil. A mound of soil shall be formed in the center of the hole to support the roots or ball of the plant. The plant shall be placed on the mound of soil and held in a vertical position. The roots of BR plants, pruned as required, shall be spread out to their approximate natural position. B&B plants shall be placed in their wrapped ball, and shall be moved and handled only by the ball. The plant shall be so set, by adjusting the elevation of the mound that after settlement the plant will stand approximately the same depth it stood in the nursery or field.

3. Unless otherwise specified, the plant hole shall be backfilled with topsoil to which compost has been added at the ratio of six (6) parts soil to 1 (1) part compost by volume. The soil compost mixture shall be placed in layers around the roots or ball. Each layer shall be carefully tamped in place in a manner to avoid injury to the roots or ball disturbing the position of the plant. When approximately 2/3rds of the plant hole has been backfilled, the hole shall be filled with water and the soil allowed to settle around the roots. B&B plants shall have the burlap cut away or folded back from the top of the ball before applying the water. After the water has been absorbed, the plant hole shall be filled with topsoil and tamped lightly to grade. Any settlement shall be brought to grade with topsoil. Unless otherwise directed or specified, a shallow rain cup or rain basis shall be formed in the completed backfill by shaping the soil around the plant.

4. The holes made for MT plants shall be filled to about ½ the hole depth with a slurry made from a 1:1 mixture of water and compost by volume. The slurry shall be placed in the hole just prior to placing the tree in the hole. Any voids remaining when the machine is removed shall be backfilled with topsoil.

5. After the plantings have been in place at least two (2) days, but not more than five (5), an inspection of such plantings shall be made. Plant depths and plumbness shall be adjusted as necessary and any additional required backfill shall be placed. All plants being inspected shall be thoroughly watered during the inspection period.

B. Fertilizing

1. Fertilizer for Potting Mixtures

a) Fertilizers for potting mixtures shall be incorporated in the mixtures at the rate of four (4) pounds of fertilizer per cubic yard of mixture so that the fertilizer is uniformly distributed.

2. Fertilizer for Plant Holes

a) The number of packets specified on the plans to be placed in each plant hole shall be uniformly spaced around the outside of the plant hole during the backfill operation. The packets shall be placed as shown on the planting detail sheet after the backfilling is partially completed. They shall be at least six (6) inches below the final grade of the backfill material

b) If specified for MT plants, the packets shall be equally spaced around the hole by placing in niches dug into the plant hole wall from 9” to 18” below the soil surface.

C. Mulching

1. Mulch, when specified, shall be placed over the backfilled plant hole or plant bed within the specified area to a depth of approximately three (3) inches after any necessary backfilling, adjustment, and watering has been performed, unless otherwise specified.

D. Wrapping

1. When specified to be wrapped, the trunks of trees shall be wrapped with wrapping material overlapping one and one-half (1 ½) inches, wound from the ground line to the lowest main branches. The wrapping shall be securely tied in at least three places, including the top, middle and bottom. The wrapping shall be done as soon as practical after planting.

E. Rodent Protection

1. When required, a rodent protective material shall be applied to the plants. This is appropriate on Birch species.

F. Bracing

1. When specified, trees shall be braced with a stake driven into the ground near the base of the tree to a depth of two (2) to three (3) feet, or until sufficiently solid to support the tree, and shall extend upward to about six (6) inches below the lowest main branches. The tree shall be fastened to the stake by a means of a soft rope, strap, or a wire enclosed in a hose in such a manner as to avoid injury to the tree.

G. Guying

1. When specified, trees shall be guyed with three (3) wires whose upper ends encircle the tree trunk, just above the lowest main branches of deciduous trees and at a point above the ground line of 2/3rds the height of evergreen trees. The lower ends shall be anchored to stakes set in the ground around the tree, equal distance apart and at a distance from the tree of approximately 3/4ths the distance from the ground to the upper point of fastening. The anchor stakes shall be notched to prevent slipping of the wire and shall be driven into the ground at a slight angle away from the tree to a depth of 18” or more until solid, and shall extend for three (3) inches above the ground.

2. Each wire where it encircles the tree shall be enclosed in a hose of sufficient length to clear the trunk six (6) inches at the ends. The wires shall be drawn taut to equal tension by means of twisting or use of turnbuckles, and securely fastened, with the trunk of the tree remaining in a vertical position.

H. Disposal of Excess and Waste Material

1. All excess excavation, waste materials, or other debris shall be removed and disposed of by the CONTRACTOR.

3.2 INSTALLATION

A. General

1. The normal spring planting season for all plants except those handled BRP shall extend to June 1. Unless otherwise approved, BRP plants shall not be planted at the designated locations on the project site after June 1st to August 15th. The normal fall planting season for all plants, except evergreens, shall begin on October 1st. Fall evergreen planting shall be done between September 1

and October 1. Unless otherwise approved, planting shall not be done when the ground is frozen or when the soil is in an unsatisfactory condition for planting. Planting shall not be done when the temperature is below freezing unless plant roots are satisfactorily protected to prevent damage.

B. Delivery and Temporary Storage

1. At least three (3) days prior to each delivery of plant material to the potting, storing, or project site, the CONTRACTOR shall notify the A/E of such contemplated delivery.

2. In so far as practicable, plant stock shall be planted on the day of delivery at the project site. In the event this is not possible, the plant stock shall be temporarily stored by "heeling-in" or by placing in a well ventilated, cool, moist storage place and shall be adequately protected against drying by the use of moist sphagnum moss, straw, or other suitable covering around the roots of BR stock and the balls of B&B stock.

3. Plants growing in pots or containers shall be spaced to provide for air circulation and reasonably unrestricted top spread. Potted and container grown plants shall be cared for and watered as necessary to keep them in a healthy growing condition while in storage.

4. Bare root plants, when "heeled-in", shall be placed in a spade depth trench, have their roots fully covered with damp topsoil and be protected from the sun and wind. When "heeled-in" all plants shall be properly cared for by the CONTRACTOR. Plants shall not remain "heeled-in" from one planting season until the next.

C. Excavation of Plant Holes

1. The plant holes shall be centered at the location stake, unless otherwise permitted by the A/E.

2. The plant holes, except for MT stock, shall be excavated to the minimum dimensions shown on the plans or established by the A/E, provided, however, that the plant hole shall be large enough to permit placing at least six (6) inches of backfill material around and at least two (2) inches beneath the root system of BR stock and the pots, balls or containers of BRP, B&B, B&P and CG stock. When a minimum size hole is excavated, the hole shall be excavated cylindrical in shape with vertical sides and a flat or saucer-shaped bottom.

3. Unless soil conditions make it impractical, planting holes for MT plants shall be dug by the tree moving machine and shall be approximately the same size and shape as the soil mass containing the root system of the machine moved plant.

4. The sod and topsoil suitable for backfilling shall be kept separate from the excavated subsoil.

5. When planting on a slope, the minimum depth of the plant hole shall be measured from the downward side of the slope at the hole.

6. In the event it is necessary to suspend planting operations until the following planting season, any open plant holes shall be backfilled before suspending the work.

D. Pruning

1. The bruised or broken parts of large or fleshy roots shall be cut off smoothly before planting or potting. The tops of deciduous plants shall be pruned either before or at the time of planting or potting. Unless otherwise specified or directed by the A/E, for deciduous BR stock this shall consist of removing 1/3 to ½ of the top by thinning out and heading back the stems and top branches; and for deciduous B&B, B&P and CG stock, this shall consist of removing dead and broken branches and thinning and heading back the stems and branches to compensate for root

loss and to shape the plant. The pruning shall be done so that the plant retains its natural form. Except when heading back, all cuts shall be made outside of the branch bark ridge. Evergreen plants shall not be pruned except to remove dead or broken branches. All cut surfaces of one (1) inch or more in diameter shall be painted with a tree wound dressing.

E. Anti-Desiccant

1. Anti-desiccant, when specified, shall be applied to evergreen plants prior to or at the time of planting and to BRP plants prior to shipment from the storage place. It shall be applied to plants to be transplanted prior to transplanting. The rate and method of application of the emulsion shall be according to the manufacturer's recommendations.

END OF DOCUMENT 32 93 00

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DOCUMENT 33 11 00 - WATER DISTRIBUTION

PART 1 - GENERAL

1.1 WORK INCLUDED

A. Connection to water main at location shown on plans.

B. Installation of water lateral at location shown on plans.

C. Trenching and backfilling required for work of this section.

D. Furnish and install water lateral, pipe, valves, and appurtenances for water supply from the water main location to within 5 feet of building.

E. Coordinate with the Municipality prior to making connection of service to water main.

1.2 REFERENCE

A. Standard Specifications for Sewer and Water Construction in Wisconsin, 6th Edition, Public Works Industry Improvement Program, 2835 North Mayfair Road, Milwaukee, WI 53227.

B. AWWA - American Water Works Association Standards.

C. State of Wisconsin Administrative Code, Chapters SPS 382 and SPS 384.

PART 2 – PRODUCTS

2.1 WATER PIPE

A. Ductile Iron meeting the requirements of AWWA C115 and AWWA C151.

B. Polyvinyl Chloride (PVC) tubing meeting the requirements of ASTM D2241 or AWWA C900.

C. High Density Polyethylene (HDPE) tubing meeting the requirements of AWWA C901.

2.2 WATER MAIN FITTINGS

A. Ductile Iron pipe fitting shall meet the requirements of AWWA C110, AWWA C153, and ANSI B16.42.

B. Polyvinyl Chloride (PVC) fittings shall conform to the Wisconsin Department of Safety and Professional Services Administrative Code section 384.30(5)(a).

C. High Density Polyethylene (HDPE) fitting shall meet the requirements of either ASTM D2609, ASTM D2683, or ASTM D3261.

2.3 GATE VALVES

A. Kennedy Valve, Waterous, Mueller or equal.

B. Gate valves shall meet the requirements of Chapter 8.27.0 of Standard Specifications for Sewer and Water Construction.

C. Epoxy lined per AWWA C550.

2.4 CAST IRON VALVE BOXES

A. Valve boxes shall be Mueller H-10357 or equal with a no tilt drop cover marked "Water" and of the length required for the depth of cover shown on the plans. Valve boxes shall be supported on gate valve adaptors as manufactured by Adaptor, Inc. or approved equal.

B. Cast iron valve boxes shall meet requirements of Chapter 8.29.0 of the Standard Specifications for Sewer and Water Construction. CONTRACTOR will furnish extension if required to meet existing surface or finished grades.

2.5 CONCRETE BUTTRESSES

A. Ready-mixed concrete shall be used.

B. Concrete shall have following characteristics:

Buttresses	
28 day Compressive Strength	2000
Maximum Slump	5"
Air-Entrainment by Volume	4%-7%
Minimum Cement Content	4 bags
Maximum Aggregate	3/4"

2.6 DETECTABLE PIPE WARNING WIRE

A. 18 gauge wire with 0.015" thick vinyl insulation, insulation color blue.

B. Moisture, oil and gasoline resistant.

C. Splices either solder or brass clamp wrapped with electrical tape or shrink wrapped.

D. Exterior access locations shall include a means of protecting the tracer wire.

PART 3 – EXECUTION

3.1 EXAMINATION

A. Before installation, inspect pipe for defects and cracks. Do not use defective, damaged, or unsound pipe.

3.2 INSTALLATION

A. Runs shall be as close as possible to those shown on drawings.

B. Excavate to required depth.

C. Bottom of trenches shall be hard. Tamp as required.

D. Remove debris from trench prior to laying of pipe.

E. Excavate trenches so the top of pipe will have a minimum cover of 7’ from the top of pipe to the proposed finished grades.

F. Trench shall be backfilled every day. No open trench except at the start of next day’s work will be allowed to remain open overnight. Backfill material shall be installed to shed water. Excavations required to be left open overnight shall be enclosed with snow fence. Barricades with flashing lights shall be placed around fence.

3.3 GATE VALVE AND VALVE BOX INSTALLATION

A. Provide sufficient quantities of crushed stone or rock conforming to the requirements of ASTM C33, Gradation No. 2 over and around the valve to prevent sand blockages of valve bonnet and box.

3.4 PIPE RESTRAINT

A. Concrete buttresses shall meet requirements of Article 4.3.13 of Standard Specification for Sewer and Water Construction, except as modified herein. Water main joints shall be kept free of concrete.

3.5 SEPARATION FROM WATER PIPE

A. When water mains cross over sewers, provide a minimum of 12 inches from the bottom of the water main to the top of the sewer.

B. When water mains cross under sewers, provide a minimum of 18 inches from the top of the water main to the bottom of the sewer.

3.6 FIELD QUALITY CONTROL

A. Test waterman, including valves, in accordance with Section 4.15.0 of the Standard Specifications.

B. Flush and disinfect water system in accordance with Section 382.40(8)(i) of the State of Wisconsin Administrative Code.

END OF DOCUMENT 33 11 00

DOCUMENT 33 31 00 - SANITARY SEWER SYSTEMS

PART 1 – GENERAL

1.1 WORK INCLUDED

A. Connection to Sanitary Sewer Main.

B. Installation of Sanitary Sewer Service.

C. Trenching and backfilling required for sanitary sewer installation.

D. Furnish and install piping for sanitary sewer, building sewer service, appurtenances and bedding from public main to within 5 feet of building.

1.2 REFERENCE

A. Standard Specifications for Sewer and Water Construction in Wisconsin, 6th Edition, Public Works Industry Improvement Program, 2835 North Mayfair Road, Milwaukee, WI 53227.

B. AWWA - American Water Works Association Standards.

C. State of Wisconsin Administrative Code, Chapters SPS 382 and SPS 384.

PART 2 – PRODUCTS

2.1 SANITARY SEWER PIPE

A. Polyvinyl Chloride Pipe (PVC), SDR-35 PVC, meeting the requirements of ASTM D3034, and push-on joints with elastomeric gaskets meeting the requirements of ASTM D3212. Do not mix different manufacturer's products, or fittings.

2.2 PVC SEWER PIPE BEDDING

A. PVC sewer pipe bedding shall meet requirements of Table 34, Article 8.43.2 of Standard Specifications for Sewer and Water Construction.

2.3 TRACER WIRE

A. 18 gauge wire with 0.015 inch thick vinyl insulation, insulation color green.

B. Moisture, oil and gasoline resistant.

C. Splices either solder or brass clamp wrapped with electrical tape or shrink-wrapped.

D. Exterior access locations shall include a means of protecting the tracer wire.

2.4 PIPE INSULATION

A. Rigid closed-cell extruded polystyrene insulation suitable for buried insulation.

B. Insulation shall have a minimum thickness of 2.5 inches.

C. Insulation shall be installed as detailed in construction documents and in location shown on construction documents.

PART 3 – EXECUTION

3.1 EXAMINATION

A. PVC pipe installation shall meet requirements of Chapter 3.2.0 of Standard Specifications for Sewer and Water Construction.

3.2 TRACER WIRE

A. Install warning wire along full length of all non-metallic pipes.

B. Tracer wire shall be located directly above and within 6 inches of the non-metallic pipe.

3.3 SEPARATION FROM WATER MAIN

A. Sanitary sewer mains shall be placed at least 8 feet horizontally (center to center) from any existing or proposed water main. If, due to ledge rock conditions or physical barriers, the Project Manager determines that the 8-foot horizontal separation cannot be maintained, the horizontal separation may be reduced to a minimum of 3 feet if the bottom of the water main is at least 18 inches above the top of the sewer.

B. When sanitary sewer mains cross under water mains, provide a minimum separation of 12 inches from the bottom of the water main to the top of the sewer. When sanitary sewer mains cross over water mains, provide a minimum of 18 inches from the bottom of the sewer to the top of the water main.

3.4 AS-BUILT PLAN

A. Contractor shall provide an “As-Built” plan with all measurements to the nearest 0.01 foot at no cost to the OWNER or ARCHITECT.

3.5 FIELD QUALITY CONTROL

A. Testing and Inspection:

1. Test sanitary sewer in accordance with State of Wisconsin Administrative Codes Section SPS 382.21.

2. Tracer Wire Conductivity:

a. After completion of non-metallic sewer construction, the Contractor shall furnish a locator and using a low voltage circuit, test the entire trace wire system in the presence of the Architect or Engineer.

b. The test shall consist of a continuous above ground trace of the non-metallic sewer system, areas failing the location test shall be corrected at no additional cost to the Owner.

END OF DOCUMENT 33 31 00

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SECTION 33 41 00 – STORM UTILITY DRAINAGE PIPING

PART 1 – GENERAL

1.1 WORK INCLUDED

A. The CONTRACTOR shall provide all materials, labor, equipment and services necessary for the completion of the work specified in this section.

B. Installation of storm sewer pipe, inlet structures, flat panel underdrain.

1.2 REFERENCES

A. 6th Edition of Standard Specifications for Sewer and Water Construction in Wisconsin, Public Works Industry Improvement Program, 2835 North Mayfair Road, Milwaukee, WI 53223.

B. Standard Specifications for Highway and Structure Construction, Latest Edition, State of Wisconsin, Department of Transportation, Division of Highways.

C. Wisconsin Department of Safety and Professional Services (DSPS), Wisconsin Plumbing Products Register, latest edition.

PART 2 – PRODUCTS

2.1 STORM SEWER PIPE AND CULVERT

A. Storm sewer pipe with diameters greater than 10" may use any of the pipe materials below unless specifically identified on the plan.
   1. Polyvinyl Chloride (PVC) pipe conforming to ASTM D3034. Pipes over 15" in diameter shale meet the requirements of ASTM F679. Do not mix different manufacturer's products or fittings.
   2. Corrugated Wall High-density Polyethylene (HDPE) pipe with diameters 12"-36", shall meet the requirements of ASTM F2306, AASHTO M-294, Type S. Joints for fittings and pipe shall be soil-tight bell and spigot, provided with rubber gasket. Rubber gasket shall be installed by the pipe manufacturer.
   3. Reinforced concrete pipe (RCP)

B. Perforated underdrain storm sewer pipe utilizing High-density Polyethylene (HDPE) pipe conforming to AASHTO M252, type CP. Underdrain shall be wrapped with a geotextile fabric of knitted, or non-woven fibers of polyester, polypropylene, stabilized nylon, polyethylene, or polyvinylidene chloride. Do not use slit film woven fabrics. Fabric shall have a minimum grab tensile strength of 35 lb (ASTM D-46320), an apparent opening size No. 30-200 (ASTM D-4751), and a minimum permttivity of 1.35 s^{-1}.

2.2 STORM SEWER ENDWALL

A. All Endwalls/Outfalls shall be Reinforced Concrete Pipe (RCP).

2.3 PIPE BEDDING

A. Pipe bedding shall conform to Section 312000 Earthmoving, 2.1.D Stone Bedding.
B. Use bedding material of 3/8" crushed stone chips with the following gradation:

Sieve Size	Percent Passing
1/2-inch	100%
3/8-inch	90-100%
No. 8	0-15%
No. 30	0-3%

2.4 INLET AND MANHOLE STRUCTURES

A. Concrete inlet structures shall conform to details in the plan and materials shall meet the requirements of Section 611.2 of the Standard Specifications for Highway and Structure Construction, Latest Edition.

2.5 CONCRETE MANHOLE CASTINGS AND GRATES

A. Neenah Foundary Casting and Grates or approved equalivalent shall be provided as specified in the construction documents for all concrete catch basins, manholes, and inlet structures.

2.6 MODULAR DRAIN INLETS

1. Modular inlets shall be as manufactured by Nyloplast (Advanced Drainage systems), or approved equal.

2. Basin size, pipe connection size alignment and invert as shown on drawings.

3. Grates shall be furnished by basin manufacturer and shall be considered an integral part of the surface drainage inlet. Manufacturer of cast iron grates shall conform to ASTM A-48- 83 Class 30B.

4. Modular inlets shall be manufactured from PVC pipe stock, utilizing a thermo-molding process to reform the pipe stock to the furnished configuration.

5. The joint tightness shall conform to ASTM 3212. Modular inlets shall meet the mechanical property requirements for fabricated fittings as described in ASTM F794, F949 and F1336.

2.7 FLAT PANEL UNDERDRAIN

1. Flat panel underdrain manufactured with the minimum following properties

- Physical and Mechanical Properties
  - Nominal Pipe length, min 12”
  - Slot depth 1.0 inches
  - Flow rate 17 gpm/ft
  - Compression Strength 3000 psi

- Geotextile Wrap
  - GrabTensile Strength 100 lbs
  - Grab Elongation (%) 50
  - Trapezoidal Tear 40 lbs
  - Puncture 30 lbs
  - Permittivity 0.7
  - Flow rate 100 gpm/sq ft
  - AOS (sieve size) 60
  - UV Resistance 70

2. All flat panel underdrain shall be made of polyethylene with minimum Cell classification of 424420C as per ASTM D3350

3. Subsurface drain system should shall have outlet pipes of type, size and dimensions in accordance with specifications and plans. The drain shall consist of geotextile filter fabric bonded to an internal high density core. The drain should be lightweight, flexible, and sufficiently durable to withstand automated and manual installation procedures.

Manufacturer: ADS AdvanEDGE or Multi-Flow Systems (Varicore Technologies)

2.8 PIPE BEDDING

A. Pipe bedding shall conform to Section 312000 Earthmoving, 2.1.E Stone Bedding.

2.9 CONNECTIONS

A. Connections between pipes shall be made by using fittings furnished by the manufacturer of the pipe and designed specifically for that purpose.

2.10 TRACER WIRE

A. A plastic coated brown #10 AWG solid copper wire shall be installed with all plastic pipe. The wire shall be uniformly attached to the top of the pipe a minimum of three (3) times for each pipe length.
B. Splices either solder or brass clamp wrapped with electrical tape or shrink-wrapped.
C. Exterior access locations shall include a means of protecting the tracer wire.

PART 3 – EXECUTION

3.1 INSTALLATION

A. Install storm sewer pipe in accordance with the Standard Specifications for Highway and Structure Construction, Latest Edition subsection 607.3 and supplemented as follows:

B. Trench width shall be in accordance with ASTM Designation D2321 for the standard practice for Underground Installation of Flexible Thermoplastic Sewer Pipe. Minimum width of trench shall be not less than the greater of either the pipe outside diameter plus 16 inches or the pipe outside diameter times 1.25 plus 12 inches.

C. Joints for storm sewer pipe shall be sealed to 10 psi.

3.2 STORM SEWER OUTFALL

A. Construct storm sewer outfall in accordance with Wisconsin Department of Transportation Standard Specifications for Highway and Structure Construction, Latest Edition.

3.3 CLEANING CULVERTS AND STORM PIPES

A. CONTRACTOR shall remove all silt and debris accumulated in the culverts and storm sewer pipe, including pipe, inlets and outlets of the system. This work shall be performed after the completion of paving and after all turf areas have an established sufficient growth of grass to prevent sediment runoff.

3.4 SEPARATION FROM WATER MAIN

A. Storm sewer mains shall be placed at least 8 feet horizontally (center to center) from any existing or proposed water main. If, due to ledge rock conditions or physical barriers, the Project Manger determines that the 8-foot horizontal separation cannot be maintained, the horizontal separation may be reduced to a minimum of 3 feet if the bottom of the water main is at least 18 inches above the top of the sewer.

B. When storm sewer mains cross under water mains, provide a minimum separation of 12 inches from the bottom of the water main to the top of the sewer. When storm sewer mains, provide a minimum of 18 inches from the bottom off the sewer to the top of the water main.

C. If an existing water main is encountered while laying the storm sewer and it is impossible to obtain the proper vertical separation, immediately inform the Project Manager and reconstruct the water main for a minimum distance of 8 feet on either side of the storm sewer to permit centering one full length of water main under the storm sewer.

END OF DOCUMENT 33 41 00

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures.** Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Universal Transverse Mercator (UTM) zone 16. The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or UTM zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum.** For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov/ or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC- 3, #9202
1315 East- West Highway
Silver Spring, MD 20910- 3282

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713- 3242**, or visit its website at http://www.ngs.noaa.gov/.

Base map information shown on this FIRM was provided in digital format by the Green County Land Information Office. This information was derived from 2005 digital orthophotography produced at a resolution of 18 inches.

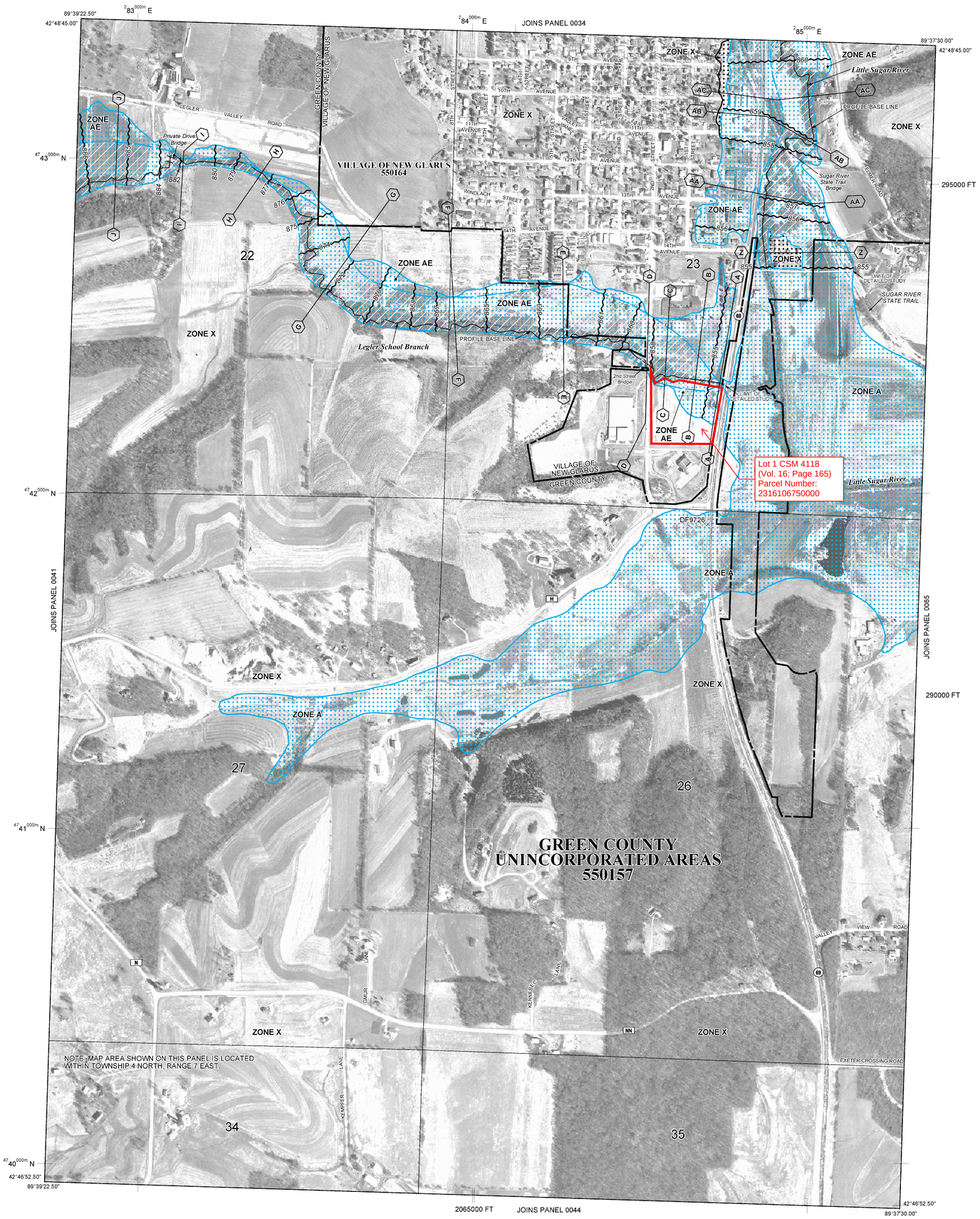
This map reflects more detailed and up- to- date **stream channel configurations** than those shown on the previous FIRM for this jurisdiction. The floodplains and floodways that were transferred from the previous FIRM may have been adjusted to conform to these new stream channel configurations. As a result, the Flood Profiles and Floodway Data tables *in the Flood Insurance Study report (which contains authoritative hydraulic data)* may reflect stream channel distances that differ from what is shown on this map.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de- annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1- 800- 358- 9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, *a Flood Insurance Study report*, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1- 800- 358- 9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1- 877- FEMA MAP** (1- 877- 336- 2627) or visit the FEMA website at http://www.fema.gov/.



LEGEND

SPECIAL FLOOD HAZARD AREAS (SFHAs) SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual chance flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X	Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X	Areas determined to be outside the 0.2% annual chance floodplain.
ZONE D	Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

- 1% annual chance floodplain boundary
- 0.2% annual chance floodplain boundary
- Floodway boundary
- Zone D boundary
- CBRS and OPA boundary
- Boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
- 513 — Base Flood Elevation line and value; elevation in feet*
- (EL 987) — Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988 (NAVD 88)

- A — A — Cross section line
- 23 — 23 — Transect line
- 97°07'30", 32°22'30" — Geographic coordinates referenced to the North American Datum of 1983 (NAD 83)
- 4275000mN — 1000-meter Universal Transverse Mercator grid ticks, zone 16
- 6000000 FT — 5000-foot grid ticks: Wisconsin State Plane coordinate system, south zone (FIPSZONE 4803), Lambert Conformal Conic
- DX5510 — Bench mark (see explanation in Notes to Users section of this FIRM panel)
- M1.5 — River Mile

MAP REPOSITORIES
Refer to Map Repositories list on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
May 18, 2009
EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your insurance agent or call the National Flood Insurance Program at 1- 800- 638- 6620.

MAP SCALE 1" = 500'
250 0 500 1000 FEET
150 0 150 300 METERS

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0042G

FIRM
FLOOD INSURANCE RATE MAP
GREEN COUNTY, WISCONSIN
AND INCORPORATED AREAS

PANEL 42 OF 375
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)
CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
GREEN COUNTY	550157	0042	G
NEW GLARUS, VILLAGE OF	550164	0042	G

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
55045C0042G

EFFECTIVE DATE
MAY 18, 2009

Federal Emergency Management Agency

Assured Wetland Delineation Report

Blanchardville Coop Oil & NGSD Parcels

Village of New Glarus, Green County, Wisconsin

January 2, 2021

Project Number: 20200316

506 Springdale Street | Mount Horeb, WI 53572 | www.heartlandecological.com

Blanchardville Coop Oil & NGSD Parcels

Village of New Glarus, Green County, Wisconsin

January 2, 2021

Prepared for:

Mr. Gary Steinmetz

Blanchardville Coop

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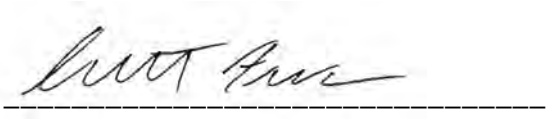
Prepared by: Eric C. Parker



Reviewed by: Scott Fuchs

Solutions for people, projects, and ecological resources.

Table of Contents

1.0 Introduction

Heartland Ecological Group, Inc. ("Heartland") completed an assured wetland determination and delineation at the Blanchardville Coop Oil & New Glarus School District Parcels site on May 20th, 2020 at the request of Blanchardville Coop. Fieldwork was completed by Eric C. Parker, PWS, an assured delineator qualified via the Wisconsin Department of Natural Resources' (WDNR's) Wetland Delineation Assurance Program (Appendix E, Qualifications). The 32.86-acre site (the "Study Area") is between State Trunk Highway (STH) 69 and 2nd Street, and south of 14th Avenue, in the southwest quarter of Section 23, T4N, R7E, Village of New Glarus, Green County, WI (Figure 1, Appendix A). The purpose of the wetland delineation was to determine the location and extent of wetlands within the Study Area.

Three (3) wetland areas totaling approximately 1.94 acres were delineated and mapped within the Study Area (Figure 6, Appendix A). One (1) wetland may be non-adjacent to other wetlands or waters of the United States. The Legler School Branch is a water of the United States that flows across the central portion of the Study Area from west to east and is entirely within a delineated wetland. The Legler School Branch, which also appears to be navigable by State of Wisconsin standards, also has a system of excavated ditches that drain into it.

Wetlands and waterways discussed in this report may be subject to federal regulation under the jurisdiction of the U.S. Army Corps of Engineers (USACE), state regulation under the jurisdiction of the WDNR, and local zoning authorities. Heartland recommends this report be submitted to local authorities, the WDNR, and USACE for final jurisdictional review and concurrence.

2.0 Methods

2.1 Wetlands

Wetlands were determined and delineated using the criteria and methods described in the USACE Wetlands Delineation Manual, T.R. Y-87-1 ("1987 Corps Manual") and the applicable *Regional Supplement to the Corps of Engineers Wetland Delineation Manual*. In addition, the *Guidance for Submittal of Delineation Reports to the St. Paul District USACE and the WDNR* (WDNR, 2015) was followed in completing the wetland delineation and report.

Determinations and delineations utilized available resources including the U.S. Geological Survey's (USGS) *WI 7.5 Minute Series (Topographic) Map* (Figure 2, Appendix A), the Natural Resource Conservation Service's (NRCS) Soil Survey Geographic Database (SSURGO), U.S. Department of Agriculture's (USDA) *Web Soil Survey* (Figure 3, Appendix A), the Wisconsin Department of Natural Resources' *Surface Water Data Viewer's* wetland indicator data layer (Figure 4, Appendix A), the WDNR's *Wisconsin Wetland Inventory* data layer (Figure 5, Appendix A), and aerial imagery available through the USDA Farm Service Agency's National Agriculture Imagery Program (NAIP). The USGS *National Hydrography Dataset* is included on Figures 2 and 5, Appendix A.

Wetland determinations were completed on-site at sample points, often along transects, using the three (3) criteria (vegetation, soil, and hydrology) approach per the 1987 Corps Manual and the Regional Supplement. Procedures in these sources were followed to demonstrate that, under normal circumstances, wetlands were present or not present based on a predominance of hydrophytic vegetation, hydric soils, and wetland hydrology.

Recent weather conditions influence the visibility or presence of certain wetland hydrology indicators. An assessment of recent precipitation patterns helps to determine if climatic/hydrologic conditions were typical when the field investigation was completed. Therefore, a review of the antecedent precipitation in the three (3) months leading up to the field investigation was completed. Using a WETS analysis developed by the NRCS, the amounts of precipitation in these three (3) months were compared to averages and standard deviation thresholds over the past 30 years to generally represent if conditions encountered during the investigation were normal, wet, or dry. Recent precipitation events in the week prior to the investigation were considered while interpreting wetland hydrology

indicators. In some cases, the Palmer Drought Index was checked for long-term drought or moist conditions (NOAA, 2018).

The uppermost wetland boundary and sample points were identified and marked with wetland flagging and located with a Global Positioning System (GPS) capable of sub-meter accuracy. The GPS data was then used to map the wetlands using ESRI ArcMap™ 10.6 software.

3.0 Results and Discussion

3.1 Desktop Review

Climatic Conditions

According to the WETS analysis using the previous three (3) months of precipitation data, conditions encountered at the time of the fieldwork were expected to be in the normal range for the time of year (Appendix B). However, in the past two (2) weeks prior to fieldwork, precipitation has been above normal and site conditions appeared to be in the wetter than normal range for the time of year. The Palmer Drought Index was checked on line and the long-term conditions at the time of the fieldwork were in the extremely moist range. Fieldwork was completed outside the dry-season based on long-term regional hydrology data utilized in the WebWIMP Climatic Water Balance web site.

General Topography and Land Use

The topography within the Study Area was mostly flat, with subtle depressions, swales, and ridges present. The Study Area had undergone historic grading in the past, likely for when the school property was developed into its current configuration, which includes recreational fields. Topographic highs of approximately 874 feet above mean sea level (msl) are present in the northwest corner of the Study Area, and topographic lows of approximately 852 feet above msl are present along Legler School Branch in the east-central portion of the Study Area (Figures 2 and 6, Appendix A). Land uses within the Study Area consisted of a school property dominated by regularly mowed turf grass that comprises the athletic fields, parking areas, buildings, and roads. A large portion of the Study Area likely has previously been graded based on aerial imagery (NAIP imagery, Appendix F). Surrounding areas are primarily industrial-commercial facilities-buildings, additional school properties, and

residential properties. General drainage is toward the Legler School Branch, which flows to the east out of the Study Area. The Legler School Branch is a tributary to the Little Sugar River.

Soil Mapping

Soils mapped by the NRCS Soil Survey within the Study Area and their hydric status are summarized in Table 1. Wetlands identified during the field investigation are located in areas mapped as both partially hydric and non-hydric soils including wetland indicator soils (Figures 3 and 4, Appendix A).

Table 1. Summary of NRCS Mapped Soils within the Study Area

Soil symbol: Soil Unit Name	Soil Unit Component	Soil Unit Component Percentage	Landform	Hydric status
An: Arenzville silt loam, 0-3% slopes, occasionally flooded	Arenzville-Occasionally flooded	90-99	Drainageways, flood plains	No
	Orion-Occassionally flooded	1-5	Flood plains, drainageways	No
	Ettrick-Frequently flooded	0-5	Depressions on flood plains	Yes
ChB: Chaseburg silt loam, moderately well drained, 2-6% slopes	Chaseburg-Occassionally flooded	80-98	Drainageways, flood plains	No
	Orion-Occassionally flooded	1-10	Flood plains	No
	Arenzville-Occassionally flooded	1-10	Drainageways, flood plains	No
GaB2: Gale silt loam, 2-6% slopes, moderately eroded	Gale-Moderately eroded	80-100	Ridges	No
	Elevasil	0-10	Ridges	No
	Pepin-Moderately eroded	0-10	Ridges	No
GaC2: Gale silt loam, 6-12% slopes, moderately eroded	Gale-Moderately eroded	80-100	Ridges	No
	Elevasil-Moderately eroded	0-10	Ridges	No
	Pepin-Moderately eroded	0-10	Ridges	No

Soil symbol: Soil Unit Name	Soil Unit Component	Soil Unit Component Percentage	Landform	Hydric status
HmC2: Hixton loam, 6-12% slopes, moderately eroded	Hixton	100	Ridges	No
OnA: Orion silt loam, 0-3% slopes, occasionally flooded	Orion-Occasionally flooded	80-95	Flood plains, drainageways	No
	Arenzville-Occassionally flooded	3-10	Drainageways, flood plains	No
	Ettrick-Frequently flooded	1-5	Depressions on flood plains	Yes
	Bearpen-Rarely flooded	1-5	Flood plains	No
Ou: Otter silt loam, frequently flooded	Otter	100	Depressions on flood plains	Yes

Wetland Mapping

The Wisconsin Wetlands Inventory (WWI) mapping (Figure 5, Appendix A) depicts one wetland in the central portion of the Study Area. This wetland is identified as a complex of emergent and forested wetlands (E1K and T3K). The Legler School Branch waterway is depicted traversing the central portion of the Study Area.

Previous Delineations

Wetland flagging from a previous delineation was observed along Legler School Branch in the central portion of the Study Area, which were approximately in the same location as Heartland's delineated wetland boundaries. No other wetland delineations are known to have been completed in the Study Area.

Aerial Photography

The NAIP imagery from 2005 through 2018 (Appendix F) were reviewed to assist in understanding the recent history of the Study Area and to evaluate for general wetland signatures. This imagery showed the Study Area was used as farmland up until approximately 2010 in the portion of the Study Area south of Legler School Branch. After farming ceased, the 2013 aerial image shows trees and brush removed along the Legler

School Branch and grading for a parking area on the western side of the recently abandoned farm field.

3.2 Field Review

Three (3) wetland areas were identified and delineated within the Study Area based on both the field investigation and desktop review, which included a review of aerial imagery. Based on site observations and soil profiles, most of the delineated wetland areas appear to be significantly affected by past grading events associated with the development of the school property.

Wetland determination data sheets (Appendix C) were completed at 17 sample points that were representative of the wetland and upland conditions near the boundary and where potential wetlands may be present based on the desktop review and field reconnaissance. Appendix D provides photographs, typically at the sample point locations of the wetlands and adjacent uplands. The wetland boundary and sample point locations are shown on Figure 6 (Appendix A). Wetlands are summarized in Table 2 and detailed in the following sections.

Table 2. Summary of Wetlands Identified within the Study Area

Wetland ID	Wetland Description	*Surface Water Connections	*NR151 Protective Area	Acreage (on-site)
W-1	Wet Meadow / Shallow Marsh/ Shrub Carr	Direct connection to the Legler School Branch	Moderately susceptible, 50 feet	1.20
W-2	Wet Meadow / Shallow Marsh/ Shrub Carr	Direct connection to the Legler School Branch	Less susceptible, 10-30 feet	0.72
W-3	Wet Meadow	Isolated	Less susceptible, 10-30 feet	0.01
*Classification based on Heartland's professional opinion. Jurisdictional authority of wetland and waterway protective areas under NR 151 lies with the WDNR. Local zoning authorities may have additional restrictions. USACE has authority for determining federal jurisdiction of wetlands and waterways.				**1.94**

Wetland 1 (W-1)

Wetland 1 (W-1) is an approximately 1.20-acre wet meadow (partially maintained as mowed turf), shallow marsh, and shrub carr complex associated with the Legler School Branch in the central portion of the Study Area. Two narrow lobes (a ditch and a swale) feed into W-1 from the north, while a depressional area outlets through a narrow channel into W-1 from the south. W-2 also feeds into W-1 from the north through a culvert.

Along the Legler School Branch portion of W-1, two invasive plant species were observed to be dominant and most prevalent: reed canary grass (*Phalaris arundinacea*, FACW) and narrow-leaved cattail (*Typha angustifolia*, OBL). Other portions were also dominated by reed canary grass, such as the depressional area that outlets into the Legler School Branch from the south. At sample point P13 where mowed turf was being maintained, purslane speedwell (*Veronica peregrina*, FACW) and common spikerush (*Eleocharis palustris*, OBL) were dominant. Most dominant species in W-1 were hydrophytic and met the vegetation parameter.

The Depleted Matrix (F3) hydric soil indicator was observed within W-1 at all the sample points completed. Other hydric soil indicators such as Depleted Below Dark Surface (A11) and Redox Dark Surface (F6) were also observed. Hydric soils were observed to be present throughout W-1.

The primary wetland hydrology indicators of High Water Table (A2) and Saturation (A3) were observed at the sample points completed in W-1. In many areas, Surface Water (A1) was observed. In addition, the secondary hydrology indicators of Geomorphic Position (D2) and a positive FAC-Neutral Test (D5) were met throughout W-1.

Wetland 2 (W-2)

Wetland 2 (W-2) is an approximately 0.72-acre wet meadow, shallow marsh, and shrub carr complex that drains into the Legler School Branch in the east-central portion of the Study Area. Portions of W-2 are excavated (a ditch and a swale), and W-2 is set in an area that appears to have been graded several decades ago when the property was developed. W-2 feeds into W-1 through a culvert.

As in W-1, W-2 was mostly dominated by reed canary grass and narrow-leaved cattail. Portions of W-2 were also conspicuously dominated by sandbar willow (*Salix interior*,

FACW). At sample point P7 where mowed turf was being maintained, redtop grass (*Agrostis gigantea*, FACW) was dominant. Most dominant species in W-2 were hydrophytic and met the vegetation parameter.

Various combinations of the Depleted Below Dark Surface (A11), Depleted Matrix (F3), and Redox Dark Surface (F6) hydric soil indicators were observed within W-2 at the sample points completed. Hydric soils were observed to be present throughout W-2.

The primary wetland hydrology indicators of Surface Water (A1), High Water Table (A2), and Saturation (A3) were observed at numerous points within W-2. At least one (1) of these primary hydrology indiators was observed at each of the sample points completed in W-2. In addition, the secondary indicators of hydrology of Geomorphic Position (D2) and a positive FAC-Neutral Test (D5) were met throughout W-2.

Wetland 3 (W-3)

Wetland 3 (W-3) is a small 0.01 acre disturbed wet meadow ditch-swale on the northern edge of the Study Area that appears to be non-adjacent to other wetlands or Waters of the U.S. Like other wetlands in the Study Area, W-3 is located within a larger area that was graded when the site was developed.

W-3 was dominated by hydrphytic vegetation. Both purslane speedwell and reed canary grass were dominant. Therefore, the hydrophytic vegetation parameter was met.

The Depleted Below Dark Surface (A11), Depleted Matrix (F3), and Redox Dark Surface (F6) hydric soil indicators were observed at the sample point completed within W-3. Therefore the hydric soil parameter was met.

The primary wetland hydrology indicators of Surface Water (A1), High Water Table (A2), and Saturation (A3) were observed at the sample point completed in W-3. Secondary indicators observed were Geomorphic Position (D2) and a positive FAC-Neutral Test (D5). Therefore the wetland hydrology parameter was met in W-3.

3.3 Other Considerations

This report is limited to the identification and delineation of wetlands within the Study Area. Other regulated environmental resources that result in land use restrictions may be present within the Study Area that were not evaluated by Heartland (e.g. navigable waterways, floodplains, cultural resources, and threatened or endangered species).

Wisconsin Act 183 provides exemptions to permitting requirements for certain nonfederal wetlands. Nonfederal wetlands are wetlands that are not subject to federal jurisdiction. Exemptions apply to projects in urban areas with wetland impacts up to 1-acre per parcel. An urban area is defined as an incorporated area; an area within ½ mile of an incorporated area; or an area served by a sewerage system. The determination of federal and nonfederal wetlands MUST be made by the USACE through an Approved Jurisdictional Determination (AJD). This report may be submitted to the USACE to assist with their determination.

Wis. Adm. Code NR 151 ("NR 151") requires that a "protective area" (buffer) be determined from the Ordinary High-Water Mark (OHWM) of lakes, streams and rivers, or at the delineated boundary of wetlands. Per NR 151.12, the protective area width for "less susceptible" wetlands is determined by using 10% of the average wetland width, no less than 10 feet or more than 30 feet. "Moderately susceptible" wetlands, lakes, and perennial and intermittent streams identified on recent mapping require a protective area width of 50 feet. Table 2 above lists the potential wetland buffers per NR 151 for each wetland identified based on Heartland's professional opinion. Please note that jurisdictional authority on wetland and waterway protective areas under NR 151 lies with the WDNR. Local zoning authorities and regional planning organizations may have additional land use restrictions within or adjacent to wetlands.

4.0 Conclusion

Heartland completed an assured wetland determination and delineation at the Blanchardville Coop Oil & New Glarus School District Parcels site on May 20th, 2020 at the request of Blanchardville Coop. Fieldwork was completed by Eric C. Parker, PWS, an assured delineator qualified via the WDNR's Wetland Delineation Assurance Program (Appendix E, Qualifications).

The 32.86-acre Study Area is between STH 69 and 2nd Street, and south of 14th Avenue, in the southwest quarter of Section 23, T4N, R7E, Village of New Glarus, Green County, WI (Figure 1, Appendix A). The purpose of the wetland delineation was to determine the location and extent of wetlands within the Study Area.

Three (3) wetland areas totaling approximately 1.94 acres were delineated and mapped within the Study Area (Figure 6, Appendix A). One (1) wetland may be non-adjacent to other wetlands or waters of the United States. The Legler School Branch is a water of the United States that flows across the central portion of the Study Area from west to east and is entirely within a delineated wetland. The Legler School Branch, which also appears to be navigable by State of Wisconsin standards, also has a system of excavated ditches that drain into it.

Wetlands and waterways discussed in this report may be subject to federal regulation under the jurisdiction of the USACE, state regulation under the jurisdiction of the WDNR, and the local zoning authority. Heartland recommends this report be submitted to the USACE for final jurisdictional review and concurrence. Review by local authorities may be necessary for determination of any applicable zoning and setback restrictions.

Heartland recommends that all applicable regulatory agency reviews and permits are obtained prior to beginning work within the Study Area or within or adjacent to wetlands or waterways. Heartland can assist with evaluating the need for additional environmental reviews, surveys, or regulatory agency coordination in consideration of the proposed activity and land use as requested but is outside of the scope of the wetland delineation.

Experienced and qualified professionals completed the wetland determination and delineation using standard practices and professional judgment. Wetland boundaries may

be affected by conditions present within the Study Area at the time of the fieldwork. All final decisions on wetlands and their boundaries are made by the USACE, the WDNR, and/or sometimes a local unit of government. Wetland determination and boundary reviews by regulatory agencies may result in modifications to the findings presented to the Client. These modifications may result from varying conditions between the time the wetland delineation was completed and the time of the review. Factors that may influence the findings may include but not limited to precipitation patterns, drainage modifications, changes or modification to vegetation, and the time of year.

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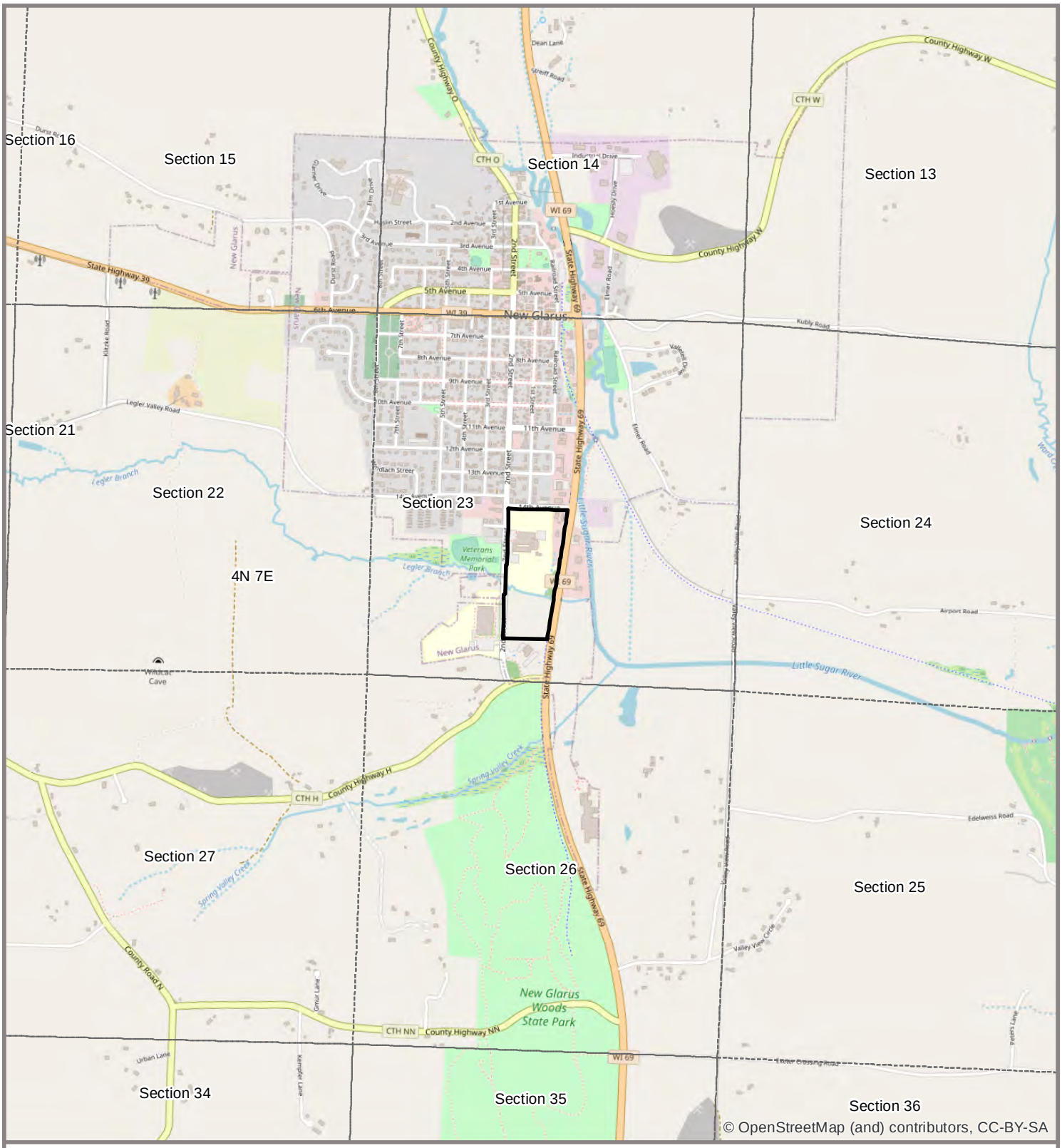
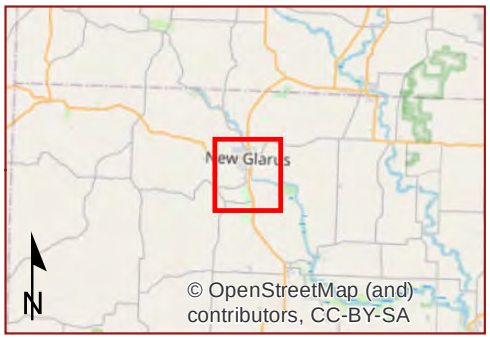
Blanchardville Coop
Blanchardville Coop Oil & NGSD Parcels
Project #: 20200316
January 2, 2021

Appendix A | Figures





Study Area (32.86 ac)

Township

Section

0 1,000 2,000 Ft

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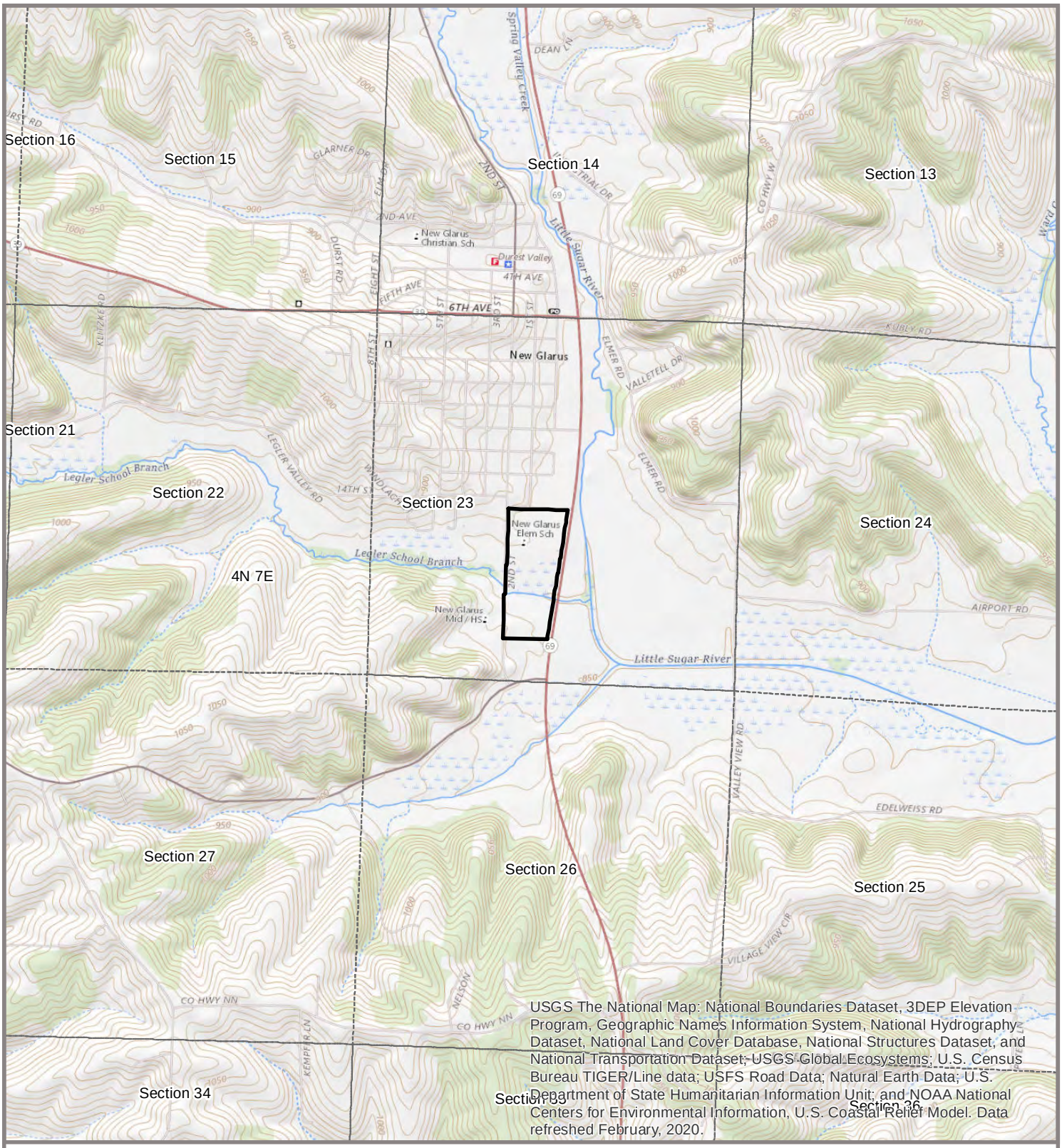
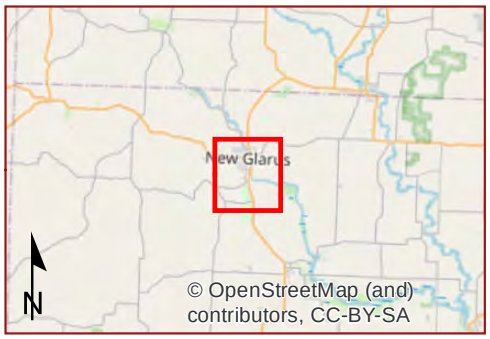
Figure 1. Project Location

Blanchardville Co-op Oil & NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

OpenStreetMap Data: ESRI 5/22/2020





Study Area (32.86 ac)

Township

Section

0 1,000 2,000 Ft

Heartland ECOLOGICAL GROUP INC

Figure 2. USGS Topography

Blanchardville Co-op Oil & NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

USGS Topo
Data: USGS *5/22/2020*

Study Area (32.86 ac)

0 150 300 Ft

NRCS Hydric Soils

- Predominantly Hydric (85-100%)
- Partially Hydric (15-84%)
- Predominantly Non-Hydric (1-14%)
- Non-Hydric (0%)

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Figure 3. NRCS Hydric Soils

Blanchardville Co-op Oil & NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2018 NAIP
Data: NRCS *5/22/2020*

Study Area (32.86 ac)

Maximum Extent Wetland Indicators

0 150 300 Ft

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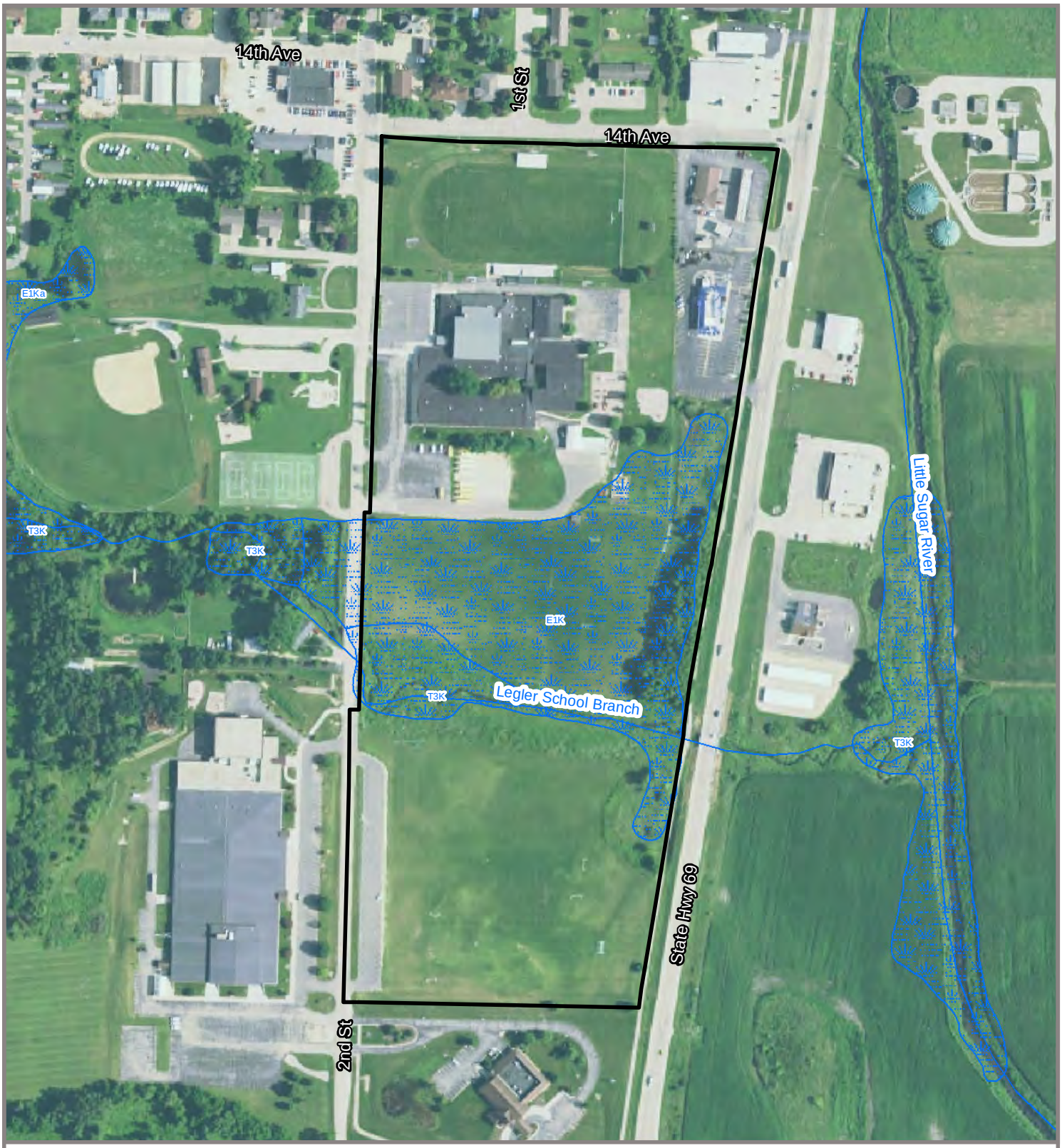
Figure 4. SWDV Wetland Indicators

Blanchardville Co-op Oil & NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2018 NAIP
Data: WDNR *5/22/2020*



Study Area (32.86 ac)

WWI Wetlands

NHD Waterway

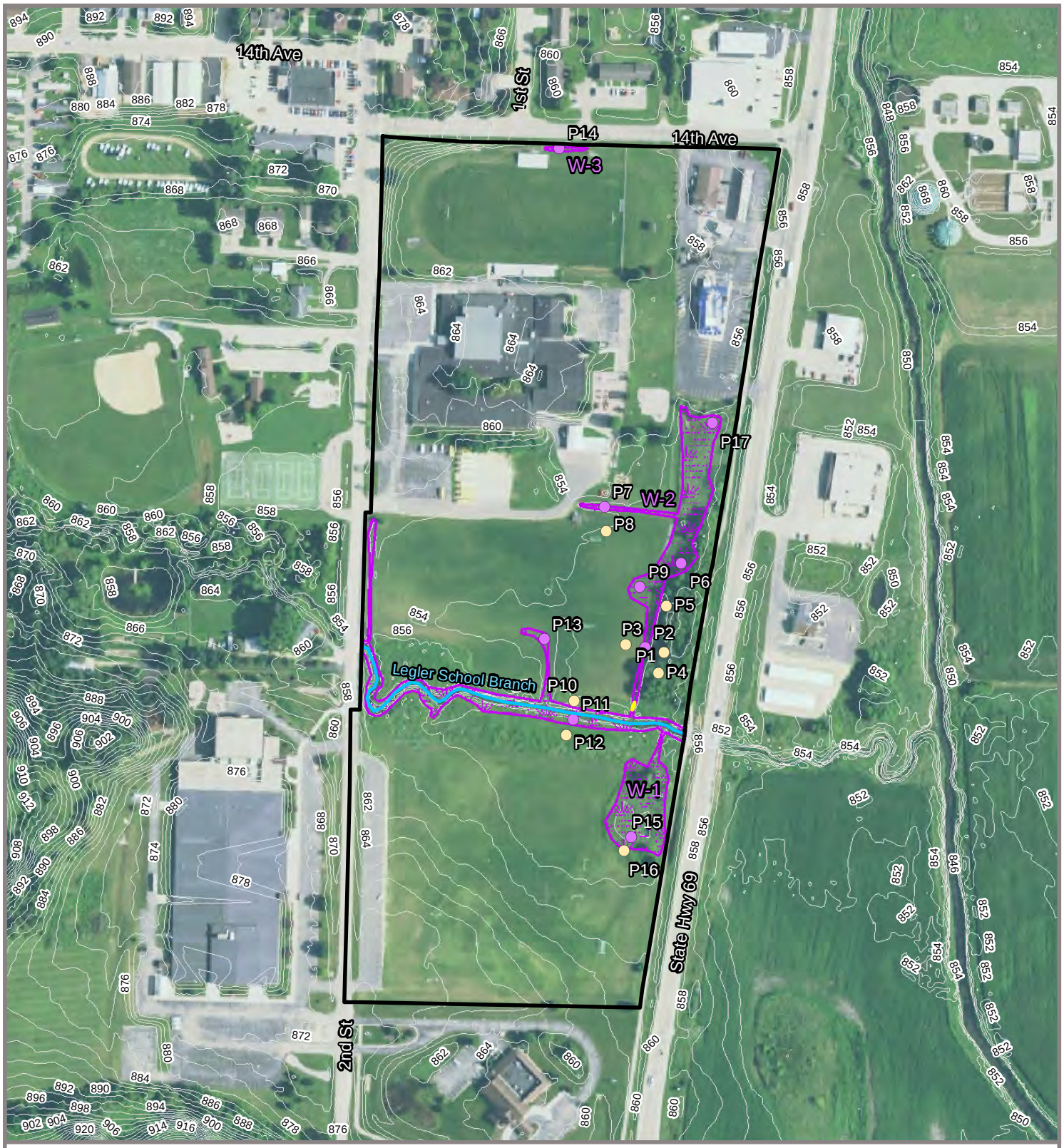
0 150 300 Ft

Heartland ECOLOGICAL GROUP INC

Figure 5. Wisconsin Wetland Inventory

Blanchardville Co-op Oil & NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2018 NAIP
Data: WDNR, USGS *5/22/2020*



Study Area (32.86 ac)

Green Co 2' Contours

Culverts

Legler School Branch

Field Delineated Wetlands (1.94 ac)

Sample Points

Upland

Wetland

0 150 300 Ft

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Figure 6. Field Delineated Wetlands

Blanchardville Co-op Oil & NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2018 NAIP
Data: Green Co *5/22/2020*

Appendix B | WETS Analysis

WETS Analysis Worksheet

Project Name: Blanchardville Coop Oil & NGSD
Project Number: 202003106
Period of interest: March - May 2020
Station: Dodgeville WI
County: Green County (adj to Iowa County)

Long-term rainfall records (from WETS table)

	Month	3 years in 10 less than	Normal	3 years in 10 greater than
1st month prior:	May	3.06	4.49	5.36
2nd month prior:	April	2.72	3.88	4.61
3rd month prior:	March	1.33	2.24	2.72
		Sum =	**10.61**	

Site determination

	Site Rainfall (in)	Condition Dry/Normal*/Wet	Condition** Value	Month Weight	Product
	5.64	Wet	3	3	9
	1.88	Dry	1	2	2
	3.45	Wet	3	1	3
Sum =	**10.97**			Sum*** =	**14**

***Normal precipitation with 30% to 70% probability of occurrence

Determination:

	Wet
	Dry
X	Normal

****Condition value:**

Dry =	1
Normal =	2
Wet =	3

*****If sum is:**

6 to 9	then period has been drier than normal
10 to 14	then period has been normal
15 to 18	then period has been wetter than normal

Precipitation data source: Midwest Regional Climate Center, cli-MATE: MRCC Application Tools Environment

Reference: Donald E. Woodward, ed. 1997. *Hydrology Tools for Wetland Determination* , Chapter 19. Engineering Field Handbook. U.S. Department of Agriculture, Natural Resources Conservation Service, Fort Worth, TX.

Date	Precipitation (Inches)
5/7/2020	0.00
5/8/2020	0.00
5/9/2020	0.00
5/10/2020	0.18
5/11/2020	0.17
5/12/2020	0.00
5/13/2020	0.00
5/14/2020	0.45
5/15/2020	0.45
5/16/2020	0.00
5/17/2020	0.38
5/18/2020	1.55
5/19/2020	0.02
5/20/2020	0.00
Total	**3.2**

WETS Table

WETS Station: DODGEVILLE WWTP, WI								
Requested years: 1990 - 2019								
Month	Avg Max Temp	Avg Min Temp	Avg Mean Temp	Avg Precip	30% chance precip less than	30% chance precip more than	Avg number days precip 0.10 or more	Avg Snowfall
Jan	26.1	9.0	17.6	1.41	0.89	1.69	4	10.6
Feb	30.7	12.2	21.4	1.50	0.87	1.83	4	9.6
Mar	42.7	22.9	32.8	2.24	1.33	2.72	5	4.9
Apr	56.5	33.9	45.2	3.88	2.72	4.61	8	1.6
May	68.1	45.3	56.7	4.49	3.06	5.36	8	0.0
Jun	77.6	55.8	66.7	5.87	3.92	7.03	8	0.0
Jul	81.2	59.7	70.4	4.68	3.23	5.57	7	0.0
Aug	79.6	58.2	68.9	4.55	2.67	5.52	6	0.0
Sep	72.6	49.7	61.1	3.57	2.19	4.32	6	0.0
Oct	59.4	37.7	48.6	3.13	1.81	3.80	6	0.6
Nov	43.6	26.2	34.9	2.52	1.43	3.06	5	2.4
Dec	31.2	15.5	23.3	1.84	0.95	2.24	5	10.8
Annual:					35.72	43.88		
Average	55.8	35.5	45.6	-	-	-	-	-
Total	-	-	-	39.66			73	40.6

GROWING SEASON DATES			
Years with missing data:	24 deg = 1	28 deg = 1	32 deg = 1
Years with no occurrence:	24 deg = 0	28 deg = 0	32 deg = 0
Data years used:	24 deg = 29	28 deg = 29	32 deg = 29
Probability	24 F or higher	28 F or higher	32 F or higher
50 percent *	4/9 to 10/29: 203 days	4/21 to 10/15: 177 days	5/2 to 10/6: 157 days
70 percent *	4/5 to 11/3: 212 days	4/17 to 10/20: 186 days	4/29 to 10/10: 164 days
* Percent chance of the growing season occurring between the Beginning and Ending dates.			

STATS TABLE - total precipitation (inches)													
Yr	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annl
1896								1.91	4.16	M3.27	1.58	1.11	12.03
1897	2.29	0.78	2.88	3.70	1.00	6.70	2.48	3.69	1.43	M1.31	1.77	1.92	29.95
1898	M1.65	1.62	2.58	3.10	5.30	5.91	2.70	M5.18	2.31	4.52	M2.18	0.39	37.44
1899	M1.80	2.51	M2.69	3.56	4.64	M5.19	2.31	2.77	1.44	1.48	1.65	M1.48	31.52
1900	M0.89	1.37	1.84	2.52	3.77	2.81	8.02	2.15	3.65		2.01	1.00	30.03
1901	0.74	0.85	M1.70	0.95	3.54	M1.37	4.22	0.62	4.13	2.71		M1.27	22.10
1902	M0.70	1.60	M0.45	M0.02	6.64	5.07	7.96	M0.70	4.50	1.30	1.02	1.80	31.76
1903	0.60	0.50	M0.40	M1.70	4.90		M7.20	8.00	4.00	2.00	1.60	0.65	31.55
1904	0.10	0.35	1.90	0.15	1.35		2.26	3.10	1.				11.

1982													
1983													
1984												1.82	1.82
1985		1.91	2.89	1.12	4.04	4.46	4.66	2.84	5.76	3.35	4.91	1.58	37.52
1986	1.16	2.02	2.04	3.05	3.40	3.36	3.14	3.29	6.92	2.68	1.20	0.81	33.07
1987	0.70	0.00	3.28	3.38	4.53	1.76	5.90	8.11	2.25	1.12	3.77	3.75	38.55
1988	1.56	0.61	1.83	2.10	1.12	0.87	2.82	2.45	4.65	1.43	2.45	1.29	23.18
1989	0.86	0.57	1.19	2.55	1.67	2.31	3.60	4.99	1.61	3.08	1.14	0.37	23.94
1990	1.72	0.95	3.13	3.02	4.01	8.68	3.58	9.06	0.58	3.00	2.04	2.86	42.63
1991	0.92	0.12	4.40	6.17	4.39	3.75	2.43	3.54	6.86	6.94	5.27	1.55	46.34
1992	1.14	1.72	2.18	3.01	0.99	1.49	5.57	3.17	5.11	1.18	6.37	2.69	34.62
1993	1.62	1.55	2.74	M5.55	5.97	9.20	11.90	5.16	3.02	0.96	1.65	0.45	49.77
1994	1.72	2.44	M0.48	1.61	1.25	6.08	5.83	6.67	3.52	0.62	3.02	1.20	34.44
1995	1.01	0.15	2.49	6.07	4.44	2.91	6.87	1.56	2.35	4.85	2.95	0.79	36.44
1996	2.85	0.66	1.15	2.34	3.38	7.79	4.61	4.24	1.65	3.71	1.46	1.25	35.09
1997	1.39	1.36	2.41	1.89	3.80	5.99	6.31	3.59	1.38	0.92	0.94	1.16	31.14
1998	1.64	3.13	6.71	5.62	5.50	9.90	2.77	4.97	4.32	2.66	1.96	0.33	49.51
1999	2.26	1.47	0.93										4.66
2000	M1.07	M1.26	1.42	2.40	8.54	9.46	M2.47	3.43	3.09	0.76	M1.31	M2.25	37.46
2001	M1.14	M2.99	0.53	4.14	4.81	5.07	1.57	5.45	7.23	2.14	2.29	2.05	39.41
2002	M0.00	M1.25	1.43	3.70	3.20	5.57	2.74	M0.48	2.96	3.76	0.20	0.07	25.36
2003	M0.32	M0.31	M0.40	M0.93	6.17	2.43	2.76	2.59	3.53	1.61	7.91	M0.84	29.80
2004	M0.12	1.73	4.17	1.86	10.80	3.73	4.12	3.55	0.82	3.66	1.90	0.94	37.40
2005	2.25	1.06	0.98	2.13	2.73	4.83	4.62	1.71	2.73	0.72	3.51	M0.90	28.17
2006	M0.70	0.43	2.26	6.12	M5.08	2.85	6.46	2.41	6.08	1.83	2.41	0.37	37.00
2007	1.08	1.70	2.48	5.88	M1.51	3.76	2.54	20.02	3.11	6.34	0.49	4.49	53.40
2008	2.58	3.43	2.18	8.43	4.35	8.72	3.03	1.32	3.65	2.00	1.50	3.16	44.35
2009	0.96	1.35	4.44	3.40	3.45	8.28	5.61	4.28	2.09	5.67	0.96	3.90	44.39
2010	1.25	0.92	1.00	4.63	4.21	8.78	6.36	5.69	3.11	1.55	1.38	2.10	40.98
2011	0.69	1.82	2.92	3.64	2.89	5.30	1.93	2.82	2.99	1.72	3.96	2.26	32.94
2012	1.34	0.98	2.84	3.10	3.26	0.57	3.72	3.27	1.80	4.29	1.20	M2.22	28.59
2013	2.86	1.93	2.01	6.78	4.33	10.97	2.25	2.38	2.62	1.37	2.49	1.12	41.11
2014	1.08	1.07	1.35	5.10	2.15	7.87	3.21	6.67	2.27	3.51	1.89	1.51	37.68
2015	0.58	1.09	1.28	2.61	4.47	4.86	2.13	4.78	3.40	2.87	5.14	5.65	38.86
2016	0.88	0.87	4.41	1.62	3.65	5.38	7.76	7.55	4.03	3.26	2.34	2.00	43.75
2017	2.95	1.34	2.80	4.17	4.13	3.80	9.44	1.45	0.79	5.22	0.85	0.46	37.40

2018	0.96	2.83	0.73	2.50	11.08	7.88	3.16	6.27	7.53	8.27	1.95	1.78	54.94
2019	3.07	3.17	1.05	4.17	6.37	4.31	7.65	3.74	10.86	5.28	2.43	1.93	54.03
2020	1.30	0.62	3.45	1.88	5.64	5.13	5.62	1.84	4.98	3.60	3.30	M1.57	38.93

Notes: Data missing in any month have an "M" flag. A "T" indicates a trace of precipitation.

Data missing for all days in a month or year is blank.

Creation date: 2016-07-22

Blanchardville Coop
Blanchardville Coop Oil & NGSD Parcels
Project #: 20200316
January 2, 2021

Appendix C | Wetland Determination Data Sheets

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P1

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Shoulder Local relief (concave, convex, none): Linear

Slope (%): 1-2 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** Yes No X
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	60	Yes	FAC
2.			
3.			
4.			
5.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15ft)			
1. *Lonicera X bella*	25	Yes	FACU
2. *Sambucus nigra*	15	Yes	FAC
3. *Acer negundo*	5	No	FAC
4.			
5.			
	45	=Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Glechoma hederacea*	30	Yes	FACU
2. *Impatiens capensis*	30	Yes	FACW
3. *Galium aparine*	15	No	FACU
4. *Solidago canadensis*	7	No	FACU
5. *Phalaris arundinacea*	5	No	FACW
6. *Circaea canadensis*	5	No	FACU
7. *Alliaria petiolata*	3	No	FAC
8. *Sambucus nigra*	1	No	FAC
9. *Epilobium coloratum*	1	No	OBL
10.			
	97	=Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 5 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 60.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	1	x 1 =	1
FACW species	35	x 2 =	70
FAC species	84	x 3 =	252
FACU species	82	x 4 =	328
UPL species	0	x 5 =	0
Column Totals:	202 (A)		651 (B)

Prevalence Index = B/A = 3.22

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? Yes X No

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: P1

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/1	55					Loamy/Clayey	Mixed Matrix SiL
	10YR 2/1	45						Mixed Matrix SiL
7-24	10YR 3/1	50					Loamy/Clayey	Mixed Matrix SiCL
	10YR 2/1	45	10YR 3/3	5	C	M		Mixed Matrix SiCL

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Mixed matrix indicates historic fill materials may be present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed. No saturation in the observed profile.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P2

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Excavated Ditch Local relief (concave, convex, none): Concave

Slope (%): 1-2 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1. *Salix interior*	10	Yes	FACW
2. *Sambucus nigra*	3	Yes	FAC
3.			
4.			
5.			
	13 =Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Phalaris arundinacea*	15	Yes	FACW
2. *Typha angustifolia*	10	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	25 =Total Cover		
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	25	x 2 =	50
FAC species	3	x 3 =	9
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	38 (A)		69 (B)

Prevalence Index = B/A = 1.82

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: P2

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	5Y 2.5/1	100					Loamy/Clayey	SiCL
6-15	5Y 2.5/1	97	2.5Y 4/4	3	C	M	Loamy/Clayey	SiC
15-24	N 3/	97	2.5Y 4/4	3	C	M	Loamy/Clayey	SiC

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains.

[2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- X Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 2		
Water Table Present?	Yes X	No ___	Depth (inches): 0		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P3

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Graded Play Field Local relief (concave, convex, none): Linear

Slope (%): 1-2 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No** X
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet. Managed turf, not normal circumstances.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Trifolium repens*	15	Yes	FACU
2. *Taraxacum officinale*	5	Yes	FACU
3. *Erigeron strigosus*	1	No	FACU
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	21 =Total Cover		
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 0 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 0.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	0	x 3 =	0
FACU species	21	x 4 =	84
UPL species	0	x 5 =	0
Column Totals:	21 (A)		84 (B)

Prevalence Index = B/A = 4.00

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Managed recreational field, turf grass, not normal circumstances. Poa pratensis cover is 80%.

SOIL

Sampling Point: P3

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-11	2.5Y 3/1	60					Loamy/Clayey	Mixed Matrix SiCL
	2.5Y 2.5/1	40						Mixed Matrix SiCL
11-19	2.5Y 3/1	50					Loamy/Clayey	Mixed Matrix SiL
	5Y 3/1	45	10YR 4/4	5	C	M		Mixed Matrix SiCL
19-24	2.5Y 4/2	85	10YR 4/6	15	C	M	Loamy/Clayey	SiC

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Soils mixed, historic fill materials likely present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed. No saturation in the observed profile.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P4

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Shoulder Local relief (concave, convex, none): Linear

Slope (%): 1-2 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No** X
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	60	Yes	FAC
2.			
3.			
4.			
5.			
	60	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15ft)			
1. *Lonicera X bella*	20	Yes	FACU
2. *Acer negundo*	5	Yes	FAC
3.			
4.			
5.			
	25	=Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Poa pratensis*	20	Yes	FAC
2. *Lonicera X bella*	20	Yes	FACU
3. *Alliaria petiolata*	10	Yes	FAC
4. *Glechoma hederacea*	10	Yes	FACU
5. *Solidago canadensis*	10	Yes	FACU
6. *Circaea canadensis*	7	No	FACU
7. *Rhamnus cathartica*	5	No	FAC
8. *Phalaris arundinacea*	5	No	FACW
9. *Solidago gigantea*	5	No	FACW
10. *Galium aparine*	3	No	FACU
	106	=Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 8 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	10	x 2 =	20
FAC species	103	x 3 =	309
FACU species	75	x 4 =	300
UPL species	3	x 5 =	15
Column Totals:	191 (A)		644 (B)
Prevalence Index = B/A =			3.37

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **No** X

Remarks: (Include photo numbers here or on a separate sheet.)

VEGETATION Continued – Use scientific names of plants. Sampling Point: P4

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
	60	=Total Cover	
Sapling/Shrub Stratum			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
	25	=Total Cover	
Herb Stratum			
11. *Geum canadense*	3	No	FAC
12. *Daucus carota*	3	No	UPL
13. *Galium triflorum*	3	No	FACU
14. *Taraxacum officinale*	2	No	FACU
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
	106	=Total Cover	
Woody Vine Stratum			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: P4

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-14	10YR 3/1	50					Loamy/Clayey	Mixed Matrix SiL
	10YR 2/1	50						Mixed Matrix SiL
14-19	10YR 2/1	100					Loamy/Clayey	SiL
19-23	10YR 2/1	70					Loamy/Clayey	Mixed Matrix SiCL
	10YR 3/1	30						Mixed Matrix SiCL
23-26	2.5Y 4/2	95	10YR 4/6	5	C	M	Loamy/Clayey	SiC

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Mixed matrix indicates historic fill materials may be present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed. No saturation in the observed profile.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P5

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Shoulder Local relief (concave, convex, none): Linear

Slope (%): 1-2 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** **No** X
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	20	Yes	FAC
2.			
3.			
4.			
5.			
	20	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15ft)			
1. *Lonicera X bella*	5	Yes	FACU
2. *Acer negundo*	1	No	FAC
3.			
4.			
5.			
	6	=Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Phalaris arundinacea*	60	Yes	FACW
2. *Impatiens capensis*	20	Yes	FACW
3. *Urtica dioica*	15	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	95	=Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 75.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	95	x 2 =	190
FAC species	21	x 3 =	63
FACU species	5	x 4 =	20
UPL species	0	x 5 =	0
Column Totals:	121 (A)		273 (B)

Prevalence Index = B/A = 2.26

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)
More open woods than P1 and P4

SOIL

Sampling Point: P5

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	10YR 3/1	100					Loamy/Clayey	SiL
7-12	10YR 3/1	60					Loamy/Clayey	Mixed Matrix SiCL
	10YR 4/2	37	10YR 4/4	3	C	M		Mixed Matrix SiCL
12-19	10YR 2/1	60					Loamy/Clayey	Mixed Matrix SiCL
	10YR 3/1	40						Mixed Matrix SiCL
19-24	2.5Y 4/2	95	10YR 4/6	5	C	M	Loamy/Clayey	SiC

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Mixed matrix indicates historic fill materials may be present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No saturation in the observed profile.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P6

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Shoulder Local relief (concave, convex, none): Linear

Slope (%): 1-2 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet. Landscape position for P6 is lower than P5, down a gradual slope.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1. *Acer negundo*	5	Yes	FAC
2.			
3.			
4.			
5.			
	5	=Total Cover	
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
		=Total Cover	
Herb Stratum (Plot size: 5ft)			
1. *Phalaris arundinacea*	75	Yes	FACW
2. *Impatiens capensis*	30	Yes	FACW
3. *Urtica dioica*	3	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	108	=Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
		=Total Cover	

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 3 (A)

Total Number of Dominant Species Across All Strata: 3 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	108	x 2 =	216
FAC species	5	x 3 =	15
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	113 (A)		231 (B)

Prevalence Index = B/A = 2.04

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: P6

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	100					Loamy/Clayey	SiL possible fill
8-14	2.5Y 4/2	95	10YR 4/4	5	C	M	Loamy/Clayey	SiCL possible fill
14-24	2.5Y 2.5/1	100	10YR 4/4	3	C	M		SiL Likely Buried A Horizon

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Potential buried A horizon, 3rd horizon, has high organic content.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 15
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 12

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Lower landscape position than P5

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P7

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Drainage swale Local relief (concave, convex, none): Concave

Slope (%): 0-1 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet. Managed turf, not normal circumstances.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Agrostis gigantea*	50	Yes	FACW
2. *Eleocharis palustris*	10	No	OBL
3. *Phalaris arundinacea*	3	No	FACW
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	63	=Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	10	x 1 =	10
FACW species	53	x 2 =	106
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	63 (A)		116 (B)

Prevalence Index = B/A = 1.84

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)
Managed recreational field, turf grass, not normal circumstances. Poa pratensis cover is 40%.

SOIL

Sampling Point: P7

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	100					Loamy/Clayey	SiCL
6-11	10YR 4/2	97	10YR 4/4	3	C	M	Loamy/Clayey	SiCL
11-20	10YR 4/2	60	10YR 4/6	5	C	M	Loamy/Clayey	Mixed Matrix SiC
	10YR 2/1	35						Mixed Matrix SiC
20-24	10YR 5/2	90	10YR 4/6	10	C	M	Loamy/Clayey	SiC

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Mixed matrix indicates historic fill materials may be present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 2
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P8

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Graded Play Field Local relief (concave, convex, none): Linear

Slope (%): 2-4 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No** X
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet. Managed turf, not normal circumstances.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5ft)			
1.			
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	=Total Cover		
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: (A)

Total Number of Dominant Species Across All Strata: (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: (A/B)

Prevalence Index worksheet:

Total % Cover of:	Multiply by:	
OBL species	x 1 =	
FACW species	x 2 =	
FAC species	x 3 =	
FACU species	x 4 =	
UPL species	x 5 =	
Column Totals: (A)		(B)

Prevalence Index = B/A =

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **No** X

Remarks: (Include photo numbers here or on a separate sheet.)
Managed recreational field, turf grass, not normal circumstances. Poa pratensis cover is 100% and no weeds in the plot.

SOIL

Sampling Point: P8

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	2.5Y 3/1	100					Loamy/Clayey	SiL
8-13	10YR 5/2	80					Loamy/Clayey	Mixed Matrix SiL
	10YR 3/1	20						Mixed Matrix SiL
13-24	10YR 3/1	50					Loamy/Clayey	Mixed Matrix SiCL
	2.5Y 4/2	40	10YR 4/6	10	C	M		Mixed Matrix SiCL

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Mixed matrix, historic fill materials likely present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed. No saturation in the observed profile.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P9

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Broad Swale Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet. Managed turf, not normal circumstances.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Agrostis gigantea*	25	Yes	FACW
2. *Eleocharis palustris*	5	No	OBL
3. *Phalaris arundinacea*	5	No	FACW
4. *Plantago rugelii*	3	No	FAC
5. *Taraxacum officinale*	2	No	FACU
6.			
7.			
8.			
9.			
10.			
	40	=Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	30	x 2 =	60
FAC species	3	x 3 =	9
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	40 (A)		82 (B)

Prevalence Index = B/A = 2.05

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)
Managed recreational field, turf grass, not normal circumstances. Poa pratensis cover is 60%.

SOIL

Sampling Point: P9

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-6	10YR 3/1	95	10YR 3/4	5	C	M	Loamy/Clayey	SiL
6-15	10YR 4/2	60	10YR 4/6	10	C	M	Loamy/Clayey	Mixed Matrix SiCL
	10YR 3/1	30						Mixed Matrix SiCL
15-24	10YR 2/1	70					Loamy/Clayey	Mixed Matrix SiCL
	10YR 4/2	20	10YR 4/6	10	C	M		Mixed Matrix SiCL

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:
Mixed matrix indicates historic fill materials may be present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 6
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 3

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
Lower part of field, a very broad swale

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P10

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Top of slope Local relief (concave, convex, none): Convex

Slope (%): 2-4 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No X**
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Sorghastrum nutans*	15	Yes	FACU
2. *Monarda fistulosa*	15	Yes	FACU
3. *Ratibida pinnata*	10	Yes	UPL
4. *Poa pratensis*	10	Yes	FAC
5. *Erigeron strigosus*	5	No	FACU
6. *Solidago canadensis*	3	No	FACU
7. *Silphium perfoliatum*	3	No	FACW
8. *Taraxacum officinale*	2	No	FACU
9. *Galium aparine*	1	No	FACU
10. *Symphyotrichum lanceolatum*	1	No	FAC
	65	=Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	3	x 2 =	6
FAC species	11	x 3 =	33
FACU species	41	x 4 =	164
UPL species	10	x 5 =	50
Column Totals:	65 (A)		253 (B)

Prevalence Index = B/A = 3.89

Hydrophytic Vegetation Indicators:

__ 1 - Rapid Test for Hydrophytic Vegetation

__ 2 - Dominance Test is >50%

__ 3 - Prevalence Index is ≤3.0[1]

__ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

__ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **No X**

Remarks: (Include photo numbers here or on a separate sheet.)
Seeded prairie buffer for creek, stabilized and normal circumstances.

SOIL

Sampling Point: P10

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-9	10YR 3/1	100					Loamy/Clayey	SiL
9-18	2.5Y 3/1	100					Loamy/Clayey	SiCL
18-24	2.5Y 3/1	98	10YR 4/4	2	C	M	Loamy/Clayey	SiC

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

Seeded prairie buffer for adjacent stream

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed. No saturation in the observed profile.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P11

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave

Slope (%): 0-2 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: T3K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Poa pratensis*	15	Yes	FAC
2. *Symphyotrichum lanceolatum*	10	Yes	FAC
3. *Scirpus atrovirens*	10	Yes	OBL
4. *Solidago gigantea*	10	Yes	FACW
5. *Angelica atropurpurea*	7	No	OBL
6. *Panicum virgatum*	7	No	FAC
7. *Eleocharis palustris*	7	No	OBL
8. *Carex stipata*	5	No	OBL
9. *Solidago canadensis*	3	No	FACU
10. *Impatiens capensis*	3	No	FACW
	83	=Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 4 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	29	x 1 =	29
FACW species	16	x 2 =	32
FAC species	35	x 3 =	105
FACU species	3	x 4 =	12
UPL species	0	x 5 =	0
Column Totals:	83 (A)		178 (B)

Prevalence Index = B/A = 2.14

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

VEGETATION Continued – Use scientific names of plants. Sampling Point: P11

Tree Stratum	Absolute % Cover	Dominant Species?	Indicator Status
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
		=Total Cover	
Sapling/Shrub Stratum			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
13.			
		=Total Cover	
Herb Stratum			
11. *Salix interior*	2	No	FACW
12. *Alliaria petiolata*	2	No	FAC
13. *Barbarea vulgaris*	1	No	FAC
14. *Helianthus grosseserratus*	1	No	FACW
15.			
16.			
17.			
18.			
19.			
20.			
21.			
22.			
	83	=Total Cover	
Woody Vine Stratum			
3.			
4.			
5.			
6.			
7.			
		=Total Cover	

Definitions of Vegetation Strata:

Tree – Woody plants 3 in. (7.6 cm) or more in diameter at breast height (DBH), regardless of height.

Sapling/Shrub – Woody plants less than 3 in. DBH and greater than 3.28 ft (1 m) tall.

Herb – All herbaceous (non-woody) plants, including herbaceous vines, regardless of size, and woody plants less than 3.28 ft tall.

Woody Vine – All woody vines greater than 3.28 ft in height.

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: P11

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/2	100					Loamy/Clayey	SiCL
5-11	2.5Y 4/2	97	10YR 3/3	3	C	M	Loamy/Clayey	SiCL
11-21	2.5Y 4/2	95	10YR 4/3	5	C	M	Loamy/Clayey	SiC

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Seeded prairie buffer for adjacent stream

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 5
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P12

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Top of slope Local relief (concave, convex, none): Convex

Slope (%): 1-3 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: None depicted

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No X**
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Poa pratensis*	60	Yes	FAC
2. *Solidago canadensis*	40	Yes	FACU
3. *Symphyotrichum lanceolatum*	5	No	FAC
4. *Cirsium arvense*	3	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	108 =Total Cover		
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 50.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	65	x 3 =	195
FACU species	43	x 4 =	172
UPL species	0	x 5 =	0
Column Totals:	108 (A)		367 (B)

Prevalence Index = B/A = 3.40

Hydrophytic Vegetation Indicators:

___ 1 - Rapid Test for Hydrophytic Vegetation

___ 2 - Dominance Test is >50%

___ 3 - Prevalence Index is ≤3.0[1]

___ 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

___ Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **No X**

Remarks: (Include photo numbers here or on a separate sheet.)
Buffer zone for creek, stabilized and normal circumstances, likely either not seeded or successfully seeded.

SOIL

Sampling Point: P12

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-17	10YR 3/1	100					Loamy/Clayey	SiL
17-24	10YR 3/1	50					Loamy/Clayey	Mixed Matrix SiCL, No Redox
	10YR 2/1	50						

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:
Seeded prairie buffer for adjacent stream

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:
No wetland hydrology indicators observed. No saturation in the observed profile.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P13

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Drainage swale Local relief (concave, convex, none): Concave

Slope (%): 1-2 Lat: Long: Datum:

Soil Map Unit Name: Arenzville SiL (An) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet. Managed turf, not normal circumstances.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Veronica peregrina*	20	Yes	FACW
2. *Eleocharis palustris*	5	Yes	OBL
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	25 =Total Cover		
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	5	x 1 =	5
FACW species	20	x 2 =	40
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	25 (A)		45 (B)

Prevalence Index = B/A = 1.80

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)
Managed recreational field, turf grass, not normal circumstances. Poa pratensis cover is 60%.

SOIL

Sampling Point: P13

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-7	2.5Y 4/2	95	10YR 4/4	5	C	M	Loamy/Clayey	SiL
7-17	2.5Y 4/2	65	10YR 4/4	5	C	M	Loamy/Clayey	Mixed Matrix SiL
	2.5Y 2.5/1	30						Mixed Matrix SiC
17-24	2.5Y 4/2	95	10YR 4/4	5	C	M	Loamy/Clayey	SiC
								SiC

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Mixed matrix indicates historic grading/ fill materials may be present.

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes X	No ___	Depth (inches): 1		
Water Table Present?	Yes X	No ___	Depth (inches): 0		
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0	**Wetland Hydrology Present?**	**Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P14

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Drainage swale Local relief (concave, convex, none): Concave

Slope (%): 1-3 Lat: Long: Datum:

Soil Map Unit Name: Otter SiL (Ou) NWI classification: None depicted

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet. Managed turf, not normal circumstances.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Veronica peregrina*	10	Yes	FACW
2. *Phalaris arundinacea*	7	Yes	FACW
3. *Plantago rugelii*	3	No	FAC
4. *Taraxacum officinale*	2	No	FACU
5.			
6.			
7.			
8.			
9.			
10.			
	22 =Total Cover		
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	17	x 2 =	34
FAC species	3	x 3 =	9
FACU species	2	x 4 =	8
UPL species	0	x 5 =	0
Column Totals:	22 (A)		51 (B)

Prevalence Index = B/A = 2.32

Hydrophytic Vegetation Indicators:

X 1 - Rapid Test for Hydrophytic Vegetation

X 2 - Dominance Test is >50%

X 3 - Prevalence Index is ≤3.0[1]

4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)

Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)
Managed drainage swale adjacent to football field, regularly mowed turf grass, not normal circumstances. Poa pratensis cover is 15%.

SOIL

Sampling Point: P14

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	2.5Y 3/1	98	10YR 3/3	2	C	M	Loamy/Clayey	SiL
5-14	10YR 4/2	90	10YR 4/4	10	C	M	Loamy/Clayey	SiCL
14-24	2.5Y 4/2	85	10YR 4/4	15	C	M	Loamy/Clayey	SiC

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No ___	Depth (inches):	2
Water Table Present?	Yes	X	No ___	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes	X	No ___	Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P15

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Toeslope Local relief (concave, convex, none): Concave

Slope (%): 1-2 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: T3K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet. Landscape position for P15 is lower than P16, down a moderate slope.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Phalaris arundinacea*	50	Yes	FACW
2.			
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	50 =Total Cover		
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 1 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	50	x 2 =	100
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	50 (A)		100 (B)

Prevalence Index = B/A = 2.00

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: P15

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-8	10YR 3/1	95	10YR 4/4	5	C	M	Loamy/Clayey	SiL
8-18	10YR 4/2	70	10YR 4/6	10	C	M	Loamy/Clayey	SiCL
	10YR 2/1	20						
18-24	10YR 5/2	90	10YR 4/6	10	C	M	Loamy/Clayey	SiC

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- X Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- X Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

Closed depression w/a high water outlet to the north to Legler School Branch

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- X Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes	X	No ___	Depth (inches):	1
Water Table Present?	Yes	X	No ___	Depth (inches):	0
Saturation Present? (includes capillary fringe)	Yes	X	No ___	Depth (inches):	0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Lower landscape position than P16

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P16

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Top of slope Local relief (concave, convex, none): Convex

Slope (%): 1-3 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: None depicted

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation X, Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes No X

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes	No X	**Is the Sampled Area within a Wetland?** **Yes** **No X**
Hydric Soil Present?	Yes	No X	
Wetland Hydrology Present?	Yes	No X	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1. *Lonicera X bella*	10	Yes	FACU
2. *Rubus occidentalis*	3	Yes	UPL
3.			
4.			
5.			
	13 =Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Solidago canadensis*	60	Yes	FACU
2. *Poa pratensis*	20	Yes	FAC
3.			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
	80 =Total Cover		
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 1 (A)

Total Number of Dominant Species Across All Strata: 4 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 25.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	0	x 1 =	0
FACW species	0	x 2 =	0
FAC species	20	x 3 =	60
FACU species	70	x 4 =	280
UPL species	3	x 5 =	15
Column Totals:	93 (A)		355 (B)

Prevalence Index = B/A = 3.82

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- 2 - Dominance Test is >50%
- 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** **No X**

Remarks: (Include photo numbers here or on a separate sheet.)
Old field vegetation

SOIL

Sampling Point: P16

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 3/1	100					Loamy/Clayey	SiL
5-15	10YR 3/1	60					Loamy/Clayey	Mixed Matrix SiL
	2.5Y 2.5/1	40						
15-24	10YR 4/3	100					Loamy/Clayey	SiCL

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- ___ Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- ___ Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** ___ **No** X

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- ___ High Water Table (A2)
- ___ Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- ___ Geomorphic Position (D2)
- ___ FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes ___	No X	Depth (inches): ___
Saturation Present? (includes capillary fringe)	Yes ___	No X	Depth (inches): ___

Wetland Hydrology Present? **Yes** ___ **No** X

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

No wetland hydrology indicators observed. No saturation in the observed profile.

WETLAND DETERMINATION DATA FORM – Midwest Region

Project/Site: Blanchardville Coop Oil & NGSD Parcels City/County: V New Glarus / Green Co Sampling Date: 5/20/2020

Applicant/Owner: Blanchardville Coop Oil State: WI Sampling Point: P17

Investigator(s): Eric C. Parker, SPWS Section, Township, Range: Section 23, T4N, R7E

Landform (hillside, terrace, etc.): Swale Toeslope Local relief (concave, convex, none): Concave

Slope (%): 1-2 Lat: Long: Datum:

Soil Map Unit Name: Orion SiL (OnA) NWI classification: E1K

Are climatic / hydrologic conditions on the site typical for this time of year? Yes X No (If no, explain in Remarks.)

Are Vegetation , Soil , or Hydrology significantly disturbed? Are "Normal Circumstances" present? Yes X No

Are Vegetation , Soil , or Hydrology naturally problematic? (If needed, explain any answers in Remarks.)

SUMMARY OF FINDINGS – Attach site map showing sampling point locations, transects, important features, etc.

Hydrophytic Vegetation Present?	Yes X	No	**Is the Sampled Area within a Wetland?** **Yes** X **No**
Hydric Soil Present?	Yes X	No	
Wetland Hydrology Present?	Yes X	No	

Remarks:
Based on a WETS analysis, antecedent moisture conditions on the site are in the normal range. In the two weeks prior to fieldwork, there was approximately 3.2 inches of rain. Conditions on site were generally wet. Landscape position for P17 is topographically lower than P6.

VEGETATION – Use scientific names of plants.

Tree Stratum (Plot size: 30ft)	Absolute % Cover	Dominant Species?	Indicator Status
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Sapling/Shrub Stratum (Plot size: 15ft)			
1.			
2.			
3.			
4.			
5.			
	=Total Cover		
Herb Stratum (Plot size: 5ft)			
1. *Phalaris arundinacea*	60	Yes	FACW
2. *Impatiens capensis*	20	Yes	FACW
3. *Urtica dioica*	15	No	FACW
4. *Typha angustifolia*	3	No	OBL
5.			
6.			
7.			
8.			
9.			
10.			
	98	=Total Cover	
Woody Vine Stratum (Plot size: 30ft)			
1.			
2.			
	=Total Cover		

Dominance Test worksheet:

Number of Dominant Species That Are OBL, FACW, or FAC: 2 (A)

Total Number of Dominant Species Across All Strata: 2 (B)

Percent of Dominant Species That Are OBL, FACW, or FAC: 100.0% (A/B)

Prevalence Index worksheet:

Total % Cover of:		Multiply by:	
OBL species	3	x 1 =	3
FACW species	95	x 2 =	190
FAC species	0	x 3 =	0
FACU species	0	x 4 =	0
UPL species	0	x 5 =	0
Column Totals:	98 (A)		193 (B)

Prevalence Index = B/A = 1.97

Hydrophytic Vegetation Indicators:

- 1 - Rapid Test for Hydrophytic Vegetation
- X 2 - Dominance Test is >50%
- X 3 - Prevalence Index is ≤3.0[1]
- 4 - Morphological Adaptations[1] (Provide supporting data in Remarks or on a separate sheet)
- Problematic Hydrophytic Vegetation[1] (Explain)

[1]Indicators of hydric soil and wetland hydrology must be present, unless disturbed or problematic.

Hydrophytic Vegetation Present? **Yes** X **No**

Remarks: (Include photo numbers here or on a separate sheet.)

SOIL

Sampling Point: P17

Profile Description: (Describe to the depth needed to document the indicator or confirm the absence of indicators.)

Depth	Matrix		Redox Features					
(inches)	Color (moist)	%	Color (moist)	%	Type[1]	Loc[2]	Texture	Remarks
0-5	10YR 2/1	100					Loamy/Clayey	SiL
5-11	10YR 4/2	60	10YR 4/6	10	C	M	Loamy/Clayey	Mixed Matrix SiCL
	10YR 2/1	30						
11-24	2.5Y 5/2	85	10YR 4/6	15	C	M	Loamy/Clayey	SiC

[1]Type: C=Concentration, D=Depletion, RM=Reduced Matrix, MS=Masked Sand Grains. [2]Location: PL=Pore Lining, M=Matrix.

Hydric Soil Indicators:

- ___ Histosol (A1)
- ___ Histic Epipedon (A2)
- ___ Black Histic (A3)
- ___ Hydrogen Sulfide (A4)
- ___ Stratified Layers (A5)
- ___ 2 cm Muck (A10)
- X Depleted Below Dark Surface (A11)
- ___ Thick Dark Surface (A12)
- ___ Sandy Mucky Mineral (S1)
- ___ 5 cm Mucky Peat or Peat (S3)
- ___ Sandy Gleyed Matrix (S4)
- ___ Sandy Redox (S5)
- ___ Stripped Matrix (S6)
- ___ Dark Surface (S7)
- ___ Loamy Mucky Mineral (F1)
- ___ Loamy Gleyed Matrix (F2)
- X Depleted Matrix (F3)
- ___ Redox Dark Surface (F6)
- ___ Depleted Dark Surface (F7)
- ___ Redox Depressions (F8)

Indicators for Problematic Hydric Soils[3]:

- ___ Coast Prairie Redox (A16)
- ___ Iron-Manganese Masses (F12)
- ___ Red Parent Material (F21)
- ___ Very Shallow Dark Surface (F22)
- ___ Other (Explain in Remarks)

[3]Indicators of hydrophytic vegetation and wetland hydrology must be present, unless disturbed or problematic.

Restrictive Layer (if observed):

Type: _____

Depth (inches): _____

Hydric Soil Present? **Yes** X **No** ___

Remarks:

HYDROLOGY

Wetland Hydrology Indicators:

Primary Indicators (minimum of one is required; check all that apply)

- ___ Surface Water (A1)
- X High Water Table (A2)
- X Saturation (A3)
- ___ Water Marks (B1)
- ___ Sediment Deposits (B2)
- ___ Drift Deposits (B3)
- ___ Algal Mat or Crust (B4)
- ___ Iron Deposits (B5)
- ___ Inundation Visible on Aerial Imagery (B7)
- ___ Sparsely Vegetated Concave Surface (B8)
- ___ Water-Stained Leaves (B9)
- ___ Aquatic Fauna (B13)
- ___ True Aquatic Plants (B14)
- ___ Hydrogen Sulfide Odor (C1)
- ___ Oxidized Rhizospheres on Living Roots (C3)
- ___ Presence of Reduced Iron (C4)
- ___ Recent Iron Reduction in Tilled Soils (C6)
- ___ Thin Muck Surface (C7)
- ___ Gauge or Well Data (D9)
- ___ Other (Explain in Remarks)

Secondary Indicators (minimum of two required)

- ___ Surface Soil Cracks (B6)
- ___ Drainage Patterns (B10)
- ___ Dry-Season Water Table (C2)
- ___ Crayfish Burrows (C8)
- ___ Saturation Visible on Aerial Imagery (C9)
- ___ Stunted or Stressed Plants (D1)
- X Geomorphic Position (D2)
- X FAC-Neutral Test (D5)

Field Observations:

Surface Water Present?	Yes ___	No X	Depth (inches): ___
Water Table Present?	Yes X	No ___	Depth (inches): 0
Saturation Present? (includes capillary fringe)	Yes X	No ___	Depth (inches): 0

Wetland Hydrology Present? **Yes** X **No** ___

Describe Recorded Data (stream gauge, monitoring well, aerial photos, previous inspections), if available:

Remarks:

Lower landscape position than P6, which is across the swale to the south.

Blanchardville Coop
Blanchardville Coop Oil & NGSD Parcels
Project #: 20200316
January 2, 2021

Appendix D | Site Photographs

Photo #1 Sample point P1

Photo #2 Sample point P1

Photo #3 Sample point P1

Photo #4 Sample point P1

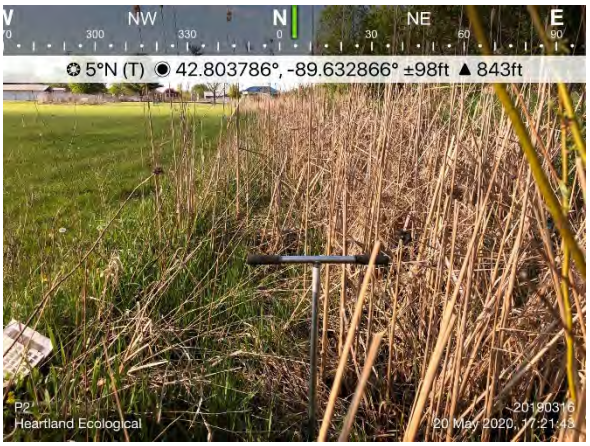

Photo #5 Sample point P2

Photo #6 Sample point P2

Photo #7 Sample point P2

Photo #8 Sample point P2

Photo #9 Sample point P3

Photo #10 Sample point P3

Photo #11 Sample point P3

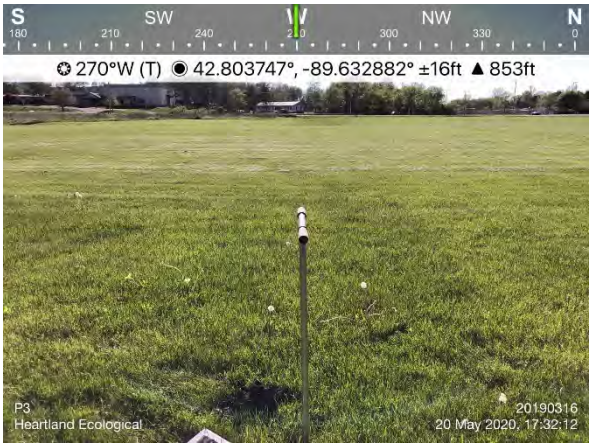

Photo #12 Sample point P3

Photo #13 Sample point P4

Photo #14 Sample point P4

Photo #15 Sample point P4

Photo #16 Sample point P4

Photo #17 Sample point P5

Photo #18 Sample point P5

Photo #19 Sample point P5

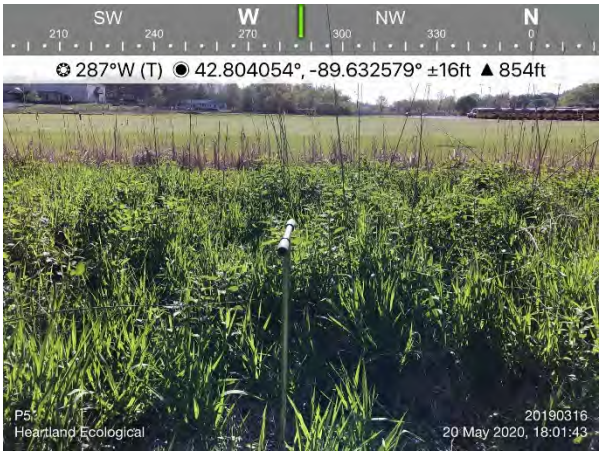

Photo #20 Sample point P5

Photo #21 Sample point P6

Photo #22 Sample point P6

Photo #23 Sample point P6

Photo #24 Sample point P6

Photo #25 Sample point P7

Photo #26 Sample point P7

Photo #27 Sample point P7

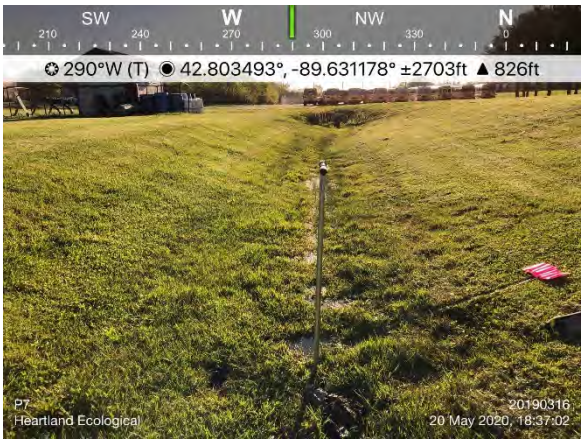

Photo #28 Sample point P7

Photo #29 Sample point P8

Photo #30 Sample point P8

Photo #31 Sample point P8

Photo #32 Sample point P8

Photo #33 Sample point P9

Photo #34 Sample point P9

Photo #35 Sample point P9

Photo #36 Sample point P9

Photo #37 Sample point P10

Photo #38 Sample point P10

Photo #39 Sample point P10

Photo #40 Sample point P10

Photo #41 Sample point P11

Photo #42 Sample point P11

Photo #43 Sample point P11

Photo #44 Sample point P11

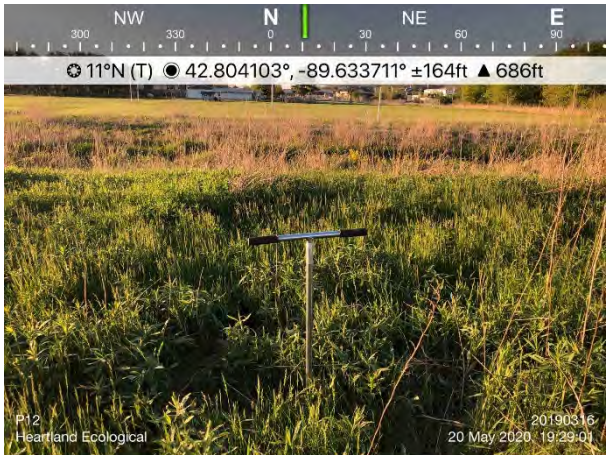

Photo #45 Sample point P12

Photo #46 Sample point P12

Photo #47 Sample point P12

Photo #48 Sample point P12

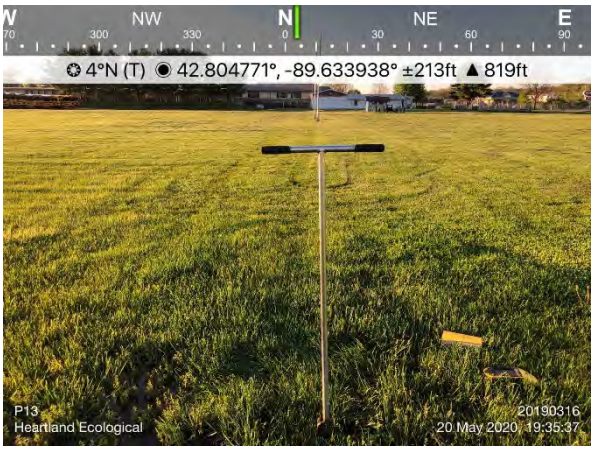

Photo #49 Sample point P13

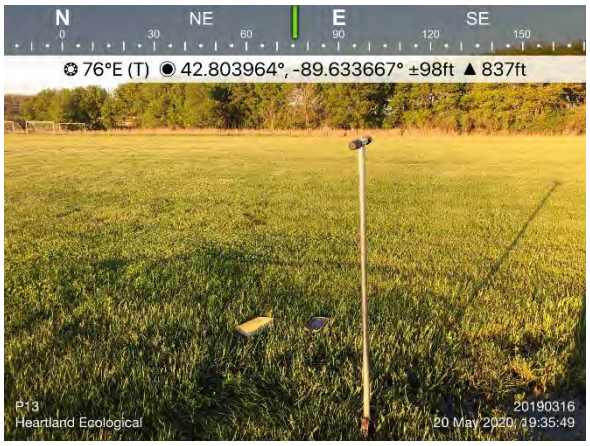

Photo #50 Sample point P13

Photo #51 Sample point P13

Photo #52 Sample point P13

Photo #53 Sample point P14

Photo #54 Sample point P14

Photo #55 Sample point P14

Photo #56 Sample point P14

Photo #57 Sample point P15

Photo #58 Sample point P15

Photo #59 Sample point P15

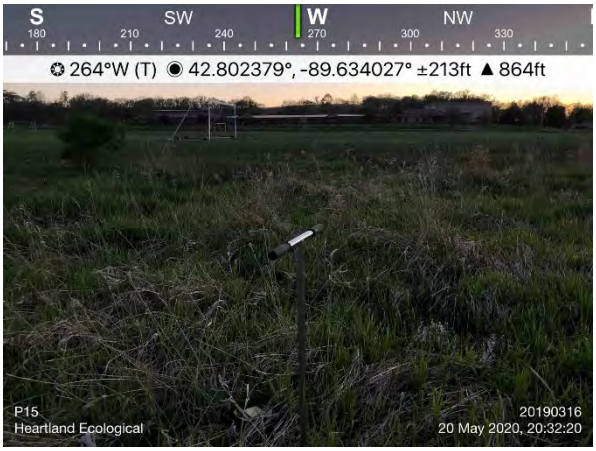

Photo #60 Sample point P15

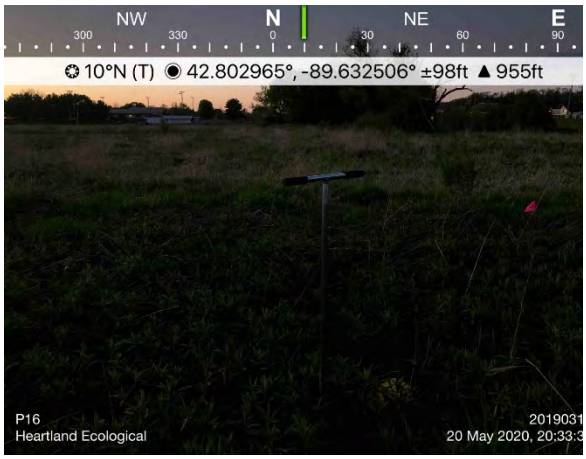

Photo #61 Sample point P16

Photo #62 Sample point P16

Photo #63 Sample point P16

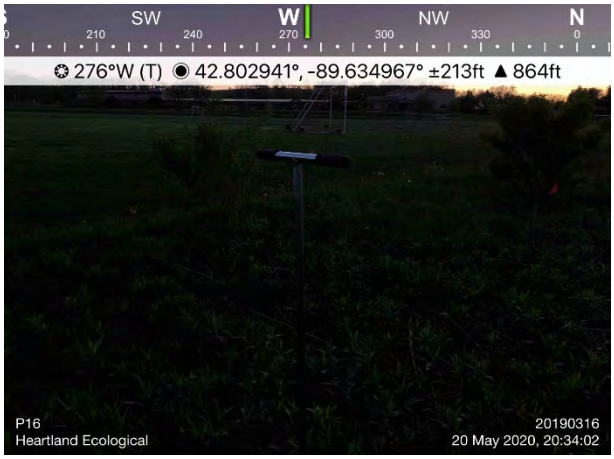

Photo #64 Sample point P16

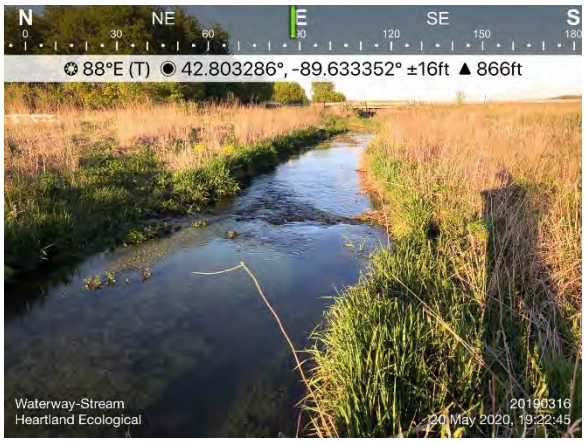

Photo #65 View east (downstream) along Legler School Branch

Photo #66 View southwest (upstream) along Legler School Branch

Photo #67 View north along 2nd Street's east ditch, part of W-2

Photo #68 View south along 2nd Street's east ditch, part of W-2

Appendix E | Delineator Qualifications

State of Wisconsin
DEPARTMENT OF NATURAL RESOURCES
1300 W Clairemont Avenue
Eau Claire, WI 54701

Tony Evers, Governor
Preston D. Cole, Secretary
Telephone 608-266-2621
Toll Free 1-888-936-7463
TTY Access via relay - 711

March 19, 2020

Eric Parker
Heartland Ecological Group, Inc.
4821 Elm Island Circle, Waterford, WI 53185

Subject: 2020 Assured Wetland Delineator Confirmation

Mr. Parker,

This letter provides Wisconsin Department of Natural Resources (WDNR) confirmation for the wetland delineations you conduct during the 2020 growing season. You and your clients will not need to wait for the WDNR to review your wetland delineations before moving forward with project planning. This will help expedite the review process for WDNR's wetland regulatory program. Your name and contact information will continue to be listed on our website at: http://dnr.wi.gov/topic/wetlands/assurance.html.

In the instance where a municipality may require a letter of confirmation for your work prior to moving forward in the local regulatory process, this letter shall serve as that confirmation. Although your wetland delineations do not require WDNR field review, inclusion of a Wetland Delineation Report is required for projects needing State authorized wetland, waterway and/or storm water permit approvals.

If you or any client has a question regarding your status in the Wetland Delineation Professional Assurance Program, contact me by email at kara.brooks@wisconsin.gov or phone at 414-308-6780. Thank you for all your hard work and best wishes for the upcoming field season.

Sincerely,

Kara Brooks
Wetland Identification Coordinator
Bureau of Watershed Management

Heartland
ECOLOGICAL GROUP INC

Eric C. Parker, SPWS

Principal Scientist
506 Springdale Street
Mount Horeb, WI 53572
eric@heartlandecological.com
(414) 380-0269

Mr. Parker is a Senior Professional Wetland Scientist and Professionally Assured Wetland Delineator in Wisconsin with 33 years of experience assisting public and private clientele. He has completed wetland projects in other states including IL, IN, OH, MI, ND, MO, PA, TX, MD, VA, and NC. His work has supported thousands of institutional, commercial, utility, residential, industrial & transportation projects. Mr. Parker's natural resource specialties include botanical surveys, wetland science, restoration and mitigation, and environmental corridor mapping. He has a widespread understanding of the scientific, technical, and regulatory aspects of natural resources projects. His interests also include floristic quality assessment (FQA) and wetness categorization of plant species.

Mr. Parker's experience includes the following: Botanical / Biological Surveys and Natural Resource Inventories; Rare Species Surveys, Conservation Plans and Monitoring; Wetland Determination, Delineation and Functional Assessment; Wetland Exemptions; Environmental Corridor Determinations/Mapping; Wetland Restoration, Mitigation, Banking and Monitoring; Habitat Restoration, Wildlife Surveys, SCAT surveys, Environmental Assessments; Local, state, federal permit applications; Expert Witness testimony; and Regulatory permit compliance.

Education

BS, Watershed Management, Soils Minor
University of WI - Stevens Point, 1983

Wetland Ecosystems (including delineation & assessment), USEPA Graduate School Washington DC, 1988

Field Oriented Wetland Delineation Course (1987 Corps Manual) Wetlands Training Institute (WTI) St. Paul, MN, 1994

Basic Wetland Delineation Training Wisconsin Dept. of Administration Waukesha, WI, 1997

Vegetation Description, UWM Cedarburg Bog Field Station, Saukville, WI, 1998

Advanced Wetland Delineation, U. of WI - La Crosse, Bayfield County, WI, 2001

Critical Methods in Wetland Delineation, University of WI - La Crosse Continuing Education and Extension, Madison, WI, 2006, 2008, 2010, 2014, 2016-2020

Mosses ID & Ecology, UWM Cedarburg Bog Field Station, Saukville, WI, 1998

Sedges ID & Ecology, UWM Cedarburg Bog Field Station, Saukville, WI, 2002, 2006, 2010

Grasses ID & Ecology, UWM Cedarburg Bog Field Station, Saukville, WI, 1998

Registrations

Senior Professional Wetland Scientist #838, (SPWS), Society of Wetland Scientists Professional Certification Program, 1995-current

Certified Wetland Scientist #C-058, (CWS), Stormwater Management Commission Lake County, IL, 2002-current

Qualified Wetland Review Specialist #W-057, (QWRS), Kane County, IL, 2006-current

Project Experience

Wetland Delineation & Regulatory Support

2020 Wetland Delineations, Exemption Submittals, and Permitting (90 sites)

Courtney Street Storage Buildings, Racine Co., WI (Feb); 86th Ave & STH 165 Parcel, Kenosha Co., WI (Feb-Apr); Harris Gravel Pit, Dane Co., WI (Mar-Apr); Alliant Birnamwood Substation, Shawano Co., WI (Apr); Rolling Meadows Drive Parcel, Fond du Lac Co., WI (Apr); Lieds Nursery Site, Waukesha Co., WI (Apr); Plas-Tech Engineering Site, Walworth Co., WI (Apr); Fink Parcel, Racine Co., WI (Apr); Lot 1 Proposed CSM 3258, Racine Co., WI (Apr); Harris Gravel Pit, Dane Co., WI (May); Schumacher Rd Reconstruction, Dane Co., WI (Apr); Whitetail Ridge Ph2, Kenosha Co., WI (Apr), Kelly Pit Addition, Dane Co., WI (Apr); Myrtle Way Road Improvements, Rock Co., WI (Apr); Pewaukee Industrial Park South, Waukesha Co., WI (May); Mueller Property, Fond du Lac Co., WI (Apr); 3901 Kipp Street Site, Dane Co., WI (Apr); Witte Parcels, Dane Co., WI (Apr); Sandalwood Lots 7-8, Oconto Co., WI (Apr); Yellowstone Outdoor Resort, Lafayette Co., WI (Apr); S&L Underground Expansion, Columbia Co., WI (May); 200 Baraboo Street, Sauk Co., WI (May); Jefferson Pit, Jefferson Co., WI (May); Rock Point Village, Waukesha Co., WI (May); Blanchardville Coop Oil & NGSD Parcels, Green Co., WI (May); Logtown Development, Sauk Co., WI (Jun); Maple Ave Property, Waukesha Co., WI (May); Wanasek Property, Racine Co., WI (May); Meier Farms, Dane Co., WI (Jun); 76th & Ryan Site, Sauk Co., WI (May); Milton Townline Road Site, Rock County, WI (May); Somers Multi-family Site, Kenosha Co., WI (May); Cazenovia WWTP Expansion, Waukesha Co., WI (Jun); Waukegan Property, Lake Co., IL (Jun); Ozaukee Christian School, Washington Co., WI (Jun); Kohler Distribution Center, Sheboygan Co., WI (Jun); Veterans Memorial Park West Site, Kenosha County, WI (Jun); Veterans Memorial Park East Site, Kenosha County, WI (Oct); Bristol Commons Site, Kenosha Co., WI (Jun); Barels Property, Racine Co., WI (Jun); Rogich Property, Milwaukee Co., WI (Jun); CTH MM Intersection Reconstruction, Dane Co., WI (Jul); Rose Property, Racine Co., WI (Jun); Baldev Court Property, Ozaukee Co., WI (Jul); Paul-Meghan Dominie Property, Dane Co., WI (Jul); Union Court Site, Kenosha Co., WI (Jul); Webcrafters Parcels, Dane Co., WI (Jul); Site Security Upgrades Site, Waukesha Co., WI (Jul); Scuppernong Creek Site, Waukesha Co., WI (Jul); W9030 Oak Ridge Road Property, Jackson Co., WI (Jul); Cherokee Golf Course, Dane Co., WI (Aug); W3948 South Shore Drive, Walworth Co., WI (Aug); Caledonia Multifamily Site, Racine Co., WI (Aug), Mittelstaedt Property, Sauk Co., WI (Aug); 1525 Bryce Drive Parcel, Winnebago Co., WI (Sep); Platten Property, Outagamie Co., WI (Sep); St. Mary's Springs Site, Fond du Lac Co., WI (Sep); Fairway Village Site, Ozaukee Co., WI (Sep); Quarry Park Site, Waukesha Co., WI (Sep); CTH F-Concord Site, Jefferson Co., WI (Sep); HJ Williams Farm, Adams Co., WI (Oct); STH 16-Lisbon Rd Parcel, Waukesha Co., WI (Sep); Golden Lake Road Property, Waukesha Co., WI (Sep); 4522 CTH P Parcel, Washington Co., WI (Sep); Darby Farms, Kenosha Co., WI (Sep); 227 Sussex Street, Waukesha Co., WI (Sep); Lexus of Brookfield Site, Milwaukee Co., WI (Sep); Wesner Greenfield Ave Parcels, Waukesha Co., WI (Sep); Oriole Lane Parcels, Ozaukee Co., WI (Oct); Wayside Parkview Estates, Brown Co., WI (Sep); Wind Point Parcel, Racine Co., WI (Oct); Geneva National Lot 18-23, Walworth Co., WI (Oct); Badger Farm, Racine Co., WI (Oct); Dorset Corners Substation, Monroe Co., WI (Sep); Covered Bridge Rd Site, Ozaukee Co., WI (Oct); Trek Distribution Center, Jefferson Co., WI (Oct); Craftsman Drive Parcel, Waukesha Co., WI (Oct); Village Green Subdivision, Ozaukee Co., WI (Oct); Ansay Farm, Ozaukee Co., WI (Oct); Zenner Farm Property, Racine Co., WI (Oct); West Snell Rd Site, Winnebago Co., WI (Oct); Kenosha County Bridges, Kenosha Co., WI (Oct); Confidential Site Janesville, Rock Co., WI (Oct); Janesville Airport Site, Rock Co., WI (Oct); 10920 West Liberty Drive, Milwaukee Co., WI (Oct); V of River Hills 53-Acre Site, Milwaukee Co., WI (Oct); Hwy 14 & Lacy Rd Site, Dane Co., WI (Oct); Wilderness Way Parcel, Waukesha County, WI (Oct); Hummingbird Lane Parcel, Sheboygan Co., WI (Oct); Plainview Rd Site, Waukesha Co., WI (Nov); Delimat Property, Kenosha Co., WI (Nov); 11900 N Port Washington Rd Parcel, Ozaukee Co., WI (Nov); Canopy Hills Artificial Wetland, Racine Co., WI (Dec); Strauss Brands Facility, Milwaukee County, WI (Dec).

2019 Wetland Delineations, Exemption Submittals, and Permitting (39 sites)

North Hills Subdivision, Waukesha Co., WI (Jan); Prairie Walk Subdivision, Waukesha Co., WI (Apr); Loomis Parcel Determination, WI (Mar-Apr); Lamminem Parcel, Kenosha Co., WI (Apr); Lot 103 Burlington, Racine Co., WI (Apr); 7220 Ryan Rd Parcel, Milwaukee Co., WI (Apr); 1-Acre Franklin Parcel, Milwaukee Co., WI (June); 256th Ave Site, Kenosha Co., WI (May); 915 Main St Mukwonago, Waukesha Co., WI (May); Muskego Lakes CC, Muskego, Waukesha Co., WI (June), Bonniwell Road Parcel, Ozaukee Co., WI (July); 333 Portland Rd Site, City of Waterloo, Jefferson Co., WI (May); Thompson Lane Parcel, Village of Chenequa, Waukesha Co., WI (May); Schmitz Redi-Mix Site, Village of Mt. Pleasant, Racine Co., WI (June); New Berlin Redi-Mix Site, City of New Berlin, Waukesha Co., WI (May); Elm Grove Road Basin, City of New Berlin, Waukesha Co., WI (May); Lathrop-Meacham Parcels Mitigation Site, Village of Mt. Pleasant, Racine Co., WI (May-July); Lot

18-31 Geneva National Site, Town of Geneva, Walworth Co., WI (July); Bohner's Lake Parcel, Town of Burlington, Racine Co., WI (Sept); 6970 South 6th St., City of Oak Creek, Milwaukee Co., WI (Aug); Weatherstone Meadows site, City of New Berlin, Waukesha Co., WI (Aug); Parkview Apartments site, Village of Somers, Kenosha Co., WI (Aug); Volkswagen Expansion site, Village of Pleasant Prairie, Kenosha Co., WI (Aug); Pewaukee-Brookfield Trail, Waukesha Co., WI (Aug-Sept); Parcel 1268-993, City of New Berlin, Waukesha Co., WI (Aug); Germantown Industrial Business Park, Washington Co., WI (Oct); Haasch- Finger site, City of Brookfield, Waukesha Co., WI (Oct); Kennedy Property, Village of Waunakee, Dane Co., WI (Oct); Jefferson County Interurban Trail, Towns of Watertown and Ixonia, Jefferson Co., WI (Oct); Mukwonago Residential Parcel, Village of Mukwonago, Waukesha Co., WI (Oct); Pine Ridge Estates, City of Oconomowoc, Waukesha Co., WI (Oct); Silver Lake Parcels, Village of Salem Lakes, Kenosha Co., WI (Oct); New Berlin Trail Phase II, City of Waukesha, Waukesha Co., WI (Oct); 1910 W Puetz Road site, City of Oak Creek, Milwaukee County, WI (Oct); Project Redline, Village of Menomonee Falls, WI (Oct); CSM 3232 Oulot 1, Village of Mt. Pleasant, Racine Co., WI (Oct); Plant Community Mapping and Assessment, City of Oak Creek, Milwaukee Co., WI (Nov); Faber Property, Village of Williams Bay, Walworth Co., WI (Nov); Campus Drive Property, Village of Hartland, Waukesha Co., WI (Dec).

Example 2018 Wetland Delineations in WI and IL (50 sites)

Homestead Acres, Racine Co., WI (Apr); Greenmeadows, Racine Co., WI (Apr), Wind Point School, Racine Co., WI (Apr); Vintage Parc East, Kenosha Co., WI (Apr); Nelson-Heckel, Kenosha Co., WI (Apr); Caledonia Storage, Racine Co., WI (Apr); New Berlin Storage, Waukesha Co., WI (Mar); Manke Gravel Pit, Columbia Co., WI (May); Drissel-Wallace, Kenosha Co., WI (May); LaBelle Golf Course, Waukesha Co., WI (May); Waterloo Aluminum, Jefferson Co., WI (May); Salem Business Park, Kenosha Co., WI (May); Audubon Arboretum, Racine Co., WI (May); Briarwood, Racine Co., WI (May); Basting-Brown Parcels, Waukesha Co., WI (May); 84-Acre Site, Racine Co., WI (May); Jolenta Lane, Waukesha Co., WI (Apr); Rock Road Storage, Walworth Co., WI (May); Wildwood Creek, Winnebago Co., WI (Jun); Green Bay Site, Brown Co., WI (Jun); Main Street Market, Kenosha Co., WI (Jul), Armstrong Eddy Park, Rock Co., WI (May), Hickory St Site, Ozaukee Co., WI (Jun), Parcel DW 800004, Walworth Co. (Jun); Lot 8 Parcel WCA-0003, Walworth Co., WI (Jun); RRR Grundy, Kane Co., IL (Jul); Coleman Norris Parcel, Waukesha Co., WI (Jul); Deaton Parcel, Kenosha Co., WI (Aug); Hintz Parcel, Washington Co., WI (Aug); Loomis-Ryan Rds Site, Milwaukee Co., WI (Aug); Grass Parcels, Waukesha Co., WI (Sep); Mallard Ridge Landfill Pipeline, Walworth Co., WI (Sep); Glacier Ridge Landfill Pipeline, Dodge Co., WI (Sep); Ravenwoods, Waukesha Co., WI (Aug); Canopy Hills, Racine Co., WI (Sep); Duck Pond, Kenosha Co., WI (Sep); Splinter Parcels, Racine Co., WI (Oct); Berget Parcel, Walworth Co., WI (Sep); Saylesville Rd Parcel, Waukesha Co., WI (Oct); Racine Ave-Lawnsdale Rd Parcel, Waukesha Co., WI (Oct); Braun Rd-90th St Parcel, Racine Co., WI (Oct); Grafton Parcels, Ozaukee Co., WI (Dec); Crawford Parcel, Racine Co., WI (Nov); Kotas Parcels, Racine Co., WI (Nov); Altamount Acres South, Racine Co., WI (Dec); Christina Estates, Racine Co., WI (Dec); Christina Estates NE, Racine Co., WI (Dec); Lathrop Parcel, Racine Co., WI (Dec); Hillside Ridge, Waukesha Co., WI (Dec); Stolz Property, Waukesha Co., WI (Dec).

Example 2017 Wetland Delineations in WI, MI, IN, and IL (31 Sites)

Back 40 Mine, Menominee Co., MI (Jan); Oakdale Rd Site, Waukesha Co., WI (Sep), Birds Eye Foods, Walworth Co., WI (Sep); Boss Property, Leelanau Co., MI (Jul); Brighton Estates, Waukesha Co., WI (Sep); Saltzman North, Waukesha Co., WI (Sep); Susnar Parcel, Waukesha Co., WI (Sep); Wrenwood Site, Washington Co., WI; Chorneyko Site, Walworth Co., WI (Apr); CN Railroad Bridges-6 Sites, Fond du Lac & Winnebago Co's, WI; CN Railroad Freeport Culvert, Kane Co., IL (May); Herrling Site, Dane Co., WI (Sep); MMSD Sewerage Project, Milwaukee Co., WI (May); Spring St Site, Racine Co., WI (Oct); Goshen Midway Cell Tower, Elkhart Co., IN (Apr); Two Creeks Utility Site, Manitowoc Co., WI (Nov); Suncast Site, Kane Co., IL (Dec); Lot 51 Lakeview Corp Park, Kenosha Co., WI (Oct); Lakefront Gun Range, Racine Co., WI (Oct); WI Club Golf Course, Milwaukee Co., WI (Apr); WisDOT Improvements, STH 32 Racine Co (Aug), STH 67 Walworth Co. (Sep), STH 20, Racine Co. (Oct), 27th St, Milwaukee Co. (Sep); Conference Point Boat Launch, Walworth Co., WI (Oct); Lake View RR Corridor, Portage Co., WI (Sep).

Example 2016 Wetland Delineations in WI, OH, MI and IL (Mostly Large Projects)

AEP Wavery-Adams-Seaman 138 kV Trans. Line Rebuild, Adams & Pike Co's, OH (Dec); Kansas West-Faraday Trans. Line Rebuild-Macon, Moultrie, & Coles Co's, IL (Jan), Riveredge Nature Center Preliminary, Ozaukee Co., WI (Feb); Lost Creek Mitigation Site, Portage Co., WI (Jun); I-41 Burleigh to Good Hope Corridor WisDOT, Milwaukee Co., WI (Jul); STH 60 Corridor, Ozaukee & Washington Co's, WI (Aug–Oct); Erin Hills Golf Course, Washington Co., WI (Sep); Back 40 Mine, Menominee Co., MI; Lake Zurich SW Cell Tower, Lake Co., IL (Oct); Acme Steel Coke Site, Cook Co., IL (Dec).

Example 2015 Wetland Delineations in WI, IL, and MO (Mostly Large Projects)
Bolser Street MO33211-M Cell Tower Site, Grundy Co., MO (Sep); Section 9 Site, Dane Co., WI (Apr); Franzel Rd Site, Bayfield Co., WI (Apr); Big Eau Pleine Mitigation Site, Marathon Co., WI (Aug); Taylor Road Siding Track, Jackson Co., WI (Nov); UPS-CACH Site, Cook Co., IL (Jun); Eggers Woods Forest Preserve, Cook Co., IL (Mar).

Example 2014 Wetland Delineations in WI, IL, and MI (Mostly Large Projects)
Emerald Park Western Expansion, Waukesha Co., WI (Oct); Arcadia Mining Site-Trempealeau Co., WI (Apr); Kalamazoo River Parcel, Kalamazoo and Calhoun Co's, MI (Jul); G2 Mitigation Site - Winnebago Co., WI (May); Line 6A MP 378.94, McHenry Co., IL (Sep); Geneva National Site, Walworth Co., WI (Nov); Nortrax Site -Lincoln Co., WI (Oct); Toberman Parcel- Crawford Co., WI (Oct).

Example 2013 Wetland Delineations in WI, IL, OH, and MI (Mostly Large Projects)
West Central Lateral - Eau Claire, Clark, Jackson & Monroe Co's, WI (Apr-May); Walker Cranberry 80- acre Parcel – Jackson Co., WI (Sept - Oct); Berne to Natrium Pipeline, Monroe Co., OH (Oct); CNX Noble Pipeline – Noble Co., OH (Oct); Deer Grove Forest Preserve, Cook Co., IL (Nov).

Example 2012 Wetland Delineations in WI, IL, IN, and TX (Mostly Large Projects)
West Central Lateral (190 miles), Eau Claire, Clark, Jackson & Monroe Co's, WI (Sep-Nov); Morrison Creek Cranberry Parcel, Jackson Co., WI (Aug); London Mitigation Site, Jefferson Co., WI (July); Southern Access Pipeline, Sawyer & Washburn Co's, WI (Jun); I-80 Interchange, LaPorte Co., IN (Mar); Eagle-Ford Shale Plays, LaSalle & McMullen Co's, TX (Jan-Feb).

I-94 Corridor Wetland and Primary Environmental Corridor Mapping and Endangered Species Study, Milwaukee, Racine, and Kenosha Counties, WI (Project Manager and Lead Scientist)

Primary Environmental Corridor Delineation Parkview Site, Village of Somers, WI (Lead Scientist)

Elm Road Generating Station, Oak Creek & Caledonia, WI (Project Manager & Lead Scientist)

Tri-State Tollway, Deerfield Plaza Wetland and Endangered Species Investigation, Lake and Cook Counties, IL (Lead Scientist)

Guardian II Laterals, Fox Valley, Hartford and West Bend, WI (Project Manager and Lead Scientist)

ATC Paris to St. Martins (KK3025) 138KV Line Rebuild, Kenosha, Racine and Milwaukee Counties, WI (Project Manager and Lead Scientist)

Appendix F | NAIP Aerial Imagery

Study Area (32.75 ac)

0 150 300
Ft

Heartland
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Appendix: 2005-08-02
NAIP Aerial Imagery
Blanchardville Co-op Oil &
NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2005 NAIP
Data: USDA *5/18/2020*

Study Area (32.75 ac)

0 150 300 Ft

Heartland ECOLOGICAL GROUP INC

Appendix: 2006-07-15 NAIP Aerial Imagery

Blanchardville Co-op Oil & NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2006 NAIP
Data: USDA *5/18/2020*

Study Area (32.75 ac)

0 150 300
Ft

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Appendix: 2008-07-09
NAIP Aerial Imagery
Blanchardville Co-op Oil & NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2008 NAIP
Data: USDA *5/18/2020*

Study Area (32.75 ac)

0 150 300 Ft

Heartland ECOLOGICAL GROUP INC

Appendix: 2010-07-02
NAIP Aerial Imagery
Blanchardville Co-op Oil & NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2010 NAIP
Data: USDA *5/18/2020*

Study Area (32.75 ac)

0 150 300 Ft

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Appendix: 2013-07-05 NAIP Aerial Imagery

Blanchardville Co-op Oil & NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2013 NAIP
Data: USDA *5/18/2020*

Study Area (32.75 ac)

0 150 300
Ft

Heartland
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Appendix: 2015-09-09
NAIP Aerial Imagery
Blanchardville Co-op Oil &
NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2015 NAIP
Data: USDA *5/18/2020*

Study Area (32.75 ac)

0 150 300 Ft

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Appendix: 2017-09-24 NAIP Aerial Imagery

Blanchardville Co-op Oil & NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2017 NAIP
Data: USDA *5/18/2020*

Study Area (32.75 ac)

0 150 300
Ft

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Appendix: 2018-07-28
NAIP Aerial Imagery
Blanchardville Co-op Oil &
NGSD Parcels
Project #20200316
T4N, R7E, S23
V New Glarus, Green Co, WI

2018 NAIP
Data: USDA *5/18/2020*

Geotechnical Engineering Exploration and Analysis

Proposed Improvements
New Glarus Middle & High School
1628 2nd Street
New Glarus, Wisconsin

Prepared for:

New Glarus School District
New Glarus, Wisconsin

May 31, 2023
Giles Project No. 1G-2303032

GILES
ENGINEERING ASSOCIATES, INC.

GILES
ENGINEERING ASSOCIATES, INC.
GEOTECHNICAL, ENVIRONMENTAL & CONSTRUCTION MATERIALS CONSULTANTS

• Dallas, TX
• Los Angeles, CA
• Manassas, VA
• Milwaukee, WI

May 31, 2023

New Glarus School District
1420 2nd Street
New Glarus, WI 53574

Attention: Ms. Jennifer Thayer, Ph.D.
Superintendent

Subject: Geotechnical Engineering Exploration and Analysis
Proposed Improvements
New Glarus Middle & High School
1628 2nd Street
New Glarus, Wisconsin
Giles Project No. 1G-2303032

Dear Ms. Thayer:

As requested, Giles Engineering Associates, Inc. conducted a *Geotechnical Engineering Exploration and Analysis* for the proposed project. The accompanying report describes the services that were performed, and it provides geotechnical-related findings, conclusions, and recommendations that were derived from those services.

We sincerely appreciate the opportunity to provide geotechnical services for the proposed project. Please contact the undersigned if there are questions about the report or if we may be of further service.

Very truly yours,

GILES ENGINEERING ASSOCIATES, INC.

Andrew J. Globig
Project Professional

Benjamin M. Stark, P.E.
Project Engineer

Distribution: Bray Architects
Attn: Mr. Andrew Kerr (pdf: akerr@brayarch.com)

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GEOTECHNICAL ENGINEERING EXPLORATION AND ANALYSIS

PROPOSED IMPROVEMENTS
NEW GLARUS MIDDLE & HIGH SCHOOL
NEW GLARUS, WISCONSIN
GILES PROJECT NO. 1G-2303032

1.0 SCOPE OF SERVICES

This report provides the results of the *Geotechnical Engineering Exploration and Analysis* that Giles Engineering Associates, Inc. ("Giles") conducted for the proposed project. The *Geotechnical Engineering Exploration and Analysis* included a geotechnical subsurface exploration program, geotechnical laboratory services, and geotechnical engineering. The scope of each service area was narrow and limited, as directed by our client, and based on our understanding and assumptions about the proposed project. Services are briefly described later. Environmental consulting was beyond Giles' authorized scope for this project.

Geotechnical-related recommendations are provided in this report for design and construction of the foundations and at-grade floors for the proposed concession building, and for design and construction of foundations for new bleachers and stadium lights. Additionally, recommendations are provided for the proposed pavement and stormwater management basin infiltration. Site preparation recommendations are given but are only preliminary as the means and methods of site preparation will depend on factors that were unknown when this report was prepared. Those factors include, but are not limited to, the weather before and during construction, the actual subsurface conditions that are exposed during construction, and the finalized details of the proposed development.

2.0 SITE AND PROJECT DESCRIPTION

The proposed project will consist of improvements to the existing New Glarus Sports Green Space soccer field, which is located at the address 1628 2nd Street, in New Glarus, Wisconsin. When the test borings were performed, the improvement area contained a soccer field and was covered with grass. An asphalt-paved parking lot was on the west side of the site. The proposed improvement area is shown on the *Test Boring Location Plans*, enclosed as Figures 1 in Appendix A.

Proposed Structures

A new concession building will be constructed immediately north of the proposed track, in the area of Test Boring 4. It is understood that the concession structure will be a two-story pre-engineered steel structure and a bar-joist and metal deck roof system. The structure will not have a basement or other below-grade spaces. Perimeter walls and interior columns will assumedly support the building. Maximum foundation loads were not provided to us. Therefore, this report assumes that the maximum foundation loads will be 3,000 pounds per lineal foot (plf) from bearing walls and 20,000 pounds per column. It is understood that the floor of each building is planned to be a ground-bearing concrete slab; this report assumes that the maximum floor load will be 100 pounds per square foot (psf). It is unknown whether the proposed buildings will be heated.

It is assumed that the new bleachers will be pre-manufactured and will be constructed of aluminum framing. Furthermore, it is assumed that the new bleachers are planned to be supported by isolated spread-footing foundations. The maximum foundation loads were not provided to us. Therefore, this report assumes that the maximum foundation load for the bleachers will be 20,000 pounds per column.

It is understood that stadium lights will be installed at various locations within the proposed improvement area. It is assumed that the stadium lights will be metal pole structures that are planned to be supported by large spread-footing foundations that extend at least 48 inches below-ground for frost protection and lateral stability. The maximum foundation loads for the stadium light were not provided to us and could not be estimated because details of the lights were also not provided.

The finish floor elevations for the proposed building and the top-of-foundation elevations for the other structures were not provided to us. Therefore, this report assumes that less than one foot of grade change will be needed in the proposed improvement areas. Because the proposed elevations were not provided to us, it is recommended that Giles review the finalized project plans before construction. Depending on that review, revision of this report might be necessary.

Proposed Pavement

A new parking lot will be constructed in the northwest portion of the site, as shown on Figure 1. It is assumed that the proposed parking lot will be paved with asphalt-concrete, but Portland cement concrete pavement will be in areas of higher traffic stress. Because Giles was not provided with traffic information, the pavement recommendations provided herein are based on assumed traffic conditions. It is assumed that surface grades of new pavement will generally match the surface grades, except for minor changes to promote proper surface and subsurface drainage.

Stormwater Management Device

It is understood that a stormwater management basin is planned to be constructed north of the proposed track and field, in the area of Test Pits 1 and 2, as shown on Figure 1. Because final details of the basin were not provided to us, the preliminary information provided in this report assumes that the basin will be several feet deep.

3.0 GEOTECHNICAL SUBSURFACE EXPLORATION PROGRAM

Test Borings

To explore subsurface conditions, six geotechnical test borings were conducted at the site using a mechanical drill-rig. Test Borings 1 through 4 were in the proposed soccer and football field area and Test Boring 5 and 6 were in the proposed pavement areas. Each test boring was drilled

to 16 feet deep. Test boring locations were positioned at the site based on measurements from existing site features and by approximating right angles. Approximate locations of the test borings are shown on the *Test Boring Location Plan*.

Samples were collected from each test boring, at certain depths, using the Standard Penetration Test (SPT), conducted with the drill rig. A brief description of the SPT is given in Appendix B, along with descriptions of other field procedures. Immediately after sampling, select portions of the SPT samples were placed in containers that were labeled at the site for identification. A Standard Penetration Resistance value (N-value) was determined from each SPT. N-values are reported on the *Test Boring Logs* (in Appendix A), which are records of the test borings.

The boreholes were backfilled, but backfill materials will likely settle or heave, creating a hazard that can injure people and animals. Borehole areas should, therefore, be carefully and routinely monitored by the school maintenance personnel or by others; settlement and heave of backfill materials should be repaired immediately. Giles will not monitor or repair boreholes.

Test Pits

Four test pits were performed at the site. Test Pits 1 and 2 were excavated in the proposed stormwater basin area and Test Pits 3 and 4 were excavated in additional potential basin areas using an excavator equipped with a toothed bucket. Test pit locations were positioned at the site based on measurements from existing site features and apparent property lines, and by using a Trimble® R2 receiver. Approximate locations of the test pits are shown on the *Test Boring Location Plan*.

The test pits were planned to be 15 feet deep but were only excavated to depths ranging between 10 and 12 feet below-ground due to caving wet sands. Test pits were conducted to observe subsurface conditions with regard to stormwater infiltration. A Giles representative observed the excavation procedures and logged the subsurface conditions within each test pit. Observations are reported on the Wisconsin DSPS *Soil and Site Evaluation – Storm* logs, included in Appendix A. Each test pit excavation was backfilled after the soil conditions were logged; however, backfill material was loosely placed and is, therefore, unsuitable for structural support.

Ground Elevations

Giles determined the ground elevations at the test borings and test pits using a Trimble® R2 receiver. The test boring elevations are noted on the *Test Boring Logs* and are considered accurate within about one foot.

4.0 GEOTECHNICAL LABORATORY SERVICES

Samples that were retained from the test borings were transported to Giles' geotechnical laboratory where the samples were classified using the descriptive terms and particle-size criteria shown on the *General Notes* in Appendix D and by using the Unified Soil Classification System (ASTM D 2488) as a general guide. Classifications are shown on the *Test Boring Logs*, along with horizontal lines that show estimated depths of material change. Field-related information pertaining to the test borings is also shown on the *Test Boring Logs*. For simplicity and abbreviation, terms and symbols are used on the *Test Boring Logs;* the terms and symbols are defined on the *General Notes*.

Soil samples that were observed in the test pit excavations were also visually classified using the USDA textural classification system in general accordance with the guidelines provided in the *Field Book for Describing and Sampling Soils* (USDA, Sept. 2012). USDA classifications of the retained samples are shown on the Wisconsin DSPS *Soil Evaluation – Storm* logs, enclosed in Appendix A. Supplemental information regarding soil classifications, including the USDA and USCS soil classification systems, is included in the *Soil Classification Notes* enclosure within Appendix D.

Unconfined compression (without measured strain), penetrometer resistance, and moisture content tests were performed on select SPT samples to evaluate their general engineering properties. Additionally, sieve testing of the percent of material passing the No. 200 sieve (P200) and Atterberg limits tests were performed on soil samples collected from Test Pits 1 and 3. Test results are on the *Test Boring Logs* and *Soil and Site Evaluation-Storm* logs. Because SPT samples were used, which are categorized as being disturbed samples, results of the unconfined compression and penetrometer resistance tests are approximate. Laboratory procedures are briefly described in Appendix C.

5.0 MATERIAL CONDITIONS

Because material sampling at the test borings was discontinuous, it was necessary to estimate conditions between sample intervals. Estimated conditions at the test borings are briefly discussed in this section and are described in more detail on the *Test Boring Logs* and *Soil and Site Evaluation-Storm* logs. The conclusions and recommendations in this report are based only on the estimated conditions.

5.1. Surface Materials

Topsoil was at the surface of each test boring and was about 8 to 10 inches thick. Topsoil generally consisted of silty clay or sandy clay, and included an estimated little amount of organic matter.

5.2. Fill Material

Material classified as fill was encountered at Test Pits 1 through 4 to about ±6½ feet below ground surface. The fill material was variable and consisted of lean clay, silty clay, and gravel that included concrete rubble.

5.3. Native Soil

Native soil generally consisted of fine sand; however, mottled sandy clay and lean clay soils were above sand at Test Borings 3, 4, 5, and 6 and were present to about ±4 to ±6½ feet below-ground; mottling is an indication of seasonal saturation. Based on laboratory testing, sandy clay and lean clay exhibited comparative consistencies of medium stiff to stiff. SPT N-values within the sand typically correlate to loose to firm relative densities.

5.4. Weathered Bedrock

Weathered bedrock was also below the materials described above at Test borings 2 and 5. Weathered bedrock was sampled, using a split-barrel sampler, as sand from sandstone. Furthermore, the degree of weathering varied. N-values within the weathered bedrock correlate to relative densities between dense and very dense, however, many of the N-values are likely not representative of the in-place density of the sampled materials because testing was within weathered bedrock.

6.0 GROUNDWATER CONDITIONS

It is estimated that the water table was between ±4 and ±6½ feet below-ground at the test boring locations when the test borings were conducted. However, based on the mottling within the shallow lean clay and sandy clay materials, the site may be subject to shallow perched-groundwater conditions, where groundwater perches above the water table and within several feet of the ground surface, especially within existing fill materials. Groundwater conditions will likely fluctuate, depending on precipitation, surface run-off, and other factors.

Giles' estimate of the groundwater conditions is only an approximation based on the colors and moisture conditions of the retained soil samples, and the depth that groundwater was identified within the test borings. Groundwater conditions might differ from the conditions described above, and the water table might be higher or lower than estimated. If a precise determination of the water table is needed, groundwater observation wells are recommended to be installed and monitored at the site. Giles can install and monitor observation wells, if needed.

7.0 CONCLUSIONS AND RECOMMENDATIONS

7.1. Seismic Design Considerations

A soil Site Class D is recommended for seismic design. By definition, Site Class is based on the average properties of subsurface materials to 100 feet below-ground. Because 100-foot test borings were not requested or authorized, Site Class was estimated based on the test borings, presumed area geology, and the International Building Code.

7.2. Foundation Recommendations

Spread-footing foundations are recommended for the proposed concession building, bleachers, and stadium lighting. However, existing fill is unsuitable for direct or indirect support of foundations. Each footing must bear on suitable native soil, or on new engineered fill or lean-concrete backfill (both discussed below) placed on suitable native soil. The foundations are recommended to be designed using a 1,500 psf maximum, net, allowable soil bearing capacity. For geotechnical considerations and regardless of the calculated foundation-bearing stress, strip footings are recommended to be at least 18 inches wide and isolated footings are recommended to be at least 24 inches wide and long. From a geotechnical perspective, foundation walls for the proposed buildings can be constructed of cast-in-place concrete or concrete masonry units. It is recommended and assumed that a structural engineer will provide specific foundation details, including footing dimensions, reinforcing, etc.

A minimum 48-inch foundation-embedment depth is required by the building code. It is, therefore, recommended that perimeter foundations (and any exterior elements) of the concession building bear at least 48 inches below the finished ground-grade at the perimeter of these buildings. If these buildings will be heated, the bearing grade of interior foundations, if any, can be above the 48-inch embedment depth. However, if these buildings will not be heated, it is recommended that interior foundations bear at least 48 inches below the floor surface. Also, it is recommended that foundations for the bleachers and stadium lighting bear at least 48 inches below the finished ground grade at the foundation locations, but foundations for these structures might need to be much deeper to develop sufficient lateral stability.

A frictional coefficient of 0.35 is recommended to determine lateral resistance at the base of foundations. The recommended frictional coefficient is only for concrete cast directly on suitable native soil, or on new engineered fill or lean-concrete backfill, used to replace unsuitable materials. Lateral resistance due to friction should be determined based on dead load only. Also, the ultimate lateral resistance determined from the frictional coefficient is recommended to be factored to determine an allowable value. Passive resistance is recommended to be neglected to at least the recommended 48-inch foundation-embedment depth due to seasonal changes and due to the amount of lateral movement necessary to develop full passive pressure.

Because of the shallow groundwater and lower-strength native soil, over-excavation of unsuitable material beneath foundation areas might be necessary to develop proper foundation support. Therefore, evaluation and approval of foundation-support soil by a geotechnical engineer during construction is critical. Without testing and approval by a geotechnical engineer, the proposed buildings and stadium lighting might be improperly supported, which could lead to excessive settlement, failure, and other problems. The foundations are recommended to be constructed immediately after foundation support soil is approved by a geotechnical engineer because weather can cause soil to become unstable.

Foundation excavations are recommended to be dug with a smooth-edge bucket to develop a relatively undisturbed bearing grade. A toothed bucket will likely disturb foundation-bearing soil more than a smooth-edge bucket, thereby making soil at the excavation base more susceptible to saturation and instability, especially during adverse weather. It is critical that contractors protect foundation-support soil and foundation construction materials (concrete and reinforcing). Furthermore, engineered fill is recommended to be placed and compacted in benched excavations along foundation walls immediately after the foundation walls can properly support lateral pressures from backfill, compaction, and compaction equipment. Earth-formed footing construction techniques are expected to be feasible, based on the test borings and the encountered sandy clay and lean clay at Test Boring 3, 4, 5, and 6. Earth-formed footing construction techniques might not be feasible at Test Borings 1 and 2 due to the granular site soil.

Foundation Support Soil Requirements

Existing fill is unsuitable for direct or indirect support of foundations. Each footing must bear on suitable native soil, or on new engineered fill or lean-concrete backfill (both discussed below) placed on suitable native soil. Based on the recommended 1,500 psf maximum, net, allowable soil bearing capacity, the in-situ unconfined compressive strength of cohesive native soil, such as sandy clay and lean clay, within foundation influence zones is recommended to be at least 0.8 tons per square foot (tsf). Granular native soil, such as sand, within foundation influence zones is recommended to have a corrected N-value (determined from SPTs and correlated from other in-situ tests) of at least 5, based on the recommended bearing capacity. It is recommended that the strength characteristics of soil within all foundation influence zones (determined by a geotechnical engineer during construction) meet or exceed the recommended values unless Giles approves other values.

Because of the shallow groundwater and lower-strength native soil, evaluation of foundation-support soil by a geotechnical engineer during construction is critical. The purpose of the evaluation is (1) to confirm that the foundations will be properly supported by suitable native soil, (2) to help determine where over-excavation is necessary, and (3) to confirm that the support soil is similar to the soil conditions described on the *Test Boring Logs*. If a firm other than Giles performs the evaluation, Giles must be notified if the composition or strength characteristics of foundation-support soil differ from those shown on the *Test Boring Logs*; revision of this report

might be necessary. Without evaluation and approval of foundation-support soil by a geotechnical engineer, the proposed buildings and stadium lighting could be improperly supported, which could lead to excessive settlement, failure, and other problems. OSHA requirements must be strictly followed when evaluating foundation-support soil; excavations that do not meet OSHA safety guidelines must not be entered.

Unsuitable material beneath foundation areas can likely be replaced with engineered fill consisting of dense-graded crushed stone that meets the gradation requirements of *dense-graded base* (1¼-inch) in Section 305 of the Wisconsin Department of Transportation Standard Specifications (2019). Granular material with other gradation characteristics can possibly be used but should be approved by a geotechnical engineer before the material is placed. If engineered fill is used as backfill beneath foundation areas, lateral over-excavation of unsuitable materials will also be required, in addition to the required vertical over-excavation. The overall width of lateral over-excavation will depend on the vertical over-excavation depth. For estimating purposes, the minimum lateral over-excavation could be determined by extending an imaginary line outward and downward at a ratio of 1(horizontal):2(vertical) from the bottom edges of a footing pad, but the actual lateral extents of over-excavation are recommended to be approved by a geotechnical engineer during construction.

Lean Portland cement concrete (minimum 28-day compressive strength of 500 psi) can likely also be used to replace unsuitable materials beneath foundation areas and is Giles' preferred backfill material for this project because of the groundwater conditions. Where lean concrete is used as backfill, footing construction must not begin until the lean concrete has gained sufficient strength. Also, over-excavations that are filled with lean concrete are recommended to be at least as wide (on all sides) as the footing pad that will be supported by the concrete, and excavation sidewalls are recommended to be plumb and parallel. To help control caving, lean-concrete backfill is recommended to be placed immediately after excavation. This trench-and-pour method requires close communication and scheduling between the general contractor, foundation contractor, concrete supply company, and geotechnical engineer. With a trench-and-pour method a geotechnical engineer must observe excavations as they are made. Full-time observation by a geotechnical engineer is critical, as noted above.

From a geotechnical perspective, foundations can possibly be extended through unsuitable materials, but stepped, thickened, and extended foundations must be approved by a structural engineer and geotechnical engineer. It is recommended that a geotechnical engineer provide specific recommendations pertaining to unsuitable materials within foundation areas at the time of construction.

Estimated Foundation Settlement

For the proposed concession building and bleachers, the post-construction total and differential settlements of a spread-footing foundation designed and constructed based on this report are

estimated to be less than about 1 inch and ½ inch, respectively. Also, it is estimated that the post-construction total settlement of a bleacher foundation will be a maximum of about 1 inch. These settlement estimates assume that the recommendations provided in this report will be followed and that foundation-support soil will be evaluated and approved by a geotechnical engineer during construction. Because specific loading and structural information was not provided to us, it was not possible to estimate settlement for stadium lights.

7.3. Building Floor Slab Recommendations

With proper subgrade preparation, native soil is expected to be suitable to support ground-bearing floor slabs; new engineered fill that is placed on properly prepared native soil is also expected to be suitable. However, subgrade improvement might be necessary to develop proper support, especially due to shallow groundwater and the moisture-sensitive clay. Consequently, the proposed floor areas are recommended to be thoroughly evaluated and approved by a geotechnical engineer immediately before fill placement and before floor construction.

From a geotechnical perspective and based on a maximum 100 psf floor load, the floor slabs for the proposed buildings are recommended to be at least 4 inches thick; this thickness assumes that the 28-day compressive strength of concrete will be at least 3,500 pounds per square inch (psi). Assuming proper subgrade preparation, the floor slabs may be designed using a *Modulus of Subgrade Reaction* (K_{v1}) value of 100 pounds per square inch per inch (psi/in). It is recommended and assumed that a structural engineer will specify the actual floor slab thickness, reinforcing, joint details, and other parameters.

A minimum 4-inch-thick base course is recommended to be below each floor slab to serve as a capillary break. It is recommended that the base course consist of free-draining aggregate that has been tested and approved by a geotechnical engineer. Depending on aggregate gradation and the subgrade conditions, geotextile might need to be below the base material to serve as a separator. The need for geotextile should be determined during construction with the assistance of a geotechnical engineer.

A minimum 10-mil vapor retarder is recommended to be directly above or below the base course throughout each floor area. The position (above or below the base course) of the vapor retarder should be specified by the project structural engineer or architect. Vapor retarder sheets are recommended to be overlapped at least 6 inches, and the overlaps are recommended to be continuously taped. Also, vapor retarder must extend to all foundation walls. Vapor retarders are recommended to be in accordance with ASTM E 1745, entitled *Standard Specification for Plastic Water Vapor Retarders Used in Contact with Soil or Granular Fill under Concrete Slabs*, and other relevant documents. If the base course includes sharp aggregate, protecting the vapor retarders with geotextile or by other means is recommended.

Floor Movement

The post-construction total and differential settlements of an isolated floor slab constructed according to this report are estimated to be less than about ½ inch and ⅓ inch, respectively, over about 20 feet. Estimated settlements assume that floor slab support materials will be tested and approved by a geotechnical engineer immediately before floor slab construction.

If the building will be unheated, the floor slabs will be susceptible to frost-related movement. Furthermore, even if the buildings will be heated, certain floor areas (such as near exterior doors) could be susceptible to freeze-thaw related movement. Installation of insulation or other protective measures should be considered for floor areas that are susceptible to freeze-thaw movement. Pavement and ground grades are recommended to be sloped away from the buildings to reduce water infiltration and potential freeze-thaw problems.

7.4. Pavement Recommendations

Because traffic-related information was not provided to us, recommendations are included herein for light-duty and moderate-duty pavement using assumed traffic conditions. The light-duty pavement section is for passenger-vehicle parking areas and is based on an assumed traffic condition of five 18-kip Equivalent Single Axle Loads (ESALs) per day. The moderate-duty pavement section is for drives that will be subject to buses and other heavy vehicles and is based on an assumed traffic condition consisting of fifteen 18-kip ESALs per day. The recommended pavement sections assume no increase in traffic volume and no changes in vehicle type or traffic pattern. Also, it is assumed that the ESALs noted above will be in one direction for each lane.

It is important that the project owner, developer, civil engineer, and other design professionals involved with the project confirm that the ESALs noted above are appropriate for the expected traffic conditions, vehicle types, and axle loadings. If requested, Giles can provide supplemental pavement recommendations based on other traffic conditions, vehicle types, and axle loads. The recommended pavement sections could underperform or fail prematurely if the design ESALs are exceeded.

Based on the test borings and with proper subgrade preparation, it is expected that pavement support materials will consist of lean clay. Therefore, the recommended pavement sections were developed based on a sandy clay subgrade with an assumed field CBR value of 4 and a *Modulus of Subgrade Reaction* (K_{V1}) value of 100 psi/in. Engineered fill that is placed in proposed pavement areas is recommended to have a field CBR value and a *Modulus of Subgrade Reaction* (K_{V1}) value at least equal to these design values. Fill is recommended to be placed and compacted per this report.

The following table shows the recommended thicknesses for hot-mix asphalt (HMA) pavement with an aggregate base-course. State specifications are also included in the table. The recommended pavement sections are based on the traffic conditions described above.

TABLE 1
RECOMMENDED HMA PAVEMENT SECTION

Materials	Light Duty	Moderate Duty	Wisconsin DOT Standard Specifications
Hot-Mix Asphalt Surface Course	1.5 inches	1.5 inches	Section 460
Hot Mix Asphalt Binder Course	2.0 inches	2.5 inches	Section 460
Dense-Graded Aggregate Base Course	8.0 inches	9.0 inches	Section 305, 1¼-inch Crushed Stone

Portland cement concrete pavement is recommended in higher-stress areas, such as the lot entrance and exit aprons, at refuse enclosures, and in areas where trucks will turn or will be parked. Based on the assumed ESALs, discussed above, concrete pavement is recommended to be at least 6 inches thick and is recommended to be underlain by a minimum 4-inch-thick aggregate base course. It is recommended that concrete pavement have load-transfer reinforcement, where appropriate. Control-joint spacing should be determined in accordance with the current ACI code. Expansion joints should be provided where pavement abuts fixed objects, such as the building and light poles. The 28-day compressive strength of concrete is recommended to be at least 4,000 psi, and the concrete should be properly air-entrained for durability. It is recommended and assumed that a civil engineer will provide specific recommendations for concrete pavement, including reinforcing details and control-joint spacing. Materials and construction procedures for concrete pavement and the aggregate base are recommended to be in accordance with Wisconsin DOT specifications.

General Pavement Considerations

The pavement recommendations assume that the pavement subgrade will be prepared according to this report, the base course will be properly drained, and a geotechnical engineer will observe and test pavement construction. Pavement was designed based on AASHTO design parameters for a twenty-year design period, but the actual service life will likely be less. More frequent pavement maintenance should be expected in areas of perched groundwater. Local codes may require specific testing to determine soil support characteristics, and a minimum pavement section thicknesses might be required.

7.5. Preliminary Stormwater Infiltration Screening

It is understood that a stormwater management basin is planned to be constructed north of the proposed track, in the area of Test Pits 1 and 2; the approximate locations are shown on Figure 1. Because details of the basins were not provided to us, this report assumes that each basin will be several feet deep. Because of the existing fill that contained rubble, low permeability cohesive soil, and shallow groundwater that was encountered at the basin-area test pits, Giles considers the proposed basin areas to be exempt from stormwater infiltration requirements per section NR 151.124(4)(c) of the Wisconsin Administrative Code and WDNR 1002 guidelines.

7.6. Generalized Construction Considerations

Adverse Weather

Site soil is moisture sensitive and will become unstable when exposed to adverse weather, such as rain, snow, and freezing temperatures. Therefore, it might be necessary to remove or stabilize the upper 6 to 12 inches (or more) of soil due to adverse weather, which commonly occurs during late fall, winter, and early spring. At least some over-excavation or stabilization of unstable soil should be expected if construction is during or after adverse weather. Because site preparation is weather dependent, bids for site preparation and other earthwork activities should consider the time of year that construction will be conducted.

To protect soil from adverse weather, the site surface is recommended to be smoothly graded and contoured during construction to divert surface water away from construction areas. Contoured subgrades are recommended to be rolled with a smooth-drum compactor before precipitation to “seal” the surface. Furthermore, construction traffic should be restricted to certain aggregate-covered areas to control traffic-related soil disturbance. Foundation construction should begin immediately after suitable support is confirmed since weather can cause soil to become unstable.

Dewatering

Filtered sump pumps, drawing water from sump pits excavated in the bottom of construction trenches, are expected to be adequate to remove water that collects in shallow excavations. Excavated sump pits should be fully lined with geotextile and filled with open-graded, free-draining aggregate. If foundations extend deeper than assumed in this report for support considerations (such as for stadium light foundations), more significant dewatering will likely be required. It is recommended that a geotechnical engineer monitor and approve dewatering since improper dewatering could cause support-related problems at the site and at nearby properties.

Excavation Stability

Excavations are recommended to be made in accordance with current OSHA excavation and trench safety standards and other applicable requirements. Where required, sides of excavations must be sloped, benched, or braced to develop and maintain a safe work environment. Temporary shoring must be designed according to applicable regulatory requirements. Contractors are responsible for excavation safety.

7.7. Recommended Construction Materials Testing Services

This report was prepared assuming that a geotechnical engineer will perform Construction Materials Testing ("CMT") services during construction of the proposed development. Supplemental geotechnical recommendations might be needed based on the results of CMT services and specific details of the project not known at this time.

8.0 BASIS OF REPORT

This report is strictly based on the project description given in Section 3.0. Giles must be notified if the project description or our assumptions are not accurate so that this report can be amended, if needed. This report assumes that the facility will be designed and constructed according to the codes that govern construction at the site.

The conclusions and recommendations in this report are based on estimated subsurface conditions as shown on the *Test Boring Logs*. Giles must be notified if the subsurface conditions that are encountered during construction of the proposed development differ from those shown on the *Test Boring Logs*; revision of this report might be necessary. General comments and limitations of this report are given in the appendix.

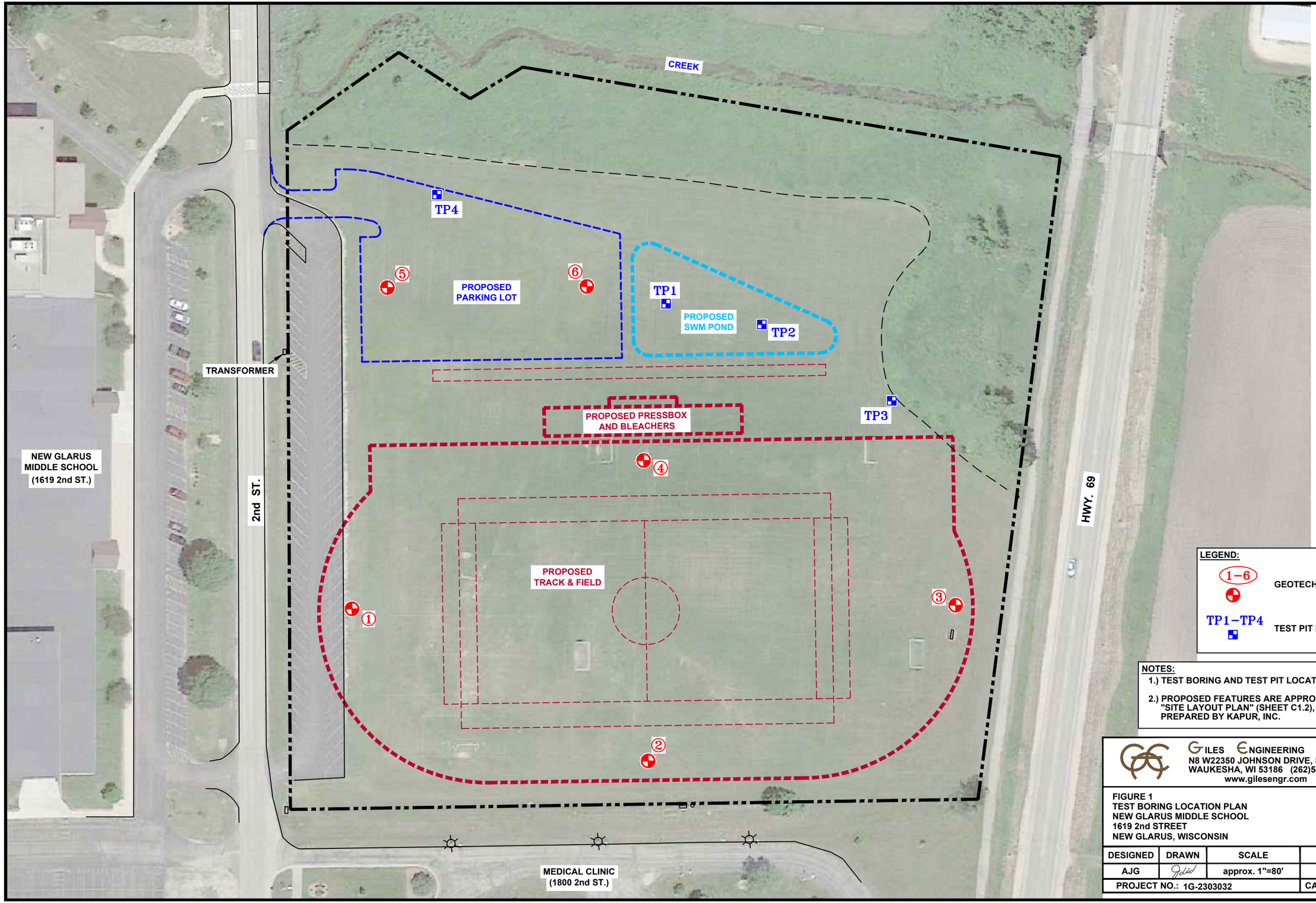
The conclusions and recommendations in this report have been promulgated in accordance with generally accepted professional engineering practices in the field of geotechnical engineering. No other warranty is either expressed or implied.

APPENDIX A

FIGURES AND TEST BORING LOGS

The Test Boring Location Plan contained herein was prepared based upon information supplied by *Giles'* client, or others, along with *Giles'* field measurements and observations. The diagram is presented for conceptual purposes only and is intended to assist the reader in report interpretation.

The Test Boring Logs and related information enclosed herein depict the subsurface (soil and water) conditions encountered at the specific boring locations on the date that the exploration was performed. Subsurface conditions may differ between boring locations and within areas of the site that were not explored with test borings. The subsurface conditions may also change at the boring locations over the passage of time.



N
W E
S

0 40' 80'

APPROXIMATE SCALE

LEGEND:

1–6 — GEOTECHNICAL TEST BORINGS

TP1–TP4 — TEST PIT LOCATIONS

NOTES:

1.) TEST BORING AND TEST PIT LOCATIONS ARE APPROXIMATE.

2.) PROPOSED FEATURES ARE APPROXIMATE BASED ON THE "SITE LAYOUT PLAN" (SHEET C1.2), DATED 7-10-2020, PREPARED BY KAPUR, INC.

GILES ENGINEERING ASSOCIATES, INC.
N8 W22350 JOHNSON DRIVE, SUITE A1
WAUKESHA, WI 53186 (262)544-0118
www.gilesengr.com

FIGURE 1
TEST BORING LOCATION PLAN
NEW GLARUS MIDDLE SCHOOL
1619 2nd STREET
NEW GLARUS, WISCONSIN

DESIGNED	DRAWN	SCALE	DATE	REVISED
AJG		approx. 1"=80'	05-03-23	--
PROJECT NO.: 1G-2303032			CAD No. 1g2303032-blp	

BORING NO. & LOCATION: 1	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 864.1 feet	PROPOSED NEW GLARUS MIDDLE SCHOOL IMPROVEMENTS	
COMPLETION DATE: 04/25/23	1619 2ND STREET NEW GLARUS, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2303032	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±10" Topsoil: Dark Brown Silty Clay, little Sand and Organic Matter-Moist										
Brown fine Sand, trace Silt and Gravel-Moist to Wet at ±4 feet			1-SS	7						
			2-SS	6						
	▽	860								
	5		3-SS	6						
			4-SS	7						
		855								
	10		5-SS	6						
		850								
	15		6-SS	21						
Boring Terminated at about 16 feet (EL. 848.1')										

	Water Observation Data	Remarks:
▽	Water Encountered During Drilling: 4 ft.	
▼	Water Level At End of Drilling:	
	Cave Depth At End of Drilling:	
▼	Water Level After Drilling:	
	Cave Depth After Drilling:	

GILES LOG REPORT 1G2303032.GPJ GILES.GDT 5/16/23

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

BORING NO. & LOCATION: 2	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 865.7 feet	PROPOSED NEW GLARUS MIDDLE SCHOOL IMPROVEMENTS	
COMPLETION DATE: 04/25/23	1619 2ND STREET NEW GLARUS, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2303032	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±10" Topsoil: Dark Gray Silty Clay, little Sand and Organic Matter-Moist		865	1-SS	4						
Brown fine Sand, trace Silt and Gravel-Moist to Wet at ±4 feet			2-SS	7						
	▽									
	5	860	3-SS	5						
			4-SS	4						
	10	855	5-SS	59						
Weathered Bedrock: Sandstone	15	850	6-SS	50/4"						
Boring Terminated at about 16 feet (EL. 849.7')										

	Water Observation Data	Remarks:
▽	Water Encountered During Drilling: 4 ft.	
▼	Water Level At End of Drilling:	
	Cave Depth At End of Drilling:	
▼	Water Level After Drilling:	
	Cave Depth After Drilling:	

GILES LOG REPORT 1G2303032.GPJ GILES.GDT 5/16/23

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

BORING NO. & LOCATION: 3	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 859.1 feet	PROPOSED NEW GLARUS MIDDLE SCHOOL IMPROVEMENTS	
COMPLETION DATE: 04/25/23	1619 2ND STREET NEW GLARUS, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2303032	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±8" Topsoil: Dark Gray Sandy Clay, little Organic Matter-Moist										
Brown and Gray mottled Sandy Clay, trace Gravel-Moist			1-SS	3						
			2-SS	5	1.2	1.2		17		
		855								
	5		3-SS	10		1.8		10		
Brown fine Sand, trace Silt and Gravel-Wet	▽									
			4-SS	6						
		850								
	10		5-SS	6						
		845								
	15		6-SS	10						
Boring Terminated at about 16 feet (EL. 843.1')										

	Water Observation Data	Remarks:
▽	Water Encountered During Drilling: 6.5 ft.	
▼	Water Level At End of Drilling:	
	Cave Depth At End of Drilling:	
▼	Water Level After Drilling:	
	Cave Depth After Drilling:	

GILES LOG REPORT 1G2303032.GPJ GILES.GDT 5/16/23

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

BORING NO. & LOCATION: 4	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 860.4 feet	PROPOSED NEW GLARUS MIDDLE SCHOOL IMPROVEMENTS	
COMPLETION DATE: 04/25/23	1619 2ND STREET NEW GLARUS, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2303032	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±10" Topsoil: Dark Gray Sandy Clay, little Organic Matter-Moist		860	1-SS	3						
Brown and Gray mottled Sandy Clay, trace Gravel-Moist			2-SS	6	1.2	1.2		21		
	5	855	3-SS	9	1.2	1.0		17		
Brown fine Sand, trace Silt and Gravel-Wet ▽			4-SS	8						
	10	850	5-SS	6						
	15	845	6-SS	63						
Boring Terminated at about 16 feet (EL. 844.4')										

Water Observation Data	Remarks:
▽ Water Encountered During Drilling: 6.5 ft.	
▼ Water Level At End of Drilling:	
Cave Depth At End of Drilling:	
▼ Water Level After Drilling:	
Cave Depth After Drilling:	

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

GILES LOG REPORT 1G2303032.GPJ GILES.GDT 5/16/23

BORING NO. & LOCATION: 5	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 859.7 feet	PROPOSED NEW GLARUS MIDDLE SCHOOL IMPROVEMENTS	
COMPLETION DATE: 04/25/23	1619 2ND STREET NEW GLARUS, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2303032	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±10" Topsoil: Dark Gray Silty Clay, little Sand and Organic Matter-Moist										
Brown and Gray mottled lean Clay, little Sand-Moist			1-SS	11						
			2-SS	5		1.0		20		
	5	855	3-SS	7		1.0		24		
Brown fine Sand, trace Silt and Gravel-Wet			4-SS	15						
Highly Weathered Bedrock: Sandstone	10	850	5-SS	54/10"						
	15	845	6-SS	50/5"						
Boring Terminated at about 16 feet (EL. 843.7')										

Water Observation Data	Remarks:
Water Encountered During Drilling: 6.5 ft.	
Water Level At End of Drilling:	
Cave Depth At End of Drilling:	
Water Level After Drilling:	
Cave Depth After Drilling:	

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

GILES LOG REPORT 1G2303032.GPJ GILES.GDT 5/16/23

BORING NO. & LOCATION: 6	TEST BORING LOG	GILES ENGINEERING ASSOCIATES, INC.
SURFACE ELEVATION: 855.3 feet	PROPOSED NEW GLARUS MIDDLE SCHOOL IMPROVEMENTS	
COMPLETION DATE: 04/25/23	1619 2ND STREET NEW GLARUS, WISCONSIN	
FIELD REP: JAMES BLAIR	PROJECT NO: 1G-2303032	

MATERIAL DESCRIPTION	Depth (ft)	Elevation	Sample No. & Type	N	Q_u (tsf)	Q_p (tsf)	Q_s (tsf)	W (%)	PID	NOTES
±10" Topsoil: Dark Gray Silty Clay, little Sand and Organic Matter-Moist		855								
Brown and Gray mottled lean Clay, little Sand-Moist			1-SS	4						
			2-SS	11		1.0		23		
Brown fine Sand, trace Silt and Gravel-Wet										
	5	850	3-SS	7						
			4-SS	6						
	10	845	5-SS	6						
	15	840	6-SS	11						
Boring Terminated at about 16 feet (EL. 839.3')										

	Water Observation Data	Remarks:
▽	Water Encountered During Drilling: 4 ft.	
▼	Water Level At End of Drilling:	
	Cave Depth At End of Drilling:	
▼	Water Level After Drilling:	
	Cave Depth After Drilling:	

GILES LOG REPORT 1G2303032.GPJ GILES.GDT 5/16/23

Changes in strata indicated by the lines are approximate boundary between soil types. The actual transition may be gradual and may vary considerably between test borings. Location of test boring is shown on the Boring Location Plan.

1002-CPS-23
Division of Industry Services
P. O. Box 2658
Madison, Wisconsin 53701
Scott Walker, Governor
Laura Gutierrez, Secretary

Attachment 2:

SOIL AND SITE EVALUATION – STORM

In accordance with SPS 382.365, 385, Wis. Adm. Code, and WDNR Standard 1002

Attach a complete site plan on paper not less than 8 ½ x 11 inches in size. Plan must include, but 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

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

County: Green

Parcel I.D.:

Reviewed by:
Date:

Property Owner	Property Location
School District of New Glarus	Govt. Lot SE ¼ SW ¼ Section 23, T4N, R7E
Property Owner' Mail Address: 1701 2nd Street	Lot # / Block # / Subd. Name or CSM #
City: New Glarus; State: WI; Zip Code: 53574; Phone Number	[ ] City [x] Village [ ] Town; Nearest Road: 2nd Street; New Glarus, WI

Drainage area: sq. ft. acres

Test site suitable for (check all that apply) [ ] Site not suitable:

[ ] Bioretention [ ] Subsurface Dispersal System:

[ ] Reuse: [ ] Irrigation: [ ] Other:

Hydraulic Application Test Method

- [x] Morphological Evaluation
- [ ] Double Ring Infiltrometer
- [ ] Other: (specify)

Soil Moisture
Date of soil borings:
USDA-NRCS WETS Value:

- [ ] Dry = 1;
- [ ] Normal = 2;
- [ ] Wet = 3

TP1 #OBS. x Pit [ ] Boring [ ] Ground surface elevation 857.4 ft. Elevation of limiting factor 852.4 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	0-10	10YR 3/1		SICL	1, VF, SBK	M, FR	A – S	<5%	85%	0.04
FILL	10-30	10 YR 5/4		fS	1, F, GR	M, FI	C – W	5%	10%	0.50
FILL	30-36	10 YR 3/3		C	MA	M, FI	C – W	5%	90%	0.07
FILL	36-72	10 YR 3/1		C	1, F, SBK	M, FI	C – W	5%	*88%	0.07
FILL	72-78	10 YR 5/1		GR CL	MA	M, FI	C – W	35%	80%	0.03
C	78-144	10 YR 5/1		fS	1, F, GR	M, FI	--	<5%	10%	0.50

Comments: Groundwater encountered at 5 feet below ground surface
Excavation terminated at 12 feet below ground surface due to wet caving sand
Concrete rubble between 6 and 6½ feet below ground surface
Atterberg Limit Results at 4 to 5 feet below ground surface: LL=49 ; PI = 32
*Percent Passing No. 200 sieve (P200) = 88%

TP2 #OBS. x Pit [ ] Boring [ ] Ground surface elevation 857.1 ft. Elevation of limiting factor 851.1 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	0-14	10YR 3/1		SICL	1, VF, SBK	M, FR	A – S	<5%	85%	0.04
FILL	14-24	10 YR 3/3		C	1, F, SBK	M, FI	C – W	10%	90%	0.07
FILL	24-72	10 YR 5/3		C	MA	M, FI	C – W	10%	90%	0.07
FILL	72-78	10 YR 5/1		GR fS	1, M, GR	M, FI	C – W	35%	10%	0.50
C	78-120	10 YR 5/1		fS	1, F, GR	M, FI	--	<5%	10%	0.50

Comments: Groundwater encountered at 6 feet below ground surface
Excavation terminated at 10 feet below ground surface due to wet caving sand
Concrete rubble between 6 and 6½ feet below ground surface

Name (Please Print)	Signature	Credential Number
Kevin T. Bugel, P.G.		P.G. No.: 178-13
Address	Date Evaluation Conducted	Telephone Number

TP3 #OBS. X Pit [ ] Boring Ground surface elevation 855.6 ft. Elevation of limiting factor 851.1 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	0-12	10YR 3/1		SICL	1, VF, SBK	M, FR	A – S	<5%	85%	0.04
B	12-66	10 YR 6/1		C	1, F, SBK	M, FI	C – W	10%	*86%	0.07
C	66-144	10 YR 5/1		fS	1, F, GR	M, FI	--	<5%	10%	0.50

Comments: Groundwater at encountered at 5½ feet below ground surface
Excavation terminated at 12 feet below ground surface due to wet caving sand
Atterberg Limit Results at 4 to 5 feet below ground surface: LL=45; PI =26
*Percent Passing No. 200 sieve (P200) = 86%

TP4 #OBS. X Pit [ ] Boring Ground surface elevation 857.4 ft. Elevation of limiting factor 852.4 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	0-16	10YR 3/1		SICL	1, VF, SBK	M, FR	A – S	<5%	85%	0.04
FILL	16-36	10 YR 3/3		C	1, F, SBK	M, FI	C – W	10%	90%	0.07
FILL	36-72	10 YR 5/3		C	MA	M, FI	C – W	10%	90%	0.07
FILL	72-78	10 YR 5/1		GR fS	1, M, GR	M, FI	C – W	35%	10%	0.50
C	78-144	10 YR 5/1		fS	1, F, GR	M, FI	--	<5%	10%	0.50

Comments: Groundwater encountered at 5 feet below ground surface
Excavation terminated at 12 feet below ground surface due to wet caving sand
Possible Concrete rubble between 6 and 6½ feet below ground surface

APPENDIX B

FIELD PROCEDURES

The field operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) designation D

420 entitled “Standard Guide for Sampling Rock and Rock” and/or other relevant specifications. Soil samples were preserved and transported to *Giles'* laboratory in general accordance with the procedures recommended by ASTM designation D 4220 entitled “Standard Practice for Preserving and Transporting Soil Samples.” Brief descriptions of the sampling, testing and field procedures commonly performed by *Giles* are provided herein.

GENERAL FIELD PROCEDURES

Test Boring Elevations

The ground surface elevations reported on the Test Boring Logs are referenced to the assumed benchmark shown on the Boring Location Plan (Figure 1). Unless otherwise noted, the elevations were determined with a conventional hand-level and are accurate to within about 1 foot.

Test Boring Locations

The test borings were located on-site based on the existing site features and/or apparent property lines. Dimensions illustrating the approximate boring locations are reported on the Boring Location Plan (Figure 1).

Water Level Measurement

The water levels reported on the Test Boring Logs represent the depth of "free" water encountered during drilling and/or after the drilling tools were removed from the borehole. Water levels measured within a granular (sand and gravel) soil profile are typically indicative of the water table elevation. It is usually not possible to accurately identify the water table elevation with cohesive (clayey) soils, since the rate of seepage is slow. The water table elevation within cohesive soils must therefore be determined over a period of time with groundwater observation wells.

It must be recognized that the water table may fluctuate seasonally and during periods of heavy precipitation. Depending on the subsurface conditions, water may also become perched above the water table, especially during wet periods.

Borehole Backfilling Procedures

Each borehole was backfilled upon completion of the field operations. If potential contamination was encountered, and/or if required by state or local regulations, boreholes were backfilled with an "impervious" material (such as bentonite slurry). Borings that penetrated pavements, sidewalks, etc. were "capped" with Portland Cement concrete, asphaltic concrete, or a similar surface material. It must, however, be recognized that the backfill material may settle, and the surface cap may subside, over a period of time. Further backfilling and/or re-surfacing by *Giles'* client or the property owner may be required.

FIELD SAMPLING AND TESTING PROCEDURES

Auger Sampling (AU)

Soil samples are removed from the auger flights as an auger is withdrawn above the ground surface. Such samples are used to determine general soil types and identify approximate soil stratifications. Auger samples are highly disturbed and are therefore not typically used for geotechnical strength testing.

Split-Barrel Sampling (SS) – (ASTM D-1586)

A split-barrel sampler with a 2-inch outside diameter is driven into the subsoil with a 140-pound hammer free-falling a vertical distance of 30 inches. The summation of hammer-blows required to drive the sampler the final 12-inches of an 18-inch sample interval is defined as the "Standard Penetration Resistance" or N-value is an index of the relative density of granular soils and the comparative consistency of cohesive soils. A soil sample is collected from each SPT interval.

Shelby Tube Sampling (ST) – (ASTM D-1587)

A relatively undisturbed soil sample is collected by hydraulically advancing a thin-walled Shelby Tube sampler into a soil mass. Shelby Tubes have a sharp cutting edge and are commonly 2 to 5 inches in diameter.

Bulk Sample (BS)

A relatively large volume of soils is collected with a shovel or other manually-operated tool. The sample is typically transported to *Giles'* materials laboratory in a sealed bag or bucket.

Dynamic Cone Penetration Test (DC) – (ASTM STP 399)

This test is conducted by driving a 1.5-inch-diameter cone into the subsoil using a 15-pound steel ring (hammer), free-falling a vertical distance of 20 inches. The number of hammer-blows required to drive the cone 1¾ inches is an indication of the soil strength and density, and is defined as "N". The Dynamic Cone Penetration test is commonly conducted in hand auger borings, test pits and within excavated trenches.

- Continued -

Ring-Lined Barrel Sampling – (ASTM D 3550)

In this procedure, a ring-lined barrel sampler is used to collect soil samples for classification and laboratory testing. This method provides samples that fit directly into laboratory test instruments without additional handling/disturbance.

Sampling and Testing Procedures

The field testing and sampling operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) and/or other relevant specifications. Results of the field testing (i.e. N-values) are reported on the Test Boring Logs. Explanations of the terms and symbols shown on the logs are provided on the appendix enclosure entitled “General Notes”.

APPENDIX C

LABORATORY TESTING AND CLASSIFICATION

The laboratory testing was conducted under the supervision of a geotechnical engineer in accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) and/or other relevant specifications. Brief descriptions of laboratory tests commonly performed by *Giles* are provided herein.

LABORATORY TESTING AND CLASSIFICATION

Photoionization Detector (PID)

In this procedure, soil samples are "scanned" in *Giles'* analytical laboratory using a Photoionization Detector (PID). The instrument is equipped with an 11.7 eV lamp calibrated to a Benzene Standard and is capable of detecting a minute concentration of **certain** Volatile Organic Compound (VOC) vapors, such as those commonly associated with petroleum products and some solvents. Results of the PID analysis are expressed in HNu (manufacturer's) units rather than actual concentration.

Moisture Content (w) (ASTM D 2216)

Moisture content is defined as the ratio of the weight of water contained within a soil sample to the weight of the dry solids within the sample. Moisture content is expressed as a percentage.

Unconfined Compressive Strength (qu) (ASTM D 2166)

An axial load is applied at a uniform rate to a cylindrical soil sample. The unconfined compressive strength is the maximum stress obtained or the stress when 15% axial strain is reached, whichever occurs first.

Calibrated Penetrometer Resistance (qp)

The small, cylindrical tip of a hand-held penetrometer is pressed into a soil sample to a prescribed depth to measure the soils capacity to resist penetration. This test is used to evaluate unconfined compressive strength.

Vane-Shear Strength (qs)

The blades of a vane are inserted into the flat surface of a soil sample and the vane is rotated until failure occurs. The maximum shear resistance measured immediately prior to failure is taken as the vane-shear strength.

Loss-on-Ignition (ASTM D 2974; Method C)

The Loss-on-Ignition (L.O.I.) test is used to determine the organic content of a soil sample. The procedure is conducted by heating a dry soil sample to 440°C in order to burn-off or "ash" organic matter present within the sample. The L.O.I. value is the ratio of the weight loss due to ignition compared to the initial weight of the dry sample. L.O.I. is expressed as a percentage.

Particle Size Distribution (ASTB D 421, D 422, and D 1140)

This test is performed to determine the distribution of specific particle sizes (diameters) within a soil sample. The distribution of coarse-grained soil particles (sand and gravel) is determined from a “sieve analysis,” which is conducted by passing the sample through a series of nested sieves. The distribution of fine-grained soil particles (silt and clay) is determined from a “hydrometer analysis” which is based on the sedimentation of particles suspended in water.

Consolidation Test (ASTM D 2435)

In this procedure, a series of cumulative vertical loads are applied to a small, laterally confined soil sample. During each load increment, vertical compression (consolidation) of the sample is measured over a period of time. Results of this test are used to estimate settlement and time rate of settlement.

Classification of Samples

Each soil sample was visually-manually classified, based on texture and plasticity, in general accordance with the Unified Soil Classification System (ASTM D-2488-75). The classifications are reported on the Test Boring Logs.

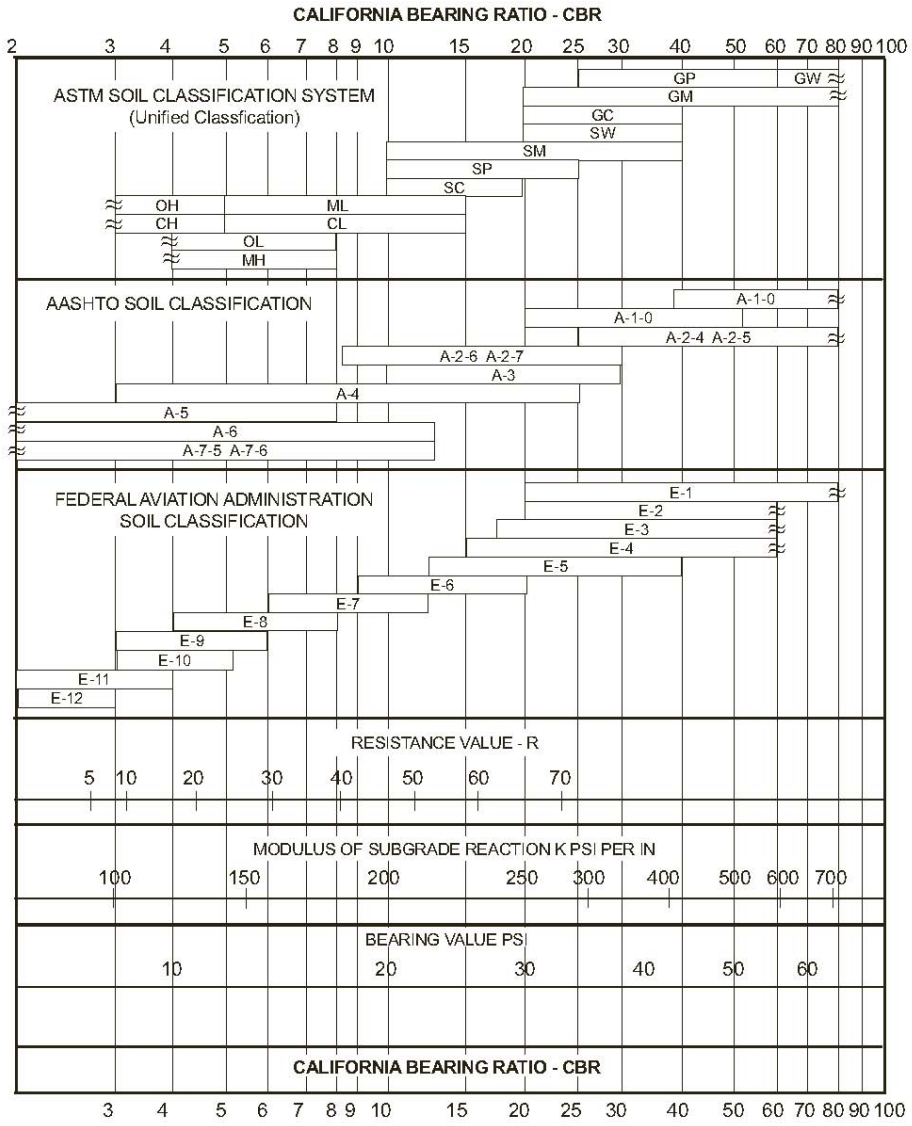
Laboratory Testing

The laboratory testing operations were conducted in general accordance with the procedures recommended by the American Society for Testing and Materials (ASTM) and/or other relevant specifications. Results of the laboratory tests are provided on the Test Boring Logs or other appendix enclosures. Explanation of the terms and symbols used on the logs is provided on the appendix enclosure entitled “General Notes.”

California Bearing Ratio (CBR) Test ASTM D-1833

The CBR test is used for evaluation of a soil subgrade for pavement design. The test consists of measuring the force required for a 3-square-inch cylindrical piston to penetrate 0.1 or 0.2 inch into a compacted soil sample. The result is expressed as a percent of force required to penetrate a standard compacted crushed stone.

Unless a CBR test has been specifically requested by the client, the CBR is estimated from published charts, based on soil classification and strength characteristics. A typical correlation chart is below.



APPENDIX D

GENERAL INFORMATION

AND
IMPORTANT INFORMATION ABOUT
THIS GEOTECHNICAL REPORT

GENERAL COMMENTS

The soil samples obtained during the subsurface exploration will be retained for a period of thirty days. If no instructions are received, they will be disposed of at that time.

This report has been prepared exclusively for the client in order to aid in the evaluation of this property and to assist the architects and engineers in the design and preparation of the project plans and specifications. Copies of this report may be provided to contractor(s), with contract documents, to disclose information relative to this project. The report, however, has not been prepared to serve as the plans and specifications for actual construction without the appropriate interpretation by the project architect, structural engineer, and/or civil engineer. Reproduction and distribution of this report must be authorized by the client and *Giles*.

This report has been based on assumed conditions/characteristics of the proposed development where specific information was not available. It is recommended that the architect, civil engineer and structural engineer along with any other design professionals involved in this project carefully review these assumptions to ensure they are consistent with the actual planned development. When discrepancies exist, they should be brought to our attention to ensure they do not affect the conclusions and recommendations provided herein. The project plans and specifications may also be submitted to *Giles* for review to ensure that the geotechnical related conclusions and recommendations provided herein have been correctly interpreted.

The analysis of this site was based on a subsoil profile interpolated from a limited subsurface exploration. If the actual conditions encountered during construction vary from those indicated by the borings, *Giles* must be contacted immediately to determine if the conditions alter the recommendations contained herein.

The conclusions and recommendations presented in this report have been promulgated in accordance with generally accepted professional engineering practices in the field of geotechnical engineering. No other warranty is either expressed or implied.

GUIDE SPECIFICATIONS FOR SUBGRADE AND GRADE PREPARATION FOR FILL, FOUNDATION, FLOOR SLAB AND PAVEMENT SUPPORT; AND SELECTION, PLACEMENT AND COMPACTION OF FILL SOILS USING STANDARD PROCTOR PROCEDURES

1. Construction monitoring and testing of subgrades and grades for fill, foundation, floor slab and pavement; and fill selection, placement and compaction shall be performed by an experienced soils engineer and/or his representatives.

2. All compaction fill, subgrades and grades shall be (a) underlain by suitable bearing material; (b) free of all organic, frozen, or other deleterious material, and (c) observed, tested and approved by qualified engineering personnel representing an experienced soils engineer. Preparation of subgrades after stripping vegetation, organic or other unsuitable materials shall consist of (a) proof-rolling to detect soil, wet yielding soils or other unstable materials that must be undercut, (b) scarifying top 6 to 8 inches, (c) moisture conditioning the soils as required, and (d) recompaction to same minimum in-situ density required for similar materials indicated under Item 5. Note: compaction requirements for pavement subgrade are higher than other areas. Weather and construction equipment may damage compacted fill surface and reworking and retesting may be necessary to assure proper performance.

3. In overexcavation and fill areas, the compacted fill must extend (a) a minimum 1 foot lateral distance beyond the exterior edge of the foundation at bearing grade or pavement subgrade and down to compacted fill subgrade on a maximum 0.5(H):1(V) slope, (b) 1 foot above footing grade outside the building, and (c) to floor subgrade inside the building. Fill shall be placed and compacted on a 5(H):1(V) slope or must be stepped or benched as required to flatten if not specifically approved by qualified personnel under the direction of an experienced soil engineer.

4. The compacted fill materials shall be free of deleterious, organic, or frozen matter, shall contain no chemicals that may result in the material being classified as "contaminated", and shall be low-expansive with a maximum Liquid Limit (ASTM D-423) and Plasticity Index (ASTM D-424) of 30 and 15, respectively, unless specifically tested and found to have low expansive properties and approved by an experienced soils engineer. The top 12 inches of compacted fill should have a maximum 3-inch-particle diameter and all underlying compacted fill a maximum 6-inch-diameter unless specifically approved by an experienced soils engineer. All fill materials must be tested and approved under the direction of an experienced soils engineer prior to placement. If the fill is to provide non-frost susceptible characteristics, it must be classified as a clean GW, GP, SW or SP per the Unified Soil Classification System (ASTM D-2487).

5. For structural fill depths less than 20 feet, the density of the structural compacted fill and scarified subgrade and grades shall not be less than 95 percent of the maximum dry density as determined by Standard Proctor (ASTM-698) with the exception of the top 12 inches of pavement subgrade which shall have a minimum in-situ density of 100 percent of maximum dry density, or 5 percent higher than underlying fill materials. Where the structural fill depth is greater than 20 feet, the portions below 20 feet should have a minimum in-place density of 100 percent of its maximum dry density of 5 percent greater than the top 20 feet. The moisture content of cohesive soil shall not vary by more than -1 to +3 percent and granular soil ±3 percent of the optimum when placed and compacted or recompacted, unless specifically recommended/approved by the soils engineer monitoring the placement and compaction. Cohesive soils with moderate to high expansion potentials (PI>15) should, however, be placed, compacted and maintained prior to construction at a moisture content 3±1 percent above optimum moisture content to limit further heave. The fill shall be placed in layers with a maximum loose thickness of 8 inches for foundations and 10 inches for floor slabs and pavement, unless specifically approved by the soils engineer taking into consideration the type of materials and compaction equipment being used. The compaction equipment should consist of suitable mechanical equipment specifically designed for soil compaction. Bulldozers or similar tracked vehicles are typically not suitable for compaction.

6. Excavation, filling, subgrade and grade preparation shall be performed in a manner and sequence that will provide drainage at all times and proper control of erosion. Precipitation, springs and seepage water encountered shall be pumped or drained to provide a suitable working platform. Springs or water seepage encountered during grading/foundation construction must be called to the soil engineer's attention immediately for possible construction procedure revision or inclusion of an underdrain system.

7. Non-structural fill adjacent to structural fill should typically be placed in unison to provide lateral support. Backfill along walls must be placed and compacted with care to ensure excessive unbalanced lateral pressures do not develop. The type of fill material placed adjacent to below-grade walls (i.e. basement walls and retaining walls) must be properly tested and approved by an experienced soils engineer with consideration for the lateral pressure used in the wall design.

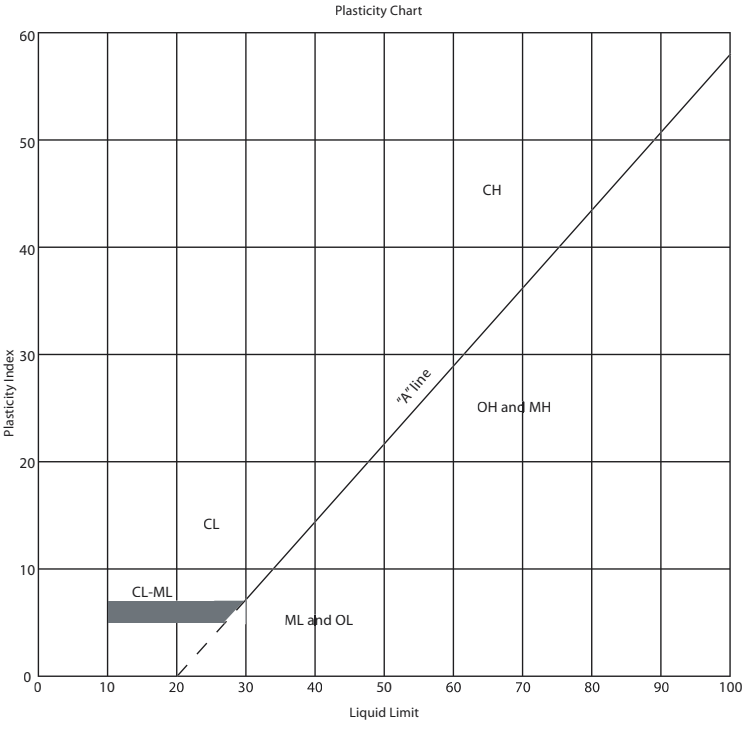
8. Whenever, in the opinion of the soils engineer or the Owner's Representatives, an unstable condition is being created either by cutting or filling, the work shall not proceed into that area until an appropriate geotechnical exploration and analysis has been performed and the grading plan revised, if found necessary.

CHARACTERISTICS AND RATINGS OF UNIFIED SOIL SYSTEM CLASSES FOR SOIL CONSTRUCTION *									
Class	**Compaction Characteristics**	**Max. Dry Density Standard Proctor (pcf)**	**Compressibility and Expansion**	**Drainage and Permeability**	**Value as an Embankment Material**	**Value as Subgrade When Not Subject to Frost**	**Value as Base Course**	**Value as Temporary Pavement**	
								With Dust Palliative	**With Bituminous Treatment**
GW	Good: tractor, rubber-tired, steel wheel or vibratory roller	125-135	Almost none	Good drainage, pervious	Very stable	Excellent	Good	Fair to poor	Excellent
GP	Good: tractor, rubber-tired, steel wheel or vibratory roller	115-125	Almost none	Good drainage, pervious	Reasonably stable	Excellent to good	Poor to fair	Poor	
GM	Good: rubber-tired or light sheepsfoot roller	120-135	Slight	Poor drainage, semipervious	Reasonably stable	Excellent to good	Fair to poor	Poor	Poor to fair
GC	Good to fair: rubber-tired or sheepsfoot roller	115-130	Slight	Poor drainage, impervious	Reasonably stable	Good	Good to fair **	Excellent	Excellent
SW	Good: tractor, rubber-tired or vibratory roller	110-130	Almost none	Good drainage, pervious	Very stable	Good	Fair to poor	Fair to poor	Good
SP	Good: tractor, rubber-tired or vibratory roller	100-120	Almost none	Good drainage, pervious	Reasonably stable when dense	Good to fair	Poor	Poor	Poor to fair
SM	Good: rubber-tired or sheepsfoot roller	110-125	Slight	Poor drainage, impervious	Reasonably stable when dense	Good to fair	Poor	Poor	Poor to fair
SC	Good to fair: rubber-tired or sheepsfoot roller	105-125	Slight to medium	Poor drainage, impervious	Reasonably stable	Good to fair	Fair to poor	Excellent	Excellent
ML	Good to poor: rubber-tired or sheepsfoot roller	95-120	Slight to medium	Poor drainage, impervious	Poor stability, high density required	Fair to poor	Not suitable	Poor	Poor
CL	Good to fair: sheepsfoot or rubber-tired roller	95-120	Medium	No drainage, impervious	Good stability	Fair to poor	Not suitable	Poor	Poor
OL	Fair to poor: sheepsfoot or rubber-tired roller	80-100	Medium to high	Poor drainage, impervious	Unstable, should not be used	Poor	Not suitable	Not suitable	Not suitable
MH	Fair to poor: sheepsfoot or rubber-tired roller	70-95	High	Poor drainage, impervious	Poor stability, should not be used	Poor	Not suitable	Very poor	Not suitable
CH	Fair to poor: sheepsfoot roller	80-105	Very high	No drainage, impervious	Fair stability, may soften on expansion	Poor to very poor	Not suitable	Very poor	Not suitable
OH	Fair to poor: sheepsfoot roller	65-100	High	No drainage, impervious	Unstable, should not be used	Very poor	Not suitable	Not suitable	Not suitable
Pt	Not suitable		Very high	Fair to poor drainage	Should not be used	Not suitable	Not suitable	Not suitable	Not suitable

* "The Unified Classification: Appendix A - Characteristics of Soil, Groups Pertaining to Roads and Airfields, and Appendix B - Characteristics of Soil Groups Pertaining to Embankments and Foundations," Technical Memorandum 357, U.S. Waterways Ixperiment Station, Vicksburg, 1953.

** Not suitable if subject to frost.

UNIFIED SOIL CLASSIFICATION SYSTEM (ASTM D-2487)

Major Divisions			Group Symbols	Typical Names	Laboratory Classification Criteria	
Coarse-grained soils (more than half of material is larger than No. 200 sieve size)	Gravels (More than half of coarse fraction is larger than No. 4 sieve size)	Clean gravels (little or no fines)	GW	Well-graded gravels, gravel-sand mixtures, little or no fines	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[b]	$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			GP	Poorly graded gravels, gravel-sand mixtrues, little or no fines		Not meeting all gradation requirements for GW
		Gravels with fines (appreciable amount of fines)	GM[a] d	Silty gravels, gravel-sand-silt mixtures		Atterberg limits below "A" line or P.I. less than 4 — Limits plotting within shaded area, above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			GM[a] u			
			GC	Clayey gravels, gravel-sand-clay mixtures		Atterberg limits above "A" line or P.I. greater than 7
	Sands (More than half of coarse fraction is smaller than No. 4 sieve size)	Clean sands (Little or no fines)	SW	Well-graded sands, gravelly sands, little or no fines		$C_u = \frac{D_{60}}{D_{10}}$ greater than 4; $C_c = \frac{(D_{30})^2}{D_{10} \times D_{60}}$ between 1 and 3
			SP	Poorly graded sands, gravelly sands, little or no fines		Not meeting all gradation requirements for SW
		Sands with fines (Appreciable amount of fines)	SM[a] d	Silty sands, sand-silt mixtures		Atterberg limits below "A" line or P.I. less than 4 — Limits plotting within shaded area, above "A" line with P.I. between 4 and 7 are *borderline* cases requiring use of dual symbols
			SM[a] u			
			SC	Clayey sands, sand-clay mixtures		Atterberg limits above "A" line or P.I. greater than 7
Fine-grained soils (More than half material is smaller than No. 200 sieve size)	Silts and clays (Liquid limit less than 50)		ML	Inorganic silts and very fine sands, rock flour, silty or clayey fine sands, or clayey silts with slight plasticity		
			CL	Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays		
			OL	Organic silts and organic silty clays of low plasticity		
	Silts and clays (Liquid limit greater than 50)		MH	Inorganic silts, micaceous or diatomaceous fine 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		

[a] Division of GM and SM groups into subdivisions of d and u are for roads and airfields only. Subdivision is based on Atterberg limits, suffix d used when L.L. is 28 or less and the P.I. is 6 or less; the suffix u is used when L.L. is greater than 28.

[b] Borderline classifications, used for soils possessing characteristics of two groups, are designated by combinations of group sympols. For example GW-GC, well-graded gravel-sand mixture with clay binder.

GENERAL NOTES

SAMPLE IDENTIFICATION

All samples are visually classified in general accordance with the Unified Soil Classification System (ASTM D-2487-75 or D-2488-75)

DESCRIPTIVE TERM (% BY DRY WEIGHT)

Trace:	1-10%
Little:	11-20%
Some:	21-35%
And/Adjective	36-50%

PARTICLE SIZE (DIAMETER)

Boulders:	8 inch and larger
Cobbles:	3 inch to 8 inch
Gravel:	coarse - ¾ to 3 inch
	fine – No. 4 (4.76 mm) to ¾ inch
Sand:	coarse – No. 4 (4.76 mm) to No. 10 (2.0 mm)
	medium – No. 10 (2.0 mm) to No. 40 (0.42 mm)
	fine – No. 40 (0.42 mm) to No. 200 (0.074 mm)
Silt:	No. 200 (0.074 mm) and smaller (non-plastic)
Clay:	No 200 (0.074 mm) and smaller (plastic)

SOIL PROPERTY SYMBOLS

Dd:	Dry Density (pcf)
LL:	Liquid Limit, percent
PL:	Plastic Limit, percent
PI:	Plasticity Index (LL-PL)
LOI:	Loss on Ignition, percent
Gs:	Specific Gravity
K:	Coefficient of Permeability
w:	Moisture content, percent
qp:	Calibrated Penetrometer Resistance, tsf
qs:	Vane-Shear Strength, tsf
qu:	Unconfined Compressive Strength, tsf
qc:	Static Cone Penetrometer Resistance (correlated to Unconfined Compressive Strength, tsf)
PID:	Results of vapor analysis conducted on representative samples utilizing a Photoionization Detector calibrated to a benzene standard. Results expressed in HNU-Units. (BDL=Below Detection Limit)

DRILLING AND SAMPLING SYMBOLS

SS:	Split-Spoon
ST:	Shelby Tube – 3 inch O.D. (except where noted)
CS:	3 inch O.D. California Ring Sampler
DC:	Dynamic Cone Penetrometer per ASTM Special Technical Publication No. 399
AU:	Auger Sample
DB:	Diamond Bit
CB:	Carbide Bit
WS:	Wash Sample
RB:	Rock-Roller Bit
BS:	Bulk Sample
Note:	Depth intervals for sampling shown on Record of Subsurface Exploration are not indicative of sample recovery, but position where sampling initiated

N: Penetration Resistance per 12 inch interval, or fraction thereof, for a standard 2 inch O.D. (1⅜ inch I.D.) split spoon sampler driven with a 140 pound weight free-falling 30 inches. Performed in general accordance with Standard Penetration Test Specifications (ASTM D-1586). N in blows per foot equals sum of N-Values where plus sign (+) is shown.

Nc: Penetration Resistance per 1¾ inches of Dynamic Cone Penetrometer. Approximately equivalent to Standard Penetration Test N-Value in blows per foot.

Nr: Penetration Resistance per 12 inch interval, or fraction thereof, for California Ring Sampler driven with a 140 pound weight free-falling 30 inches per ASTM D-3550. Not equivalent to Standard Penetration Test N-Value.

SOIL STRENGTH CHARACTERISTICS

COHESIVE (CLAYEY) SOILS

COMPARATIVE CONSISTENCY	BLOWS PER FOOT (N)	UNCONFINED COMPRESSIVE STRENGTH (TSF)
Very Soft	0 - 2	0 - 0.25
Soft	3 - 4	0.25 - 0.50
Medium Stiff	5 – 8	0.50 - 1.00
Stiff	9 – 15	1.00 - 2.00
Very Stiff	16 – 30	2.00 - 4.00
Hard	31+	4.00+

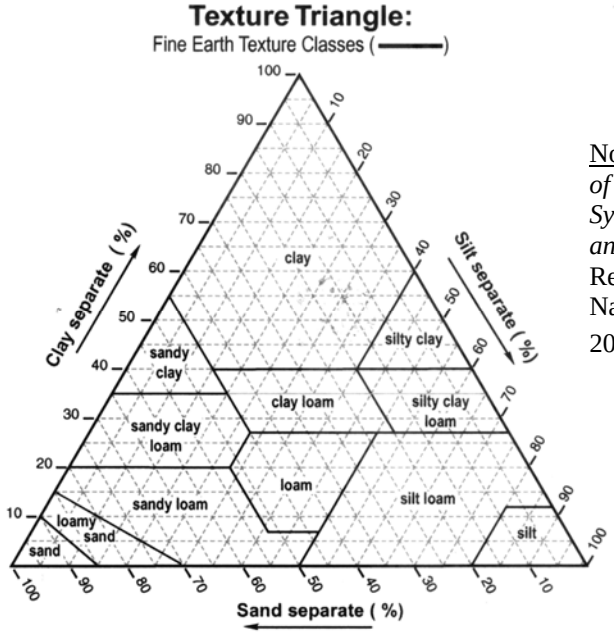
NON-COHESIVE (GRANULAR) SOILS

RELATIVE DENSITY	BLOWS PER FOOT (N)
Very Loose	0 - 4
Loose	5 - 10
Firm	11 - 30
Dense	31 - 50
Very Dense	51+

DEGREE OF PLASTICITY	PI
None to Slight	0 - 4
Slight	5 - 10
Medium	11 - 30
High to Very High	31+

DEGREE OF EXPANSIVE POTENTIAL	PI
Low	0 - 15
Medium	15 - 25
High	25+

SOIL CLASSIFICATION NOTES



Note: *Texture Triangle* and *Comparison of Particle Size Classes in Different Systems* from *Field Book for Describing and Sampling Soil*, USDA Natural Resources Conservation Service National Soil Survey Center (September 2002).

Comparison of Particle Size Classes in Different Systems

	FINE EARTH										ROCK FRAGMENTS					
											channers			flagst.	stones	boulders
USDA [1]	Clay [2]		Silt		Sand						Gravel			Cobbles	Stones	Boulders
	fine	co.	fine	co.	v.fi.	fi.	med.	co.	v. co.		fine	medium	coarse			
millimeters:	0.0002	.002 mm		.02	.05	.1	.25	.5	1	2 mm	5	20		76	250	600 mm
U.S. Standard Sieve No. *(opening)*:					300 [3]	140	60	35	18	10	4	*(3/4")*		*(3")*	*(10")*	*(25")*

International [4]	Clay	Silt	Sand		Gravel	Stones
			fine	coarse		
millimeters:	.002 mm	.02	.20		2 mm	20 mm
U.S. Standard Sieve No. *(opening)*:					10	*(3/4")*

Unified [5]	Silt or Clay	Sand			Gravel		Cobbles	Boulders
		fine	medium	co.	fine	coarse		
millimeters:	.074	.42		2 mm	4.8	19	76	300 mm
U.S. Standard Sieve No. *(opening)*:	200	40		10	4	*(3/4")*	*(3")*	

AASHTO [6,7]	Clay	Silt	Sand		Gravel or Stones			Broken Rock (angular), or Boulders (rounded)
			fine	coarse	fine	med.	co.	
millimeters:	.005 mm	.074	.42	2 mm	9.5	25	75 mm	
U.S. Standard Sieve No.:		200	40	10	*(3/8")*	*(1")*	*(3")*	

phi #:	12	10	9	8	7	6	5	4	3	2	1	0	-1	-2	-3	-4	-5	-6	-7	-8	-9	-10	-12
Modified Wentworth [8]	clay			silt				sand					pebbles						Cobbles	boulders			
millimeters:	.002	.004	.008	.016	.031	.062	.125	.25	.5	1	2 mm		8	16	32	64		256			4092 mm		
U.S. Standard Sieve No.:						230	120	60	35	18	10		5										

1. Soil Survey Staff. 1995. Soil survey Laboratory information manual. USDA, Natural Resources Conservation Service, Soil Survey Investigations Report No. 45, Version 1.0, National Soil Survey Center, Lincoln, NE. 305 p.
2. Soil Survey Staff. 1995. Soil Survey Lab information manual. USDA-NRCS, Soil Survey Investigation Report #45, version 1.0, National Soil Survey Center, Lincoln, NE. Note: Mineralogy studies may subdivide clay into three size ranges; fine (<0.08µm), medium (0.08-0.2µm), and coarse (0.2-2µm); Jackson, 1969.
3. The Soil Survey Lab (Lincoln, NE) uses a no. 300 sieve (0.047 mm opening) for the USDA-sand/silt measurement. A no. 270 sieve (0.053 mm opening) is more readily available and widely used.
4. International Soil Science Society. 1951. *In*: Soil Survey Manual. Soil Survey Staff, USDA-Soil Conservation Service, Agricultural Handbook No. 18, U.S. Gov. Print. Office, Washington, D.C. 214 p.
5. ASTM. 1993. Standard classification of soils for engineering purposes (Unified Soil Classification System). ASTM designation D2487-92. *In*: Soil and rock; dimension stone; geosynthetics. Annual book of ASTM standards-Vol. 04.08.
6. AASHTO. 1986a. Recommended practice for the classification of soils and soil-aggregate mixtures for highway construction purposes. AASHTO designation M145-82. *In*: Standard specifications for transportation materials and methods of sampling and testing; Part 1: Specifications (14th ed.). American Association of State Highway and Transportation Officials, Washington, D.C.
7. AASHTO. 1986b. Standard definitions of terms relating to subgrade, soil-aggregate, and fill materials. AASHTO designation M146-70 (1980). *In*: sampling and testing; Part 1: Specifications (14th ed.). American Association of State Highway and Transportation Officials, Washington, D.C.
8. Ingram, R.L. 1982. Modified Wentworth scale. *In*: Grain-size scales. AGI Date Sheet 29.1. *In*: Dutro, J.T., Dietrich, R.V., and Foose, R.M. 1989. AGI data sheets for geology in the field, laboratory, and office, 3rd edition. American Geological Institute, Washington, D.C.

GILES
ENGINEERING ASSOCIATES, INC.

Important Information about This

Geotechnical-Engineering Report

Subsurface problems are a principal cause of construction delays, cost overruns, claims, and disputes.

While you cannot eliminate all such risks, you can manage them. The following information is provided to help.

The Geoprofessional Business Association (GBA) has prepared this advisory to help you – assumedly a client representative – interpret and apply this geotechnical-engineering report as effectively as possible. In that way, you can benefit from a lowered exposure to problems associated with subsurface conditions at project sites and development of them that, for decades, have been a principal cause of construction delays, cost overruns, claims, and disputes. If you have questions or want more information about any of the issues discussed herein, contact your GBA-member geotechnical engineer. Active engagement in GBA exposes geotechnical engineers to a wide array of risk-confrontation techniques that can be of genuine benefit for everyone involved with a construction project.

Understand the Geotechnical-Engineering Services Provided for this Report

Geotechnical-engineering services typically include the planning, collection, interpretation, and analysis of exploratory data from widely spaced borings and/or test pits. Field data are combined with results from laboratory tests of soil and rock samples obtained from field exploration (if applicable), observations made during site reconnaissance, and historical information to form one or more models of the expected subsurface conditions beneath the site. Local geology and alterations of the site surface and subsurface by previous and proposed construction are also important considerations. Geotechnical engineers apply their engineering training, experience, and judgment to adapt the requirements of the prospective project to the subsurface model(s). Estimates are made of the subsurface conditions that will likely be exposed during construction as well as the expected performance of foundations and other structures being planned and/or affected by construction activities.

The culmination of these geotechnical-engineering services is typically a geotechnical-engineering report providing the data obtained, a discussion of the subsurface model(s), the engineering and geologic engineering assessments and analyses made, and the recommendations developed to satisfy the given requirements of the project. These reports may be titled investigations, explorations, studies, assessments, or evaluations. Regardless of the title used, the geotechnical-engineering report is an engineering interpretation of the subsurface conditions within the context of the project and does not represent a close examination, systematic inquiry, or thorough investigation of all site and subsurface conditions.

Geotechnical-Engineering Services are Performed for Specific Purposes, Persons, and Projects, and At Specific Times

Geotechnical engineers structure their services to meet the specific needs, goals, and risk management preferences of their clients. A geotechnical-engineering study conducted for a given civil engineer will not likely meet the needs of a civil-works constructor or even a different civil engineer. Because each geotechnical-engineering study is unique, each geotechnical-engineering report is unique, prepared *solely* for the client.

Likewise, geotechnical-engineering services are performed for a specific project and purpose. For example, it is unlikely that a geotechnical-engineering study for a refrigerated warehouse will be the same as one prepared for a parking garage; and a few borings drilled during a preliminary study to evaluate site feasibility will not be adequate to develop geotechnical design recommendations for the project.

Do not rely on this report if your geotechnical engineer prepared it:

- for a different client;
- for a different project or purpose;
- for a different site (that may or may not include all or a portion of the original site); or
- before important events occurred at the site or adjacent to it; e.g., man-made events like construction or environmental remediation, or natural events like floods, droughts, earthquakes, or groundwater fluctuations.

Note, too, the reliability of a geotechnical-engineering report can be affected by the passage of time, because of factors like changed subsurface conditions; new or modified codes, standards, or regulations; or new techniques or tools. *If you are the least bit uncertain* about the continued reliability of this report, contact your geotechnical engineer before applying the recommendations in it. A minor amount of additional testing or analysis after the passage of time – if any is required at all – could prevent major problems.

Read this Report in Full

Costly problems have occurred because those relying on a geotechnical-engineering report did not read the report in its entirety. Do not rely on an executive summary. Do not read selective elements only. *Read and refer to the report in full.*

You Need to Inform Your Geotechnical Engineer About Change

Your geotechnical engineer considered unique, project-specific factors when developing the scope of study behind this report and developing the confirmation-dependent recommendations the report conveys. Typical changes that could erode the reliability of this report include those that affect:

- the site's size or shape;
- the elevation, configuration, location, orientation, function or weight of the proposed structure and the desired performance criteria;
- the composition of the design team; or
- project ownership.

As a general rule, *always* inform your geotechnical engineer of project or site changes – even minor ones – and request an assessment of their impact. *The geotechnical engineer who prepared this report cannot accept*

responsibility or liability for problems that arise because the geotechnical engineer was not informed about developments the engineer otherwise would have considered.

Most of the "Findings" Related in This Report Are Professional Opinions

Before construction begins, geotechnical engineers explore a site's subsurface using various sampling and testing procedures. *Geotechnical engineers can observe actual subsurface conditions only at those specific locations where sampling and testing is performed.* The data derived from that sampling and testing were reviewed by your geotechnical engineer, who then applied professional judgement to form opinions about subsurface conditions throughout the site. Actual sitewide-subsurface conditions may differ – maybe significantly – from those indicated in this report. Confront that risk by retaining your geotechnical engineer to serve on the design team through project completion to obtain informed guidance quickly, whenever needed.

This Report's Recommendations Are Confirmation-Dependent

The recommendations included in this report – including any options or alternatives – are confirmation-dependent. In other words, they are not final, because the geotechnical engineer who developed them relied heavily on judgement and opinion to do so. Your geotechnical engineer can finalize the recommendations *only after observing actual subsurface conditions* exposed during construction. If through observation your geotechnical engineer confirms that the conditions assumed to exist actually do exist, the recommendations can be relied upon, assuming no other changes have occurred. *The geotechnical engineer who prepared this report cannot assume responsibility or liability for confirmation-dependent recommendations if you fail to retain that engineer to perform construction observation.*

This Report Could Be Misinterpreted

Other design professionals' misinterpretation of geotechnical-engineering reports has resulted in costly problems. Confront that risk by having your geotechnical engineer serve as a continuing member of the design team, to:

- confer with other design-team members;
- help develop specifications;
- review pertinent elements of other design professionals' plans and specifications; and
- be available whenever geotechnical-engineering guidance is needed.

You should also confront the risk of constructors misinterpreting this report. Do so by retaining your geotechnical engineer to participate in prebid and preconstruction conferences and to perform construction-phase observations.

Give Constructors a Complete Report and Guidance

Some owners and design professionals mistakenly believe they can shift unanticipated-subsurface-conditions liability to constructors by limiting the information they provide for bid preparation. To help prevent the costly, contentious problems this practice has caused, include the complete geotechnical-engineering report, along with any attachments or appendices, with your contract documents, *but be certain to note conspicuously that you've included the material for information purposes only.* To avoid misunderstanding, you may also want to note that "informational purposes" means constructors have no right to rely on the interpretations, opinions, conclusions, or recommendations in the report. Be certain that constructors know they may learn about specific project requirements, including options selected from the report, *only* from the design drawings and specifications. Remind constructors that they may perform their own studies if they want to, and *be sure to allow enough time* to permit them to do so. Only then might you be in a position to give constructors the information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions. Conducting prebid and preconstruction conferences can also be valuable in this respect.

Read Responsibility Provisions Closely

Some client representatives, design professionals, and constructors do not realize that geotechnical engineering is far less exact than other engineering disciplines. This happens in part because soil and rock on project sites are typically heterogeneous and not manufactured materials with well-defined engineering properties like steel and concrete. That lack of understanding has nurtured unrealistic expectations that have resulted in disappointments, delays, cost overruns, claims, and disputes. To confront that risk, geotechnical engineers commonly include explanatory provisions in their reports. Sometimes labeled "limitations," many of these provisions indicate where geotechnical engineers' responsibilities begin and end, to help others recognize their own responsibilities and risks. *Read these provisions closely.* Ask questions. Your geotechnical engineer should respond fully and frankly.

Geoenvironmental Concerns Are Not Covered

The personnel, equipment, and techniques used to perform an environmental study – e.g., a "phase-one" or "phase-two" environmental site assessment – differ significantly from those used to perform a geotechnical-engineering study. For that reason, a geotechnical-engineering report does not usually provide environmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. *Unanticipated subsurface environmental problems have led to project failures.* If you have not obtained your own environmental information about the project site, ask your geotechnical consultant for a recommendation on how to find environmental risk-management guidance.

Obtain Professional Assistance to Deal with Moisture Infiltration and Mold

While your geotechnical engineer may have addressed groundwater, water infiltration, or similar issues in this report, the engineer's services were not designed, conducted, or intended to prevent migration of moisture – including water vapor – from the soil through building slabs and walls and into the building interior, where it can cause mold growth and material-performance deficiencies. Accordingly, ***proper implementation of the geotechnical engineer's recommendations will not of itself be sufficient to prevent moisture infiltration. Confront the risk of moisture infiltration*** by including building-envelope or mold specialists on the design team. ***Geotechnical engineers are not building-envelope or mold specialists.***

GEOPROFESSIONAL BUSINESS ASSOCIATION

Telephone: 301/565-2733
e-mail: info@geoprofessional.org www.geoprofessional.org

Geotechnical, Environmental & Construction Materials Consultants

GILES

ENGINEERING ASSOCIATES, INC.

www.gilesengr.com

GENERAL INFORMATION
STORMWATER MANAGEMENT PERMIT APPLICATION

Send Application to:

Village of New Glarus
319 Second Street
New Glarus, Wisconsin 53574

Official Use Only

Date Received _____
Number _____
Fee Received _____
Reviewer _____

Instructions: Please type or print. Read all instructions before completing application.

Name of Project:
New Glarus Track and Field

Applicant/Entity Receiving Permit

Name of Applicant: New Glarus School District
First Name of Contact: Jennifer Thayer Last Name:
Street (1): 1701 2nd Street
Street (2):
City: New Glarus State: WI Zip Code: 53574
Telephone Number: (608) 527-2410
Fax Number: (N/A)

Property Owner

First Name: SAME AS ABOVE Last Name:
Street (1):
Street (2):
City: State: Zip Code:
Telephone Number: ( )
Parcel Identification Number(s): 23-161-0675.0000

Engineer

Name of Firm: Point of Beginning, Inc.
First Name of Contact: Jesse Becker, P.E. Last Name:
Street (1): 4941 Kirschling Court
Street (2):
City: Stevens Point State: WI Zip Code: 54481
Telephone Number: (715) 344-9999
Fax Number: (N/A)

Village of New Glarus
Stormwater Management Plan
Application Checklist

Project Name: New Glarus Track and Field

Permit #: _____

Date: 9/6/2023

Please check the appropriate box: I = Included; NA = Non-Applicable *(If "NA" is checked, an explanation must be entered.)*

Plan Requirement	I	NA	Explanation/Location in Plan
A. Submittal Requirements			
1. Permit Application Form	X		
2. Maintenance Agreement	X		
3. Financial Guarantee		X	
4. Certification/Stamp by Wisconsin Prof. Engineer	X		
B. Predevelopment Site Conditions Mapping			
1. Location Map	X		
2. Soils Survey Map	X		
3. Existing Land Use Mapping	X		
4. Predeveloped Site Conditions	X		
a. Existing Contours	X		
b. Property lines	X		
c. Existing flow paths and direction	X		
d. Outlet locations	X		
e. Drainage basin divides and subdivides	X		
f. Existing drainage structures on and adjacent to the site.	X		
g. Nearby Watercourses	X		
h. Lakes, streams, wetlands, channels, ditches, etc.	X		
i. Limits of the 100-year floodplain;	X		
j. Wells/Wellhead Protection Areas	X		
C. Post-Development Site Conditions Mapping			
1. Pervious Surfaces	X		
2. Impervious Surfaces	X		
3. One Foot Topographic Contours	X		
4. Proposed Drainage System (including applicable off-site)	X		
5. Proposed Easement Locations	X		
6. Proposed Flow Paths, Overland Flow Routes	X		
7. Proposed Outlets/Drainage Divides	X		
D. Drawings/Details			
1. Practice Location/Layout/Cross Sections	X		
2. Outlet Structure Details	X		
3. Ditch/Storm Sewer Plan/Profile	X		
4. Other	X		
E. Calculations, including computer modeling input and output files.			
1. Hydrograph Parameter Calculations	X		
2. Computer Modeling Input/Output (Pre- and Postdeveloped)	X		
3. Detention Pond Routing	X		
4. Conveyance System Design	X		
5. Other	X		

Village of New Glarus
Stormwater Management Plan
Application Checklist

Project Name: New Glarus Track and Field

Permit #: _____

Date: 9/6/2023

Please check the appropriate box: I = Included; NA = Non-Applicable *(If "NA" is checked, an explanation must be entered.)*

Plan Requirement	I	NA	Explanation/Location in Plan
F. Narrative			
1. Methodologies and Assumptions	X		
2. Results/Conclusions	X		
a. Pre-, and Post-developed parameter summary	X		
b. Pre-, and Post-developed peak discharge Summary	X		
3. Provisions to preserve natural topography/cover features	X		
4. Limitations from wellhead protection plans and ordinances.	X		
5. Results of investigations of soils and groundwater	X		
6. Practice Installation Schedule	X		
7. Maintenance Plan	X		
8. Cost Estimates	X		
9. Other Information	X		

GENERAL INFORMATION
CONSTRUCTION SITE EROSION CONTROL PERMIT APPLICATION

Send Application to:

Village of New Glarus
319 Second Street
New Glarus, Wisconsin 53574

Official Use Only

Date Received _____
Number _____
Fee Received _____
Reviewer _____

Instructions: Please type or print. Read all instructions before completing application.

Name of Project:
New Glarus Track and Field

Applicant/Entity Receiving Permit

Name of Applicant: New Glarus School District
First Name of Contact: Jennifer Thayer Last Name:
Street (1): 1701 2nd Street
Street (2):
City: New Glarus State: WI Zip Code: 53574
Telephone Number: (608) 527-2410
Fax Number: (N/A)

Property Owner

First Name: SAME AS ABOVE Last Name:
Street (1):
Street (2):
City: State: Zip Code:
Telephone Number: ( )
Parcel Identification Number(s): 23-161-0675.0000

Engineer (Where Applicable)

Name of Firm: Point of Beginning, Inc.
First Name of Contact: Jesse Becker, P.E. Last Name:
Street (1): 4941 Kirschling Court
Street (2):
City: Stevens Point State: WI Zip Code: 54481
Telephone Number: (715) 344-9999
Fax Number: (N/A)

Village of New Glarus
Construction Site Erosion Control Plan
Application Checklist
(Sites > One Acre)

Project Name: New Glarus Track and Field

Permit #: _____

Date: 9/6/23

Please check the appropriate box: I = Included; NA = Non-Applicable

(If "NA" is checked, an explanation must be entered.)

Plan Requirement	I	NA	Explanation/Location in Plan
A. Submittal Requirements			
1. Permit Application Form	X		
B. Predevelopment Site Conditions Mapping			
1. Location Map	X		
2. Soils Survey Map	X		
3. Existing Land Use Mapping	X		
4. Predeveloped Site Conditions	X		
a. Existing Contours	X		
b. Property lines	X		
c. Existing flow paths and direction	X		
d. Outlet locations	X		
e. Drainage basin divides and subdivides	X		
f. Existing drainage structures on and adjacent to the site.	X		
g. Nearby Watercourses	X		
h. Lakes, streams, wetlands, channels, ditches, etc.	X		
i. Limits of the 100-year floodplain;	X		
C. Proposed Site Grading and Erosion Control Plan			
1. Boundaries of the construction site.	X		
2. Drainage Patterns/slopes after grading activities	X		
3. Areas of land disturbance	X		
4. Locations of structural and nonstructural controls	X		
5. Drainage basin delineations and outfall locations	X		
D. Drawings/Details			
1. Practice Location/Layout/Cross Sections	X		
2. Construction Details	X		
E. Calculations, as required to demonstrate ordinance compliance			
F. Narrative			
1. Name of receiving waters	X		
2. Site Description/Nature of construction activity	X		
3. Sequence of Construction	X		
4. Estimate of site area and disturbance area	X		
5. Pre- and postdeveloped runoff coefficients	X		
6. Description of proposed controls, including	X		
a. Interim and permanent stabilization practices	X		
b. Practices to divert flow from exposed soils	X		
c. Practices to store flows or trap sediment	X		
d. Any other practices proposed to meet ordinance	X		

New Glarus HS – Track & Field Maintenance Plan

Operation and Maintenance, Short-term

The OWNER of this project, located in the Village of New Glarus, Green County, Wisconsin, is directly responsible for implementation and maintenance of the construction site erosion control measures.

The Contractor shall conduct the following inspections:

- Weekly inspections of implemented erosion and sediment controls.
- Inspections of erosion and sediment controls within 24 hours after precipitation event 0.5 inches or greater which results in runoff during active construction periods.

The Contractor shall maintain weekly written reports of all inspections that include:

- The date, time, and exact place of the inspection.
- The name of the individual who performed the inspection.
- An assessment of the condition of erosion and sediment controls.
- A description of any erosion and sediment control implementation and maintenance performed.
- A description of the present phase of construction at the site.

Repairs shall be made immediately, as required, to maintain effectiveness, until permanent vegetation is established. All repairs to erosion control devices shall be documented on the Wisconsin Department of Natural Resources Construction Site Inspection Report (Form 3400-187). A copy of Form 3400-187 can be found in **Appendix F**.

Operation and Maintenance, Long-term

The OWNER of this project, located in the Village of New Glarus, Green County, Wisconsin, is directly responsible for the operation, inspection, and maintenance of all storm water facilities located within the project site, as described below.

- Dry Detention Basin:
  Inspection: Look for accumulation of sediment and/or debris in basin. Verify period of time water is retained in basin following storm events. Look for erosion or damage. Review plant health.
  Maintenance: Remove accumulated sediment deposits and/or debris in basin and repair any eroded or damaged grass areas. If water is retained for more than 24-48 hours after a storm event, verify that the outfall structure is in proper working order. Remove any accumulations of trash, sediment, or vegetation by outfall structure.
- Catch Basins, Storm Sewer, and Outfall:
  Inspection: Accumulation of sediment and/or debris within catch basin, storm sewer pipe, and/or outfall. Look for damage to pipe, catch basin structure, and outfall.
  Maintenance: Remove accumulated sediment and/or debris within the pipe, sump below catch basin, and/or within or near outfall. Repair damaged pipe, catch basin, and/or outfall. If the damage is un-repairable then the pipe, catch basin, and/or outfall shall be replaced.

The above long-term inspection and maintenance schedule shall be performed after any rainfall event exceeding one inch of rainfall, and at a minimum semi-annually in early spring and fall.

All inspections and maintenance activities shall be documented, and the OWNER shall keep all inspection and maintenance records onsite and available upon request of the local municipality or Wisconsin Department of Natural Resources.

New Glarus New Football Field

New Glarus, WI

Lighting System

Pole/Fixture Summary

Pole ID	Pole Height	Mtg Height	Fixture Qty	Luminaire Type	Load	Circuit
F1-F2	80'	80'	4	TLC-LED-1500	5.72 kW	A
F1-F4	80'	80'	1	TLC-LED-900	0.88 kW	A
F1-F4	80'	80'	2	TLC-LED-1500	2.82 kW	A
F1-F4	80'	16'	2	TLC-BT-575	1.15 kW	A
F3-F4	80'	80'	3	TLC-LED-1500	4.29 kW	A
F4	80'	80'	1	TLC-LED-900	0.89 kW	A
4			**35**		**40.31 kW**	

Circuit Summary

Circuit	Description	Load	Fixture Qty
A	Football	40.31 kW	35

Fixture Type Summary

Type	Source	Wattage	Lumens	L90	L80	L70	Quantity
TLC-BT-575	LED 5700K - 75 CRI	575W	52,000	>120,000	>120,000	>120,000	8
TLC-LED-1500	LED 5700K - 75 CRI	1410W	181,000	>120,000	>120,000	>120,000	8
TLC-LED-1500	LED 5700K - 75 CRI	1430W	160,000	>120,000	>120,000	>120,000	14
TLC-LED-900	LED 5700K - 75 CRI	880W	104,000	>120,000	>120,000	>120,000	4
TLC-LED-900	LED 5700K - 75 CRI	890W	89,600	>120,000	>120,000	>120,000	1

Single Luminaire Amperage Draw Chart

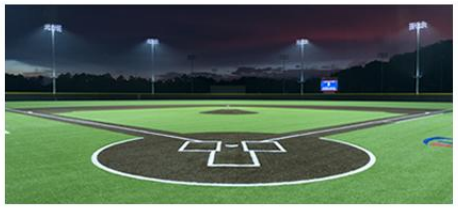
Driver Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-BT-575	3.3	3.2	2.9	2.5	2.0	1.8	1.5
TLC-LED-1500	8.5	8.1	7.4	6.4	5.1	4.7	3.7
TLC-LED-900	5.2	4.9	4.5	3.9	3.1	2.9	2.3

Light Level Summary

Calculation Grid Summary

Grid Name	Calculation Metric	Illumination					Circuits	Fixture Qty
		Ave	Min	Max	Max/Min	Ave/Min		
Football	Horizontal Illuminance	32	26	44	1.71	1.23	A	35
Football Home Bleachers	Horizontal	17.9	15	20	1.30	1.19	A	35
Football Visitor Bleachers	Horizontal	15.1	14	16	1.14	1.08	A	35
Plaza	Horizontal	7.71	0	20	75.85		A	35
Property Line	Horizontal Illuminance	0.06	0	0.44	0.00		A	35
Soccer	Horizontal Illuminance	32.4	26	45	1.72	1.25	A	35
Track	Horizontal Illuminance	10.6	1	23	26.48	10.65	A	35

From Hometown to Professional



We Make It Happen.

ENGINEERED DESIGN By: • File #228301C • 22-Aug-23

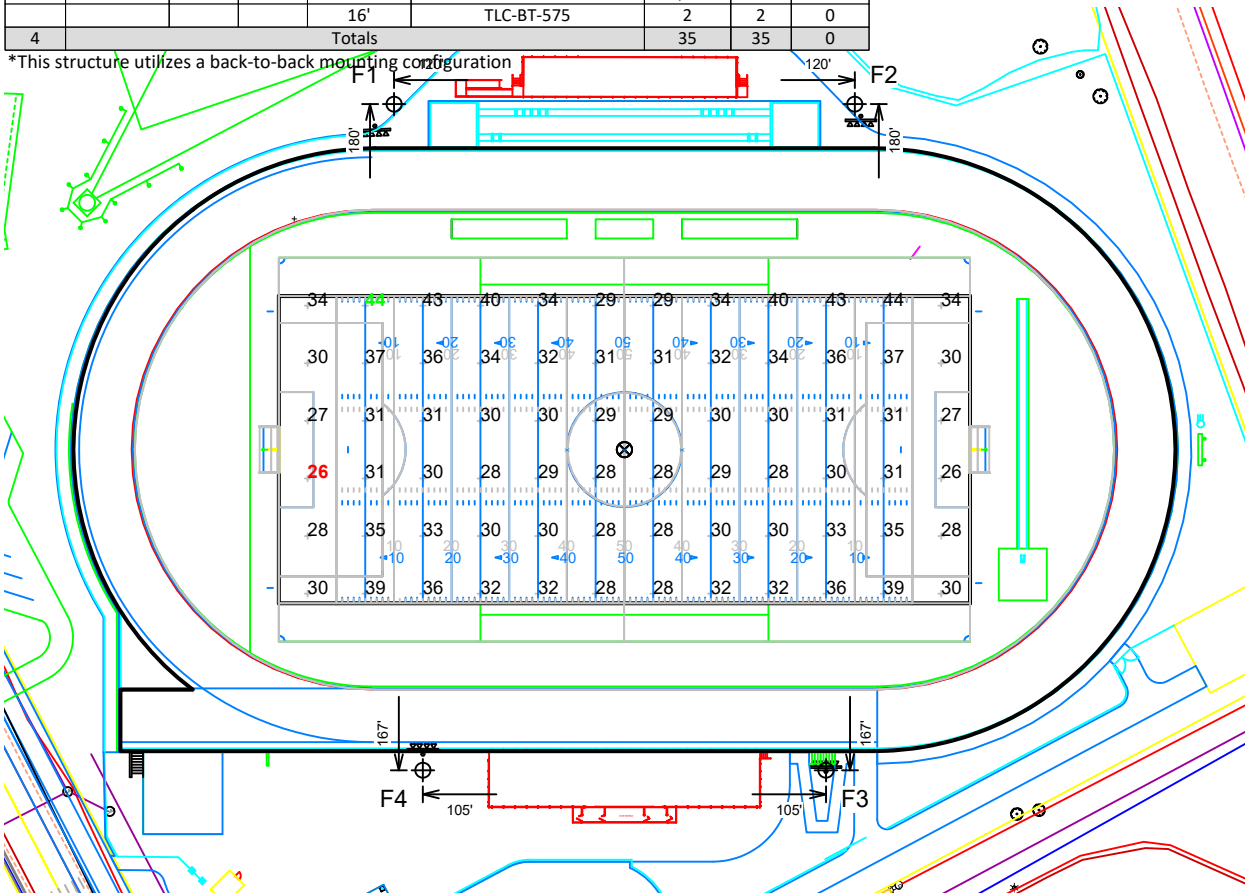
New Glarus New Football Field

New Glarus, WI

Equipment List For Areas Shown

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	80'	TLC-LED-1500	6	6	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F3	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F4	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1/1*	2	0
				16'	TLC-BT-575	2	2	0
4	Totals					35	35	0

*This structure utilizes a back-to-back mounting configuration



Grid Summary

Name	**Football**
Size	360' x 160'
Spacing	30.0' x 30.0'
Height	3.0' above grade

Illumination Summary

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Guaranteed Average	**30**
Scan Average	32.05
Maximum	44
Minimum	26
Avg/Min	1.24
Guaranteed Max/Min	**2.5**
Max/Min	1.71
UG (adjacent pts)	1.32
CU	0.46
No. of Points	72
LUMINAIRE INFORMATION	
Applied Circuits	A
No. of Luminaires	**35**
Total Load	40.31 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊠

We Make It Happen.

ENGINEERED DESIGN By: • File #228301C • 22-Aug-23

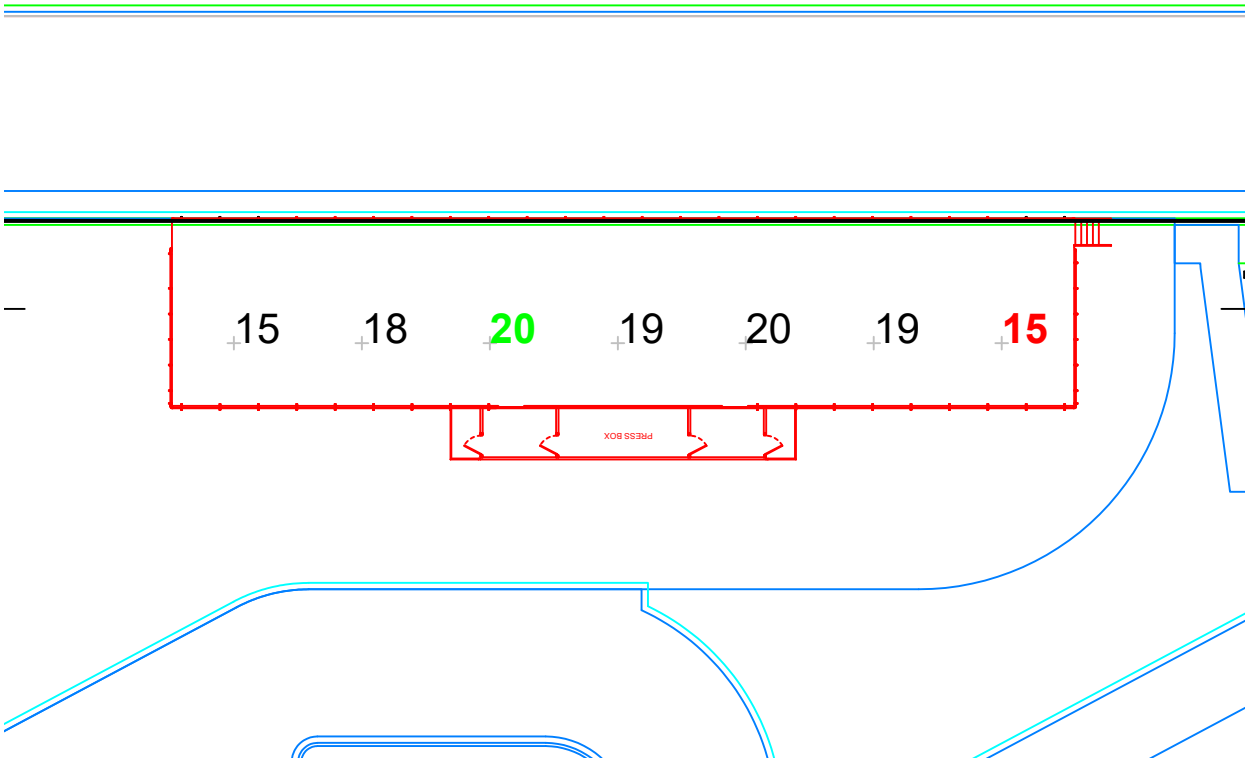
New Glarus New Football Field

New Glarus, WI

Equipment List For Areas Shown

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	80'	TLC-LED-1500	6	6	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F3	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F4	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1/1*	2	0
				16'	TLC-BT-575	2	2	0
4	Totals					35	35	0

*This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 30

0' 30' 60'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊠

Grid Summary

Name	**Football Home Bleachers**
Size	360' x 160'
Spacing	20.0' x 20.0'
Height	3.0' above grade

Illumination Summary

	MAINTAINED HORIZONTAL FOOTCANDLES
	Entire Grid
Scan Average	**17.89**
Maximum	20
Minimum	15
Avg/Min	1.19
Max/Min	**1.30**
No. of Points	42
LUMINAIRE INFORMATION	
Applied Circuits	A
No. of Luminaires	**35**
Total Load	40.31 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

We Make It Happen.

ENGINEERED DESIGN By: • File #228301C • 22-Aug-23

New Glarus New Football Field

New Glarus, WI

Equipment List For Areas Shown

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	80'	TLC-LED-1500	6	6	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F3	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F4	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1/1*	2	0
				16'	TLC-BT-575	2	2	0
4	Totals					35	35	0

*This structure utilizes a back-to-back mounting configuration

Grid Summary

Name	**Football Visitor Bleachers**
Size	360' x 160'
Spacing	20.0' x 20.0'
Height	3.0' above grade

Illumination Summary

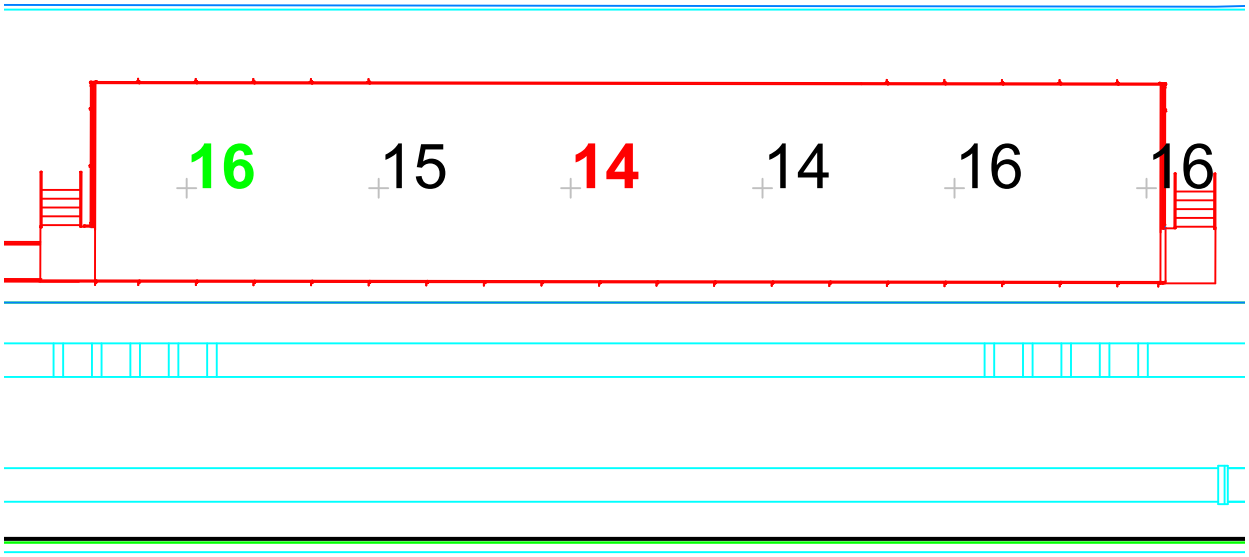
	MAINTAINED HORIZONTAL FOOTCANDLES
	Entire Grid
Scan Average	**15.14**
Maximum	16
Minimum	14
Avg/Min	1.07
Max/Min	**1.14**
No. of Points	22
LUMINAIRE INFORMATION	
Applied Circuits	A
No. of Luminaires	**35**
Total Load	40.31 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.



SCALE IN FEET 1 : 20

0' 20' 40'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊠

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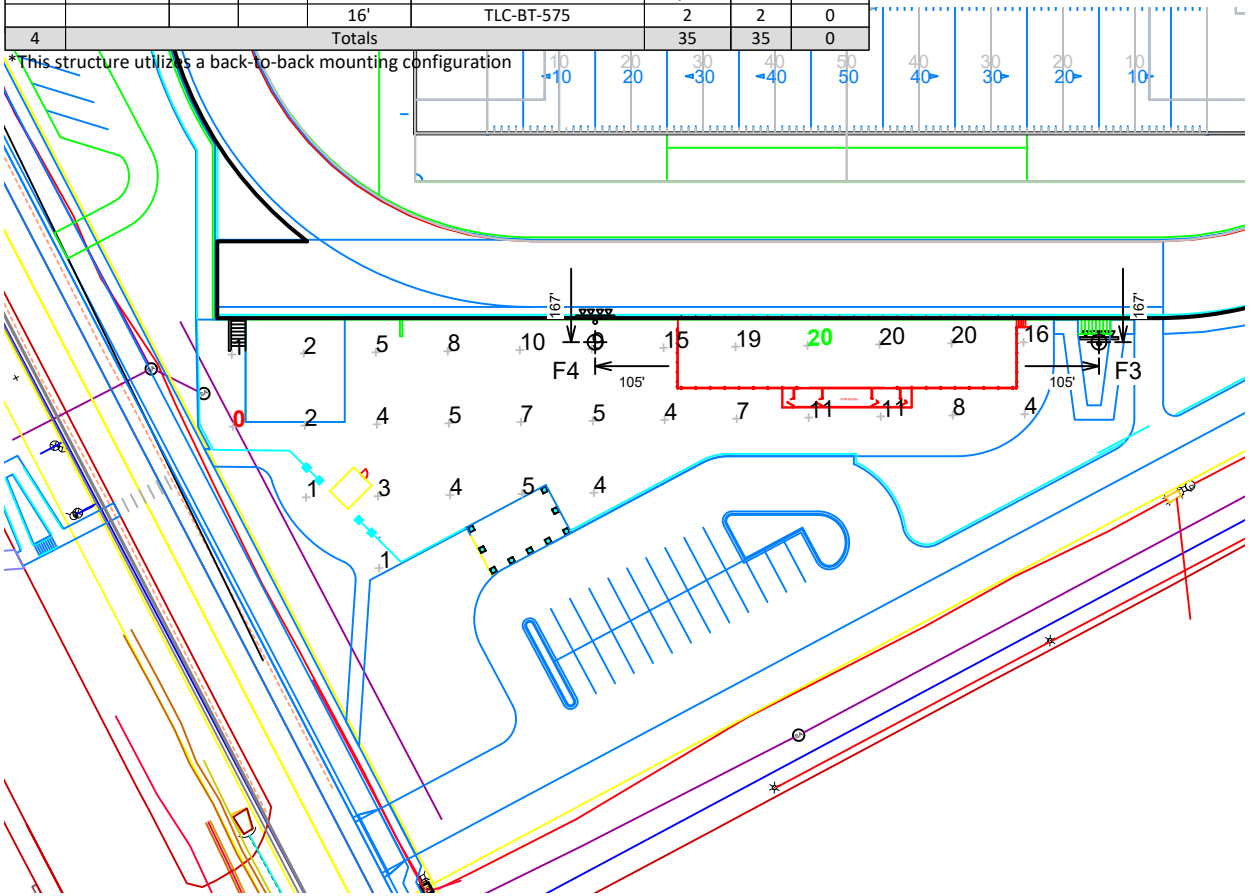
New Glarus New Football Field

New Glarus, WI

Equipment List For Areas Shown

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	80'	TLC-LED-1500	6	6	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F3	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F4	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1/1*	2	0
				16'	TLC-BT-575	2	2	0
4	Totals					35	35	0

*This structure utilizes a back-to-back mounting configuration



Grid Summary

Name	**Plaza**
Size	360' x 160'
Spacing	30.0' x 30.0'
Height	3.0' above grade

Illumination Summary

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average	**7.71**
Maximum	20
Minimum	0
CU	0.05
No. of Points	260
LUMINAIRE INFORMATION	
Applied Circuits	A
No. of Luminaires	**35**
Total Load	40.31 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 80

0' 80' 160'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊠

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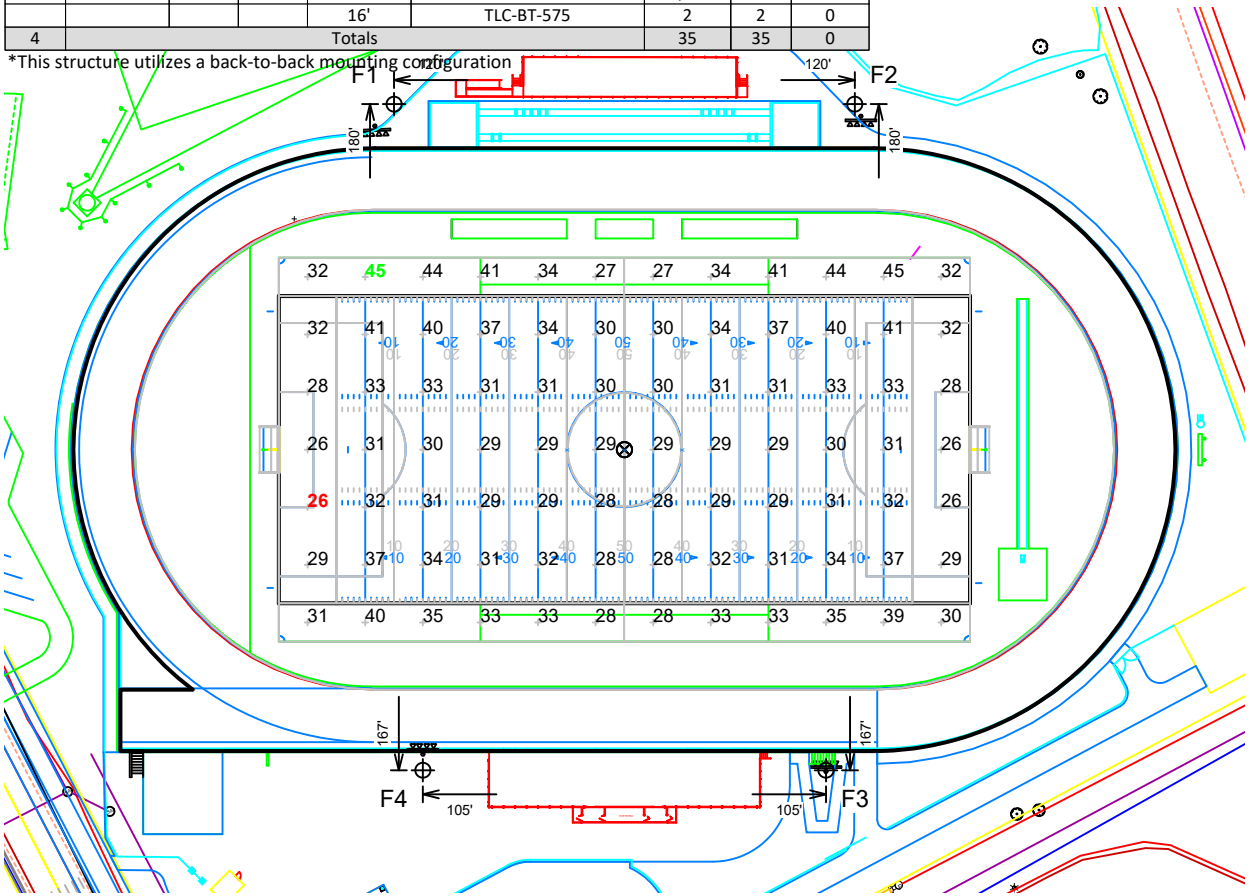
New Glarus New Football Field

New Glarus, WI

Equipment List For Areas Shown

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	80'	TLC-LED-1500	6	6	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F3	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F4	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1/1*	2	0
				16'	TLC-BT-575	2	2	0
4	Totals					35	35	0

*This structure utilizes a back-to-back mounting configuration



Grid Summary

Name	**Soccer**
Size	360' x 200'
Spacing	30.0' x 30.0'
Height	3.0' above grade

Illumination Summary

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Guaranteed Average	**30**
Scan Average	32.41
Maximum	45
Minimum	26
Avg/Min	1.24
Guaranteed Max/Min	**2.5**
Max/Min	1.72
UG (adjacent pts)	1.41
CU	0.54
No. of Points	84
LUMINAIRE INFORMATION	
Applied Circuits	A
No. of Luminaires	**35**
Total Load	40.31 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊠

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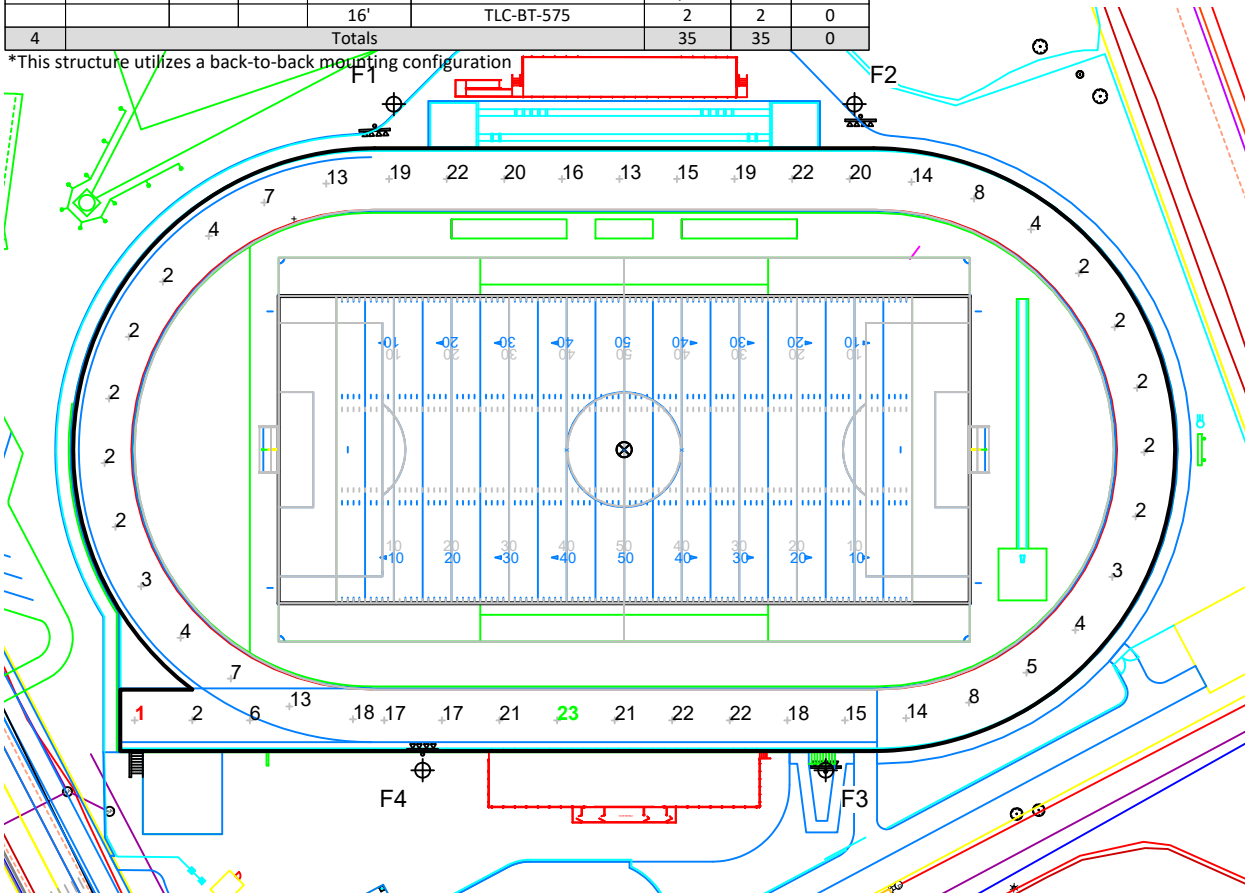
New Glarus New Football Field

New Glarus, WI

Equipment List For Areas Shown

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	80'	TLC-LED-1500	6	6	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F3	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F4	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1/1*	2	0
				16'	TLC-BT-575	2	2	0
4	Totals					35	35	0

*This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 100

0' 100' 200'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊠

Grid Summary

Name	**Track**
Size	Irregular
Spacing	30.0' x 30.0'
Height	3.0' above grade

Illumination Summary

	MAINTAINED HORIZONTAL FOOTCANDLES
	Entire Grid
Scan Average	**10.65**
Maximum	23
Minimum	1
Avg/Min	12.37
Max/Min	**26.48**
CU	0.10
No. of Points	47
LUMINAIRE INFORMATION	
Applied Circuits	A
No. of Luminaires	**35**
Total Load	40.31 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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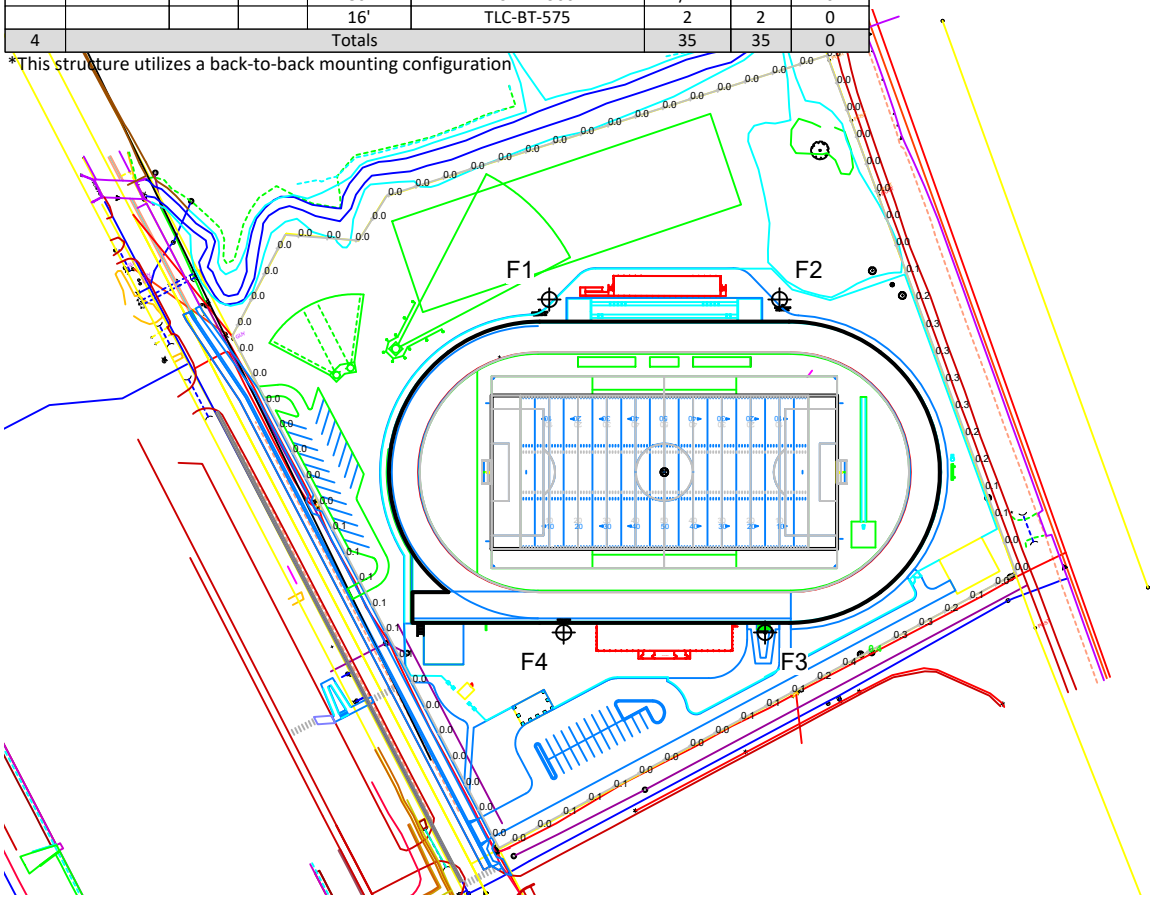
New Glarus New Football Field

New Glarus, WI

Equipment List For Areas Shown

Pole				Luminaires				
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY/POLE	THIS GRID	OTHER GRIDS
2	F1-F2	80'	-	80'	TLC-LED-1500	6	6	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F3	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1	1	0
				16'	TLC-BT-575	2	2	0
1	F4	80'	-	80'	TLC-LED-1500	5	5	0
				80'	TLC-LED-900	1/1*	2	0
				16'	TLC-BT-575	2	2	0
4	Totals					35	35	0

*This structure utilizes a back-to-back mounting configuration



SCALE IN FEET 1 : 200

0' 200' 400'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊠

Grid Summary

Name	**Property Line**
Spacing	30.0' x 30.0'
Height	3.0' above grade

Illumination Summary

MAINTAINED HORIZONTAL FOOTCANDLES

	Entire Grid
Scan Average	**0.0638**
Maximum	0.44
Minimum	0.00
CU	0.00
No. of Points	84
LUMINAIRE INFORMATION	
Applied Circuits	A
No. of Luminaires	**35**
Total Load	40.31 kW

Guaranteed Performance: The ILLUMINATION described above is guaranteed per your Musco Warranty document and includes a 0.95 dirt depreciation factor.

Field Measurements: Individual field measurements may vary from computer-calculated predictions and should be taken in accordance with IESNA RP-6-15.

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

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New Glarus New Football Field

New Glarus, WI

Equipment Layout

INCLUDES:
· Football
· Soccer
· Track

Electrical System Requirements: Refer to Amperage Draw Chart and/or the **"Musco Control System Summary"** for electrical sizing.

Installation Requirements: Results assume ± 3% nominal voltage at line side of the driver and structures located within 3 feet (1m) of design locations.

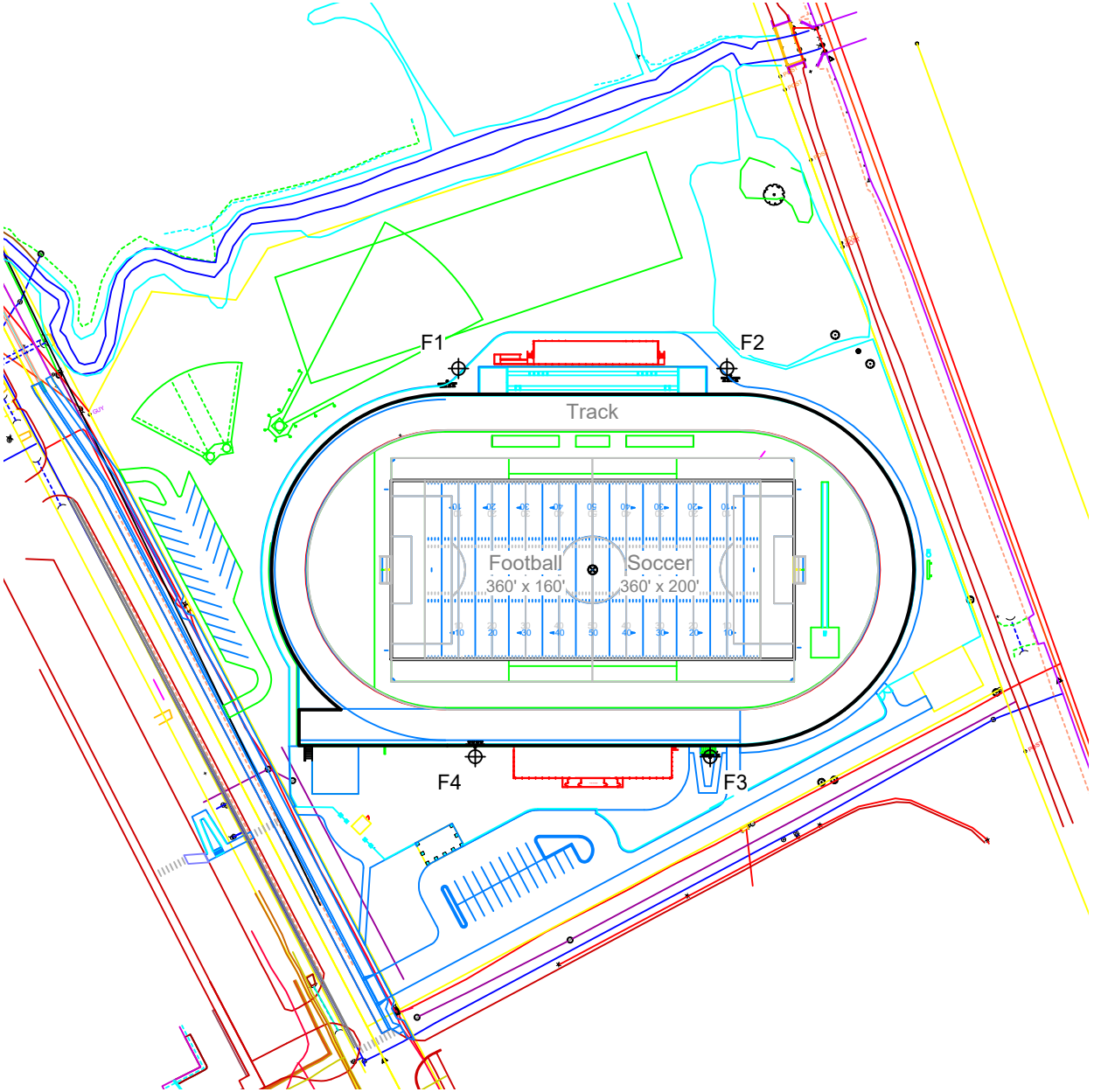
Equipment List For Areas Shown

Pole				Luminaires		
QTY	LOCATION	SIZE	GRADE ELEVATION	MOUNTING HEIGHT	LUMINAIRE TYPE	QTY/POLE
2	F1-F2	80'	-	80'	TLC-LED-1500	6
				80'	TLC-LED-900	1
				16'	TLC-BT-575	2
1	F3	80'	-	80'	TLC-LED-1500	5
				80'	TLC-LED-900	1
				16'	TLC-BT-575	2
1	F4	80'	-	80'	TLC-LED-1500	5
				80'	TLC-LED-900	1/1*
				16'	TLC-BT-575	2
4	Totals					35

*This structure utilizes a back-to-back mounting configuration

Single Luminaire Amperage Draw Chart

Driver Specifications (.90 min power factor)	Line Amperage Per Luminaire (max draw)						
Single Phase Voltage	208 (60)	220 (60)	240 (60)	277 (60)	347 (60)	380 (60)	480 (60)
TLC-BT-575	3.3	3.2	2.9	2.5	2.0	1.8	1.5
TLC-LED-1500	8.5	8.1	7.4	6.4	5.1	4.7	3.7
TLC-LED-900	5.2	4.9	4.5	3.9	3.1	2.9	2.3



SCALE IN FEET 1 : 150

0' 150' 300'

Pole location(s) ⊕ dimensions are relative to 0,0 reference point(s) ⊠

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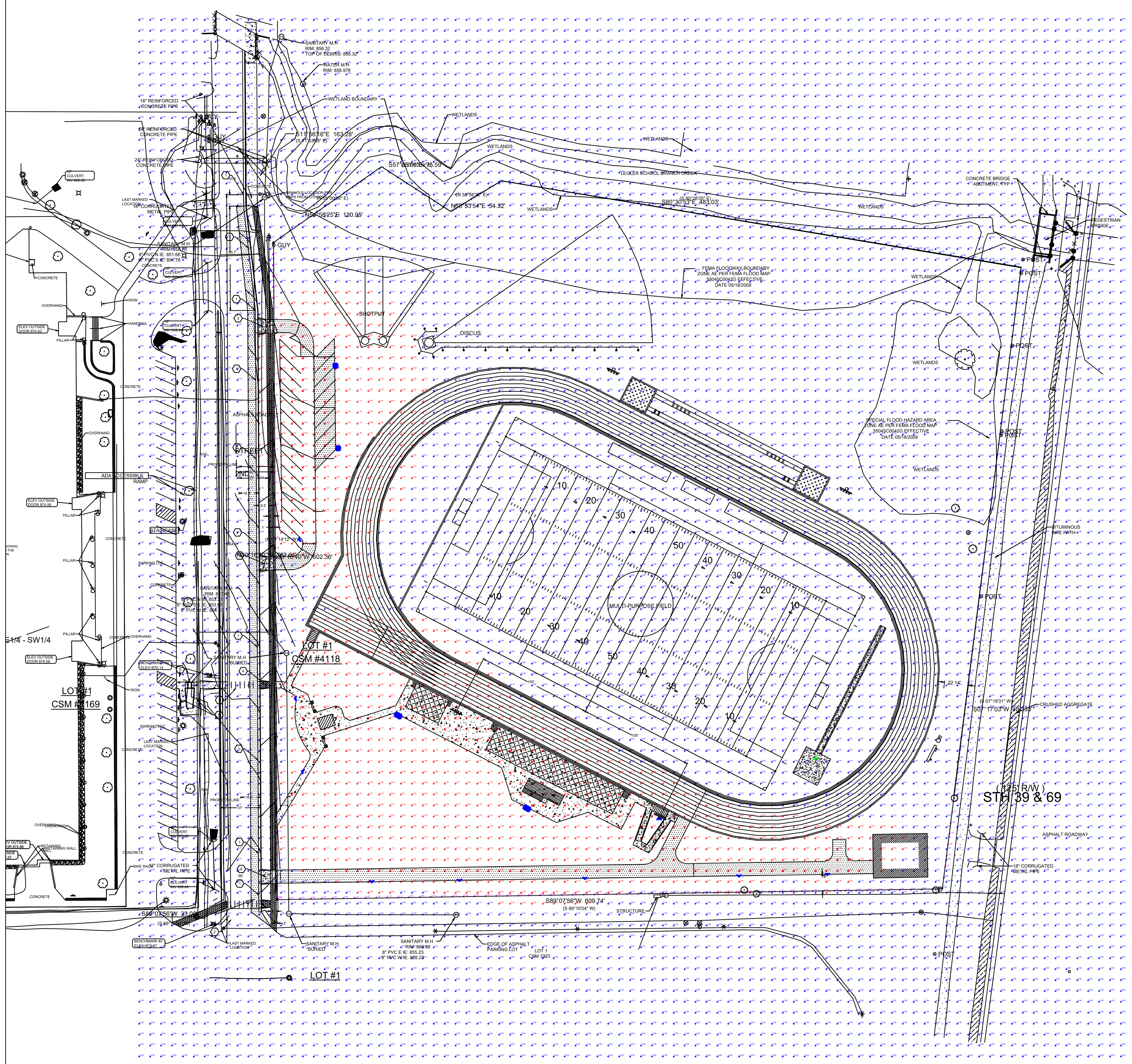


Statistics

Description	Symbol	Avg	Max	Min	Avg/Min	Max/Min
Property Line_At Grade	+	0.09 fc	0.49 fc	0.00 fc	N/A	N/A
South Pavement_At Grade	✕	1.72 fc	3.15 fc	0.63 fc	2.7:1	5.0:1
Southwest Pavements_At Grade	✕	1.33 fc	3.01 fc	0.37 fc	3.6:1	8.1:1
West Lot_At Grade	✕	1.11 fc	2.61 fc	0.46 fc	2.4:1	5.7:1

Schedule

Label	QTY	Manufacturer	Catalog	Lamp Output	LLF
OA3 HS	8	Lithonia Lighting	RSX2 LED P1 40K R3 HS + 20FT POLE (ASSUMES 3FT BASE)	7715	0.95
OA4	1	Lithonia Lighting	RSX2 LED P1 40K R3 - Confirm mounting on existing pole	10991	0.95
OA5	2	Lithonia Lighting	RSX2 LED P1 40K R5 + 20FT POLE (ASSUMES 3FT BASE)	11284	0.95
2OA 5	2	Lithonia Lighting	(2) RSX2 LED P1 40K R5 + 20FT POLE (ASSUMES 3FT BASE)	11284	0.95

ENTERPRISE Lighting & Control

COMMENTS	DATE	#

REVISIONS

DRAWN BY : CAS

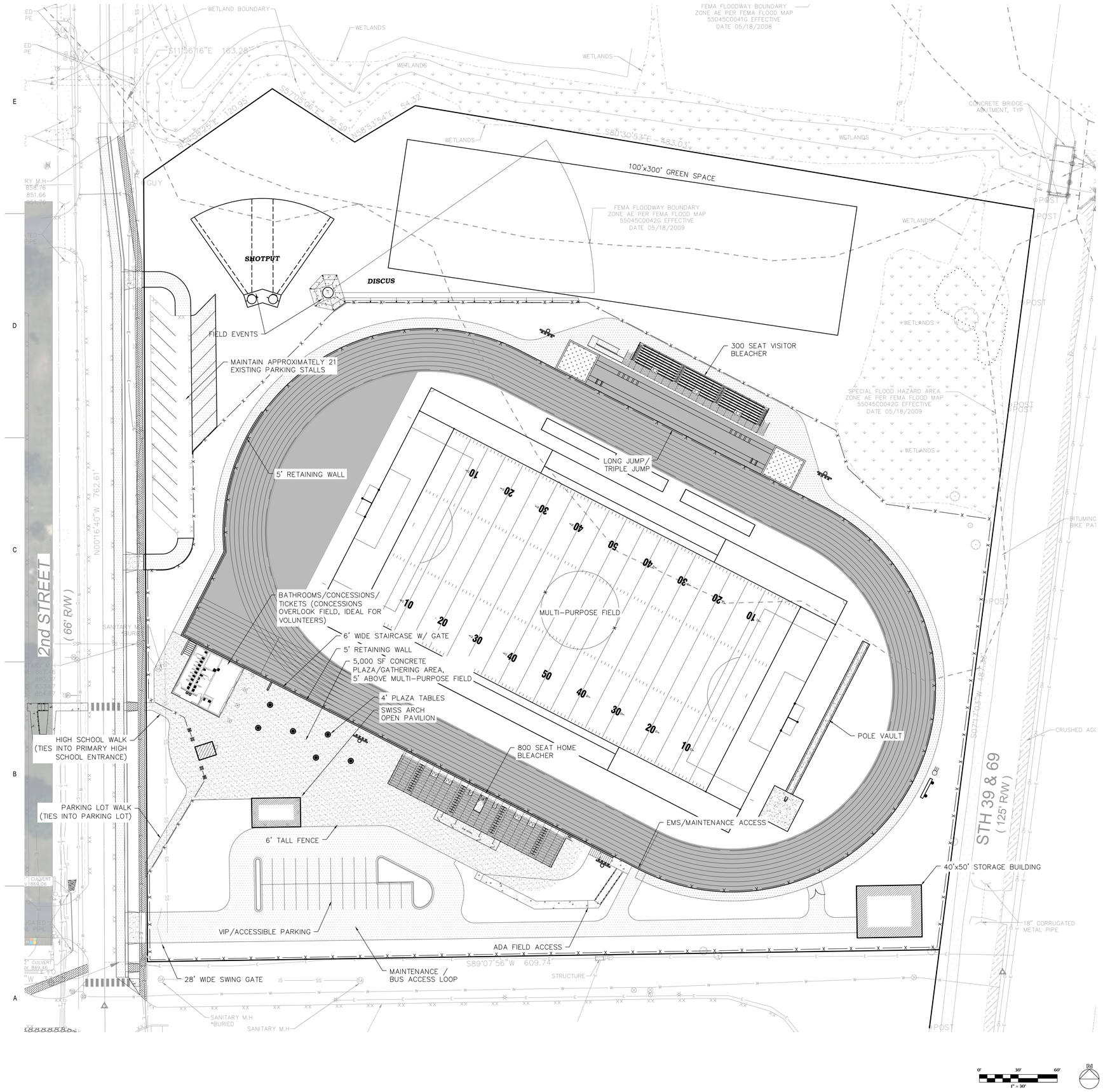
DATE : 09/06/2023

SCALE : 3/16" = 1' 0"

NEW GLARUS PRIMARY ATHLETIC FACILITY

NEW GLARUS, WI

EXTERIOR LAYOUT



GENERAL NOTES:

1. CONTACT DIGGER'S HOTLINE 5 WORKING DAYS PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
2. GRADE, LINE, AND LEVEL TO BE REVIEWED IN THE FIELD BY THE CONSTRUCTION MANAGER.
3. EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED PER STATE AND REQUIREMENTS.
4. SEE SHEET C4.0 FOR ALL REQUIRED EROSION CONTROL ELEMENTS.
5. ANY EXISTING UTILITIES NOT SHOWN ON THIS DOCUMENT WHICH NEED TO BE REMOVED, RELOCATED AND OR ADJUSTED SHALL BE THE RESPONSIBILITY OF THE SITE GRADING CONTRACTOR.
6. VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF WORK.
7. BIDDERS SHALL VISIT THE SITE AND REVIEW EXISTING CONDITIONS PRIOR TO BID DATE.
8. BEFORE STARTING WORK, VERIFY WITH THE LOCAL AUTHORITIES THAT ALL REQUIRED PERMITS HAVE BEEN ACQUIRED.
9. COORDINATE CONSTRUCTION IN THE RIGHT OF WAY WITH THE LOCAL AUTHORITIES.
10. SIDEWALK JOINTS SHALL BE INSTALLED AS INDICATED OR AS APPROVED BY THE CONSTRUCTION MANAGER.
11. ALL GENERAL LANDSCAPE AREAS SHALL BE SEEDED, FERTILIZED, AND CRIMP HAY MULCHED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

PAVEMENT HATCH PATTERNS:

INSTALL 3.5" ASPHALT PAVEMENT
W/ 6" BASE
W/ 12" BREAKER RUN

INSTALL 3.5" ASPHALT PAVEMENT
W/ 6" BASE
W/ 12" BREAKER RUN
W/ POLYURETHANE TRACK SURFACING

INSTALL 4" PRIVATE CONCRETE SIDEWALK

INSTALL 5" PUBLIC CONCRETE SIDEWALK

INSTALL 7" HEAVY DUTY
CONCRETE PAVEMENT

INSTALL NEW ROADWAY ASPHALT
PAVEMENT, MATCH EXISTING
ROADWAY SECTION

bray architects

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715.344.9999(Ph) 715.344.9922(FX)
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Point of Beginning

Project Title:
NEW ACTIVITIES COMPLEX
NEW GLARUS HIGH SCHOOL
NEW GLARUS SCHOOL DISTRICT
NEW GLARUS, WI

REVISIONS:

Project Number:
3388

Issued For:
PLAN
COMMISSION
REVIEW
9/13/2023

Sheet Title:
MASTER PLAN

Sheet Number:
C2.0

NOT FOR CONSTRUCTION