Erosion Control & Storm Water Management Maintenance/Operation Plan

For:

Medford Apartment Complex

PREPARED BY:

4941 KIRSCHLING COURT
STEVENS POINT, WI 54481
(715) 344-9999 ■ (715) 344-9922

POB Job Number 21.126

Located in:

City of Medford
Taylor County, Wisconsin

Dated:

February 8, 2022

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Medford Apartment Complex
Medford, Wisconsin
February 8, 2022

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Erosion Control & Storm Water Management
Maintenance/Operation Plan
Faith Construction Services
Medford, WI

1.0 BACKGROUND & GENERAL INFORMATION

1.1 Introduction and Project Location

Point of Beginning, Inc. has been retained by Faith Construction Services to perform storm water management calculations and prepare a storm water management plan per NR216.47 and NR151, for the proposed multi-family development project. This project is located in the NE 1/4 of the NE 1/4 and part of the SE 1/4 of the NE 1/4 of Section 3, Township 30 north, Range 4 east, city of Medford, Taylor County, Wisconsin.

1.2 Project Description

The proposed project consists of constructing a new multi-family apartment development on a currently vacant lot. Four new buildings with four new garage accessory structures and two new parking lots will be built. Sewer and water services will be installed and connect the proposed building to public utilities. Additionally the site will be graded for storm water management best management practices (See Layout Plan in **Appendix A**).

1.3 Project Requirements

The project area includes approximately 4.15 acres that will be disturbed. Since the disturbed area exceeds one acre, a Wisconsin Department of Natural Resources Notice of Intent application/permit (NOI-WPDES per WDNR) is required.

The storm water management plan for this project is developed in accordance with the NOI-WPDES requirements and NR216.47/NR151.121 for redevelopment sites.

1.4 General Project Data

Soils
Based on existing soil mapping data from the Natural Resources Conservation Service, the existing subgrade soils are expected to be Poskin silt loam which is classified as hydrologic soil group B/D, Freeon very stony and Freeon silt loam which is classified as hydrologic soil group C/D and Magnor very stony and Magnor silt loams which is classified as hydrologic soil group C/D within project site.

The geotechnical data containing soil hydrologic classes are attached in **Appendix B**.

Groundwater
Groundwater was not encountered at any of the borings while drilling, however some wet soils were found in borings B-1, B-3, B-7 & B-8.

Wetlands
Wetlands are not located on or within 75' of the project site. No wetland impact is expected, however, wetland indicator soils were present.

Precipitation

The following precipitation rates from the NOAA Atlas 14 Point Precipitation Frequency Estimates: WI, have been utilized for storm water calculations:

$P_{1,24}$ = 2.36”
$P_{2,24}$ = 2.73”
$P_{10,24}$ = 3.94”
$P_{25,24}$ = 4.78”
$P_{100,24}$ = 6.18”

2.0 EXISTING DRAINAGE CONDITIONS

2.1 Existing Drainage Area

The existing site consists of one sub-basin (E1). Sub-basin E1 contains active agricultural fields. Runoff from E1 drains offsite primarily to the southeast into Pep’s Drive and the adjoining parcel to the south. An existing drainage map can be found in **Appendix C.**

2.2 Existing Drainage Calculation Summary

Existing drainage calculations utilize TR-55 methodology and results for a 1, 2, 10, 25 and 100-year design storm are included. Existing drainage calculations are provided in **Appendix C.**

2.3 Existing Off-Site Drainage

Existing off-site storm water runoff draining onto the project site has been taken into consideration for the existing or proposed drainage evaluation.

3.0 PROPOSED DRAINAGE CONDITIONS

3.1 Proposed Drainage Areas

The proposed site is divided into one sub-basin (D1). Drainage Area D1 consists primarily of paved parking area, concrete sidewalk, structure roofs and lawn area. Runoff from D1 is conveyed via storm pipe to the municipal storm sewer within the right of way of Pep’s Drive.

A proposed drainage area map is provided in **Appendix D.**

3.2 Post-Development Runoff Summary

Proposed drainage calculations utilize TR-55 methodology and results for a 1, 2, 10, 25 and 100-year design storm have been attached. A proposed drainage area map and calculations are provided in **Appendix D.**

4.0 POST-DEVELOPMENT PERFORMANCE STANDARDS

4.1 Total Suspended Solids

According to NR151.122, BMPs shall be designed in accordance with Table 1, or to the maximum extent practicable. For new development projects Table 1 indicates that the total suspended solids load for new development shall be reduced by 80 percent, based on an average annual rainfall, as compared to no runoff management controls.

80% TSS reduction will be achieved by a regional detention pond, which was built, by others, to serve this parcel.

4.2 Infiltration

According to NR151.124(4)(c)(1), areas where the infiltration rate of the soil is less than 0.6 inches/hour measured at the bottom of the infiltration basin using a scientifically credible field test method are exempt from the infiltration requirements.

The soils investigation indicates the existing onsite soils are estimated to have infiltration rates less than 0.6 inches/hour throughout the site, and is therefore exempt from the infiltration requirement.

4.3 Peak Discharge

According to NR151.123(1), BMPs shall be employed to maintain or reduce the 1-year, 24-hour and the 2-year, 24-hour post construction peak runoff discharge rates to the 1-year, 24-hour and the 2-year, 24-hour pre-development peak discharge rates respectively.

The pre-development and post-development peak rates of discharge leaving the site are summarized in the table below. See **Appendix D** for HydroCAD modeling routing diagrams, summaries, and node listings.

All runoff from impervious areas of the post-development site will be discharged into a regional detention facility for rate control. The table below illustrates the amount of runoff that will be flowing into the municipal storm sewer system and piped directly to the pond once the project is complete.

	Pre-Development	Post-Development
	Total (1L)	Total (1L)
1-year 24-hour Peak Flow	3.93 cfs	9.39 cfs
2-year 24-hour Peak Flow	5.04 cfs	11.50 cfs
10-year 24-hour Peak Flow	8.89 cfs	18.46 cfs
25-year 24-hour Peak Flow	11.65 cfs	23.28 cfs
100-year 24-hour Peak Flow	16.28 cfs	31.26 cfs

4.4 Protective Area

No neighboring waterways or wetlands within 75’ of the project site. Not applicable.

4.5 Summary

The modeling of this site shows that the requirements set by the Department of Natural Resources for total suspended solids, peak discharge, and infiltration can all be met with the proposed design.

The Storm Water Management Plan shows basic compliance with accepted engineering practice in hydrology planning and design. The resulting development will function as a positive addition to the community while sustaining environmental benefits in storm water management and quality.

5.0 CONSTRUCTION SITE PERFORMANCE STANDARDS

5.1 Erosion Control

The purpose of this control plan is to provide guidelines that comply with the state and local requirements, as well as to make recommendations regarding erosion control and storm water management. The construction of this development is a critical phase in terms of storm water management and runoff control. Construction site erosion control will help minimize the impact of development, enhance and protect local environment, and protect the surrounding project area by applying best management practices for erosion control at construction sites. This work shall be planned and executed in accordance with the Wisconsin Department of Natural Resources Storm Water

Management Technical Standards and/or accepted local engineering practice. The owner/developer will be responsible for erosion control during the process of construction. Silt fence, site vegetation, rock construction entrance, inlet protection and erosion mat will be utilized to keep sediment from leaving the construction site. **See Appendix E.**

5.2 Construction Site Erosion Control Measures

The following erosion control devices may be used on the project site at any time during the construction phases to ensure the compliance with NR 216 and local erosion control requirements, as applicable.

a) Silt Fence (WDNR 1056)

Continuous silt fencing will be required along all areas downstream of disturbed area, and around the base of all stockpiled material subject to sediment transportation during rain fall events (stockpiled topsoil, gravel base, etc.). The silt fencing will provide a siltation barrier between the disturbed area and any inlets and ultimately downstream water bodies. All silt fence shall be removed upon completion of the project or when disturbed areas have generated sufficient vegetation to prevent erosion and the threat of sediment reaching inlets and bodies of water.

b) Site Vegetation

Existing site vegetation outside of project limits shall be protected and maintained to the maximum extent practicable. Existing site vegetation within the project limits shall remain undisturbed until construction schedule warrants disturbance. For disturbed areas vegetation that resists erosion, maintains slow storm water velocities, and retains sediment from runoff shall be provided by the contractor. Temporary seeding may be required for disturbed areas that are subject to long periods of construction inactivity. Temporary vegetation is used when areas are disturbed and may remain unfinished long enough to allow vegetation to grow and assist with erosion control. Permanent vegetation is encouraged as soon as possible in the construction process.

c) Stone Tracking Pad (WDNR 1057)

Stone tracking pads will be constructed at all entrances to the construction site to minimize sediment tracking onto existing streets. A minimum of one construction entrance is required for the project site. Tracking pads are temporary and will be removed or much of the aggregate will be removed before the site is completed.

d) Non-channel Erosion Mat (WDNR 1052)

The purpose of this practice is to protect the soil surface from the erosive effect of rainfall and prevent sheet erosion during the establishment of grass or other vegetation, and to reduce soil moisture loss due to evaporation. This practice applies to both Erosion Control Re-vegetative Mats (ECRM) and Turf-Reinforcement Mats (TRM).

1. CLASS I: A short-term duration (minimum of 6 months), light duty, organic mat with photodegradable plastic or biodegradable netting.

    a. Type A – Use on erodible slopes 2.5:1 or flatter.

    b. Type B – Double netted product for use on erodible slopes 2:1 or flatter.

e) Waste and Material Disposal

All waste and unused building materials (including garbage, debris, cleaning wastes, or other construction materials) shall be properly disposed of and not allowed to be carried by runoff into a receiving channel or inlet.

5.3 Operation and Maintenance, Short-term

The OWNER of this project, located in the City of Medford, Taylor 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**.

5.4 Operation and Maintenance, Long-term

The OWNER of this project, located in the City of Medford, Taylor County, Wisconsin, is directly responsible for the operation, inspection, and maintenance of all storm water facilities located within the project site, as described below.

- Vegetated Swales:
  Inspection: Look for accumulation of sediment and/or debris within swale. Look for erosion or damage. Review plant health.
  Maintenance: Remove accumulated sediment deposits and/or debris and repair any eroded or damaged grass areas.

- Catch Basins, Storm Sewer, and Outfalls:
  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 to pipe, catch basin, and/or outfall. If the damage is un-repairable then the pipe, catch basin, and/or outfall shall be replaced.

The aforementioned 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 shall be documented and the OWNER shall keep all inspection and maintenance reporting/records onsite and available upon request of the Municipality and/or Wisconsin Department of Natural Resources.

6.0 SUMMARY

6.1 General

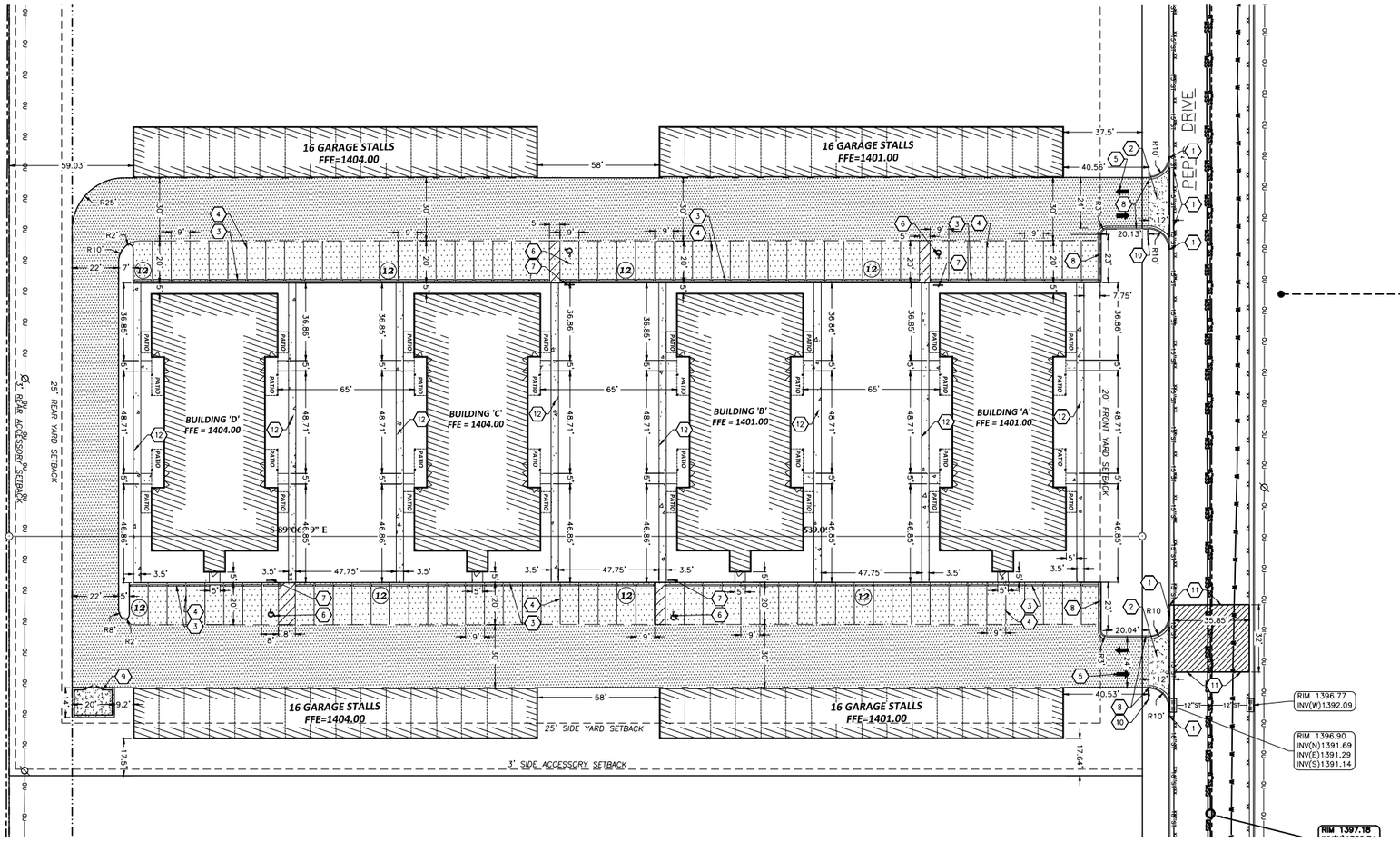
The proposed development as outlined above meets all applicable Wisconsin Department of Natural Resources storm water regulations.

For the temporary construction site scenario, sediment transport from this site to adjacent properties will be reduced by the erosion control devices and conservation practice standards.

This plan meets state storm water requirements and provides an environmentally sound and practical solution for the future storm water runoff generated from the development of this site.

APPENDIX A

Proposed Site Plan



KEYNOTES:

1. SAWCUT AND REMOVE EXISTING CURB & GUTTER, REPLACE CURB & GUTTER TO MATCH CURB IN STREET.
2. CONCRETE DRIVE APRON
3. PARKING STOP
4. PARKING LOT STRIPING — 4 C5.0
5. DIRECTIONAL ARROW — 5 C5.0
6. HANDICAP PARKING STALL — 4 C5.0
7. HANDICAP PARKING SIGN — 6 C5.0
8. 18" CONCRETE CURB & GUTTER — 7 C5.0
9. DUMPSTER ENCLOSURE (14'x20' CONCRETE PAD) — 8 C5.0
10. STOP SIGN — 9 C5.0
11. SAWCUT EXISTING BITUMINOUS PAVEMENT. REPLACE ASPHALT & BASE TO MATCH EXISING PAVEMENT SECTION.
12. CONCRETE WALK — 2 C5.0

PAVEMENT HATCH PATTERNS:

- PROPOSED STANDARD ASPHALT PAVEMENT — 1 C5.0
- PROPOSED HEAVY DUTY ASPHALT PAVEMENT — 1 C5.0
- PROPOSED STANDARD CONCRETE PAVEMENT — 2 C5.0
- PROPOSED REINFORCED CONCRETE PAVEMENT — 3 C5.0
- REPLACE EXISTING ASPHALT & BASE TO MATCH EXISTING PAVEMENT SECTION– COORDINATE W/CITY OF MEDFORD

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.

BENCHMARK:

ELEVATIONS ARE REFERENCED TO NAVD 88 DATUM.

BENCHMARK #1
BURY BOLT ON HYDRANT
LOCATED ON THE EAST SIDE OF PEP'S DRIVE,
APPROXIMATELY 550 FEET SOUTH OF THE INTERSECTION
OF PEP'S DRIVE AND C.T.H. "O".
ELEVATION = 1403.69

BENCHMARK #2
BURY BOLT ON HYDRANT
LOCATED ON THE EAST SIDE OF PEP'S DRIVE,
APPROXIMATELY 1155 FEET SOUTH OF THE INTERSECTION
OF PEP'S DRIVE AND C.T.H. "O".
ELEVATION = 1399.13

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. ALL REQUIRED EROSION CONTROL MEASURES SHALL BE INSTALLED AND MAINTAINED IN ACCORDANCE WITH LOCAL MUNICIPAL AND DEPARTMENT OF NATURAL RESOURCES REGULATIONS.
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 AND INCLUDED IN THE BASE BID CONTRACT.
6. VERIFY THE LOCATION OF ALL EXISTING UTILITIES PRIOR TO THE START OF DEMOLITION/CONSTRUCTION.
7. BIDDERS SHALL VISIT THE SITE AND REVIEW EXISTING CONDITIONS PRIOR TO THE BID DATE.
8. PRIOR TO 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. PROVIDE PROPER BARRICADES, SIGNS, AND TRAFFIC CONTROL TO MAINTAIN THRU TRAFFIC ALONG ADJACENT STREETS IN ACCORDANCE WITH LOCAL MUNICIPAL REQUIREMENTS.
11. SIDEWALK JOINTS SHALL BE INSTALLED AS INDICATED OR AS APPROVED BY THE CONSTRUCTION MANAGER.
12. ALL CONCRETE SAWCUTS SHALL BE AT AN EXISTING JOINT.
13. ALL NEW CONCRETE PAVEMENT AND CURB ON ADJACENT STREET SHALL BE TIED IN ACCORDANCE WITH DETAIL __ ON SHEET ___.
14. ALL GENERAL LANDSCAPE AREAS SHALL BE SEEDED, FERTILIZED, AND CRIMP HAY MULCHED IN ACCORDANCE WITH THE PROJECT SPECIFICATIONS.

0' 30' 60'
1" = 30'

N

REVISIONS

CHECKED:	J.L.
DRAWN:	M.K.
DATE	02/08/2022
PROJECT NO.	21.126

LAYOUT PLAN

NOT FOR CONSTRUCTION

FATIH CONSTRUCTION SERVICES
MEDFORD APARTMENTS
MEDFORD
TAYLOR CO, WISCONSIN

Civil Engineering
Land Surveying
Landscape Architecture
4941 Kirschling Court
Stevens Point, WI 54481
715.344.9999 (PH) 715.344.9922 (FX)

POB Point of Beginning

SHEET C1.0

APPENDIX B

Geotechnical Data

Map Scale: 1:3,240 if printed on A portrait (8.5" x 11") sheet.

N

Meters: 0 45 90 180 270

Feet: 0 150 300 600 900

Map projection: Web Mercator Corner coordinates: WGS84 Edge tics: UTM Zone 15N WGS84

MAP LEGEND

Area of Interest (AOI)

Area of Interest (AOI)

Soils

Soil Rating Polygons

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Lines

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Soil Rating Points

A

A/D

B

B/D

C

C/D

D

Not rated or not available

Water Features

Streams and Canals

Transportation

Rails

Interstate Highways

US Routes

Major Roads

Local Roads

Background

Aerial Photography

MAP INFORMATION

The soil surveys that comprise your AOI were mapped at 1:12,000.

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

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

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

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

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

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

Soil Survey Area: Taylor County, Wisconsin
Survey Area Data: Version 19, Sep 9, 2021

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

Date(s) aerial images were photographed: Apr 28, 2011—Oct 5, 2016

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

Hydrologic Soil Group

Map unit symbol	Map unit name	Rating	Acres in AOI	Percent of AOI
24A	Poskin silt loam, 0 to 3 percent slopes	B/D	10.1	25.6%
457B	Freeon, very stony and Freeon silt loams, 2 to 6 percent slopes	C/D	8.4	21.2%
3456A	Magnor, very stony and Magnor silt loams, 0 to 4 percent slopes	C/D	21.0	53.3%
Totals for Area of Interest			**39.5**	**100.0%**

Description

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

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

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

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

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

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

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

Rating Options

Aggregation Method: Dominant Condition

Component Percent Cutoff: None Specified

Tie-break Rule: Higher

AMERICAN ENGINEERING TESTING, INC.

CONSULTANTS
- ENVIRONMENTAL
- GEOTECHNICAL
- MATERIALS
- FORENSICS

REPORT OF GEOTECHNICAL EXPLORATION

Proposed Multi-Family Housing Development
1321 Peps Drive
Medford, Wisconsin

AET Project No. P-0009283

Date:

February 7, 2022

Prepared for:

Faith Construction Services
3264 Coon Avenue
Stevens Point, Wisconsin 54481

www.amengtest.com

AMERICAN
ENGINEERING
TESTING, INC.

February 7, 2022

Mr. Chris Karch
Faith Construction Services
3264 Coon Avenue
Stevens Point, Wisconsin 54481

RE: Report of Geotechnical Exploration
Proposed Multi-Family Housing Development
1321 Peps Drive
Medford, Wisconsin
AET Project No. P-0009283

Dear Mr. Karch:

We are pleased to present the results of our subsurface exploration program for your proposed multi-family housing development in Medford, Wisconsin. These services were performed according to our proposal to you dated January 21, 2022.

We are submitting an electronic (PDF) version of this geotechnical report to you. Unless you request otherwise, we will not submit any hard copies of the report.

We appreciate the opportunity to work with you on this phase of the project. Please contact us if you have questions about this report or require further assistance.

Sincerely,

American Engineering Testing, Inc.

Matthew B. Williams, P.E.
Geotechnical Engineer

4203 Schofield Avenue, Suite 1 ▪ Schofield, Wisconsin 54476 ▪ 715-359-3534 ▪ www.amengtest.com

Signature Page

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Boring Log Notes
Unified Soil Classification System
Figure 1 – Boring Locations
Subsurface Boring Logs
Gradation Curves

APPENDIX B Geotechnical Report Limitations and Guidelines for Use

1.0 INTRODUCTION

Faith Construction Services is providing planning and construction services for a proposed multi-family housing development in Medford, Wisconsin. To assist planning and design, Faith Construction Services authorized American Engineering Testing, Inc. (AET) to conduct a subsurface exploration program at the site and perform a geotechnical engineering review for the project. This report presents the results of the above services and provides our engineering recommendations based on this data.

2.0 SCOPE OF SERVICE

AET's services were performed according to our proposal to Faith Construction Services dated January 21, 2022. The authorized scope consists of:

- Eight standard penetration test borings to depths of 15 feet each
- Visual/manual classification and limited laboratory testing of the recovered soil samples
- Geotechnical engineering review based on the gained data and preparation of this report

These services are intended for geotechnical purposes. The scope is not intended to explore for the presence or extent of environmental contamination.

3.0 PROJECT INFORMATION

The project includes the design and construction of a multi-family housing development located on the west side of Peps Drive about 850 feet south of CTH O in Medford, Wisconsin. The development will include four buildings (Buildings A through D), each containing sixteen rental housing units. The buildings will have two stories, frost-depth footings, and slabs-on-grade with no basements. The finished floor elevation (FFE) of Buildings A and B will be 1401.0 feet. The FFE of Buildings C and D will be 1404.0 feet. The proposed FFEs will require cuts and fills of up to about 2 feet (from existing grades). The project will also include bituminous-paved parking and drive areas. Point of Beginning, Inc. (POB) is providing civil engineering services for the project.

The above-stated information represents our understanding of the project and is an integral part of our engineering review. It is important we be contacted if there are changes from that described so we can evaluate if modifications to our recommendations are appropriate.

4.0 SUBSURFACE EXPLORATION AND LABORATORY TESTING

Our subsurface exploration program for this project consisted of drilling a total of eight borings (B-1 through B-8) with standard penetration testing (SPT) and sampling on January 24 and 26, 2022. POB specified the number, depths, and locations of the borings, which are shown on Figure 1 in Appendix A.

Prior to drilling, we contacted Wisconsin Diggers Hotline to locate public underground utilities at the site. We drilled the borings using 3¼-inch-inside-diameter hollow-stem augers. Refer to Appendix A for details on the drilling and sampling methods, the classification methods, and the water level measurement details.

The boring logs are found in Appendix A and contain information concerning soil layering, geologic description, moisture condition, and USCS classifications. Relative density or consistency is also noted for the natural soils, which are based on the standard penetration resistance (N-value).

We performed twenty-nine moisture content tests, nine unconfined compressive strength tests (pocket penetrometer), and four sieve analysis tests on the recovered soil samples. The moisture content (WC), unconfined compressive strength (q_p), and percent of silty/clay sized particles (%-200) are shown on the boring logs, adjacent to the sample on which each test was performed. The complete sieve analysis results are shown on a separate page following the boring logs in Appendix A.

5.0 SITE CONDITIONS

5.1 Surface Observations

On the days we drilled, the project area was a snow-covered field. The ground surface slopes downward from the northwest to the southeast. The surface elevations of our borings range from 1405.9 (B-1) to 1399.8 (B-8).

5.2 Subsurface Soils

We measured about 10 to 17 inches of topsoil (plow zone) at the surface of each boring. The underlying soils were loess to about 2 feet (except in B-4 where it extended to 4.5 feet). The loess was silt; because the soils were frozen to a depth of about 1.5 feet, the N-values of the loess are

not an accurate representation of relative density; where the loess extended to 4.5 feet (in B-4), the lower portion of the loess was loose. Below the loess, we encountered till to the boring termination depths. The till was loose to very dense clayey sand, silty sand, and sandy silt with varying gravel contents and apparent cobbles; and soft to very stiff sandy lean clay with varying gravel content. The dense and very dense layers of till may have been the result of the sampler encountering cobbles (i.e. inflated N-values).

5.3 Groundwater

We did not encounter a water table in any of the borings we drilled for this project. However, we encountered some wet soils from 7 to 9.5 feet in boring B-1, and below 14.5 feet in borings B-3, B-7, and B-8; these wet soils might be indicative of some perched water. Most of the soils at this site are slow to very slow draining and it could take days or weeks for water levels to stabilize in open boreholes. The installation of monitoring wells or piezometers for obtaining additional groundwater level measurements was beyond our scope of service. Groundwater levels will fluctuate due to varying seasonal and annual rainfall and snow melt amounts and other factors.

6.0 BUILDING RECOMMENDATIONS

6.1 Approach Discussion

Based on the subsurface conditions found in our borings and our understanding of the project, it is our opinion the proposed buildings can be supported on conventional footing foundations after proper site preparation has taken place. The silt we encountered in our borings should be removed from the building footprints; the silt is highly moisture sensitive and will become soft and easily disturbed when wet. Details of our recommendations are presented below.

6.2 Site Preparation

6.2.1 Excavation

To prepare the building areas for foundation and floor slab support, all vegetation, root clusters, organic soils, existing fill, and other unsuitable soils should be removed from the entire building footprints. Our estimated subcut depths and elevations at our boring locations are shown in Table 1. However, an experienced soils technician or geotechnical engineer must perform observations during construction to determine actual required subcut depths, which could be more or less than anticipated; subcutting should be performed prior to the placement of fill where the grade is to be raised in building areas.

Table 1: Estimated Subcut Depths and Elevations

Boring No.	Surface Elevation (feet)	Subcut Depth (feet)	Subcut Elevation (feet)
B-1	1405.9	~2	~1403.9
B-2	1403.9	~2	~1401.9
B-3	1404.3	~4.5	~1399.8
B-4	1403.1	~4.5	~1398.6
B-5	1402.5	~2	~1400.5
B-6	1401.5	~2	~1399.5
B-7	1399.9	~2	~1397.9
B-8	1399.8	~4.5	~1395.3

Where subcutting extends below the proposed foundation grade, the excavation bottom and resultant engineered fill system must be oversized laterally beyond the planned outside edges of the foundation to properly support the loads exerted by that foundation. This engineered fill lateral extension should at least be equal to the vertical depth of fill needed to attain foundation grade at that location (i.e., 1:1 lateral oversize).

After removing all unsuitable materials, and prior to the placement of new fill or concrete, we recommend that the base soils be surface densified to compact loose zones and to correct zones loosened by the excavating process.

6.2.2 Fill Placement and Compaction

The silty sands and clayey sands at the site would generally be suitable for re-use as compacted fill supporting the new buildings; however, moisture conditioning will probably be necessary to achieve adequate compaction. The on-site silts and clays should not be reused as compacted fill below the buildings. Imported fill should be non-organic granular soil having a maximum of 12% by weight passing the No. 200 sieve, and having a maximum particle size of 2 inches.

Fill placed to attain grade for foundation and/or slab support should be compacted in thin lifts, such that the entire lift achieves a minimum compaction level of 95% of its maximum modified Proctor dry density (ASTM D1557). We anticipate a lift thickness on the order of 6 to 8 inches may be appropriate, although this should be reviewed in the field at the time of construction.

6.3 Foundation Design

The new buildings can be supported on conventional shallow foundation systems bearing on competent naturally-occurring soils, or on fill placed and compacted over a suitable subgrade, provided the site has been prepared in accordance with the above recommendations. We recommend that perimeter foundations for heated building spaces bear a minimum of 4 feet below exterior grade for protection from frost penetration. Interior footings in heated areas should bear at least 2 feet below the finished floor elevation to provide confinement to the bearing stratum. Footings in unheated areas should be extended to a minimum of 5 feet below surrounding grade. We recommend that column footings and continuous wall footings for this project have minimum widths of 3 feet and 18 inches, respectively.

Based on the subsurface conditions we encountered and provided our recommendations are followed, it is our opinion foundations for the buildings can be designed based on a net maximum allowable soil bearing pressure of 3,000 psf. It is our judgment this design pressure will have a factor of safety of at least 3 against the ultimate bearing capacity.

With this design we estimate maximum total settlement of each building of up to 1 inch, and differential settlements of half this amount between adjacent footings of similar size and loading, if the bearing soils are not soft, wet, disturbed, or frozen at the time of construction.

6.4 Floor Slab Design

We recommend the top 6 inches of soil below floor slabs consist of dense-graded base course or crushed stone. Interior backfill in under slab utility trenches and in footing trenches should be held to the same requirements of Section 6.2.2. Provided our site preparation recommendations are followed, the structural engineer can use a modulus of subgrade reaction of 225 pounds per cubic inch to design the floor slab thickness and reinforcement.

We recommend a vapor retarder be placed under floor slabs in areas containing moisture-sensitive equipment, materials, and/or floor coverings. The purpose of a vapor retarder is to reduce the potential for the upward migration of water vapor from the soil into and through the concrete slabs. Water vapor migrating upward through slabs can damage floor coverings such as the carpeting, wood, or paint/sealers and contribute to excess humidity and microbial growth in the building. Various methods of vapor retarder construction are described in Part 2, Section 302.2R of the American Concrete Institute *Manual of Concrete Practice*.

The slabs-on-grade should be designed and constructed following the recommendations of the Portland Cement Association and the American Concrete Institute. The slabs should have construction joints/control joints at spacings recommended by the Portland Cement Association and the American Concrete Institute to mitigate, but not eliminate, slab curling and cracking. The floor slabs should be cast independent of the foundation walls of the buildings to allow relative movement of the slabs and footings to occur without causing excessive distress to the structure.

6.5 Exterior Slabs and Sidewalks

Where exterior slabs and sidewalks abut the buildings, silty and clayey soils should be subcut to a depth of 4 feet below bottom of slab/sidewalk and replaced with non-frost-susceptible (NFS) granular fill. The NFS fill should consist of sand or a sand and gravel mix having less than 5% by weight passing the No. 200 sieve. This fill should be compacted to at least 95% of its maximum modified Proctor dry density. The purpose of constructing the NFS subgrade is to reduce the potential for the characteristic heave (including differential heave) that can occur when silty and clayey soils freeze each winter. This heaving can raise the slabs to jam doors or damage the structure. We recommend that 4-inch-diameter perforated PVC pipes be placed at the base of the NFS zone to collect and remove precipitation and runoff that infiltrates the NFS backfill. These drain pipes should be wrapped in a geosynthetic filter fabric and lead to a suitable discharge location.

As an alternative, these exterior slabs and sidewalks could be designed as structural slabs supported on footings bearing at least 5 feet deep. An air gap of at least 2 inches should be left below the slab, and insulation panels should cover the vertical frost walls to act as a bondbreaker and to prevent adfreezing between the backfilled soils and the frost walls.

For either option, the design should include transition zones from the frost-protected slabs/sidewalks to unprotected (or less protected) areas. The purpose of this is to reduce the risk of abrupt transitions in frost heave of slabs and pavements.

6.6 Seismic Design Considerations

According to the International Building Code, the Site Class is determined by the properties of the top 100 feet of the subsurface profile. Based on our borings and geologic conditions at the site, it is our opinion the project site should be classified as Site Class D per Table 1613.5.2 of the IBC.

7.0 BITUMINOUS PAVEMENT RECOMMENDATIONS

7.1 Approach Discussion

The existing subgrade soils at the site are slow to very slow draining and highly frost susceptible. To reduce these effects, we recommend the project team include a drainage (subbase) layer below the base course; the base course by itself is not considered free draining.

The soils at this site are highly moisture sensitive and have the potential to become easily disturbed by construction activity. Even if the contractor uses appropriate methods, it is possible that wet weather during (or in the months leading up to) construction could make earthwork activities difficult. The project team and contractor must understand this risk and take appropriate precautions.

7.2 Pavement Subgrade Preparation

In areas of new pavement, we recommend removal of all vegetation, root clusters, organic soils, and other unsuitable soils that are encountered. An experienced soils technician or geotechnical engineer should perform observations during construction to determine actual subcutting requirements.

After removal of these materials and excavation to the required depth, the top 12 inches of the exposed subgrade should be compacted to a minimum of 95% of its maximum modified Proctor dry density. In addition to the surface compaction, each area should be proof rolled with a fully loaded tandem-axle dump truck and observed for signs of poor performance by a geotechnical engineer or experienced soils technician, just prior to placing new fill. All soft areas should be dug out and corrected.

Where new fill (below the base course) is needed in pavement areas, we recommend it consist of non-organic granular soils having less than 12% by weight passing the No. 200 sieve and a maximum aggregate size of 2 inches. Fill placed to attain subgrade elevation in pavement areas should be compacted in thin lifts, such that the entire lift achieves a minimum compaction level of 95% of its maximum modified Proctor dry density. We anticipate a lift thickness on the order of 6 to 8 inches may be appropriate, although this should be reviewed in the field at the time of construction.

7.3 Drainage Layer and Base Course

The drainage (subbase) layer should consist of free-draining sand, crushed stone, or breaker run. Free-draining sand, if selected, should have less than 20% by weight passing the No. 100 sieve and less than 5% by weight passing the No. 200 sieve. Crushed stone or breaker run, if selected, should have less than 5% by weight passing the No. 200 sieve. AET should be contacted to review the gradation of the selected drainage layer material. The drainage layer should be extended an additional 2 feet beyond the pavement edge.

The drainage layer must be provided with a means of subsurface drainage to prevent buildup of water. This can be accomplished by placing short segments of drainage lines which are connected to catch basins in low elevation areas (referred to as "finger drains"). Where paved areas are relatively level, and if finger drains are not frequent, longer parallel drainage lines should be placed through the level areas to better remove infiltrating water, including along the perimeter.

The base course should meet the 1-1/4-inch gradation provided in WisDOT 305, and should be compacted to at least 95% of its maximum modified Proctor dry density. After the base course has been placed, compacted, and tested, it is the contractor's responsibility to maintain the base course in a suitable condition for paving. We recommend each pavement area be proof rolled with a fully-loaded tandem-axle dump truck and observed for signs of poor performance by a geotechnical engineer or experienced soils technician, just prior to placing the pavement. All soft areas should be dug out and corrected.

7.4 Pavement Design Parameters

Table 2 lists our recommended parameters the civil engineer can use to design the site pavements. These parameters are based on the soil conditions found in our borings, subgrade preparation as described in Section 7.1, and the anticipated new fill. If the subgrade conditions vary significantly from those encountered in our borings for the buildings, we should be contacted to review our recommendations.

Table 2: Pavement Design Parameters

Design Parameter	Recommended Value
Frost Index	F-4
Design Group Index	16
Soil Support Value	3.6
Modulus of Subgrade Reaction	125 pci

7.5 Pavement Fatigue and Maintenance

Regardless of the subgrade preparation and design, the owner should expect that cracks will appear in the bituminous pavement within 1 to 3 years due to thermal expansion and contraction, and due to the loss of volatiles from the bituminous cement. These cracks cannot be avoided; they should be cleaned annually and filled with a hot bituminous sealant. Within three to five years after construction, cracks and depressions may appear in heavily traveled areas, such as drive aisles. Such areas should be cut out and repaired expeditiously to extend the pavement life. Periodically during the pavement life, the engineer responsible for maintenance of the facility should determine the need to apply a seal coat of hot bituminous and rock chips.

8.0 CONSTRUCTION CONSIDERATIONS

8.1 Groundwater

Based on the conditions found in our borings, it is our opinion the contractors will probably not encounter the static groundwater table at this site. It is possible zones of perched water will be encountered. If water is encountered in the excavations, it should be promptly pumped out before compacted fill or concrete are placed. The contractor should not be allowed to place fill or concrete into standing water, or over softened soils in an attempt to displace these materials. This technique can result in trapping softened soils under footings, floor slabs, and/or pavements, resulting in excessive post-construction settlement, even if the softened zone is only a few inches thick.

8.2 Disturbance of Soils

The soils at this site are highly sensitive to disturbance and will become easily disturbed under construction traffic, especially when wet. If soils become disturbed, they should be subcut to the underlying undisturbed soils, followed by placement of new compacted fill.

8.3 Excavation Backsloping

If excavation faces are not retained, the excavations should maintain maximum allowable slopes in accordance with *OSHA Regulations (Standards 29 CFR), Part 1926, Subpart P, "Excavations"* (can be found on www.osha.gov). Even with the required OSHA sloping, water seepage or surface runoff can potentially induce sideslope erosion or running which could require slope maintenance.

8.4 Observation and Testing

The recommendations in this report are based on the subsurface conditions found at our test boring locations. Since the soil conditions can be expected to vary away from the soil boring locations, we recommend on-site observation by a geotechnical engineer/technician during construction to evaluate these potential changes. Soil density testing should also be performed on new fill placed in order to document that project specifications for compaction have been met.

9.0 ASTM STANDARDS

When we refer to an ASTM Standard in this report, we mean that our services were performed in general accordance with that standard. Compliance with any other standards referenced within the specified standard is neither inferred nor implied.

10.0 LIMITATIONS

Within the limitations of scope, budget, and schedule, we have endeavored to provide our services according to generally accepted geotechnical engineering practices at this time and location. Other than this, no warranty, express or implied, is intended. Important information regarding risk management and proper use of this report is given in Appendix B entitled “Geotechnical Report Limitations and Guidelines for Use.”

Appendix A

AET Project No. P-0009283

Geotechnical Field Exploration and Testing
Boring Log Notes
Unified Soil Classification System
Figure 1 – Boring Locations
Subsurface Boring Logs
Gradation Curves

Appendix A
Geotechnical Field Exploration and Testing
AET Project No. P-0009283

A.1 FIELD EXPLORATION

The subsurface conditions at the site were explored by drilling eight standard penetration test borings. The boring locations are shown on Figure 1.

A.2 SAMPLING METHODS

A.2.1 Split-Spoon Samples (SS)

Standard penetration (split-spoon) samples were collected in general accordance with ASTM: D1586. The ASTM test method consists of driving a 2-inch O.D. split-barrel sampler into the in-situ soil with a 140-pound hammer dropped from a height of 30 inches. After an initial set of 6 inches, the number of hammer blows to drive the sampler the next 12 inches is known as the standard penetration resistance or N-value.

In the past, standard penetration N-value tests were performed using a rope and cathead for the lift and drop system. The energy transferred to the split-spoon sampler was typically limited to about 60% of its potential energy due to the friction inherent in that system. That converted energy provided what is known as an N_{60} blow count.

Most drill rigs today incorporate an automatic hammer lift and drop system, which has higher energy efficiency and subsequently results in lower N-values than the traditional N_{60} values. We use a Pile Driving Analyzer (PDA) and an instrumented rod to measure the actual energy generated by the automatic hammer system. The drill rig (AET rig number 57) we used for this project has a measured energy transfer ratio of 89%. The N-values reported on the boring logs and the corresponding relative densities and consistencies are from the field blow counts and have not been adjusted to N_{60} values.

A.2.2 Disturbed Samples (DS)/Spin-up Samples (SU)

Sample types described as “DS” or “SU” on the boring logs are disturbed samples, which are taken from the flights of the auger. Because the auger disturbs the samples, possible soil layering and contact depths should be considered approximate.

A.2.3 Sampling Limitations

Unless actually observed in a sample, contacts between soil layers are estimated based on the spacing of samples and the action of drilling tools. Cobbles, boulders, and other large objects generally cannot be recovered from test borings, and they may be present in the ground even if they are not noted on the boring logs.

Determining the thickness of “topsoil” layers is usually limited, due to variations in topsoil definition, sample recovery, and other factors. Visual-manual description often relies on color for determination, and transitioning changes can account for significant variation in thickness judgment. Accordingly, the topsoil thickness presented on the logs should not be the sole basis for calculating topsoil stripping depths and volumes. If more accurate information is needed relating to thickness and topsoil quality definition, alternate methods of sample retrieval and testing should be employed.

A.3 CLASSIFICATION METHODS

Soil descriptions shown on the boring logs are based on the Unified Soil Classification System (USCS). The USCS is described in ASTM: D2487 and D2488. Where laboratory classification tests (sieve analysis or Atterberg Limits) have been performed, accurate classifications per ASTM: D2487 are possible. Otherwise, soil descriptions shown on the boring logs are visual-manual judgments. Charts are attached which provide information on the USCS, the descriptive terminology, and the symbols used on the boring logs.

The boring logs include descriptions of apparent geology. The geologic depositional origin of each soil layer is interpreted primarily by observation of the soil samples, which can be limited. Observations of the surrounding topography, vegetation, and development can sometimes aid this judgment.

A.4 WATER LEVEL MEASUREMENTS

The ground water level measurements are shown at the bottom of the boring logs. The following information appears under "Water Level Measurements" on the logs:

- Date and Time of measurement
- Sampled Depth: lowest depth of soil sampling at the time of measurement
- Casing Depth: depth to bottom of casing or hollow-stem auger at time of measurement
- Cave-in Depth: depth at which measuring tape stops in the borehole
- Water Level: depth in the borehole where free water is encountered
- Drilling Fluid Level: same as Water Level, except that the liquid in the borehole is drilling fluid

The true location of the water table at the boring locations may be different than the water levels measured in the boreholes. This is possible because there are several factors that can affect the water level measurements in the borehole. Some of these factors include: permeability of each soil layer in profile, presence of perched water, amount of time between water level readings, presence of drilling fluid, weather conditions, and use of borehole casing.

A.5 TEST STANDARD LIMITATIONS

Field and laboratory testing is done in general conformance with the described procedures. Compliance with any other standards referenced within the specified standard is neither inferred nor implied.

A.6 SAMPLE STORAGE

Unless notified to do otherwise, we routinely retain representative samples of the soils recovered from the borings for a period of 30 days.

BORING LOG NOTES

DRILLING AND SAMPLING SYMBOLS

Symbol	Definition
B, H, N:	Size of flush-joint casing
CA:	Crew Assistant (initials)
CAS:	Pipe casing, number indicates nominal diameter in inches
CC:	Crew Chief (initials)
COT:	Clean-out tube
DC:	Drive casing; number indicates diameter in inches
DM:	Drilling mud or bentonite slurry
DR:	Driller (initials)
DS:	Disturbed sample from auger flights
FA:	Flight auger; number indicates outside diameter in inches
HA:	Hand auger; number indicates outside diameter
HSA:	Hollow stem auger; number indicates inside diameter in inches
LG:	Field logger (initials)
MC:	Column used to describe moisture condition of samples and for the ground water level symbols
N (BPF):	Standard penetration resistance (N-value) in blows per foot (see notes)
NQ:	NQ wireline core barrel
PQ:	PQ wireline core barrel
RD:	Rotary drilling with fluid and roller or drag bit
REC:	In split-spoon (see notes) and thin-walled tube sampling, the recovered length (in inches) of sample. In rock coring, the length of core recovered (expressed as percent of the total core run). Zero indicates no sample recovered.
REV:	Revert drilling fluid
SS:	Standard split-spoon sampler (steel; 1d" is inside diameter; 2" outside diameter); unless indicated otherwise
SU	Spin-up sample from hollow stem auger
TW:	Thin-walled tube; number indicates inside diameter in inches
WASH:	Sample of material obtained by screening returning rotary drilling fluid or by which has collected inside the borehole after "falling" through drilling fluid
WH:	Sampler advanced by static weight of drill rod and 140-pound hammer
WR:	Sampler advanced by static weight of drill rod
94mm:	94 millimeter wireline core barrel
▼:	Water level directly measured in boring
▽:	Estimated water level based solely on sample appearance

TEST SYMBOLS

Symbol	Definition
CONS:	One-dimensional consolidation test
DEN:	Dry density, pcf
DST:	Direct shear test
E:	Pressuremeter Modulus, tsf
HYD:	Hydrometer analysis
LL:	Liquid Limit, %
LP:	Pressuremeter Limit Pressure, tsf
OC:	Organic Content, %
PERM:	Coefficient of permeability (K) test; F - Field; L - Laboratory
PL:	Plastic Limit, %
q_p:	Pocket Penetrometer strength, tsf (approximate)
q_c:	Static cone bearing pressure, tsf
q_u:	Unconfined compressive strength, psf
R:	Electrical Resistivity, ohm-cms
RQD:	Rock Quality Designation of Rock Core, in percent (aggregate length of core pieces 4" or more in length as a percent of total core run)
SA:	Sieve analysis
TRX:	Triaxial compression test
VSR:	Vane shear strength, remolded (field), psf
VSU:	Vane shear strength, undisturbed (field), psf
WC:	Water content, as percent of dry weight
%-200:	Percent of material finer than #200 sieve

STANDARD PENETRATION TEST NOTES

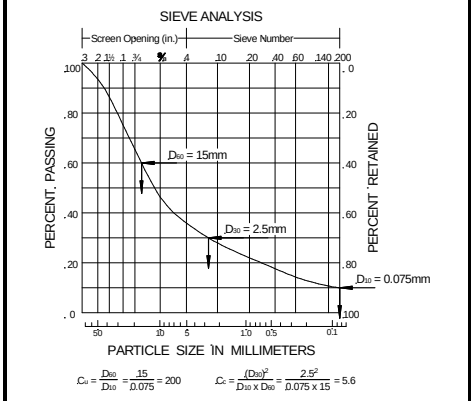
The standard penetration test consists of driving the sampler with a 140 pound hammer and counting the number of blows applied in each of three 6" increments of penetration. If the sampler is driven less than 18" (usually in highly resistant material), permitted in ASTM: D1586, the blows for each complete 6" increment and for each partial increment is on the boring log. For partial increments, the number of blows is shown to the nearest 0.1' below the slash.

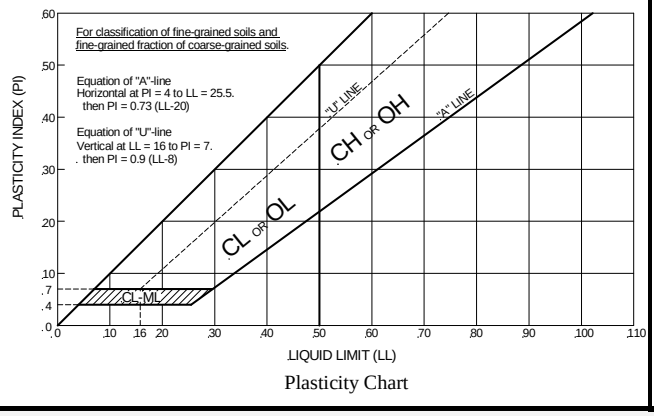
The length of sample recovered, as shown on the "REC" column, may be greater than the distance indicated in the N column. The disparity is because the N-value is recorded below the initial 6" set (unless partial penetration defined in ASTM: D1586 is encountered) whereas the length of sample recovered is for the entire sampler drive (which may even extend more than 18").

UNIFIED SOIL CLASSIFICATION SYSTEM
ASTM Designations: D 2487, D2488

AMERICAN ENGINEERING TESTING, INC.

Criteria for Assigning Group Symbols and Group Names Using Laboratory Tests[A]				Soil Classification	
				Group Symbol	Group Name[B]
Coarse-Grained Soils More than 50% retained on No. 200 sieve	Gravels More than 50% coarse fraction retained on No. 4 sieve	Clean Gravels Less than 5% fines[C]	Cu≥4 and 1≤Cc≤3[E]	GW	Well graded gravel[F]
			Cu<4 and/or 1>Cc>3[E]	GP	Poorly graded gravel[F]
		Gravels with Fines more than 12% fines[C]	Fines classify as ML or MH	GM	Silty gravel[F,G,H]
			Fines classify as CL or CH	GC	Clayey gravel[F,G,H]
	Sands 50% or more of coarse fraction passes No. 4 sieve	Clean Sands Less than 5% fines[D]	Cu≥6 and 1≤Cc≤3[E]	SW	Well-graded sand[I]
			Cu<6 and 1>Cc>3[E]	SP	Poorly-graded sand[I]
		Sands with Fines more than 12% fines[D]	Fines classify as ML or MH	SM	Silty sand[G,H,I]
			Fines classify as CL or CH	SC	Clayey sand[G,H,I]
Fine-Grained Soils 50% or more passes the No. 200 sieve (see Plasticity Chart below)	Silts and Clays Liquid limit less than 50	inorganic	PI>7 and plots on or above "A" line[J]	CL	Lean clay[K,L,M]
			PI<4 or plots below "A" line[J]	ML	Silt[K,L,M]
		organic	Liquid limit–oven dried / Liquid limit – not dried <0.75	OL	Organic clay[K,L,M,N] Organic silt[K,L,M,O]
	Silts and Clays Liquid limit 50 or more	inorganic	PI plots on or above "A" line	CH	Fat clay[K,L,M]
			PI plots below "A" line	MH	Elastic silt[K,L,M]
		organic	Liquid limit–oven dried / Liquid limit – not dried <0.75	OH	Organic clay[K,L,M,P] Organic silt[K,L,M,Q]
Highly organic soil			Primarily organic matter, dark in color, and organic in odor	PT	Peat[R]





Plasticity Chart

Notes

[A]Based on the material passing the 3-in (75-mm) sieve.

[B]If field sample contained cobbles or boulders, or both, add "with cobbles or boulders, or both" to group name.

[C]Gravels with 5 to 12% fines require dual symbols:
GW-GM well-graded gravel with silt
GW-GC well-graded gravel with clay
GP-GM poorly graded gravel with silt
GP-GC poorly graded gravel with clay

[D]Sands with 5 to 12% fines require dual symbols:
SW-SM well-graded sand with silt
SW-SC well-graded sand with clay
SP-SM poorly graded sand with silt
SP-SC poorly graded sand with clay

[E]$Cu = D_{60} / D_{10}$, $Cc = \frac{(D_{30})^2}{D_{10} \times D_{60}}$

[F]If soil contains ≥15% sand, add "with sand" to group name.

[G]If fines classify as CL-ML, use dual symbol GC-GM, or SC-SM.

[H]If fines are organic, add "with organic fines" to group name.

[I]If soil contains ≥15% gravel, add "with gravel" to group name.

[J]If Atterberg limits plot is hatched area, soils is a CL-ML silty clay.

[K]If soil contains 15 to 29% plus No. 200 add "with sand" or "with gravel", whichever is predominant.

[L]If soil contains ≥30% plus No. 200, predominantly sand, add "sandy" to group name.

[M]If soil contains ≥30% plus No. 200, predominantly gravel, add "gravelly" to group name.

[N]PI≥4 and plots on or above "A" line.

[O]PI<4 or plots below "A" line.

[P]PI plots on or above "A" line.

[Q]PI plots below "A" line.

[R]Fiber Content description shown below.

ADDITIONAL TERMINOLOGY NOTES USED BY AET FOR SOIL IDENTIFICATION AND DESCRIPTION

Grain Size

Term	Particle Size
Boulders	Over 12"
Cobbles	3" to 12"
Gravel	#4 sieve to 3"
Sand	#200 to #4 sieve
Fines (silt & clay)	Pass #200 sieve

Gravel Percentages

Term	Percent
A Little Gravel	3% - 14%
With Gravel	15% - 29%
Gravelly	30% - 50%

Consistency of Plastic Soils

Term	N-Value, BPF
Very Soft	less than 2
Soft	2 - 4
Firm	5 - 8
Stiff	9 - 15
Very Stiff	16 - 30
Hard	Greater than 30

Relative Density of Non-Plastic Soils

Term	N-Value, BPF
Very Loose	0 - 4
Loose	5 - 10
Medium Dense	11 - 30
Dense	31 - 50
Very Dense	Greater than 50

Moisture/Frost Condition
(MC Column)

D (Dry): Absense of moisture, dusty, dry to touch.

M (Moist): Damp, although free water not visible. Soil may still have a high water content (over "optimum").

W (Wet/ Waterbearing): Free water visible intended to describe non-plastic soils. Waterbearing usually relates to sands and sand with silt.

F (Frozen): Soil frozen

Layering Notes

Laminations: Layers less than ½" thick of differing material or color.

Lenses: Pockets or layers greater than ½" thick of differing material or color.

Peat Description

Term	Fiber Content (Visual Estimate)
Fibric Peat:	Greater than 67%
Hemic Peat:	33 – 67%
Sapric Peat:	Less than 33%

Organic Description (if no lab tests)

Soils are described as *organic*, if soil is not peat and is judged to have sufficient organic fines content to influence the Liquid Limit properties. *Slightly organic* used for borderline cases.

Root Inclusions

With roots: Judged to have sufficient quantity of roots to influence the soil properties.

Trace roots: Small roots present, but not judged to be in sufficient quantity to significantly affect soil properties.

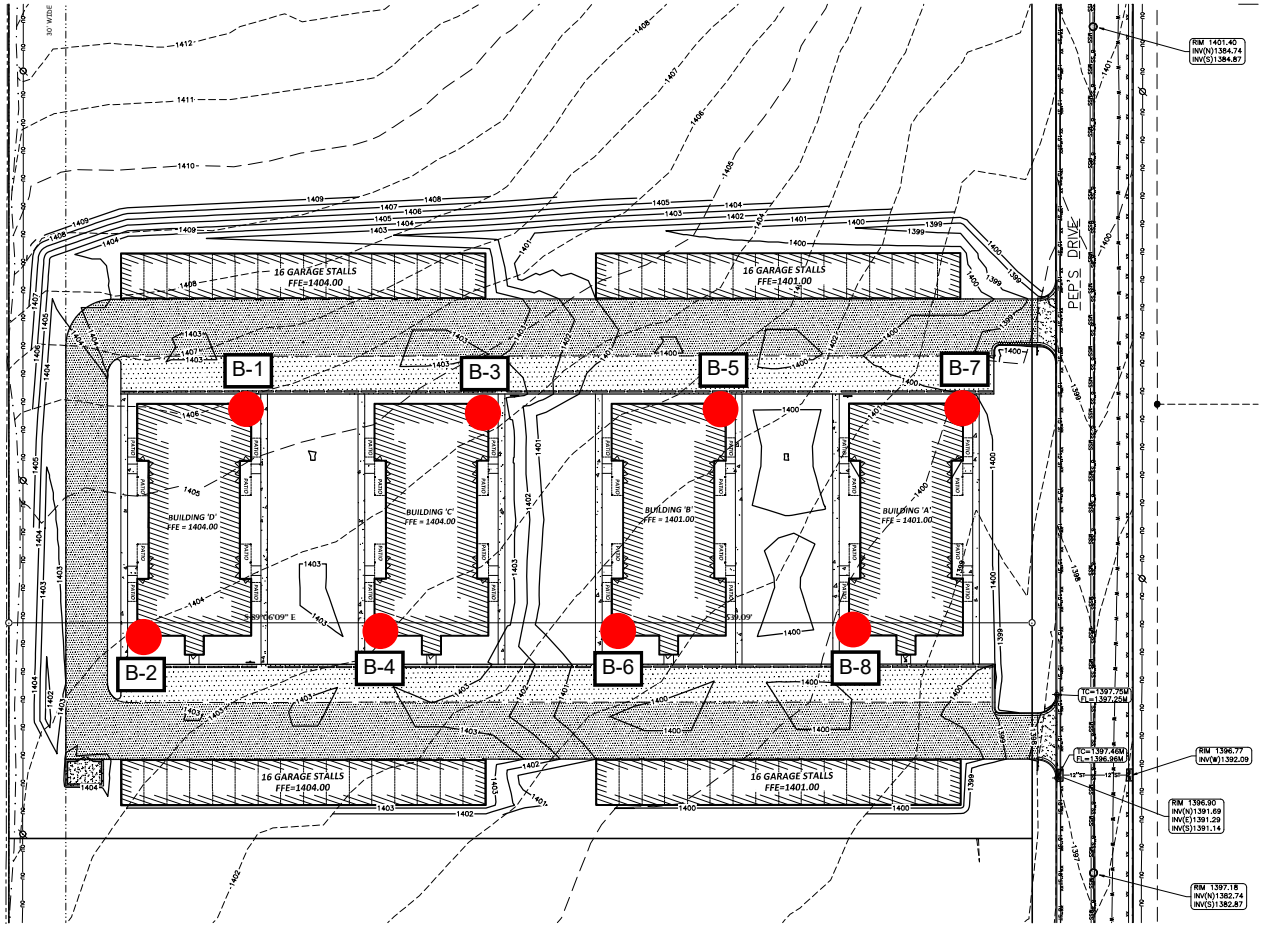


Figure 1 - Boring Locations
AET Project No. P-0009283
Drilled January 24 & 26, 2022

0' 30' 60'
1" = 30'

N

NOT FOR CONSTRUCTION

REVISIONS

CHECKED:	J.L.
DRAWN:	M.K.
DATE	MM/DD/YYYY
PROJECT NO.	21.126

GRADING PLAN

FAITH CONSTRUCTION SERVICES
MEDFORD APARTMENTS
MEDFORD
TAYLOR CO, WISCONSIN

Civil Engineering
Land Surveying
Landscape Architecture
4941 Kirchling Court
Stevens Point, WI 54481
715.344.9999 (PH) 715.344.9922 (FX)

Point of Beginning

SHEET C3.0

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **P-0009283** Log of Boring No. **B-1 (p. 1 of 1)**

Project: **Proposed Multi-Family Housing Development; 1321 Peps Drive, Medford, WI**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **1405.9** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
1	1404.8	FILL (13 inches), silt with organics, dark brown, frozen (ML)	TOPSOIL / FILL	9	F/M	SS	18	20				
2	1403.9	SILT, mottled gray and brown, frozen to moist, with trace organics (ML)	LOESS									
3		CLAYEY SAND, fine to medium grained, a little gravel, brown, moist, medium dense (SC)	TILL	14	M	SS	17					
4	1401.4											
5		SILTY SAND with gravel, fine to medium grained, brown, moist, medium dense (SM)		17	M	SS	16					
6												
7	1398.9											
8		CLAYEY SAND, fine to medium grained, a little gravel, brown, wet, loose (SC)		9	W	SS	21	15				
9	1396.4											
10		CLAYEY SAND with gravel, fine to coarse grained, brown, moist, medium dense to very dense (SC)		11	M	SS	13					
11												
12												
13				57/.7	M	SS	6					
		Apparent cobbles from 13 to 14.5 feet										
14	1391.4											
15		No recovery from 14.5 to 16.5 feet		11		SS	0					
16	1389.4											
		End of boring at 16.5 feet										

DEPTH: DRILLING METHOD	WATER LEVEL MEASUREMENTS						
	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-14.5' 3.25" HSA	**1/26/22**	**1130**	**16.5**	**14.5**	**16.5**	**None**	**None**
BORING COMPLETED: **1/26/22**							
DR: **KS** LG: **SZ** Rig: **57**							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AET_CORP W-ELEV P-0009283 FAITH APARTMENTS.GPJ AET+CPT+WELL.GDT 2/7/22

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **P-0009283** Log of Boring No. **B-2 (p. 1 of 1)**

Project: **Proposed Multi-Family Housing Development; 1321 Peps Drive, Medford, WI**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **1403.9** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
1	1402.8	FILL (13 inches), silt with organics, dark brown, frozen (ML)	TOPSOIL / FILL	12	F/M	SS	19					
2	1401.9	SILT, mottled gray and brown, frozen to moist (ML)	LOESS					16				
3		CLAYEY SAND, fine to medium grained, a little gravel, reddish brown, moist, medium dense (SC)	TILL	12	M	SS	18					
4												
5				21	M	SS	14					
6												
7	1396.9											
8		CLAYEY SAND with gravel, fine to medium grained, brown, moist, medium dense (SC)		12	M	SS	15					
9	1394.4											
10		Gravelly SILTY SAND, fine to coarse grained, brown, moist, medium dense, with apparent cobbles (SM)		25	M	SS	16					
11												
12	1391.4											
13		Sandy LEAN CLAY with gravel, brown, stiff (CL)		14	M	SS	14	14	0.5			
14												
15				12	M	SS	22	14	0.5			
16	1387.4											
		End of boring at 16.5 feet										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-14.5'	**3.25" HSA**	**1/26/22**	**1045**	**16.5**	**14.5**	**16.5**	**None**	**None**
BORING COMPLETED:	**1/26/22**							
DR: **KS**	LG: **SZ** Rig: **57**							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AET_CORP W-ELEV P-0009283 FAITH APARTMENTS.GPJ AET+CPT+WELL.GDT 2/7/22

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **P-0009283** Log of Boring No. **B-3 (p. 1 of 1)**

Project: **Proposed Multi-Family Housing Development; 1321 Peps Drive, Medford, WI**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **1404.3** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
	1403.4	FILL (11 inches), silt with organics, dark brown, frozen (ML)	TOPSOIL / FILL									
1		SILT, mottled gray and brown, frozen to moist (ML)	LOESS	10	F/M	SS	13	19				
2	1402.3	Sandy SILT, a little gravel, brown, moist, loose (ML)	TILL									
3				9	M	SS	10	18				
4	1399.8											
5		SILTY SAND, fine to medium grained, a little gravel, brown, moist, medium dense (SM)		26	M	SS	12					
6												
7	1397.3											
8		Sandy LEAN CLAY, a little gravel, brown, soft to stiff (CL)		8	M	SS	16	13	0.5			
9												
10				2	M	SS	11	17	<0.25			
11												
12												
13				13	M	SS	17	15	0.5			
14	1389.8											
15		CLAYEY SAND, fine to medium grained, a little gravel, brown, wet, loose (SC)		10	W	SS	4					
16	1387.8											
		End of boring at 16.5 feet										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-14.5'	**3.25" HSA**	**1/26/22**	**1400**	**16.5**	**14.5**	**16.5**	**None**	**None**
BORING COMPLETED:	**1/26/22**							
DR: **KS**	LG: **SZ** Rig: **57**							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AET_CORP W-ELEV P-0009283 FAITH APARTMENTS.GPJ AET+CPT+WELL.GDT 2/7/22

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **P-0009283** Log of Boring No. **B-4 (p. 1 of 1)**

Project: **Proposed Multi-Family Housing Development; 1321 Peps Drive, Medford, WI**

Surface Elevation **1403.1**

DEPTH IN FEET	ELEV. FEET	MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
1	1401.7	FILL (17 inches), silt with organics, dark brown, frozen (ML)	TOPSOIL / FILL	19	F/M	SS	22					
2	1401.1	SILT, mottled gray and brown, frozen to moist (ML)	LOESS					17				
3		SILT, brown, moist, loose (ML)		6	M	SS	17	17				
4	1398.6											
5		Gravelly CLAYEY SAND, fine to medium grained, reddish brown, moist, dense, with apparent cobbles (SC)	TILL	34	M	SS	16	6				17
6												
7	1396.1											
8		CLAYEY SAND, fine to medium grained, a little gravel, brown, moist, medium dense (SC)		11	M	SS	4					
9	1393.6											
10		CLAYEY SAND with gravel, fine to coarse grained, gray and reddish brown, moist, medium dense, with apparent cobbles and clay lenses (SC)		24	M	SS	11					
11												
12	1391.1											
13		Sandy LEAN CLAY, a little gravel, brown, very stiff (CL)		21	M	SS	23	12	1.5			
14	1388.6											
15		CLAYEY SAND, fine to medium grained, a little gravel, brown, moist, medium dense (SC)		16	M	SS	20					
16	1386.6											
		End of boring at 16.5 feet										

DEPTH:	DRILLING METHOD
0-14.5'	**3.25" HSA**

WATER LEVEL MEASUREMENTS

DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
1/26/22	**1000**	**16.5**	**14.5**	**16.5**	**None**	**None**

BORING COMPLETED: **1/26/22**

DR: **KS** LG: **SZ** Rig: **57**

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AET_CORP W-ELEV P-0009283 FAITH APARTMENTS.GPJ AET+CPT+WELL.GDT 2/7/22

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **P-0009283** Log of Boring No. **B-5 (p. 1 of 1)**

Project: **Proposed Multi-Family Housing Development; 1321 Peps Drive, Medford, WI**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **1402.5** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
1	1401.5	FILL (12 inches), silt with organics, dark brown, frozen (ML)	TOPSOIL / FILL									
		SILT, mottled gray and brown, frozen to moist (ML)	LOESS	10	F/M	SS	17	25				
2	1400.5	CLAYEY SAND, fine to medium grained, a little gravel, reddish brown, loose to medium dense (SC)	TILL									
3				17	M	SS	10					
4												
5				14	M	SS	23					
6												
7												
8				8	M	SS	20	13				45
9	1393.0											
10		Sandy LEAN CLAY with gravel, reddish brown, firm to stiff (CL)		10	M	SS	10	14	0.75			
11												
12												
13				8	M	SS	11	16	0.75			
14	1388.0											
15		Sandy LEAN CLAY, a little gravel, brown, stiff (CL)		13	M	SS	14	14	1.25			
16	1386.0											
		End of boring at 16.5 feet										

DEPTH: DRILLING METHOD	WATER LEVEL MEASUREMENTS						
	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-14.5' 3.25" HSA	**1/24/22**	**1530**	**16.5**	**14.5**	**16.5**	**None**	**None**
BORING COMPLETED: **1/24/22**							
DR: **MD** LG: **SZ** Rig: **57**							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AET_CORP W-ELEV P-0009283 FAITH APARTMENTS.GPJ AET+CPT+WELL.GDT 2/7/22

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **P-0009283** Log of Boring No. **B-6 (p. 1 of 1)**

Project: **Proposed Multi-Family Housing Development; 1321 Peps Drive, Medford, WI**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **1401.5** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
1	1400.5	FILL (12 inches), silt with organics, dark brown, frozen (ML)	TOPSOIL / FILL									
1		SILT, mottled gray and brown, frozen to moist, with trace organics (ML)	LOESS	10	F/M	SS	22	18				
2	1399.5											
3		CLAYEY SAND, fine to medium grained, a little gravel, brown, moist, loose, with clay lenses (SC)	TILL	10	M	SS	18					
4	1397.0											
5		Gravelly SILTY SAND, fine to coarse grained, gray and red and brown, moist, medium dense (SM)		29	M	SS	11					
6												
7	1394.5											
8		Sandy LEAN CLAY with gravel, brown, stiff (CL)		13	M	SS	12	17				
9	1392.0											
10		CLAYEY SAND with gravel, fine to medium grained, brown, moist, loose (SC)		9	M	SS	14					
11												
12												
13				10	M	SS	6					
14	1387.0											
15		Sandy LEAN CLAY, a little gravel, brown, firm (CL)		7	M	SS	23	16				
16	1385.0											
		End of boring at 16.5 feet										

DEPTH: DRILLING METHOD	WATER LEVEL MEASUREMENTS						
	DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-14.5' 3.25" HSA	**1/24/22**	**1625**	**16.5**	**14.5**	**16.5**	**None**	**None**
BORING COMPLETED: **1/24/22**							
DR: **MD** LG: **SZ** Rig: **57**							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AET_CORP W-ELEV P-0009283 FAITH APARTMENTS.GPJ AET+CPT+WELL.GDT 2/7/22

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **P-0009283** Log of Boring No. **B-7 (p. 1 of 1)**

Project: **Proposed Multi-Family Housing Development; 1321 Peps Drive, Medford, WI**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **1399.9** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
	1399.1	FILL (10 inches), silt with organics, dark brown, frozen (ML)	TOPSOIL / FILL									
1		SILT, mottled gray and brown, frozen to moist (ML)	LOESS	14	F/M	SS	21	19				
2	1397.9	SILTY SAND, fine to coarse grained, a little gravel, brown, moist, medium dense, with apparent cobbles (SM)	TILL									
3				23	M	SS	14					
4	1395.4											
5		CLAYEY SAND, fine to medium grained, a little gravel, reddish brown, moist, loose to medium dense (SC)		21	M	SS	20					
6												
7												
8				8	M	SS	12	14				43
9	1390.4											
10		SILTY SAND with gravel, fine to coarse grained, brown, moist, medium dense to dense (SM)		18	M	SS	13					
11												
12		*Apparent cobbles at 12 feet*										
13				44	M	SS	16					
14	1385.4											
15		CLAYEY SAND, fine to medium grained, a little gravel, brown, wet, medium dense (SC)		18	W	SS	19	15				
16	1383.4											
		End of boring at 16.5 feet										

DEPTH:	DRILLING METHOD	WATER LEVEL MEASUREMENTS						
		DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
0-14.5'	**3.25" HSA**	**1/24/22**	**1016**	**16.5**	**14.5**	**16.5**	**None**	**None**
BORING COMPLETED:	**1/24/22**							
DR: **MD**	LG: **SZ** Rig: **57**							

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AET_CORP W-ELEV P-0009283 FAITH APARTMENTS.GPJ AET+CPT+WELL.GDT 2/7/22

AMERICAN ENGINEERING TESTING, INC.

SUBSURFACE BORING LOG

AET No: **P-0009283** Log of Boring No. **B-8 (p. 1 of 1)**

Project: **Proposed Multi-Family Housing Development; 1321 Peps Drive, Medford, WI**

DEPTH IN FEET	ELEV. FEET	Surface Elevation **1399.8** MATERIAL DESCRIPTION	GEOLOGY	N	MC	SAMPLE TYPE	REC IN.	FIELD & LABORATORY TESTS WC	qp	LL	PL	%-#200
1	1398.8	FILL (12 inches), silt with organics, dark brown, frozen (ML)	TOPSOIL / FILL	11	F/M	SS	17	17				
2	1397.8	SILT, mottled gray and brown, frozen to moist (ML)	LOESS									
3		Sandy SILT, brown, a little gravel, moist, loose (ML)	TILL	7	M	SS	19	19				
4	1395.3											
5		CLAYEY SAND, fine to medium grained, a little gravel, reddish brown, moist, medium dense (SC)		23	M	SS	17	9				35
6												
7												
8				16	M	SS	16					
9	1390.3											
10		SILTY SAND with gravel, fine to coarse grained, brown, moist, medium dense (SM)		19	M	SS	14					
11												
12	1387.8											
13		SILTY SAND, fine to medium grained, a little gravel, brown, moist, medium dense (SM)		27	M	SS	19					
14	1385.3											
15		CLAYEY SAND, fine to medium grained, a little gravel, brown, wet, loose (SC)		9	W	SS	20	15				
16	1383.3											
		End of boring at 16.5 feet										

DEPTH:	DRILLING METHOD
0-14.5'	**3.25" HSA**

WATER LEVEL MEASUREMENTS

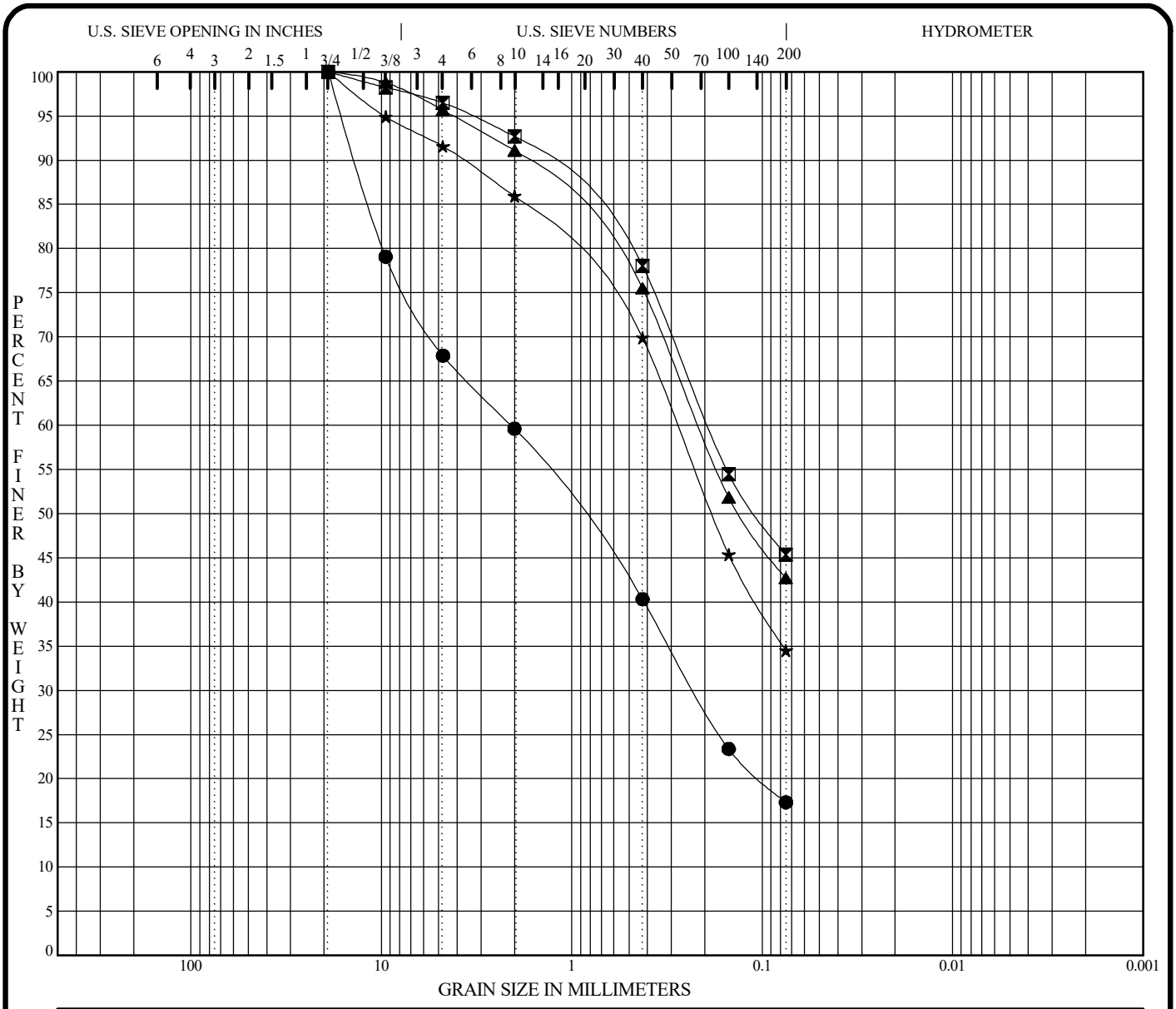
DATE	TIME	SAMPLED DEPTH	CASING DEPTH	CAVE-IN DEPTH	DRILLING FLUID LEVEL	WATER LEVEL
1/24/22	**1055**	**16.5**	**14.5**	**16.5**	**None**	**None**

BORING COMPLETED: **1/24/22**

DR: **MD** LG: **SZ** Rig: **57**

NOTE: REFER TO THE ATTACHED SHEETS FOR AN EXPLANATION OF TERMINOLOGY ON THIS LOG

AET_CORP W-ELEV P-0009283 FAITH APARTMENTS.GPJ AET+CPT+WELL.GDT 2/7/22



COBBLES	GRAVEL		SAND			SILT OR CLAY
	coarse	fine	coarse	medium	fine	

	Specimen Identification		Classification	MC%	LL	PL	PI	Cc	Cu
●	B-4	5.5'	Gravelly Clayey Sand, fine to medium grained (SC)	6					
⊠	B-5	8.0'	Clayey Sand, fine to medium grained, a little gravel (SC)	13					
▲	B-7	8.0'	Clayey Sand, fine to medium grained, a little gravel (SC)	14					
★	B-8	5.5'	Clayey Sand, fine to medium grained, a little gravel (SC)	9					

	Specimen Identification		D100	D60	D30	D10	%Gravel	%Sand	%Silt	%Clay
●	B-4	5.5'	19.00	2.08	0.226		32.1	50.5	17.3	
⊠	B-5	8.0'	19.00	0.19			3.5	51.1	45.4	
▲	B-7	8.0'	19.00	0.21			4.3	53.0	42.7	
★	B-8	5.5'	19.00	0.28			8.4	57.1	34.5	

PROJECT **Proposed Multi-Family Housing Development; Medford, WI**

AET JOB NO. **P-0009283**

DATE **1/24/22**

AMERICAN ENGINEERING TESTING

GRADATION CURVES

Appendix B

AET Project No. P-0009283

Geotechnical Report Limitations and Guidelines for Use

Appendix B
Geotechnical Report Limitations and Guidelines for Use
AET Project No. P-0009283

B.1 REFERENCE

This appendix provides information to help you manage your risks relating to subsurface problems which are caused by construction delays, cost overruns, claims, and disputes. This information was developed and provided by GBA[1], of which we are a member firm.

B.2 RISK MANAGEMENT INFORMATION

B.2.1 Geotechnical Services are Performed for Specific Purposes, Persons, and Projects

Geotechnical engineers structure their services to meet the specific needs of their clients. A geotechnical engineering study conducted for a civil engineer may not fulfill the needs of a construction contractor or even another civil engineer. Because each geotechnical engineering study is unique, each geotechnical engineering report is unique, prepared solely for the client. No one except you should rely on your geotechnical engineering report without first conferring with the geotechnical engineer who prepared it. And no one, not even you, should apply the report for any purpose or project except the one originally contemplated.

B.2.2 Read the Full Report

Serious problems have occurred because those relying on a geotechnical engineering report did not read it all. Do not rely on an executive summary. Do not read selected elements only.

B.2.3 A Geotechnical Engineering Report is Based on A Unique Set of Project-Specific Factors

Geotechnical engineers consider a number of unique, project-specific factors when establishing the scope of a study. Typically, factors include: the client's goals, objectives, and risk management preferences; the general nature of the structure involved, its size, and configuration; the location of the structure on the site; and other planned or existing site improvements, such as access roads, parking lots, and underground utilities. Unless the geotechnical engineer who conducted the study specifically indicates otherwise, do not rely on a geotechnical engineering report that was:

- not prepared for you,
- not prepared for your project,
- not prepared for the specific site explored, or
- completed before important project changes were made.

Typical changes that can erode the reliability of an existing geotechnical engineering report include those that affect:

- the function of the proposed structure, as when it's changed from a parking garage to an office building, or from a light industrial plant to a refrigerated warehouse,
- elevation, configuration, location, orientation, or weight of the proposed structure,
- composition of the design team, or
- project ownership.

As a general rule, always inform your geotechnical engineer of project changes, even minor ones, and request an assessment of their impact. Geotechnical engineers cannot accept responsibility or liability for problems that occur because their reports do not consider developments of which they were not informed.

B.2.4 Subsurface Conditions Can Change

A geotechnical engineering report is based on conditions that existed at the time the study was performed. Do not rely on a geotechnical engineering report whose adequacy may have been affected by: the passage of time; by man-made events, such as construction on or adjacent to the site; or by natural events, such as floods, earthquakes, or groundwater fluctuations. Always contact the geotechnical engineer before applying the report to determine if it is still reliable. A minor amount of additional testing or analysis could prevent major problems.

1 Geoprofessional Business Association, 15800 Crabbs Branch Way, Suite 300, Rockville, MD 20855
Telephone: 301/565-2733: www.geoprofessional.org

B.2.5 Most Geotechnical Findings Are Professional Opinions
Site exploration identified subsurface conditions only at those points where subsurface tests are conducted or samples are taken. Geotechnical engineers review field and laboratory data and then apply their professional judgment to render an opinion about subsurface conditions throughout the site. Actual subsurface conditions may differ, sometimes significantly, from those indicated in your report. Retaining the geotechnical engineer who developed your report to provide construction observation is the most effective method of managing the risks associated with unanticipated conditions.

B.2.6 A Report's Recommendations Are Not Final
Do not over-rely on the construction recommendations included in your report. Those recommendations are not final, because geotechnical engineers develop them principally from judgment and opinion. Geotechnical engineers can finalize their recommendations only by observing actual subsurface conditions revealed during construction. The geotechnical engineer who developed your report cannot assume responsibility or liability for the report's recommendations if that engineer does not perform construction observation.

B.2.7 A Geotechnical Engineering Report Is Subject to Misinterpretation
Other design team members' misinterpretation of geotechnical engineering reports has resulted in costly problems. Lower that risk by having your geotechnical engineer confer with appropriate members of the design team after submitting the report. Also retain your geotechnical engineer to review pertinent elements of the design team's plans and specifications. Contractors can also misinterpret a geotechnical engineering report. Reduce that risk by having your geotechnical engineer participate in prebid and preconstruction conferences, and by providing construction observation.

B.2.8 Do Not Redraw the Engineer's Logs
Geotechnical engineers prepare final boring and testing logs based upon their interpretation of field logs and laboratory data. To prevent errors or omissions, the logs included in a geotechnical engineering report should never be redrawn for inclusion in architectural or other design drawings. Only photographic or electronic reproduction is acceptable, but recognizes that separating logs from the report can elevate risk.

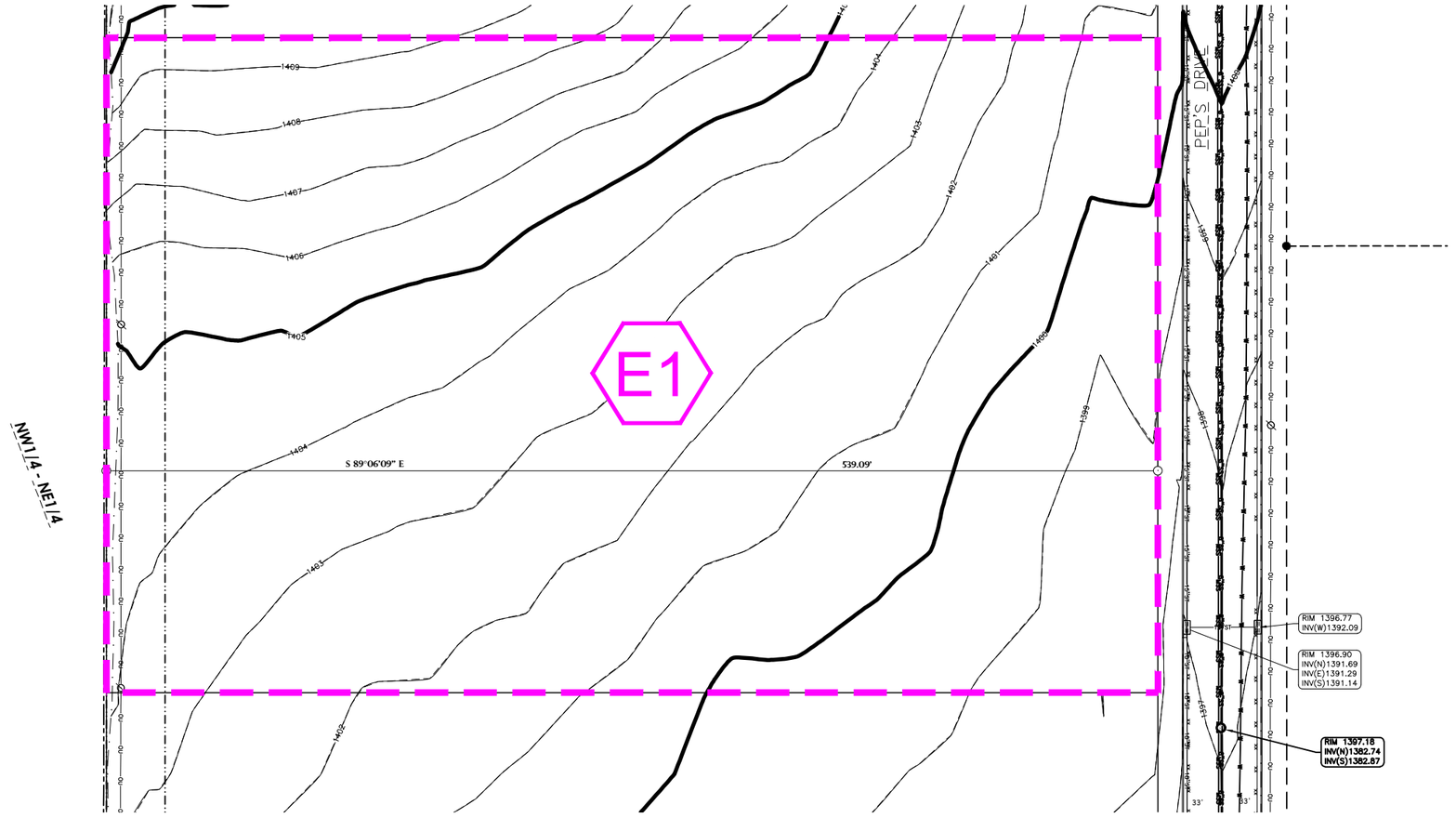
B.2.9 Give Contractors a Complete Report and Guidance
Some owners and design professionals mistakenly believe they can make contractors liable for unanticipated subsurface conditions by limiting what they provide for bid preparation. To help prevent costly problems, give contractors the complete geotechnical engineering report, but preface it with a clearly written letter of transmittal. In the letter, advise contractors that the report was not prepared for purposes of bid development and that the report's accuracy is limited; encourage them to confer with the geotechnical engineer who prepared the report (a modest fee may be required) and/or to conduct additional study to obtain the specific types of information they need or prefer. A prebid conference can also be valuable. Be sure contractors have sufficient time to perform additional study. Only then might you be in a position to give contractors the best information available to you, while requiring them to at least share some of the financial responsibilities stemming from unanticipated conditions.

B.2.10 Read Responsibility Provisions Closely
Some clients, design professionals, and contractors do not recognize that geotechnical engineering is far less exact than other engineering disciplines. This lack of understanding has created unrealistic expectations that have led to disappointments, claims, and disputes. To help reduce the risk of such outcomes, geotechnical engineers commonly include a variety of explanatory provisions in their report. 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.

B.2.11 Geoenvironmental Concerns Are Not Covered
The equipment, techniques, and personnel used to perform a geoenvironmental study differ significantly from those used to perform a geotechnical study. For that reason, a geotechnical engineering report does not usually relate any geoenvironmental findings, conclusions, or recommendations; e.g., about the likelihood of encountering underground storage tanks or regulated contaminants. Unanticipated environmental problems have led to numerous project failures. If you have not yet obtained your own geoenvironmental information, ask your geotechnical consultant for risk management guidance. Do not rely on an environmental report prepared for someone else.

APPENDIX C

Existing Drainage Map and Calculations



LEGEND:

EXISTING DRAINAGE AREA

REVISIONS

CHECKED:	J.L.
DRAWN:	M.K.
DATE	02/08/2022
PROJECT NO.	21.126

EXISTING DRAINAGE MAP

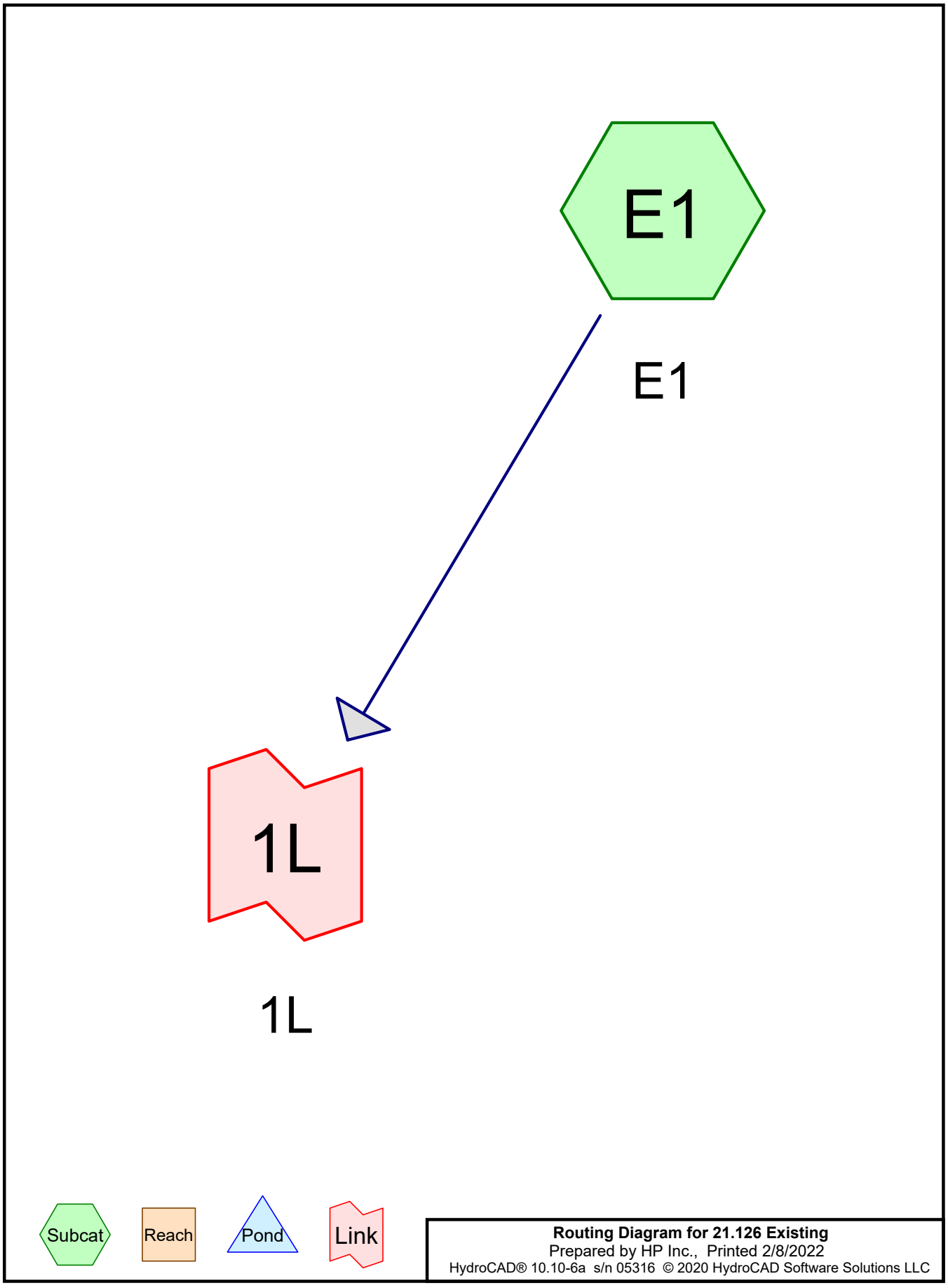
FAITH CONSTRUCTION SERVICES
MEDFORD APARTMENTS
MEDFORD
TAYLOR CO, WISCONSIN

Civil Engineering
Land Surveying
Landscape Architecture

4941 Kirschling Court
Stevens Point, WI 54481
Phone: 715.344.9999 Fax: 715.344.9922

POB Point of Beginning

SHEET EX



Routing Diagram for 21.126 Existing
Prepared by HP Inc., Printed 2/8/2022

Summary for Subcatchment E1: E1

Runoff = 5.04 cfs @ 12.37 hrs, Volume= 20,570 cf, Depth= 1.36"
Routed to Link 1L : 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 2-Year Rainfall=2.73"

Area (sf)	CN	Description
71,110	80	Pasture/grassland/range, Good, HSG D
109,823	89	Row crops, straight row, Good, HSG D
180,933	85	Weighted Average
180,933		100.00% Pervious Area

Tc (min)	Length (feet)	Slope (ft/ft)	Velocity (ft/sec)	Capacity (cfs)	Description
21.9	258	0.0278	0.20		**Sheet Flow,** Cultivated: Residue>20% n= 0.170 P2= 2.73"
2.8	192	0.0156	1.12		**Shallow Concentrated Flow,** Cultivated Straight Rows Kv= 9.0 fps
24.7	450	Total			

Summary for Link 1L: 1L

Inflow Area = 180,933 sf, 0.00% Impervious, Inflow Depth = 1.36" for 2-Year event
Inflow = 5.04 cfs @ 12.37 hrs, Volume= 20,570 cf
Primary = 5.04 cfs @ 12.37 hrs, Volume= 20,570 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE1: E1 Runoff Area=180,933 sf 0.00% Impervious Runoff Depth=1.07"
Flow Length=450' Tc=24.7 min CN=85 Runoff=3.93 cfs 16,103 cf

Link 1L: 1L Inflow=3.93 cfs 16,103 cf
Primary=3.93 cfs 16,103 cf

Total Runoff Area = 180,933 sf Runoff Volume = 16,103 cf Average Runoff Depth = 1.07"
100.00% Pervious = 180,933 sf 0.00% Impervious = 0 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE1: E1 Runoff Area=180,933 sf 0.00% Impervious Runoff Depth=1.36"
Flow Length=450' Tc=24.7 min CN=85 Runoff=5.04 cfs 20,570 cf

Link 1L: 1L Inflow=5.04 cfs 20,570 cf
Primary=5.04 cfs 20,570 cf

Total Runoff Area = 180,933 sf Runoff Volume = 20,570 cf Average Runoff Depth = 1.36"
100.00% Pervious = 180,933 sf 0.00% Impervious = 0 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE1: E1 Runoff Area=180,933 sf 0.00% Impervious Runoff Depth=2.40"
Flow Length=450' Tc=24.7 min CN=85 Runoff=8.89 cfs 36,251 cf

Link 1L: 1L Inflow=8.89 cfs 36,251 cf
Primary=8.89 cfs 36,251 cf

Total Runoff Area = 180,933 sf Runoff Volume = 36,251 cf Average Runoff Depth = 2.40"
100.00% Pervious = 180,933 sf 0.00% Impervious = 0 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentE1: E1 Runoff Area=180,933 sf 0.00% Impervious Runoff Depth=3.17"
Flow Length=450' Tc=24.7 min CN=85 Runoff=11.65 cfs 47,726 cf

Link 1L: 1L Inflow=11.65 cfs 47,726 cf
Primary=11.65 cfs 47,726 cf

Total Runoff Area = 180,933 sf Runoff Volume = 47,726 cf Average Runoff Depth = 3.17"
100.00% Pervious = 180,933 sf 0.00% Impervious = 0 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

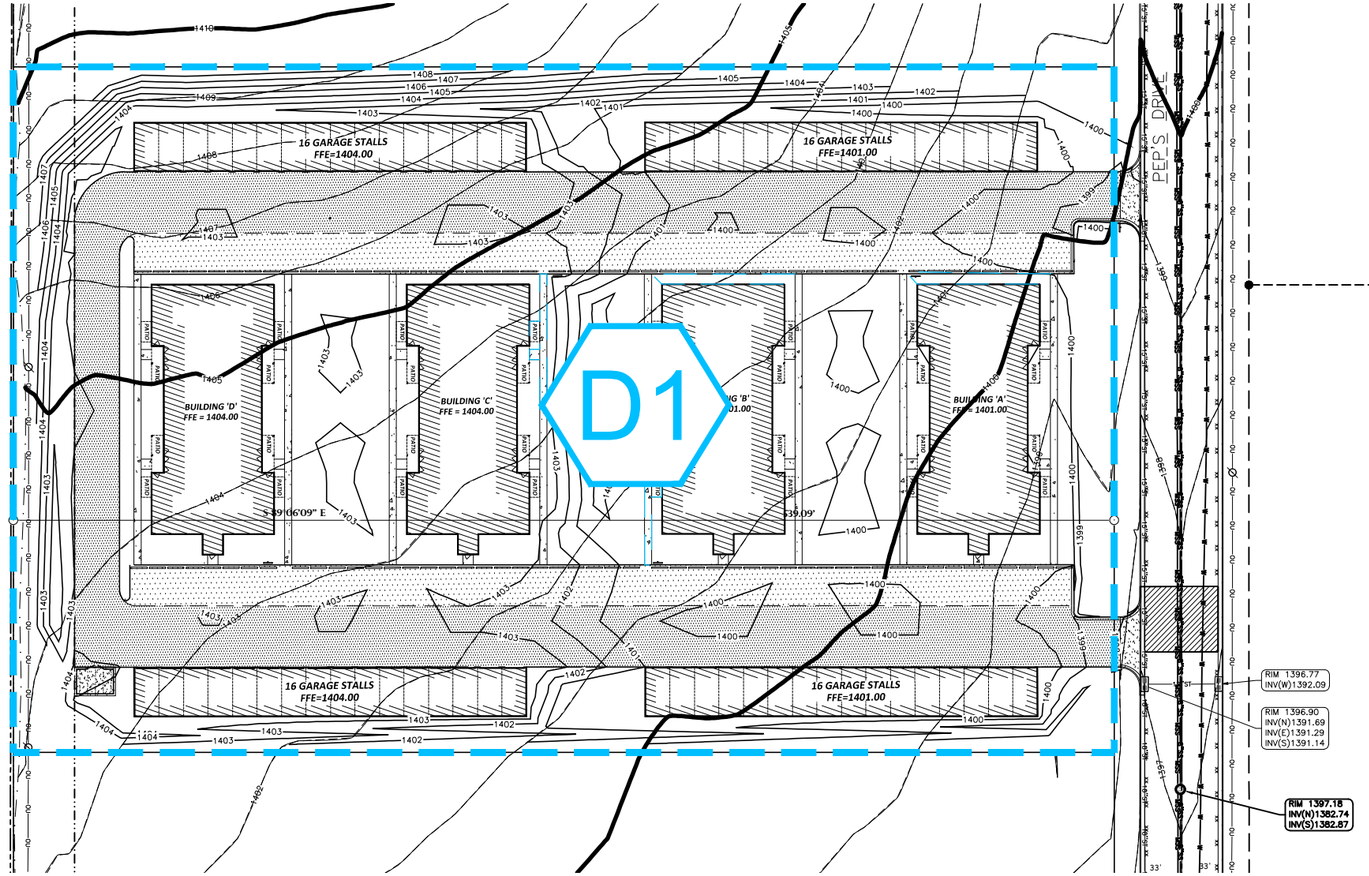
SubcatchmentE1: E1 Runoff Area=180,933 sf 0.00% Impervious Runoff Depth=4.47"
Flow Length=450' Tc=24.7 min CN=85 Runoff=16.28 cfs 67,436 cf

Link 1L: 1L Inflow=16.28 cfs 67,436 cf
Primary=16.28 cfs 67,436 cf

Total Runoff Area = 180,933 sf Runoff Volume = 67,436 cf Average Runoff Depth = 4.47"
100.00% Pervious = 180,933 sf 0.00% Impervious = 0 sf

APPENDIX D

Proposed Drainage Map and Calculations



LEGEND:

PROPOSED DRAINAGE AREA

REVISIONS

CHECKED:	*J.L.*
DRAWN:	*M.K.*
DATE	*02/08/2022*
PROJECT NO.	*21.126*

PROPOSED DRAINAGE MAP

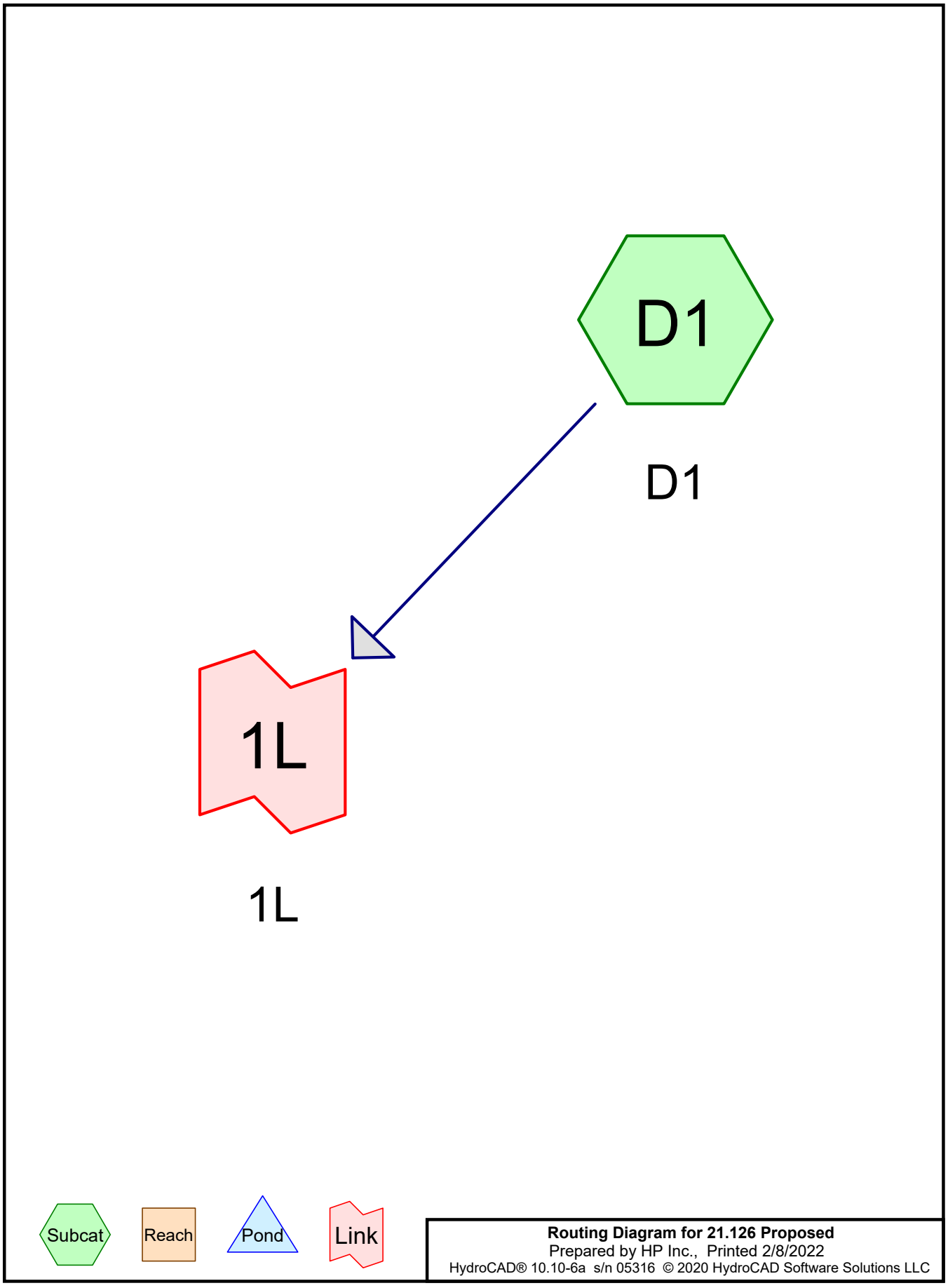
FAITH CONSTRUCTION SERVICES
MEDFORD APARTMENTS
MEDFORD
TAYLOR CO, WISCONSIN

Civil Engineering
Land Surveying
Landscape Architecture

4941 Kirschling Court
Stevens Point, WI 54481
Phone: 715.344.9999 Fax: 715.344.9922

Point *of* **Beginning**

SHEET ***PR***



Routing Diagram for 21.126 Proposed
Prepared by HP Inc., Printed 2/8/2022

Summary for Subcatchment D1: D1

Runoff = 11.50 cfs @ 12.13 hrs, Volume= 26,202 cf, Depth= 1.74"
Routed to Link 1L : 1L

Runoff by SCS TR-20 method, UH=SCS, Weighted-CN, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs
MSE 24-hr 4 2-Year Rainfall=2.73"

Area (sf)	CN	Description
52,636	98	Paved parking, HSG D
4,778	98	Unconnected pavement, HSG D
45,589	98	Unconnected roofs, HSG D
77,930	80	>75% Grass cover, Good, HSG D
180,933	90	Weighted Average
77,930		43.07% Pervious Area
103,003		56.93% Impervious Area
50,367		48.90% Unconnected

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

Summary for Link 1L: 1L

Inflow Area = 180,933 sf, 56.93% Impervious, Inflow Depth = 1.74" for 2-Year event
Inflow = 11.50 cfs @ 12.13 hrs, Volume= 26,202 cf
Primary = 11.50 cfs @ 12.13 hrs, Volume= 26,202 cf, Atten= 0%, Lag= 0.0 min

Primary outflow = Inflow, Time Span= 0.00-48.00 hrs, dt= 0.01 hrs

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentD1: D1 Runoff Area=180,933 sf 56.93% Impervious Runoff Depth=1.41"
Tc=6.0 min CN=90 Runoff=9.39 cfs 21,209 cf

Link 1L: 1L Inflow=9.39 cfs 21,209 cf
Primary=9.39 cfs 21,209 cf

Total Runoff Area = 180,933 sf Runoff Volume = 21,209 cf Average Runoff Depth = 1.41"
43.07% Pervious = 77,930 sf 56.93% Impervious = 103,003 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentD1: D1 Runoff Area=180,933 sf 56.93% Impervious Runoff Depth=1.74"
Tc=6.0 min CN=90 Runoff=11.50 cfs 26,202 cf

Link 1L: 1L Inflow=11.50 cfs 26,202 cf
Primary=11.50 cfs 26,202 cf

Total Runoff Area = 180,933 sf Runoff Volume = 26,202 cf Average Runoff Depth = 1.74"
43.07% Pervious = 77,930 sf 56.93% Impervious = 103,003 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentD1: D1 Runoff Area=180,933 sf 56.93% Impervious Runoff Depth=2.86"
Tc=6.0 min CN=90 Runoff=18.46 cfs 43,157 cf

Link 1L: 1L Inflow=18.46 cfs 43,157 cf
Primary=18.46 cfs 43,157 cf

Total Runoff Area = 180,933 sf Runoff Volume = 43,157 cf Average Runoff Depth = 2.86"
43.07% Pervious = 77,930 sf 56.93% Impervious = 103,003 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

SubcatchmentD1: D1 Runoff Area=180,933 sf 56.93% Impervious Runoff Depth=3.66"
Tc=6.0 min CN=90 Runoff=23.28 cfs 55,252 cf

Link 1L: 1L Inflow=23.28 cfs 55,252 cf
Primary=23.28 cfs 55,252 cf

Total Runoff Area = 180,933 sf Runoff Volume = 55,252 cf Average Runoff Depth = 3.66"
43.07% Pervious = 77,930 sf 56.93% Impervious = 103,003 sf

Time span=0.00-48.00 hrs, dt=0.01 hrs, 4801 points
Runoff by SCS TR-20 method, UH=SCS, Weighted-CN
Reach routing by Stor-Ind+Trans method - Pond routing by Stor-Ind method

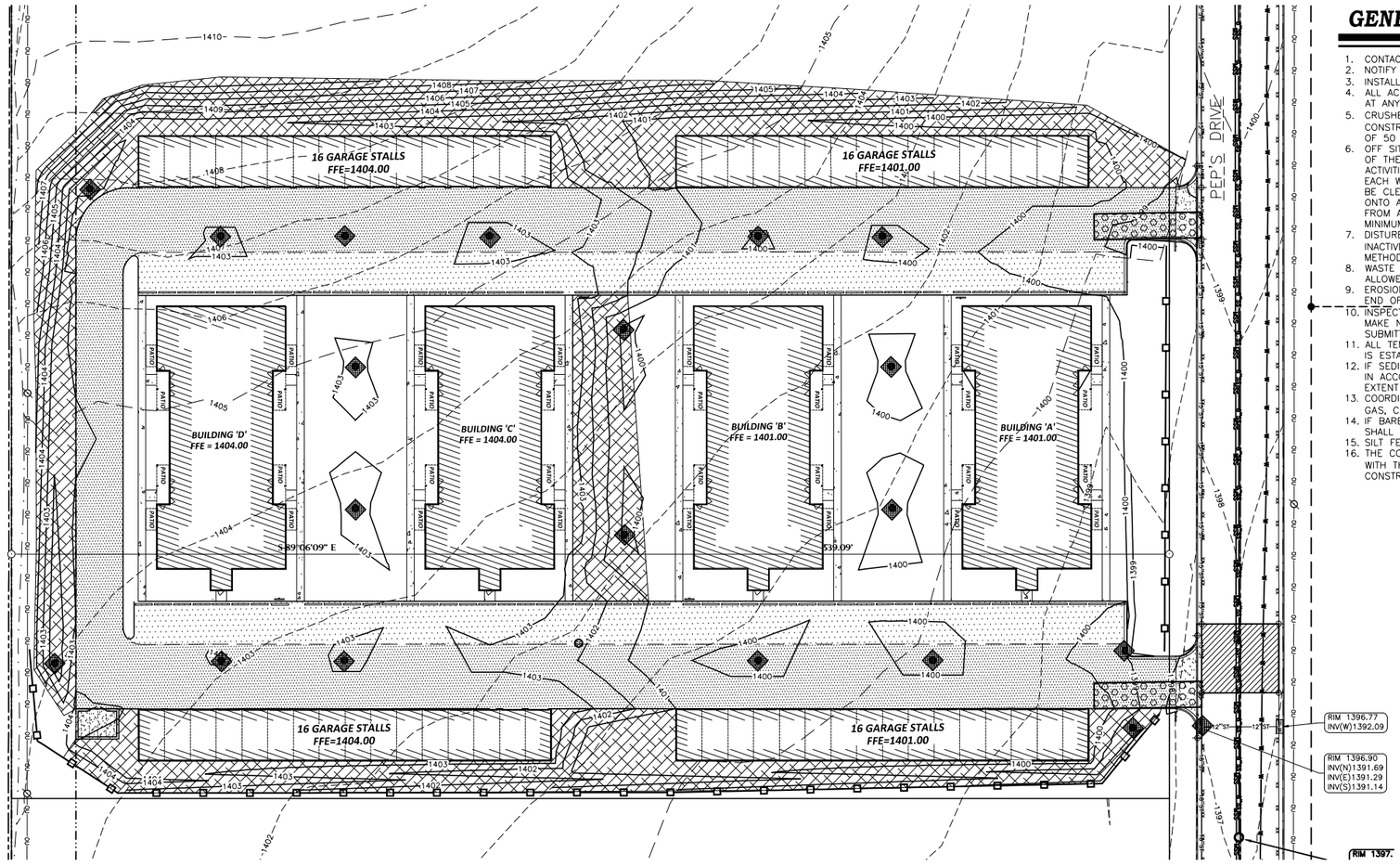
SubcatchmentD1: D1 Runoff Area=180,933 sf 56.93% Impervious Runoff Depth=5.02"
Tc=6.0 min CN=90 Runoff=31.26 cfs 75,710 cf

Link 1L: 1L Inflow=31.26 cfs 75,710 cf
Primary=31.26 cfs 75,710 cf

Total Runoff Area = 180,933 sf Runoff Volume = 75,710 cf Average Runoff Depth = 5.02"
43.07% Pervious = 77,930 sf 56.93% Impervious = 103,003 sf

APPENDIX E

Proposed Erosion Control Plan



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 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. IF BARE SOIL IS EXPOSED DURING THE WINTER MONTHS, STABILIZATION BY MULCHING OR ANIONIC POLYACRYLAMIDE SHALL OCCUR PRIOR TO SNOWFALL OR GROUND FREEZE.
15. SILT FENCE SHALL BE INSTALLED AROUND THE TOPSOIL STOCKPILE.
16. 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 — 10 C5.0

PROPOSED INLET PROTECTION — 5 C5.1

EROSION CONTROL BLANKET — 11 C5.0

ROCK CONSTRUCTION ENTRANCE — 12 C5.0

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:

ELEVATIONS ARE REFERENCED TO NAVD 88 DATUM.

BENCHMARK #1
BURY BOLT ON HYDRANT
LOCATED ON THE EAST SIDE OF PEP'S DRIVE,
APPROXIMATELY 550 FEET SOUTH OF THE INTERSECTION
OF PEP'S DRIVE AND C.T.H. "O".
ELEVATION = 1403.69

BENCHMARK #2
BURY BOLT ON HYDRANT
LOCATED ON THE EAST SIDE OF PEP'S DRIVE,
APPROXIMATELY 1155 FEET SOUTH OF THE INTERSECTION
OF PEP'S DRIVE AND C.T.H. "O".
ELEVATION = 1399.13

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.

0' 30' 60'
1" = 30'

N

REVISIONS

CHECKED:	J.L.
DRAWN:	M.K.
DATE	02/08/2022
PROJECT NO.	21.126

EROSION CONTROL PLAN

NOT FOR CONSTRUCTION

FATIH CONSTRUCTION SERVICES
MEDFORD APARTMENTS
MEDFORD
TAYLRO CO, WISCONSIN

Civil Engineering
Land Surveying
Landscape Architecture
4941 Kirschling Court
Stevens Point, WI 54481
715.344.9999 (PH) 715.344.9922 (FX)

POB Point of Beginning

SHEET C3.0

APPENDIX F

State of Wisconsin Construction Site Inspection Report,
Post Construction Long-Term Storm Water Management Checklist,
And Notice of Termination

State of Wisconsin
Department of Natural Resources (DNR)
PO Box 7921, Madison WI 53707-7921
dnr.wi.gov

CONSTRUCTION SITE INSPECTION REPORT

Form 3400-187 (R 11/16)

Notice: This form was developed in accordance with s. NR 216.48 Wis. Adm. Code for WPDES permittees ôconvenience; however, use of this specific form is voluntary. Multiple copies of this form may be made to compile the inspection report. Inspections of the construction site and implemented erosion and sediment control best management practices (BMPs) must be performed weekly and within 24 hours after a rainfall event 0.5 inches or greater.

Construction Site Name and Location (Project, Municipality, and County):	**Site/Facility ID No. (FIN):**
Onsite Contact/Contractor:	**Onsite Phone/Cell:**

Note: Inspection reports, along with erosion control and storm water management plans, are required to be maintained on site in accordance with s. NR 216.48 (4) and made available upon request. PLEASE PRINT LEGIBLY.

Date of inspection:

Time of inspection:
Start: _____ ◯ **am** ◯ **pm**
End: _____ ◯ **am** ◯ **pm**

Type of inspection: ◯ **Weekly** ◯ **Precipitation Event** ◯ **Other (specify)**

Weather/Site Conditions:

Temp. _____ **°F** **Antecedent Soil Moisture**

◯ **Dry** ◯ **Frozen or snow covered**
◯ **Variable** ◯ **Frozen (Thaw predicted in next week)**
◯ **Wet** ◯ **Melting Snow/slush**

Last Rainfall Depth: _____ **inches**

Last Rainfall Date: _____

Describe current phase of construction:

Scheduled Final Stabilization Date for Universal Soil Loss Equation (USLE)[1] :

Project on Schedule[2]? ◯ **Yes** ◯ **No**

Name(s) of individual(s) performing inspection:

Inspector Phone/Cell:

I certify that the information contained on this form is an accurate assessment of site conditions at the time of inspection:

Inspector Signature _____ **Date:** _____

Inspection Questions:	**Yes**	**No (Identify Actions Required):**	**Location/Comments:**	**Actions Completed by Date & Initials**
1. Is the erosion control plan accessible to operators?	☐	☐ Provide onsite copy		
2. Is the permit certificate posted where visible?	☐	☐ Post certificate		
3. Is the current phase of construction on sequence with the site-specific erosion and sediment control plan, including installation/stabilization of ponds and ditches?	☐	☐ Add sediment control ☐ Install missing ditch/pipe/pond ☐ Stabilize bare soil		
4. Are all erosion and sediment control BMPs shown on plan properly installed and in functional condition?	☐	☐ Repair ☐ Modify ☐ Install/Replace		
5. Is inlet protection properly installed and functioning in all inlets likely to receive runoff from the site?	☐	☐ Clean ☐ Replace ☐ Install		
6. Is the air free of fugitive dust resulting from construction activity and bare soil exposure?	☐	☐ Apply water ☐ Apply dust control product		

[1] The Universal Soil Loss Equation (USLE) model and the Construction Site Soil Loss and Sediment Discharge Guidance are available at: http://dnr.wi.gov/topic/stormwater/standards/const_standards.html

[2] If the project is not on schedule then the soil loss summary for the project should be reviewed and schedule, plan or practices modified accordingly.

CONSTRUCTION SITE INSPECTION REPORT

Inspection Questions:	Yes	No (Identify Actions Required):	Location/Comments:	Actions Completed by Date & Initials
7. Is the public right of way curb line free of tracked soil and accumulation?	☐	☐ Install tracking pad ☐ Widen/lengthen pad ☐ Amend stone/Add geotextile ☐ Install wheel washing station ☐ Close entrance/exit ☐ Limit traffic across disturbed areas ☐ Sweep road and curb line		
8. Are wetlands, lakes, streams, ditches, or storm sewers downstream of the site free of sedimentation and turbid water leaving the site? [3]	☐	☐ Repair/Replace erosion control ☐ Add sediment controls ☐ Modify operations ☐ Contact DNR to verify extent of cleanup required		
9. Is dewatering and/or vehicle and equipment washing being done in a manner that prevents erosion and sediment discharge?	☐	☐ Install treatment train ☐ Install energy dissipation ☐ Modify discharge location ☐ Modify intake to reduce sediment		
10. Are soil stockpiles existing for more than 7 days covered and stabilized?	☐	☐ Seed ☐ Install mat/mulch/polymer ☐ Cover with tarp/plastic sheeting		
11. Are downstream channels and other downhill areas protected from scour and erosion?	☐	☐ Install energy dissipation at outfall ☐ Install ditch checks ☐ Install slope interruption ☐ Install onsite detention		
12. Are good housekeeping practices or treatment controls in place to prevent the discharge of chemicals, cement, trash, and other materials into wetlands, waterways, storm sewers, ditches, or drainage-ways? [4]	☐	☐ Properly dispose of trash ☐ Provide concrete washout station ☐ Contact DNR to verify extent of cleanup required		
13. Is the plan reflective of current site operations and does it address all erosion and sediment control issues identified during the inspection?	☐	☐ Revise sequence ☐ Revise sediment control BMP ☐ Revise erosion control BMP ☐ Revise post-construction storm water BMP		
14. Are all areas where construction has temporarily ceased (and will not resume for more than 2 weeks) temporarily stabilized?	☐	☐ Topsoil & seed ☐ Install mat/mulch/polymer ☐ Cover with tarp/plastic sheeting		
15. Are all areas at final grade permanently vegetated or stabilized with other treatments?	☐	☐ Topsoil & seed ☐ Install mat/mulch/polymer ☐ Sod ☐ Install stone base		
16. Have temporary sediment controls been removed in areas of the site that meet the permit definition of final stabilization?	☐	☐ Water to establish vegetation ☐ Repair or reseed areas ☐ Remove temporary practices		

3 If sediment discharge enters a wetland or waterbody, the permittee should consult with DNR staff to determine if sediment cleanup and/or additional control measures are required.

4 The permittee shall notify the DNR immediately via the spills hotline at (800)943-0003 of any release or spill of a hazardous substance to the environment in accordance with s. 292.11, Wis. Stats., and ch. NR 706, Wis. Adm. Code.

Save... Print... Clear Data

State of Wisconsin
Department of Natural Resources
dnr.wi.gov

Notice of Termination – Storm Water Discharges Associated With Land Disturbing Construction Activities General Permit

Form 3400-162 (R 12/13)

This Notice of Termination (NOT) form is authorized by s. 283.37, Wis. Stats. Submittal of a completed NOT to the Department is mandatory for any landowner of a construction site regulated under 40 CFR Part 122, Chapter 283, Wis. Stats., and Chapter NR 216, Wis. Adm. Code. Failure to submit a completed NOT to the Department after the construction site undergoes final stabilization may result in forfeitures up to $10,000 per day, pursuant to s. 283.92 (2), Wis. Stats. Personally identifiable information on this NOT may be used for other water quality program purposes.

Submission of this NOT constitutes notice that the landowner identified in Section I, no longer intends to be authorized by a general WPDES permit to discharge storm water associated with land disturbing construction activities from the construction site identified in Section III of this NOT.

All necessary information must be provided on this NOT. Failure to complete this NOT correctly may result in rejection of this NOT by the Department. Please read all instructions before completing. Please type or clearly print your answer to all questions

Section I: Landowner Information

Business Name	Authorized Representative		
Mailing Address	City	State: WI	ZIP Code
E-mail	Phone Number (area code)	Alternate Phone Number	

Section II: Contractor Information

Business Name	Contact Person		
Mailing Address	City	State: WI	ZIP Code
E-mail	Phone Number (area code)	Alternate Phone Number	

Section III: Facility/Site Location Information

Site Name

Location Address/Description				WDNR Site Number	
◯ City ◯ Township ◯ Village of				County	
PLSS Information	Township N	Range ☐ East ☐ West	Section	Quarter	Quarter-Quarter

Section IV: Certification

I certify under penalty of law that disturbed soils at the identified site have undergone final stabilization and temporary erosion and sediment control measures have been removed or that all storm water discharges associated with construction activity that are authorized by a general WPDES storm water discharge permit have otherwise been eliminated. I understand that by submitting this Notice of Termination, I am no longer authorized to discharge storm water associated with construction activity by the general WPDES permit, and that discharging pollutants in storm water associated with construction activity to waters of Wisconsin is unlawful where the discharge is not authorized by a WPDES permit.

NOTE: The person signing below must be a representative of the landowner as defined in s. NR 216.55 (4) Wis. Adm. Code. "Landowner" for purposes of this NOT is defined in s. NR 216.002 (13), Wis. Adm. Code. Failure to have this NOT properly signed will result in its rejection.

Signature of Landowner/Authorized Representative	Date Signed
Printed Name of Landowner/Authorized Representative	Title

Mail this completed NOT form to the appropriate Wisconsin Department of Natural Resources office in the region where the facility is located. See the instructions on page 2 of this form for regional office addresses.

Instructions

Section I: Landowner Information

Provide the legal name of the person, firm, public organization, or any other entity that owns the construction site described in Section III of this application and holds or qualifies for an applicable general or individual constructions site storm water discharge permit. The mailing address and phone number given should be for the authorized representative.

Section II: Contractor Information

Provide the legal name of the person, firm, or any other entity that acted as the major contractor in charge or operating the construction site described in Section III of this application. The mailing address and phone number given should be for the contact person.

Section III: Construction Site Information

Enter the construction site's official or legal name and complete address, including county, city, state and zip code. Be sure to include the quarter-quarter, quarter, section, township and range (the nearest quarter section) of the site. If the site is on more than one quarter, enter the quarter that best describes the location of the site. Use additional space if needed to describe the site location. The WDNR Site Number can be found in the upper right corner of the original letter conferring coverage under the general permit from the WDNR.

Section IV: Certification

State Statutes provide for severe penalties for submitting false information on this NOT form. State regulations require this NOT to be signed as follows:

1. For a corporation, by a responsible corporate officer including president, secretary, treasurer, vice president, manager, or a duly authorized representative having overall responsibility for the operation covered by this permit.
2. For a unit of government, by a ranking elected official or other duly authorized representative.
3. For a partnership, by a general partner; and for a sole proprietorship, by the proprietor.
4. For a limited liability company, by a manager.

Sign the form and print the name of the individual signing the NOT and date of signature. If the form was prepared by a consultant or someone other than an employee of the site landowner, provide the name and address of the preparer.
If you need additional information about the NOT for construction activities, please contact the Department at (608) 267-7694.

Mailing Address

Unless otherwise directed, mail this completed NOT Form to the WDNR office associated with the county of the site location:

NORTHERN REGION (NOR)				
Ashland Barron Bayfield Burnett	Douglas Florence Forest Iron	Langlade Lincoln Oneida Polk Price	Rusk Sawyer Taylor Vilas Washburn	WDNR Wausau Service Center 5301 Rib Mountain Road Wausau, WI 54401 715-359-4522
NORTHEAST REGION (NER)				
Brown Calumet Door Fond du Lac	Green Lake Kewaunee Manitowoc Marinette	Marquette Menominee Oconto Oneida Reservation	Outagamie Shawano Waupaca Waushara Winnebago	WDNR Northeast Regional Headquarters 2984 Shawano Avenue Green Bay, WI 54313-6727 920-662-5100
WEST CENTRAL REGION (WCR)				
Adams Buffalo Chippewa Clark	Crawford Dunn Eau Claire Jackson Juneau	La Crosse Marathon Monroe Pepin Pierce	Portage St. Croix Trempealeau Vernon Wood	WDNR Wausau Service Center 5301 Rib Mountain Road Wausau, WI 54401 715-359-4522
SOUTH CENTRAL REGION (SCR)				
Columbia Dane Dodge	Grant Green Iowa	Jefferson LaFayette Richland	Rock Sauk	WDNR South Central Regional Headquarters 3911 Fish Hatchery Road Fitchburg, WI 53711 608-275-3266
SOUTHEAST REGION (SER)				
Kenosha Milwaukee	Ozaukee Racine	Sheboygan Walworth	Washington Waukesha	WDNR Waukesha Service Center 141 N.W. Barstow Street, Room 180 Waukesha, WI 53188 262-574-2100

Storm Water Management Practices
Post Construction Long-Term Storm Water Management Checklist

Site Name: Medford Apartments

Location: City of Medford, Taylor County, Wisconsin

Responsible Party: The owner of the property is responsible for the post construction long-term storm water management upkeep. This checklist may be utilized when performing inspections after any rainfall event exceeding one inch of rainfall, and at a minimum semi-annually in early spring and fall.

Date of Inspection: (mm/dd/yy)

Time of Inspection: (start/end)

Type of Inspection: (annual/quarterly/precipitation event)

Weather:

Inspector's Name:

Component Inspected:	**Repairs Required:**	**Comments:**

Grass and Plants throughout Site
- -Bare Spots
- -Dead Plant Material
- -Washouts

Drainage Swales
- -Debris/sediment buildup
- -Erosion
- -Culvert endwall structure

Site Vegetation

Storm Sewer Pipes:

- -Sediment Deposits
- -Trash/Debris
- -Cracks